2022-04-01

Preparedness of recent medical graduates to meet anticipated healthcare needs

Gale, Thomas

http://hdl.handle.net/10026.1/19338

PREPAREDNESS OF RECENT MEDICAL GRADUATES TO MEET ANTICIPATED HEALTHCARE NEEDS

GMC1203

Final Report

February 2022

Tom Gale

Nicola Brennan

Nicola Langdon

James Read

Natasha Keates

Lorna Burns

Hisham Khalil

CAMERA,
Peninsula Medical School,
University of Plymouth

Karen Mattick

University of Exeter
Medical School,
University of Exeter

Executive Summary

Background

It is vital that medical graduates are prepared for their first day of work as a trainee doctor. Graduates being prepared for practice has an important impact on patient safety and the functioning of the healthcare team. The conceptualisation of 'preparedness for practice' has however widened now to involve doctors being prepared, not just for when they start practising, but for their whole career. Key organisations have identified the needs and challenges doctors will have to meet in the future. The General Medical Council (GMC) are particularly interested in finding out whether medical graduates are prepared to meet anticipated healthcare needs in the following areas of practice:

1. the changing doctor-patient relationship – characterised by more involvement of patients in decision-making and using information to enhance their own health management

2. the doctor in a multi-disciplinary team (MDT) – increased importance of interdisciplinary team working with doctors from all care settings and specialities; and with other health and social care professionals

3. complex clinical decision-making – clinical decisions characterised by incomplete information and a high degree of uncertainty

Research Questions

RQ1. What are the core skills, capabilities and attributes doctors will require to be prepared:
a) to empower patients and adapt to the changing doctor-patient relationship
b) to work effectively as part of the future multi-disciplinary teams across different healthcare settings
c) to make complex clinical decisions with incomplete information and a high degree of uncertainty.

RQ2. To what extent do new graduate doctors have the skills, capabilities and attributes that will enable them to empower patients and adapt to the changing doctor-patient relationship?

RQ3. To what extent do new graduate doctors have the skills, capabilities and attributes to work effectively as part of the future MDT across different healthcare settings?

RQ4. To what extent do new graduate doctors have the skills, capabilities and attributes to make complex clinical decisions with incomplete information and a high degree of uncertainty?

Methods

The research used a mixed methods design including:

1. A rapid review of the literature to provide a pragmatic operationalisation of the three areas of practice. The search strategy involved key medical and education databases, citation searching and grey literature searches. Searches returned over 1,960 articles that were screened against inclusion criteria. There were 34 studies included in the mapping stage and 20 in the narrative synthesis across the three areas of practice.

2. National stakeholder interviews to explore foundation doctors' preparedness for practice in the three specified areas of practice. Interviews lasting 45-60 minutes were conducted with 67 stakeholders across the UK e.g. Foundation Year 1 (FY1) and Foundation Year 2 (FY2) doctors, educational and clinical supervisors, postgraduate Deans, patient representatives, Foundation Programme leads, medical educators, other healthcare professionals. The interviews were audio recorded, transcribed, analysed thematically and coded in NVivo.

3. Post-simulation interviews to explore foundation doctors' preparedness for MDT working and complex clinical decision-making in acute settings. Twenty FY1 and FY2 doctors in a trust in the South West of England took part in high fidelity simulations using SimMan® 3G technology. Following the simulations (approx 20 minutes duration) participants undertook a structured 30-40 minute debrief based on the Crisis Resource Management (CRM) approach from trained simulation faculty sessions (from anaesthetics, physician or emergency medicine background). Faculty and participants also completed a CRM template online. Participants then took part in individual semi-structured interviews with a member of the research team. Individual interviews were also held with five simulation faculty members involved in running the scenarios. The 25 interviews lasted 20-60 minutes and were held approximately 2-4 weeks after the simulation. Interviews and CRM templates were audio recorded, transcribed, analysed thematically and inductively coded in NVivo.

Results

Key finding 1: Communication skills, self-awareness and medical knowledge were identified as being important across all three areas of practice

Good communication skills, self-awareness and medical knowledge were identified as being important across all three focus areas of practice. There are also specific skills that are unique for each area of practice i.e. skills for patient-centred care were important to underpin the changing doctor-patient relationship, teamworking for MDT working, and confidence for complex clinical decision-making.

Key finding 2: Graduates felt prepared for many aspects of the changing doctor-patient relationship but less prepared for fostering empowerment.

Our data suggests that on the whole, graduates felt prepared for empowering patients and the changing doctor-patient relationship. Graduates felt well-prepared for communication, particularly building a rapport with patients and delivering patient-centred care. There was mixed feelings of preparedness for fostering empowerment with patients with some feeling well prepared and some feeling not prepared at all. Often graduates felt prepared for the different aspects of the role of the foundation doctor but due to the pressures of the clinical environment did not have the time to execute these capabilities to the best of their ability.

Key finding 3: Graduates felt prepared for many aspects of working in MDTs but did not fully appreciate the scope of practice of other HCP's. Graduates were less prepared for leadership in urgent or emergency situations.

On the whole, graduates felt prepared for working in MDTs. They felt prepared for communication, working in MDTs led by other healthcare practitioners (HCPs) and understanding team hierarchies. There was mixed preparedness for understanding different team roles and it was felt that more inter-professional education during undergraduate training would greatly improve this. There was also mixed preparedness for taking on leadership roles in MDTs, but this was perceived by trainers and foundation doctors as something that was not necessarily expected at the level of the foundation doctor role.

Key finding 4: Preparedness for complex clinical decision-making was 'complex'.

It was felt by many stakeholders that graduates do not make complex clinical decisions and that it was beyond the remit of the role of the foundation doctor. However, others identified the types of complex clinical decisions that foundation doctors made, including those relating to; co-morbidities and social problems, acute or time-pressured situations, end of life, do not resuscitate (DNAR) and discharge. This divergence may reflect subjectivity over what counts as a complex decision. On the whole, graduates reported feeling prepared for complex clinical decision-making. They felt prepared for understanding their own knowledge and professional limits and knowing when to escalate. There was mixed preparedness reported for dealing with uncertainty and prioritising tasks. The post-simulation interviews highlighted the fact that foundation doctors are not yet prepared for leadership in acute scenarios and complex clinical decision-making in acute settings.

Key finding 5: There are limits to the extent medical school can prepare graduates for the role of foundation doctor.

It is clear from the data that there is only so much preparation that medical schools can provide for the role of the foundation doctor and that some aspects can only be learned on the job. Foundation doctors recognised the importance of interprofessional learning and simulation team-based training, but it is only when they are responsible for the care of the patient and performing the role in reality that they fully appreciate the expectations of a foundation doctor. While taught skills are important, and indeed essential, it was felt by many that, the most effective way of being prepared for the foundation doctor role was to

put the skills into real-life clinical practice. Whether this was through initiatives such as shadowing the FY1/FY2 roles, assistantships, induction programmes, or the Interim Foundation Programme (FiY1) introduced during the COVID-19 pandemic, the more practise they had at carrying out the role, the more prepared they felt.

Conclusion

Our study adds to the preparedness for practice literature by providing an in-depth exploration of three areas of new graduates' practice that will be important to meet future anticipated healthcare needs. The current medical education provision is producing doctors that are prepared for many aspects of practice in these areas including, communication, patient-centred care, MDTs led by other HCPs, understanding team hierarchies, knowing when to escalate decisions, understanding own knowledge and self-awareness. Areas that need some more attention are complex clinical decision-making in acute settings, fostering empowerment, complex communication, dealing with uncertainty, leadership and prioritising tasks but these are skills that participants felt can be learned on the job. Any future changes to medical education provision should focus on providing more experiential learning and programmes where medical students have the opportunity to 'act up' to the role of the foundation doctor.

Contents

List of Abbreviations & Acronyms

BMA	British Medical Association
Brexit	Britain leaving the EU
CAMERA	Collaboration for the Advancement of Medical Education and Research
CRM	Crisis Resource Management
FY1	Foundation Year 1 doctor
FY2	Foundation Year 2 doctor
GMC	General Medical Council
GPs	General Practitioners
HEE	Health Education England
HRA	Health Research Authority
MDT	Multidisciplinary team
NHS	National Health Service
NVivo QSR	Qualitative Analysis Software
OECD	The Organisation for Economic Co-operation and Development
PROSPERO	Prospective register for systematic reviews
Rayyan QCRI	Systematic Review Software
RQs	Research questions
UK	United Kingdom
USA	United States of America
UKFPO	United Kingdom Foundation Programme Office
WP	Work Package
WHO	World Health Organisation

1. Background

1.1 Introduction

It is vital that medical graduates are prepared for their first day of work as a trainee doctor.[1] There is evidence to suggest that when trainee doctors in the UK start their first work placement as a Foundation Year 1 doctor (F1) in August each year, it has a negative impact on patient safety.[2] Graduates being underprepared for practice also has an impact on the functioning of the broader healthcare team.[1] Finally the transition from medical student to practising doctor is frequently experienced as very stressful.[3] Ensuring that graduates are prepared as well as they possibly can be for this challenging role eases this stressful transition.[4] The conceptualisation of 'preparedness for practice' has recently been widened to involve doctors being prepared, not just for when they start practising, but for their whole career. [1] Understanding the anticipated future healthcare needs and preparedness of current doctors will help policy-makers such as the GMC to better understand the extent to which current medical education and training (undergraduate and postgraduate) supports the development of the competencies and capabilities required for the future healthcare workforce.

1.2 Previous research on preparedness for practice

Over the last decade or so, there has been a plethora of research on medical graduates' preparedness to practise medicine.[5] [6-12] In the UK in particular, there have been three large-scale mixed methods studies carried out on the topic. The first of these studies was carried out by Illing et al in 2008 and examined graduates preparedness for practice in three medical schools (Newcastle, Warwick and Glasgow).[9] [13] In 2009, Brennan et al carried out a study of Peninsula Deanery F1 doctors' preparedness for practice.[3, 4, 14] More recently, in 2014, Monrouxe et al. et al carried out a multi-site study of UK medical graduates preparedness for practice.[1, 5, 15] These studies collectively found that graduates felt underprepared for dealing with their newly gained responsibility, the increased workload, the degree of multitasking required, managing uncertainty, working in multi-professional teams and dealing with the death of a patient. However the more clinical experience gained as an undergraduate student helped to ease the stress of the transition.

An underexplored area of new graduates preparedness for practice relates to their preparedness for acute ward settings.[16] Foundation doctors are often the first to be called to review patients in hospital wards whose clinical status has deteriorated. The factors that influence foundation doctors' preparedness to recognise, respond and manage patient deterioration in acute ward settings are complex. A systematic review of the literature indicated that there is substantial room for improvement in foundation doctors' capacity to deal with patient deterioration. Evidence suggests preparation of foundation doctors in the recognition and management of the deteriorating patient is influenced by effective simulation education and clinical experiential exposure over time.[16]

Preparedness to practice has been defined as "the combination of knowledge, skills and behaviour that medical graduates should possess at the point of entering the workforce".[1] However in recent years the conceptualisation has been widened to include professional values, personal attributes, and contextual/environmental factors.[17] This conceptualisation also includes lifelong learning and relates to doctors being prepared for their whole career as well as when they start practising. Furthermore, Monrouxe et al. et al[18: 1] importantly point out that "as the healthcare needs of modern society are changing the goal of preparedness constantly changes too".[18] Thus when thinking about preparedness from a longitudinal perspective it is important to not only consider the role of the doctor as it is performed now but expectations of the role that doctors will need to perform in the future.[19] The Future Doctor report outlines what the NHS, patients and the public require from future doctors in order to help prioritise the next stage of medical education reform.[19] The Future Doctor report identified eight areas of practice including the patient-doctor partnership, the extentivist and generalist, leadership, followership and team working, and the transformed multi-professional team, population health and sustainable healthcare, adoption of technology, work-life balance and flexibility throughout a career and driving research and innovation.[19]

1.3 Preparedness for future medical practice

A variety of organisations have identified the needs and challenges healthcare workers will have to meet in the future.[17, 20] The GMC are particularly interested in finding out whether medical graduates are prepared for these three areas of practice including:

1. the changing doctor-patient relationship
2. the doctor as part of a MDT
3. complex clinical decision-making.

These areas of practice were decided upon by the GMC based on internal/external consultation, overlap in the underlying skills and attributes, and a review of the literature. It is important to note that these areas of practice are not new but are anticipated to be an increasingly integral aspect of a future doctor's role.

1.3.1 The changing doctor-patient relationship

This reflects changes in the doctor-patient relationship arising from evolving consumer needs and expectations, as well as patients having greater access to health information (e.g. through health and wellbeing apps, disease specific websites and health information intermediaries such as WebMD). Access to more health information does not only enhance patients' own health monitoring and management, but also leads to an increased emphasis on shared decision-making and consent in relation to their care. Complexities may arise for doctors around the quality and variability of information accessed by patients to inform shared decision-making.

1.3.2 MDT working

In England, the NHS five year plan highlights the need for services to be integrated around care of the patient.[21] As a result, multi-disciplinary team (MDT) working is projected to become an ever more important element of doctors' roles in the future. New models of care are leading to increasingly diverse MDTs, requiring doctors to work effectively alongside other types of doctors and healthcare professionals across all settings.[22] This will require doctors to undertake various team roles including, where appropriate, demonstrating leadership and the ability to accept and support leadership by others.[23] This is driven by a number of factors including the increasing complexity and specialisation of care, increasing co-morbidities and prevalence of chronic diseases.

1.3.3 Complex clinical decision-making

The nature of illness is typically complex and therefore the health and care of many patients is complicated and uncertain. A clinical decision may be the outcome of a process of observation, reflection and analysis of observable or available information or data. The decision must not only take into account the available clinical information, but also the context of the patient and their situation. What differentiates a complex clinical decision is uncertainty – some or a large part of the information required to derive the decision is either incomplete or unknown. The demographic of an ageing and more diverse population, more multi-morbidity, the increasing move to integrated care across different settings, and MDT working is adding to the complexity of clinical decision-making. Newly-qualified doctors must be able to recognise complexity and uncertainty, and, through the process of seeking support and help from colleagues, learn to develop confidence in managing these situations and responding to change.

Understanding the anticipated future healthcare needs and preparedness of current doctors in these three areas of practice will help policy-makers such as the GMC to better understand the extent to which current medical education and training (undergraduate and postgraduate) supports the development of the competencies and capabilities required across the three focus categories.

1.4 Aim of study & research questions

The aim of this research is to understand whether and to what extent new graduates (i.e. doctors in foundation training) are prepared to meet specific anticipated healthcare needs.

The research questions are as follows:

RQ1. What are the core skills, capabilities and attributes doctors will require to be prepared:

a. to empower patients and adapt to the changing doctor-patient relationship
b. to work effectively as part of the future MDT across different healthcare settings
c. to make complex clinical decisions with incomplete information and a high degree of uncertainty.

RQ2. To what extent do new graduate doctors have the skills, capabilities and attributes that will enable them to empower patients and adapt to the changing doctor-patient relationship?

RQ3. To what extent do new graduate doctors have the skills, capabilities and attributes to work effectively as part of the future MDT across different healthcare settings?

RQ4. To what extent do new graduate doctors have the skills, capabilities and attributes to make complex clinical decisions with incomplete information and a high degree of uncertainty?

2. Methods

2.1 Research design

The research used a mixed methods design to identify the core skills, capabilities and attributes doctors will require to address the three specified healthcare needs and assess the extent to which recent graduates can demonstrate them.

It is important to define what we mean by the terms "skills", "capabilities" and "attributes". A skill can be defined as a type of work or activity that requires special training and knowledge e.g. carrying out a venepuncture.[24] Capability is viewed as an all-round human quality and involves the integration of knowledge, skills, personal qualities and understanding used appropriately and effectively.[25] Competency in a range of skills and clinical contexts underpins capability. Finally, an attribute is a quality or feature regarded as a characteristic or inherent part of someone or something.[26]

The research involved three work packages (WPs) (Table 1). WPA involved a rapid review of the literature to identify the key skills, capabilities and attributes associated with the three areas of practice. This would provide a pragmatic operationalisation of the three specified areas of practice and would inform the design of the interview schedules used in the subsequent work packages. WPB entailed qualitative semi-structured interviews with 67 key stakeholders to investigate foundation doctors' preparedness for the three areas of practice. This method would provide an in-depth multi-perspective understanding of stakeholders' experiences of preparedness for the three areas of practice. WPC utilised interprofessional simulation to explore factors associated with foundation doctors' confidence and capability to deal with the multidisciplinary team and complex clinical judgement. This work package would provide an insight into graduates thinking and feelings about their preparedness for acute clinical scenarios at a particular point in time that would have been difficult to gain through interview alone. Including key simulation faculty from multiple disciplines would also provide objective perspectives from their observations as simulation facilitators and clinical supervisors.

Table 1: Mapping research questions to work packages

	Research Questions	WP A	WP B	WP C
RQ1.	What are the core skills, capabilities and attributes doctors will require to be prepared to address the 3 specified areas of practice?	X	X	X
RQ2.	To what extent do new graduate doctors have the skills, capabilities and attributes that will enable them to empower patients and adapt to the changing doctor-patient relationship?		X	
RQ3.	To what extent do new graduate doctors have the skills, capabilities and attributes to work effectively as part of the future MDT across different healthcare settings?		X	X
RQ4.	To what extent do new graduate doctors have the skills, capabilities and attributes to make complex clinical decisions with incomplete information and a high degree of uncertainty?		X	X

2.2 Rapid review of the literature

2.2.1 Aim of review & review question

The aim of the review was to provide a pragmatic operationalisation of the three areas of practice: the changing doctor patient relationship, MDT working and complex clinical decision-making. The identification of skills, capabilities and attributes required to meet future needs within these areas of practice enabled the assessment of recent graduates' preparedness in the later phases of the research.

The review question was:

What are the core skills, capabilities and attributes future doctors will require:
a. to empower patients and adapt to the changing doctor-patient relationship
b. to work effectively as part of the future MDT across different healthcare settings.
c. to make complex clinical decisions with incomplete information and a high degree of uncertainty?

2.2.2 Search strategy

The search strategy was designed, piloted and carried out by an experienced information specialist (LB) with experience of carrying out searches for medical education systematic reviews. The search strategy involved searching electronic databases as well as a number of supplementary search methods e.g. grey literature and citation searching. A 2013 date limit was set to conduct a focussed update of the literature review underpinning the Monrouxe et al review. A list of search terms were compiled relating to preparedness and the three focus areas of practice: doctor-patient relationship, MDT working and complex clinical decision-making. For further details on the search histories and search strategy see Appendices A and B.

2.2.3 Study selection

In order to identify literature relevant to our review questions the inclusion criteria were kept quite broad (Table 2).

Table 2: Inclusion criteria

	Category	Preparedness for practice review
1.	Population	Medical graduates up to 2 years post-graduation, supervisors, trainers and employers of medical graduates
2.	Intervention/topic of interest	Preparedness for practice (mapping review) Preparedness for 3 areas of practice (narrative synthesis) (a) changing patient-doctor relationship (b) multidisciplinary team (c) complex clinical judgement
3.	Study design	All study designs that report empirical data
4.	Outcome measures	All outcome measures
5.	Language	Studies published in English language
6.	Country of interest	UK
7.	Date	2013 to present

The potential relevance of all titles and abstracts was assessed using Rayyan (systematic review software). The screening was divided amongst four reviewers (NB, LB, NL and NK) following a joint calibration session whereby 10% of the overall sample was screened by each of the reviewers and discussed. Any discrepancies were discussed until agreement was reached.

2.2.4 Data extraction

The papers of all eligible studies were obtained and read in full, and a standardised data extraction form was utilised. For further details on data extraction see Appendix B.

2.2.5 Data synthesis

The aim of the mapping stage was to describe the broad literature that had been published on preparedness for practice since the Monrouxe et al. review, in order to make an informed decision about which studies would contribute substantially to the narrative synthesis stage.

In order to bring together the data we extracted for the narrative synthesis stage we adopted a configuring approach.[27] A configuring approach involves placing 'study findings alongside one another in order to build up a picture of the whole, and how they relate to one another' as opposed to an aggregating approach which focuses on 'multiple observations of the same phenomena'.

2.2.6 Reporting of the review

The PRISMA (preferred reporting items for systematic reviews and meta-analyses) checklist was utilised to ensure the review was rigorously reported.[28]

2.3 National stakeholder interviews

In order to gain an in-depth multi-perspective understanding of foundation doctors' preparedness for practice in the specified areas of practice we conducted semi-structured interviews with key stakeholders. In particular we wanted to explore the transition from medical student to practising doctor, whether foundation doctors are prepared for the skills capabilities and attributes identified in the rapid review, identify further skills, capabilities or attributes foundation doctors' may require, explore how foundation doctors training could be improved to make them more prepared and finally the impact of the COVID-19 pandemic on their practice.

2.3.1 Sampling and recruitment

We used a purposive sampling strategy to recruit a variety of participants including F1 doctors, F2 doctors, clinical/educational supervisors, foundation programme leads, postgraduate deans, medical educators, healthcare professionals and patient representatives. In order to maximise variability in demographics we recruited across all four nations of the UK. F1 and F2 doctors, educational/clinical supervisors and foundation programme leads were recruited via the UK Foundation Programme Office (UKFPO), which cascaded invitation e-mails to all of these groups across the UK. In addition, the research team used existing contacts that work with foundation doctors in South West England, Northern Ireland, Scotland and Wales to send invitation e-mails to foundation doctors. Postgraduate Deans, other healthcare professionals and patient representatives were recruited via contacts within the research team and the GMC. We also recruited F1s via another GMC funded study on the preparedness of interim foundation doctors that TG, NB and KM were involved in. All stakeholders were sent an invitation e-mail which contained a Participant Information Sheet, describing the study and our procedures for data management, and a link to the online consent form which was hosted by JISC online surveys. Some foundation doctors were selected to ensure representation of gender and geographical location.

2.3.2 Data collection

The interviews were semi-structured in format, using a topic guide developed by the research team to cover the research questions, but allowing the conversation to develop depending on the individual participant's particular perspective and expertise. The interview schedules were tailored for three groups of stakeholders; 1) F1 and F2 doctors, 2) educational/clinical supervisors, medical educators, foundation programme leads, postgraduate deans, and 3) patient representatives. The interview schedules are included in Appendix C.

Interviews were conducted by video call using MS Teams or Zoom between November 2020 and May 2021. Interviews were digitally audio-recorded, and transcribed verbatim by two professional transcribers bound by a confidentiality agreement. Participants were anonymised prior to transcription and were referred to by a signifier (a unique reference number and stakeholder type). Interviews were completed with 67 participants (Table 3). F1 and F2 doctors were between 4 and 10 months into their respective programmes when interviewed.

Table 3: No. of stakeholders interviewed

Stakeholder type	Completed interviews
F1 Trainees	24
F2 Trainees	18
Educational/Clinical Supervisors	9
Foundation Programme Lead	3
Postgraduate Deans	2
Other healthcare professionals	5
Medical Educators	3
Patient Representatives	3
Total	**67**

2.3.3 Data analysis

Interviews were audio-recorded, transcribed and the transcripts were uploaded into NVivo 12. The data were analysed using an inductive approach to thematic analysis. A coding framework was developed by three researchers (NB, NL and NK) who each coded three transcripts independently. Each developed their own coding framework and then met as a group to discuss and finalise the coding framework. Following this discussion NL created the final framework. The same three researchers coded all of the interviews using the final framework. Interviews were not double-coded. To ensure consistency weekly meetings were held to discuss coding, additions to the framework and emerging findings. The NVivo files were merged on a weekly basis by NB and shared with the coding team so that each coder was using the same framework.

2.3.4 Ethical approval

Ethical approval was received from the University of Plymouth Faculty of Health Research Ethics and Integrity Committee on the 1st of October 2020 (ref no: 2306).

2.4 Post-simulation interviews

Twenty five post-simulation interviews were conducted with 20 foundation doctors and five simulation faculty in a hospital trust in the South-West of England. The simulations were high-fidelity using SimMan® 3G technology. SimMan is an advanced patient simulator which can demonstrate complex physiological and neurological symptoms and signs and respond in real time to decisions and interventions made by the clinical team. SimMan has the ability to generate physiological monitoring, such as heart rate, blood pressure, oxygen saturations and ECG. This allows participants to obtain the key information as they would in real-life situations.

Simulated experiences have been found to be an effective way of helping to prepare medical students and Foundation doctors for the challenges of clinical practice.[29] Exploring a doctor's response to simulated experiences is thus another way to assess graduates' preparedness for practice. Compared to the national stakeholder interviews it provides a more objective measurement of graduates' preparedness for practice since behaviour during the simulations is observed by faculty running the scenarios. The aim of the post-simulation interviews was to explore graduates' preparedness for acute clinical scenarios. This method provides an insight into graduates thinking and feelings about their preparedness for specific clinical scenarios at a particular point in time that would have been difficult to gain through interview alone. It also investigates faculty perceptions of graduates' preparedness for working in MDTs and complex clinical decision-making as they reflect on their observations during the simulations.

2.4.1 Sampling and recruitment

Participants were recruited from a hospital Trust in the South-west of England. We used a purposive sampling strategy to recruit ten FY1 and ten FY2 doctors as well as five simulation faculty staff. Participants were recruited via an e-mail invitation sent by the simulation manager at the trust. The invitation e-mail contained a Participant Information Sheet, describing the study and our procedures for data management, and a link to the online consent form which was hosted by JISC online surveys. Participants were from a wide selection of medical schools with more than 50% graduating from outside the South-west Peninsula.

2.4.2 Data collection

All foundation doctor participants took part in a simulation session approximately 20 minutes in length. All participants received a briefing before entering the simulation room. Briefings took the form of short clinical handovers, containing pertinent information regarding the patient and concerns from the wider healthcare team (e.g. the nursing staff caring for the patient). Following entering the simulation room, participants were expected to assess and treat abnormal physiology and respond to the changing simulation environment. As the scenarios progressed, simulation faculty were able to programme SimMan to respond to the decisions and actions (or indeed, lack of action) from the participants. To aid debriefing, in some of the scenarios, video

recording was used to allow other healthcare professionals to contribute remotely and also to help highlight key events.

Two types of simulation scenarios were used. The first was modelled around acute medical emergencies and the second focused more on complex care of an older person with multiple co-morbidities. Whilst the majority (12) of the interviews completed were with participants who undertook simulation in a dedicated simulation facility, eight simulations were completed in clinical environments to increase the realism of the scenarios and to include further complexity (such as the location of key equipment).

Following the scenarios participants received a structured 30-40 minute debrief from trained simulation faculty who had observed the sessions. The faculty (experienced simulation trainers who supervise Foundation Doctors from acute medicine, anaesthetics, or emergency medicine background) undertook a structured debrief based on the Crisis Resource Management (CRM) approach,[30] drawing on personal, inter-personal and inter-professional issues. Awareness and understanding of CRM principles is fundamental for safe management of patients in acute or deteriorating situations; team based simulation debriefs commonly utilise CRM principles as a framework to reflect on human factors and non-technical skills which are important in these situations.

Following the scenarios, faculty and participants completed a Crisis Resource Management template online (Appendix D). Foundation doctors and faculty then took part in a semi-structured interview lasting 20-60 minutes. The interviews were held approximately 2-4 weeks after the simulation. The interview schedule explored preparedness for teamwork and complex clinical decision-making within the simulation session and within clinical practice. The interview schedule also asked specific questions investigating participant responses to the CRM template. The interview schedules are included in Appendix E.

Interviews were conducted by video call using MS Teams or Zoom between October 2020 and May 2021. Interviews were digitally audio-recorded, and transcribed verbatim by two professional transcribers bound by a confidentiality agreement. Participants were anonymised prior to transcription and were referred to by a signifier (a unique reference number and stakeholder type).

2.4.3 Data analysis

The interview transcripts and CRM templates were uploaded into NVivo 12. The data were analysed using an inductive approach to thematic analysis. A coding framework was developed by three researchers (NL, JR and NK) who each coded three transcripts independently. Each developed their own coding framework and then met as a group to discuss and finalise the coding framework. Following this discussion NL created the final framework. The same three researchers coded all of the interviews using the final framework. Interviews were not double-coded. To ensure consistency regular meetings were held to discuss coding, additions to the framework and emerging findings.

2.4.4 Ethical approval

Ethical approval was received from the Health Research Authority (HRA) on the 29th of July 2020 (ref no. IRAS 283309 and REC reference: 20/HRA/3782). Ethical approval was received from the University of Plymouth Faculty of Health Research Ethics and Integrity Committee on the 22nd of September 2020 (ref no: 2257).
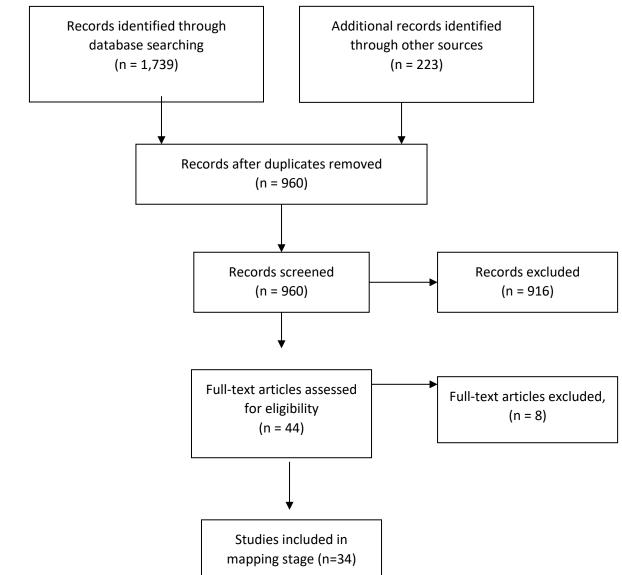
3. Results – Rapid review of the literature

3.1 Literature identified
Of the 1,962 articles found, 34 articles were included in the study (Figure 1 shows a PRISMA diagram).

Figure 1: PRISMA Flow Diagram

Included

```
┌─────────────────────┐
│  Studies included in │
│  thematic synthesis  │
│      (n = 20)        │
└─────────────────────┘
```

3.2 Mapping the literature

In total, 34 studies were included in the mapping stage. Of these, 21 were qualitative, ten were quantitative and one was mixed-methods (further details about the studies are presented in Appendix F). Fourteen of the studies were about junior doctors' general preparedness for practice while 22 contained data that specifically addressed one or more of the three areas of practice. Thirteen studies involved F1 doctors only, five involved F1 and F2 doctors, and the remainder were mixed participants including F1 doctors, F2 doctors, patients, carers, postgraduate deans, specialist registrars, consultants and healthcare organisations.

3.3 Narrative Synthesis

We included 20 papers that specifically addressed one or more of the three areas of practice in the narrative synthesis, the results of which are presented in Chapter 3.

3.3.1 The changing doctor-patient relationship.

The Future Doctor report[23] and the initial consultation[31] states that patients expectations of the future doctor was further patient involvement, most typically in the sense of patient-doctor partnership for care decisions and to be more proactive in their relationship with doctors.[32] Patients want to be more proactive in their relationship with doctors and this expectation comes from the growing tendency for patients to seek information to enhance their own health management. Patients thought that they thought such shared decision-making would lead to other expectations including greater advocacy. Patient involvement was also linked with personalised care whereby patients will expect doctors to work in partnership with them to provide treatment options that have their best interests at heart and consider the patient's circumstances.[23, 31]

Increased access to information online and health/lifestyle data collected from smart devices and apps mean patients are able to research their conditions and engage in treatment plans more than ever before. Future doctors will have an important role in helping patients filter this information, eliminate potential "fake news" and know which information sources may be trusted.[23]

The Future Doctors report[23] highlights the need to empower patients to manage their own health and wellbeing according to individual preferences and capabilities. However, it also warns this must not place undue burden on the patient. Future Doctors will need to be sensitive to the needs of diverse populations within different communities and cultural contexts and embrace their responsibility to reduce health inequalities by working flexibly with different patient populations. The Future Doctor will therefore require training in cultural awareness, and to develop an understanding of local health population and cultures. The Future Doctor Report[23] listed the core skills and behaviours that patients and the public will expect including:

- Humaneness, compassion
- Competence, accuracy, safety
- Time for care
- Patient involvement in decisions
- Ability to signpost appropriately through understanding of how their local health and care system works

Expert communication skills with patients, their families and colleagues will remain fundamental skills for the future and specialised skills such as motivational interviewing will become increasingly important as healthcare moves towards promoting healthy living and disease prevention. The report also emphasises how interpersonal skills are built on trust and require a combination of honesty, openness, responsiveness and having the patients' best interests at heart. "Future Doctors need understanding of the therapeutic power of the patient-doctor partnership and to be fluent in providing empathy, support and reassurance with honest information about patients' conditions, options for treatment, the risks and potential harms of medical interventions, while listening carefully to concerns and personal preferences."[23: 20]

In terms of patient-centred care, Kostov et al. identified how being understanding and having empathy, treating patients with respect and dignity and listening to patients and carers, treating patients as individuals and addressing their needs and concerns were important skills[15] Kostov et al. reported how patients talked about situations where they or their carers felt disempowered and vulnerable e.g. when they entered hospital. Patients felt strongly that doctors should be well prepared to communicate effectively with patients on all levels. In particular being mindful that patients are often nervous in the clinical setting and being able to build rapport was important. The ability to work in partnership with patients was also important. Graduates need to have the skills to share information clearly and empower patients to be involved in making decisions. The importance of having full and complete information in order to communicate with patients was highlighted in a study by Lundin.[33] Patients expected that senior doctors should role-model those behaviours to their junior colleagues.[15]

Monrouxe et al.[18] found that junior doctors often felt underprepared for the high volume of patient consultations and anything unexpected or unusual regarding those consultations. In terms of patient-orientated communication, many areas of under preparedness were commonly identified by new graduates in terms of patient-orientated communication, including:

- communicating with particular 'types' of patients (e.g. patients with mental health conditions,
- patients who are emotional, patients with English as an additional language and/or highly informed patients),
- managing complaints,
- and breaking bad news.

In the same study, patients reported events concerning junior doctors' preparedness for communication. The general consensus was that communication skills were lacking in many junior doctors, but that these skills were often lacking in their seniors too. Participants felt that such role models had a significant influence on the development of new graduates' communication skills.

One of the key aspects of the doctor-patient relationship that arose in the literature for junior doctors was with regards to seeking consent.[34] Wood et al found that numerous junior doctors felt inexperienced and ultimately lacking in confidence to consent for procedures of which they had had limited exposure to. They were acutely aware of their inabilities to answer patients' questions. In the UK, and many other developed healthcare systems around the world, patients' values, preferences and experiences have been given increasing emphasis in clinical interactions in an effort to promote patient-centred care. Doctors must supply patients with information, regardless of the patients' wishes. Wood et al found that junior doctors expressed an awareness of this and how they would persist in providing information and would implore patients to listen. Current consent processes do not appear to be ideal for many doctors. In particular, junior doctors are often not confident taking consent for surgical procedures and require more support to undertake this task.[34]

The specific skills, capabilities and attributes that were identified in the literature relating to the doctor-patient relationship have been outlined in Table 4. We also grouped these together into four broader categories: patient-centred care, communication, self-awareness and human factors.

Table 4 Skills and capabilities identified in doctor-patient relationship literature

	Skills and capabilities identified	Broader code
1.	Building rapport	Communication
2.	Humaneness, compassion	Communication
3.	Motivational interviewing	Communication
4.	Understanding of how their local health and care system works	Human factors
5.	Respect for patient	Patient-centred care
6.	Treating patients as individuals	Patient-centred care
7.	Work in partnership with patient/Patient involvement/patient involvement in decisions	Patient-centred care
8.	Empower patients to make decisions	Patient-centred care
9.	Patient-centred care	Patient-centred care
10.	Shared decision-making	Patient-centred care
11.	Patient advocacy	Patient-centred care
12.	Cultural Awareness/Sensitive to the needs of diverse populations within different communities and cultural contexts	Patient-centred care
13.	Time for care	Patient-centred care
14.	Filter information/Guide information seeking	Patient-centred care
15.	Empathy	Patient-centred care
16.	Share information clearly	Patient-centred care
17.	Being understanding	Patient-centred care
18.	Interpersonal skills built on trust, honesty, openness, responsiveness and having the patients' best interests at heart	Patient-centred care/ Communication
19.	Understanding of the therapeutic power of the relationship	Patient-centred care/ Self-awareness
20.	Competence, accuracy, safety	Self-awareness

3.3.2 The doctor in a MDT

The Future Doctor consultation identified teamwork/MDT working as an expectation held for the future doctors.[32] Teamwork is essential and that "all members of healthcare delivery need to function effectively together in teams that develop flexibly as advances in healthcare delivery come on stream".[31] Respect and understanding of other roles were identified as being integral to

team working. An important aspect of this is that doctors will need to accept the change in their roles and "be able to let go of some duties that are better placed with other colleagues where possible and as appropriate so that they can together with the team optimise healthcare delivery". A key part of the future doctor's remit would be working with new roles within the multidisciplinary team. Roles noted include Physicians Associates, Nurse Practitioners, "technology experts and scientists". However there were some concerns expressed by participants about this "on the one hand it provides non-medical colleagues with the opportunity to take over some of the doctor's previous tasks, but at the same time there is a risk that this could undermine the professionalism of doctors and public perception of them".[31]

The Future Doctor Consultation[31] also identified leadership as being an important aspect of the MDT in the future. Doctors will be expected "to lead, supervise and develop a team of medical and non-medical practitioners, recognising the skills, and responsibilities of different team members." In terms of good leadership The Future Doctor[23] cites the following skills including self-awareness; strong communication and interpersonal skills; professionalism and fairness; and the confidence to challenge, question and understand the future clinical team and roles of each multi-professional team member. Future Doctors need to learn about leadership, followership and effective team working, embracing collaborative and compassionate leadership to enable health and care colleagues to do more for patients. They must have a comprehensive understanding of other health and social care professions and be trained as role models for team working and advocates for other professions, enabling the full contribution of all members of the future clinical team.

A study by Axon[35] exploring factors affecting communication between Foundation Year 1 doctors and hospital pharmacists identified the following skills as being important in MDT working including, communication, building rapport, verbal and written communication skills. Kellet found that assertiveness was needed for working in MDTs.[36] Working within and across multi-professional teams was difficult for some in early days of work, as F1s did not feel that they had any position of authority with colleagues to, for example, to request tests and make referrals.

Attending MDTs was ranked as essential learning experiences[37] and learning about roles and hierarchies largely appeared to be implicit in learning about MDTs.[38] Nurses played an important role in doctors MDT learning during their early clinical practice.

Kelly et al[36] explored teamworking between junior doctors and managers. Both groups reported that after participating in Paired Learning they better understood the structure of each other's training and hierarchies, and how clinical and management decisions are made. They felt better able to work in partnership with the other group in managing patient services. After participating in Paired Learning junior doctors better understood the structure of management training and hierarchies, and how management decisions are made. They felt better able to work in partnership with the other group in managing patient services.[39]

McGettigan[40] identified the key attributes required by individual team members to work in MDTs which included; 1) learns from experience 2) values expertise of others 3) deals with events in rational/decisive manner 4) anticipates risks/safety issues 5) prioritises tasks efficiently 6) makes effort to be sociable 7) clinically capable 8) can be trusted to complete undertakings 9) takes into account all aspects of care, 10) understands expertise of team 11) develops rapport with patients 12) enthusiastic about work 13) communicates clearly and precisely 14) acknowledges importance of all opinions 15) good team player.[40]

Monrouxe et al.[18] found that while FY1s were prepared for communicating with colleagues, they experienced challenges with respect to MDT working. Examples that were given included clinical disputes with senior medical or nursing staff, difficulties in gaining support from senior medical staff or HCPs and handovers with insufficient information received. Occasionally, serious communication breakdowns between nurses and postgraduate year 1 (PGY1) doctors were experienced, including confrontation and emotional distress.

Monrouxe et al.[18] also found that junior doctors spoke about the importance of learning about MDT working on the job and that everyday experiences of interacting with different healthcare professionals allowed them to develop the skills they needed. Issues relating to using information effectively in teams and not having enough information when requesting the assistance of other healthcare professionals were also highlighted. However in this included study, junior doctors reported positive experiences of working as part of a multiprofessional team, frequently mentioning interactions with nurses as being very positive.

The specific skills, capabilities and attributes that were identified in the literature relating to MDT have been outlined in Table 5. We also grouped these together into broader categories; communication/interpersonal skills, team working, leadership and followership, self-awareness, human factors, professional integrity and decision-making skills. Patient-centred care did not feature in the literature on this theme but the importance of person level human factors was evident in three articles. Interprofessional working was identified as an overarching theme for many skills and capabilities identified.

Table 5 Skills and capabilities identified in MDT literature

	MDT	Broader code
1.	Communicates clearly and precisely	Communication
2.	Develops rapport with patients	Communication
3.	Communication (verbal & written) and interpersonal skills	Communication/Interpersonal Skills
4.	Takes into account all aspects of care	Holistic care
5.	Anticipates risks/safety issues	Human factors
6.	Deals with events in rational/decisive manner	Human factors/Decision-making skills
7.	Prioritises tasks efficiently	Human factors/Decision-making skills
8.	Leadership & Followership	Leadership & followership
9.	Assertiveness	Leadership/human factors
10.	Professionalism and Fairness	Professional integrity
11.	Can be trusted to complete undertakings	Professional integrity/Decision-making skills
12.	Self-awareness	Self- awareness
13.	Clinically capable	Self-awareness/Decision-making skills
14.	Values expertise of others	Self-awareness/Team working/interprofessional working
15.	Understanding how management decisions are made	Team working, leadership & followership
16.	Acknowledges importance of all opinions	Team working/human factors
17.	Enthusiastic about work	Team working/Interpersonal Skills
18.	Makes effort to be sociable	Team working/Interpersonal Skills
19.	Advocates for other professions	Team working/interprofessional working
20.	Good team player	Team working/interprofessional working
21.	Knowledge of roles and hierarchies	Team working/interprofessional working
22.	Respect and understanding of other roles	Team working/interprofessional working
23.	Understands expertise of team	Team working/interprofessional working
24.	Working in partnership	Team working/interprofessional working
25.	Accept change in their own role	Team working/Leadership & followership

3.3.3 Complex clinical decision-making.

With an increasingly complex healthcare system in a changing environment, future doctors will need to be experts in managing uncertainty and ambiguity and evaluating risks and benefits to patients and populations.[23] Doctors need to be able to make valued judgements, hold on to uncertainty, evaluate risk and often act as the final decision-maker. Furthermore, and linked to the MDT theme, future doctors will need to support others in developing and using these skills as the expertise in the multi-professional team develops.

Adams et al[41] found that reflective practice, note writing and tolerating diagnostic uncertainty, first impressions, analytical thought, pattern recognition and analytical self-monitoring were important skills in junior doctors' clinical decision-making. They found a constant dialectic between intuitive and analytical cognition throughout the reasoning process. Bull[42] reported how junior doctors defined their own personal characteristics, such as tolerance of uncertainty, conscientiousness or confidence, and their self-perceived knowledge, skill and experience, as major influences on decisions.

An important aspect of complex clinical decision-making is knowing when to escalate. Burridge[37] found that foundation doctors did not feel confident in recognising what situations they would be expected to manage on their own as an FY1. Knowing when to escalate, and who to escalate to, were areas of significant concern. In parallel to this, participants felt that at times they were expected to perform beyond their level of competency. Similarly Monrouxe et al.[18] reported dilemmas around when junior doctors should escalate decisions with others. Foundation doctors also talked negatively in terms of coping with uncertainty and change, in particular there was uncertainty about their diagnoses, about when seniors changed their minds and ethical issues. Junior doctors positive talk around uncertainty and change related to how repeated exposure to events that were similar in nature led them to cope better.

Corfield[43] found that ethics was an integral component of complex clinical decision-making. However, some graduating doctors are not well prepared to deal with the complex ethical and legal aspects of medicine e.g. resuscitation decisions, discharge against medical advice. In particular, it was found that graduates were often more confident in making decisions with a complex case than a standard case. This may be because they are overconfident and lack self-awareness, and thus do not recognise their limitations or ask for help when it is needed. "Given the complexities of many ethical decisions, preparedness should not be seen as the ability to make a difficult decision but rather a recognition that such cases are difficult, that doubt is permissible and the solution may well be beyond the relatively inexperienced doctor."[43]

The specific skills, capabilities and attributes that were identified in the literature relating to the complex clinical decision-making have been outlined in Table 6. We also grouped these together into four broader categories: Self-awareness, decision-making skills, complexity and uncertainty, communication and human factors.

Table 6 Skills and capabilities identified in complex clinical decision-making literature

	Complex clinical decision-making	Broader code
1.	Admitting they do not know the answer	Self-awareness
2.	Analytical self-monitoring	Self-awareness
3.	Recognising limits of knowledge	Self-awareness
4.	Reflective practice	Self-awareness
5.	Self-awareness	Self-awareness
6.	Self-perceived knowledge, skill and experience	Self-awareness
7.	Conscientiousness or confidence	Leadership /Professional integrity
8.	Ability to evaluate risk	Human factors/Complexity & uncertainty
9.	Knowing when to escalate and who to	Human factors
10.	Analytical thought	Decision-making skills
11.	Pattern recognition	Decision-making skills
12.	Tolerating diagnostic uncertainty	Dealing with complexity & uncertainty
13.	Note writing	Communication

3.4 Summary

The specific skills, capabilities and attributes that were identified in the literature across the three categories are presented in Table 7. This table shows that while some skills, capabilities and attributes were common to all three categories i.e. communication, self-awareness and human factors, others were common to one or two categories. These findings align with Outcomes for Graduates, Tomorrows Doctor's and the Generic Professional Capabilities Framework. [44-46]

Table 7: Summary of skills, capabilities & attributes identified across the 3 categories by rapid review [17]

	Changing doctor-patient relationship	Multidisciplinary Team working	Complex Clinical Decision Making
	Rapid review	Rapid Review	Rapid Review
1.	Patient-centred care		
2.	Communication	Communication	Communication
3.	Self-awareness	Self-awareness	Self-awareness
4.	Human factors	Human factors	Human factors
5.		Team working	
6.		Leadership & followership	
7.			Complexity and uncertainty
8.		Interpersonal skills	
9.		Professional integrity	Professional Integrity
10.		Holistic care	
11.		Interprofessional work	
12.		Decision making skills	Decision-making skills

4. Results – National interviews with stakeholders

This section presents the results of the national stakeholder interviews with F1/F2 doctors, clinical/educational supervisors, foundation programme leads, deans, medical educators, healthcare professionals and patient representatives. In order to maximise variability we spoke with respondents across all four nations of the UK about foundation doctors' preparedness for the changing doctor-patient relationship, MDT working, and complex clinical decision-making. The demographics of the interview participants are presented in Appendix G.

4.1 RQ.2 The changing doctor-patient relationship

The national interview respondents were asked to comment on the changing doctor-patient relationship, the key skills and attributes required for an effective doctor-patient relationship, and how prepared they felt foundation doctors are for these factors.

4.1.1 What aspects of the doctor-patient relationship are perceived to be changing?

A few of the foundation doctor participants felt that as newly qualified doctors they had not experienced any significant shift in the doctor-patient relationship, instead they were accustomed to the current relationship dynamic that they had always trained and worked within. However, from working alongside more experienced colleagues, and with the benefit of retrospection they were able to comment on a perceived change in dynamics. Respondents identified that there had been many changes to the doctor-patient relationship over the preceding years, and these changes had both positive and negative effects. Perceived changes

included, increasing shared decision-making between doctors and patients, generational differences in patient interactions with doctors, and greater access to information for patients.

The core change identified was an increase in shared decision-making, and this was due to the relationship becoming more balanced and moving away from a paternalistic dynamic where the doctor was seen to 'always know best'. Largely, this was perceived by respondents to be a positive change, that allowed the patient to have more responsibility over their health, and for them to be involved in discussion with healthcare providers about their medical, lifestyle, and support needs.

> *"I think **that in the old fashioned models the doctor kind of instructed the patient and very much led the patient, but now I think more so the patient's having a lot more say** in decision-making"* (Interview 1, F1 Doctor, Female, England)

> *"…**the role of the doctor isn't to make all the decisions, it's to make them together**, which I think is what's changed between patients and doctors"* (Interview 13, F1 Doctor, Female, England)

Although most respondents identified shared decision-making to be a positive shift in the relationship between doctors and patients, it was also identified that this shift could also raise challenges. For example, a more balanced dynamic and onus on patients to take part in their medical decisions sometimes results in increased patient expectations, a feeling of patients as consumers, and doctors pressured to facilitate patient demands rather than provide professional medical opinion. Additionally, some patients may not wish or be able to partake in shared decision-making and would prefer doctors to instruct on the best course of action to take. Finally, there was considered to be less deference to the doctor, and a more equal relationship between doctor and patient, however, at times this went to the extreme and constituted a lack of respect or rudeness.

> *"I suppose if a patient came to me as a consumer then I probably wouldn't enjoy it if they demanded, …. sometimes you do get people demanding investigations and things, **and one patient I had demanded like quick treatment for their psychiatric condition, which we just couldn't offer and that can be quite frustrating like trying to communicate that you can't necessarily fix things straightaway**"* (Interview 4, F1 Doctor, Male, England)

> *"Whereas coming up here to [Country] I found that there's a very much, particularly kind of some of the deprived parts of [City] and surrounding [County], that **there is a lot more of the old school approach where patients just refer to you as like you're the doctor and I'll do what you say doctor, and you're given that kind of responsibility to make the decision for the patient, which has it difficulties because you're trying to come to kind of a shared decision-making approach**, whereas often the patients I've encountered particularly during my training so far have actually kind of like shirked away from that"* (Interview 28, F2 Doctor, Male, Scotland)

> *"some people that can be quite disrespectful and I feel like that would never have happened like decades ago, I hear a patient in their twenties or thirties, …they were really rude to the F1 and to the registrars and the consultants, they weren't listening, they were like I don't care what you have to say," (Interview 5, F1 Doctor, Female, England)*

An interesting aspect of the shift towards shared decision-making seemed to be the generational differences between patient interactions with doctors. Some respondents noticed that older patients still assumed a paternalistic dynamic between doctors and patients and would often defer decision-making to the doctor and be ready to do what the doctor decided was best for their care. One female foundation doctor found that the traditional stereotype of doctors as male was commonplace within interactions with patients. Many older patients did not recognise her as a doctor, but instead assumed she must be the nurse, which may also affect their involvement in shared decision-making. The comments below reflect a traditional relationship dynamic between doctors and patients in the UK, whereby stereotypically the doctor was likely to be a respected and educated male, and patients were naturally deferential to this position and status. Conversely, respondents found the younger generation of patients were much more likely to be informed and participatory with their healthcare.

> *"I think there is a lot more questioning of decisions, which is probably a good thing, and definitely more involvement of patients in decision-making, so there's a lot more questioning of decisions. I think you can see a generational change, so I still get younger patients tend to recognise me as a doctor whereas most of my older patients still think I'm a nurse, so there's like a change in perception of our gender, which is changing, almost every day I get called the nurse" (Interview 37, F2 Doctor, Female, Wales)*

> *"On the whole from speaking to patients there is definitely a difference across generations, so for example the older generation they have a very paternalistic attitude in the doctor / patient relationship, when you offer them the opportunity to get involved in their care and nine times out of 10 the answer is always well do you think is best, or what would you like me to do, and trying to explain to them that my decision can't really influence your decision. Whereas the younger generation I think it's interesting cos they're a lot more well versed with general health conditions, and particularly with chronic disease patients, they have a much better understanding of their disease and so you are able to practice your more shared decision-making side of things" (Interview 31, F2 Doctor, Male, England)*

Another aspect of the changing relationship highlighted by respondents was patients' greater access to information. While to a degree this could be beneficial, facilitating shared decision-making through patients being more informed about their health, particularly those who manage chronic conditions, it was also reported to be a challenging aspect of the doctor-patient relationship. Greater access to information about health online sometimes meant patients were misinformed by poor sources, or confirmation bias, which supports a preconceived idea of a

diagnosis or treatment option. Moderating patient beliefs and expectations can present a challenge for doctors, particularly if a patient is convinced of the need for a particular medical investigation or treatment, and this can be further compounded for doctors by time or workload factors.

> *"When I first started I knew everything and the patient knew nothing and my role was to transmit it information, now because of what's out there patients sometimes potentially can even know more than the doctor knows, particularly if in you're in general practice where you won't know everything about everything, but if you're a patient IT savvy and reasonably intelligent, and we need to be aware that this doesn't apply to everybody, which is where one of the challenges are, and if you've got a rare disease that you've read up on you can come in more as a disease expert than the doctor you're seeing"* (Interview 61, Dean, Male, England)

> *"Lots of people won't say that they've looked stuff up, but I find it quite useful to ask them have you looked it up, cos I think if you ask them in a non-judgemental way, they'll then just admit to it or say what they find, so I find it better to just engage with the fact that they've probably done that. Cos we do look stuff up too and sometimes they might have found very similar information to what you would have said. So I don't find the doctor Google thing that much of a problem, unless they have a really fixed idea, but if they do have a really fixed idea of why something happened it's not normally from Google anyway, they probably had the idea before and then they just found something online that supports it"* (Interview 26, F2 Doctor, Female, Scotland)

Despite the challenges, greater access to information can be helpful for patients to understand their condition, treatment and when to seek help. It can also play a key role in opening up discussions and allowing patients to become more involved in shared decisions around their health and wellbeing.

> *"I think there is a lot of people come in saying I've read this, or I've seen that or I've heard this, ……I think patients are bringing their own stuff to the table and wanting to talk about what they know compared to what you know, and have that kind of open discussion"* (Interview 2, F1 Doctor, Female, Scotland)

4.1.2 RQ1.a What are the key skills, capabilities and attributes doctors require for an effective doctor-patient relationship?

Respondents suggested a number of key skills, capabilities or attributes that they considered were important for an effective doctor-patient relationship. Of primary importance were, good communication skills, good medical knowledge, having empathy, and providing patient-centred care. Many other skills and qualities were reported, albeit to a lesser extent. Additional skills mentioned included practising shared decision-making and building rapport with patients, good teamworking skills, the ability to prioritise and negotiate, good time management, record keeping and IT skills, demonstrating situational awareness, self-awareness and recognition of one's limits, and being able to quantify risk. The personal

qualities and attributes considered to be beneficial for an effective doctor-patient relationship included having honesty, integrity, and humility, being personable, approachable, and non-judgemental, having charisma, confidence, patience and resilience, and demonstrating kindness, compassion, reassurance, and respect.

Communication

Communication was referred to in all of the 67 national interviews and 23 Sim interviews undertaken, albeit in different ways. The national stakeholders interviewed felt that good communication skills were vital to an effective doctor-patient relationship in order to explain a diagnosis, treatment options, risk or uncertainty, and to empower patients.

> *"So I think **communication is probably the key thing**, mainly because often empowering patients actually requires being able to explain to them what's going on to them and what the treatment options are …**And I think having that ability to be able to communicate that effectively kind of outweighs the other aspects** because you can always look up or add in extra bits of knowledge over time," (Interview 28, F2 Doctor, Male, Scotland)*

One F2 doctor felt they had underestimated just how much of their role as a doctor would involve talking to different people, and so communication skills were extremely important. While another mentioned the need to tailor communication styles according to the patient and their needs. Furthermore, while they acknowledge the need for good medical knowledge, they felt it was communication skills that were the important part of practising as a doctor.

> *"… **I don't think at the time [medical school] I fully appreciated how much of your job is talking to patients** from all walks of life and different stages of their healthcare journey. So I think **the communication side of it for junior doctors is really important**" (Interview 25, F2 Doctor, Male, Scotland)*

> *"I think **definitely good communication skills** and developing a rapport, [because] every patient's different and if you know there's a young patient who has access to Google on her phone right there and then, you know it's going to be a different conversation to an 80 year old who is just believing everything that you're saying and does not have the capability to Google. **So I think it's knowing your patients, and communication is very important in med school and we practised that, you can learn all the medical knowledge but it's communication skills when it comes to working**" (Interview 17, F1 Doctor, Female, England)*

Empathy

Having empathy was also highlighted as one of the core skills required of a foundation doctor for an effective doctor-patient relationship. Respondents talked about demonstrating understanding of a patient's ideas, concerns and expectations (ICE), as well as giving the patient space to speak.

> *"… **having empathy and understanding is more important than ever I think**, and I think those are all the skills that are really hard, I mean in the past it might have been you need to know your knowledge and that's it, but these are all the really hard skills that are needed now" (Interview 1, F1 Doctor, Female, England)*

> *"So probably by… **letting the patient speak**, that's something we can do to empower them, and **letting them explain their ICE, and then to kind of build on that to make the relationship you have to acknowledge it and show that you sympathise and empathise with***

> *their concerns, and then make sure that they're involved in the kind of decision-making about investigations and treatments, and patient choice, that's empowering" (Interview 29, F2 Doctor, Female, England)*

Two interviewees identified the need to genuinely empathise and listen to patients, rather than giving a façade of empathy while not actually listening to patient concerns.

> *"Being able to listen, to empathise effectively, **and to generally empathise rather than exhibit empathetic phrases**" (Interview 9, F1 Doctor, Female, England)*

> *"A patient said to me a while ago, I was rushing around, and it was a really busy day, and he looked at me and he said, 'you're looking but you're not seeing', and I thought that was really interesting and I kind of went 'woah I need to sit down and have a chat with you'. **So just listening and taking time, and it's hard when you're so busy and you're rushing around, but if you think about it, if you just spend those five minutes to listen to what that patient's got to say and listen to their concerns and address them, that's great for them, it makes their day a little bit better**, but it also makes your day a little bit easier as well because you don't have to keep going back, you've sorted that problem and sat down and had a listen" (Interview 14, F1 Doctor, Female, England)*

One doctor implored putting yourself into the patient's position to encourage understanding of patient needs, thus connecting empathy with patient-centred care. Another F1 doctor recognised that patients are likely to be feeling anxious or scared, particularly if there has been a serious diagnosis, and so giving that patient some of your time and empathy was really important to patient care.

> *"**Empathy, to be able to understand that you could very easily be in their position,** what would you want to know if you were in their position" (Interview 21, F1 Doctor, Female, Scotland).*

> *"…just **ensuring you understand, and having a bit of empathy, that's really, really, really important… a lot of the people in hospital are very scared, they don't know what's going on, they don't understand**… spending a little bit more time with someone who's had a big diagnosis, or somethings going on that we don't really understand, and explaining to them we don't understand where we are at the moment but we're doing these tests and we're hoping to narrow it down so we can work out what's going on and make sure that you get the best treatment possible (Interview 15, F1 Doctor, Male, England)*

Patient-Centred Care

Interviewees also separately identified patient-centred care as a core capability necessary to the doctor-patient relationship, which encompassed identifying, listening to, and understanding patient ideas, concerns and expectations, and encouraging the patient to be participatory within their consultation and care. One interviewee identified that this was a changed aspect of the doctor-patient relationship, where previously patients may not be confident enough to discuss serious health worries with their doctor. Ensuring there is mutual understanding between the doctor and patient appeared key to delivering patient-centred care. For example, doctors need to ensure that patients understand their diagnosis, investigations or treatment, while also understanding the individual needs, concerns, expectations and choices of the patient.

> *"**we've taken this idea of ideas and concerns and expectations on board, where part of every consultation should include us asking the patients what they think the problem is?**

> *Asking the patient what they're worried it could be? Asking them what they want from the consultation? So a lot, a lot of patients, I think in the past, may have come in, worried that they have cancer, but not be confident enough to say, "I'm worried that they have cancer", which means that the doctor can't reassure them…. So, they go away, still worried that they have cancer, even though the doctor thinks, oh I've just told them that they've got a chest infection, they don't need to worry about it, but the patient is still worried that they didn't have an opportunity to have their concerns addressed properly"* (Interview 43, F2 Doctor, Male, England).

The necessity of patient-centred care was iterated by many different interviewee respondents, in different medical roles, highlighting the prevalence of this skill to the relationship between patients and healthcare professionals. One of the interviewees in the role of an educational/clinical supervisor highlighted the need to see patients as individuals, not their condition, and to take into consideration their lives. Another interviewee in the role of Dean, felt that patient-centred care was about patient need and want rather than doctor want, and GPs were well-placed to recognise this importance.

> *"… on an individual level, **we need to move on and help our students move on, beyond the clinical gaze to see these individuals just as a disease or a condition. But we need to make sure that we allow them, and give them the tools to see patients, their life worlds, their conditions**, and really, you know, optimise our efforts, educationally, to make sure that that's not overlooked. …**I think it's about co-constructing with your patients**"* (Interview 64, Medical Educator, Male, N. Ireland)

> *"I think **moving to the concept of what does the patient want, what does the patient need, not what does the doctor want**, and I think one of the reasons we're better at that probably is the greater involvement of general practice in medical school education, just because **I think GPs recognise that skill and the knowledge**"* (Interview 61, Dean, Male, England)

Medical Knowledge

Holding high level and up-to-date medical knowledge and clinical and procedural skills were also identified as necessary to an effective doctor-patient relationship, although interestingly these were mentioned to a lesser degree than communication, empathy, and delivering patient-centred care. However, it was noted that having sound medical knowledge and clinical and procedural skills impacted upon the ability to communicate, deliver patient-centred care, and foster trust with patients. Part of this skill also involved recognising one's own limitations, and being honest with patients about uncertainties, as well as being able to assess the urgency of a situation and prioritise effectively.

> *"**I think they have to have sound medical knowledge, which becomes very evident if you don't have it very, very quickly because you almost can't stratify what's the most urgent to explain**, for example, if somebody goes for an abdominal ultrasound at four pm on a Friday afternoon and the findings are not perhaps urgent, is it appropriate to speak to the patient at that time, how much of that information do you give, is that going to cause a bit of difficulty if we then reach out of hours and the patient's got lots of questions but no one there to spend time to explain things to them. **So I think you have to have sound medical knowledge and understand urgency of everything including scan results, blood results, that kind of thing**"* (Interview 20, F1 Doctor, Female, Scotland)

> *"… **they need to be up-to-date with their curriculum in terms of their medical knowledge and the procedural and examination skills**, and I think they need to be aware of their responsibilities for treating the patient" (Interview 50, Educational/Clinical Supervisor, Male, England)*

One F2 interviewee felt that sound medical knowledge was important in order to be able to answer queries and concerns with honesty and establish a level of trust with the patient. The patient will likely have expectations about the doctor's knowledge expertise and will seek information and guidance from them.

> *"**I think the biggest thing I've found doctors need is a thorough understanding of the topic they have to discuss with the patient, because I think nothing breaks that trust down more when the patient starts asking you questions, and you start stumbling from the get-go and say I don't know**. You have to acknowledge that you won't know everything, but I also feel like patients have an expectation that you as a doctor will know or understand everything" (Interview 31, F2 Doctor, Male, England)*

4.1.3 How prepared are foundation doctors for these and other skills?

National stakeholders that took part in the interviews reported on how prepared they felt foundation doctors were for, communicating and building rapport with patients, fostering empowerment, and delivering patient-centred care.

Preparedness for communication and building rapport with patients

Many of the respondents felt that foundation doctors were well prepared for communicating and building rapport with patients, including from across the spectrum of roles interviewed. This preparation was identified as due in part to a strong communication skills grounding within medical training, and this appeared to be beneficial, despite divergent training backgrounds. Many of the foundation doctors felt they had been well-prepared by their medical training for communication skills, through simulation exercises with actors, sessions on breaking bad news, or by gaining experience by communicating directly with patients during clinical placements and time on the ward.

> *"I think I felt quite well prepared to do that as well, I think my med school was really good for communication skills, we had a lot of sessions doing it and videos and everything. **And I think you do it all the time, you have to build a rapport with patients, even if you're just going to take their blood, little things like introducing yourself, telling them your name, asking permission, explaining what you're going to do, just being friendly and open, that kind of thing, I think you do it all the time, whenever you see any patient you have to build a rapport**. I think I did feel prepared for that"* (Interview 29, F2 Doctor, Female, England)

> *"I think I feel quite prepared for this as well. **The rationale around building a rapport with the patient stems back to having the good and effective communication skills, and it's creating an environment where they feel that they can tell you everything they want to tell you, and feel comfortable saying whatever they want to say, and knowing that the doctor would be listening to them and not just saying yeah that's all fine.** So I feel quite prepared and med school helped me quite a lot with that in terms of the communication skills and things we did throughout the year, and from placements that we went to as well"* (Interview 13, F1 Doctor, Female, England)

The educational/clinical supervisors interviewed echoed this perspective, reporting that foundation doctors were extremely well-prepared for building rapport, and their generally relaxed demeanour is well-received and responded to by patients. Furthermore, the junior status of foundation doctors may result in them being perceived as more approachable than more senior consultants.

> *"**How prepared are foundation doctors for building rapport with patients; I think they're very good**" (Interview 45, Educational Supervisor, Male, England)*

> *"**It's excellent**. I would say across the board, I would say that… **I think it's a much more relaxed generation in terms of they're more relaxed with senior medical staff and they're more relaxed with patients. And patients are going to respond to that**"*

> *and that's how you open up the rapport, and all of that. You know, they're young, nice people who are friendly and open, generally speaking, and patients respond to that really, really quickly. Even people who are hugely cognitively impaired, or you know, all of that. They recognise somebody who is kind and nice and so I think they do an excellent job" (Interview 63, Medical Educator, Female, England)*

The education and clinical skills supervisors, and patient/lay representatives also spoke of the necessity of good communication skills in order to foster an effective doctor-patient relationship. Both highlighted the patient need for doctors who are good communicators, placing this on an equal footing with the requirement for sound medical skills, and linking this to patient safety.

> *"There's probably sometimes a difference between what a doctor thinks makes a good doctor and what a patient thinks makes a good doctor, and **from my experience the doctors who patients have really warmed to and talk about fondly are those that have communicated well.** Sometimes it's quite surprising cos you hear that, and you think they're not a very good doctor…" (Interview 47, Educational/Clinical Supervisor, Male, England)*

> *"I know lots of people say why do we need doctors who can communicate, what does it matter, well they need to be able to communicate and be competent, for me they're equal weights, **because if you can't communicate you don't ask the right questions and you don't get the right answers and therefore, then it becomes unsafe**" (Interview 65, Patient/Lay Representative, Female, England)*

The experience of interacting with patients led one interviewee to reflect on their own limitations and develop methods to assist with rapport building, for example remembering details about patients, such as the book they might be reading, demonstrating a commitment to building rapport effectively as well as patient-centred care.

> *"I feel quite good about it actually, and I think it stems from when I was a student, I was always really struggling to remember the patients, and they'd be like the lady in bed four and I'd be like 'I don't know who that is, I don't know what's going on', and **I realised pretty early on that I needed a system to start to remember patients a little bit better. So I started on the ward round clocking little things about them, so the book they were reading, the pyjamas they were wearing, the film they were watching, and then when I went to see them it was actually a little conversation starter cos I'd remembered, be like 'oh you watched that film yesterday, what did you think about it', and they'd go 'hold on what'. So that kind of method of remembering people has turned into something I use to build rapport,** so I feel ok about that, and making small talk when taking bloods and stuff. I think I do quite well and also get some interesting knowledge from patients by doing that, you find out some really cool stories. And we've actually implemented that in ITU now as well, cos they all become one big Covid blur, and **on our handover sheet now we've got a fun facts section, so we put in a fun fact about every single patient, and that's just really**

nice, I think it's really important and something I'll carry forward for other placements as well" (Interview 14, F1 Doctor, Female, England)

Building rapport with patients involves communication skills and personal qualities that foster engagement from the patient. Respondents identified that some peers and colleagues were naturally more comfortable conversing with patients and found it easier and more enjoyable than others. Interestingly, one educational/clinical supervisor explained the effect of experience on one's ability to adapt to situations that may be out of one's comfort zone, describing doctors as "actors" who "portray this calm knowledgeable exterior to people". Many of the interviewees acknowledged that this was a skill that you developed with exposure and experience. For example, building rapport was something that developed as doctors became more familiar and comfortable interacting directly with patients and essentially could practice and hone this skill through clinical practice.

Some foundation doctors felt prepared for communication and building rapport with patients due to their extra-curricular experiences, for example prior work as a healthcare assistant in service roles which had allowed them to already be familiar and practised with speaking with members of the public.

*"… whilst I was at Medical School, **I had quite a few… service type jobs, which I think, actually, probably prepared me better than Medical School did**, because it's most of being a rapport, is just being able to have a casual chat with a stranger, when they're in a difficult situation, and that's something that's really quite difficult to do some of the time. **I think it's a difficult thing to teach, because there's no, no script that will work for every patient**" (Interview 43, F2 Doctor, Male, England)*

While most of the foundation doctors reported feeling comfortable and prepared for most aspects of communication, a few felt that the training received was 'text-book' or conventional in nature, and that 'good communication' varied between patients and contexts. Some respondents felt they were less prepared for more complicated aspects of communication, for example, a patient refusing a particular intervention, or communication through third-parties. This was primarily due to less clinical exposure and experience in those unique situations.

*"**I think they [foundation doctors] are very good at dealing with next of kin, but not so good at dealing with more formal situations, so powers of attorney, legal guardians, legal advocates, and that's just down to less experience**" (Interview 45, Education and Clinical Supervisor, Male, England)*

*"Having conversations over the phone is also more difficult than having them in person, but **I think it's very difficult to prepare for third party conversations especially as a student when you don't really get exposure to that at all**" (Interview 2, F1 Doctor, Female, Scotland)*

One respondent highlighted that medical training in communicating and building rapport is taught in a way that is unrealistic, whereby the doctor has the time to focus on one patient at a time and develop rapport but that in real life they may not have the time to do this. As such,

those foundation doctors who are good at building rapport may struggle with adapting this skill to different contexts where time and pressures may be more intense.

> *"Yes I think during med school they do get that opportunity,* **cos I think their patient interaction when they're experiencing it is very much a you're focused on just that patient, they're going to see a patient to get a history, do an examination and present it, but it's not in the real world, it's not in the context of a busy medical or surgical ward where you don't have that time to do it** *…And if they're given the time to do it, which in GP they often are, then they can build up that rapport and get the patients to talk to them and I think that that's great.* **But I think the ones who like doing that and are good at doing that then struggle in specialities where they don't have the time to do it. So I think they are prepared for it but not the adaptation they have make to that in different situations"** *(Interview 52, Educational/Clinical Supervisor Female, England)*

Other communication difficulties or barriers to rapport include, dealing with complex scenarios, aggressive patients, and being unfamiliar with the subtleties of the English language, such as reading sub-text or non-verbal cues.

Foundation doctors were frequently required to communicate with patients and relatives via the telephone, especially during the COVID-19 pandemic, and for some this was a skill that they felt they required more preparation and training. Furthermore, it was also highlighted by one doctor that due to COVID-19 and the restrictions on the numbers of people within the hospital environment, they had never experienced a patient's relatives being present within the clinical environment. This is an interesting point that may affect the preparedness of doctors to speak with patient relatives in the future.

> *"I guess it would be easier if it was face-to-face now, so if we were allowing family to come in and there wasn't a translator in the room, I can still look them in the eye,* **whereas when it's a telephone conversation it takes forever to say anything or get anywhere in a conversation. So I find it really hard, and if I'm honest that is something I always try and back away from,** *that's the thing I find really difficult"* *(Interview 14, F1 Doctor, Female, England)*

> **"I don't feel very confident, to the point that, and this is really silly, I would leave the doctor's office, go and find the other phone so the other doctors can't judge me on how poor my conversations were,** *and they probably weren't that poor but I just felt that they weren't good enough and I didn't want other people kind of overhearing how stutter I might be.* **So not very prepared I think would be the honest answer to that"** *(Interview 3, F1 Doctor, Female, England)*

In light of the changed relationship dynamic between doctors and patients, some of the foundation doctors observed poor forms of communication from senior doctors as they interacted with patients. This sometimes involved a paternalistic dynamic, although it was also recognised that this communication dynamic was sometimes preferred by the patient, and that there can be generational differences between communication styles, with some older patients

being deferential to doctor-led communication and decision-making, whereas younger patients were sometimes more likely to embrace a more conversational approach.

Preparedness for fostering empowerment

Respondents from the national interviews were mixed in their perception of foundation doctors' preparedness for empowering patients. While some respondents felt this was something they were prepared for, others felt that it was not something that foundation doctors had been provided the opportunity to gain experience in. As illustrated below, some of the respondents felt able to try to empower patients and were able to describe how they would go about this. For example, by ascertaining the level of patient understanding, as well as how much they wanted to know and be involved in decision-making, by educating or signposting patients to information, presenting an unbiased explanation of the different options and their risks and benefits, and consenting patients. One of the healthcare professionals interviewed felt that the best way to empower patients was to get them involved in their own healthcare and prevention.

> *"I think the thing I would try to do ultimately is get to know the patient on an individual basis, I think if I can **get an understanding of how much the patient knows, how much they want to know, what their current level of understanding is, and how much they want to be involved in the decision-making**, that then sets the perfect kind of foundation for going forward with that patient's care, I think **taking that time to lay some foundation and groundwork of just getting to know the patient and a bit about them, cos every patient will be different in how they're going to approach being involved in those decisions**" (Interview 1, F1 Doctor, Female, England)*

> *"**providing education whether it be yourself or signposting them to the right places** and not forgetting that actually, **the best way that you can help a patient and empower them… is getting them on-board with their own treatment and prevention**" (Interview 59, Healthcare Professional, Female, England)*

One of the F1 interviewees spoke of having a department folder where all team members had taken selfies, and how this empowered patients by allowing them to be familiar with the team and felt comfortable to ask questions if they were unsure of anything. One interviewee specifically mentioned an example where they were able to empower a patient to talk about a specific issue that they were reluctant to mention to seniors on a ward round. This relates to a point made in the previous section about building rapport, whereby patients are sometimes more receptive to establishing rapport with the foundation doctors, who may appear more approachable.

> *"In terms of empowering patients; so we started being ITU unit, which I think is really good, where we've all taken selfies, **so there's a folder of selfies, and we've told the patients if you want to know what we look like just let us know and we've got a picture, which is really nice because then they can go oh, you're you,** which I thought was a really nice idea. **So listening and just making them aware of alternative, say if you've got a question just ask, if you want to know something else just ask**, and I try*

and keep reiterating that with them all the time" (Interview 14, F1 Doctor, Female, England)

Some of the interviewees felt that their preparedness for empowering patients depended on the specific context, and that as foundation doctors they were still developing these skills, but that this would improve with experience.

*"I think it depends what the decision is, **I guess I feel prepared about the specific decisions I've been taught how to make well with patients**. So thinking about patients and how we do end of life discussions, and how we talk about their future care, whether they're going to need to go home, going to need support at home, things like that, I feel like I've been given skills to make those decisions. But actually that's come from doing it in practice rather than being prepared. **In terms of making decisions about whether patients should or shouldn't have an operation say, or choose between a set of treatments, I'm not sure I really have those skills yet. But kind of looking at future placements it might be that I just haven't reached that point yet**" (Interview 12, F1 Doctor, Female, England)*

Other barriers to empowering patients included not always being afforded the time to execute this skill due to the volume of work, presenting a difference between textbook training and real-world practise of patient empowerment.

*"**I think the problem is more the actual work environment**, you know what to do in an ideal world, we're taught this, this and that, say when you break bad news you're taught to find a quiet room, to sit everybody down five minutes and talk about, but that doesn't work in the ideal world, and it's not because you haven't been trained to do so, like the times I was in A&E, you just don't have the resources or the time to sit the family down, to do it as how you would ideally like to do it. So **training-wise everybody is probably trained to do stuff right but unfortunately when we actually start working, we realise it's totally different and not everything can happen how you read in textbook**" (Interview 30, F2 Doctor, Female, England)*

*"I do feel prepared, and that is something I really want to achieve, **I think feel currently that I'm limited in my ability to do that based on things like time and resources**, like on psychiatry at the moment lots of the patients that we see the first line, and most effective treatment for lots of the patients is like a course of therapy that the waiting list is like three years. **So I so feel that even though I do feel prepared for it there are maybe other barriers that prevent me from being able to deliver it**" (Interview 9, F1 Doctor, Female, England)*

One F2 doctor interviewed felt that the capacity to empower patients depended on having the time and consistent care to get to know the patient over a few consultations.

*"**I don't think I feel that prepared for empowering, I can see it as a bit easier to empower someone over like a few consultations**… …And I think it's easier to empower someone when you know a bit more about their life, or about their*

*personality, whereas if you've only just met them and all you've talked about is their medical problem, I would find it quite difficult. **So I don't think I feel that prepared but hopefully that will come a bit more with time**" (Interview 26, F2 Doctor, Female, Scotland)*

The early career status of foundation doctors means they have not always gained the knowledge and experience to be able to empower patients. However, some of the respondents also noted that this was not expected of them at the grade and stage of career they were currently working at, instead it was a grade-specific skill expected from more senior clinicians.

*"I think that takes a bit longer, **I think when you are a foundation doctor you are still very much learning the nuts and bolts of acute medicine or surgery, and empowering patients to take decisions is something which is probably the next grade up at least,** and I think they will have the skills to get there at the appropriate time in their training but it's not something I would expect them to be taking on or be competent at in the first two years of being a doctor" (Interview 50, Educational/Clinical Supervisor, Male, England)*

Some of the respondents also talked about this skill as being context specific, dependent on the rotation they were working within, the doctor's own knowledge of the medical diagnosis and treatment options, and their experience with the specific decision-making process.

*"**I think I feel somewhat prepared, because really the question depends on what decision I'm asking them to make, and that is intrinsically linked to my level of experience.** For example, if it is a joint replacement surgery that I'm talking to them about, I don't feel at all empowered or ready to help patients feel empowered to make that decision because I don't know anything about it, or enough about it to make a patient feel ready. However, something that I feel I'm comfortable with and dealt with day in day out, I can talk to patients about it and lay out all the options and say to them there's more information and help available, these are the options, let me know what you think. **So I think my confidence is directly correlated to how comfortable I am with the topic we're talking about**" (Interview 31, F2 Doctor, England)*

*"S**o they have a wealth of opportunities to learn those core skills both at medical school and within foundation curricula,** or objectives sort of teaching them how to do it, and opportunities, so we have training days, in-house programmes, a lot which just focus on things like human factors and communication**. But in terms of opportunities to actually deploy those skills I think it depends entirely on what rotations they're exposed to**" (Interview 54, Foundation Programme Lead, Male, England)*

One interviewee felt that the assessment of non-technical skills should be a more rigorous part of the entry requirements for medical school, in order to ensure that the profession attracted those with intellectual capacity as well as emotional insight and intelligence. One respondent felt that non-technical skills such as communication and fostering empowerment were personality driven rather than something you could learn, and that medicine attracts high academic achievers who

may not be as attuned emotionally. As such, they felt there was an argument for having situational judgement tests earlier in medical school training rather than at the end, as well as a more rigorous part of the selection process.

> *"**I think this is a personality thing rather than a training thing**… I believe situational judgement tests and things like that should be done in the beginning of medical school rather than the end, cos the end is way too late, **because medicine attracts a particular personality of high achievers who most of the times were best in their school, they are intellectually orientated, and sometimes, and it doesn't apply to all, they're much more drawn to the intellectual rather than the emotional.** So I think in order to prepare someone for these 'skills' you must have the right material, and I think that should be a more rigorous part of the interview process and the acceptance" (Interview 21, F1 Doctor, Female, Scotland)*

Preparedness for delivering patient-centred care

Overall the respondents felt that foundation doctors were prepared for delivering patient-centred care. Many of the foundation doctors interviewed felt that this was a central element of their medical training from day one and has been carried through into their clinical practice. One respondent even felt it was a 'natural' part of delivering medical care.

> *"That's again why I feel quite lucky to have gone to [Hospital], they were really hot on that, **in the first week they lectured us about what patient-centred care is and understanding the core philosophies around that**" (Interview 8, F1 Doctor, Male, England)*

> *"I think very prepared, **my medical school training always put patients at the forefront of medicine**, we were taught in a sort of case-based way that always **centred around patient care, evidence-based practice and shared decision-making was emphasised a lot**, and I think that's something I've seen and hopefully carried through into my practice" (Interview 16, F1 Doctor, Male, England)*

While it may not be possible to be fully prepared for the future of patient-centred care, as it depends in part on how the doctor-patient relationship evolves, the interviewee below felt that the communication skills training they had received allowed them to prepare for delivering this style of medical care.

> *"**I think I feel pretty well prepared for the current state of things**, I do feel well prepared to involve patients in my care, and to create that more balanced patient / doctor relationship. It's quite daunting to think how far that will go and what the patient / doctor relationship will look like in the future, **I can't be prepared entirely without knowing what that's going to look like in another 10 years' time. But I do think the amount of communication training I've had has been adequate in order to kind of prepare for this style of medicine that we're delivering**" (Interview 1, F1 Doctor, Female, England)*

For many of the respondents their ability to deliver good patient-centred care was based on their experience and this was developing all the time. The reason for this was greater familiarity with different situations, presentations, and a lot of exposure and practice during training.

> *"I think from the experience I've had, especially from my foundation years, **I feel as if that's got better throughout my whole time, I genuinely do feel like the longer that I've been a doctor it's made overall my patient care better because I'm just more familiar with certain situations, so I feel like I'm more effective and quicker at doing things, as opposed to when I first started out**. So I'd say yeah at the moment I do feel like I feel confident to be able to deliver that, but I think that's definitely something that I've developed throughout my training" (Interview 39, F2 Doctor, Female, England)*

As with preparedness for communication and building rapport, some felt that their prior experiences, such as working as HCAs had helped them feel prepared for delivering patient-centred care to a greater degree than their medical training, due to the real-world experience of interacting with patients and other healthcare professionals.

Again, time and resource constraints act as a barrier for foundation doctors to be able to deliver good patient-centred care. The pressures of the job mean that doctors are not always able to spend as much time on an individual basis with patients as either parties would like. Other respondents felt that they were prepared from their medical training but were not prepared enough for the ways in which to deliver the best patient-centred care and integrating that skill into daily practise.

> *"I do feel quite well prepared for giving patient centred care, **I think sometimes we don't, we don't always get the opportunity to deliver good patient centred care, and there's always priorities beyond the one patient that you've got in front of you, that you need to think about**. I think some patients would love it, if we could spend forty-five to an hour, just talking to them about their life, and that would be good patient centred care, but **we can't always provide that, because we haven't got the time or the resources, you see**" (Interview 43, F2 Doctor, Male, England)*

4.1.4 The impact of the COVID-19 pandemic on foundation doctors experience of the doctor-patient relationship

Positive public perception of healthcare workers

Respondents noticed a change in the public perception of doctors and other healthcare workers in response to the pandemic. Interviewees mentioned a sense of public goodwill, the hero status of frontline workers, and the public clap for carers, which increased their feeling of being valued professionally. Patients have also been concerned about taking the doctor's time or being a burden on an already pressured NHS. However, it was recognised that this could change, particularly if delays in treatments continue and lead to increased conflict or frustrations.

Depersonalised interactions with patients and colleagues

One of the primary negative impacts of COVID-19 reported by respondents was depersonalised interactions. This depersonalisation was created by wearing PPE and social distancing resulting in increased telecommunications with patients and families in the absence of physical consultations.

The wearing of PPE was particularly highlighted for creating a barrier with patients and being frightening for patients who may be elderly or suffering from confusion, or may be hearing impaired and rely on lip reading which would be obscured by face masks. Furthermore, the restrictions and requirement of having to put on PPE makes it more difficult to maintain an attentive doctor-patient relationship. For example, whereas previously doctors may visit a patient on the ward for non-urgent/essential reasons, this is much more problematic under the COVID-19 restrictions on social distancing, and the need to change into full PPE with each interaction. The addition of PPE also makes it more difficult for doctors to read the non-verbal cues from patients and this has a negative impact on being able to assess patient understanding, needs and expectations.

Respondents spoke of not being able to reassure, comfort or provide empathy or company to patients because of social distancing, and this can create an isolating experience for patients. Doctors can miss out on social and welfare factors that are significant leading to gaps in knowledge of a patient's healthcare or social situation.

4.2 RQ.3 Working in a multidisciplinary team

Respondents from the national stakeholder interviews were asked about foundation doctors' experience of MDT working, how frequently they work in MDTs, what skills and qualities are necessary for effective MDT working, and how prepared the foundation doctors are for these aspects.

4.2.1 What kind of teams do foundation doctors work in?

All of the respondents across the different roles interviewed felt that foundation doctors worked frequently within multidisciplinary teams, with most interviewees saying this was a daily occurrence. The nature of the MDT varied from formal specialised MDTs like oncology, to less formal but routine MDT working, such as that which occurs during daily ward rounds, when discharging patients, or when working in discipline areas that naturally involve multiple health and social care professionals, such as geriatrics. One interviewee was unsure if foundation doctors would always be aware that they were working within an MDT in its less formalised environments, however all of the F1 and F2 respondents identified that they worked daily within MDTs, and many highlighted the various forms this could take.

> *"... **I think they sometimes don't realise that they're on a ward they're in an MDT,** so we have a daily clinical care meeting on the ward, we take soundings from*

*physiotherapy, from OT, from our respiratory physios, from the other junior doctors, from the nurses, you've got a lot of information coming in, phone calls coming in from family, information from social workers, it all coalesces in this meeting. **And it's a fantastic resource actually, that is a true MDT, and the junior doctors are absolutely key to that because they know the patients as well. So I think on the wards, certainly in our hospital, they're immersed in it every day, even if we don't formally call it an MDT**" (Interview 50, Educational/Clinical Supervisor, Male, England)*

The teams that foundation doctors tended to work with involved many different health and social care professionals. Most cited were nurses, pharmacists, OTs, physiotherapists, and healthcare assistants. To a lesser extent, speech and language therapists, dieticians, midwives, specialist nurses, ward clerks and discharge teams. Also mentioned were mental health practitioners, radiologists, social workers, safeguarding professionals, the ambulance service, porters, the chaplaincy, and patients themselves.

*"I'll say the most common members of the MDT are probably my **nursing colleagues, then followed by physios, OTs, and then all the allied specialities, dieticians, safeguarding individuals**. During the first Covid wave I was on a ward as opposed to intensive care, so **there was a lot of conversations that we had with the chaplaincy team for example, which was not a service I'd [not] significantly utilised before but realised they were there for pretty much anything and everything related to lay side of things**. So I can't think of a single job where I haven't had interaction with MDT on a daily basis" (Interview 31, F2 Doctor, Male, England)*

*"Daily, hourly, **I can't currently imagine a job plan that we've got for any of our 800 F1s or F2s that wouldn't work within an MDT to a greater or lesser extent, so it's an accepted part of healthcare**" (Interview 55, Foundation Programme Lead, Male England)*

"I think they work within them all the time, every day" (Interview 68, Dean, Female Scotland)

Not only did respondents feel that they worked frequently within MDTs, but many of them recognised and respected the contributions made by other professionals within those teams and felt positively about the MDT way of working in providing a holistic approach to patient care. Most of the respondents felt that the foundation doctors were comfortable with MDT working. Respondents spoke of valuing the input of colleagues who were specialists in their area, or who knew the patient well and were able to share knowledge, opinions, and decision-making. Some of the foundation doctors interviewed valued being able to go to other professionals within the MDT for advice and welcomed the challenge when those same professionals sought their opinion.

*"Obviously every day because **I couldn't do my job without all the nursing staff and healthcare assistants on my ward, or the pharmacists who catch all my mistakes**, they have to be our eyes and ears on the ward to tell us what's going on, **and I definitely take very seriously the calls that are 'will you just come and see this man,***

all his numbers are ok but I'm just not sure about him, he looks different to how he did before', and I really value that kind of input" (Interview 15, F1 Doctor, Male, England)

"Very comfortable, given how junior I am right now I think it makes me feel really comfortable working with all these different people who have so much more experience than I do… I always value their opinions about everything and anything. And the moral is that basically it's teamwork, so everyone has a little part to play. But I think it works really well" (Interview 13, F1 Doctor, Female, England)

One of the medical educators interviewed also acknowledged that MDT working is seen as more beneficial than it has previously done, and that the foundation doctor's tendency to operate within a flat hierarchy within the MDT meant treating everybody equally and valuing the input of all.

"Yes. I would say hugely more so than, you know, 20 years ago. Again there's much more understanding of the benefit of multidisciplinary working, and we need to be nice to everybody, regardless of grade. And I think because they don't feel the hierarchy in the same way, they're quite good at making sure that everybody else feels the same way" (Interview 63, Medical Educator, Female, England)

4.2.2 What role do foundation doctors play within MDTs?

Respondents were asked about the role that foundation doctors typically play within MDTs. The responses varied, as did the level of involvement within the MDT. Some respondents felt that foundation doctors were integral to the effectiveness of the MDT, while others felt that they did not play a large role at all. This may be related to there being a very broad understanding amongst participants of their role within the MDT. The role itself varied between being a bridge or liaison, coordinator of care, playing a functional role, being a dogsbody, carrying out administration, and being the patient advocate.

Many of the respondents interviewed felt that foundation doctors were primarily a bridge, link or liaison between the patient and the rest of the MDT team, and other healthcare professionals and services. They were a bridge to all parties and often coordinated elements of care plans that were agreed on by the MDT, for example, writing up referrals, or requesting investigations. One of the benefits of this role was highlighted by an F1 doctor who felt it enabled them to learn a lot by having discussions with all different members of the teams. They also took a role in presenting the patient information to senior clinicians, and making sure the patient was represented amongst the MDT.

"… often their role is very much liaising with patients, nurses, consultants and other members of the team, other services, so you know, if we need input from other services, it'll usually be the junior doctor that has to do that as well. So, I think they get pretty much put in the centre of it from the get-go" (Interview 59, Healthcare Professional, Female, England)

> *"I think often on the ward as a foundation doctor I'm quite commonly the bridge between the patient and the rest of the MDT, I'm often that point of call for the pharmacists or the consultants or the nursing team, kind of just to coordinate the care, I think I'm quite often that coordination between the MDT working on the wards, and I'm often the one to kind of make sure the patient is spoken for in amongst that team. And I think I feel like a bit of a coordinator most of the time"*
> (Interview 1, F1 Doctor, Female, England)

> *"I'd say at the moment the F1 is quite a good go-between, I often feel like our job is often around communicating decisions made by the more senior medical team to the nursing staff, to the OTs and physios, and likewise communicating their concerns and their feedback back up through to the medical team. So almost being a bit of a hinge point between the senior consultants, registrars, and the rest of the MDT"*
> (Interview 16, F1 Doctor, Male, England)

Some foundation doctors felt that the role they played largely involved gathering information and carrying out administrative tasks, such as documenting or taking minutes, ordering scans or getting information ready. One F2 doctor felt that this was due to their junior status, while another F1 felt that their clinical input was limited.

> *"So as a junior doctor we take the notes and obviously some of the jobs depending on what decision's been taken, maybe ordering CT scans or x-rays or things like that for patients"* (Interview 22, F1 Doctor, Male, Scotland)

> *"My role, depending on whom I'm communicating with, if it's ward staff it's usually information gathering about the patients, and then also delegating tasks to the nursing staff as well, and if I'm talking to the pharmacists it's usually information gathering from them, I'm usually asking for advice"* (Interview 6, F1 Doctor, Male, England)

Similarly to the coordinator role described previously, some of the respondents felt that they provided a functional role, managing patient care, taking bloods. While the role is similar to those described above, the perception of the role was described in more active terms as a 'dogsbody', 'go-fer', 'doer'; someone who got jobs done.

> *"… so I think as a Foundation doctor, I was mostly there to do what I was told. So, I was a hand who could sign a prescription, or listen to a heart, or prescribe fluids, or assess a sick patient, things like that"* (Interview 43, F2 Doctor, Male, England)

> *"I suppose my role in the team is a go-fer; just a busybody to do all the jobs that everybody wants done. I suppose yeah, like chest physio guys want an arterial blood gas done to facilitate somebody going home on oxygen, I suppose I'm the person that has to do it. My other role in the team I suppose is to keep the consultant in the loop and to keep medical notes updated so that the medical team know what's actually going on with the patients from the rest of the guys' point of view and making sure that patients are accepted by nursing care homes so that they can actually go home,*

facilitating the actual discharge letters and making sure that the medications are appropriate and safe for patient discharges" (Interview 24, F1 Doctor, Male, N. Ireland)

One educational/clinical supervisor highlighted how foundation doctors carry iPhones where they are continually updated on the jobs they need to do.

*"**I guess generally they're seen as the doers and all the jobs start with them**, and with the technology we've got now **they can be notified of jobs to do as soon as somebody's thought about doing them or them needing to be done. So they all carry hospital trust iPhones which will give them continuous update on the jobs that they've got to do**, they were always seen in that role and I think they still are seeing as they're the team that has to do all the housekeeping and making sure things get done on time" (Interview 47, Educational/Clinical Supervisor, Male, England)*

4.2.3 RQ.1b What are the skills, capabilities and attributes doctors require for effective MDT working?

The national stakeholders interviewed identified a number of skills, capabilities and attributes that they felt were essential to effective MDT working. As with the doctor-patient relationship, most prominent amongst responses was the need for communication skills. Also important were, having an understanding of different team roles within the MDT, and what other healthcare professionals can do, having self-awareness and confidence in one's own role, being a good team player, and having leadership skills. To a lesser extent, other skills identified for MDT working were, having medical knowledge, patient-centred practise, documentation skills, interpersonal skills, being organised and being able to prioritise, knowing when to refer to others, having IT skills, being decisive, having good negotiation skills, time management, being able to delegate, and being able to think critically. Other qualities and attributes mentioned included being flexible, having humility, being personable and approachable, being assertive, having gratitude, being professional, having an open-mind, and empathising and empowering others.

Communication skills

As with the doctor-patient relationship, the interviewees felt that communication skills were essential to effective MDT working so as to be able to liaise and coordinate care effectively with patients and other members of the MDT. This also involved the ability to build rapport with others and being receptive to the points of view of others.

*"So I think it comes back, **it comes back again to… communication skills**, it's just about, **liaising with patients is different to liaising with our colleagues, but they require the same set of skills really**" (Interview 43, F2 Doctor, Male, England)*

*"And so, you know, again it's just really strong communication skills and, **being receptive to other people's point of view**" (Interview 63, Medical Educator, Female, England)*

*"So again **communication is crucial in order to communicate** with people in different roles and from different backgrounds and approaches, is going to be so **crucial if you're coordinating care between multiple people**" (Interview 1, F1 Doctor, Female, England)*

Closed loop communication was recognised as a specific technique that was advantageous in order to ensure clarity over the delegation and completion of work tasks. In addition to verbal communication, written communication was also recognised as an essential skill required for effective MDT working. This included accurate and clear record-keeping and writing up-to-date notes.

> *"So I think being inclusive and making sure that everyone's up to speed and on top of things is important. So that ties in a little bit in terms **of up-to-date notes and recordkeeping as well, so I think that's an important thing, you need to have that up-to-date, so we know the acute issues that are being dealt with**" (Interview 36, F2 Doctor, Male, Scotland)*

One F1 doctor highlighted the pitfalls of poor communication within the MDT when pressures aren't communicated effectively between members, which can lead to misunderstandings and a breakdown in communication.

> *"**Again I think communication's the most important one, I think the problems that occur between professions, or let's say nurses and doctors, or surgeons and radiologists, is primarily because there's not an understanding of where the other one's coming from or the stresses one group is under**. Say I'm really just busy and a nurse wants me to prescribe pain relief for one patient on a ward, at least if I explain to them over the phone that yeah I'll come as soon as I can but I'm currently reviewing a patient with Covid, he's desaturating and needs to go to intensive care… that takes me five seconds to say that, and at least they'll be like ok actually that's fair enough, then maybe I'll try and phone the ANP or they'll try and figure another way around it, at least there'll be something, whereas if I just slam the phone down or something like that that's not very good is it, in actual fact it's not taking me much more time to do that. **It is difficult, especially when you're under stress, to remember that, and I think that's the root of a lot of issues when the breakdown does happen**" (Interview 10, F1 Doctor, Male, Scotland)*

Understanding different team roles

In addition to communication skills, the national stakeholders interviewed felt that having an understanding of the roles of different team members was vital for effective MDT working. One F1 respondent felt that by understanding team roles, the foundation doctors would know the remit, strengths and weaknesses of members, and how to fully use their skills to deliver good patient-centred care.

> *"I think **you have to have a good understanding of the role of other members** of the MDT, I think **it's really important to know where certain roles remits begin and end and knowing how to fully use people's skills** to formulate effective plans for patient care." (Interview 16, F1 Doctor, Male, England)*

Additionally, respondents felt it was important to be respectful of other healthcare roles, and to appreciate the different contributions to the MDT, and the level of knowledge and experience of different team members.

> *"And **just having the respect for other people's roles**, knowing a pharmacist is trained as a pharmacist so they're going to know the drugs best, and when **an MDT works most effectively is when everyone knows what everyone's role is and accepts what everyone's specialist areas are. Cos it's the whole point that you want the best opinion you can get,**

> *and you put all those best opinions together, you just need to have that kind of appreciation for this person knows best in this area" (Interview 19, F1 Doctor, Female, England)*

> *"It's kind of **recognising that you do all function within a team and really, the hospital doesn't run, it can't only, it can't run with only doctors, it can't run with only nurses right, we've got to have everyone.** So, it's kind of recognising the importance of the MDT and respecting**, there's respecting, people for the role that they play and how they can help and what resources, you know, they can offer** and what things, you know, you might, you're going to have to go somebody else for" (Interview 59, Healthcare Professional, Female, England)*

In addition to understanding the role of others, respondents identified that it was also important to know and be confident with your own role. This included knowing what you can bring to the team, being willing to contribute, to speak out, and to avoid feeling intimidated by hierarchy and experience.

> *"On the other side, if they are members of the MDT but not in the chair position, then **they're going to need to understand the importance of contributing something** when they have something to say **and not be intimidated by the fact that they're surrounded important Dr [name] and other people who have been there for years, so they need to have the confidence to speak out**" (Interview 50, Educational/Clinical Supervisor, Male, England)*

> *"I think again it comes down to communication skills, being humble, not being arrogant, and being able to say I don't know or asking for help from other people, and **I guess part of that is also having confidence in your own role and what you can bring to the team, which again comes from understanding everyone's role and having that good rapport**" (Interview 38, F2 Doctor, Female, England)*

Be a good team player

A key quality emphasised by respondents as necessary to effective MDT working was being a good team player. In part, this is linked to showing respect and appreciation of the knowledge, skills, and expertise of other team members. Furthermore, as some of the interviewees highlighted above, there may be points of disagreement within the MDT over patient care, and this requires doctors to be a good team player and be good at negotiating and working well with others.

> *"**So I think they've got to have good teamworking and negotiating skills because often members of the team will come from different perspectives on the case** and therefore, that leads to different ideas on management, and **they kind of bring in all of those ideas together to a concrete plan that everyone's on board with,** does require kind of good communication, good teamworking skills," (Interview 28, F2 Doctor, Male, Scotland)*

> *"…it's knowing that **this is a team thing, they're not on their own, and it's being part of that team and accepting that everybody's got skills, and it's all that pool of skills**, and I think it's being able to communicate, listen, ask questions, and make decisions as well, decision-making is critical." (Interview 65, Patient/Lay Representative, Female, England)*

A lack of arrogance and the demonstration of humility was felt to be important for effective MDT teamworking. One patient/lay representative shared an example of poor MDT working when individual ego and arrogance obscured the respect and appreciation of the skills, knowledge and experience other members could bring to the team. While one F2 doctor felt that being humble was important for good

teamwork, in order to understand your limitations and being prepared to ask and accept help and to listen to the opinion of others.

> *"… **one of things I saw in the MDT was quite a lot of arrogance**, no other word for it, I must be right because I am professor so and so, therefore, nobody else can possibly be right" (Interview 66, Patient/Lay Representative, Female, England)*

> *"Teamwork, organisation, time management, and most importantly people skills, and by people skills I mean **mutual respect**, again humility comes all the time in it, and the reason for that **is if you're not humble and knowing that you don't know everything, you're unlikely to ask for help from somebody else, or to listen to their opinion**, so this is why I keep on bringing that word in" (Interview 21, F1 Doctor, Female, Scotland)*

Leadership

In addition to being a good team player and working collaboratively, interviewees also felt it was important that doctors could demonstrate appropriate leadership and followership. One F2 interviewee felt that they played a de facto lead role within the MDT, and therefore it was also important to have more formal chairing skills. While one of the interviewees holding a foundation lead position felt foundation doctors needed to be able to have the skills to lead but the humility not to, and to understand when this was appropriate and needed by the MDT. Leadership was also felt to require the ability to synthesise information into an effective management plan.

> *"**So you have to have leadership ability and be able to follow others leadership as well**" (Interview 27, F2 Doctor, Female, Scotland)*

> *"So **they need the ability to lead but the humility not to if that's required** …and the ability if they are leading to synthesise the management plan at the end of an MDT" (Interview 55, Foundation Programme Lead, male, England)*

One respondent felt that leadership of the MDT was often assumed to be by the doctor, and therefore it was important for foundation doctors to have leadership skills. This is interesting as it neglects the potential expertise of other team members who may be more appropriate to provide leadership.

> *"probably leadership, **often in an MDT I suppose the doctor is often thought of as the leader** and facilitating MDT discussions" (Interview 29, F2 Doctor, Female, England)*

4.2.4 How prepared are foundation doctors for these and other skills?

Respondents were asked how prepared they felt that the current cohort of foundation doctors were for several MDT focussed skills. Overall, respondents indicated that foundation doctors were relatively well prepared for MDT working. Some foundation doctors interviewed felt they had had encouragement during their training to work with others, to shadow other healthcare professionals, and to sit in on MDT meetings. Others had specific MDT learning tasks or project work.

> *"…**our university actually was quite good for this because we actually had to sit in on quite a lot of MDT's, we also had specific days where we were attached to physios, OT's, dieticians, etcetera throughout our training**, particularly in care of the*

elderly actually and yeah, I suppose our training wasn't actually bad for multi-disciplinary meeting work, we actually had to observe quite a few" (Interview 24, F1 Doctor, Male, N. Ireland)

*"I think I was quite prepared; **we were very much encouraged to either shadow nurses or go and find out different things from different teams**" (Interview 3, F1 Doctor, Female, England)*

Preparedness for understanding different team roles

There were mixed perceptions of how prepared foundation doctors are for understanding different team roles, despite many of the respondents highlighting this as an essential skill for effective MDT working. While some felt that foundation doctors had a reasonably good understanding, much depended on the medical school training they had received, and how much they had been encouraged to work or train alongside other health professions. As the interview extracts below demonstrate, some doctors had worked alongside other healthcare professionals like nurses and pharmacists or had observed MDT meetings, others were encouraged to think about the role of the MDT, or to consult with other professionals during their clinical practice, enabling them to build confidence and understanding of the different roles of others.

*"I think I've been quite well prepared actually, I knew what everyone's role was, and **we did PBL in our first and second year, and in all of the cases I remember we'd be setting ourselves questions about the role of the MDT in this case or this case, so from early on I was aware of the MDT, I know what the roles were**. And kind of later in my training…. I remember being a fifth year on a respiratory ward and being told **do you mind referring to the physios, or do you mind getting the dieticians to have a look. So I was empowered to do that quite early on, so that's been good**" (Interview 14, F1 Doctor, Female, England)*

*"Again by **participating you understand just as a student, just being present in an MDT**, it does prepare you quite a lot in that you're seeing from an objective point of view…. **you can see how each of the different disciplines chips in to make a plan**." (Interview 21, F1 Doctor, Female, Scotland)*

Some respondents felt the foundation doctors' preparedness was contextual or depended upon the specific role. Many were well familiar with the role of nurses or healthcare assistants but were less familiar with the full remit of physiotherapists, or occupational therapists.

*"… so we all know what a nurse's job is, we all know what Healthcare Assistants job is. **We know to a much lesser extent what Physiotherapists and Occupational Therapists are there to, I think**" (Interview 43, F2 Doctor, Male, England)*

*"I mean broadly speaking they understand what nurses do and physios do, and occupational therapists do. **I think sometimes it takes a little while for them to really understand 100 percent what the role of, particularly people like occupational therapists, are specific to our patients**" (Interview 63, Medical Educator, Female, England)*

Despite feeling relatively well-prepared, one F2 interviewee described having to refresh their understanding of the different roles every time that they move on to a new rotation as the remit and limits of responsibilities changes within each team.

> *"I'd say fairly well prepared, but **I think that is something I still have to refresh every time I move on to a new job, because in every single team it's not necessarily the same roles and responsibilities that each member has**. So I think it's the more day-to-day side of things where you just have to learn to figure out in this department this team doesn't do this, it's actually this team that does that" (Interview 31, F2 Doctor, Male, England)*

While some of the foundation doctors interviewed had gained a grounding in understanding the different roles of the MDT, others felt this was lacking in their training, and subsequently they were not prepared for understanding the roles of other professionals, or the extent of their skills, expertise and remit.

> *"Again **I wasn't that well prepared cos I just did one nursing shadowing shift, and only now I feel like I'm still getting to grips with exactly how a speech and language therapist assesses some swallow**, I couldn't do it and think I probably should be able to do it. So I'm probably not that well prepared" (Interview 29, F2 Doctor, Female, England)*

> *"I think that **perhaps I didn't quite have an understanding of exactly what everybody's roles were** in that situation, in my **head I probably thought that physiotherapists just worked with people who had kind of joint problems and didn't appreciate that on elderly care they have them getting people out of bed, transferred and moving every day**, so that was something that I just didn't realise. So I think that I didn't have a really good understanding of what different people's roles were" (Interview 35, F2 Doctor, Female, England)*

While some foundation doctors had been encouraged to think about MDTs and to understand the roles of others in providing patient-centred care, some of the respondents felt that they were not adequately prepared for this, and this was due to not having much experience or interaction with different healthcare professionals. One medical educator felt that working alongside different healthcare professionals would assist with understanding the remit and nuances of different roles.

Interestingly, one F1 doctor felt they were not incentivised to spend time with other healthcare professionals when training as there was a large emphasis on ticking off your required skills, which often required working with doctors rather than other professionals. Some of the interviewees felt that they were not very well prepared for understanding different roles, and that this developed either from prior experience in HCA roles, or from learning through the job.

> *"I would say not that well, **I feel like the only reason I feel comfortable working in the MDTs that I do is because of the job I did before, and actually a lot of my colleagues from medical school since they've started work… I was asking how it was***

going and they'd be like I just never knew what nurses did before like now. I remember that one exercise that we did where we had to write out this is what a pharmacist does, but I think that was it, and most of the log book activities we were given are very much, **when you're on placement you're just definitely trying to get everything signed off and the vast majority of stuff you're being asked to get signed off is stuff that you would do with a doctor. So you're not incentivised to spend time with other people because ultimately you just need to get your cannulas ticked or whatever**" *Interview 9, F1 Doctor, Female, England)*

One F1 interviewee felt their understanding was largely developed from prior work as a healthcare assistant, and proactively asking questions to different healthcare professionals.

"Again I don't know that it did, **so I think I did have an advantage over a number of my colleagues having done the healthcare assistant role while I was studying, because that had given me some understanding of the MDT again having been immersed in it, but from the specific training that we received I don't think we had very much at all, and even in clinical practice I think understanding those roles has still come from me asking questions of those people themselves** *and trying to understand the role, rather than there being an active attempt to teach us what different people do" (Interview 12, F1 Doctor, Female, England)*

"I think sometimes it takes a little while for them to really understand 100 percent what the role of, particularly people like occupational therapists, are specific to our patients. *And I think they're often quite surprised at some of the functional assessments, for example, what our occupational therapists do and what have you.* **And I don't know how much time they get to work with allied health professionals**, *but I think sometimes they're a bit surprised at the scope of, the scope of the work that ... I mean they understand that physios move people about. I mean, lay people understand that, and I think sometimes their understanding of some of the nuances of what physios and occupational therapist can do, isn't quite there.* **But, of course, quite often those things you just need to be working with them to understand their work, and so they, you know, they get it quite quickly, but yeah, I think sometimes the, sort of deep understanding isn't quite there**" *(Interview 63, Medical Educator, Female, England)*

One F1 interviewee described the benefit of their extra curricula position as part of a medical student society where they routinely encouraged other healthcare professionals to come and talk with the group about their work. The interviewee felt that a lot of their understanding had been developed through these events that had been coordinated by the students themselves rather than any formal learning. The popularity of this collaboration led the university to seek advice from the society organisers who had so effectively developed a method for increasing understanding of different roles.

*"**We did have a wee bit of it, it wasn't enough, and it felt incredibly forced,** to the point where there was just people who didn't want to be there cos they're forced to be*

*there, and **I found the difference was with the society it was very much a voluntary thing and so people that were there were very keen to really try and beak those barriers down,** I feel like when it was forced it was a bit more difficult. And it was probably like day a year, whereas we had four main events in the year, big events, but that would include meetings in-between to try and prepare, and also kind of social events as well to meet up. **So there was quite a big difference, so much so that I remember the person that was responsible for organising that in the uni actually arranged a meeting with myself cos they wanted to know what we were doing, they knew that our society was growing at that time, it was growing at quite a big rate, and quite a lot of people were coming to the events, and I think she was just trying to figure out what could be done**. So I think we didn't have enough of that, and of course when you work that's what you're doing, I don't know if we had many like team exercises as medics, but in the end **you're in a team with like all these other people in the NHS so it makes sense to work with them at the start of your training as well as later on in your career**" (Interview 10, F1 Doctor, Male, Scotland)*

Additionally, it was felt it was impossible to be fully prepared for understanding the different team roles and the remit of different healthcare professionals, as those roles are constantly evolving, such as physicians associates which is a relatively new role in the UK system.

Preparedness for leadership and followership in MDTs

Respondents were mixed in their perception of foundation doctors' preparedness for leadership and followership, particularly the former, despite this being identified as a key skill for effective MDT working. This was largely as a result of not being afforded the exposure to develop this skill or having the opportunity to take on a leadership role due to their junior position. As with preparedness for understanding team roles, some of the foundation doctors interviewed felt they were prepared for leadership due to their extracurricular activities that had helped them to develop these skills.

When it came to followership, respondents were much more cohesive in their perception of foundation doctors' preparedness. Many of the interviewees felt that the current cohort of foundation doctors were well prepared for followership. The foundation doctors interviewed spoke of valuing the professional expertise and experience of others, and therefore they were happy to follow their guidance as appropriate, particularly given the recognition of their own junior position and limitations in knowledge.

Due to their early career status, foundation doctors may not have been provided the opportunity to adopt leadership responsibilities within an MDT setting. As the interview extracts below illustrate, when there is a senior colleague present, it is often implicit that they will take on the leadership role, or the foundation doctors will automatically defer to them, even if they had been leading previously. In the extracts below, the healthcare professional interviewed felt that the foundation doctors can also be self-critical of their own abilities to lead in the MDT and risk averse, suggesting that they need more confidence-building with leadership skills.

*"… **there's a consultant on our ward all the time, so it's quite difficult to develop leadership skills when you've got somebody four grades above your, or whatever it is, sitting there all the time. Because they tend to just defer to the senior person.** I would say that, **quite often the foundation doctors are quite risk averse** and that's excellent for patient safety, but then it takes … it does take some time for them to really want to develop as a leader"* (Interview 63, Medical Educator, Female, England)

*"I think they, they don't always realise that they're necessarily the leader … **So, one of the things that we see in the SIM is that they're happy to lead, but then as soon as somebody comes who can take the cardiac arrest for example, when that first responders and is holding the bleep they almost sort of, without thinking hand that leadership over** rather than actually still being encouraged to lead on it. Or, they just think that maybe because they don't know the patient therefore they can't really lead or… **they don't come across that confident that they can be the leader,** and it's always raised some really, really interesting conversations, about well why can't you be the leader in, in certain situations and **I think that again they go, it goes back to, oh well I just think that I'm glad that so and so came… because they're more senior than me they're going to take that responsibility** and that function and lead the team because **they're quite self-critical of themselves"** (Interview 57, Healthcare Professional, Female, England)*

Other interviewees highlighted how they were not provided the opportunity to gain experience and develop leadership.

*"**Based on the education I received we didn't have that much where you were put in the role, we had a few simulation scenarios, typically like an acutely unwell patient where you have the dummy and you ran through it, they're stressful even though it's just a scenario but it's good practice.** I feel comfortable, I think that's because of my characteristics, but in certain situations I can still feel a bit less confident, I'll plough on but less confident. **But based on my medical education I don't think my medical education was a big factor in my confidence in taking on a leadership role because they didn't hugely encourage it, well they didn't discourage it, it's just we weren't put into positions where we got a lot of practice in it in a real sense"***
(Interview 6, F1 Doctor, Male, England)

*"… **leading initially I was just like oh God I can't, I don't know what to do, and people come up to me and are like can you prescribe this, I'm like I don't know, can I?** first couple of days what is going on, people are actually asking me to; and **I genuinely think if during med school they gave, or like with the nursing training it's very much more involved and hands-on, and I wish med school training was a bit more like that, cos med students kind of turn up, no-one really expects them to do anything, they try and get their skills signed off and they leave,** it's a very different way of working, whereas nurses have their kind of set hours and their assigned nurse*

that they go round with, and I just think that would be so much more efficient when transitioning straight from final year to F1" (Interview 3, F1 Doctor, Female, England)

Another barrier to providing leadership of the MDT is the hierarchical structure of the health system. As such, foundation doctors do not always have the confidence to lead, or to challenge the leadership of others, or they felt that they were not listened to because of their junior status. Other difficulties involved delegation. One interviewee tended to micromanage tasks due to not wanting to overburden others, however they realised this resulted in other members not feeling involved in team tasks, and their own workload increasing.

*"But I do think in the main they do get a good experience, but it depends on where they're placed, and their characteristics as well, because **some of them are more confident than others and sometimes they feel that they don't want to challenge because they're very early on in their careers**" (Interview 65, Patient/Lay Representative, Female, England)*

*"Followership is can be really hard as an F1 because you're kind of bottom of the pecking order, and I'm lucky I'm in a great team at the moment **but I have worked in teams in the past where you just feel like your voice isn't heard, and you're just kind of at the bottom aren't you**" (Interview 14, F1 Doctor, Female, England)*

Another F1 doctor felt that foundation doctors did not do much leading but did a lot of following in the MDT, and therefore it would have been useful to have better preparation for some of the more difficult aspects of followership, such as challenging the viewpoints of others.

*"… I think there's a lot of focus on leadership and how to lead well and take control of situations and know what to do, and **as a foundation doctor you don't do leadership very often, you do a lot of followership, and I think it would have been useful to think more about that followership and how you go about doing that well, and how to challenge and ask questions when you're not sure that it's right or the right decisions are being made**, because I don't know whether it's just me personally **but I feel like followership's quite easy when it's going really well and you agree with what's going on** and the decisions are being made, **but when you don't it can be really hard to challenge that if you haven't been taught how to**" (Interview 12, F1 Doctor, Female, England)*

Preparedness for working in MDTs led by other healthcare professionals

Overall the respondents interviewed felt that foundation doctors are generally prepared for working under the leadership of other healthcare professionals, although some had not experienced an MDT led by another healthcare professional. As can be seen in the interview extracts, many suggested that the foundation doctors were content to follow others and appreciated the guidance and expertise of others when they were clearly more appropriate to lead. The foundation doctors interviewed acknowledged that in many case nurses or other practitioners had several years of valuable experience that made them very knowledgeable.

*"**I think at the point that they first qualified, they're willing to listen to anyone that will help them… because they … they know that it's a very daunting task ahead of them, and anybody that's willing to, sort of, spend time to support them**, um … So, I don't think there generally is an issue of, sort of, a multidisciplinary needing them … they're happy and responsive to anyone" (Interview 57, Healthcare Professional, Female, England)*

*"I'm trying to think of a situation which that's been the case that I've experienced. I guess nights and out of hours shifts where … nurses are the ones in charge, **I think I actually found that transition quite straightforward, they're very competent, they've been doing it for a very long time, they know the hospital, they know how it runs, so I was very happy to take instruction from them and advice into how the out of hours shifts work**" (Interview 2, F1 Doctor, Female, Scotland)*

Interestingly, one F1 doctor acknowledged that despite someone else leading the MDT, each team member still had a responsibility to contribute to the team discussion.

*"**I think quite well prepared, again if it's someone more experienced and more senior than myself who knows not only their role very well but how everyone else's role works, I think they will definitely be the most appropriate person to lead that situation, and I'd feel quite comfortable following their guidance**. And again working as part of a team isn't following someone or what someone said, even in that setting if there is a leader **everyone kind of has their own role and you bring your point to the table**" (Interview 13, F1 Doctor, Female, England)*

Some respondents felt unprepared for working in MDTs led by other healthcare professionals, and this was largely because they had not experienced it themselves, or because they did not know that it was something that occurred. Others struggled to move past the notion that they should be in charge once they had qualified. Once they started working, some of the foundation doctors felt that they became much more prepared for this change in dynamic.

*"Um, not well at all, and that's something that I think, **many of us didn't even think existed up until quite recently**, and we were talking about this on the ward the other day, because there's now a Stroke Nurse Consultant, in the hospital. So she's done all the things that a Consultant needs to do, to be a Consultant, but hasn't been to Medical School. So, she's a Nurse Consultant and is able to lead to a quite high extent, and she has Specialist Nurses working under her, that go around with her, the same way as the Specialist Nurses go around with the Consultant. She's allowed to prescribe within the realms of her capabilities and things. Um, but I don't think, any of us had any idea that even existed, **and I think it feels quite odd asking, it shouldn't do, but it does, feel a bit odd, asking a nurse for help with something, as a doctor, especially once you've moved on from F1, you feel as though you should be in charge**. And a lot of the time the nurses come to us for help, and we tell them what we think needs to be done, **we're not often having to ask nurses for help with things**" (Interview 43, F2 Doctor, male, England)*

*"I mean **in all honesty I don't know that I even knew that that was a possibility, so I would say probably very underprepared because if you don't know that it's a thing how can you be prepared for it**. But I guess you just treat it in the same was as any kind of team, you just have to find your role within that. But I don't know that I was prepared" (Interview 12, F1 Doctor, Female, England)*

Two of the foundation doctors interviewed described the need for doctors to be adaptable. One felt that this dynamic was not typical throughout their training experience, or from what they had observed amongst seniors, however they recognised this as a likely change they would need to adapt to in the future.

*"**I think it requires somebody who's quite adaptable to meld into what's going to be a very changing MDT** as I go up through my career and I think it is challenging, cos when we're at medical school we have been taught consultants who live than in that era of very much being the top of the tree, and we have been taught by a generation of doctors that that's what largely in their career they were seen. So I don't think we are totally prepared for the situation whereby that's not the case throughout our career because that's not necessarily the example that we've been given through all of our placements, because I wouldn't say it is or has been the case at the moment isn't always the kind of senior member, I think when we're consultants we won't be the most senior member, we will be surrounded by a group of senior team members, **and I think until we've really been given that demonstration it's going to be hard to have appreciated it. So I think it's something we'll just have to adapt to**" (Interview 1, F1 Doctor, Female, England)*

*"Well I probably wasn't that prepared either, but I think you just naturally adapt, and **we're quite good at adapting to different scenarios as doctors**" (Interview 29, F2 Doctor, Female, England)*

Preparedness for understanding team hierarchies and how patient-centred decisions are made

Respondents felt that foundation doctors were largely well prepared for understanding team hierarchies and understood the traditional structure of the healthcare system and their role within it. Although some new or emerging roles may be unclear, and it was acknowledged that different teams may have different hierarchical structures.

*"Yeah, I think they probably, yes, yes, **they probably do know at least with kind of the very traditional, the traditional roles** the kind of consultant registrar, you know, training doctors, foundation doctors and nurse, you know, nurse staff and what not. **I think when you add in the extra, now, you know, with the other advanced practise roles, kind of how they sit in the hierarchy, but I think that's still being figured out to be honest, I don't think there is an answer to that anyway!**" (Interview 59, Healthcare Professional, Female, England)*

*"**So I think the hierarchy is different depending on which team you're in, but I think in terms of patient decision-making you're quite aware that you kind of work up the**"*

hierarchy and take advice from different people on where to go" (Interview 7, F1 Doctor, Female, England)

One F1 doctor reported that although they felt prepared for working within hierarchies, they had been optimistic in thinking that they would not be of importance and that they could break hierarchies down, suggesting that it is considered something of a barrier. Interestingly, one F2 interviewee highlighted that discussions of hierarchy are quite controversial, and they should be led by an MDT teaching group.

> *"I don't think formally I had any education on it, I guess you just get people's opinions through placement, **I think it's a very taboo subject to discuss even the word hierarchy, that is very dangerous territory**, particularly for medics teaching medics, I think if that was something we were going to be prepared for it would likely have to be led by an MDT teaching group to discuss that, cos I think that could end in disaster otherwise" (Interview 42, F2 Doctor, Female, Scotland)*

> *"**I think you pick that up as a student quite quickly the hierarchies, the team I'm in at the moment there are hierarchies, but we all work really well together**, in my previous job on surgery it was very clear who was who and who you went to, and it was very set hierarchies. So **I think I was prepared for it, I knew it existed, I think I was a bit optimistic by being that won't matter, I'll get through to the consultant surgeon, which wasn't necessarily true. But yeah, I was aware of it**" (Interview 14, F1 Doctor, Female, England)*

Conversely, one of the educational supervisors interviewed felt that foundation doctors did not have an issue with hierarchy, and in fact it offered a structure to work within.

> *"**I think they're fine with them,** I'm struggling to think of a situation in the recent past where there's been an issue with that, **if you say this is the way this works, that's great cos that's the way it works and that's what they'll do**, I'm sure there's other instances but **for me they accept the team structure and this is the way to do things**, so I've not really come across any issues with that" (Interview 44, Educational/Clinical Supervisor, Female, England)*

Some of the respondents felt well-prepared for understanding team hierarchies and how patient-centred decisions are made, but they acknowledged that this can also be different depending on the team that you are working within.

> *"That's very much something you learn on the job **I think, if you come into something and you're the most junior person on the team you then see how those in the middle interact with the most senior people, and then you have to mirror their behaviour a little bit,** and it's terms like rocking the boat, as a junior you can't really do that. So I don't think med school really prepares you for that very well**. But I also think it's very job dependent what hierarchy your team's going to be like, but also it's very team dependent,** like you can have a job where it's typically very hierarchical like a surgery job, where actually the surgeons are very nice and want you to call them*

by their first name, and they want you to treat them like you're all equal, so it's all very nuanced I think" (Interview 8, F1 Doctor, Male, England)

In a similar way, two of the F1 doctors felt very well prepared for the hierarchical structure of decision-making amongst doctors, but felt unprepared for understanding other hierarchies, for example amongst the nursing teams. This links back to preparedness of understanding team roles, whereby respondents were not always well prepared for understanding the roles and remit of other healthcare professionals.

*"I think other than knowing the hierarchy in the medical, so doctor-wise, I didn't really know the rest of them, **like I remember having a conversation with a nurse asking what the different bands of nursing are, I don't know what the different colour lines on your uniforms mean, someone had to explain to me. So I feel like as medical students we're quite focused on just the doctor, we know there's the consultant, reg, SHO, F1 and trainees, but I don't think we know the difference with the other MDT hierarchy systems**, we don't see it as much as med students cos you just follow the consultant or someone more senior" (Interview 17, F1 Doctor, Female, England)*

While most of the respondents felt that the current cohort of foundation doctors are well prepared for understanding team hierarchies and how patient centred decisions are made within that structure, some of the respondents felt less prepared. As discussed above, hierarchies were acknowledged to be different according to teams and departments, and in some cases this resulted in a sense of unpreparedness for foundation doctors.

*"**I don't think we were prepared for patient-centred decisions in terms of because of the lack of understanding of the MDT**, so much of it is a team decision and I think if you don't have that kind of understanding of how a team a work and who in the team would make what decisions, it's then difficult to have that understanding of how you come to those decisions. **And I think more understanding of the MDT and the roles within would then bring greater understanding of how those decisions are made surrounding patient care**" (Interview 12, F1 Doctor, Female, England)*

4.2.5 The impact of the COVID-19 pandemic on foundation doctors experience of MDT working

Positive disruption to training

Some interviewees felt that the disruption of training or rotations due to COVID-19 had had a positive effect in that it allowed foundation doctors to spend more time in one place and subsequently get to know the patients and wards better. For some of the interviewees it also created more of a cohesive team environment and allowed them to get to know some of the specialist teams or allied healthcare professionals better.

Rapid deployment of tele-communications technology

There have been positives to the rapid deployment and integration of video-communications technology. It allows meetings to go ahead despite physical restrictions on numbers, and it allows

people to participate who may not be geographically close or who may have other pressing commitments that would not allow them to be there in person. For some it also allows for easier participation and questioning within the MDT. Despite a distancing effect and issues with missing information, video technology has allowed MDT meetings to largely continue during the global pandemic. While technology was considered to have depersonalised interactions with patients, it ultimately had some positive benefits, for example, enabling doctors to work more effectively through their patient caseload, and enabling those less mobile patients to participate in consultations.

More creative thinking

Positive impacts of the COVID-19 global pandemic included more creative ways of connecting with patients. One respondent highlighted the use of selfies and 'fun facts' to enhance the doctor-patient relatability, and this was something that would be taken forward post-COVID. Another mentioned the need to adapt and improvise when faced with this new working environment. COVID-19 has led positively to more creative thinking, for example, the initiative shown in using iPads to connect patients with their families.

Change in team dynamics

The global pandemic has resulted in a sense of greater teamwork and support for each other, and the pressures all frontline workers were under. There was better support between teams due to the exceptional circumstances and demand placed upon the NHS by the global pandemic. Interviewees spoke of having daily 'check-ins' to allow everyone the opportunity to ask questions about new protocols and working conditions. Others felt that culture within the workplace had improved with increased comradeship and collaborative working amongst colleagues, with everyone working together to deliver patient care.

Some of the faculty respondents also recognised positive and negative impacts on teamworking, including working with new colleagues and in different roles when redeployed to different clinical areas. One respondent felt this had a positive effect, resulting in learning new skills, adapting, and relying more on each other. Other positive aspects were an induced team spirit and sense of togetherness, as well as shared goals. One respondent felt the change in dynamic was similar to how it felt to work in the NHS when they first qualified. They felt that the job was all about pulling together to provide patient-centred care rather than being target-driven and bureaucratic, but they worried that this change would rescind as the pandemic eased.

Interim experience

The foundation doctors interviewed valued the interim experienced generated by the COVID-19 pandemic. One F1 doctor felt they were "vastly more experienced and had a lot more knowledge and soft skills about working as part of that team and working in a hospital in general" as a result of undertaking the FIY1 *(Interview 71, F1 Doctor, Male, SW England)*. Others felt that the time had given them valuable exposure to working alongside the nursing staff, helping them to understand the kind of questions they could ask of each other, and allowing them to gain in confidence because they were treated like a doctor for the first time.

Another F1 doctor valued the exposure to different communication styles, particularly via telephone, which they had not received training in during medical school. Taking on responsibilities within the MDT allowed them to familiarise themselves with talking with families over the phone, breaking bad news, and practising doing this in a sensitive way.

Change in team dynamics

One of the challenges brought about by COVID-19 was that new colleagues were pulled from other wards, which meant there was a level of unfamiliarity within teams, unknown skillsets of team members, or unknown ward environments, as well as the stress of the global pandemic on a depleted and pressured workforce. However more negative aspects include staff shortages which results in more locum and temporary staff who may find it more difficult to fit into teams, as well as placing greater pressure on the team physically and mentally to manage the patient load.

Social distancing restrictions

One of the obvious impacts of COVID-19 on MDT working is the restrictions on numbers in close proximity within the hospital environment. As a result of this, many of the MDT meetings took place remotely through platforms like MS Teams. Many of the respondents highlighted that communication through a computer screen was harder than in person and changed the dynamic of the discussion. Interviewees reported that that certain team members were absent from discussions, such as social workers. Another worrying consequence of remote meetings is that their formal arrangement means that you need to have all of your information and relevant questions for the MDT ready for a set time and length of meeting. As such, if you wish to check something after the meeting you need to wait until the scheduled meeting the next day rather than physically popping in on team members for clarification. As such, the interviewee felt the process could be frustrating and potentially lead to delays in care.

For those meetings still occurring in person, there are further negative impacts. Some of the F1 interviewees felt that the restrictions on numbers meant that the MDT becomes smaller, only involving those clinicians who really need to be there.

Additionally, it meant for some specialties, like psychiatry, specialists were seeing patients individually one at a time, which changed the dynamic of the MDT. Board rounds were sometimes split, and not all of the healthcare professionals involved in a patient's care would be able to be present at the same time. As a result, it was felt the team was disjointed and there may be gaps in knowledge that affect the provision of holistic patient care.

MDT working was made more challenging because of the social distancing and gathering rules during the pandemic. Many MDT meetings were held virtually via Zoom or Teams. While this permitted colleagues to continue discussing patient care, as found in the earlier section on rapid deployment of tele-communications technology it also had a distancing effect. Furthermore, in order to minimise the number of people in close contact with patients, tasks usually carried out by junior staff were carried out by more senior staff, resulting in only a small number of people being involved in the critical environment.

These points were supported by the faculty respondents who also highlighted the difficulties of repeatedly sending members of staff in to attend to various patient tasks when there was a need to minimise contact, issues with PPE affecting communication, and video call MDMs which affect team working.

4.3 RQ.4 Complex clinical decision-making

Respondents from the national stakeholder interviews were asked to comment on foundation doctors' experience of complex clinical decision-making, including the types of complex decisions that foundation doctors might make, the core skills and attributes required for effective complex clinical decision-making, and how prepared the foundation doctors are for these aspects.

4.3.1 Doctors' understanding and experience of complex clinical decision-making

There were three main types of complex clinical decisions identified by stakeholders. The first type involved patients with different co-morbidities in addition to social problems, issues with facilities and consideration of power of attorney decisions. The second involved acute situations when there was a time pressure, and the third related to difficult decisions around DNAR, end of life care, or when to discharge patients home.

Co-morbidities

Respondents identified difficult decisions when faced with patients with complex health needs. This may entail patients with multiple morbidities, different patient preferences or expectations, or additional complex social needs. There may not always be an obvious diagnosis or treatment plan, there may be uncertainty, and the complex decision will likely involve weighing risks and benefits. There may be difficult family or social dynamics to navigate.

> *"To me it means **a decision where you have to weigh up a lot of risks and benefits and balance a lot of different factors together, for example a bleeding risk and a clotting risk**, I can understand where in the middle that patient lies and whether or not you should treat a bleed or a clot. **Alternatively looking at decisions to escalate people to the high care settings, like the CPAP or intensive care, or rather to take a more palliative approach, is also a complex clinical decision**" (Interview 8, F1 Doctor, Male, England)*

> *"So my understanding of it is kind of **patients with lots and lots of things going on, that sometimes there can be difficult family dynamics or social dynamics, there are often several teams involved, and coming to a decision with regard to treatment or not treatment** about specific aspects of their care, where in ITU I see that all the time, a complicated decision" (Interview, 14, F1 Doctor, Female, England)*

Acute or time pressured situations

Some respondents felt the complexity of decisions involved acute or time-pressured situations, such as treating septic shock, making life-changing decisions, or building relationships with colleagues in a time-pressured environment. These were decisions associated with providing immediate care.

> *"**we had someone who was on our ward who had bad kidney failure and went into septic shock**, so we were putting him full of fluid because he was sepsis and his kidneys weren't coping with it so the fluid was leaking to the wrong place, **that's quite complex because it's acute, it's time-pressure, you don't really have long to think about what you're doing**" (Interview 18, F1 Doctor, Male, Scotland)*

> *"So, they have to deal with **competing demands, complex uncertainty, multiple healthcare needs for a patient, and knowing where to start, considering the patient's care in the context of carers, the MDT across primary and secondary care**. Being put ... be in positions where they are doing their job, but they haven't had time to build relationships with others. **You know, you're in a ward and you've got some agency nurses, and they've got a locum consultant, you know, you have to build those relationships and how easy can you do that in a time pressured environment**?" (Interview 64, Medical Educator, Male, N. Ireland)*

End of life care, DNAR, or decisions around discharge

The third area respondents discussed was related to making decisions about end of life, DNAR or when to discharge patients. These were seen as complex decisions that would often not be made just by the foundation doctors alone but would require the input of many different health and social care professionals, or family members.

> *"Another thing I would definitely consider complex would be towards end of life and **whether or not you go for actively treating something or palliating, I would find that very complex and as an FY1 I would find that very stressful if I had to make those decisions**" (Interview 18, F1 Doctor, Male, Scotland)*

> *"**so I think making someone end of life**, we've got a few very frail, elderly women that have had multiple things happen to them, **so deciding whether someone's for a procedure or for palliative care or for medical management is a complex decision**" (Interview, 40, F2 Doctor, Male, N. Ireland)*

Do not make complex clinical decisions

Related to the point above, many of the interviewees felt that foundation doctors do not make complex clinical decisions as this is something more senior clinicians would do. Although they may observe or be part of those discussions, it was beyond the remit of their role to make the final decisions on complex matters. Oftentimes such decisions would involve an MDT. Some of the doctors felt confident in providing their opinion, but they identified that they did not have the expertise or experience in their current positions.

> *"**I feel confident sharing my opinion, but I wouldn't want to make the decision**, I think it should be an MDT decision or a consultant's decision" (Interview 29, F2 Doctor, Female, England)*

> *"**I feel very comfortable contributing to the conversation, but I don't feel very comfortable being the sole clinician involved**, so particularly when I have a bit more responsibility like on-call or overnight, if I find that I'm having a task which is more complex I'll almost always run it past my reg first to get a different point of view" (Interview 37, F2 Doctor, Female, Wales)*

As two of the interviewees highlight below, it is inappropriate for foundation doctors to be the ones making very complex decisions and doing so would suggest they were working outside of their range of expertise. However, both the medical educator and dean identified the usefulness of involving them in the decision-making process in order for them to gain exposure and build confidence with complex decisions.

> *"... not many [complex decisions], **I would say, and I think that's right that they don't, because I think that's a bit of a scary thing to ask a foundation doctor to take responsibility for.** I would say, as a general rule, they're quite okay with assessing people who are clearly going to have a complex clinical decision required, but, you know, **I would fully expect them to escalate it and they do, and so I would do very little complex clinical decision-making**" (Interview 63, Medical Educator, Female, England)*

> *"Almost by definition they probably don't because, well they should be involved in the process definitely, but **if a medical decision is complex, if a foundation doctor could make it well it wouldn't be complex, or if a foundation doctors was being asked to make it they were being put in a role with inadequate supervision, which I would criticise**" (Interview, 61, Dean, Male, England)*

4.3.2 RQ.1cWhat are the skills, capabilities and attributes doctors require for effective complex clinical decision-making?

There was a broad variety of key skills, attributes and capabilities identified by stakeholders for complex clinical decision-making. There were over 30 different ones mentioned however, the most common ones identified included, communication, confidence, experience, and knowledge.

Communication

As with MDT working and the doctor-patient relationship, interviewees identified the importance of good communication skills as central for effective complex clinical decision-making. This is important in order to gather all relevant clinical information as well as the wishes from the patient, carers or families, and other colleagues, and also to be able to explain effectively in a way so that the patient understands the complexity of the situation, and the risks and benefits.

> *"**Communication and listening, so listening to what everyone's got to say, unfortunately it doesn't always come a nice, neat conclusion and everyone might not agree, but you need to listen to what people have to say and take that on board when you're making those***

*complicated decisions. If there's incomplete information then using what you've got, **I think there's a lot of detective work that happens as an F1** when you've got a patient who you know nothing about and you're trawling through the notes just trying to find some glimmer of information, **taking kind of collateral histories and having the confidence to do that**. So as part of my role in ITU **I spend a lot of time phoning and GPs and carers and things and just gathering more information, which takes quite a lot of confidence to do as an F1 because when you're talking to a GP, they've got years of experience on you and you're the one asking them the questions, but empowering yourself to do that I think is really important"* (Interview 14, F1 Doctor, Female, England)

*"think again comes back to another big thing is **being able to quickly convey that information and that level of uncertainty to the patient, and make sure that the patient is able to explain that back to you as well to kind of help ensure that they've actually taken that on board**, because it's all very well and good having all those skills but if the patient's too emotionally distressed to actually take and retain what you said it limits the effectiveness of that conversation"* (Interview 28, F2 Doctor, Male, Scotland)

Confidence

Confidence was another key quality respondents felt was important for effective clinical decision-making. This involved having the confidence to take responsibility for your decision-making and understanding the legal implications of doing so. Interviewees also felt it was important to have confidence in your own skills and knowledge.

*"**I guess one of the points of being a being doctor as opposed to be a nurse or whatever is your name, or your senior's name, but ultimately you are held legally responsible for that decision**. I think the main thing **is having the confidence and being able to take on that responsibility, just being the one who's happy to make that decision and accept whatever the consequences of that decision is**, not that the outcome doesn't matter but you accept all outcomes when you do that, that's definitely the thing I think I would find hardest"* (Interview 9, F1 Doctor, Female, England))

*"**Being quite confident about your decision-making**, I can see from the examples that I've seen throughout working as a doctor so far **that it can often be quite difficult to be sure of yourself that you're deciding the right path, or that whatever team or department you're working with you've come up with the right decision can be quite challenging"* (Interview 11, F1 Doctor, Male, Wales)

One of the patient/lay representatives felt it was also important to have the confidence to be honest with patients when you are unsure of the right course of action or if there is uncertainty around a diagnosis or treatment, and to seek further guidance when necessary.

*"I think nowadays patients do have huge issues, **and it's having that confidence to say to the patient I'm really sorry I can't answer all your questions today, or let me go and check, or I'll come back to you** within so and so, and then do what they say they're going to do, and I think that **patients will respect that, that they will know that nobody can answer every single question"* (Interview 65, Patient/Lay Representative, Female, England)

Knowledge

In addition to experience, interviewees recognised the importance of good clinical knowledge in order to ground complex decisions within the clinical knowledge base. It was also vital for foundation doctors to maintain up-to-date clinical skills and knowledge, and suitable training in intellectual and behavioural skills so that they can weigh up risks and benefits and have the basic tools and methods to approach complex cases.

> *"… so **I suppose good risk and benefit stratification**, particularly community style doctors in the hospital. **I guess up-to-date clinical knowledge and you know our responsibility to maintain up-to-date knowledge**" (Interview 24, F1 Doctor, Male, N. Ireland)*

> *"… **they've got to have the foundational knowledge. They've got to have guided, scaffolded, if that's such a word, training in taking those intellectual skills into behavioural skills, and being allowed opportunities to develop those skills, is important**. Being able to recognise an uncertain, like complex situation, and knowing, regardless of the context, **knowing that there are some fundamental approaches, mind tools, things that you do**, rather than making a snap decision, you've got to take a tactical pause, and say look I need to think about this, can I get back to you in a moment? Can I take your notes to the nurses' station while I just gather more information**? So I think, I think a greater focus on the more higher-level skills, rather than sort of what do you do in a dilemma?**" (Interview 64, Medical Educator, Male, N. Ireland)*

4.3.3 How prepared are foundation doctors for these and other skills?

Participants were asked how prepared they felt foundation doctor were for specific aspects of complex clinical decision-making, including dealing with uncertainty, knowing when to escalate decisions, understanding one's own knowledge and professional limits, and prioritising tasks.

How prepared are foundation doctors for dealing with uncertainty?

Foundation doctors' preparedness for dealing with uncertainty was mixed. Some interviewees said they were well prepared for it while others were not. When faced with uncertainty, foundation doctors would seek help from their foundation peers, wider team, or senior colleagues depending on the nature of the problem. They would also try to seek further information by talking with the patient, carers or families to gather more patient histories, or they would consult with established medical guidelines, protocols and research.

> *"Yeah, I think **we do a lot of training with, so we spend quite a lot of time on things like palliative care where often there's a lot of uncertainty**, and so **I feel quite comfortable admitting when I don't know and being honest with patients** about we can't be certain how long you're going to live, you can't put a number on it all. So I feel like I'm quite comfortable with that" (Interview 7, F1 Doctor, Female, England)*

One interviewee felt there would always be uncertainty, and managing it was about doing what you could do and breaking it down step by step, while another F1 doctor recognised that it was

also about balancing when to continue seeking more information, and when to make a decision with the information you have.

> *"whether that's from a textbook or from the team around me, **I think you seek more until you're comfortable that you have enough information to make a decision, but also so it's knowing when to seek more information, when to gather advice, and knowing when to just say ok now we've just got to make a decision**. We will never know everything, and we'll never be sure, **so it's striking the perfect balance between knowing how long to seek information for and knowing at what point to just say ok now we give it our best guess**" (Interview 17, F1 Doctor, Female, England)*

Foundation doctors' preparedness for knowing when to escalate decisions

The majority of interview respondents felt that foundation doctors were well-prepared for knowing when to escalate to senior colleagues. Many of the interviewees felt that they had been encouraged throughout their training to escalate to others if they were unsure, and as such most were very comfortable with this process.

> *"**I'm aware that I have limitations, acutely aware at the moment as a junior doctor that I've got so much still to learn**, and if there's something I'm not sure or not familiar with **I'll either try and look it up on the local guidance and see what our recommended protocols are, or I will ask for help**" (Interview 15, F1 Doctor, Male, England)*

A potential barrier that affected how comfortable the foundation doctors were for escalating was how receptive senior colleagues were to being consulted, and how supportive they were.

> *"I think **I feel confident that I know when to escalate, and there is a lot of emphasis on if you're not sure then make sure you escalate. But I do think I've been very lucky in that I have had seniors who are very accepting of that and very willing to help, and I know that that has really encouraged me and helped me learn**, and I think it must be very difficult if you don't have seniors, I have colleagues who have not had seniors that are willing to help them if they need to escalate" (Interview 12, F1 Doctor, Female, England)*

One significant point raised by one of the educational supervisors is whether the foundation doctors are prepared for what happens when you can't easily escalate. One of the F2 interviewees illustrated this with an example from their role on cardiology, where they felt unable to escalate easily when on nights due to healthcare system structures and the superior rank of the senior colleague. Worryingly, they highlighted that the lack of support with escalating concerns may result in poor patient-care at nights.

> *"**Yes, I think they're well prepared you know to always ask, always seek help**. I think the trickiness is that we teach them you must escalate and get it right and they say right this is the point I would ring the medical registrar and we can tick you know so you've passed you know at undergraduate level. **What we don't tell them is that when you try to ring the medical registrar, he's, you know he's, he hasn't answered***

his bleep because he's having a rest … and then when you ring him, he's you know grumpy and hassled. We don't teach them you know what do you do then if you can't easily escalate the help" (Interview 51, Educational/Clinical Supervisor, Female, N. Ireland)

"In my current job in cardiology there is no person for us to call out of hours, but the consultant, so if in the middle of the night somebody is very, very unwell, the only person I can call is someone who's fast asleep and significantly more senior than me… so that's very disconcerting and I hate doing that, particularly if you're new to the job, so I absolutely loathe that, I think that's a really stupid system. So I'm not allowed to call the medical registrar because cardiology is separate specialty, as a specialty in my hospital, so yeah, I really think that leads to poor care at the nights, during the nights and the weekends" (Interview 40, F2 Doctor, Male, N. Ireland)

Foundation doctors' preparedness for understanding their own knowledge and professional limits

Overall foundation doctors were prepared for recognising their own knowledge and professional limits, and they were prepared not to pursue decisions outside of this. By accepting that they are early in their careers and will not know everything, some of the foundation doctors felt more confident. Some of the interviewees felt that they had had specific training in this area throughout medical school, where in the management of a patient case they had to acknowledge their limitations, when they would escalate, and who they would talk to.

*"Yes definitely, **I think that is something that again was drilled into me from medical school**, that whenever we did our finals it was our OSCEs were practically running through examinations, differentials, investigations and managements, **and in that management section it was crucial to know where you've reached your limits and you need senior help**" (Interview 13, F1 Doctor, Female, England)*

*"Oh I think they're very good. **I mean I think they know what they know, mostly, they know what they know, and they know what they don't know and they know what they need to know to fill in any gaps**. And I think they're good at, they're good at directing themselves, I would say, you know, self-directed learning and all that sort of stuff, I think they're pretty good at that" (Interview 63, Medical Educator, Female, England)*

Preparedness for prioritising tasks

Preparedness for prioritising tasks and managing large amounts of information was mixed. Some of the foundation doctors interviewed had had some simulation exercises involving prioritisation where they were given the job lists and had to make decisions over changing priorities, or they had learned skills and tools to assist with the prioritisation process. Many acknowledged that it was a skill they had got much better at once they were working and had to make those decisions in real life, and they were learning how to constantly readjust priorities.

*"So **I think it's a skill that I've definitely had to get better at doing on the job, it's something that we touched upon mostly in my final year of uni, and we talked***

*about a prioritisation matrix and trying to like organise jobs. While certain things have definitely stuck in terms of like keeping lists and trying to like organise jobs by type as such, **often I've noticed that it's the very ad hoc nature of how you get presented those tasks, particularly if you're working in an on-call shift, means that you have to be constantly readjusting what is prioritised and where"** (Interview 28, F2 Doctor, Male, Scotland)*

*"Yes, I think they're good at that, **I think they're probably at their prime in some ways for drawing up problem lists and working through them in what they perceive as the most important order, so I think they're very good at prioritisation"** (Interview 45, Educational/Clinical Supervisor, Male, England)*

One of the F1 interviewees recalled being able shadow F1 doctors on-call when they were a medical student. The exercise allowed them to gain insight into the foundation doctor workload, as well the type of tasks and how best to prioritise them.

*I think so, fifth year was very good for that because we were shadowing the F1s and a large part of that was seeing how they manage their workload and organised it. **I think the sessions we had where we had out of hours placement was really good as well cos you were shadowing an F1 on call and doing the ward cover, you see the amount that they are expected to do and they are bleeped, and the type of tasks and things that they get, and I think seeing it in real life is the easiest way I think to rationalise this is the job list that you've got, how would I prioritise,** I probably would do it similar to you or slightly different, seeing that a number of times and then applying it in practice I felt really useful (Interview 16, F1 Doctor, Male, England)*

Some of the respondents did not feel they were well prepared for prioritising and found this a shock when they began working on the ward. However, some of the interviewees acknowledged that the foundation doctors would learn this quickly through their clinical experience. One F1 doctor felt they had had little exposure as a medical student, and as such, they had little by way of tools and techniques to help with multi-tasking and prioritising. Instead, they had to learn this very quickly within the first week of the job in order to avoid becoming overwhelmed by the workload. The same respondent felt an apprenticeship style of learning would significantly help with these skills.

*"No I didn't feel very prepared, **I thought I was, and I got on to the ward and then thought right what do we do. So I did find it difficult**, I don't think the SDT actually helped at all, **I think you learn as you go along that you need to sort your scans out first because if they don't happen, you'll still be waiting for the report at six o'clock"** (Interview 16, F1 Doctor, Male, England)*

*"**I did not feel prepared for prioritising tasks at all** because I think I appreciated the F1 was going to be busy, but because I never had to work as an F1 as a student, **I had absolutely no idea what like tricks of the trade, how to multi-task to make my life easier and I think that I, everyone has to learn in their first week of F1 how to multi-task, very, very, very quickly, or they're going to drown, so yeah, I, like everyone***

else, had to learn had to multi-task very well. I did not feel particularly prepared by undergraduate training, again maybe something that would have been prepared better by apprenticeship style learning" (Interview 24, F1 Doctor, Male, N. Ireland)

Some of the educational/clinical supervisors felt that the foundation doctors were poor at prioritising, frequently working down a list from top to bottom rather than reprioritising workload against time or collating similar tasks together and completing them in one go.

*"**I think they're rubbish about prioritising tasks; I think the easiest thing to do is to go to the top of the list and work my way down rather than go right five people needs bloods doing so I'll sit in front of a computer and I'll order all the bloods at the same time rather than just go in patient by patient**. Or rather than updating for half an hour at the end of the ward round I'll update whilst we're going along, **or this person is potentially dying if I don't do this test, this is my priority however awkward and difficult it might be to organise it, and these other things can be done this afternoon or tomorrow morning**. So I think the ability to prioritise is not really there, I'd say that's pretty general across the board, again **it's something that they learn pretty quickly, especially the good ones**" (Interview 44, Educational/Clinical Supervisor, Female, England)*

*Obviously, **that's, again, hugely personality driven**, and **some people are absolutely, you know, insanely organised, and that translates into their work and their ability to prioritise clinical tasks and I imagine they're much the same at home. And some people are an absolutely calamity, and that's quite a boy and girl split...** that is quite a difficult skill to learn, and that can be quite a bumpy route (Interview 63, Medical Educator, Female, England)*

4.3.4 The impact of COVID-19 on foundation doctors experience of complex clinical decision-making

Created additional complexity

A principal negative effect of COVID-19 on complex clinical decision-making was the fact that it made already complex situations and decisions much more complex. A large number of the respondents felt this, and they described the impact in different ways. There was added complexity at the start of the pandemic as health professionals did not know much about the illness, and much greater exposure to younger people dying and challenging situations. Another respondent highlighted the difficulties of seemingly straightforward tasks due to the physical placement of patients so as to reduce the risk of contracting COVID-19.

In many specialties COVID-19 has added extra risk-benefit considerations over whether to admit someone into hospital, not only due to the prospect of contracting or spreading COVID-19, but also due to potentially exacerbating their condition. For example, respondents reported that in psychiatry there was an additional concern over isolating someone who may already have mental

health difficulties, and there were many more difficult conversations with families on sensitive topics like DNAR.

Due to members of the public avoiding coming into hospital, either through fear of catching COVID-19 or not wanting to overburden the NHS, the only patients really being admitted during the height of the pandemic were already complex patients. As such, there have been delays in presentations and treatment, which in some cases has made the health issue more complicated. Providing basic patient-centred care also became harder. The decision to enter a room and examine a patient was more complex due to the COVID-19 risk to both parties. There has also been an increase in difficult ethical decisions around which patients require escalated treatment, and which patients should be placed on end of life care.

The result was described by one of the faculty members as an 'obsession' with COVID-19 to the neglect of the medical problem that brought the patient into hospital in the first place.

Delayed and disrupted patient care

COVID-19 also negatively affected the level of care and treatment patient received. For example, some services were delayed or disrupted, particularly elective treatments. When making discharge decisions it has added a layer of complexity around the safety of the patient or the people that they live with due to vulnerability to COVID-19. In mental health disciplines, remote consultations have meant potentially missing important visual clues with patients. The threshold for admitting patients for specific services has risen as well, and in some case caused factious relationships between departments. Other negative impacts involve the frequent movement of patients around the hospital, which makes it difficult to maintain continuity of care, and the difficulties of involving families in treatment plans.

No relatives present for patient support and well-being

A further negative impact was not being able to have relatives present within the hospital. This has made complex decisions harder due to not being able to have everybody in one room. Instead, difficult discussions with family members are taking place over the phone. It has also resulted in DNAR decisions being ascertained much earlier on in a patient's admission to hospital.

Negative disruption to training

For some F1 doctors their training was negatively impacted by the decision to graduate early from medical school. Some had elective modules arranged, shadowing experiences, or had plans to participate in training overseas, but these experiences did not go ahead due to COVID-19 and the pressures on the healthcare system. Some had had important training delayed that would have helped with preparedness for emergencies, such as ALS. One F1 doctor felt that they were missing vital training in acute situations, which not only affected their current level of confidence, but would also have consequences further along in their training when they would be expected to manage situations they felt inexperienced with.

As such, some doctors felt they had missed aspects of their preparatory training right at the point of transition from student to doctor. The diversity of training experience has been limited, with doctors unable to gather the full range of experiences by involving themselves in extra tasks, observations or shadowing opportunities. This also has potential impacts upon the future provision of healthcare. Some interviewees highlighted the potentially serious consequences of this period of time on the provision of healthcare in the future, where there could be serious lapses in care as a result of disrupted training and practical experience for junior doctors due to COVID-19.

A small number of doctors described this transition as a 'shock' and remarked how quickly they had changed from student to doctor. Furthermore, this was not an expected course of events and so it necessitated a fast change to existing plans, and for some this meant they hadn't really felt they had completed their time as a student.

One of the faculty members reported that this disruption was a 'disaster' that affected joint training between foundation (F1 and F2) doctors and nurses. It also resulted in a gap in training where simulations where not able to take place. Concerningly, one faculty respondent felt that patient care was adversely and seriously affected from the disruption to training caused by the global pandemic. Conversely, a significant proportion of the respondents took on interim foundation roles during transition from student to F1 doctor which was a very beneficial experience (see section 4.4.3).

4.4 How can doctors' preparedness for the doctor-patient relationship, MDT working, and complex clinical decision-making be improved?

Respondents were asked if they felt that foundation doctors' preparedness for the doctor-patient relationship, MDT working, and complex clinical decision-making could be improved. They highlighted several areas where improvements could be made, including improving

communication skills training, providing foundation doctors with greater exposure and experience, improved simulation training, more integrated training with other healthcare professionals, and increased practise at prioritisation (see Table 8). Additional improvements mentioned included how to escalate concerns around patient care, and greater resilience training.

Table 8: Strategies for improving doctors' preparedness for the doctor-patient relationship, MDT working, and complex clinical decision-making could be improved

Areas of improvement	Doctor-patient relationship	MDT working	Complex clinical decision-making
Improving communication skills	Better training for difficult communications such as communicating through third parties like translators, and highly emotive conversations with family regarding palliative care. Additionally, encouraging reflective practice of communication, more exposure to difficult communication, and more frequent simulation activities practising communication scenarios	More exposure to difficult communication, and more frequent simulation activities practising communication scenarios	
Shadowing/apprenticeship model of training	Improvements could be made by incorporating more shadowing opportunities or establishing an assistantship to allow foundation doctors to gain more clinical experience in a way that was supported		
Interim period	Respondents highlighted the benefit of the interim FiY1 phase, introduced in order to support the NHS workforce throughout the COVID-19 global pandemic, and felt that this should become a permanent fixture within training. Many of the doctors who participated spoke of the positive benefits this phase had in preparing them for working as a doctor, allowing them to gain responsibility and experience in a supported environment		
Improved simulations/self-reflection	Improvements that could be made to the simulation included more simulations involving difficult communications such as with third parties, conversations about DNR, angry patients.	Improved simulation scenarios would allow foundation doctors to practise and develop complex decision-making skills, prioritisation of tasks, and working within a time-pressured situation, while in a safe environment, and with the opportunity for reflection and debriefing.	
Better understanding of other HCP roles		A core improvement is to spend more time with other healthcare professionals during training, including training alongside each other, having joint simulation sessions where you have mock MDT scenarios, or shadowing members of the different healthcare teams to understand their role, skills and contribution to MDTs and complex clinical decision-making	
More experience and exposure		Respondents felt the only way to develop MDT understanding is through more experience and exposure. This included observing MDT working within clinical practice, having a role within the MDT process, for example presenting a patient at an MDT meeting, more collaborative projects with principles that reflect an MDT, for MDT members to come in and talk to students about their role, or for the team to have an MDT discussion which students could observe.	Similarly, respondents suggested greater exposure to complex clinical decision-making would allow foundation doctors to build decision-making skills and to be part of the decision-making process.

4.4.1 Improving communication skills

Overall the respondents interviewed felt that the foundation doctors experienced good communication skills training, however there was some room for improvements to be made. Respondents spoke of requiring better training for difficult communications such as role playing breaking bad news. Despite having theoretical training, respondents felt more experience and exposure in practising difficult communications, such as communicating through third parties like translators, and highly emotive conversations with family regarding palliative care. Other related aspects involve encouraging reflective practise of communication, and more frequent simulation activities practising communication scenarios.

> *"I think exposure's really good, so just the more time you're out on placement meeting patients, but also **we were really encouraged to reflect, oh my goodness, everyone was whining about it all the time, so many reflections to do, but looking back it was really important and it's a skill that I still use now. And it meant that if you were sat there watching a doctor talking to a patient and you were uncomfortable, you could reflect on that and think about what went well, why didn't that go well. So I think that's really good and should be encouraged, even though everyone hates it, it great to reflect on things**. And it's awful and I hated doing it myself but doing kind of role play scenarios in medical school, makes you feel awful, it's a safe controlled way of doing it. And now we've got the translation thing that would have been a nice thing to have done that we didn't do, we always had the classic breaking bad news role plaything" (Interview, 14, F1 Doctor, Female, England)*

Two of the respondents interviewed who work in education roles, spoke of educators encouraging foundation doctors to be more involved in difficult conversations, or observing difficult discussions in order to gain more exposure and experience by reflecting on others' communications. Importantly, this means also reflecting on how families react to the way information is communicated to them, and learning how to have difficult conversations, and how not to do it.

> *"**at educational induction meetings it's one of the things that I always bring up and say you can get involved with palliative care conversations, and we put that down as one of the aims for them to fulfil while they're on our ward for four months**. And I would say that when we have an end of placement meeting four months later, they've often had the opportunity to be involved in one or two, probably not more than that. **So I encourage it and educational supervisors could do that for example, could encourage it at induction meetings and say this is one of the things you should be doing, if it's that sort of ward, and everyone's agreed that the junior doctor will take that opportunity to talk to the family and so forth**" (Interview 50, Educational/Clinical Supervisor, Male, England)*

> *"**I think there is enormous value in them watching those conversations had in real life and not sending them out because they're the medical student however hard***

*the conversation is, because they're going to be doing that conversation at some point and they need to learn and understand how you do have these conversations, and **sometimes it's learning how not to do it, and you're an observer,** you can see there and you can see the person doing it and the reactions of people, and how each thing that came in was reacted to, was taken in, **and you're in a really valuable position there because you've got that slightly wider view**" (Interview 53, Foundation Programme Lead, Female, England)*

4.4.2 Shadowing and an apprenticeship model of training

Some of the respondents felt that improvements could be made by incorporating more shadowing opportunities or establishing an assistantship to allow foundation doctors to gain more clinical experience in a way that was supported. One respondent compared the experience of nursing colleagues who have an apprenticeship model of learning while working, while one of the educational/clinical supervisors highlighted how foundation doctors usually have the opportunity to shadow the role they will be stepping into next, but the global pandemic recently interrupted this learning opportunity.

*"if I'm honest, I think it's, I think it really is just an issue with undergraduate training, it's not necessarily bad undergraduate training, I wouldn't say that at all, I think my undergraduate training was great, and **I think you ultimately just have to learn certain skills doing the job, but I would also appreciate that our colleagues sometimes tend to get better training in terms of nursing colleagues who start off their career in education, oh, sorry their education by working, so working through that assistantship style learning, in the hospitals, physician associates working in that, learning and working at the same time, that assistantship style learning and I think it's something that if it was introduced to medicine it would probably vastly improve those matters of education**" (Interview 24, F1 Doctor, Male, N. Ireland)*

*"I think the shadowing, what we always used to do as junior doctors **we'd spend at least a week shadowing the job they were allowed to take over once they qualified, and most of them didn't get that opportunity so that definitely needs to come in again**" (Interview 49, Educational/Clinical Supervisor, Female, England)*

4.4.3 Interim period

Furthermore to the prospect of including a shadowing or assistantship aspect to training, some of the respondents spoke of the benefits of the interim FiY1 phase, introduced in order to support the NHS workforce throughout the COVID-19 global pandemic, and felt that this should become a permanent fixture within training. Many of the doctors who participated spoke of the positive benefits this phase had in preparing them for working as a doctor, allowing them to gain responsibility and experience in a supported environment. One of the key aspects was that the doctors were seen and treated as doctors rather than medical students on a placement. As such,

they were paid, given responsibilities, and rostered in to work as any other member of staff. Some of the doctors mentioned that as medical students there was a greater flexibility to leave early on quiet days, or to turn up inconsistently which ultimately affects the full experience of working as a doctor. Whereas most felt the FiY1 experience was a good learning experience, where they were respected and considered to be a doctor, and for some that also increased personal motivation, and enabled a smoother transition into the F1 role. For one F1 respondent, the global pandemic and inclusion of the interim FiY1 phase had shown a much better way of transitioning from student to doctor and ensuring more familiar with your role and the ward.

> *"**I think the most useful thing that I've seen, and I really hope you pick some of these people up in your study, is the people who started as interim F1s during the Covid redeployment, because from speaking to all of them they said they really appreciated that two month almost glide into F1 because at that point they picked up on all these practical life skills and bits that you just have to learn while also learning how to do the job and look after unwell patients,** whereas in a way when there's old F1s licking around you have a safety net in which you can learn. **So I'm a big believer and advocate of making the shadowing period or allowing students the opportunity to start a month early, just so they can pick up on all this stuff and use that, I think that would be quite useful**. Cos nobody would have thought about doing that, I only have anecdotal evidence from my colleagues, but I think if you're picking up a general theme in your study that's definitely something that's looking into, cos it's feasible but it just means that students have to give a month of their last two months before they plunge into working life"* (Interview 31, F2 Doctor, Male, England)

One respondent suggested incorporating a paid internship into training, where doctors would work for a few weeks as a healthcare assistant in order to gain experience and have some responsibility. They also felt it would be a beneficial humbling experience, particularly for more privileged students.

> *"… **one thing that was fantastic that happened with the pandemic was that doctors started in Northern Ireland earlier,** I'm sure you've heard this amongst other, that they actually started work, and became part of the rota. **So there's a very different mindset when you're shadowing versus when you're actually employed and get paid and have responsibility. So, that was fantastic for them… yeah, so that's one thing that could certainly be improved**, would be an introductory. Probably you could say that doing, I don't know, a paid internship, in other ways on the ward as a healthcare assistant would be very helpful for, medical students to do where they get, I don't know, do one month every year of where they actually **work on the ward as healthcare assistants would probably be beneficial for them and humbling, I think for a lot of the more privileged students"** (Interview 40, F2 Doctor, Male, N. Ireland)

4.4.4 Improved simulations and encouraging deep reflection of one's own performance

Respondents also spoke of improvements that could be made to the simulation exercises that foundation doctors participate in. These include better debriefing in order to encourage reflective thought and provide constructive feedback, and as mentioned, more simulations involving difficult communications such as with third parties, conversations about DNR, angry patients, or handling post-emergency situations. Additionally, it allowed foundation doctors to practise and develop complex decision-making skills in a safe environment, and with the opportunity for reflection and debriefing. It also permitted practise at prioritisation of tasks, and working within a time-pressured situation

Foundation doctors raised the need for more simulations involving difficult doctor-patient relationships including how best to handle angry patients, how to handle the dynamics of third party discussions, particularly using translators, and how to have discussions around difficult issues like DNR.

> *"**more of those sessions of difficult communications, or dealing with angry patients**, or those sort of situations that we commonly encounter," (Interview 39, F2 Doctor, Female, England)*

> *"**to have more exposure to third party discussions, and also to be extremely clear about what sort of information you can give, or what sort of information can the third party be a part of, especially when people actually have capacity but the third party's just translating**, or it's not a translator but is a family member, cos that does happen, it shouldn't happen but does happen. Sort of how to handle these kind of dynamics it would be a great addition to the curriculum" (Interview 21, F1 Doctor, Female, Scotland)*

> *"Maybe creating scenarios where you have to deal with issues like that would probably be useful, **maybe in the final year of med school having to deal with power of attorney, DNR CPRs, having the discussions surrounding that. In my job as a junior doctor we can't do a DNR CPR, it's left to senior registrars or consultants to do that. But I think it would have been good as a med student to at least have an experience or exposure on how it's done and processes**" (Interview 22, F1 Doctor, Male, Scotland)*

More simulations were seen to be beneficial and teaching in mental debriefs was important in order to help with processing challenging events once an emergency is over.

> *"Yeah, **I think probably more simulation work, but at the end of that, what we're not doing at the minute is, even teaching them how to do some kind of mental debrief**, how did that go for me, you know am I worrying all evening about those relatives, should I go and talk to somebody about it" (Interview 51, Educational/Clinical Supervisor, Female, N. Ireland)*

> *"**So I think it would have been beneficial to think about once the emergency is over say how do you then go on with that if you have a confused patient or a patient***

who doesn't speak English, I think it would have been beneficial to have some simulations thinking about that and being able to practice" (Interview 12, F1 Doctor, Female, England)

It was also felt that improved simulation could help foundation doctors with the prioritisation tasks and working within a time-pressured situation but in a safe environment. One F2 doctor recounted participating in simulation on-calls where they were repeatedly bleeped with different tasking to prioritise, and they felt this was good preparation.

*"I know we had some simulation on-calls towards the end of my final year where they give you a bleep and send you off in the hospital and keep bleeping you with different tasks, **so maybe more simulation-based learning around that would be good, or shadowing an F1 and being given the bleep to hold under supervision maybe would be helpful because it's the most daunting thing for any new F1 is that first on-call shift when you've never had to hold an on-call or an arrest bleep before, just having it is the scary thing,** so whether you could be better prepared for that really" (Interview 38, F2 Doctor, Female, England)*

*"**I do think that things like sim should be more embedded in medical school because I think it's a really useful skill at learning about complex acute decision-making, and I am a really big proponent of that, and I think that it puts you in a safe environment and allows appropriate debriefing and to gain skills in a really safe way.** I think nothing will beat doing it in real life, but **I think that gives you some core skills to know how to do your time management in acute way,** you've still got to do time management, you've still got to do the organisation, you're just doing it in a compressed manner. And I think more things like that as a more routine way of doing it helps people make these decisions, understand complexity and making decisions with incomplete information, understand all of that a little bit better" (Interview 53, Foundation Programme Lead, Female, England)*

4.4.5 Better understanding and integration of the role of other healthcare professionals

One of the core improvements mentioned by many of the foundation doctor interviewees was to spend more time with other healthcare professionals during training. This included training alongside each other, having joint simulation sessions where you have mock MDT scenarios, or shadowing members of the different healthcare teams to understand their role, skills and contribution to MDTs and complex clinical decision-making.

*"I think **more multidisciplinary learning opportunities,** in Medical School, it seems to be the way things are going, and I think it should be. Um, **doctors and nurses work so closely together, and I don't know why we don't learn closely together, because we're almost kept completely separate until, it's only we're then pressured into***

working together, and I think that that's something that could definitely change"
(Interview 43, F2 Doctor, Male, England)

*"I think maybe if you had **shared training**, if you had occupational therapists or whatever, physios, **there's no reason why, there couldn't be like simulation for an MDT scenario and learning about everybody's role**, it wouldn't take very long to get up to speed about the different aspects of social work that are, like where the interactions happen and what the shared knowledge requirement is" (Interview 40, F2 Doctor, Male, N. Ireland)*

*"I think the only thing I would have asked for is just to work with more team members throughout our training, typically we were taught mostly by doctors and given experience by other members of the team but maybe not as extensively as we could have done. **So we could have had more experience with OT and physio and dieticians in the hospital on placements going on shadowing rounds, just more experience of working with other team members. And I think what would have prepared me the best to be part of an MDT is for my teaching at medical school to feel more split between members of the team, I think maybe if it was a healthier balance between our teaching that we receive from different members of the team it would have empathised the importance of all members slightly more so"***
(Interview 1, F1 Doctor, Female, England)

Some of the interviewees felt that they only received a very one-sided perspective that was confined largely to the role and opinion of doctors.

*"**I think just more like joint discussions with those members of the team, I think being able to fully understand what their role is**, but throughout your training as a medical student it's important that you're not just seeing the solely the doctors point of view in that situation, and usually it's a consultant that you're shadowing as opposed to the junior that more often have to liaise with many different members of the team, **so you get a very one-sided view of what it's like to be a doctor until you're suddenly part of it and then part of MDTs really**" (Interview 39, F2 Doctor, Female, England)*

One F1 interviewee felt that a novel and useful improvement to their training would have involved an app for their induction where they could see what specialists healthcare professionals were on the ward or on-call and their hours of availability so that you could contact them to consult on patient-care.

*"you're very aware of the diabetic nurse practitioners and the Warfarin pharmacists because they introduced themselves quite early on to us. So I suppose just **having either like an app for induction on your phone so that you can like scroll through and see that there is a diabetic nurse practitioner on-call or like a ward round clinical pharmacist on-call or whatever, during hours that you could contact** would be probably the only recommendation and in my hospital we have one, so" (Interview 24, F1 Doctor, Male, N. Ireland)*

4.5.6 More experience and exposure

Another key improvement suggested by respondents was for foundation doctors to have more exposure and experience with complex clinical decision-making and MDT working, and to have greater involvement within the MDT in order to develop their understanding.

Some of the respondents acknowledged the difficulties of teaching about MDT in the classroom and felt the only way to develop understanding is to observe MDT working within clinical practice. Another of the F1 interviewees felt that having a role within the MDT process would also be useful, for example presenting a patient at an MDT meeting. Others' suggestions were to have collaborative projects with principles that reflect an MDT, for MDT members to come in and talk to students about their role, or for the team to have an MDT discussion which students could observe. One of the foundation leads felt a dual approach was needed, that included exposure within a safe and supported environment.

*"I think one comment I've got is as a student we on most of our placements on our timetable it'll be MDT meeting, **so we'd be sat in this MDT meeting discussing patients we'd never met, and it became kind of oh got to go to MDT this afternoon, it really did in our placements because it was just boring, we could not relate at all, and we had no input because we were just students and we didn't know who they were talking about. So it gave me this really negative outlook on MDT meetings, which is a shame**, I don't really know how you change it, but I really had a very negative outlook on it whereas actually when it's patients that you know, and you have got an input in their care. So maybe just **presenting a patient at MDT as a student would have been really nice**, cos we have to do cases each week, we look at a patient and then have to present their case, **it would be quite nice if we could present it in a meaningful way at an MDT meeting"** (Interview 14, F1 Doctor, Female, England)*

*"So first of all test before getting into medical school, **second having collaborative projects with principles which reflect an MDT and will become your colleagues in the end, it's mandatory MDT attendance"** (Interview 21, F1 Doctor, Female, Scotland)*

*"… think it's **just exposure to it, with the mock MDTs that we've talked about would be good,** but I think you do attend a couple of MDTs as a student, but I don't think the importance of it is stressed enough, **and it's one of those things that you feel you attend it for the sake of getting the sign-off in your logbook. But maybe to have some teaching sessions delivered by members of the MDT would be helpful, or whether members could come in and have an MDT discussion in front of you to understand it a bit better.** Cos I think the amount you work in an MDT is probably you don't get that kind of preparation as a medical student, you just get used to it as you work"* (Interview 38, F2 Doctor, Female, England)

A few of the interviewees felt that it was important for students to be given an active role within MDTs, so that they felt included and more committed to understanding how MDT works. By giving students some responsibility within the MDT they may gain more useful experience and understanding of the roles of others, and how patients are discussed and decisions made. One patient/lay representative felt that having some responsibility could be an empowering learning tool for students.

> *"Yeah, so as a student I felt like there was the MDT, then me, and it would be nice to feel as part of an MDT, even though I am a student" (Interview 14, F1 Doctor, Female, England)*

> *"Yes, **I think the thing that could have better prepared me is actually having a role in them, because depending on which ones you're in and which department you're in, you're just a nameless medical student on the side-lines so you're an observer, which can be difficult for learning…** So actually having a role, **if you have a responsibility and a role within that MDT where you need to bring information, you actually have to communicate with others, that would be really key in giving me more experience, or medical students more experience of working at the MDT** rather than just being aware of the MDT and having an understanding of how things work. **Yeah, actually being embedded and having a role and responsibility"** (Interview 6, F1 Doctor, Male, England)*

> *"…**does their training involve them acting in MDTs, if not it certainly should, it would be great if they could actually participate in MDTs as in being asked their opinion and encouraged, that would be really empowering**. And also being told if they don't listen to you this is what you do, rather than whistleblowing because that's a nasty phrase and has such negative connotations, **but this is how to stand up for your views, self-assertiveness I suppose really. I don't know if that comes in medical training or not"** (Interview 66, Patient/Lay Representative, Female, England)*

Similarly, respondents suggested greater exposure to complex clinical decision-making would allow foundation doctors to build decision-making skills and to be part of the decision-making process.

> *"You also need to factor in that time-making, **and I think again the only way you get that decision-making, complex decision-making skillage is to be actually be part of a real decision"** (Interview 54, Foundation Programme Lead, Male, England)*

> *"I think **it's just really important experience and exposure for complex clinical decision-making**, because I think no patient is the same, so, as I tell them when I'm teaching them, I actually can't give you a clear answer on this because …**So, it's actually giving them the skills to look at the patient in front of them, and assess them as an … individuals … … We all learn by doing, don't we?** (Interview 58, Healthcare Professional, Female, England)*

5. Results – Post-simulation interviews

This section presents the results of the CRM reflections, faculty observations and post-simulation interviews with F1/F2 doctors and simulation faculty facilitators from a Trust within South West England. Respondents took part in a high-fidelity simulation scenario of an acute or emergency presentation, before then completing a reflective CRM template. Respondents were then asked about foundation doctors' preparedness for MDT working, and complex clinical decision-making within an acute, urgent, or emergency setting. The demographics of the interview participants are presented in Appendix G.

5.1 Multidisciplinary team working in an acute or emergency setting

The post-simulation interviewees were asked about their experience of MDT working in an acute or emergency setting, their role within the MDT, the core skills and attributes foundation doctors require in order to work effectively as part of an MDT in an urgent or emergency setting, and how prepared the foundation doctors are for these aspects.

5.1.1 Foundation doctors' experience of MDT working in an acute or emergency setting

As with the findings of section 4.2.1, the interview respondents stated that they worked frequently within multidisciplinary teams during their clinical practise, and to an extent through simulation sessions. Most of the respondents felt MDT working was a daily occurrence involving continuous involvement with many different healthcare professionals, such as, nurses, OTs, social workers, pharmacists, midwives, clinical staff, HCAs, dieticians, speech and language therapists, as well as ward managers, palliative care, and different grades of doctors.

One interviewee referred to this way of working as a dynamic environment and highlighted the need to delegate appropriate roles for MDT members.

> *"Quite a lot, so in the obstetric part of things **we work with nurses, midwives, anaesthetists and kind of theatre staff as well, so it's quite dynamic environment** that requires the ability to delegate appropriate roles to different people quite regularly" (Interview 79, Male F2 Doctor, SW England)*

This was echoed by the faculty members interviewed as well, with one respondent highlighting how healthcare provision is a 'team sport' all of the time, so including during acute, urgent and emergency situations.

> *"**Massively, it's continuous, the whole provision of healthcare is team sport 100% of the time pretty much**" (Interview 85, Faculty, Male, SW England)*

> *"**I think all the time, I think people would say it's different depending on different people's perspectives**, but I think whether it's; on psychiatry at the moment we have formally an MDT, a ward round that involved the nursing staff, meetings that involves the OTs, the social workers, the pharmacists, as well as kind of the clinical staff, and*

*that's kind of the formal stuff. But I think even outside of that **every interaction that we have about patients where we discuss, a nurse raises that they have concerns, or a pharmacist asks a question about a prescription, I think all of that feeds into kind of what your experience is like with an MDT**" (Interview 76, F2 Doctor, Female, SW England)*

One of the challenges with MDT working in an acute or emergency setting relates to the size of teams. There needs to be good leadership to prioritise tasks if the team size is limited, and recognition that in real life there are often a lot of people around which can make MDT working more confusing.

*"…taking into account that **if there's a limited amount of people they can't really do ten tasks at once, so whoever is leading the emergency scenario had to prioritise what they wanted to be done first,** which I found relevant to clinical practice quite a lot times, because if there's an unwell patient it's two people attending initially, you sort of have to prioritise what tasks are there to be done" (Interview 83, F2 Doctor, Female, SW England)*

*"**Yeah, there would be a lot more people around, that could be a good and a bad thing cos obviously too many people could get quite confusing who's doing what etc.,** but I think in real life on the ward we would have a lot more people to help out, and more senior as well" (Interview 70, F1 Doctor, Female, SW England)*

5.1.2 What are the core skills and qualities doctors require in order to respond to urgent clinical presentations or emergencies as part of a multidisciplinary team?

The post-simulation interviewees identified a number of key skills and qualities that they felt foundation doctors required in order to respond to urgent or emergency presentations as part of an MDT. These included communication skills, particularly closed-loop communication, leadership skills, an understanding of the different roles of team members, and staying calm.

Communication skills- clear, concise, closed loop

As with the results of section 4.2.3, communication skills were considered key to effective MDT working when responding to urgent clinical presentations or emergencies. Particularly highlighted was the need for communication to be clear, concise and closed loop. This ensures that instructions are delivered to, received by, and carried out by the right team member, and that all members of the team know who is responsible for various tasks and feedback on what tasks have been completed. Closed loop communication was considered a vital skill during an emergency situation as part of an MDT.

*"… **try and speak as coherently and clearly as possible, make sure your instructions are understood by whoever's doing it, so they don't end up doing something they don't know how to do…but he's just told me to do it so I need to do it**. And also feedback of, once something is done it goes back to you again, so there's quite a clear, calm chain of command, I know it's meant to be a flat hierarchy, **but if there's a clear chain of command of who's telling who what to do and who you're feeding back to, to me that was one of the most important things in an emergency**" (Interview 77, F2 Doctor, Male, SW England)*

*"And then communicating, so are you able to establish what your role is in the team, **are you able to communicate when you've done tasks, are you able to communicate to people what tasks you want them to do in a way that means that those tasks actually happen, and that you know what the results of those tasks are**" (Interview 71, F1 Doctor, Male, SW England)*

*"**Closed loop communication certainly**" (Interview 82, F2 Doctor, Female, SW England)*

One respondent also highlighted how emergency presentations can happen anywhere and so may involve a team that you are not familiar with, and as such good communication between team members is vital.

*"**… good communication with the rest of the team, most of the time you don't really know the other people around you because in emergency it can happen anywhere**" (Interview 78, F2 Doctor, Female, SW England)*

*"So I think the main thing is, so **communication kind of infiltrates everything** that effects how that simulation runs, **whether that's from the F1 being able highlight their concerns to the F2, or whether it's the F2 that has to acknowledge those concerns and lead the scenario, I think being able to communicate openly as well clearly and concisely really helps the scenario kind of progress and the team to work well in that situation**" (Interview 76, F2 Doctor, Female, SW England)*

Leadership skills

Having good leadership skills was also deemed important for effective MDT working during an acute, urgent or emergency situation. Good leadership involved composure, clarity, confidence, direction and good delegation, to provide "a sense of order to the carnage" *(Interview 81, F2 Doctor, Male, SW England).*

*"I just think probably the number one thing, and it's what I prefer in other people when I'm facing a medical emergency situation, is composure and like clarity, and I personally, I don't prefer if there's just one person shouting and barking orders… it just throws me off, **what I like in the sim is if someone comes in and kind of weigh up the situation out loud and then begin to delegate in a really calm and composed manner. So like clarity and delegate, this person's role is that I think the situation is this, this is how we're going to manage it, does everyone understand, ok let's go**, rather than this is the diagnosis, throw some fluids, whack in some blah, someone do it, just a little bit step back and clarity and leadership. **So I just think clarity, composure, making sure people are aware of their team role, in a not kind of patronising kind of way… So a sense of order to the carnage**" (Interview 81, F2 Doctor, Male, SW England)*

Other respondents felt they were good leaders during acute simulation scenarios, being assertive, approachable, and fostering a good team environment, addressing colleagues using their names, and encouraging them to contribute to the scenario.

*"**so I would expect the other team members, the senior, to have confidence and direction within a clinical environment, and that they would also be supportive within a situation**" (Interview 70, F1 Doctor, Female, SW England)*

*"I thought **I was assertive enough to make the scenario run smoothly with efficient management, but also came across as approachable enough, using names and eye contact***

to create a positive medium and allow colleagues to speak up and contribute to the team's goals" (CRM response, F2 Doctor, Male, SW England)

One respondent highlighted that others will sometimes take over the leadership role if necessary, suggesting that they were willing to hand this role over to senior colleagues. Another respondent suggested it was important to be able to follow the leadership of others if you are not the natural leader in a situation.

*"be a good leader… And **leadership is important, however, people will also come along who will lead the situation later on if required**" (Interview 72, F1 Doctor, Female, SW England)*

*"…so I guess generally being approachable, being assertive, having good leadership skills but **also being able to follow leadership if you're not the natural leader in that situation**" (Interview 73, F1 Doctor, Female, SW England)*

The view of one of the faculty respondents similarly identified the importance of leadership skills, particularly within an emergency MDT scenario, which may progressively involve foundation doctors leading teams of healthcare professionals from completely different specialties.

*"**I think that's a really essential skill, we work with people from different specialties, we work with people from completely different backgrounds** such as physios, nurses, healthcare assistants, and maybe infrequently at F1 but progressively as they become more senior, F2 and SHO grade, **they might have to take a more leadership role amongst those groups and individuals particularly with regard to emergency situations, so they need to be able to lead and manage a team effectively**" (Interview 88, Faculty, Male, SW England)*

Understanding team roles

As highlighted in section 4.2.3, understanding the roles of other members of the MDT was also considered essential, in order to know what each team member can do when in an emergency situation.

*"As just a member of the team I think it's quite useful to know what everybody's skill-sets are, **usually when you're at some sort of medical emergency you have the ACT that turns up eventually, you have got your nurses there already and you've got a myriad of doctors that were on the ward already if they were on the ward anyway, so it's quite useful to know what each of them can do**" (Interview 77, F2 Doctor, Male, SW England)*

Staying calm

Being able to stay calm was deemed a key attribute when working in an acute situation as part of an MDT, in order to think clearly, in what is likely to be a stressful and frantic situation. Some respondents suggested that using clinical frameworks and protocols to manage emergency presentations would help to maintain a calm and collected approach to the emergency situation, while another respondent emphasised taking time and knowing from the outset who everyone in the team is.

*"… again it depends on the, the type of decision, if it's an emergency decision I think it, it's a different situation it has to be quite quick, so I would say, sort of, **I know it's going to be stressful but finding a way to sort of stay calm and collected and have, probably having a framework in mind that would guide someone doing an emergency like the A to E assessment, that's like a, even if, if you're really worried and stressed you have a framework and you start working from somewhere**, yeah, I think knowledge, experience and*

being calm are very important to making these sort of decisions" (Interview 83, F2 Doctor, Female, SW England)

*"I feel like you need a good mix of personal skills probably and knowledge-wise, so **obviously you don't have to panic, you have to stay very calm... And then I like to have at least some clear steps of what to do in case of emergency like clinical-wise like knowledge-wise**, so a cardiac arrest like a respiratory problem so what medications you can give, what to avoid, and all those, so I think it's like a mix of things" (Interview 78, F2 Doctor, Female, SW England)*

*"I think you need to be able to **remain calm so that you can think adequately**" (Interview 72, F1 Doctor, Female, SW England)*

5.1.3 Preparedness for responding to urgent or emergency situations as part of an MDT

Overall the post-simulation respondents felt very prepared with multidisciplinary team working in an acute or emergency environment. They felt teamworking was of benefit, they respected the team roles and valued the expertise of others. They required more preparedness for understanding the remit of team members, and for providing leadership, although it was felt this was beyond their current stage of training.

Preparedness for MDT working overall

When asked how prepared foundation doctors are for responding to urgent or emergency presentations as part of an MDT, most respondents indicated feeling very comfortable with this way of working. As respondents indicated in section 4.2.4, medical school training and clinical practice provided experience through simulation and exposure to MDT working and this helped foundation doctors to feel more prepared.

One respondent indicated that preparation for acute or emergency situations through simulation helped with preparedness for MDT working, meaning they were less likely to freeze when presented with a real-life scenario. However, if a presentation is not following a 'conventional' pattern, preparedness and confidence may be adversely affected.

*"I think, from the people that I work with, **everyone seemed to have had, sessions in medical school that were encouraging, developing teamworking skills**…" (Interview 83, F2 Doctor, Female, SW England)*

*"I think [University] tends to prepare you quite well because **you do these sort of scenarios from second year of medical school, so you're quite used to the dummy, what to do with the crash trolley, so you're not exactly a stranger in a critical care scenario, which means you're less likely to be like a rabbit in headlights and just freeze, you're more likely to actually do something…** Whereas for me personally I went to do an elective where I was very much thrown into the deep end and had to mature very fast with regards to managing critical scenarios as a leader… **So I think my experience and my preparedness is slightly biased because of that, but I think as a whole I felt very well prepared for being in an emergency scenario but not necessarily knowing what to do if something is not following the conventional pattern that you were taught**" (Interview 77, F2 Doctor, Male, SW England)*

Other respondents highlighted the physical and social issues that may also present alongside medical emergencies, and the benefit of team working was having other specialists with valuable experiences to draw on, as well as not feeling alone.

> *"I think it's really important to have that kind of team around you, especially on my respiratory placement because so many people have such varied problems, you're not only treating their kind of medical issues, they have a lot of physical and social issues that need to be addressed as well, so it's really important to have the people around, especially in something like respiratory **we also have lots of specialist trained nurses that also help with home ventilation and providing long-term oxygen therapy, and outreach nurses and staff that provide follow-up care in the community. So I'm quite used to it and I think it is really important for providing good care. And then I think in my acute kind of experiences we worked closely with the acute care team as well with their specialist nurses, and that's definitely beneficial because I think they're so experienced and they have background of ITU experience as well, so I've learnt a lot from them"** (Interview 69, F1 Doctor, Female, SW England)*

> *"I wasn't sure if I was going to enjoy it there as much as I'm actually doing it, but **I feel like being part of a team is quite good and also when you're in the hospital like doing so many different things you might feel alone, but when you're a part of a team it's good"** (Interview 78, F2 Doctor, Female, SW England)*

Preparedness for leadership

There was some divergence over perceptions of foundation doctors' preparedness for leadership, particularly between foundation doctors and faculty members, with the latter feeling more strongly that foundation doctors were not prepared for leadership of an emergency scenario, but that this wasn't necessarily a negative point.

Some respondents felt this was a skill they were prepared for, particularly due to the responsibility they held when working on on-call shifts, or due to their extracurricular responsibilities, for example military training in the army reserves. While other respondents felt it depended on the context of the situation, or their experience with the particular clinical presentation.

> *"Very I think, I think so**, I think that's also come out of respiratory and ED, frequently being somebody who had on-call shifts, a lot of responsibility in the department, where concerns get escalated to you**, it's almost less so in psychiatry because it's kind of more supervised, more consultant led, so that kind of plays into a little bit more. But otherwise I think in my day-to-day practice yeah fairly comfortable actually dealing with concerns and questions and things"* (Interview 76, F2 Doctor, Female, SW England)*

Some of the respondents felt that if someone more senior was present it would be more difficult to lead an emergency scenario unless they were encouraged or instructed to, due to the automatic assumption to defer to more senior colleagues, as mentioned in section 4.2.4

*"I think it depends, who else is around because I know that, **if there's someone more senior around, I find it more difficult to lead the, the emergency scenario, unless I'm clearly encouraged or instructed to, I always feel a bit strange if there's someone else that would be more suitable to take over from me.** So generally, I think, I wouldn't mind if I had to, obviously it's a bit stressful but, it's the dynamic sometimes is, **if there's two F2s there it might be a bit confusing as to who, who's going to lead and if there's someone more senior there, I think automatically everyone is sort of expecting whoever is more senior to do that"** (Interview 83, F2 Doctor, Female, SW England)*

*"But I have also had lots of sim and lots of training, and I've done my ALS (Advanced Life Support) which I know a lot of people haven't done so far, and I have been in those little initial situations so I do feel I could definitely recognise when someone was ill and ask for more help, **but actually in terms of when there's everyone there and taking on that leadership role, I think that at the moment I would be definitely be more comfortable if that was someone more senior"** (Interview 74, F1 Doctor, Female, SW England)*

Other issues may involve a lack of clarity over who is leading the scenario, or there may be several dominant character types delivering competing leadership. The leadership and management of an acute or emergency situation in real life may be far less clear than within the simulation suite. Furthermore, there may be some difficulties or a lack of clarity around the transition of leadership between those leading an emergency scenario in the initial stages, and more senior colleagues who may assume leadership partway through.

*"I think probably more generally in these scenarios when you see them there's usually a lack of clarity with kind of what's happening, **and it's not always clear who's leading the team effort and things, sometimes there's multiple kind of large characters in the team and it can make it more challenging I think"** (Interview 79, Male F2 Doctor, SW England)*

*"…**the F2 came in and I guess because I'd been leading beforehand because there was just me and the nurse, I felt like we were both trying to lead at some points, but I then obviously backed away,** but I think maybe when he came in we should have been like you do this, you do that. But we did delegate tasks I think quite well, **I think it was more who was leading the situation, to be fair the nurse was probably unsure of who it was"** (Interview 72, F1 Doctor, Female, SW England)*

Other interviewees felt that they were prepared for leadership of emergencies in a scenario-based environment, but they were unsure how that would translate to real life presentations.

*"**In a Sim session quite good but I don't know how it translates to real life where no matter how many resus scenarios I've done, when it's actually a real patient it's very different** so I've not got much experience of that yet, so I don't know how it will translate until I've done it" (Interview 68, F1 Doctor, Male, SW England)*

*"Not very, but **I don't think that's necessarily inappropriate, I think that I'm comfortable providing leadership that's appropriate to my level of experience and my role**, I would much rather someone else took the lead if they are more experienced than me" (Interview 71, F1 Doctor, Male, SW England)*

One of the faculty interviewees also highlighted challenges with leadership and unclear roles, finding it difficult for team members to clearly assume and vocalise who was leading within an acute scenario in order to avoid confusion between the team.

*"So I think they worked quite well within their known roles, like I'm the nurse, F1, F2, and followed that hierarchy mostly. **They were very reluctant to, even though I encouraged it between scenarios, to say the words I'm the F2, I'll lead this case, which it was all implied when they did it but in an actual situation you might have three F2s and no one else and so it's not so obvious who the leader should be**. So I was trying to get them to do that, and they were very reluctant I thought to formally say I'm going to lead this" (Interview 86, Faculty, Male, SW England)*

Respondents who felt unprepared for leadership, felt that in an emergency situation they would not be acting in a leadership capacity as a senior colleague would be assuming that role, which limits the exposure of foundation doctors to appropriate leadership situations.

*"No not really, but if you're on the Met team you're usually the one that's kind of gaining access, and if you're seeing a patient then that's a bit unwell, you're pretty much seeing them by yourself or with a nurse, **and if there's any situation involved you usually call a registrar, which means that you cannot be the leader. Even if there's like an emergency on the ward, that the times there has been, I think there's always been someone more senior about**" (Interview 72, F2 Doctor, Female, SW England)*

*"Probably not that comfortable, **I think if it's appropriate and relevant to my knowledge then comfortable, but I don't think that I have enough clinical knowledge or experience to feel that I'm often taking a leadership role** to tell you how comfortable I would feel" (Interview 71, F1 Doctor, Male, SW England)*

This was echoed by some of the faculty respondents who felt that the foundation doctors do not have enough experience to manage a clinical critical scenario, but that this was entirely appropriate for their current grade of training and so not a point of criticism. Rather, at their current level their skills lie in good teamworking.

*"…**they don't have that experience to lead or to manage patients on their own**, that's definitely the area that will take a longer time to develop, so **I wouldn't really imagine that anyone below the level of registrar to be a particularly good leader with a [critically] ill patient**" (Interview 84, Faculty, Male, SW England)*

*"**I personally think that they are still merely competent doctors, they are not yet leaders, and I wouldn't necessarily expect them to leaders, I'd expect them to**

understand how to be good team members maybe but not necessarily leaders at this point. So what I expect them to be able do is work well within their team, to communicate well within their team, to lead when they have to but to escalate and call for help early. So I wouldn't expect them to be the person making the big decisions because I think that's wrong… No I don't think so, I think we could always improve training, I think the GMC are quite right to look at this and to see if we can improve training, but it does sometimes come down to just years of experience how good you are at something like leadership, and quite honestly it depends on the background of the individuals involved as well" (Interview 84, Male Faculty, SW England)

Preparedness for followership

Conversely, respondents generally felt prepared for following the leadership of others, and this may reflect their junior level, recognition of their limitations of experience, and their willingness to learn from more senior colleagues.

"Yeah fine, I think it's a lot easier to be told what to do than to tell everyone else what to do, also being quite junior you don't lead very often, you're more used to being kind of delegated tasks" (Interview 72, F1 Doctor, Female, SW England)

"I think I'm quite kind of used to being guided and advised by the decisions of more senior members of staff, I think especially the consultants and registrars either on the ward or the med reg on-call, or during arrest situations whoever's involved, I was just involved with arrest situation yesterday where we had the med reg leading and I think they were very clear with their instructions and delegations of roles. And otherwise on the wards we have our senior sisters and matrons who are also in that clear leadership role as well when guiding F1s and new junior doctors on the ward" (Interview 69, F1 Doctor, Female, SW England)

One interviewee pointed out the importance of contributing to the MDT even if you are not in the leadership role.

"I'm comfortable with that, I know it's a dynamic thing and even like another person is leading the team they always ask for some feedback from the rest of the team, so even if you're not leading you can still contribute somehow in a significant way, so it's absolutely fine with me" (Interview 78, F2 Doctor, Female, SW England)

Another interviewee felt comfortable following the leadership of other healthcare professionals like advanced nurse practitioners, but highlighted issues that colleagues had with that different leadership/followership dynamic.

"Yeah, so I have worked under nurse practitioners, and generally speaking they're very good in their area, not to be rude to them or anything but sometimes there is a bit of a difference between us being doctors and them being nurse practitioners, which

> *can be problematic at times, not that I've personally had a problem with it but there have been one or two issues in colleagues that have had issues with that. And physios I'd be like ok we've dealt with the medical side, how can we, now it's just the physio's turn to get you ready, or how can we support the physios to get them out of here, cos they're working towards the end goal of course. So fairly happy"* (Interview 68, F1 Doctor, Male, SW England)

Interestingly, two of the F1 doctors interviewed felt that their preparedness for followership depended in part on the quality and appropriateness of the leader of the situation. They felt it was important that the leader was confident, had experience, and had a plan for the scenario, and they identified poor leadership as being someone who communicates badly, or does not involve other team members.

The simulation training that the respondents take part in involves a post-simulation debrief, and the completion of a crisis resource management form, both of which encourage doctors to be reflective and reflexive of their actions and those of others. Training in critical thinking may explain a predisposition to consideration of what makes a good leader through the observation of others.

> *"Yeah definitely, if I see them as a leader and they fill me with confidence that they have a plan and have experience, then yeah I would be happy to follow them"* (Interview 70, F1 Doctor, Female, SW England)

> *"Two aspects of that; in theory very happy, **if somebody is a good leader and they know what they're doing and they're more experienced than me, then I would much rather they were in control of things. But if that person is communicating badly, is not bringing people into the team so you know what's going on, then I think that that makes it really difficult**, but then I suppose that's not really leadership is it"* (Interview 71, F1 Doctor, Male, SW England)

Similarly, one of the faculty respondents describes the need for foundation doctors to have the clinical experience and emotional intelligence to recognise good leadership and then be prepared to accept it, rather than always wanting to be in charge, or perceiving followership of other healthcare professionals as a professional slight.

> *"**I think if they have emotional intelligence, they can recognise leadership, and accept it. I think some, don't have enough training in it and always want to be in charge,** so feel that if somebody else takes charge, or even if a nurse, err, helps them, for example on ITU ... that is just so common, because the ICU nurses know more than, you know, a lot of the consultants do. **And I think that's an essential skill that is not taught as well as it could be, and you see that in sort of aggressive behaviour or people feeling that they've been snubbed because somebody's come and helped them, rather than recognising that a collective leadership style is much better for the patient safety and patient outcome**"* (Interview 87, Faculty, Female, SW England)

"Where it's different it seems like ED, ITU and anaesthetics, recovery, in those areas nurses do take on a much more of a care role, much more one-to-one, their clinical experience levels are much higher, they're often ALS instructors, oh cardiothoracic and cardiology wards also are another source of nurses who are incredibly strong. So for example, all the ED nurses are expected to do the ALS course, no other nurses are expected to do that, but any kind of ED nurse that's in a band six, seven role would be expected to do that. **Now what that might mean is that because of their 10 years of ED experience and their ALS skills, I've IP's ED nurses, Instructor Potential [IP], cos they're so good, you will find that person will be much better to lead your arrest than any one of your F1, F2 doctors, now whether those doctors recognise that would just depend massively on their clinical experience up to that point"** *(Interview 84, Faculty, Male, SW England)*

Preparedness for understanding team roles

Preparedness for understanding team roles with an MDT was uncertain from the interview data. As the extract below indicates, some of the foundation doctors felt that they only had a superficial understanding of the role, remit and competencies of others until they experienced working with them. One F2 interviewee described the benefit of having arrest team meetings in order to understand who everyone is and what their role is within that acute emergency situation. They also highlighted how the remit of roles can overlap.

"Well in some respects, less well in others, **I think a lot of the people we work with I have very little understanding of what their role is, a very superficial understanding of what their role is, what their competencies are likely to be,** *certainly before I started working with them"* *(Interview 71, F1 Doctor, Male, SW England)*

"I think… **if you've met the team beforehand it's quite useful,** *I don't know if you'd call it a tool but it's a thing where you know who's in the cardiac arrest team, so when I'm working on MAU at 9.30,* **we have an arrest team meeting so everybody knows who's who, so when they do turn up at the meeting ah that's the ACT nurse, or that's the registrar, that's the person who should really be leading it, so that sort of prepares you***... One of the things that I do think takes away from working as a team is when you have to do the sort of PowerPoints beforehand about***, it's like a dry PowerPoint and this person does this, this person does this, this automatically puts people into boxes, it's more like a Venn diagram, so things overlap a lot more"* *(Interview 77, F2 Doctor, Male, SW England)*

A lack of clarity over team roles or team leadership, or difficult team dynamics also present challenges to the effective MDT response to an emergency or acute presentation. One respondent felt it was unclear what the skillsets were of other team members, and therefore they were unsure what tasks they could reasonably delegate to others.

"Obviously I haven't had too much experience because I'm quite junior and there's lots of things you want to do but no-one around, **I didn't know I was always able to delegate to someone else. And I think it is quite challenging cos even on the wards**

now everyone has so many different sets of skills, you have kind of more senior nurses, HCAs, there's so many allied health professionals that can do various different things that I'm never quite sure exactly what I can ask of someone else. So I think that's why it was a bit difficult, once you have more people around then it's easier to delegate out roles, but just for prioritising what to do first I wasn't sure what you can share out and what you can ask other people to do" (Interview 69, F1 Doctor, Female, SW England)

"I feel very comfortable with it, I guess when you start a new job, well for me anyway cos I'm brand new, like starting gastro I don't know exactly what the dieticians… can and cannot do as well, and it takes a little time to get used to what that is. And certainly when I was on the stroke it took a little time to get used to what sort of things the physios could and couldn't help with, you don't have much exposure to that at med school… There'd be times when you'd say can you do this, they'd be like we don't really do that" (Interview 73, F1 Doctor, Female, SW England)

One of the faculty respondents felt on reflection of their own training, that it was their clinical ward experience rather than their medical school training that helped with the preparedness of understanding team roles.

"So in terms of like crisis MDTs, as in lots of people responding to a crisis, I think it probably does prepare you ok, because you do see and learn who would do what in an emergency like that. My training didn't really acknowledge like the roles of like very specialist nurses who might be like very good at certain parts of it, it was more doctor focused on like the decision-making, but that might have changed since I was at university. And in terms of like day-to-day MDTs working with physios and OTs and things like that, I think purely by spending time on the wards you kind of learn what everyone's role is, so programmes where you just end up spending a lot of time on the ward, I think you know who you need to ask for kind of what help" (Interview 86, Faculty, Male, SW England)

This was a point echoed by some of the faculty respondents interviewed, who felt that at times the foundation doctors failed to recognise the skills and experience of others or conducted themselves with a superior attitude. Concerningly, the faculty member felt that this attitude stemmed from a lack of empathy, which was highlighted in section 4.1.2 as a core skill for an effective doctor-patient relationship.

"But the important thing there is to kind of feel out the specific skills of the staff around you; now what I don't think F1, F2s necessarily recognise is that perhaps senior nurses are more experienced than them, and it gets more interesting now of course because you've got physician associates as well, PAs, those guys theoretically are not doctors but I would say that because they're in a permanent job they will probably know more about that ward environment… So I think in their regards their ability to work with MDTs we've improved massively in their training and their ability to understand the importance other team members, but I sometimes think that even

> *now junior doctors will think that they're slightly more superior, and I think that's for a number of factors, and sometimes I think that's due to a lack of empathy"* (Interview 84, Faculty, Male, SW England)

Problems with fixation (on diagnosis or protocols)

Other challenges of MDT working in an emergency situation involve a fixation on a particular diagnosis or following certain protocols, which may indicate a lack of tolerance with ambiguity or uncertainty and the need for a resolution. Alternatively, it may indicate a sense of panic which obscures judgement.

> *"However, the team was, and myself I have to admit to an extent, was quite convinced that this was a thrombus as the primary cause of pathology, **but I think that you do run a risk of thinking it's got to be, you don't have it confirmed, this is probably it so we'll treat it as such, you become so fixated with this stuff that if it was something else and because you haven't looked at it you delay the treatment of that**. But that was the scenario in this case and I kind of realised that afterwards I think we went so far down the line of a thrombus that what if it was a PE or something like that, well still a thrombus, but you would manage it, but what if it was something else"* (Interview 77, F2 Doctor, Male, SW England)

The extract below from the F1 doctor also highlights the need to bring all members into the team and ensure good communication in order to gather all relevant information from team members.

> *"**So I was going well an acute asthma attack and thinking he's probably got an infection, it's exacerbated, it's asthma, fine, and so I went for that and then there was kind of no improvement**, he was on a lot of oxygen, having nebs, and his saturation was still dropping quite significantly so I was just like this isn't good and then I called for help. **And then as we called for help, as the F2 came in I think we kind of did a handover and then the nurse just kind of plopped in like halfway through oh yeah, they were given** [audio lost] **in ED and I was like oh no. So obviously then it was anaphylaxis that was going through my mind, but maybe we should have thought of that beforehand**"* (Interview 72, F1 Doctor, Female, SW England)

This was a point also reported by one of the faculty respondents, who discussed problems related to a fixation on following a particular set of protocols, to the exclusion of other members of the team from the information and communication process.

> *"…**F1 got hold of the hyperkalemia protocol and then followed it but never spoke to anyone else, even when the patient was becoming quite unwell, and there was more things prescribed than could like really be given in that timeframe, and there was just quite a lot to do and they didn't seem to think that, or in that moment they didn't think purely more hands required escalation, but they thought they were following the protocol and so they didn't need help to follow the protocol, but just the number of hands was causing them an issue**. And then the patient did start*

dropping their blood pressure and things like that, and they were trying to manage it themselves and the entire thing probably should have been escalated a lot earlier, and to the point where eventually sent the F2 in as if she had just been on the ward and heard there is a commotion because she'd never been called" (Interview 86, Faculty, Male, SW England)

Preparedness for communication within an MDT

Just as closed loop communication was emphasised as an essential skill for responding to an emergency or acute presentation as part of an MDT, one of the challenges of this is poor communication skills. Particularly, the need to have closed loop so that individuals were specifically addressed by name and delegated tasks, and there were no false assumptions that tasks had been completed, or confusion over which team member had been delegated to.

*"I think there's two things there; so I think **one of those things that came out of the Sim session was that across the board we would ask people to do things and I think, both with myself asking people to do things and then being asked to do things, and we wouldn't always either request or have that as a closed loop**, and what I mean by that is say you say can you activate major haemorrhage protocol, you're not then having the person asking you to do that say and come back and tell you when that happened. And particularly when I was thinking about when I was being the nurse in that situation obviously you would get asked several things and **people would then assume that because they'd asked those things had happened, and so if you weren't closing that loop it was easy for stuff to get lost or missed,** just not happened" (Interview 71, F1 Doctor, Male, SW England)*

*"And that's again with the closed loop, it was like saying [name] can you do this rather than can you do that, like **saying the actual names I think was the big thing cos when she was like we need to prescribe the antibiotics and when two of you reach for the drug chart then actually someone could be doing something else**. So I think that was the main thing was being clear" (Interview 74, F1 Doctor, Female, SW England)*

Similarly, the faculty interviewees also highlighted the challenges associated with poor communication during an MDT response to an emergency situation. In one particular simulation scenario, there was a lack of closed loop communication which resulted in a lack of cross-checking and feedback, a lack of direct delegation to specific team members, and a lack of ongoing communication with the rest of the team.

*"**There wasn't good, closed loop communication, there wasn't crosschecking to make sure things had been done. Things were said out into the air without actually getting clarity of who was going to do that**. So, it was things like we need to do a BM, and then no one ... you know, just saying it, and then ... because that's what happens in a crisis" (Interview 87, Faculty, Female, SW England)*

*"There was one situation I can remember where I felt like it could have been better; so **someone went off I think it was actually before the doctors came into the room, and one person it wasn't quite clear whether they were going to get an ECG machine, bring it back and do the heart tracing, or whether they were going to get one of the doctors and bring them back, or whether it was both**. So I did think that some of the communication there could have been clearer with what they were going to do, **and then when they came back, they could have been like I have told the doctor, or I haven't told the doctor, just to try and close the loop and keep us in the picture** about what had actually happened so far" (Interview 85, Faculty, Male, SW England)*

Emotional preparedness

Emotional difficulties may also present a challenge to effective MDT working. One F2 doctor felt this could arise when there are different clinical expectations or expectations of roles, which may impact on the emotional handling of a situation. Furthermore, there may be emotions that arise out of the human connection established with the patient, and these may play out in an acute or emergency context. Additionally, the handling of an emergency situation may result in some panic amongst MDT members resulting again in communication that is taken in a way that was not intended. Issues with poor communication between unfamiliar teams may also lead to difficult team dynamics, where members feel tension over communication styles as an emergency scenario unfolds and may feel particularly sensitive to abrupt direction. However, despite the pressures of an emergency affecting social relationships, one of the F2 doctors interviewed felt that once the ward buzzer is pulled it mitigates any social tensions and people focus on the job.

*"…I think that is something is difficult for lots of people… **when these situations happen in real life it is very much a real person that people have looked after for days and weeks, they knew who they were as people, and sometimes when that all kind of comes to the surface as an acute situation where they've become unwell and they've deteriorated that's very, very difficult for a whole team really to like bear the emotional burden of,** and particularly on the wards where I've experienced that in the past it affects the whole ward dynamic for the rest of the day. So yeah, in that sense very difficult for the entire team MD team" (Interview 76, F2 Doctor, Female, SW England)*

*"It feels like when it's an emergency that **there might be some panic there, someone may not stay like very calm, so also communication might come across in the wrong way, someone might come across in a more aggressive way**. So [I] think it's very important not to take things personally as well and just try to make everything run smooth for the patient and [in] their best interest" (Interview 78, F2 Doctor, Female, SW England)*

*"I think working with people you don't know is very common, and just **being able to communicate with people that you don't know without necessarily coming off kind of rude or short with them**… but in the emergency situation you don't necessarily care*

*about any of that, it's just about communicating... **on the ward there's like a buzzer you can pull and I realise that kind of mitigates all that, so if you pull that everyone realises that something bad is happening and then it kind of switches a little switch in everyone's brain a bit I think**" (Interview 79, F2 Doctor, Male, SW England)*

5.2 Complex clinical decision-making in an acute or emergency setting

The post-simulation interviewees were asked to comment on their experience of complex clinical decision-making, including the types of complex decisions they may be involved in, the types of skills foundation doctors require in order to make effective complex clinical decisions in an acute or emergency setting, and how prepared the foundation doctors are for these aspects.

5.2.1 Foundation doctors' experience of complex clinical decision-making in an acute or emergency setting

Interview respondents had diverging views on the experience and frequency that foundation doctors made complex clinical decisions. While some felt this was a frequent occurrence, or was shift/context dependent, others felt that they did not make decisions that were complex because they did not yet have the knowledge or experience to do so.

One F2 doctor acknowledged that complex clinical decision-making is increasing and becoming a more frequent occurrence due to patients with complex backgrounds and comorbidities that present a challenge.

> *"**I feel like it's an everyday challenge and it's an everyday situation** I know in hospital, it's not just in oncology where I'm working all the patients are very complex with different backgrounds, but **everywhere in the hospital right now people have more co-morbidities than before, and right now they might present like a later stage, particularly when on call, so I feel like it's a definite challenge** in the hospitals nowadays" (Interview 78, F2 Doctor, Female, SW England)*

Depends on the shift pattern

Some of the interviewees felt the frequency that they had to make complex decisions depended on the working pattern. For example when on night shifts or on-call, foundation doctors tended to make more decisions that they felt were complex as they may be the most senior member of staff working and hold responsibility for a number of patients. The degree of complexity involved in decisions is subjective, but interviewees felt that during the day their responsibility for complex decision-making reduced as senior colleagues would take on that responsibility.

> *"I think **quite a lot but only if I'm on-call**, if I'm working in the day-to-day part of the job, I would say I don't make clinical decisions cos other people make those for me, whereas **out of hours I tend to make the complex decisions within remit**" (Interview 77, F2 Doctor, Male, SW England)*

"On a day job hardly any because there's always a consultant ward round and senior help, generally speaking, out of hours things do get a bit more complicated. But I would say as an F2 in [Hospital] there's always help, and I've never felt like I couldn't get the help that I needed, I've always been able to pick up the phone and just speak to someone senior about it" (Interview 82, F2 Doctor, Female, SW England)

"I think on the placement I've just done a lot because we have quite sick patients, and just the way of your shifts is if you're not working a normal day shift you're working with quite limited support, so on my shift yesterday I was the only doctor covering both the respiratory wards and then various medical patients on four other outlier wards, so I'm being bleeped and having to make a decision on the spot and being called to review sick patients, and make those decisions and hand whatever I think is urgent over to the doctor coming on overnight, or escalate what I think needs to be escalated to the medical registrars on-call" (Interview 69, F1 Doctor, Female, SW England)

Do not make complex clinical decisions

Some interviewees felt that they did not make complex clinical decisions, at least not in isolation. Instead, they would discuss complex decisions with senior colleagues who had more experience with complex decisions. Others felt they made many decisions but that they were not necessarily complex.

"So probably as an F1 not that much but if we are approached with a complex clinical decision then we would usually chat it through with someone or ring someone up because yeah, we don't necessarily have the experience to be able to make those decisions, we may have an idea as to what we think the best thing is to do but we need someone else to confirm that that's what we should or shouldn't be doing. So I suppose we don't really make any complex clinical decisions, at least not by ourselves" (Interview 72, F1 Doctor, Female, SW England)

"I suppose currently make a lot of decisions, but I wouldn't necessarily say they were complex, I think on my placement at the moment on my normal shifts I have a lot of senior support, we have the consultant ward round every day, so a lot of those complex decisions are made by them. I wouldn't say I'm making complex decisions every day as such" (Interview 70, F1 Doctor, Female, SW England)

The viewpoint of faculty respondents was quite divergent. While one faculty interviewee felt that foundation doctors made complex clinical decisions on a day-to-day basis, others felt that they did not make complex clinical decisions at all unless they were on on-call shifts or had a supporting role while the complex decision was actually made by senior colleagues. This divergence may reflect subjectivity over what counts as a complex decision.

"So all the time on a day-to-day basis, every shift whatever job you're doing I think" (Interview 85, Faculty, Male, SW England)

*"Not very often I think, **for most foundation doctors your day-to-day job is mostly doing the ward round and actioning someone else's decisions from the ward round, which is usually not very complex, and then when you're on-call you have to do a lot more of it.** But I would say for a foundation doctor it's mostly limited to on-call shifts"* (Interview 86, Faculty, Male, SW England)

*"I don't think they are very often, **particularly FY1 and FY2, their daily role will often be fulfilling the tasks that have been decided on by a more senior colleague, so for example they will go on a ward round, depends on the clinical scenario, the registrar consultant will decide what management plan needs to be implemented for the patient, and what the junior doctors often do is they carry out the legwork, so they organise scans, arrange investigations, might write up the treatment but it wasn't necessarily their decision to start that treatment.** So in reality they don't necessarily make those decisions on a daily basis, occasionally in certain specialties they might have on-call responsibilities every couple of weeks whereby they carry a bleep, and they get asked to see a patient out of hours, and then they're to a greater extent making some decisions but they do have support for more complex decision-making and probably would be expected to discuss complex decision-making with senior members of the team. **So I don't think it's necessarily a daily task for them, it's sort of learning from their peers how those decisions are made during their first two years predominantly**"* (Interview 88, Faculty, Male, SW England)

At the other end of this spectrum, one faculty respondent expressed concern that foundation doctors are losing their skills by being shielded from the experience of making complex clinical decisions which creates a vital learning experience.

*"Not, not very much. **They're very hand held, they ... in fact, I get concerned that they are losing their skills now because physicians' associates and physicians' assistants and doctors' assistants are such a big part, and a permanent part of the teams, that junior doctors often don't become skilled at things such as canulation. Or taking blood or recognising a sick patient because they're just not exposed to it enough.** And I think that there was a problem when we, decided to take on the European working time directive because training opportunities were suddenly slashed and the professionalism of being a doctor was removed, and that is **really part of being a good doctor is making sure that you don't go home before all your patients are, we used to say, tucked up in bed and everything was addressed. Whereas, now because of the shift pattern, it's very much I'm not on duty, and that means that you miss learning opportunities**"* (Interview 87, Faculty, Female, SW England)

5.2.2 Key skills and qualities for complex clinical decision-making in an acute or emergency setting

Interviewees were asked what key skills and qualities were required for effective complex clinical decision-making during acute or emergency situations. While in section 4.3.2 interviewees

emphasized communication skills and interpersonal qualities above medical knowledge, respondents here felt clinical knowledge was of primary importance, with communication skills, self-awareness and a calm demeanour also being important.

Clinical knowledge

Clinical knowledge was deemed to be a core skill for complex clinical decision-making during acute or emergency situations. This was important in order to have the foundational knowledge behind decisions, as well as having a thorough understanding of the risks and benefits of different decisions. It was also important that these skills and knowledge were kept up-to-date and, that all information was taken into consideration, such as full patient histories, as well as the opinions of other healthcare professionals involved in patient care.

> *"**Good clinical knowledge, knowing the risks and benefits of different treatments, and being able to weigh those up**, so I guess having quite an holistic approach and being able to weigh up what the best thing to do is, as in when there's no clear answer and like someone who's had an intracranial haemorrhage but then has also had an NSTEMI the next day, that kind of thing. **Good clinical knowledge of what you need and then being able to weigh up the pros and cons**" (Interview 73, F1 Doctor, Female, SW England)*

> *"I suppose **having background knowledge is very important, and continual reading about things, and update information, keeping up-to-date is probably really important in terms of complex clinical decisions**, knowing who to contact is important, and at the end of the day lots of people, even consultants, can't always make a complex clinical decision and that's why we have best interest meetings and things like that" (Interview 72, F1 Doctor, Female, SW England)*

In addition to sound clinical knowledge, one interviewee felt that having a framework or system in place for gathering information and decision-making also helped, particularly during times of stress such as an acute or emergency presentation.

> *"**I think you need a fairly good knowledge-base to be able to make a complex clinical decision, because if you don't have any knowledge you don't really have an understanding of what the decision, what your options are to make a decision**, so knowledge... And **then the ability to… gather information, and I think that's what comes back to having a framework**, like the A to E framework that you're drilled on that allows you to just kind of do stuff and gather information when your brain is not really working very well because you're stressed. So **I suppose really those two, having some knowledge to hang things on, having a system in which to gather information to make your decision**" (Interview 71, F1 Doctor, Male, SW England)*

Previous experience

As with many of the findings in section 4.1, prior experience was recognised as an important asset for complex clinical decision-making, allowing foundation doctors to draw on greater

knowledge acquired from previous exposure to a particular scenario or condition, and demonstrate that within discussions with colleagues or patients.

> "**Experience and knowledge, you need to know what you're talking about and it would help if you have experience before** because you probably know it from working in the past, and I think that will get more people to believe you"

Non-technical skills

Other non-technical skills felt to be important for complex clinical decision-making include non-medical skills that are sometimes referred to as 'soft skills'. We have assimilated these under the term non-technical skills. These include interpersonal qualities, communication skills, information gathering, interacting with the patient through non-verbal cues and awareness of the surrounding environment. For example, one faculty interviewee referred to the more subtle indicators of a patient's health and wellbeing, such as their appearance, or social situation. They felt that taking the time to recognise these additional elements was an important skill, allowing foundation doctors to gather a full picture of patient health, rather than losing perspective in a critical situation.

> *"… yeah, they're good at the sort of treatment which is what junior doctors are all really excited about, **but it's the softer skills, the gathering of information from, err, the bedside table, to what the patient looks like, to whether they smell cigarettes, or alcohol or look like they've taken drugs, or what clothes they're wearing. It's all of that, and they often are going, okay what's the scenario? Is it a heart attack? Is it anaphylaxis? And, they're thinking ahead of the game, but they lose perspective because they haven't collected all the information and they're in such a rush that they sometimes forget that in real life medical events unfold very slowly**. And, most things are not so time critical that they happen now, you know, even if someone has an anaphylactic reaction you see them change in front of you, and unless they have a cardiac arrest, err, you have time to do stuff" (Interview 87, Faculty, Female, SW England)*

Awareness of strengths and limitations of self and others

Being aware of ones' limitations, as well as the strengths and limits of others was also deemed a useful skill for complex clinical decision-making. This included having the confidence in your own capacity for decision-making and being prepared to ask others when a situation exceeds your capabilities.

> *"And I think **also having a sense of at least confidence or self-awareness that you have the capacity to make decisions**, or if you don't kind of be able to seek help and ask for it and recognise your limitations when it comes to maybe where you can't do that" (Interview 76, F2 Doctor, Female, SW England)*

> *"I think **the biggest thing is to know your limitations, and who to ask for help when you need help**, but equally find [**simulation**] can be difficult when it comes to*

escalation for help because it's not always what is available in real life" (Interview 82, F2 Doctor, Female, SW England)

Recognising when to escalate a decision was also an important part of understanding one's own limits, as well as being confident to acknowledge this and discuss decisions with peers, other professionals, and senior colleagues.

*"**Run it past one of my colleagues, bounce it off a fellow junior or one of the nurses or the patient, just talk about the different options, verbalise it and then see where we're at with that, and then if needs be work up the chain until I'm happy with an answer**" (Interview 68, F1 Doctor, Male, SW England)*

Team working

Having good team working skills was also considered important to complex clinical decision-making in acute or emergency situations. One F2 doctor felt that this was important so as to avoid the potential for mistakes when working quickly in a time pressured situation.

*"Yeah definitely**, I think if you were to just do it yourself you would almost certainly make mistakes and miss things, more so in these situations where you're thinking really quickly and there's a time pressure, so it's definitely important to get other people's input.** And usually that just comes freely, and I think from quite experienced members within these kind of acute teams that get called to emergencies, they will all chip in, but I think it's important to certainly ask cos **often there is less experienced people in the team who are thinking things who won't say anything unless they're actually asked is there anything else they want to add**" (Interview 79, F2 Doctor, Male, SW England)*

Team working skills were also emphasised by one of the faculty interviewees who described the benefit of having lots of different opinions from those involved in a patient's care, and not acting singularly to make a decision.

*"I guess working in that MDT is important with this complex decision because **you're going to want potentially lots of different opinions on it, from your seniors and people looking after different aspects of the patient's care**" (Interview 85, Faculty, Male, SW England)*

Composure under pressure

Staying calm, focussed, and not acting rashly, were also seen as important for effective complex clinical decision-making in a pressured environment.

*"**I think the main thing is being organised in your thoughts and being able to stay calm, stay level-headed** I guess, so **being able to organise your thoughts into problem lists** and dealing with everything on the problem list, and **not getting distracted by kind of the urgency of the situation**" (Interview 86, Faculty, Male, SW England)*

> *"And I guess **you want people that can make decisions in a reasonable timeframe but not rashly acting, acting in a way that's irreversible** because a lot of decisions will probably need time to reflect on, and you don't want people acting too quickly and causing harm" (Interview 85, Faculty, Male, SW England)*

5.2.3 Preparedness for complex clinical decision-making in an acute or emergency setting

Respondents reported mixed preparedness for complex clinical decision-making in an acute or emergency presentation. While some felt they were appropriately prepared for the decision-making they would be expected to do as a foundation doctor, others felt this was very much context-dependent, or depended on their experience and exposure to making complex clinical decisions or difficult situations. Some of the foundation doctors felt that they were unprepared for complex clinical decision-making, whereas the response from faculty members was more nuanced and emphasised that they were working appropriately for their level of knowledge and experience.

Appropriately prepared for expectations of foundation grade

Some respondents felt appropriately prepared for their training level as F1 or F2 foundation doctors, and for making decisions they felt comfortable with, and if they were unsure, they would ask others. One F1 doctor explained that the point of still being a training doctor was to build your experience level in order to be able to make complex clinical decisions.

> *"Depends how complex the decision is. **I think I feel appropriately prepared for the level of responsibility I have as an F1 at the moment**" (Interview 71, F1 Doctor, Male, SW England)*

> *"**I think I feel prepared to make decisions that I feel comfortable with, but if there's anything I'm slightly unsure about I'll take the first senior input, I guess that's the whole point of still training as a medic and having to train for so many years before you become a consultant, cos you need that experience to be able to make those clinical decision**s" (Interview 72, F1 Doctor, Female, SW England)*

This point was echoed by the faculty respondents. They reported that they would not expect foundation doctors to have expertise in complex clinical decision-making because they are still early in their careers and so have limited experience to draw on.

> *"I think it's reasonable, **I wouldn't expect them to have high levels of complex decision-making capabilities because they haven't been doing the job long enough, and I think it's a reasonable level** given that they do have support around them to help them make these decisions" (Interview 88, Faculty, Male, SW England)*

Experience driven preparedness

As found in section 4.3.3, experience and exposure helped foundation doctors to feel prepared for complex clinical decision-making. Some of the interviewees recognised that their capabilities in this area would develop as their career progressed and they gathered more experience.

> *"It's hard to point at any one thing, it's med school, the clinical, your teaching is your teaching and that's what prepares you for these things…* **there's a natural progression as you gain more experience and you work up the ranks that you'll take on more of those decisions, only a certain amount of that can be learnt, if med school is the foundation then actual work is building upon tha***t" (Interview 68, F1 Doctor, Male, SW England)*

Two respondents highlighted experiences that had helped them to feel more prepared for complex clinical decision-making. One F2 respondent felt that they had had the opportunity to be independent in their practise which had helped them to build confidence, another had worked abroad and been given the opportunity to take more responsibility for complex clinical decision-making which involved stepping outside of their comfort zone but provided a good learning experience.

> *"I would say unsure but I err on the side of being more prepared than not, because* **I've had opportunity to be independent in my practice, which I think is the main thing that helps, I've not worked in specialities where it's very kind of senior led, I've been able to make decisions on a small level that was just one, I was accountable for, I took responsibility for, and I think that was also being on-call shifts where it was just me, I was kind of given the opportunity to make those decisions,** *which is why I think I err on the side of feeling prepared to make those decisions now than maybe I would be otherwise" (Interview 76, F2 Doctor, Female, SW England)*

> *"One of the things that has helped a lot is doing a very good elective, so for me it was in a scenario or in a part of the world where there wasn't much healthcare* **so I was put into a position where I was able to or had to make more complex decisions without necessarily the ramifications and the reprimand that I would get if I was in the UK, which in turn built my confidence to make such decisions. So I think in terms of a tool, anything that gives you confidence to make those decisions and learn from those decisions, then that's fine***. I think I remember one time I was in medical school in a scenario very similar to this, I gave adenosine to a patient and then the patient arrested, apparently that was normal, and they came back to life again***. So I think being in a scenario where you can step outside your comfort zone a little bit and test where your confidence lies, it's better to test it on pretend patients rather than real patients cos then would know not to do that again***" (Interview 77, F2 Doctor, Male, SW England)*

One of the faculty interviewees also felt that it was important for foundation doctors to spend a lot of time on the ward in order to build their experience of complex clinical decision-making rather than an overreliance on lectures or book learning.

*"So it's similar to the previous questions really; **if you're on the ward all the time and you've spent a lot of your medical training on the ward then you would have seen the decision-making process happen for real. If you've relied on lectures or single case discussions, there's a potential that if you learn everything in its isolation** you learn about heart attacks and the next week you're learning about pneumonia, that people don't really fit into these boxes very well at all, everything's all probability in real life and maybe they would miss out on some of that important stuff. So I don't know what's happening across the different medical schools, but **my impression is that there's a high chance that probably the kind of like physical like book learning or lecture learning could definitely miss this, and you could definitely become unprepared if you just relied on that. If you spend a lot of time on the wards and you've seen these decisions then it should be ok"** (Interview 85, Faculty, Male, SW England)*

For some of the respondents their preparedness for complex clinical decision-making was context-specific and depended on having good team support, or if they are familiar with the presentation.

*"**I think it depends, if I have a team around me that's supportive then I would feel comfortable in making complex clinical decisions,** or if that decision's been made with the help of other people. I suppose yes it's probably quite enjoyable to make a complex clinical decision" (Interview 70, F1 Doctor, Female, SW England)*

*"**It definitely depends, it massively depends on usually if I've experienced it before, so I find when something is completely new, if there's an aspect that I've not come across before, I'm not well versed in it, don't have the experience in it, they're usually the situations where I don't feel very comfortable**. Usually if it's a scenario that I've at least seen before that makes me feel a bit more comfortable with it" (Interview 76, F2 Doctor, Female, SW England)*

One faculty respondent felt that no amount of training could fully prepare foundation doctors for the times when they have to take responsibility in a sudden acute situation. They felt that the foundation doctors were protected from those experiences.

*"So in terms of actually being a good doctor not under stress I think we probably have prepared them well, but **I don't think any kind of medical school training or any sim can particularly prepare you for that two in morning experience when, which all of them will get, the way we train now we try and protect them from that and prepare them for that moment,** but we know it's coming, sooner or later they will be tested at two in the morning and they will have to intervene quickly without help, and you hope that training at that point will allow them to cope or at least keep that patient alive until help gets to them" (Interview 84, Faculty, Male, SW England)*

Some of the foundation doctors interviewed felt that they were unprepared for complex clinical decision-making. They reported feeling uncomfortable and insecure about those scenarios, unconfident on a rotation that they had no experience of, or unprepared for complex decisions.

*"No, probably because **I like having like a straightforward answer, and if there's any kind of insecurity I feel like it's not something I should be dealing with. So I guess I'm not that comfortable with making complex clinical decisions**, I think even if someone's incapacitous like I'm fine with it because I've done it, but I feel like you're taking away someone's rights, appropriately in their best interests but kind of it doesn't feel particularly nice" (Interview 72, F1 Doctor, Female, SW England)*

*"**Not massively because I only make decisions that I feel I would make as an F1, and anything which is a little bit less clear-cut than that then I would ask my senior**, or at least say to them I'm thinking of doing this, are you happy with that" (Interview 73, F1 Doctor, Female, SW England)*

*"…**I'm meant to be starting on surgery today and I've been told I was meant to be a normal shift, but I was pulled to the evening cover shift, I would probably say I do not feel comfortable or prepared for the shift that I'm doing…. That's going to be a big shock**… I don't feel like I'm experienced at all, I haven't been exposed to patients with those problems, I'm not really used to managing that" (Interview 69, F1 Doctor, Female, SW England)*

Preparedness for managing uncertainty

When asked about their preparedness for managing uncertainty, many of the foundation doctors felt they would be prepared to conduct research or protocols or escalate the issue to senior colleagues.

*"I think usually what I tend to do is I tend to think if I wasn't supervised what would I do so that I at least kind of go through the motions of is worse comes to worse I have to make a decision, what do I do, and then **I tend to seek support fairly easily, a lot of the supervisors I've had have been very open, very welcoming to kind of concerns and things like that, so I've not really had any difficulty with escalating concerns. Other than that, if it's something that's fairly straightforward that I can like look up in guidelines and resources and things I tend to do that as well, that tends to help**" (Interview 76, F2 Doctor, Female, SW England)*

*"It depends how urgent it is**, if it's not something too urgent then I try to find out with the resources I have by looking at the BMF or NICE guidelines, or if it's something urgent than just ring a registrar or consultant for help**" (Interview 82, F2 Doctor, Female, SW England)*

The faculty interviewees however, had divergent opinions over foundation doctors' preparedness for escalating when faced with an uncertain decision. One of the issues they highlighted was that foundation doctors become task focussed and keep treating patients rather than calling for help quickly. Another faculty member felt that this was due to a lack of insight around their own capabilities.

*"So from my perspective I think it's decisions to escalate and call for help largely, I think most commonly the subject that we mostly focus on. **So the simple thing for***

doctors to do is to keep treating, so if they can identify a clinical problem, they then often get task focused on treating that problem, F1s and F2s and last year medical student largely, what they tend not to do is think how they could make this easier for themselves, so they don't tend to escalate or call for help at all quickly" (Interview 84, Faculty, Male, SW England)

*"I suppose it's that kind of insight that they're going to develop as well, **so when we look at good doctors some of them, especially in F1, F2 years, don't have that insight of their own capabilities,** I think senior gynaes in obs and gynae realise that they're pretty rubbish at doing certain things so that's why they call the team, they like the team around them, they like to work in a team, we know that we each have skills that we offer to the patient to create care as a whole. **And I think that insight when they're F1, F2s of their own ability and skill is sometimes lacking as well, so they'll just keep going and not escalate and not help**" (Interview 88, Faculty, Male, SW England)*

Respondents highlighted the challenges associated with complex clinical decision-making. These included issues with escalating decisions, and problems with fixation on a diagnosis or with following protocols.

Issues with escalating

Some of the foundation doctors interviewed felt that simulation was difficult because you could not always replicate escalation, particularly what happens when in real life there is nobody to escalate to, or help does not arrive.

*"**So I suppose if it was life-threatening decision then it would be discussed between myself and the F2 to make a decision together as best as what we thought would be the best for the patient, if we thought it was something that could wait and we could just put that to one side, like put it on hold until somebody actually did come**. And also cos it was difficult in the fact that we couldn't actually phone anyone and talk to somebody senior cos that wouldn't have happened in the same situation" (Interview 70, F1 Doctor, Female, SW England)*

*"**I think the biggest thing is to know your limitations, and who to ask for help when you need help, but equally find [simulation] can be difficult when it comes to escalation for help because it's not always what is available in real life**" (Interview 82, F2 Doctor, Female, SW England)*

This was a point also reported by one the faculty interviewees, who felt the foundation doctors did not know what to do when they tried to call for help and that help did not arrive, and that this can lead to panic and poor patient care. Another felt that the foundation doctors became fixated on treating and failed to escalate at an appropriate time. Furthermore, they reported that foundation doctors tend to escalate to specific individuals rather than utilise the hospital systems for calling a team quickly.

> *"… **they're very good at calling for help, but sometimes help doesn't come, and, you know, that's the reality of healthcare**. And I think that when you play that out sometimes, in scenario, and in real life, they don't know what to do then. They **… and they don't have the, okay slow down, what is my approach to this? What do I do first? To the extent of they forget to put the oxygen on the patient***" (Interview 87, Faculty, Female, SW England)*

> *"**And then the patient did start dropping their blood pressure and things like that, and they were trying to manage it themselves and the entire thing probably should have been escalated a lot earlier, and to the point where eventually sent the F2 in as if she had just been on the ward and heard there is a commotion because she'd never been called.** And then one other scenario, it wasn't nearly that pronounced, but they just took quite a long time to ring" (Interview 86, Faculty, Male, SW England)*

Fixation

A second challenge to complex clinical decision-making in acute scenarios was the issue of fixation, either on a particular diagnosis, or treatment, or on following a specific set of protocols. Some of the interviewees reported not being open-mind about a differential diagnosis, while others felt they were too focussed on a particular task which delayed enacting treatment. Another F1 spoke of feeling unsure of what to do due to the pressure of the simulation environment.

> *"I think we were good at making decisions quite quickly, **however, that also meant that we probably were stuck on one diagnosis rather than thinking, being open-minded** about the rest of the medical treatment out of it and didn't suspect until things weren't improving that it could be something else" (Interview 72, F1 Doctor, Female, SW England)*

> *"**But I think after that what was quite complicated for us, even when the SHO came, was deciding what to do next, I think that was challenging, I think we were helped by the fact that the nurse kind of pointed out that we have protocols that we can just follow**, which I think in the pressure of the situation we got to a point when we felt stuck and we weren't sure what to do next" (Interview 69, F1 Doctor, Female, SW England)*

One of the faculty respondents felt that the foundation doctors sometimes became so fixated on treating a patient that they failed to escalate at an appropriate time or found it difficult to decide to stop treatment. This stems from the difficulties of reacting to an acute or emergency situation that involves time-pressure or a critical outcome.

> *"So an F1 and F2 as far as they're concerned will want to treat, intervene, and **effectively they become so task focused quite often that they will just treat that patient until death, and they wouldn't escalate to a call for help around that, and certainly if things were going badly, they wouldn't dream of entertaining the thought of stopping.** Now that's quite right at their level but at the same time at that*

*point you should say if there's something I'm not doing that I can process and improve, what should I be doing, and that's again calling for help and escalating. So I think that would probably be always my key thought things that they can improve. And my other thought **always when they call for help, they tend to do it very specifically, so for example I want to call a registrar, they don't think about systems that exist in a hospital to call for help on a much larger scale, so team calls, the fast bleep calls. So for me that help escalation element of it seems to be a real big issue with them**, they just don't seem to do it very often, they occasionally do" (Interview 84, Faculty, Male, SW England)*

5.3 How can doctors preparedness for MDT working and complex clinical decision-making in an acute or emergency situation be improved?

Respondents highlighted a number of areas that could improve foundation doctors' preparedness for MDT working and complex clinical decision-making in an acute or emergency situation. These include, primarily, making training multidisciplinary, having longer placements or clinical work with other healthcare professionals, and improved simulation for MDT working.

5.3.1 Make training more multidisciplinary

One of the primary ways that preparedness for MDT working could be improved is by making training multidisciplinary. Respondents felt this was key in order to understand what the capabilities are of other healthcare professionals, how to work well alongside each other, how they impact patient care, and when their intervention is needed. Collaborative training and simulation sessions, and good inductions to different specialities were all felt to be beneficial to improving foundation doctors' preparedness for MDT working when responding to acute or emergency presentations.

*"Yeah, and I think it would work vice versa as well, **I think that first and second year nurses, and even third year nurses, I don't see why they wouldn't join us in our simulation sessions cos they get more used to working with a doctor, dealing with a doctor, that sort of thing, and we get more experience knowing what a nurse capabilities are. So I think you'd learn from each other** and also if you're then in the real scenarios it's kind of like when you say just like a simulation, whereas the real scenario is not like a simulation, which I think not what it's supposed to be" (Interview 77, F2 Doctor, Male, SW England)*

*"**Probably just more collaborative teaching**, being that practical sim sessions or also like theory with the nursing students, because **I suppose the main thing that would have made a difference to how you work in an MDT is knowing it from their perspective what their trained to do, what makes their life easier and vice versa really**" (Interview 73, F1 Doctor, Female, SW England)*

*"Probably also I'd say **good inductions to different specialities so you know what emergencies you're dealing with would probably be useful**" (Interview 69, F1 Doctor, Female, SW England)*

Making training more multidisciplinary was a point also raised by one of the faculty members, who encouraged multidisciplinary simulations with learning outcomes that would benefit all members.

*"**I feel like it's obvious that we should be trying to make training multidisciplinary where we can, and ideally with the teams that people actually will be working with**, but it can be really tricky staff that aren't doctors, partly because of what I said before about, in fact I think in our local nurses rota they have something like a one percent training aspect to their time, so **it's really hard to access people, especially when everyone's having to take on extra shifts as well in all this**" (Interview 85, Faculty, Male, SW England)*

While simulation was considered to be a beneficial activity to help with preparedness, one respondent felt there was room to improve on MDT simulations in order to capture the chaos, different communication styles, and different skills of other healthcare professionals.

*"… **I find that the simulation scenarios really help, for me personally they help me appreciate what my role is in an MDT, what I default to, what kind of team player I am**. But I think because they're only run with F1s and F2s **it doesn't capture that kind of chaotic busy MDT, the different styles of communications, different styles of different professions, kind of way that acutely unwell patients in real life scenarios like manifest as**" (Interview 76, F2 Doctor, Female, SW England)*

5.3.2 Longer placements or clinical work with other HCPs

Respondents also felt that longer placements or clinical work with other healthcare professionals would be beneficial. This was a point also raised in section 4.3.8. One interviewee felt that longer placements allowed them to get to know other members of staff and become more familiar with the role of other professionals and when their expertise is required.

One faculty member felt that training could also be improved by focussing on the more routine aspects of teamworking, not just the acute or emergency situation, but tasks such as phone calls or report writing which are often overlooked.

*"Another thing that springs to mind is maybe the only time we do work and do this training in teams might be in the sort of like really involved sort of like resus, there is situations where we're maybe missing the more routine stuff which involves teamworking all the time, but it's maybe a little less exciting but it's important. **There's a lot of teamwork that involves phone calls and writing to other people and stuff that there's a risk of being missed**" (Interview 85, Faculty, Male, SW England)*

"I think when we're medical students if we spent more time in one place and that place was somewhere where you had a varied MDT then that would be really useful. I think certainly at [University], and I suspect that this is the case across the board, you have a lot of breadth of placements, but you don't tend to have a lot of depth, so the longest I spent in one place was four weeks and that's just about enough time to start to get to know a few members of staff and start to be known on a ward, and at that point you move on. And so I think it's only once I started as an F1 that you start to become part of the ward environment and then you start to know what other health professionals do and what they don't do. So I think if possible, a longer stint in one place might have been a really good way to achieve" (Interview 71, F1 Doctor, Male, SW England)

Respondents reported several ways that preparedness for complex clinical decision-making could be improved. These included having more training in managing acute situations, and a greater involvement in training, and more focus on the ethical and legal aspects of treatment decisions.

5.3.3 Training in managing acute situations

Many of the foundation doctors felt that their preparedness would be improved by greater training in the management of acute situations. For example, refresher courses in using defibrillators, or advanced life support training.

"I think for me I would probably find it more useful if we got, not training but if we got a refresher session on defibrillators every once in a while, because if it's not something that is used by us every day we forget, even though during the ALS and sometimes during sim sessions we do use the defibrillators" (Interview 83, F2 Doctor, Female, SW England)

"I wouldn't mind having more training around acute management of patients and more opportunities to do things, and I was supposed to have done my ALS recently but that was stopped because of Covid, I think that would be a really valuable experience" (Interview 71, F1 Doctor, Male, SW England)

Another interviewee felt they would benefit from greater involvement in decision-making during training placements.

"I suppose it has been adequate, but I think it could be better, maybe when we are on placement, we could be asked more actually what do you think we should do, I suppose more exposure of that would help" (Interview 70, F1 Doctor, Female, SW England)

5.3.4 More focus on ethical and legal aspects

Another suggested improvement was a greater focus on the ethical and legal aspects of complex clinical decision-making, which one faculty member felt had been neglected.

> *"I remember ethics and sociology and psychology being brought into medical school and people not turning up to the lectures because they thought it was rubbish, and because they wanted to go cutting up, you know, dead bodies, that was their thing, because they wanted to be a surgeon" (Interview 87, Faculty, Female, SW England)*

6. Discussion

The aim of this research was to understand whether and to what extent new graduates (i.e. doctors in foundation training) are prepared to meet specific anticipated healthcare needs. To achieve this aim we answered four research questions:

RQ1. What are the core skills, capabilities and attributes doctors will require to be prepared:

a.   to empower patients and adapt to the changing doctor-patient relationship
b.   to work effectively as part of the future MDT across different healthcare settings
c.   to make complex clinical decisions with incomplete information and a high degree of uncertainty.

RQ2. To what extent do new graduate doctors have the skills, capabilities and attributes that will enable them to empower patients and adapt to the changing doctor-patient relationship?

RQ3. To what extent do new graduate doctors have the skills, capabilities and attributes to work effectively as part of the future MDT across different healthcare settings?

RQ4. To what extent do new graduate doctors have the skills, capabilities and attributes to make complex clinical decisions with incomplete information and a high degree of uncertainty?

We addressed the research questions by conducting a rapid review of the literature, qualitative interviews with a diverse sample of stakeholders from across the UK and post-simulation interviews with foundation doctors and simulation staff at a hospital trust in the South West of England. The rapid review identified the core skills, capabilities and attributes in the relevant literature for each of the three areas of practice. The skills identified then informed the design of the interview schedule for the qualitative interviews with stakeholders and the post-simulation interviews.

6.1 Key findings

6.1.1 Key finding 1: Communication skills, self-awareness and medical knowledge were identified as being important across all three areas of practice

Table 9 outlines the core skills, capabilities and attributes identified by the three different research methods. Those identified in the national stakeholder interviews and the post-simulation interviews were the specific responses provided by participants when asked what the core skills, capabilities and attributes for each of the three areas of practice were. In this table (and the previous results sections) we report the dominant skills, capabilities and attributes i.e. those that were mentioned most frequently. Good communication skills, self-awareness and medical knowledge were identified as being important across all three areas of practice. There were also specific skills that were unique for each area of practice i.e. patient-centred care was

important for the changing doctor-patient relationship, team working for MDT working, and being calm and confident for complex clinical decision-making.

Table 9: Key skills, capabilities and attributes identified by the research methods

Key:
RR = identified in rapid review
NSI = national stakeholder interviews

	Key skills, capabilities & attributes	Changing doctor-patient relationship	Multidisciplinary team working	Complex clinical decision making
1.	Communication	RR, NSI	RR, NSI, PSI	RR, NSI, PSI
2.	Self-awareness	RR, NSI	RR, NSI	RR, NSI, PSI
3.	Medical knowledge	NSI		NSI, PSI
4.	Human factors	RR, NSI, PSI	RR, NSI, PSI	RR, NSI, PSI
5.	Fostering empowerment	NSI		
6.	Team working		RR, NSI, PSI	PSI
7.	Leadership & followership		RR, NSI, PSI	PSI
8.	Confidence		NSI, PSI	NSI
9.	Patient-centred care	RR, NSI	NSI	
10.	Decision-making skills		RR	RR, PSI
11.	Empathy	NSI		
12.	Interpersonal skills	NSI	RR, NSI, PSI	NSI, PSI
13.	Professional integrity	NSI, PSI	NSI, PSI	RR, NSI, PSI
14.	Holistic care		RR, NSI	
15.	Inter-professional working skills		RR, NSI, PSI	
16.	Complexity and uncertainty			RR
17.	Understanding team roles		NSI, PSI	
18.	Understanding own role		NSI	
19.	Information gathering			NSI, PSI
20.	Calm		PSI	PSI

PSI = post-simulation interviews

6.1.2 Key finding 2: Graduates felt prepared for many aspects of the changing doctor-patient relationship but less prepared for fostering empowerment.

The main ways the doctor-patient relationship was perceived to be changing related to; patients' increasing access to information, greater-shared decision-making and a shift away from a paternalistic relationship between doctor and patient. These predictions were also reported in the Future Doctor report.[23] An important negative aspect of this change is that the more balanced dynamic and onus on patients to take part in their medical decisions sometimes resulted in increased patient expectations, a feeling of patients as consumers, and doctors pressured to facilitate patient demands rather than provide professional medical opinion.

Foundation doctors' preparedness for the key aspects of the changing doctor-patient relationship are presented in Table 10. The data from our interviews with stakeholders suggest that graduates felt well prepared for communication and particularly building a rapport with patients. The Monrouxe et al. study reported that medical graduates were mostly thought to be prepared for

straightforward communication with patients and their families and straightforward communication with medical colleagues[18] and this was corroborated by our findings. Our findings detail foundation doctors feeling less prepared for third-party communication, phone communication, and complex situations.

Our findings suggest that graduates felt well-prepared for patient-centred care. This finding also aligns with previous studies.[14, 18] In terms of fostering empowerment our data suggested mixed preparedness. While some respondents felt this was something they were prepared for, others felt that it was not something that foundation doctors had been provided the opportunity to gain experience in. Some of the respondents felt able to try to empower patients and were able to describe how they would go about this. For example, by ascertaining the level of understanding of the patient and how much they wanted to know and be involved in the decision-making, by presenting an unbiased explanation of the different options available, and their risks and benefits, and by having training in consenting patients. Interestingly, the Monrouxe et al. study did not identify fostering empowerment as a key skill, nor have there been any other studies on this area, thus our study makes a unique contribution to the literature in this respect. Often graduates felt prepared for the different aspects of the role of the foundation doctor but due to the pressures of the clinical environment did not have the time to execute these skills to the best of their ability.

Our findings suggest that overall, graduates are prepared for the changing doctor patient relationship but lack experience with fostering empowerment, and more complex communication.

Table 10: Preparedness for the changing doctor-patient relationship

Changing doctor-patient relationship	National stakeholder interviews		
	Prepared	Unprepared	Mixed Preparedness
Communication	x		
Fostering empowerment			x
Patient-centred care	x		
Overall	x		

6.1.3 Key finding 3: Graduates felt prepared for many aspects of working in MDTs but did not fully appreciate the scope of practice of other HCP's. Graduates were less prepared for leadership in urgent or emergency situations.

Foundation doctors felt very comfortable with working in MDTs and do so on a daily basis albeit in different formats depending on the trust and the specialty. Their role in the team varies but

foundation doctors were typically seen as being a bridge, a liaison or a coordinator between patients and the rest of the MDT, responsible for organising aspects of care and carrying out key practical tasks and clinical skills.

Outcome 9 from Outcomes for Graduates states that:

> *"Newly qualified doctors must learn and work effectively within a multi-professional and multi-disciplinary team and across multiple care settings. This includes working face to face and through written and electronic means, and in a range of settings where patients receive care, including community, primary, secondary, mental health, specialist tertiary and social care settings and in patients' homes."*

On the whole our findings suggest that graduates felt well prepared for working in MDTs (Table 11). They felt well prepared for communication, MDTs led by other HCPs and understanding team hierarchies.

Our findings suggested mixed preparedness for understanding different team roles. While some felt that foundation doctors had a reasonably good understanding, much depended on the medical school training they had received, and how much they had been encouraged to work or train alongside other health professions. In particular, faculty staff felt that at times the foundation doctors failed to recognise the skills and experience of others or conducted themselves with a superior attitude. Monrouxe et al. also reported mixed preparedness on this aspect, finding that participants talked about how unprepared they felt for multi-professional team-working as their medical school had given them very few experiences for learning about the different roles of the other HCPs. While, others, reported that their medical school had prepared them well by educating them about the roles of the different healthcare practitioners they might be working with.[1] The findings from our study suggest that more inter-professional education during undergraduate training would improve graduates understanding of the different roles.

Respondents were mixed in their perception of foundation doctors' preparedness for leadership and followership, particularly for leadership, despite this being identified as a key skill required for effective MDT working, particularly during an acute, urgent or emergency situation. Many of the foundation doctors interviewed felt they were not prepared for leadership within an MDT environment and particularly in an acute situation. This was largely due to their junior status, and not being afforded the exposure to develop leadership in these settings. Some of the foundation doctors interviewed felt more prepared for leadership due to their extracurricular activities that had helped to develop those skills.

When it came to followership, respondents were much more cohesive in their perception of foundation doctors' preparedness. Many of the interviewees felt that the current cohort of foundation doctors were well prepared for followership. The foundation doctors interviewed spoke of valuing the professional expertise and experience of others, and therefore they were happy to follow their guidance as appropriate.

Our study makes a contribution to the literature on graduates' preparedness for leadership and followership. While Monrouxe et al.[1] reported graduates felt unprepared for leadership, followership was not explored. Leadership and followership is covered to some extent in Outcomes for Graduates. Outcome 8 deals with leadership and team working specifically:

> *"Newly qualified doctors must recognise the role of the doctors in contributing to the management and leadership of the health service"*

The prominence of this capability in the Future Doctor Report demonstrates the relatively recent shift in the emphasis of the importance of this capability for meeting future anticipated healthcare needs.

In terms of MDTs led by other HCPs, overall the respondents interviewed felt that foundation doctors are generally prepared for this. Many suggested that the foundation doctors were content to follow others and appreciated the guidance and expertise of others when they were clearly more appropriate to lead. The foundation doctors interviewed acknowledged that in many cases, nurses or other practitioners had several years of valuable experience which made them very knowledgeable. This aspect was not explicitly explored in the Monrouxe et al. study however, it did report that graduates felt that working with other healthcare professionals, such as social workers, provided them with different ways of thinking and working and they most often cited nurses as key players who looked out for graduates due to their novice status.[18]

Table 11 Preparedness for working in MDTs

MDT	National stakeholder interviews			Post-simulation interviews		
	Prepared	Unprepared	Mixed	Prepared	Unprepared	Mixed
Communication	x					x
Understanding different team roles			x			x
Leadership and followership			x			x
MDTs lead by other HCPs	x					
Understanding team hierarchies	x					
Overall	x			x		

6.1.4 Key finding 4: Preparedness for complex clinical decision-making was 'complex'.

It was felt by many stakeholders that graduates do not make complex clinical decisions and that this was beyond the remit of the role of the foundation doctor. However, others identified the following types of complex clinical decisions made by foundation doctors including those relating to co-morbidities and social problems, acute or time-pressured situations, end of life, DNR and discharge. Some trainers and faculty felt that foundation doctors did not make complex clinical decisions at all unless they were on on-call shifts, or had a supporting role while the complex

decision was actually made by senior colleagues. This divergence may reflect subjectivity over what counts as a complex decision.

Foundation doctors felt prepared for understanding their own knowledge and professional limits and knowing when to escalate (Table 12). There was mixed preparedness for dealing with uncertainty and prioritising tasks.

Dealing with complexity and uncertainty is specifically addressed in outcome 6 in Outcome for Graduates.[44]

> *"The nature of illness is complex and therefore the health care of many patients is complicated and uncertain. Newly qualified doctors must be able to recognise complexity and uncertainty. And, through the process of seeking support and help from colleagues, learn to develop confidence in managing these situations."*

Our data suggests that foundation doctors' preparedness for dealing with uncertainty was mixed. Some interviewees said they were well prepared for it while others were not. When faced with uncertainty, foundation doctors would seek help from their foundation colleagues, wider team or senior colleagues depending on the nature of the problem. They would also try to seek further information by talking with the patient, carers or families to gather more patient histories, or they would consult with established medical guidelines, protocols and research. Brennan et al's[3] study revealed mixed responses to dealing with uncertainty. Participants encountered uncertainty in terms of what was expected of them as well as in terms of medical uncertainty about diagnosis and treatment. Similarly, Monrouxe et al[18] reported that graduates spoke negatively about coping with uncertainty and change: uncertainty about their diagnoses, when senior changed their minds and ethical issues. However, repeated exposure to these types of events led them to cope better.

Our data suggests that graduates feel prepared for recognising their own knowledge and professional limits and knowing when to escalate decisions. This was also found in the Monrouxe et al. study with the exception that graduates felt unprepared for knowing when and how to escalate the situation to their seniors in medical emergencies.[1]

Out study reported mixed preparedness regarding prioritising tasks. Monrouxe et al. reported graduates feeling less well prepared for this. Some of the foundation doctors reported having specific training in practising prioritisation, which was helpful, but many identified it as a skill that came quickly with experience in the job.

Table 12: Preparedness for complex clinical decision-making

Complex clinical decision-making	National stakeholder interviews			Post-simulation interviews		
	Prepared	**Unprepared**	**Mixed preparedness**	**Prepared**	**Unprepared**	**Mixed preparedness**
Communication	x					
Dealing with uncertainty			x			x
Knowing when to escalate decisions	x					x
Understanding own knowledge & professional limits/Self awareness	x					x
Prioritising tasks			x			
Overall			x			x

6.1.5 Key finding 5: There are limits to the extent medical school can prepare graduates for the role of foundation doctor.

It is clear from the data that there is only so much preparation that medical schools can provide for the role of foundation doctor; some aspects just have to be learned on the job. While taught skills are important and indeed essential it was strongly felt that the most effective way of being prepared for the Foundation Doctor role was to put the skills into real-life clinical practice.

Whether this was through initiatives such as shadowing the F1/F2 roles, assistantships, induction programmes or the FiY1 programme, the more practise they had at carrying out the role, the more prepared they felt. It is only when the foundation doctor is responsible for the care of the patient and they are performing the role in reality that they fully appreciate the requirements of the role. In particular, complex clinical decision-making and prioritising tasks were recognised as not something that could be taught in the classroom but needed to be developed over time and through exposure to clinical practice. Monrouxe et al. also found that important aspects of becoming a doctor can only be learnt in the workplace while working as a trainee doctor such as responsibility, managing communication between consultants and other disciplines, and supporting time management and task prioritisation through building and reviewing a job list.[19]

A recently published report commissioned by the GMC on the work and wellbeing of FiY1 doctors during COVID-19 found that the FiY1 was a valuable experience for most who undertook it, adding value beyond undergraduate placements and assistantships.[47] In particular, FiY1 provides an 'apprenticeship' in the *responsibility* of being a doctor, but with fewer of the demands. Foundation doctors who had worked as FiY1s felt more prepared overall for starting F1 than those who had not been working since April 2020, as well as those who had worked in non-FiY1

clinical roles. Most importantly, they found that perceived preparedness was associated with the duration of an FiY1 post, with a period of several weeks necessary for a high probability that a trainee would feel prepared to start F1.

6.2 COVID-19 Context

The fact that this study took place gave during the COVID-19 pandemic in 2020, which put unprecedented pressure on the delivery of healthcare in the NHS, provided a unique context to investigate the preparedness of this cohort of graduates. The COVID-19 pandemic had both positive and negative implications for the three areas of practice of interest. The positive effects reported included an enhanced use of technology, increased positive public perception of doctors, enhanced relations between doctors and patients, better knowledge of patients, better support amongst MDTs, an increased appreciation of the importance of the MDT and greater exposure to complex clinical decision-making. The perceived negative effects included less clinical experience for foundation doctors, and therefore less interactions with patients and patients' families, depersonalised interactions because of PPE or remote consultations, delayed or disrupted treatment and complex decisions were made even more complex. Despite the additional complexity of undertaking their foundation programme training during a global pandemic, graduates on the whole reported good levels of preparedness. This finding is something to be celebrated and indicates that current undergraduate medical education provision is adequately preparing doctors for unforeseen changes in healthcare needs.

An important issue that our study did not explore was the impact of the COVID-19 pandemic workplace conditions on the health and well-being of foundation doctors. Burford et al found that exposure to acutely ill and dying patients was associated with higher stress and burnout during FiY1 however by the time they started F1 there was no difference in wellbeing measures between those who did, and did not, do FiY1.[47] They also found that having been an FiY1 had a protective effect with regard to the risk of depression on starting F1. These findings support our argument that providing more experiential learning and programmes where medical students get to 'act up' to the role of the foundation doctor improves a doctors feeling of preparedness

6.3 Different perceptions of preparedness

We identified areas where supervisors and faculty staffs disagreed with new graduates in terms of their perceptions of preparedness for specific tasks. The most notable examples were around prioritising tasks, leadership and recognising professional limitations. Similarly, Monrouxe et al. identified clear contradictions in the literature regarding the level of self-reported preparedness compared with expert assessment of their skills whereby graduates rate themselves as more prepared than their seniors rate them. For example, this discrepancy was identified in assessing communication skills: while graduates rated themselves as prepared for breaking bad news and communicating with an MDT their experienced senior colleagues reported that this was not the case. Monrouxe et al. proposed that such an overestimation of preparedness could be an example of illusory superiority.[5]

6.4 National stakeholder interview vs post-simulation interviews

The national stakeholder interviews differed from the post-simulation interviews in a number of ways. Firstly, the aim of the post-simulation interviews was to explore graduates' preparedness for acute clinical scenarios whereas the national stakeholder interviews focused more on preparedness for all aspects of clinical practice. Secondly, the post-simulation interviews were carried out in a specific hospital trust in the South West of England whereas the national stakeholder interviews were carried out across the UK. Thirdly, the post-simulation interviews involved participants taking part in a simulation scenario, a structured debrief and completion of a CRM template reflecting on their preparedness for practice for the simulated acute scenario. The simulation sessions were modelled around acute medical emergencies and incorporated objective observations of foundation doctor behaviour by simulation Faculty. Fourthly, the post-simulation interview schedule asked specific questions relating to teamworking and complex clinical decision-making within the high-fidelity simulated session.

Despite the clear differences in the purpose and methods of the national stakeholder interviews and post-simulation interviews the results were similar. Thus we can conclude that the findings from the post-simulation interviews corroborate the findings of the national stakeholder interviews and vice versa. The key skills, capabilities and attributes identified as being necessary for MDT working and complex clinical decision-making were the same with the addition of being calm for MDT working which would clearly be more important in acute scenarios. In terms of new graduates' preparedness for these skills, the findings from both interview phases were also very similar overall.

The post-simulation interviews did provide some additional understanding around the importance of closed-loop communication particularly within an acute or emergency setting, and the fact that foundation doctors are not yet prepared for leadership in acute scenarios and the challenges of MDT working and complex clinical decision-making in acute settings. Preparedness for practice in an acute ward setting is a relatively underexplored area of new graduates preparedness for practice.[16] Our approach using simulation, de-briefing and the completion of a CRM template followed by a semi-structured interview is a novel approach that has not been used previously to explore this topic and thus makes a valuable contribution to the literature in this respect. A literature review by Callaghan et al. reported how junior doctors are often the first doctor to be called to review patients in hospital wards whose clinical status has deteriorated. The factors that influence junior doctors' preparedness to recognise, respond and manage patient deterioration in acute ward settings are complex. A systematic review of the literature indicated that there is substantial room for improvement in junior doctors' capacity to deal with patient deterioration.[16] Similar to our study the Callaghan et al. study found that preparation of junior doctors in the recognition and management of the deteriorating patient is influenced by effective simulation education and clinical experiential exposure over time.

6.5 Strengths and limitations of the study

This study differs from many other preparedness studies in that it is exploring preparedness of recent graduates to meet future need and therefore what they need to know and do over their whole career across the three focus aspects of practice. This was a large national study covering

all four nations in the UK, to investigate three key areas of practice which have been identified as being particularly important for junior doctors, both at the point of graduation and in their future careers. Combining national stakeholder interviews with the simulation work package in this study allowed in depth exploration of the three areas of practice, with methods which went beyond analysing the perceptions of trainees, trainers and other stakeholders. Including simulation scenarios at one site in the South West of England provided objective evaluations of multidisciplinary simulation faculty who witnessed how foundation doctors reacted to a number of acute simulation scenarios. The follow-up interview of trainees and trainers evaluated MDT working and complex clinical decision making in the context of acute and emergency care, which complemented the context of planned and elective care which was explored more with the national stakeholder interviews.

Interview schedules were devised following the rapid review of evidence related to the three areas of practice, ensuring that our research built upon existing work and theories around MDT working, complex decision making and the doctor-patient relationship. Coding the qualitative data separately for each work package meant that each work package would make an individual contribution to the study and added further weight to the overall results as the findings from WPC corroborated the findings of WPB and vice versa.

The study did not include a longitudinal research design but builds on similar work conducted by Monrouxe and colleagues in understanding preparedness for practice of foundation doctors. The simulation part of the study was only conducted one site, but this was a large tertiary referral centre which attracted Foundation doctors who had graduated from medical schools across the UK. We have made a major contribution to the literature to define the key skills and attributes required for complex clinical decision making, MDT working and the doctor patient relationship which has included perspectives and objective evaluations of multiple stakeholders including other HCPs and patients.

6.6 Potential impact of this research

This work was commissioned by the GMC and will likely inform standardised outcomes for graduates in the UK and domains assessed in the Clinical and Professional Skills Assessment (CPSA) element of the UK Medical Licensing Assessment. In particular, our work has helped to emphasise the need for graduates to be able to foster empowerment in patients as part of shared decision making and to become more comfortable making complex clinical decisions in acute situations, when there are limitations due to time pressure. Our findings will be relevant to Medical Schools and Foundation Schools planning clinical skills and simulation training as part of their curricula and national bodies such as GMC and HEE defining standards for these curricula.

This study has highlighted the fact that foundation doctors are not fully aware of the remit of other HCPs in the MDT. Furthermore, foundation doctors can find themselves making complex clinical decisions out of hours when they work closely with other members of the MDT, with less direct supervision from their medical colleagues. The findings of our work will be pertinent to programmes looking to improve interprofessional education at undergraduate and postgraduate levels and for those responsible for planning supervision of foundation doctors.

A strong theme identified from this research is that undergraduate medical education needs to optimise the amount of practice based time in the lead up to the foundation role where many aspects of the role are best learned 'on the job' through assistantships, shadowing, interim

foundation posts etc. Based on our data, Foundation doctors would value shadowing other HCPs during this time and our work will help to inform the debate on the length and structure of these training periods in the transition to the foundation doctor role.

7. Conclusion

Our study adds to the preparedness for practice literature by providing an in-depth exploration of three areas of foundation doctors' practice that will be important to meet future anticipated healthcare needs. In particular, there are some aspects of preparedness that have not been explored in the literature previously, including empowering patients, leadership and followership and MDTs led by other healthcare professionals. The current medical education provision is producing doctors that are prepared for many aspects of practice in these areas including, communication, patient centred care, MDTs led by other HCPs, understanding team hierarchies, knowing when to escalate decisions, understanding own knowledge and self-awareness. Areas that need some more attention are complex clinical decision-making in acute settings, fostering empowerment, complex communication, dealing with uncertainty, leadership and prioritising tasks but these are skills that are learned on the job. Any future changes to medical education provision should focus on providing more experiential learning and programmes where medical students get to 'act up' to the role of the foundation doctor.

8. References

[1]   Monrouxe L, Bullock A, Cole J, et al. How prepared are UK medical graduates for practice, 2014. https://www.gmc-uk.org/-/media/gmc-site-images/about/how-prepared-are-uk-medical-graduates-for-practice.pdf?la=en&hash=1D87E30FB8A260AB20D662629D0F654FB64695FA. Accessed 11th February 2020.

[2]   Vaughan L, McAlister G, Bell D. 'August is always a nightmare': results of the Royal College of Physicians of Edinburgh and Society of Acute Medicine August transition survey. *Clinical Medicine*. 2011;**11**:322.

[3]   Brennan N, Corrigan O, Allard J, et al. The transition from medical student to junior doctor: today's experiences of Tomorrow's Doctors. *Medical Education*. 2010;**44**:449-458.

[4]   Brennan N, Corrigan OP. Longitudinal evaluation of Peninsula Deanery F1 doctors: Final report, 2009. Accessed.

[5]   Monrouxe LV, Grundy L, Mann M, et al. How prepared are UK medical graduates for practice? A rapid review of the literature 2009–2014. *BMJ open*. 2017;**7**:e013656.

[6]   Cave J, Goldacre M, Lambert T, Woolf K, Jones A, Dacre J. Newly qualified doctors' views about whether their medical school had trained them well: questionnaire surveys. *BMC Medical Education*. 2007;**7**:38.

[7]   Goldacre MJ, Davidson JM, Lambert TW. The first house officer year: views of graduate and non-graduate entrants to medical school. *Medical education*. 2008;**42**:286-293.

[8]   Goldacre MJ, Lambert TW. Participation in medicine by graduates of medical schools in the United Kingdom up to 25 years post graduation: national cohort surveys. *Academic Medicine*. 2013;**88**:699-709.

[9]   Illing JC, Morrow GM, nee Kergon CRR, et al. Perceptions of UK medical graduates' preparedness for practice: a multi-centre qualitative study reflecting the importance of learning on the job. *BMC Medical Education*. 2013;**13**:34.

[10]   Morrow G, Johnson N, Burford B, et al. Preparedness for practice: the perceptions of medical graduates and clinical teams. *Medical teacher*. 2012;**34**:123-135.

[11]   Tallentire VR, Smith SE, Wylde K, Cameron HS. Are medical graduates ready to face the challenges of Foundation training? *Postgraduate medical journal*. 2011;**87**:590-595.

[12]   Watmough S, Garden A, Taylor D. Pre-registration house officers' views on studying under a reformed medical curriculum in the UK. *Medical education*. 2006;**40**:893-899.

[13]   Illing J, Peile E, Morrison J, et al. How prepared are medical graduates to begin practice? A comparison of three diverse UK medical schools, 2008. https://www.gmc-uk.org/-/media/gmc-site-images/about/how-prepared-are-medical-graduates.pdf?la=en&hash=273A5CEC4BEBFBBD59DBC9B9F851B3E0F17E3C87. Accessed 24 November 2021.

[14]   Bleakley A, Brennan N. Does undergraduate curriculum design make a difference to readiness to practice as a junior doctor? *Medical teacher*. 2011;**33**:459-467.

[15]   Kostov CE, Rees CE, Gormley GJ, Monrouxe LV. 'I did try and point out about his dignity': a qualitative narrative study of patients and carers' experiences and expectations of junior doctors. *BMJ open*. 2018;**8**:e017738.

[16]   Callaghan A, Kinsman L, Cooper S, Radomski N. The factors that influence junior doctors' capacity to recognise, respond and manage patient deterioration in an acute ward setting: an integrative review. *Australian Critical Care*. 2017;**30**:197-209.

[17]   General Medical Council. Invitation to tender for research into preparedness of recent medical graduates to meet anticipated healthcare needs, 2020.

[18]   Monrouxe LV, Bullock A, Gormley G, et al. New graduate doctors' preparedness for practice: A multistakeholder, multicentre narrative study. *BMJ Open*. 2018;**8**.

[19]   Monrouxe L, Bullock A, Cole J, et al. How Prepared are UK Medical Graduates for Practice? Final report from a programme of research commissioned by the General Medical Council, 2014. https://www.gmc-uk.org/-/media/gmc-site-images/about/how-prepared-are-uk-medical-graduates-for-practice.pdf?la=en&hash=1D87E30FB8A260AB20D662629D0F654FB64695FA. Accessed 15 October 2021.

[20]   Academy of Medical Royal Colleges. The changing face of medicine: Doctor who? Shaping a vision for 2040, 2020. http://thecfom.org.uk/wp-content/uploads/2020/02/CFOM-2020-FINAL.pdf. Accessed 15 October 2021.

[21]   NHS. Five year forward view, 2014. https://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf. Accessed 15th October 2021.

[22]   Social Care Institute for Excellence. What are MDTs and why are they important to integration?, 2020. https://www.scie.org.uk/integrated-care/research-practice/activities/multidisciplinary-teams. Accessed 15 October 2021.

[23]   NHS England. The future doctor programme, 2020. https://www.hee.nhs.uk/sites/default/files/documents/Future%20Doctor%20Co-Created%20Vision%20-%20FINAL.pdf. Accessed 15 October 2021col.

[24]   Collins Dictionary. Definition of skill, 2021. https://www.collinsdictionary.com/dictionary/english/skill. Accessed 24 June 2021.

[25]   Hanks S, Neve H. When I say....capability. *Medical Education*. 2016:610-611.

[26]   Oxford Languages. Definition of Attribute, 2021. https://languages.oup.com/google-dictionary-en/. Accessed 24 June 2021.

[27]   Gough D, Thomas J. Systematic reviews of research in education: Aims, myths and multiple methods. *Review of Education*. 2016;**4**:84-102.

[28]   Moher D, Shamseer L, Clarke M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic reviews*. 2015;**4**:1.

[29]   Morgan J, Green V, Blair J. Using simulation to prepare for clinical practice. *The clinical teacher*. 2018;**15**:57-61.

[30]   Rall M, Gaba D, Howard S, Dieckmann P. Human performance and patient safety. *Miller's anesthesia*. 2005;**6**:3021-3072.

[31]   Health Education England. HEE Future Doctor Call for Evidence, 2019. https://www.hee.nhs.uk/sites/default/files/documents/HEE%20Future%20Doctor%20Call%20for%20Evidence.pdf. Accessed 15 October 2021.

[32]   England HE. HEE Future Doctor Call for Evidence, 2019. https://www.hee.nhs.uk/sites/default/files/documents/HEE%20Future%20Doctor%20Call%20for%20Evidence.pdf. Accessed.

[33]   Lundin RM, Bashir K, Bullock A, et al. "I'd been like freaking out the whole night": exploring emotion regulation based on junior doctors' narratives. *Advances in health sciences education : theory and practice*. 2018;**23**:7-28.

[34]   Wood F, Martin SM, Carson-Stevens A, Elwyn G, Precious E, Kinnersley P. Doctors' perspectives of informed consent for non-emergency surgical procedures: a qualitative interview study. *Health expectations : an international journal of public participation in health care and health policy*. 2016;**19**:751-761.

[35]   Axon DR, Lim RHM, Lewis PJ, et al. Junior doctors' communication with hospital pharmacists about prescribing: Findings from a qualitative interview study. *European Journal of Hospital Pharmacy*. 2018;**25**:257-261.

[36]   Kellett J, Papageorgiou A, Cavenagh P, Salter C, Miles S, Leinster SJ. The preparedness of newly qualified doctors – Views of Foundation doctors and supervisors. *Medical Teacher*. 2015;**37**:949-954.

[37]   Burridge S, Shanmugalingam T, Nawrozzadeh F, Leedham-Green K, Sharif A. A qualitative analysis of junior doctors' journeys to preparedness in acute care. *BMC medical education*. 2020;**20**:12.

[38]   Burford B, Morrow G, Morrison J, et al. Newly qualified doctors' perceptions of informal learning from nurses: implications for interprofessional education and practice. *Journal of Interprofessional Care*. 2013;**27**:394-400.

[39]   Kelly NAA, Br, om KG, Mattick KL. Improving preparedness of medical students and junior doctors to manage patients with diabetes. *BMJ Open Diabetes Research and Care*. 2015;**3**:e000116.

[40]   McGettigan P, McKendree J, Reed N, Holborow S, Walsh CD, Mac ET. Identifying attributes required by Foundation Year 1 doctors in multidisciplinary teams: A tool for performance evaluation. *BMJ Quality and Safety*. 2013;**22**:225-232.

[41]   Adams E, Goyder C, Heneghan C, Br, L, Ajjawi R. Clinical reasoning of junior doctors in emergency medicine: A grounded theory study. *Emergency Medicine Journal*. 2017;**34**:70-75.

[42]   Bull S, Mattick K, Postlethwaite K. "Junior Doctor Decision Making: Isn't that an Oxymoron?" A Qualitative Analysis of Junior Doctors' Ward-Based Decision-Making. *Journal of Vocational Education and Training*.**65**:402-421.

[43]   Corfield L, Williams RA, Lavelle C, Latcham N, Talash K, Machin L. Prepared for practice? UK Foundation doctors' confidence in dealing with ethical issues in the workplace. *Journal of Medical Ethics*. 2020.

[44]   General Medical Council. Outcomes for graduates 2018, 2018 https://www.gmc-uk.org/-/media/documents/dc11326-outcomes-for-graduates-2018_pdf-75040796.pdf. Accessed 15 October 2021.

[45]   General Medical Council. Tomorrow's Doctors, 2009. Accessed.

[46]   Council GM. Generic professional capabilities framework, 2021. https://www.gmc-uk.org/education/standards-guidance-and-curricula/standards-and-outcomes/generic-professional-capabilities-framework. Accessed 24 November 2021.

[47]   Burford B, Vance G, Goulding A, et al. 2020 Medical Graduates: The work and wellbeing of interim Foundation Year 1 doctors during COVID-19, 2021. https://www.gmc-uk.org/-/media/documents/fiy1-final-signed-off-report_pdf-86836799.pdf. Accessed 15 October 2021.

Appendix A: Search histories

Search Histories

1. Areas of practice search

Search Histories

Embase <1974 to 2020 September 30>

Search history sorted by search number ascending

#	Searches	Results
1	Junior doctor*.ab,kw,ti.	5081
2	(("recently qualified" or "newly qualified") adj3 doctor*).ab,kw,ti.	324
3	(Foundation adj3 doctor*).ab,kw,ti.	874
4	((F1 or F2 or FY1 or FY2) adj doctor*).ab,kw,ti.	254
5	medical graduate*.ab,kw,ti.	3374
6	educational supervisor.ab,kw,ti.	94
7	clinical supervisor.ab,kw,ti.	167
8	or/1-7	9453
9	Professional Competence/	32162
10	Clinical Competence/	61284
11	Professional Practice/	55971
12	preparedness.ab,kw,ti.	17148
13	training.ab,kw,ti.	559124
14	skills.ab,kw,ti.	208409
15	capabilities.ab,kw,ti.	74812
16	competencies.ab,kw,ti.	20622
17	attributes.ab,kw,ti.	59309
18	((transition* or confiden* or readiness or competen*) adj3 practi?e).ab,kw,ti.	5337
19	or/9-18	955789
20	doctor patient relationship/	3687
21	doctor patient relation/	112250
22	(doctor* adj3 patient* adj3 relations*).ab,kw,ti.	7097
23	shared decision making/	7336
24	patient decision making/	10229
25	patient participation/	27800
26	shar* decision*.ab,kw,ti.	13290
27	health literacy/	11939
28	(health information adj3 (seeking or finding or using)).ab,kw,ti.	1866
29	(digital literacy or health literacy or information asymmetry).ab,kw,ti.	12348
30	(patient* adj3 (empower* or involve* or collaborat* or communicat* or partnership or advoca* or consent or autonomy)).ab,kw,ti.	148955
31	(expectations adj3 (patient* or manag*)).ab,kw,ti.	11939
32	(patient adj (focus?ed or cent?red)).ab,kw,ti.	35453
33	or/20-32	343658

34	8 and 19 and 33	392
35	multidisciplinary team/	8128
36	(interprofessional adj3 (team* or work* or collaborat*)).ab,kw,ti.	6483
37	(multidisciplinary adj3 (team* or work* or collaborat*)).ab,kw,ti.	44215
38	(multi-disciplinary adj3 (team* or work* or collaborat*)).ab,kw,ti.	5517
39	integrated care.ab,kw,ti.	6547
40	(collaborat* adj3 (team or profession*)).ab,kw,ti.	6321
41	(team building or team working or followership).ab,kw,ti.	3000
42	(future team or future doctor* or future clinician*).ab,kw,ti.	942
43	(new role* or emerging role* or extended role*).ab,kw,ti.	21313
44	or/35-43	92795
45	8 and 19 and 44	188
46	clinical decision making/	47335
47	multiple chronic conditions/	3547
48	(complex* adj3 (decision* or clinical or conditions or judgement* or patient*)).ab,kw,ti.	61481
49	(complexity or uncertainty or ambiguity or diagnostician).ab,kw,ti.	289638
50	critical thinking.ab,kw,ti.	4583
51	(decision* adj3 mak*).ab,kw,ti.	246550
52	(multimorbidity or holistic).ab,kw,ti.	37180
53	multiple chronic.ab,kw,ti.	2993
54	or/46-53	636091
55	8 and 19 and 54	422
56	34 or 45 or 55	892
57	United Kingdom/	387253
58	Great Britain/	4197
59	Ireland/	34880
60	Northern Ireland/	1506
61	(national health service* or NHS* or GMC* or General Medical Council*).ab,ad,in,ti.	367204
62	(gb or "g.b." or britain* or (british* not "british columbia")).ab,ad,in,ti.	183257
63	(UK or "U.K." or United Kingdom*).ab,ad,in,ti.	2713039
64	(England* not "new England").ab,ad,in,ti.	94046
65	(Ireland or Irish or Scotland or Scottish or ((Wales or "South Wales") not "new South Wales") or Welsh).ab,ad,in,ti.	477432
66	(bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not	2479462

(carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter
or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or
"hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or
(lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south
wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not
(ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or
manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or
("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or
nottingham or "nottingham's" or oxford or "oxford's" or peterborough or
"peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's"
or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury
or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's"
or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or
"truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's"
or winchester or "winchester's" or wolverhampton or "wolverhampton's" or
(worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not
(massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or
ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or
ont or toronto*))))).ab,ad,in,ti.

#	Searches	Results
67	(bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's").ab,ad,in,ti.	101407
68	(aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ab,ad,in,ti.	342097
69	(armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ab,ad,in,ti.	46212
70	or/57-69	3868968
71	(exp "arctic and antarctic"/ or exp oceanic regions/ or exp western hemisphere/ or exp africa/ or exp asia/ or exp "australia and new zealand"/) not (united kingdom/ or europe/)	3151605
72	70 not 71	3652780
73	56 and 72	539
74	limit 73 to yr="2013 -Current"	360
75	limit 74 to english language	360

Search history sorted by search number ascending
#	Searches	Results

1	Junior doctor*.ab,kw,ti.	3106
2	(("recently qualified" or "newly qualified") adj3 doctor*).ab,kw,ti.	221
3	(Foundation adj3 doctor*).ab,kw,ti.	409
4	((F1 or F2 or FY1 or FY2) adj doctor*).ab,kw,ti.	105
5	medical graduate*.ab,kw,ti.	2817
6	educational supervisor.ab,kw,ti.	41
7	clinical supervisor.ab,kw,ti.	125
8	or/1-7	6456
9	Professional Competence/	24353
10	Clinical Competence/	93984
11	Professional Practice/	16734
12	preparedness.ab,kw,ti.	14290
13	training.ab,kw,ti.	415035
14	skills.ab,kw,ti.	153459
15	capabilities.ab,kw,ti.	64096
16	competencies.ab,kw,ti.	15914
17	attributes.ab,kw,ti.	51397
18	((transition* or confiden* or readiness or competen*) adj3 practi?e).ab,kw,ti.	4200
19	or/9-18	738029
20	Physician-Patient Relations/	72827
21	Patient-Centered Care/	19698
22	(doctor* adj3 patient* adj3 relations*).ab,kw,ti.	4754
23	Decision Making, Shared/	524
24	patient participation/	26118
25	shar* decision*.ab,kw,ti.	9380
26	exp health literacy/	6092
27	(health information adj3 (seeking or finding or using)).ab,kw,ti.	1542
28	(digital literacy or health literacy or information asymmetry).ab,kw,ti.	9279
29	(patient* adj3 (empower* or involve* or collaborat* or communicat* or partnership or advoca* or consent or autonomy)).ab,kw,ti.	92329
30	(expectations adj3 (patient* or manag*)).ab,kw,ti.	8252
31	(patient adj (focus?ed or cent?red)).ab,kw,ti.	23166
32	or/20-31	229447
33	8 and 19 and 32	229
34	(interprofessional adj3 (team* or work* or collaborat*)).ab,kw,ti.	4845
35	(multidisciplinary adj3 (team* or work* or collaborat*)).ab,kw,ti.	24842
36	(multi-disciplinary adj3 (team* or work* or collaborat*)).ab,kw,ti.	2008
37	integrated care.ab,kw,ti.	4972
38	(collaborat* adj3 (team or profession*)).ab,kw,ti.	4246
39	(team building or team working or followership).ab,kw,ti.	1837
40	(future team or future doctor* or future clinician*).ab,kw,ti.	698
41	(new role* or emerging role* or extended role*).ab,kw,ti.	17901

42	or/34-41	59360
43	8 and 19 and 42	81
44	clinical decision making/	9771
45	Multimorbidity/	988
46	(complex* adj3 (decision* or clinical or conditions or judgement* or patient*)).ab,kw,ti.	41569
47	(complexity or uncertainty or ambiguity or diagnostician).ab,kw,ti.	235267
48	critical thinking.ab,kw,ti.	3878
49	(decision* adj3 mak*).ab,kw,ti.	175596
50	(multimorbidity or holistic).ab,kw,ti.	28347
51	multiple chronic.ab,kw,ti.	2205
52	or/44-51	469730
53	8 and 19 and 52	253
54	33 or 43 or 53	512
55	United Kingdom/	230232
56	Great Britain/	230232
57	Ireland/	18020
58	Northern Ireland/	4897
59	(national health service* or NHS*).ab,in,ti.	202048
60	(gb or "g.b." or britain* or (british* not "british columbia")).ab,in,ti.	98162
61	(UK or "U.K." or United Kingdom*).ab,in,ti.	1465291
62	(England* not "new England").ab,in,ti.	110094
63	(Ireland or Irish or Scotland or Scottish or ((Wales or "South Wales") not "new South Wales") or Welsh).ab,in,ti.	244130
64	(bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton	1433163

or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))).ab,in,ti.

65	(bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's").ab,in,ti.	56562
66	(aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ab,in,ti.	212988
67	(armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ab,in,ti.	26766
68	55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67	2243632
69	(exp africa/ or exp americas/ or exp antarctic regions/ or exp arctic regions/ or exp asia/ or exp oceania/) not (exp great britain/ or europe/)	2898399
70	68 not 69	2137052
71	54 and 70	272
72	limit 71 to (english language and yr="2013 -Current")	171

#	Query	
1	TI ("junior doctor" OR "junior doctors" OR (("recently qualified" OR"newly qualified" OR F1 OR F2 OR FY1 OR FY2) AND doctor) OR "medical graduate" OR "medical graduates" OR "educational supervisor*" or "clinical supervisor*") OR AB ("junior doctor" OR "junior doctors" OR (("recently qualified" OR"newly qualified" OR F1 OR F2 OR FY1 OR FY2) AND doctor) OR "medical graduate" OR "medical graduates" OR "educational supervisor*" or "clinical supervisor*")	3,862
2	SU ("clinical competence" or "professional competence" or "professional practice") OR TI (Preparedness or readiness or skills or training or capabilities or competencies or attributes or ((transition or confiden* or ready or competen) N3 practi?e))) OR AB (Preparedness or readiness or skills or training or capabilities or competencies or attributes or ((transition or confiden* or ready or competen) N3 practi?e)))	799,739
3	SU ("Physician-Patient Relations" or "Patient-Centered Care" or "Decision Making, Shared" or "patient participation" or "health literacy") OR TI ((doctor* N3 patient* N3 relations*) or (shar* N3 decision*) or ("health information" N3 (seeking or finding or using)) or ("digital literacy" or "information asymmetry") or (patient* N3 (empower* or involve* or collaborat* or communicat* or advoca* or partnership or consent or autonomy)) or (expectations N3 (patient* or manag*)) or (patient N1 (focus?ed or cent?red))) OR AB ((doctor* N3 patient* N3 relations*) or (shar* N3 decision*) or ("health information" N3 (seeking or finding or using)) or ("digital literacy" or "information asymmetry") or (patient* N3 (empower* or involve* or collaborat* or communicat* or advoca* or partnership or consent or autonomy)) or (expectations N3 (patient* or manag*)) or (patient N1 (focus?ed or cent?red)))	128,926
4	TI (((interprofessional or multidisciplinary or multi-disciplinary) N3 (team* or work* or collaborat*)) or "integrated care" or (collaborat* N3 (profession* or team*)) followership or "future team" or "future doctor*" or "future clinician" or "new role*" or "emerging role*" or "extended role*" or "future team") OR AB (((interprofessional or multidisciplinary or multi-disciplinary) N3 (team* or work* or collaborat*)) or "integrated care" or (collaborat* N3 (profession* or team*)) or followership or "future team" or "future doctor*" or "future clinician" or "new role*" or "emerging role*" or "extended role*" or "future team")	40,450
5	SU ("Clinical Decision-Making" or Multimorbidity) OR TI ((complex* N3 (decision* or clinical or conditions or judgement* or patient*)) OR complexity or uncertainty or ambiguity or "critical thinking" or decision-making or multimorbidity or (multiple AND chronic) or holistic or Diagnostician) OR AB ((complex* N3 (decision* or clinical or conditions or judgement* or patient*)) OR complexity or uncertainty or ambiguity or "critical thinking" or decision-making or multimorbidity or (multiple AND chronic) or holistic or Diagnostician)	249,020

6	S1 AND S2 AND S3	140
7	S1 AND S2 AND S4	56
8	S1 AND S2 AND S5	158
9	S6 OR S7 OR S8	313
10	((MH "United Kingdom+") OR (MH "Ireland")) OR (("united kingdom" OR UK OR "U.K.") OR (britain or british or england or english or scotland or scottish or ireland or irish or wales or welsh) OR ("national health service" or NHS or GMC* or "General Medical Council") OR (bath or birmingham or bradford or brighton or bristol or carlisle or cambridge or canterbury or chelmsford or chester or chichester or coventry or derby or durham or ely or exeter or gloucester or hereford or hull or lancaster or liverpool or leicester or london or manchester or newcastle or norwich or nottingham or oxford or peterborough or plymouth or portsmouth or preston or ripon or salford or salisbury or sheffield or southampton or "st albans" or stoke or sunderland or truro or wakefield or wells or estminster or winchester or wolverhampton or worcester or york) OR (bangor or cardiff or newport or st asaph or st davids or swansea) OR (aberdeen or dundee or edinburgh or glasgow or inverness or perth or stirling) OR (armagh or or belfast or lisburn or londonderry or derry or newry))	2,800,705
11	S9 AND S10	182
12	S9 AND S10 Limited Publication Date: 20130101-20201231	92
	All DBs = 92	
	CINAHL = 60	
	BEI = 21	
	ERIC = 11	

Search Histories

2. Focused update of Monrouxe et al. 2013 search

Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Daily and Versions(R) <1946 to July 21, 2020>

Search history sorted by search number ascending

#	Searches	Results
1	Junior doctor*.ti.	1215
2	(("recently qualified" or "newly qualified") adj3 doctor*).ti.	56
3	(Foundation adj3 doctor*).ti.	188
4	((F1 or F2 or FY1 or FY2) adj doctor*).ti.	14
5	medical graduate*.ti.	1265
6	or/1-5	2723
7	*Professional Competence/	11675
8	*Clinical Competence/	46135
9	*Professional Practice/	8703
10	*Self Efficacy/	8343
11	preparedness.ti.	4835
12	training.ti.	119042
13	skills.ti.	24676
14	capabilities.ti.	3391
15	competencies.ti.	3567
16	attributes.ti.	4443
17	((transition* or confiden* or readiness or ready or prepar* or competen*) adj3 practi?e).ti.	1526
18	exp *medical education/	123346
19	(resilien* adj3 medical).ti.	46
20	(effective* adj3 medical curriculum).ti.	2
21	foundation train*.ti.	58
22	medical education.ti.	18366
23	professionalism.ti.	3194
24	knowledge.ti.	62820
25	(fitness adj3 (practi?e or purpose)).ti.	216
26	uncertainty.ti.	9846
27	leadership.ti.	12386
28	ethical manner.ti.	4
29	clinical analysis.ti.	5081
30	"clinical* effective*".ti.	2294
31	(communicat* adj3 effectiv*).ti.	950
32	communication.ti.	50869
33	"Clinical responsibil*".ti.	49

34	(adapt* adj3 change*).ti.	1844
35	"clinical judge*".ti.	230
36	(CPD or Continuing professional development).ti.	1215
37	clinical performance.ti.	2056
38	uncertainty.ti.	9846
39	(Work* adj3 autonomous*).ti.	14
40	or/7-39	451204
41	6 and 40	1082
42	limit 41 to yr="2013 -Current"	401
43	United Kingdom/	228986
44	Great Britain/	228986
45	Ireland/	17844
46	Northern Ireland/	4878
47	(national health service* or NHS* or GMC* or "General Medical Council*").ab,in,ti.	202146
48	(gb or "g.b." or britain* or (british* not "british columbia")).ab,in,ti.	96925
49	(UK or "U.K." or United Kingdom*).ab,in,ti.	1442530
50	(England* not "new England").ab,in,ti.	108890
51	(Ireland or Irish or Scotland or Scottish or ((Wales or "South Wales") not "new South Wales") or Welsh).ab,in,ti.	240377
52	(bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or	1410358

"wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*)))))).ab,in,ti.

#		Results
53	(bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's").ab,in,ti.	55607
54	(aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ab,in,ti.	209599
55	(armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ab,in,ti.	26230
56	43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55	2215246
57	(exp africa/ or exp americas/ or exp antarctic regions/ or exp arctic regions/ or exp asia/ or exp oceania/) not (exp great britain/ or europe/)	2871899
58	56 not 57	2110513
59	42 and 58	**197**

Embase <1996 to 2020 Week 29>
Search history sorted by search number ascending

#	Searches	Results
1	Junior doctor*.ti.	1372
2	(("recently qualified" or "newly qualified") adj3 doctor*).ti.	84
3	(Foundation adj3 doctor*).ti.	294
4	((F1 or F2 or FY1 or FY2) adj doctor*).ti.	23
5	medical graduate*.ti.	790
6	or/1-5	2548
7	*Professional Competence/	8645
8	*Clinical Competence/	20116
9	*Professional Practice/	15364
10	*Self Efficacy/	13178
11	preparedness.ti.	4958
12	training.ti.	113545
13	skills.ti.	25597
14	capabilities.ti.	3050
15	competencies.ti.	3672
16	attributes.ti.	4314
17	((transition* or confiden* or readiness or ready or prepar* or competen*) adj3 practi?e).ti.	1419

18	exp *medical education/	109375
19	(resilien* adj3 medical).ti.	53
20	(effective* adj3 medical curriculum).ti.	2
21	foundation train*.ti.	84
22	medical education.ti.	11976
23	professionalism.ti.	2982
24	knowledge.ti.	66948
25	(fitness adj3 (practi?e or purpose)).ti.	255
26	uncertainty.ti.	10104
27	leadership.ti.	10702
28	ethical manner.ti.	4
29	clinical analysis.ti.	5653
30	"clinical* effective*".ti.	2524
31	(communicat* adj3 effectiv*).ti.	918
32	communication.ti.	43968
33	"Clinical responsibil*".ti.	28
34	(adapt* adj3 change*).ti.	1440
35	"clinical judge*".ti.	212
36	(CPD or Continuing professional development).ti.	1700
37	clinical performance.ti.	2047
38	uncertainty.ti.	10104
39	(Work* adj3 autonomous*).ti.	12
40	or/7-39	420701
41	6 and 40	1046
42	limit 41 to yr="2013 -Current"	471
43	United Kingdom/	300276
44	Great Britain/	4145
45	Ireland/	31927
46	Northern Ireland/	1435
47	(national health service* or NHS* or GMC* or "General Medical Council*").ab,ad,in,ti.	350905
48	(gb or "g.b." or britain* or (british* not "british columbia")).ab,ad,in,ti.	157668
49	(UK or "U.K." or United Kingdom*).ab,ad,in,ti.	2141978
50	(England* not "new England").ab,ad,in,ti.	78940
51	(Ireland or Irish or Scotland or Scottish or ((Wales or "South Wales") not "new South Wales") or Welsh).ab,ad,in,ti.	426140
52	(bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or	1992384

"chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))).ab,ad,in,ti.

53	(bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's").ab,ad,in,ti.	83318
54	(aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ab,ad,in,ti.	270483
55	(armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ab,ad,in,ti.	37078
56	43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55	3097009
57	(exp "arctic and antarctic"/ or exp oceanic regions/ or exp western hemisphere/ or exp africa/ or exp asia/ or exp "australia and new zealand"/) not (united kingdom/ or europe/)	2557428
58	56 not 57	2896781
59	42 and 58	**249**

S1	TI (junior doctor* or (("recently qualified" or "newly qualified") AND doctor*) or foundation doctor* or F1 or F2 or FY1 or FY2 or medical graduate*) AND TI (competenc* or efficacy or prepare* or training or skills or capabilit* or attribute* or

transition* or confiden* or readiness or ready or education or resilien* or
professionalism or knowledge or fitness or uncertain* or leadership or ethical
manner or clinical analysis or clinical* effective* or communication or clinical
responsib* or clinical performance or work* autonomous* or CPD or continuing
professional development)
((SU "United Kingdom+") OR (SU "Ireland")) OR (("united kingdom" OR UK OR
"U.K.") OR (britain or british or england or english or scotland or scottish or ireland
or irish or wales or welsh) OR ("national health service" or NHS or GMC* or "general
medical council") OR (bath or birmingham or bradford or brighton or bristol or
carlisle or cambridge or canterbury or chelmsford or chester or chichester or coventry
or derby or durham or ely or exeter or gloucester or hereford or hull or lancaster or
liverpool or leicester or london or manchester or newcastle or norwich or nottingham
or oxford or peterborough or plymouth or portsmouth or preston or ripon or salford
or salisbury or sheffield or southampton or "st albans" or stoke or sunderland or truro
or wakefield or wells or estminster or winchester or wolverhampton or worcester or
york) OR (bangor or cardiff or newport or st asaph or st davids or swansea) OR (
aberdeen or dundee or edinburgh or glasgow or inverness or perth or stirling) OR (

S2   armagh or or belfast or lisburn or londonderry or derry or newry))

S3   S1 and S2

CINAHL	**97**
British Education Index (28)	**28**
ERIC (15)	**15**

Appendix B: Further detail on search strategy & data extraction

B.1 Searching key databases for the 3 areas of practice

Five healthcare databases were searched for literature relevant to the research question. The
following databases were searched on 1st October 2020: Embase, Medline, CINAHL, ERIC and BEI.
A search strategy was devised that comprised three alternate combinations to represent the
three areas of practice. Terms were compiled for the concepts of foundation doctors,
preparedness, doctor-patient relationship, MDT working and complex clinical decision-making.
As the study was about the UK context a validated UK search filter was added to all searches in
order to reduce the amount of non- results. To this filter, the terms GMC and General Medical
Council were added to the list of search terms to increase sensitivity to the UK context.   A 2013
date limit was added, which was the date of the search of the 2014 Monrouxe et al. report. This
yielded **433** results (see Table 13).

B.2 Focused update of the Monrouxe et al. search

We also conducted a focused update of the Monrouxe et al. 2013 literature search. The literature search that underpinned the Monrouxe et al. 2014 report addressed a wider question than the present review, which is focused on certain areas of practice. A complete update of the 2013 literature search was therefore not appropriate nor was it feasible within the resources available. A focused update search of the literature was thus undertaken using just two concepts; foundation doctors, preparedness; and these two search blocks used either title terms or major subject headings to increase the specificity of the results. This focused update search was performed in Embase, MEDLINE, CINAHL, ERIC and British Education Index. This yielded **413** results.

Table 13: Summary of searches carried out to date

Database	Revised areas of practice search (Oct 20)	Focused update of Monrouxe et al. search
Embase (via Ovid)	360	249
MEDLINE (via Ovid)	171	197
CINAHL (via EBSCOhost)	60	97
ERIC (via EBSCOhost)	11	28
British Education Index (via EBSCOhost)	21	15
Total	605	566
Total after deduplication	433	**413**

B.3 Citation searching of studies included in Monrouxe et al. review

There were 81 studies included in the Monrouxe et al. 2014 review, 62 were journal articles and 19 were grey literature. The 62 journal articles were checked for forward citations and these citations were collated in EndNote. The forward citations were also collected for the 2014 Monrouxe et al. GMC report and the 2018 Monrouxe et al. qualitative study.

B.4 Searching for key terms within six key journals

An analysis of the publication of Monrouxe et al.'s 62 included studies showed that the most frequent journals they were published in were:

1. Medical Teacher
2. Medical Education

3. BMC Medical Education
4. Postgraduate Medical Journal
5. Clinical Teacher
6. BMJ Quality and Safety

These six titles were handsearched for relevant publications subsequent to date of the literature search underpinning the Monrouxe et al. 2014 report. Handsearching took place using the Scopus interface, searching by publication name in ISSN field and limiting the results to 2013-2020 (Table 14). This technique replicated the browse function on journal homepages where browsing every issue of a publication from 2013 to 2020 would be a less efficient use of time.

Table 14: Scopus search strategies

Medical Teacher:
ISSN (1466187x) AND PUBYEAR > 2012 = 2272
Medical Education:
ISSN (13652923) AND PUBYEAR > 2012 = 2016
BMC Medical Education:
ISSN (14726920) AND PUBYEAR > 2012 = 2312
Postgraduate Medical Journal:
ISSN (14690756) AND PUBYEAR > 2012 = 1426
Clinical Teacher:
ISSN (1743498X) AND PUBYEAR > 2012 = 1078
BMJ Quality and Safety:
ISSN (20445415) AND PUBYEAR > 2012 = 1231

B.4 Grey Literature Searching

We carried out a grey literature search of the GMC and Health Education England (HEE) websites.

B.5 Citation Searching

We also searched the citations of included studies using Google Scholar, and 3 relevant studies were identified using this search method.

B.6 Data extraction

The papers of all eligible studies were obtained and read in full. A standardised data extraction review form was piloted and utilised. The extraction was carried out in Microsoft Excel by the lead reviewer. A random sample of 10% of all articles were data extracted by another reviewer and then compared for consistency. Data was extracted from each study on the authors, the year published, the aim of the study, the methods, the population and whether the study was about general preparedness for practice or addressed one or more of the three areas of practice. If the study addressed one of the three areas of practice, all relevant text in the paper relating to the

areas of practice was copied word for word into the excel spreadsheet. Because this was a rapid review and resources were limited we did not undertake quality assessment of the literature.

Appendix C: Interview schedules for key stakeholders

F1 & F2 Interview Schedule for WPB

Interviewer's introduction

As the healthcare needs of modern society are changing, the goal of preparedness constantly changes too. When looking at preparedness through a longitudinal lens; it is important to not only consider the role of a doctor as it is performed now, but expectations of the role that doctors will need to perform in the future. Various organisations undertake work to anticipate the needs and challenges healthcare providers will have to meet in the future.

These anticipated healthcare needs and challenges will impact on the role of the doctor, they include:

1. the patient-doctor relationship.
2. the doctor in a multi-disciplinary team.
3. complex clinical decision-making.

This research aims to understand whether and to what extent recent graduates (i.e. doctors in foundation training) are prepared to meet specific anticipated healthcare needs.

Reminder: In the event that a line of questioning evolves in such a way that you feel hesitant or uncomfortable I'd like to remind you of your right to decline to answer any particular question(s) and also that you may withdraw from participation in the research at any time without disadvantage to yourself of any kind

Section 1: Background
1. Can you tell me about your undergraduate training and your foundation placements to date?
2. (a) <u>FY1's & FY2's</u> Can you tell me about the transition from being a medical student to a Foundation doctor? (Prompt: What is going well, not so well, and what has surprised you?)
3. (b) <u>FY2's only</u> Can you tell me about the transition from FY1 to FY2? (Prompt: What is going well, not so well, and what has surprised you?)

Section 2: The doctor-patient relationship
4. Do you feel the relationship dynamic between patients and doctors is changing? And if so, in what ways? Prompts: patients as 'consumers', 'Dr Google', e-health information, use of technology e.g. remote consultations, empowering patients, shared decision-making, dealing with multiple conditions in an ageing population.
   a. Can you provide an example of this from your clinical work?
5. Do you feel this is having a positive or negative effect on your interactions with patients? And can you explain why?

6. What are the core skills, capabilities and attributes doctors will require to in order to empower patients and foster an effective doctor-patient relationship?

7. Now thinking about your training to date as a whole, how prepared do you feel for delivering patient-centred care?

   a. How prepared did you feel for empowering a patient to make a decision? Can you give an example of doing this from your clinical work?

   b. How prepared did you feel for promoting shared decision-making? Can you give an example of doing this from your clinical work?

   c. How prepared did you feel for building rapport with patients? Can you give an example of doing this from your clinical work?

   d. How prepared did you feel for communicating through third-parties e.g. carers or people with powers of attorney for a patient, to understand the patient's wishes and make decisions?

8. If feeling unprepared – what else could be done to prepare/support doctors in gaining the necessary skills/capabilities?

9. To what extent has COVID-19 affected or will affect the doctor-patient relationship?

10. Do you have any further thoughts around the future doctor-patient relationship?

If the participant struggles to understand what we mean by changing doctor-patient relationship we provide our working definition:

What the research team means by the changing patient-doctor relationship is that it reflects changes in the doctor-patient relationship arising from evolving consumer needs and expectations, as well as patients having greater access to health information (e.g. through health and wellbeing apps, disease specific websites and health information intermediates such as WebMD) Access to more health information does not only enhance patients; with own health monitoring and management, but also leads to an increased emphasis on shared decision-making and consent in relation to their care. Complexities may arise for doctors around the quality and variability of information accessed by patients to inform shared decision-making.

Section 3: The doctor in a multi-disciplinary team

11. How frequently do you work within multidisciplinary teams?

    a. What types of multidisciplinary teams do you work in?

    b. What is your role on the team?

    c. Do you feel part of the team?

    d. How comfortable are you with this way of working?

    e. Do you know when different models of MDT are appropriate?

12. If you are happy to do so, can you give me an example of multidisciplinary team working from your clinical practice?

13. How are multidisciplinary teams changing or anticipated to change in future?

14. What are the core skills, capabilities and attributes doctors require to work effectively as part of the future multidisciplinary teams across different healthcare settings?

15. Now thinking about your training to date as a whole, how well were you prepared for working in multidisciplinary teams across different healthcare settings? Can you give an example of doing this from your clinical work?
    a. How prepared were you for understanding the different roles in a multidisciplinary teams?
    b. How prepared were you for leadership and accepting leadership (i.e. followership)?
    c. How prepared were you for understanding team hierarchies and how patient centred decisions are made?
    d. How prepared were you for the changing dynamic within multidisciplinary teams e.g. teams lead by Advanced Nurse Practitioners?
16. If feeling unprepared – what else could be done to prepare/support doctors in gaining the necessary skills/capabilities?
17. To what extent has COVID-19 affected your experience of multidisciplinary team working?
18. Do you have any further thoughts around multidisciplinary team working in the future?

If the participant struggles to understand what we mean by multidisciplinary team, we provide our working definition:

The NHS five year plan highlights the need for services to be integrated around care of the patient. As a result, multi-disciplinary team (MDT) working is projected to become an ever more important element of doctors' roles in the future. New models of care are leading to increasingly diverse MDTs, requiring doctors to work effectively alongside other types of doctors and healthcare professionals across all settings. This will require doctors to undertake carious team roles including, where appropriate, demonstrating leadership and the ability to accept and support leadership by others. This is driven by a number of factors including the increasing complexity and specialisation of care, increasing co-morbidities and prevalence of chronic diseases and workforce shortages.

Section 4: Complex clinical decision-making
19. What do you understand by the term complex clinical decision-making? Can you provide an example of a complex clinical decision from your clinical work?
20. How comfortable do you feel with making complex clinical decisions?
21. What are the core skills, capabilities and attributes doctors will require to make complex decisions with incomplete information and a high degree of uncertainty?
22. When making complex clinical decisions, what do you do when you have uncertainty or ambiguity, or you simply don't know what to do?
23. Now thinking about your training to date as a whole,
    how well were you prepared for complex clinical decision-making?
    a. Did you feel prepared for dealing with uncertainty?
    b. Did you feel prepared for prioritising tasks? Have you found this difficult?
    c. Did you feel prepared for managing vast amounts of information when treating a patient?
    d. Did you feel prepared for recognising your own knowledge and professional limits

> e.   Did you feel prepared for knowing when to escalate an issue and who to escalate it to?

24. To what extent has COVID-19 affected your experience of complex clinical decision-making?
25. Do you have any further thoughts on how the complexity of clinical decision-making is changing?

If the participant struggles to understand what we mean by complex clinical decisions, we provide our working definition:

The nature of illness is complex and therefore the health and care of many patients is complicated and uncertain. A clinical decision may be the outcome of a process of observation, reflection and analysis of observable or available information or data. The decision must not only take into account the available clinical information, but also the context of the patient and their situation. What differentiates a complex clinical decision is uncertainty – some or a large part of the information required to derive the decision is either incomplete or unknown. The demographic of an ageing and more diverse population, more multi-morbidity, the increasing move to integrated care across different settings, and multi-disciplinary working is adding to the complexity of clinical decision-making. Newly- qualified doctors must be able to recognise complexity and uncertainty. And, through the process of seeking support and help from colleagues, learn to develop confidence in managing these situations and responding to change.

Section 6: Closing
26. Are there any further issues that you feel are important to these topics and would like to raise?

Thank you for taking part.

'Other' Stakeholders Interview Schedule for WPB

Other stakeholders include educational/clinical supervisors, Foundation Programme Leads, Deans, 'Other' healthcare professionals and medical educators.

Interviewer's introduction
As the healthcare needs of modern society are changing, the goal of preparedness constantly changes too. When looking at preparedness through a longitudinal lens; it is important to not only consider the role of a doctor as it is performed now, but expectations of the role that doctors will need to perform in the future. Various organisations undertake work to anticipate the needs and challenges healthcare providers will have to meet in the future.

These anticipated healthcare needs and challenges will impact on the role of the doctor, they include:

1. the changing patient-doctor patient relationship.
2. the doctor in a multi-disciplinary team.
3. complex clinical decision-making.

This research aims to understand whether and to what extent recent graduates (i.e. doctors in foundation training) are prepared to meet specific anticipated healthcare needs.

Section 1: Background
1. Can you tell me a little bit about your background and your current role?
2. Can you tell me about your work with foundation doctors (both FY1's and FY2's)?

Section 2: The changing doctor-patient relationship
3. In what ways do you feel the relationship dynamic between patients and doctors is changing? Prompts: patients as 'consumers', 'Dr Google', e-health information, shared decision-making, dealing with multiple conditions in an ageing population.
4. What are the core skills, capabilities and attributes foundation doctors will require to empower patients and adapt to the changing doctor-patient relationship?
5. How prepared do you feel current foundation doctors are for this changing patient-doctor relationship?
    a. How prepared are foundation doctors for empowering a patient to make a decision? Can you give an example?
    b. How prepared are foundation doctors for promoting shared decision-making? Can you give an example?
    c. How prepared are foundation doctors for building rapport with patients? Can you give an example?
    d. How prepared are foundation doctors for communicating through third-parties e.g. carers or people with powers of attorney for a patient, to understand the patient's wishes and make decisions?
6. If foundation doctors are unprepared – what else could be done to prepare/support doctors in gaining the necessary skills/capabilities?
7. To what extent has COVID-19 affected the changing doctor-patient relationship?
8. Do you have any further thoughts around the core skills, capabilities and attributes foundation doctors will require to be prepared for the future patient-doctor relationship?

What the research team means by the changing patient-doctor relationship is that this reflects changes in the doctor-patient relationship arising from evolving consumer needs and expectations, as well as patients having greater access to health information (e.g. through health and wellbeing apps, disease specific websites and health information intermediaries such as WebMD) Access to more health information does not only enhance patients; with own health monitoring and management, but also leads to an increased emphasis on shared decision-making and consent in

relation to their care. Complexities may arise for doctors around the quality and variability of information accessed by patients to inform shared decision-making.

Section 3: The doctor in a multi-disciplinary team

9. How frequently do foundation doctors work within multidisciplinary teams?
    a. What types of multidiscinplinary teams to they work in?
    b. What is the foundation doctor's role in a multidisciplinary team?
    c. Do they feel part of the team?
    d. How comfortable are they with this way of working?
    e. Do foundation doctors know when different models of MDT are appropriate?
10. How are multidisciplinary teams changing or anticipated to change in future?
11. What are the core skills, capabilities and attributes foundation doctors require to work effectively as part of the future multi-professional team across different healthcare settings?
12. How well are foundation doctors prepared for working in multprofessional teams across different healthcare settings? Can you give an example?
    a. How prepared are foundation doctors for understanding the different roles in multidisciplinary teams?
    b. How prepared are foundation doctors for leadership and accepting leadership (i.e. followership)?
    c. How prepared are foundation doctors for understanding team hierarchies and how patient-centred decisions are made?
    d. How prepared are foundation doctors for the changing dynamic within multidisciplinary teams e.g. teams lead by Advanced Nurse Practitioners?
13. If foundation doctors are unprepared – what else could be done to prepare/support foundation doctors to gain the necessary skills/capabilities?
14. To what extent has COVID-19 affected foundation doctors experience of multidisciplinary team working? Can you give an example?
15. Do you have any further thoughts around the core skills, capabilities and attributes foundation doctors will require to be prepared for working within multidisciplinary teams in the future?

What the research team means by the doctor in a multi-disciplinary team. The NHS five year plan highlights the need for services to be integrated around care of the patient. As a result, multi-disciplinary team (MDT) working is projected to become an ever more important element of doctors' roles in the future. New models of care are leading to increasingly diverse MDTs, requiring doctors to work effectively alongside other tupes of doctors and healthcare professionals across all settings. This will require doctors to undertake carious team roles including, where appropriate, demonstrating leadership and the ability to accept and support leadership by others. This is driven by a number of factors including the increasing complexity and specialisation of care, increasing co-morbidities and prevalence of chronic dieseases and workforce shortages.

Section 4: Complex clinical decision-making

16. What types of complex clinical decisions do foundation doctors make? Can you provide an example?

17. How comfortable are they with making complex clinical decisions?

18. What are the core skills, capabilities and attributes foundation doctors require to make complex decisions with incomplete information and a high degree of uncertainty?

19. When foundation doctors are making complex clinical decisions, what do they do when they have uncertainty or ambiguity or they don't know what to do?

20. How well prepared are foundation doctors for complex clinical decision-making?

    a. Are foundation doctors prepared for dealing with uncertainty?

    b. Are foundation doctors prepared for managing vast amounts of information when treating a patient?

    c. Are foundation doctors prepared for prioritising tasks?

    d. Are foundation doctors prepared for recognising their own knowledge and professional limits?

    e. Are foundation doctors prepared for knowing when to escalate an issue and who to escalate it to?

21. To what extent has COVID-19 affected foundation doctor's experiences of complex clinical decision-making?

22. Do you have any further thoughts around the core skills, capabilities and attributes doctors will require to be prepared making complex clinical decisions in the future?

What the research team means by complex clinical decision-making: The nature of illness is complex and therefore the health and care of many patients is complicated and uncertain. A clinical decision may be the outcome of a process of observation, reflection and analysis of observable or available information or data. The decision must not only take into account the available clinical information, but also the context of the patient and their situation. What differentiates a complex clinical decision is uncertainty – some or a large part of the information required to derive the decision is either incomplete or unknown. The demographic of an ageing and more diverse population, more multi-morbidity, the increasing move to integrated care across different settings, and multi-disciplinary working is adding to the complexity of clinical decision-making. Newly- qualified doctors must be able to recognise complexity and uncertainty. And, through the process of seeking support and help from colleagues, learn to develop confidence in managing these situations and responding to change.

Section 6: Closing

23. Are there any further issues that you feel are important to these topics and would like to raise?

Thank you for taking part.

Patient Representatives Interview Schedule for WPB

Interviewer's introduction

This research aims to understand whether and to what extent recent graduates (i.e. doctors in foundation training) are prepared to meet specific anticipated healthcare needs, they include:

1. the changing doctor-patient relationship.
2. the doctor in a multidisciplinary team.
3. complex clinical decision-making.

Section 1: Background
1. Can you tell me a little bit about your patients experiences of healthcare in the NHS?
2. Have they been treated by junior doctors? How did they find that experience?
3. In the context of new doctors, what does the phrase 'prepared for practice' mean to your patients?
4. Based on your experiences as a patient or carer, how, if at all would you know a junior doctor is 'prepared'? Probe: What behaviours, attitudes or skills might you expect or be looking for?

Section 2: The changing doctor-patient relationship

5. Do you think the relationship dynamic between patients and doctors is changing? Prompts: patients as 'consumers', 'Dr Google', e-health information, empowering patients, shared decision-making.
6. Do you think this is having a positive or negative effect on the provision of medical care? And can you explain why?
7. Prior to seeing your doctor, do you seek information about your potential illness and then talk about this information in your consultation with your doctor?
8. Has a doctor ever empowered you to make a decision about your healthcare?
9. Have you any experiences of shared decision-making with a doctor?
10. What are the core skills doctors need for adapting to the changing doctor-patient relationship?
11. Do you think junior doctors are prepared for the changing doctor-patient relationship?
12. Do you have any further thoughts around the future patient-doctor relationship?

What the research team means by the changing patient-doctor relationship is that this reflects changes in the doctor-patient relationship arising from evolving consumer needs and expectations, as well as patients having greater access to health information (e.g. through health and wellbeing apps, disease specific websites and health information intermediates such as WebMD) Access to more health information does not only enhance patients; with own health monitoring and management, but also leads to an increased emphasis on shared decision-making and consent in relation to their care. Complexities may arise for doctors around the quality and variability of information accessed by patients to inform shared decision-making.

Section 3: The doctor in a multi-disciplinary team

13. Have you ever been treated by a multidisciplinary team? Can you provide an example? How was this experience?
14. What are the core skills doctors require to work effectively as part of a multidisciplinary team?
15. Do you think junior doctors are prepared for working in multidisciplinary teams?
16. Do you have any further thoughts around multidisciplinary team working?

What the research team means by the doctor in a multi-disciplinary team. The NHS five year plan highlights the need for services to be integrated around care of the patient. As a result, multi-disciplinary team (MDT) working is projected to become an ever more important element of doctors' roles in the future. New models of care are leading to increasingly diverse MDTs, requiring doctors to work effectively alongside other types of doctors and healthcare professionals across all settings. This will require doctors to undertake carious team roles including, where appropriate, demonstrating leadership and the ability to accept and support leadership by others. This is driven by a number of factors including the increasing complexity and specialisation of care, increasing co-morbidities and prevalence of chronic diseases and workforce shortages.

Section 4: Complex clinical decision-making

17. Have you any experience of being treated by a doctor that had to make a complex clinical decision?
18. What are the core skills doctors need to make complex clinical decisions?
19. Do you think junior doctors are prepared for making complex clinical decisions?
20. Do you have any further thoughts around making complex clinical decisions?

What the research team means by complex clinical decision-making: The nature of illness is complex and therefore the health and care of many patients is complicated and uncertain. A clinical decision may be the outcome of a process of observation, reflection and analysis of observable or available information or data. The decision must not only take into account the available clinical information, but also the context of the patient and their situation. What differentiates a complex clinical decision is uncertainty – some or a large part of the information required to derive the decision is either incomplete or unknown. The demographic of an ageing and more diverse population, more multi-morbidity, the increasing move to integrated care across different settings, and multi-disciplinary working is adding to the complexity of clinical decision-making. Newly- qualified doctors must be able to recognise complexity and uncertainty. And, through the process of seeking support and help from colleagues, learn to develop confidence in managing these situations and responding to change.

Section 6: Closing

21. Are there any further issues that you feel are important to these topics and would like to raise?

Thank you for taking part.

Appendix D: Crisis Resource Management (CRM) Template

Preparedness for Practice Live

Page 1: Introduction

Thank you for agreeing to take part in this GMC funded study on preparedness for practice.

The title of the project is: *Preparedness of recent medical graduates to meet anticipated healthcare needs.*

You can find a link to the information form here.

This research has been reviewed and approved by the University of Plymouth's Faculty of Health Research Ethics and Integrity Committee and the Health Research Authority.

IRAS: 283309 [v3 07/07/2020]

REC Reference: 20/HRA/3782

1. I confirm that I have read the information sheet [dated 7/7/20 version 3] for the above

study. I have had the opportunity to consider the information, ask questions and have had

these answered satisfactorily.

Yes

No

2. I confirm that I have completed the consent form for this study.

Yes

No

3. Please enter your name.

4. Please enter your email address.

Page 2: Demographic Details

This page asks some questions about your personal details. All details will be held securely and you can choose not to answer any of the questions.

5. What is your age?

Please enter a whole number (integer). Your answer should be no more than 3 characters long.

6. With which gender do you identify?

6.a. If you selected 'Prefer to self-describe', please specify:

Female

Male

Non-binary / Third Gender

Prefer not to say

Prefer to self-describe

Other

7. What is your ethnicity?

Arab

Asian / Asian British: Any other Asian background

Asian / Asian British: Bangladeshi

Asian / Asian British: Chinese

Asian / Asian British: Indian

Asian / Asian British: Pakistani

Black / African / Caribbean / Black British: African

Black / African / Caribbean / Black British: Any other Black / African / Caribbean

background

Black / African / Caribbean / Black British: Caribbean

Mixed / Multiple ethnic groups: Any other Mixed / Multiple ethnic backgrounds

Mixed / Multiple ethnic groups: White and Asian

Mixed / Multiple ethnic groups: White and Black African

Mixed / Multiple ethnic groups: White and Black Caribbean

White: Any other background

White: English / Welsh / Scottish / Northern Irish / British

White: Gypsy or Irish Traveller

White: Irish

Any other ethic group

Prefer not to say

8. Which medical school did you obtain your Primary Medical Qualification from?

9. What is your professional role?

Allied Healthcare Professional

FY1

FY2

Healthcare Assistant

Registered Nurse

Other

9.a. If you selected Other, please specify:

Page 3: CRM Principles

This section asks for your reflections on your simulation experience today. Please use the sections below to guide your responses. In the first box you may wish to record any general thoughts you have, before thinking about what went well and what could be improved.

10. **Knowing your environment:** Identify the location and function of equipment, especially for time-critical procedures. Structure the environment in a logical way. Use cognitive aids e.g. equipment maps. Identify the role and level of experience of team members.

10.a. What went well?

10.b. What could be improved?

11. **Anticipating, sharing and reviewing the plan:** · Think ahead and plan for all contingencies · Set priorities dynamically · Re-evaluate periodically · Anticipate delays · Use checklists · Share the plan with others · Think out loud and provide periodic briefings to verbalise priorities, goals and clinical findings as they change · Encourage team members to share relevant thoughts and plans Continually review the plan based on observations and response to treatment

11.a. What went well?

11.b. What could be improved?

12. **Ensuring leadership, role clarity and good teamwork:** · Employ the least confrontational approach consistent with the goal · Use participative decision to improve team buy in · Use an authoritative approach when necessary (e.g. time critical situations) · Allocate team roles · Establish behavioural and performance expectations of team members · Establish and maintain the team's

shared mental model of what is happening and the team's goals · Monitor the external and internal environments of the team to avoid being caught off guard · Show good followership and be an active participant · Debrief appropriately Recognise when affected by stress, and develop appropriate self-care behaviours

12.a. What went well?

12.b. What could be improved?

13. **Communicating effectively**: · Distribute needed information to team members · Use closed loop communication · Be assertive, not aggressive or submissive · Avoid personal attacks · Resolve conflict · Maintain relationships · Facilitate collaborative efforts working towards a common goal · Cross (double) check

13.a. What went well?

13.b. What could be improved?

14. **Allocating attention wisely and avoiding fixation:** · Be aware of 'fixation error' that reduces situational awareness · Prioritize tasks and focus on the most important task at hand · Delegate tasks to others · Use all available information

14.a. What went well?

14.b. What could be improved?

15. **Distributing the workload - monitoring and supporting team members** · Team Leader stands back whenever possible to maintain situational awareness and oversee the team · Assign tasks according to the defined roles of the team Team Leader supports team members in their tasks

15.a. What went well?

15.b. What could be improved?

Page 4: Final page

Thank you for completing this survey. You will be contacted to take part in an interview with a researcher to discuss your responses in the near future. If you have any questions, please contact nicola.brennan@plymouth.ac.uk or james.read@plymouth.ac.uk

Appendix E: Interprofessional skills simulation interview schedules

WPC Interview schedule of questions for FY1 and FY2 doctors

Interviewers Introduction

Thank you for agreeing to take part.

Research aims: The aim of the research is to use available evidence to understand to what extent recent graduates (doctors in foundation training) are prepared to meet specific anticipated healthcare needs within the three focus categories: 1) the changing patient-doctor relationship, 2) the doctor in a multi-disciplinary team, and 3) complex clinical decision-making. For this part of the study we are focusing on multi-disciplinary team working and complex clinical decision-making.

Reminder: In the event that a line of questioning evolves in such a way that you feel hesitant or uncomfortable I'd like to remind you of your right to decline to answer any particular question(s) and also that you may withdraw from participation in the research at any time without disadvantage to yourself of any kind.

Section 1: Background information

1) Which medical school did you graduate from?
2) What is your current stage of training?
   a. What is your current rotation?
   b. What rotations have you completed?

Section 2: Team working within the simulation session

1) What skills and qualities do you feel are necessary for responding to urgent clinical presentations or emergencies as part of a multidisciplinary team?

2) In your reflective template, you have identified aspects of crisis resource management that went well and aspects that were more challenging (*Interviewer - give examples from template*). Can you expand on …(*example from CRM template*)

3) What aspects of the simulation exercise involved team working? And can you describe the nature of that team dynamic?
   a. What role did you provide within the team?
   b. How comfortable do you feel providing leadership within a multidisciplinary team setting?
   c. And how comfortable do you feel accepting leadership (including by other professionals) within a multidisciplinary team setting?

4) What aspects of team working do you feel went well, and what was challenging? Why?
   a. How did you overcome these challenges within the simulation?

5) Thinking about your training as a whole, how well do you feel it has prepared you for working within multidisciplinary teams?
   Prompts:
   a. Can you provide examples of other aspects of your training career to date that have helped you to develop the skills and qualities for working as part of a multidisciplinary team?
   b. Are there aspects of your training that could have helped you to better prepare for multidisciplinary team working?
   c. Have you taken part in any 'in-situ' simulation sessions in the clinical environment? If so, how did these help in preparing you for working in multidisciplinary teams?

Section 3: Team working within clinical practice

Thinking about team working in your own clinical practice…

6) How frequently do you work within multidisciplinary teams?
   a. Which roles from all health professions do you work with most regularly?
   b. How comfortable are you with this way of working? – What factors does this depend upon?
   c. How comfortable do you feel providing leadership within a multidisciplinary team setting?
   d. And how comfortable do you feel accepting leadership (including by other professionals) within a multidisciplinary team setting?
   e. Do you feel part of a team?

7) Have you had to deal with any critical incidents / urgent / emergency situations when working in multidisciplinary teams?
   a. What happened? What have you learned from these experiences? How did it affect you?
8) What are the challenging aspects of working within multidisciplinary teams during your clinical practice?
   a. How did you overcome these challenges?

9) To what extent has COVID-19 affected your experience of team working?

10) *Interviewer – optional question if not covered previously:* To what extent do you feel that FY1 and FY2 doctors are prepared for working in teams? And can do so effectively?

Section 4: Complex clinical decision-making within the simulation session

11) What skills and qualities do you feel are necessary for making good complex clinical decisions?

12) What aspects of the simulation session involved complex clinical decision-making?
   a. What was 'complex' about this situation?

13) What aspects of complex decision-making do you think went well, and what were more challenging? Why?
   a. How did you overcome these challenges within the simulation?

14) Now thinking about your training to date as a whole, how prepared do you feel for making complex clinical decisions?
   Prompts:
   a. What aspects of your training have helped you to develop the skills and qualities to make complex clinical decisions?
   b. Do you feel your training has been adequate in preparing you for making complex clinical decisions? If not, why not?

Section 5: Complex clinical decision-making within clinical practice

Thinking about complex clinical decision-making in your own clinical practice…

15) To what degree do you feel your clinical practice requires you to make complex clinical decisions?
   a. How comfortable do you feel with making complex clinical decisions? Is it something you enjoy?

16) If you are happy to do so, can you tell me of a time from your clinical practice of a situation where you have had to make a complex clinical decision?
   a. What happened and how prepared did you feel?
   b. Was this a positive or negative experience?
   c. What lessons did you learn from the experience and how did it affect you?

17) *Interviewer – optional question if the previous example is positive:*
   a. Have you had any experiences where complex clinical decision-making has not gone very well?
      i. What do you feel are the challenges with making complex clinical decisions?
      ii. How do you overcome these challenges?

18) When you are working in the clinical environment, what do you do when you are unsure about what actions you should take next?

19) To what extent has COVID-19 affected your experience of complex clinical decision-making?

20) What, if any, concerns do you have around making complex clinical decisions in the future?

Are there any further issues that you feel are important to the topic, and would like to raise?

Thank you for taking part.

WPC Interview schedule of questions for Faculty

Interviewers Introduction

Thank you for agreeing to take part.

Research aims: The aim of the research is to use available evidence to understand to what extent recent graduates (doctors in foundation training) are prepared to meet specific anticipated healthcare needs within three focus categories: 1) the changing patient-doctor relationship, 2) the doctor in a multi-disciplinary team, and 3) complex clinical decision-making. For this part of the study we are focusing on multi-disciplinary team working and complex clinical decision-making.

Reminder: In the event that a line of questioning evolves in such a way that you feel hesitant or uncomfortable I'd like to remind you of your right to decline to answer any particular question(s) and also that you may withdraw from participation in the research at any time without disadvantage to yourself of any kind.

Section 1: Background information

1) What is your current role and experience of working with Foundation doctors?
2) What was your role within the simulation session?

Section 2: Team working within the simulation session

3) What aspects of the simulation exercise involved team working? And can you describe what happened?

4) In your reflective template you have identified aspects of crisis resource management which went well and aspects which were more challenging for the foundation doctors *(give examples from template)*. Can you expand on …..(*example from CRM template)*

5) How did the FY1 and FY2 doctors respond to the teamwork scenario?
    a. What worked well within the simulation?
    b. What aspects did the doctors find challenging? And how did they respond to this?
    c. What level of skills, capabilities and attributes did the doctors demonstrate within the scenario?
    d. How well do you feel they provided leadership and accepted leadership (including by other professionals) within a multidisciplinary team setting?
    e. What was the key learning experience generated by the simulation?

6) Thinking about medical training more broadly, how well do you feel it prepares newly qualified doctors for working within multidisciplinary teams?

     f.   Are there aspects of undergraduate or postgraduate training that could be improved in order to develop the skills, qualities and experience required for effective multidisciplinary team working?

Section 3: Team working within clinical practice

Thinking about team working within clinical practice…

7) To what extent are foundation doctors required to work within multidisciplinary teams within the clinical setting?
    g.   How well prepared are foundation doctors to work with team members from other health professions?
    h.   To what extent do you feel foundation doctors are prepared to provide leadership, and to accept leadership (including by other professionals), within a multidisciplinary clinical setting?

8) What skills and qualities do you feel are necessary for working within multidisciplinary teams?
    i.   To what extent do you feel that FY1 and FY2 doctors possess the skills and capabilities for this way of working?
    j.   What factors contribute to or hinder effective working within multidisciplinary teams?

9) Are there particular clinical encounters / areas where foundation doctors find it difficult to work in multidisciplinary teams?

10) To what extent has COVID-19 affected the effectiveness of multidisciplinary team working?

Section 4: Complex clinical decision-making within the simulation session

11) What aspects of the simulations involved complex clinical decision-making? And can you describe what happened?

12) How did the FY1 and FY2 doctors respond to this scenario?
    k.   What worked well within the simulation in relation to clinical decision-making?
    l.   What aspects did the doctors find challenging? And how did they respond to this?

13) Thinking about medical training more broadly, how well do you feel it prepares newly qualified doctors for making complex clinical decisions within a clinical setting?

14) Are there aspects of undergraduate or postgraduate training that could be improved in order to develop the skills, qualities and experience required for effective complex clinical decision-making?

Section 5: Complex clinical decision-making within clinical practice

Thinking about complex clinical decision-making within clinical practice…

15) To what extent are doctors required to make complex clinical decisions on a day-to-day basis?
   m. What kind of scenarios might this involve?
   n. How important is it that doctors are prepared for this?

16) What skills and qualities do you feel are necessary for making complex clinical decisions?
   o. To what extent do you feel that FY1 and FY2 doctors possess these skills and capabilities for this way of working?
   p. What factors contribute to or hinder foundation doctors making complex clinical decisions?

17) Are there particular clinical encounters / areas where foundation doctors find it difficult to make complex clinical decisions effectively?

18) To what extent has COVID-19 affected the experience or requirement of making complex clinical decisions?

Are there any further issues that you feel are important to the topic and would like to raise?

Thank you for taking part.

Appendix F: Characteristics of included studies

	Author	Year	Aim	Methods	Population	Mapping Review - General preparedness for practice	Theme
1.	Adams	2017	To describe junior doctors clinical reasoning using the DCT as a guiding theory	Qualitative	Junior doctors	n/a	Complex decision-making
2.	Axon	2018	To explore factors affecting communication between Foundation Year 1 doctors and hospital pharmacists about prescribing from the junior doctors' perspective	Qualitative	F1 doctors	n/a	MDT
3.	Blencowe	2015	To design, deliver and assess a targeted structured induction programme for new F1 doctors.	Quantitative	F1 doctors & final year medical students	✔	
4.	Bull	2013	To describe the decisions made by junior doctor decision-making.	Qualitative	F1 doctors	n/a	Complex decision-making
5.	Burford	2013	To identify what newly qualified doctors learn from nurses in the workplace and what does that tell us about the relationship between the two professions	Qualitative	F1 doctors	n/a	MDT
6.	Burford	2014	To examine UK graduates' preparedness for clinical practice, and their exposure to real-life and simulated immediate care scenarios during final year placements.	Quantitative	F1 doctors	✔	
7.	Burridge	2020	To explore junior doctors first experience with unwell patients and how their preparedness changed over time	Qualitative	F1 doctors	n/a	MDT & complex decision-making
8.	Corfield	2020	To investigate the medical law and ethics (MEL) learning needs of Foundation doctors	Quantitative	F1 & F2 doctors	n/a	Complex decision-making
9.	Goodyear	2014	To explore factors which affect newly qualified doctors' wellbeing and look at the implications for educational provision.	Qualitative	F1, F2 & foundation deans	✔	
10.	Goldacre	2014	To investigate foundation doctors' views on whether medical school prepared them for work	Quantitative	F1 doctors	✔	
11.	Illing	2013	To examine whether medical graduates from three diverse UK medical schools were prepared for practice	Qualitative	F1 doctors and senior clinicians	✔	
12.	Jubraj	2015	To explore junior doctors' attitudes around concepts related to medical review	Quantitative	F1 doctors	✔	
13.	Kellet	2015	To examine the views of first year F1 doctors regarding how prepared they felt newly qualified doctors were for the early weeks of work.	Qualitative	F1's & supervisors	n/a	MDT

14.	Kelly	2014	To cultivate positive attitudes and understanding between the two groups, break down inter-professional barriers, and to provide practical leadership experience and education.	Quantitative	Junior doctors & managers	n/a		MDT
15.	Kelly	2015	To produce an educational intervention which aimed to improve preparedness to manage patients with diabetes and evaluate it using a mixed methods approach	Mixed-methods	F1 doctors 7 5th year medical students			Complex decision-making
16.	Kostov	2018	To explore patients and carers experiences of junior doctors	Qualitative	Patients & carers	n/a		Changing doctor-patient relationship
17.	Iachish	2016	To report the views of two recent cohorts of UK-trained doctors 1 year after graduation about whether their medical school prepared them well and compare responses with earlier cohorts.	Quantitative	F1 doctors	✔		
18.	Lefroy	2017	To identify causal chains of the contextual factors and mechanisms that lead to a trainee being capable (or not) of completing tasks for the first time	Qualitative	Medical students, foundation doctors & speciality doctors	✔		
19.	Lundin	2018	The aim of this study is to explore if, and how, newly graduated doctors narrate ER in their stories of preparedness and unpreparedness for their work (henceforth called their preparedness narratives) and whether Gross' theory adequately captures the range of ER stories as narrated in stories of actual situations.	Qualitative	F1 doctors	n/a		Changing doctor-patient relationship
20.	Machin	2020	To explore the perceived medical ethics and law training needs of UK foundation doctors	Quantitative	F1 & F2 doctors	n/a		Changing doctor-patient relationship & complex decision-making
21.	McGettigan	2013	To develop and test an instrument to assess the MDT performance of FY1 doctors	Quantitative	F1 doctors	n/a		MDT
22.	Miles	2017	To examine views of first year Foundation doctors (F1's) regarding how prepared they felt by their undergraduate medical education for skills required during the first Foundation training year in relation to their type of training	Quantitative	F1 doctors	✔		
23.	Monrouxe	2018	To explore in a deeper manner, multiple stakeholders' conceptualisations of what it means to be prepared for practice and their perceptions about newly graduated junior doctors preparedness (or unpreparedness) using innovative qualitative methods.	Qualitative	F1 doctors, clinical educators, deans, training programme leads, healthcare professionals, employers, policy & government officials	n/a		Changing doctor-patient relationship, MDT & complex decision-making

24.	O' Keefee	2017	To examine the delivery of postgraduate training in the emergency medicine setting and its impact on posgraduate doctor (Foundation Year 2) performance and competence	Qualitative	F2 doctors and training leads	✓	
25.	Redman	2017	The aim of this research was to explore the experiences of Fys in caring for the dying, using the recently published Priorities for Care of the Dying Person as a conceptual framework, to identify areas for improvement in education and clinical practice.	Qualitative	F1 & F2 doctors	n/a	MDT & complex decision-making
26.	Van Hamel	2015	The aims of this national study were to assess anxiety levels and preparedness in the 2012 F1 cohort and whether these varied according to medical school of graduation and foundation school of practice.	Quantitative	F1 doctors 7 supervisors	✓	
27.	Vivekan	2014	To determine the ethical issues the foundation year 1 doctors encountered during clinical practice and the skills and knowledge of MEL, which were useful in informing MEL curriculum development.	Qualitative	F1 doctors	✓	
28.	Wells	2019	To determine newly-qualified doctors' views on the value their assistantship experience, effects on anxiety levels, confidence and preparedness for increased responsibilities, exploring change over time and whether effects differ according to assistantship alignment.	Quantitative	Final year medical students and F1 doctors	✓	
29.	Williams	2020	To explore new doctors' experiences of transition in light of recent critiques of preparedness and the first author's own experience of the transition	Qualitative	F1 doctors	✓	
30.	Wood	2016	To explore doctors' perspectives of informed consent for routine surgical procedures	Qualitative	Junior doctors, specialist registrars & onsultants	n/a	Changing doctor-patient relationship
31.	Yardley	2020	To understand: How those transitioning make sense of two intertwined concepts: responsibility and identity and the intersection between responsibility and identity during transition with resultant impact on safe medical practice	Qualitative	Final year medical students, F1 doctors, F2 doctors & specialist registrars	n/a	MDT and complex decision-making
32.	Yon	2015	To explore junior doctors' knowledge about and experiences of managing patients with MUS and to seek their recommendations for improved future training on this important topic about which they currently receive little education	Qualitative	F1 & F2 doctors	n/a	Complex decision-making
33.	Health Education England	2019	The aim of the consultation is to seek views on "what the NHS patients and public require from 21st century medical graduates"1, with a further view to supporting the General Medical Council to shape the future direction of medical education.	Qualitative	Range of stakeholders e.g. doctors and organisations	n/a	Changing doctor-patient relationship, MDT and complex decision-making.

| 34. | NHS England | 2020 | The aim of the consultation is to seek views on "what the NHS patients and public require from 21st century medical graduates"1, with a further view to supporting the General Medical Council to shape the future direction of medical education. | Qualitative | Range of stakeholders e.g. doctors and organisations | n/a | Changing doctor-patient relationship, MDT and complex decision-making. |

Appendix G: Demographics of Interview Participants

Table 15: National stakeholder interviews - foundation doctors demographics

Interview #	F1 or F2	Gender	Interim Foundation (FiY1)	Country
Interview 1	F1	Female	Yes	England
Interview 2	F1	Female	Yes	Scotland
Interview 3	F1	Female	No	England
Interview 4	F1	Male	Yes	England
Interview 5	F1	Female	Yes	England
Interview 6	F1	Male	Yes	England
Interview 7	F1	Female	Yes	England
Interview 8	F1	Male	Yes	England
Interview 9	F1	Female	No	England
Interview 10	F1	Male	Yes	Scotland
Interview 11	F1	Male	Yes	Wales
Interview 12	F1	Female	Yes	England
Interview 13	F1	Female	Yes	England
Interview 14	F1	Female	Yes	England
Interview 15	F1	Male	Yes	England
Interview 16	F1	Male	Yes	England
Interview 17	F1	Female	No	England
Interview 18	F1	Male	Yes	Scotland
Interview 19	F1	Female	Yes	England
Interview 20	F1	Female	Yes	Scotland
Interview 21	F1	Female	Unclear	Scotland
Interview 22	F1	Male	No	Scotland
Interview 23	F1	Male	Yes	N. Ireland
Interview 24	F1	Male	Yes	N. Ireland
Interview 25	F2	Male	n/a	Scotland
Interview 26	F2	Female	n/a	Scotland
Interview 27	F2	Female	n/a	Scotland
Interview 28	F2	Male	n/a	Scotland
Interview 29	F2	Female	n/a	England
Interview 30	F2	Female	n/a	England
Interview 31	F2	Male	n/a	England
Interview 32	F2	Male	n/a	England
Interview 33	F2	Female	n/a	England
Interview 35	F2	Female	n/a	England
Interview 36	F2	Male	n/a	Scotland
Interview 37	F2	Female	n/a	Wales
Interview 38	F2	Female	n/a	England
Interview 39	F2	Female	n/a	England
Interview 40	F2	Male	n/a	N. Ireland
Interview 41	F2	Female	n/a	Scotland
Interview 42	F2	Male	n/a	England
Interview 43	F2	Male	n/a	England

Appendix G: Demographics of Interview Participants

Totals	24 F1s 18 F2s	23 Females 19 Males	19/24 did FiY1	25 England, 2 Wales, 12 Scotland 3 N. Ireland

Table 16: National stakeholder interviews - Other stakeholders demographics

Interview #	Stakeholder type	Gender	Country
Interview 44	Educational/Clinical Supervisor	Female	England
Interview 45	Educational/Clinical Supervisor	Male	England
Interview 46	Educational/Clinical Supervisor	Female	England
Interview 47	Educational/Clinical Supervisor	Male	England
Interview 48	Educational/Clinical Supervisor	Male	England
Interview 49	Educational/Clinical Supervisor	Female	England
Interview 50	Educational/Clinical Supervisor	Male	England
Interview 51	Educational/Clinical Supervisor	Female	N. Ireland
Interview 52	Educational/Clinical Supervisor	Female	England
Interview 53	Foundation Programme Lead	Female	England
Interview 54	Foundation Programme Lead	Male	England
Interview 55	Foundation Programme Lead	Male	England
Interview 56	Nurse	Male	England
Interview 57	Nurse	Female	TBC
Interview 58	Pharmacist	Female	England
Interview 59	Physician Associate	Female	England
Interview 60	Physician Associate	Female	England
Interview 61	Dean	Male	England
Interview 68	Dean	Female	Scotland
Interview 62	Medical Educator	Female	England
Interview 63	Medical Educator	Female	England
Interview 64	Medical Educator	Male	N. Ireland
Interview 65	Patient Representative	Female	England
Interview 66	Patient Representative	Female	England
Interview 67	Patient Representative	Female	England
Totals	**25 other stakeholders** **9 educational/clinical supervisors** **3 foundation programme leads** **5 healthcare professionals** **3 medical educators** **2 deans** **3 patient representatives**	**16 Female 9 Male**	**21 England** **2 N. Ireland** **2 Scotland**

Table 17: Post-simulation interviewee demographics

Interview #	F1 or F2	Gender	Interim Foundation (FiY1)	Country
Interview 68	F1	Male	Yes	SW England
Interview 69	F1	Female	Yes	SW England
Interview 70	F1	Female	Yes	SW England
Interview 71	F1	Male	Yes	SW England
Interview 72	F1	Female	Yes	SW England
Interview 73	F1	Female	Yes	SW England
Interview 74	F1	Female	Yes	SW England
Interview 75	F1	Male	Yes	SW England
Interview 76	F2	Female	n/a	SW England
Interview 77	F2	Male	n/a	SW England
Interview 78	F2	Female	n/a	SW England
Interview 79	F2	Male	n/a	SW England
Interview 80	F2	Male	n/a	SW England
Interview 81	F2	Male	n/a	SW England
Interview 82	F2	Female	n/a	SW England
Interview 83	F2	Female	n/a	SW England
Interview 89	F1	Male	Yes	SW England
Interview 90	F1	Female	Yes	SW England
Interview 91	F2	Female	n/a	SW England
Interview 92	F2	Male	n/a	SW England
Interview 84	Faculty	Male	n/a	SW England
Interview 85	Faculty	Male	n/a	SW England
Interview 86	Faculty	Male	n/a	SW England
Interview 87	Faculty	Female	n/a	SW England
Interview 88	Faculty	Male	n/a	SW England
Totals	**10 F1s, 10 F2s, 5 Faculty simulation facilitators**	**13 Female 17 Males**	**10/10 did FiY1**	**All post-simulation interviews were carried out in a Trust based in South-West England**