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2020 Medical Graduates: The work and wellbeing of interim Foundation Year 1 doctors during COVID-19

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2020 Medical Graduates: The work and wellbeing of interim Foundation Year 1 doctors during COVID-19
Final report

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Executive Summary

Background

In March 2020, it was confirmed that final year medical students in some UK medical schools would be able to graduate early, gain provisional registration with the General Medical Council (GMC), and start work in a novel role known as interim Foundation Year 1 (FiY1).

This project, as an evaluation of the FIY1 initiative, was proposed in early April, with data collection undertaken between May and December 2020. Research questions concerned (i) the attractiveness of FiY1, (ii) the experience of those who undertook the posts, (iii) how their transition to F1 compared to those who did not, and (iv) the ongoing impact of the FiY1 experience. We set out to identify any effects of their work on wellbeing in the short term, and any implications for longer-term impact on individuals' perceptions of medicine as a career.

Methods

The project used mixed methods across four stages of data collection:

- **Sign-up (April-May 2020) by final year medical students and new graduates**. Gathered respondents' demographic details, plans to apply to FiY1 and free text questions asking the reasons for their choices.
- **Phase 1: FiY1 questionnaire (3-weekly through June-July).** Gathered serial data about FiY1s work (the clinical areas in which they were working, their training during FiY1, use of PPE, their experience of work and perceived preparedness on starting FiY1), wellbeing (using validated scales to measure stress, anxiety depression and burnout) tolerance of ambiguity and professional identity as doctors. Free text 'journal' entries could be completed by participants at any time.
- **Phase 2: F1 questionnaire (August and October). Gathered data similar to FiY1 questionnaire, but** fewer items about the content of work were included, and additional preparedness items addressed 25 individual activities.
- **Phase 3: F1 interviews (October-November).** A purposive sample of questionnaire respondents provided in-depth data about their experiences at the start of the pandemic, their transitions into FiY1 and F1, and any wider or longer-term impact of their working during the pandemic.

Key findings

Overall, our participants found FiY1 to be a largely valuable experience, and for many eased the transition to practice.

Key finding 1: FiY1 was attractive to medical students

FiY1s were attracted to the role by multiple factors. Primarily they perceived benefits to their own learning and had an altruistic desire to contribute to the NHS in a time of need, although some felt a sense of obligation. While some graduates actively chose not to undertake FiY1, the main barriers to taking on the role were logistical challenges.

White graduates were more likely to be FiY1s, possibly reflecting concerns among Black, Asian and other ethnic minority doctors about the risk of COVID-19. Younger graduates, who may have fewer personal commitments, were also more likely to take on FiY1.

Key finding 2: FiY1s' work was variable but often similar to the work of F1s

FiY1s worked across a range of clinical environments, although most were deployed in medical wards. The majority had worked with COVID-19 patients, sometimes in COVID-specific areas. The composition of FiY1s work was comparable to that of F1s, as identified in an earlier GMC study (2015), but they were involved to a greater extent in end of life care.

Key finding 3: FiY1 experience benefitted preparedness and the transition to F1

Those 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. This persisted into October for the overall measure and for several specific measures. 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.

Comparison with the GMC's National Training Survey (NTS) data indicates that FiY1s' preparedness for FiY1 was similar to the 2019 F1 cohort's preparedness for F1, and that they were more prepared, and non-FiY1 respondents less prepared to start F1 than the 2019 cohort.

Qualitative data confirmed that for some, FiY1 constituted a transitional period in which they developed experience of practice, preparing them for F1.

Key finding 4: FiY1 experience had limited impact on participants' wellbeing

Exposure to acutely ill and dying patients was associated with higher stress and burnout during FiY1, but on starting F1 there was no difference in wellbeing measures between those who did, and did not, do FiY1. Undertaking an FiY1 had a protective effect on the risk of depression on starting F1. Comparison with work burnout data from the NTS in 2018 and 2019 suggests that 2020 F1s felt generally less burned out than in previous years, though this could reflect the difference in timing (the NTS is usually completed when F1s have been working for several months).

Key finding 5: 'Supported autonomy' was promoted by positive learning environments and attention to wellbeing

Participants faced challenging experiences during their FiY1 posts, but these were not necessarily negative if accompanied by support from colleagues. Effective support related to clinical, social and pastoral challenge – so encompassing elements of both work and wellbeing. Some support, such as working limited hours, induction and buddying, was at a system level design of FiY1, while other informal support was more ad hoc and interpersonal.

Discussion

Our findings can be linked to framework of Autonomy, Belonging and Competence identified in the GMC's *Caring for Doctors, Caring for Patients* report.

Autonomy. Autonomy allows doctors to be self-directed in their practice and their judgements. Structural features of FiY1, such as constraints on working hours, being paid, and being supernumerary supported this, providing space and time to develop experience. Interpersonal support, as well as supervision, which allowed them to respond in their own way to challenges was also an important facilitator of autonomy. Autonomy is also linked to fairness in the workplace, and the recognition of being paid employees, doing the work of a doctor.

Belonging. There were specific challenges to 'belonging' in the context of COVID-19, and particularly the social isolation experienced during national lockdown, which could have consequences for the development of relationships in work.

In some cases, 'belonging' to a clinical team was challenged by uncertainty about the FiY1 role among team members. However informal contact from colleagues who reached out to FiY1s at times of challenge was welcomed by them and gave a sense of belonging to the team. Structural features cited above also demonstrated belonging in the sense of being part of an organisation.

Competence. Competence encompasses doctors safe and appropriate working. The features which enable autonomy and belonging are supportive of safe practice, as well as doctors' wellbeing. Competence is also closely linked to perceived preparedness. Our finding that FiY1s felt more prepared for F1 than non-FiY1 peers may be linked to their developing autonomy during FiY1, but also to developed competence. The most frequent activities undertaken by FiY1s were those which form the majority of F1s' work, which may be an important part of their feeling prepared to start F1.

As they start work, doctors occupy a transitional state. FiY1 highlighted this transitional state, with the 'interim' of the job title indicating explicitly it was time limited. Literature has suggested that workplace learning is necessary for learners to develop contextualised skills. However, compared with student placements, FiY1 also provides experience of responsibility. In this formal, paid role, FiY1s are undertaking a 'responsibility apprenticeship', as well developing skills. Our findings also add an element which is somewhat missing from earlier literature - ensuring the wellbeing of the learner. Successful transition to work benefits from a system which supports learners educationally and pastorally, something we term 'supported autonomy'.

Following this period, the fully autonomous doctor should not just have the competence to practise safely, nor even the experience to practise confidently, they must be able to emerge from the transition to practice unscathed. FiY1 provides an example of how this may be enabled.

Implications – what constitutes a good interim role

We have indicated that the overarching experience of FiY1, at least as reported by FiY1 doctors themselves, was of a supported transition to practice, and an apprenticeship in the responsibility of being an F1. But in considering the implications for future policy, we must consider how much of this is unique to the FiY1 experience, and how much could be part of a normal transition to F1.

The table identifies features which may define a 'good' FiY1-like role away from the demands and affordances of the pandemic. Many of these reflect current practice for F1s, but there are some important points which make an interim role distinct. These encompass the definition of the role, the resources required, and the responsibilities of others.

The features of a good interim role

Feature	Benefits	Challenges
A role as a paid, qualified professional.	Parity of esteem. Raises expectations of others, and the trainee.	Cost.
A clear application and appointment process.	Clarity of role and responsibilities. Provides control/autonomy to trainee.	Administrative set up for matching processes Perceptions by applicants of bureaucratic barriers.
An explicitly transitional, supernumerary role.	Clarifies expectations, gives direction to role. Ensures the interim role is developmental.	Cost. Additional supervisory load. Risk of being tasked with duties not appropriate for medical role.
A role that avoids anti-social hours.	Reduces physical demands on transition to work.	
A role long enough to make a difference – minimum 2 months.	Provides sufficient experience to increase preparedness for F1.	Cost increases with time in post. Will require early graduation (though in turn saves costs of undergraduate training).
A mutually understood role.	Expectations are appropriate to the level of experience. Training experience of F1s is protected.	Cost of communicating clearly across professions and grades.
A role with clear responsibilities and duties.	Ensures sufficient workload. Ensures varied experience and duties that align to that of an F1. Provides workforce capacity to free F1s for more development.	Risk of encroachment on F1 role. Need for training of F1 buddies
Space for informal as well as formal support.	Ensures wellbeing is integrated with work, reflecting the ABC of *Caring for Doctors, Caring for Patients.*	Changing workplace cultures. Specifying *informal* support may appear contradictory.

Longer-term reflections and further work

Our interviews were planned for November 2020 in the assumption that trainees would be in a position to reflect on their experience retrospectively, whereas in fact they coincided with the acceleration of the second wave of cases. It was therefore too soon to realistically consider any longer-term impact on their views of medicine. Some follow up of this group, to identify any longer-term effects on them as doctors, is advisable.

One year on from the announcement of FiY1, it is also apparent that the impact will be longer and wider than we could have anticipated. The clinical placements of today's final year students will have been skewed by COVID-19, those in earlier years of medical school are having an experience that is constrained by lockdowns, and at least two years' intake to medical schools will have been shaped by the replacement of A-levels. This, as well as the long-term effects on the graduates of 2020, require longer-term follow up.

Finally, we must consider the long-term effects of COVID-19 on all doctors – those whose training has been disrupted, those consultants and GPs who have had to develop new ways of working, have been displaced into unfamiliar clinical areas, and who are now faced with a backlog of patient care. The ramifications of the pandemic for medicine, and for medical education will take a long time to unravel. As the NHS looks towards recovery, not only of the healthcare system, but of the people who work in and deliver that system, the importance of education and training as part of that recovery should not be overlooked.

Conclusions

The FiY1 post, based on our data, was a valuable experience for most who undertook it, adding value beyond undergraduate placements and assistantships. In particular, FiY1 provides an 'apprenticeship' in the *responsibility* of being a doctor, but with fewer of the demands. The notion of supported autonomy, where work and wellbeing are both supported in a holistic way, has potential for benefit beyond the acute demands of the pandemic context.

Contents

1   Introduction

The incidence of what we now know as COVID-19 accelerated rapidly at the beginning of 2020. In the UK, the first cases were identified in January, before the disease and its underlying coronavirus were formally named by the World Health Organisation (WHO) on 11 February. The Department of Health and Social Care (DHSC) launched a public health information campaign in February to attempt to slow the spread of the coronavirus. By the time the outbreak was declared a pandemic by the WHO on 11 March, concerns about potential strain on the UK healthcare system had led to proposals that final year medical students could graduate early and enter the workforce as qualified doctors. The interim Foundation Year 1 (FiY1) programme was confirmed on 26 March, [1] and the first of these doctors started work on 17 April.

The speed of this initiative required rapid coordination between stakeholders. These included the GMC (to allow early provisional registration), medical schools (to ensure safe graduation of medical students outside usual assessment processes), and the bodies responsible for postgraduate education across the four nations of the UK[*] (to create and manage the FiY1 posts).

FiY1 was a brand-new role, and while it may echo the 'student locums' which many undergraduates undertook until the early 1990s – working essentially as qualified doctors before graduation [2] – it carried greater regulatory protection for doctors and patients. In regulatory terms, FiY1s were no different from those in Foundation Year 1 (F1). Both have provisional registration with the GMC, but the defined role of FiY1s was more limited. Guidance was issued by the United Kingdom Foundation Programme Office (UKFPO) to ensure they were not asked to work beyond their competence and were appropriately supervised. [3] It was recommended by the UKFPO that FiY1 doctors did not work night shifts, to ensure appropriate supervision, and that they were placed with Foundation Programme doctors, although individual 'buddies' were not allocated centrally. Local education providers (the organisations in which the posts were located) were obliged to provide induction, e-learning resources, and a named Clinical Supervisor. Induction could however vary between regions and sites within regions. [4, 5]

This project, an evaluation of the FIY1 initiative, was proposed in early April, with main data collection undertaken between April and December 2020.

1.1   *Scope of the evaluation*

All new doctors face challenges at the point of transition to practice, but FiY1s faced these in an extraordinary context. Their time at medical school was curtailed, often without the usual final assessments, without a pause between medical school and starting work, and without the rite of passage of a face-to-face graduation ceremony. They were also entering a new medical role, which had been rapidly designed and introduced to the wider healthcare workforce.

Our evaluation considered several areas relating to the work and wellbeing of FiY1s. We wanted to know what graduates were doing as part of their FiY1 roles, and how this experience affected them during FiY1, and on transition to F1. We also wished to consider how starting work in such circumstances may shape their views of medicine as a career. The political context in which the pandemic has unfolded, and its social impact, has

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[*] The UK Foundation Programme Office (UKFPO), Health Education England (HEE), NHS Education Scotland (NES), Northern Ireland Medical and Dental Training Agency (NIMDTA) and Health Education and Improvement Wales (HEIW).

placed medicine at the forefront of public awareness, [6] with potential consequences for graduates professional identity and aspirations.

As well as providing an evaluation of FiY1 as a point in time, we also intended to consider the future relevance of findings. Our aim was to inform policy decisions and educational practice, both in acute responses to further crises, and restored normal practice. To allow the FiY1 experience to be contextualised against the pre-COVID world, we considered issues of established interest in the medical education literature, to which the project team have previously contributed: preparedness, wellbeing, tolerance of ambiguity and professional identity.

1.1.1   The work of FiY1s

Research conducted by members of the project team in 2015 considered what activities Foundation Programme doctors undertook as part of their work. [7, 8] This found wide variability in the extent to which activities were part of the F1 job. Among 97 activities contained in the then-current outcomes for graduates (published as *Tomorrow's Doctors* [9]), 28% were carried out regularly by less than a quarter of F1s, while other activities, not explicitly specified as curricular outcomes, were actually an expected part of their work from day one of practice. While there are expectations of and constraints on what FiY1s do, it will be important to understand the type of care they are delivering, and the skills they are using.

Preparedness for practice

There has been a great deal of interest in the extent to which new doctors are prepared for practice, particularly in the UK. In theoretical terms, a precise definition of what it means to be prepared remains elusive, [10, 11] but it typically encompasses subjective judgements of skills, knowledge, and competence, which can be framed prospectively or retrospectively. However, in regulatory terms, there is a need to define what new doctors are expected and able to do, and the GMC specifies this in its *Outcomes for Graduates*, [12] and *Standards for Medical Education and Training*. [13]

While definitions and criteria vary, a body of work is largely in agreement that there are gaps in new doctors' preparedness, particularly when working in acute care situations. [14, 15, 16,17] The 'student assistantship' was introduced by the GMC from 2012 as a mandatory part of undergraduate medical education, [9] following the suggestion that medical graduates' preparedness was adversely affected by a lack of workplace learning. [18] The student assistantship is an undergraduate placement in which students work closely with an F1 doctor and gain experience of what the F1 role involves. There is some evidence that it may help preparedness, [19] albeit possibly only if it is aligned with the clinical specialty of an F1's first post. [20] However, its implementation across the UK, and individual experiences, vary widely, [21, 22] meaning conclusions on its impact must remain tentative.

Importantly, as the assistantship is a student placement, undertaken before graduation and provisional registration, there are statutory limitations on the responsibility and scope of practice of students in these placements – most notably, that they cannot prescribe medication. There is therefore a limit to the extent to which it can provide *authentic* experience on which a sense of preparedness can be based. In contrast to this, FiY1s were qualified and provisionally registered, meaning they were on the same statutory status as F1s. The posts therefore provided an opportunity for comprehensive workplace learning, which may more authentically capture distinctive elements of work as an F1, as an explicitly transitional step between medical school and F1.

1.1.2   Wellbeing

The wellbeing of doctors and medical students has been of particular concern in recent years, with extensive examinations of risks, and approaches to mitigation published by Health Education England [23] and the GMC, [24]

in 2019. The GMC has included the work burnout subscale of the Copenhagen Burnout Inventory in its National Training Survey since 2018, and has identified that doctors earlier in training may be at higher risk of burnout. [25] Feeling underprepared for F1 is also associated with a higher risk of burnout, even several years later. [26]

These findings reflect a substantial body of work looking at the wellbeing of medical students and trainee doctors across the world. Reviews have found high prevalence of adverse wellbeing among these groups, with a higher risk among younger doctors. [27, 28, 29, 30] The literature identifies effects which would seem to be transferable between different healthcare systems: work overload, conflicting levels of dependency, the balance between responsibility and autonomy, and working with suffering and dying patients.

Different strategies to address threats to wellbeing have been considered, with organisational leadership and culture change being identified as key factors to mitigate these threats. [31] The Care Under Pressure project, undertaken by members of the project team, identified that threats to doctors' and medical students' mental health often arose from feelings of isolation and that interventions which emphasised relationships and belonging were more likely to show benefit. [32, 33]

The transition to practice has been identified as a particularly stressful point in normal circumstances, [34] and doing so in the context of a global pandemic would be expected to add additional stressors. An additional threat to wellbeing which may be magnified in extreme circumstances is that of 'moral injury'. This term describes cases where individuals face situations where they witness, or are required to carry out, actions which conflict with moral values. Originating in the context of the armed forces, the concept has been applied to medicine, with moral dilemmas faced during the COVID-19 pandemic bringing it to the fore. [35] It has similarities to phenomena already recognised in medical education, in the challenges faced in professionalism dilemmas, [36, 37] but demands a more urgent focus because of the threat to doctors' wellbeing.

1.1.3   Tolerance of ambiguity

Alongside the practical challenges of starting work as a doctor, there is an epistemological challenge in dealing with the ambiguity inherent in medical practice. Certainties of knowledge which may be implicit in undergraduate education can be challenged with exposure to real patients. Defining the form of this ambiguity, and how it is experienced, is complex, and authors have identified different approaches to codifying the phenomenon, encompassing details such as what is known and what is knowable. [38, 39, 40]

It has been proposed that ambiguity can be defined as stimulus present in the environment, and uncertainty as a subjective response to that ambiguity. [39] The ability to tolerate ambiguity has been proposed by some as an individual trait, [39] although others argue it may be a more dynamic state which can be modified by environment or experience. [41] It may be linked conceptually to the idea of 'personal epistemologies', or individuals' beliefs about the certainty of knowledge in medicine. [42] This would imply that doctors' experience of uncertainty may vary with the extent to which they perceive medicine as something inherently ambiguous. [43, 44]

The experience of uncertainty has been linked to adverse wellbeing, [44] and so tolerance of ambiguity may be protective against these effects. It can also have direct consequences for care. For example, if a doctor is less tolerant of ambiguity, and so sees less scope for error in the evidence on which they base their decisions, their judgement may be different to those who are more accepting of ambiguity of the medical evidence base. [42]

This is an important feature of our evaluation of FiY1. As a new disease, where the course and effective treatments were largely unknown during the first wave of spring 2020, clinical ambiguity may have been more

apparent than in more normal times. Further, clinical care was also in the context of a general societal uncertainty as to how the pandemic would unfold.

1.1.4   Professional identity

Our final area of interest in the transition to practice is the development of doctors' professional identity – the way and extent to which they perceive themselves as 'doctors'. It has been argued that professional identity is an intrinsic part of professional development, [45, 46, 47] and there is evidence that medical students identify as doctors even before graduation. [48, 49] How this may develop following an unanticipated transition to practice is unknown.

Professional identity has also been linked to wellbeing among medical students. [50] Burnout experienced from the transition of being a medical student to practising as a junior doctor has been shown to relate to measures of professional identify. [51] How this develops through the transition to practice may be affected by the early entry to the workplace involved in FiY1.

1.2   Research objectives

This project aimed to examine the experiences of FiY1 doctors in terms of the work they did, their exposure to ambiguity, their preparedness for practice, their wellbeing, and their professional identity. We wanted to identify any effects of their work on their wellbeing in the short term, and any implications for longer term impact on individuals' perceptions of medicine as a career.

We did not directly consider any system-level effects, such as recruitment or management of the roles, nor effects on care or patient outcomes. However, by focusing on the impact on individual doctors, and their perceptions of the system in which they are working, we can consider how the FiY1 initiative may inform future practice. This may include responses to acute situations such as the pandemic, but also future 'business as usual' by illuminating the effects of experience as a qualified doctor in a defined role before starting F1.

This project addressed four main research questions, with a number of subsidiary questions, in order to consider the impact of the FiY1 initiative from the perspective of newly qualified doctors.

RQ1   Why did eligible graduates choose to apply, or not, for an FiY1 post?

RQ2   What is the experience of doctors in FiY1 posts?
   a.   What activities are they undertaking?
   b.   How do indicators of wellbeing, tolerance of ambiguity, and self-concept as doctors vary during the FiY1 post?
   c.   What challenges and positive experiences do FiY1 doctors experience during their FiY1 posts?
   d.   How does this experience vary with geographical region and medical school attended?

RQ3   How does the experience of FiY1 doctors on transition to FY1 compare to that of those who did not have an FiY1 post?
   a.   How do perceived preparedness or capability for elements of practice, and measures of wellbeing, compare between the two groups?

RQ4   What are the reflections of former FiY1 doctors on how work during the COVID-19 outbreak prepared them for ongoing practical, ethical and emotional aspects of practice in their F1 year?

2 Method

The project took a mixed methods approach, using quantitative methods to collect data reflecting the experiences of a larger sample of FiY1s and F1s, and qualitative methods to allow in-depth consideration of individual experiences. Ethical approval was obtained following review by the Newcastle University Faculty of Medical Sciences Research Ethics Committee (ref 1910/2410).

A project advisory group was convened to discuss and agree key stages of project development. This comprised representatives from medical schools and foundation schools, and trainees in FiY1 posts. Periodic meetings previewed data collection and reviewed preliminary findings.

2.1 Data collection

There were four main stages of data collection. Full details of questionnaires and interview questions are provided in the appendix.

2.1.1 Sign-up (April-May 2020)

Participants were initially invited to sign up to the study from early April 2020, with an email cascaded to all final year medical students across the UK through the Medical Schools Council and UKFPO, with the support of HEE, NES, HEIW and NIMDTA. This contained a link to an online form asking whether the respondent was applying for FiY1, their demographic details, and free text questions about reasons for applying, or not, to FiY1. It also asked for an email address so that subsequent questionnaire links could be emailed directly to participants. The sign-up link was also shared on Twitter by the MSC, UKFPO, GMC and other organisations.

2.1.2 Phase 1: FiY1 questionnaire (June-July)

The Phase 1 questionnaire contained items about FiY1s experience during their FiY1 post. These included the clinical areas in which FiY1s were working, their training during FiY1, use of PPE, the activities they were undertaking (with items derived from *Outcomes for Graduates* [12]), exposure to ambiguity as part of work (reflecting different types of ambiguity as described in the literature [39, 40]), perceived workload and perceived preparedness on starting FiY1. Wellbeing was measured on validated scales: the perceived stress scale (PSS), [52] the Hospital Anxiety and Depression Scale (HADS), [53] and work and personal burnout subscales of the Copenhagen Burnout Inventory. [54] Other scales measured participants' tolerance of ambiguity (the TAMSAD scale) [41] and aspects of their professional identity as doctors. [55] This first questionnaire was piloted with four FiY1s to ensure clarity and content validity.

A link to the questionnaire was sent to all those who had provided an email. Up to three reminder emails were sent to non-responders, and general reminders cascaded through the UKFPO and social media channels – sign-up remained open throughout Phase 1. Follow-up questionnaires to allow longitudinal analysis were sent to individuals 21 days after completing a questionnaire. Concurrently, a link to a separate free text 'journal' form was shared with all signed-up participants. In this, respondents were asked to describe challenging and/or positive experiences during FiY1. This was kept separate from the main questionnaire in order that it could be completed multiple times by participants if they wished.

2.1.3 Phase 2: F1 questionnaire (August and October)

The Phase 2 questionnaire was largely the same as that for Phase 1. All wellbeing, ambiguity and identity items were the same. Fewer items about the content of work were included, as this would be dependent on

individual specialty placements. As well as a question about overall perceived preparedness for starting F1, items were included about perceived preparedness for 25 individual activities derived from *Outcomes for Graduates*. The questionnaire also asked if participants would like to take part in a research interview.

As Phase 2 was open to all F1s, including those who may not have been aware of Phase 1, a preliminary sign-up form was again used. Project information was shared during Foundation Programme induction, facilitated by Foundation School Directors and supplemented by social media advertising. The Phase 2 questionnaire link was distributed on 15 August, ten days after F1s started work, to all who had signed up to Phase 1 or Phase 2. Once the questionnaire was live, sign-up and questionnaire forms were merged so that participants had only to follow a single link. A link to a follow-up questionnaire was sent on 29 September to all who had signed up, regardless of whether they had completed the questionnaire in August.

2.1.4   Phase 3: F1 interviews (October-November)

Phase 3 interviews addressed participant' experiences in more detail, focusing on their experiences at the start of the pandemic and any curtailment of medical school, their transitions into FiY1 and F1, and any wider or longer-term impact of their working during the pandemic. For some interviews, an illustration of the pandemic timeline was used as a prompt.

Interview participants were a purposive sample of respondents who had indicated willingness to take part in an interview. These were selected to ensure representation of gender, age group, ethnicity, geography, and high and low stress as indicated in the first Phase 2 questionnaire. Those who had provided free text 'journal' responses, and completed multiple questionnaires were prioritised for inclusion in the interview sample, as potentially articulate and reflective participants.

2.2   Data analysis

2.2.1   Free text responses

Free text data was collected as part of sign up and Phase 1 questionnaires. When signing up, all respondents were asked why they had, or had not, applied for an FiY1 post. In the Phase 1 questionnaire, FiY1s were asked about their experience of training during FiY1.

A qualitative content analysis was conducted separately on both data sets. [56]   For the first data set, team members KM, BB, DC read the raw data and developed initial themes independently. Following discussion and agreement these were then applied to the full dataset using NVivo 12 software. For the second data set, the process of generating themes was conducted by AG and BB. For both, the frequencies of occurrence of the themes were reviewed, and the underlying context considered. [57]

Free text responses provided in the 'journal' were more substantial, and so thematic analysis [58]   was used. DC handpicked a subset of journal entries based on the variety (eg by geography, ethnicity, gender etc) and richness of accounts, and shared these entries with KM and AG. AG, KM, and DC coded this subset of entries independently, but met to discuss and agree a common coding framework, which was then applied to the full dataset using NVivo software.

2.2.2   Interview data

Thematic analysis [58]   was also used for interview data. DC and AG handpicked a subset of four transcripts based on sample variety (eg geographical, ethnicity, gender etc) and richness of accounts and shared these entries with KM. AG, DC and KM coded this subset of entries independently, and subsequently met to discuss and

agree a common coding framework. The remaining transcripts were coded by DC and AG, with regular review meetings with KM and discussion of emerging findings with the rest of the project team.

2.2.3   Quantitative analysis

We adopted standard approaches for coding each of the questionnaire scales from the literature. The Perceived Stress Scale is reported as a sum, giving a range from 0 to 40, and the Copenhagen Burnout Inventory subscales transformed from a five-point scale and summed, giving a range from 0 to 100. The TAMSAD and identity subscales are reported as means between 1 and 5. The HADS anxiety and depression subscales are often treated as sums, but diagnostic plots identified problems arising from extreme skewness for depression indicating low scores overall. These were not be addressed by transforming the scale, and so we dichotomised both HADS subscales by using thresholds which have been validated for medical students as indicating a risk of anxiety or depression – a cut-off of ≥8 for depression, and of ≥13 for anxiety. [59]

Some preparedness items had a high negative skew (indicating high levels of preparedness) which adversely affected regression models. For those items, a Box-Cox transformation [60] was undertaken to allow consistent analysis across preparedness items.

All quantitative analyses were carried out in the R statistical programming environment. [61] Different analyses were used as appropriate: chi-square and Fisher's exact test for crosstabulation, multiple linear regression, binomial logistic regression, and for longitudinal analysis, linear mixed effects regression. [62] The results chapters summarise findings, while full R output is available in the appendix.

In developing regression models, possible covariates were included in initial models to control for confounding effects. These were gender (male/female), age (simplified to under 25/over 25) and ethnicity (simplified to White/BAME) to control for potential demographic variation. For analyses involving clinical activities or exposure to ambiguity, the TAMSAD scale was also included as a covariate because we hypothesised it may moderate effects on wellbeing measures. Covariates were retained in models if they influenced model fit. These effects are not discussed in detail in the results, but are described in the appendix.

3   Results: Respondent profiles

Across Phase 1 and Phase 2, 1448 respondents signed up to take part in the research. Of these, 1054 indicated they had done an FiY1 post, and 368 that they had not (24 had not yet graduated when they signed up, but could potentially have entered FiY1 later on, so their FiY1 experience is treated as unknown). With 4662 FiY1 posts filled at some point between April and July, we therefore have data from approximately 23% of the FiY1 cohort.

Responses were obtained from all Foundation Schools across the UK, and while the proportion of responses in different geographies varied – from 3% to 48% of FiY1s employed in each Foundation School – the median of 17% (IQR 14-28%) indicates a reasonable response rate overall for an online survey in the circumstances of the pandemic. There were also responses from graduates of all but one UK medical school, with the median response rate from those with non-zero responses again being 17% (IQR 14-26%). Full details of the geographical distribution are included in the appendices.

A breakdown of demographics from across data collection phases is given in table 1. In this table, ethnicity is presented with more granularity than subsequent analysis, which uses a binary distinction between 'White' and 'Black Asian and Minority Ethnicity' (BAME). We recognise the weaknesses of grouping 'BAME' ethnicities together but have done so to maximise data usage in analysis.

Table 1.   Demographics of FiY1 sample and responses

			Phase 1 questionnaire			Phase 2 questionnaire		Phase 3 interviews
		Signed up	Q1	Q2	Q3	August	October	
	Total	1448				578	414	22
	FiY1	1054 (73%)	461	238	60	398 (69%)	286 (69%)	17 (77%)
	Non-FiY1	368 (25%)				180 (31%)	124 (30%)	5 (23%)
	Not graduated	24 (2%)						
	Unknown	2 (<1%)					4 (1%)	
Still in FiY1 post [*]		-	441 (96%)	204 (86%)	28 (47%)	-		
Gender	Female	941 (65%)	297 (64%)	157 (66%)	35 (58%)	381 (66%)	286 (69%)	9 (41%)
	Male	485 (33%)	158 (34%)	78 (33%)	24 (40%)	188 (33%)	121 (29%)	13 (59%)
	Other	1 (<1%)	1 (<1%)	0				
	Unknown	21 (1%)	5 (1%)	3 (1%)	1 (2%)	9 (2%)	7 (2%)	
Age group	< 25	861 (59%)	295 (64%)	151 (63%)	37 (62%)	323 (56%)	232 (56%)	13 (59%)
	25-30	515 (36%)	146 (32%)	73 (31%)	18 (30%)	217 (38%)	158 (38%)	7 (32%)
	> 30	59 (4%)	17 (4%)	12 (5%)	4 (7%)	31 (5%)	21 (5%)	2 (9%)
	unknown	13 (1%)	3 (1%)	2 (1%)	1 (2%)	7 (1%)	3 (1%)	
Ethnicity [**]	White	957 (66%)	349 (76%)	184 (77%)	47 (78%)	378 (65%)	267 (64%)	14 (64%)
	Black	62 (4%)	11 (2%)	5 (2%)		33 (6%)	21 (5%)	
	South Asian	180 (12%)	34 (7%)	13 (5%)	3 (5%)	66 (11%)	46 (11%)	5 (23%)
	East Asian	91 (6%)	21 (5%)	13 (5%)	2 (3%)	44 (8%)	39 (9%)	1 (5%)
	Unspecified Asian	54 (4%)	17 (4%)	9 (4%)	3 (5%)	24 (4%)	21 (5%)	1 (5%)
	Middle Eastern	26 (2%)	3 (1%)			3 (1%)	3 (1%)	
	Unspecified Other	13 (1%)	2 (<1%)			6 (1%)	2 (<1%)	
	Not given	65 (4%)	24 (5%)	14 (6%)	5 (8%)	24 (4%)	15 (4%)	1 (5%)
Disability [**] 'Are your day-to-day activities limited because of a health problem or disability which has lasted, or is expected to last, at least 12 months?'	None	1353 (93%)	432 (94%)	218 (92%)	54 (90%)	536 (93%)	391 (94%)	20 (91%)
	Yes, a little	36 (2%)	7 (2%)	4 (2%)		17 (3%)	12 (3%)	1 (5%)
	Yes, a lot	3 (<1%)					2 (<1%)	
	Unknown	56 (4%)	22 (5%)	16 (7%)	6 (10%)	25 (4%)	9 (2%)	1 (5%)

[*] Some respondents who had terminated or not yet started their post are excluded from analyses.
[**] An initial tranche of questionnaires omitted these items, hence a higher proportion of missing data.

In Phase 1, 461 FiY1s responded to the questionnaire on one occasion (58% of the 788 FiY1 who had provided an email address on signing up). 238 completed it a second time (59% of those who received a second link), and 60 a third time (46% of 131 of those who received a third link). However, not all respondents were still in FiY1 posts by the second and third rounds, and we cannot know how many non-respondents may also have finished their FiY1 post, so the response rates to the later questionnaires are the minimum. In Phase 2, there were 578 responses in August, and 414 in October, of whom 283 (68% of August respondents) completed both questionnaires.

Figure 1 illustrates the timeline of responses, in relation to the time at which FiY1 respondents reported starting their FiY1 post. Both are presented against the background context of the unfolding pandemic, represented by the number of covid-related hospital deaths in England and Wales by each week. This shows that many FiY1s were starting their posts while the 'first wave' of UK cases was still high.

Figure 1. Timeline of COVID-19 pandemic, FiY1 start dates, and data collection

    a)   COVID-related hospital deaths in England and Wales
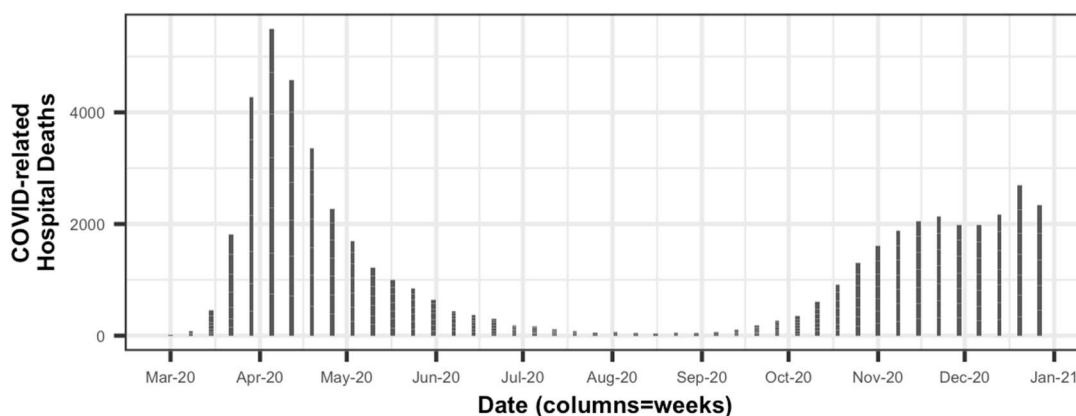
    b)   Date on which FiY1 participants started their post
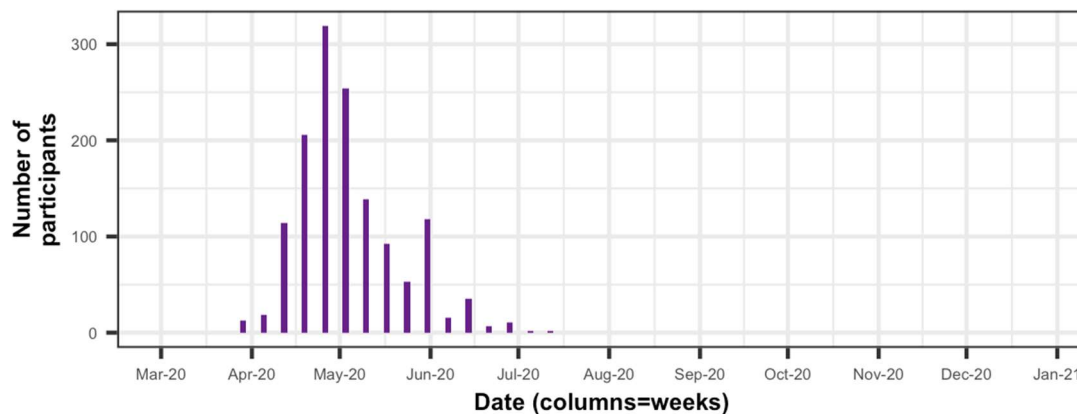
    c)   Date on which questionnaires were completed and interviews conducted

4   Results: Motivation to apply to FiY1

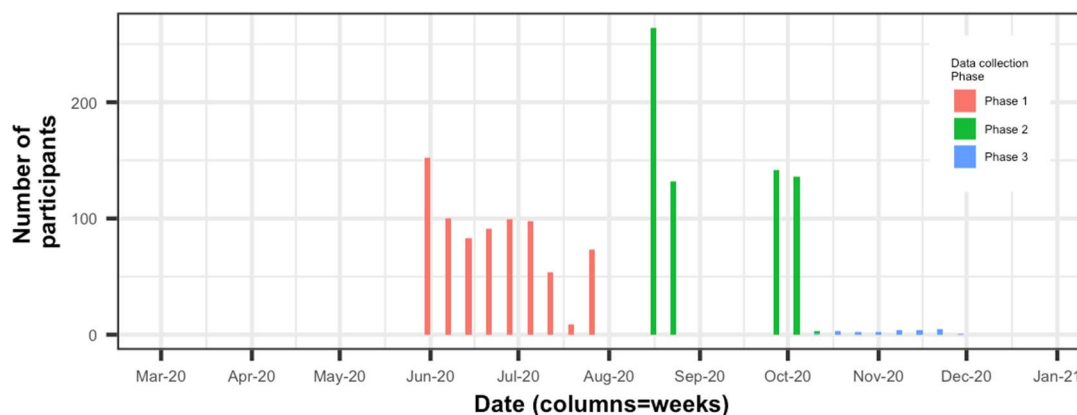On signing up to Phase 1, 927 respondents gave a free-text response indicating why they had, or had not, applied for an FiY1 post. Responses ranged from single words to lengthy and rich accounts, with many respondents providing more than one reason. Of these responses, 778 were from those who indicated they would be taking up FiY1 posts. A content analysis of these responses identified some common themes, the frequencies of which are summarised in table 2.

Table 2.   Reasons given for undertaking FiY1

Theme	Examples	Number of references
Learning	To gain experience To gain confidence Easier transition to F1 Keep updated (not de-skill) Prospect of (more) supervision	603
Altruism	Give back to NHS/Medical School Duty to help Being part of COVID-19 effort Staff shortages Responsibility Feel useful	380
Financial gain	Need to earn/pay student loan	280
No alternatives	Boredom Elective cancelled	275
Obligation	Extrinsically motivated Peer pressure Emulating other peers Not wanting to 'fall behind' peers University expectation Family expectation Media expectation	167

Most respondents gave more than one reason, so total is greater than the number of respondents.

The most frequent reason graduates gave for choosing to apply to FiY1 was for the personal benefit of gaining **learning**, experience and confidence. Some described this in terms of a desire to avoid deskilling, or to keep themselves up to date, reflecting a perception that their skills might atrophy with a prolonged period away from a clinical setting. This also encompasses references to being more prepared for, or having an easier transition to, F1. References to learning were often accompanied by the expectation of being supported and supervised.

Conversely, the second most frequent motivation was based in **altruism** – including the desire to be useful, to help the NHS, and be part of the efforts to tackle COVID-19. While the national climate and the focus on healthcare may have been a component of this, there were also references to it being what they were trained for, and 'giving back'.

Other common but less frequent reasons were associated with benefit to the individual. The **financial** incentive of FiY1 being a salaried role was also mentioned. For some, earning some money was framed as a necessity (eg being able to pay the rent), while for others it was welcome but not essential. Avoiding inactivity and **boredom** was a common motivation, compounded by the idea that working as an FiY1 would provide an opportunity to socialise – or simply leave the house – during lockdown. This was compounded by the loss and cancellation of alternative plans, such as electives or holidays.

These reasons all indicate a positive choice on the part of graduates, reflecting their actively wanting to be FiY1s. In contrast, the final theme related to a sense of **obligation**, linked to feelings of expectations from medical schools, families, and the media, and of direct or indirect pressure from peers (including the fear of 'falling behind' peers who were doing FiY1). This could also be seen as an inverse of altruism.

It was rare that any respondent gave just one reason, and elements of altruism and benefit for the participant were often both given as motivations.

> *I wanted to help where I could, to treat patients and fill any gaps in the FY rota to reduce stress on staff. Also, I wanted to gain more experience before starting my FY post in August so I could be better prepared.*
>
> Questionnaire free text, female FiY1, Scotland

Another 149 respondents gave reasons for their not applying to FiY1. The themes derived from these responses indicated overall a less explicit, positive choice on the part of graduates, but rather circumstances limiting their option (table 3). The majority of these respondents had **wanted to undertake FiY1 training, but were unable to,** due to structural problems on the recruitment side (eg a lack of, or delayed communication with trainees, and variation in the local demand for FiY1 posts). Unsurprisingly, and mirroring the attractions of FiY1 described above, these responses were often coloured by feelings of frustration, guilt, and regret for a missed opportunity. **Logistical issues** beyond the organisational/structural level were often mentioned. These included international trainees being unable to relocate to the UK in time due to lockdown restrictions, quarantine, or having caring responsibilities (eg home-schooling).

Equally common was the **fear of illness for self or others**, for example, the fear of contracting COVID-19 (sometimes compounded by a pre-existing personal health condition), and/or passing it on to family members, the concern of developing burnout, the feeling of being at risk because in a BAME group, and general concerns about lack of PPE. There were some who stated they chose to **take a break** and recharge after exams and before starting clinical work, and/or spend some time with family. Finally, some mentioned a commitment to **exams (medical school, PSA, US board exams),** while others were already **contributing to NHS in another way** (other paid HCP role, volunteer).

Table 3.   Reasons given for not undertaking FiY1

Theme	Examples	Number of references
Wanted to but no posts available	Poor communication Lack of information Low numbers of COVID-19 cases Occupational health restrictions	66
Logistical issues prevented FiY1	Commute Caring responsibilities International travel, visas Quarantine	36
Fear of illness for self or others	Fear of contracting virus Protecting oneself and others Avoiding burnout Pregnancy BAME minority feeling at risk Concerns due to lack of PPE	36
Taking a break (positive choice)	Holiday/rest Recharge after exams Spend time with family	31
Exams	Medical school, PSA, US board exams	15
Contributing to NHS in another way	Other paid HCP role Volunteer	7

4.1   Demographics of FiY1

The sign-up data allows us to consider whether there were any differences in the demographics of those who did and did not undertake an FiY1 post. Table 4 summarises by ethnicity, age group and gender the frequencies and proportions of our sample who did, or did not, undertake FiY1. This shows that while a small majority of non-FiY1s were White respondents, three-quarters of FiY1s were – figures which respectively under- and over-represent the overall proportion of White respondents in our sample. There are smaller differences in the proportions by age groups and gender.

Table 4.   Proportions of FiY1s in different demographic groups

	BAME	White
non-FiY1	169 (48%)	185 (52%)
FiY1	242 (24%)	762 (76%)
	< 25	25+
non-FiY1	200 (55%)	164 (45%)
FiY1	649 (62%)	397 (38%)
	Female	Male
non-FiY1	245 (68%)	116 (32%)
FiY1	680 (65%)	361 (35%)

Percentages refer to the proportions of FiY1s and non-FiY1s in each demographic group.

To examine whether the observed differences were statistically significant, multiple logistic regression was carried out to see if the demographic variables were associated with higher or lower probability of undertaking FIY1, when controlling for the others. Significant effects were observed for ethnicity and age group, with White graduates nearly three times more likely to undertake FiY1 than BAME graduates (odds ratio [OR]=2.86, 95% confidence interval [CI] 2.22 to 3.70, $p<0.001$), and over-25s slightly less likely than under-25s (OR=0.74, CI 0.58 to 0.96, $p<0.05$) to undertake FiY1.

The effect of ethnicity may reflect concerns about the severity of COVID-19 for some ethnic groups, which was suggested by some free text responses. The effect of age group may reflect older respondents – those who would probably have started medical school as mature students – potentially being more settled, domestically or geographically, and perhaps wanting to have more time off before starting work as an F1.

5   Results: FiY1 questionnaire data (Phase 1)

In this chapter we consider the Phase 1 questionnaire completed by FiY1s in June and July 2020.

5.1   The work of FiY1s

5.1.1   Where did FiY1s work?

In looking at the work of FiY1s, the unit of analysis was the period of work preceding completion of the questionnaire, rather than the individual respondent. In this section we consider the month in which the questionnaire was completed to have some indication of any change over time, but not repeated completion by individual respondents. Table 5 shows where participants reported where they were working in June and July. Multiple options could be selected, and 28% of all responses (186 respondents in total) reported working in multiple settings in the reference period. Overall, the locations in which respondents were working remained relatively consistent.

Table 5.   Frequency of work in different settings in the three weeks before completing the questionnaire

Setting	June (n=471*)	July (n=202*)
Accident and emergency department	37 (8%)	16 (8%)
Other urgent care unit (eg admissions unit, maternity, neonatal unit)	105 (22%)	44 (22%)
Intensive care or high dependency unit	19 (4%)	17 (8%)
Inpatient ward – surgical	128 (27%)	44 (22%)
Inpatient ward – medical	296 (63%)	131 (65%)
Operating theatres	18 (4%)	6 (3%)
Outpatient clinics	9 (2%)	3 (1%)
Digital/online clinics	0 (0%)	0 (0%)
General practice surgery	0 (0%)	0 (0%)
Other hospital setting (eg psychiatry)	34 (7%)	10 (5%)
Other community setting	1 (<1%)	0 (0%)

* This is the number of respondents who had worked as F1 in the questionnaire period.
Multiple selection of locations was possible, meaning column sums exceed these numbers.

Respondents indicated that a majority of FiY1 work periods were in areas 'where there [were] confirmed or suspected cases of COVID-19' (484; 72%), although this was greater in June (358, 76%) compared to July (126, 62%; chi-square=12.342, p<0.001). While most of these respondents had worked in areas which were not reserved for COVID-19 patients (407/484; 84%), 124 (26%) had also worked in areas which *were* reserved for COVID-19 patients, and another 77 (16%) had worked *only* in these COVID-19 specific areas. Respondents had worked with COVID-19 patients across the range of settings shown in table 5.

The extent to which FiY1s were working with COVID-19 patients varied by geography (NHS England regions, Wales, Scotland and Northern Ireland), with between 50% and 89% of FiY1s in each region working where there were confirmed or suspected cases, and between 10% and 41% working in COVID-19 specific areas. The proportion of FiY1s working with COVID-19 patients correlated highly (r=0.80) with the numbers of COVID-19 related deaths recorded between March and July in each region (Office of National Statistics data for England and Wales only [63]).

Media reports about limited availability of personal protective equipment were high during May-June 2020 when FiY1 data collection was underway. However, most of our respondents who had worked in COVID-19

areas felt they had appropriate PPE 'all of the time' (344, 71%), and a quarter (125, 26%) felt they had it 'some of the time'. Few (14, 3%) felt they had it 'none of the time'. The majority reported having used partial PPE that was changed between patients (319, 66%), while half had used full PPE changed between patients (245, 51%). A fifth of the sample (101, 21%) had used partial PPE that was not changed between patients. Note that these different levels of PPE may have been appropriate for different settings, and do not reflect a difference in availability of use.

5.1.2   Clinical activities

Participants were asked how often they had carried out a number of different activities, with appropriate supervision, in the questionnaire reference period. Most of these items were derived from *Outcomes for Graduates*, [12] with some identified as being items potentially sensitive to working in the context of COVID-19. Table 6 summarises these frequencies across all questionnaire responses, colour coded to illustrate descending quartiles.

Table 6.   Frequency with which each activity was undertaken by respondents

	Never	Occasionally (no more than once or twice a week)	Regularly (at least several times a week)
Maintained handwritten or electronic patient notes	2 (0%)	7 (1%)	664 (99%)
Sought advice in a situation of clinical uncertainty	8 (1%)	68 (10%)	597 (89%)
Completed discharge documentation	11 (2%)	28 (4%)	634 (94%)
Prescribed medication	20 (3%)	12 (2%)	640 (95%)
Carried out venepuncture	25 (4%)	144 (21%)	504 (75%)
Discussed a patient's care and treatment with them	32 (5%)	182 (27%)	457 (68%)
Made an initial assessment of a patient's problems	68 (10%)	239 (36%)	366 (54%)
Carried out intravenous cannulation	91 (14%)	224 (33%)	357 (53%)
Managed symptoms of patients who are at the end of life	178 (26%)	343 (51%)	152 (23%)
Taken blood cultures	191 (28%)	351 (52%)	131 (19%)
Carried out arterial blood gas and acid base sampling in adults	216 (32%)	350 (52%)	107 (16%)
Prescribed and administered oxygen	258 (38%)	264 (39%)	150 (22%)
Discussed DNAR decisions with colleagues, patients or next of kin	316 (47%)	246 (37%)	111 (16%)
Supported families when patients are at the end of life	347 (52%)	239 (36%)	86 (13%)
Broken bad news to a patient	373 (56%)	245 (36%)	54 (8%)
Carried out a 3- and 12-lead electrocardiogram (ECG)	381 (57%)	207 (31%)	85 (13%)
Carried out urethral catheterisation (male or female)	417 (62%)	239 (36%)	17 (3%)
Carried out blood transfusion	450 (67%)	191 (28%)	31 (5%)
Completed a death certificate	470 (70%)	182 (27%)	20 (3%)
Prepared and administered injectable (intramuscular, subcutaneous, intravenous) drugs	476 (71%)	173 (26%)	24 (4%)
Carried out nasogastric tube (NG) placement	521 (78%)	139 (21%)	12 (2%)
Taken, or instructed patients how to take, a swab (nose, throat, skin, wound)	542 (81%)	101 (15%)	29 (4%)
Set up an infusion	555 (83%)	106 (16%)	11 (2%)
Carried out immediate life support	584 (87%)	85 (13%)	1 (0%)
Carried out peak expiratory flow respiratory function test	632 (94%)	37 (6%)	2 (0%)
Carried out or assisted with cardiopulmonary resuscitation (CPR)	636 (95%)	34 (5%)	0 (0%)

Rows are colour coded by the proportion of respondents who undertook each activity. Green >75%; Red 50%-74%; Orange 25%-50%; Blue <25%

The more frequent activities, undertaken by at least 75% of respondents (green in table 6) include assessing patients, generic administrative tasks such as maintaining notes, and common procedures such as venepuncture. These are things one would expect Foundation Programme doctors to do with some regularity.

The next group, completed by more than half of FiY1s (highlighted in red) includes a number of activities associated with more acutely ill and dying patients, and which may be inferred to reflect the circumstances of working during the COVID-19 pandemic.

The activities carried out by 25-50% of the sample (in orange), also include some items associated with the dying patient – nearly half had 'supported families when patients are at the end of life', and 30% had completed death certificates. 'Breaking bad news' is also often associated with end of life care – although the item did not specify this context – and over 40% of the sample had been involved in such interactions.

The least frequent activities performed by under one quarter of respondents (blue) include those which may be carried out by nurses (NG tube placement, swabs, respiratory function tests), or resuscitation activities which may be low frequency and more likely be performed by a first responder, or a team (immediate life support, cardiopulmonary resuscitation).

Whether respondents had carried out some of these activities (collapsing 'occasional' and 'regular' to provide a dichotomised response) was associated with reported working with confirmed or suspected COVID-19 patients: end of life care, oxygen therapy, blood cultures, ABG and cannulation were all more frequent among those who had contact with COVID patients (Fisher's exact test, all $p \leq 0.001$). There was no difference however in the frequency of these activities reported by those who had worked only in COVID-specific areas compared to those in non COVID-specific areas, but the former group had more frequently carried out death certification ($p < 0.001$).

In addition to clinical activities, respondents were asked about their exposure to practice-based learning events. Most had such exposure (315, 47% occasionally; 129, 19% regularly), which did not vary with COVID-19 patient contact, nor with reported location. However, a possible trend is visible – 90% of those who had worked in ITU reported exposure to a learning event, compared to 64% on surgical and medical wards.

5.2   The impact of FiY1 on doctors' wellbeing

In this section we consider how FiY1 doctors felt during their FiY1 posts, and how measures of different aspects of wellbeing varied with exposure to work. These measures of stress, anxiety, depression and burnout are related to the individual doctor, rather than periods of work, and so analysis considers repeated measures where appropriate. Some analyses use data just from the first questionnaire responses to maximise data use.

5.2.1   Changes in wellbeing during FiY1

Three of the wellbeing measures – perceived stress, work burnout and personal burnout – are reported as scales, reflecting their conventional usage in the literature. Table 7 gives descriptive statistics for each of these for participants who had completed the Phase 1 questionnaire twice, three weeks apart. This illustrates that overall, scores were not high, indicating limited risk for wellbeing, but there were cases at the upper end of each scale. Linear mixed effects regression found increases in scores between the two time points were significant for personal burnout ($\beta=2.19$, CI 0.53-3.87) and work burnout ($\beta=2.93$, CI 1.23 to 4.65). There is no suggestion that FiY1s were functionally more burned out later in their posts, as the threshold of practical difference has been described as being 5 points, [64] but this result is of theoretical interest, suggesting that burnout is a cumulative response to work distinct from stress.

Table 7. Descriptive statistics for repeated wellbeing measures from Phase 1 questionnaire respondents 3 weeks apart

	Time point 1		Time point 2	
Scale (theoretical range)	Mean (sd)	Range	Mean (sd)	Range
Perceived stress scale (0-40)	13.16 (6.05)	0-31	13.46 (6.56)	1-35
Work burnout (0-100)	32.21 (17.46)	0-92.86	36.38 (18.12)	0- 92.86
Personal burnout (0-100)	35.94 (17.71)	0-95.83	39.34 (18.86)	0- 95.83

The HADS subscales of anxiety and depression were dichotomised because of skewed data. Logistic regression found no significant change in the likelihood of having an elevated risk of anxiety or depression over time. The proportion of respondents over the thresholds were, for anxiety, 6.8% (n=30) at time point 1 and 7.3% (n=15) at time point 2, and for depression 8.6% (n=38) and 10.8% (n=22) respectively.

5.2.2 Effects of clinical activities on wellbeing

We considered how wellbeing may be affected by exposure to the particular work activities shown in table 6 above. Tables 9 and 10 summarise significant effects observed in analysis of the first Phase 1 questionnaire.

Firstly, the simple measure of perceived work intensity was considered. Half (338) of the sample reported their work intensity as being 'about right'. 166 (25%) felt it was light or very light, and 168 (25%) felt it was heavy or very heavy. Perceived work intensity was a significant predictor of stress and both burnout measures (p<0.001) but did not affect the risk of anxiety or depression. Further analysis considered the effects of specific activities, with experience treated as a binary variable indicate whether the participant had or had not performed the activity.

The aspects of practice associated with end-of-life care (table 8) were particularly associated with adverse effects on stress and burnout. Managing patients at the end of life, breaking bad news to patients, supporting families and completing death certificates (which will involve direct contact with the dead patient) were associated with higher stress and burnout. Being involved in DNAR discussions was associated with higher stress, even though for FiY1s this involvement was likely to be peripheral. These activities did not affect the risk of anxiety or depression.

Table 8. Elements of end-of-life practice associated with changes in wellbeing measures

	Stress	Personal burnout	Work burnout
Managed symptoms of patients who are at the end of life	2.53 (CI 1.29 to 3.78) ***	5.33 (CI 1.72 to 9.94) **	7.02 (CI 3.48 to 10.56) ***
Broken bad news to a patient	2.23 (CI 1.07 to 3.38) ***	4.48 (CI 1.11 to 7.85) **	5.99 (CI 2.69 to 9.30) ***
Supported families when patients are at the end of life	1.95 (CI 0.81 to 3.08) ***	3.33 (CI 0.03 to 6.62) *	4.47 (CI 1.22 to 7.72) **
Completed a death certificate	1.27 (CI 0.02 to 2.53) *	4.11 (CI 0.48 to 7.75) *	4.29 (CI 0.70 to 7.87) *
Discussed DNAR decisions with colleagues, patients or next of kin	1.38 (CI 0.24 to 2.52) *		

Numbers are regression coefficients and 95% confidence intervals from multiple linear regression. Positive coefficients indicate a higher score (ie more adverse wellbeing) if the activity was undertaken.
* p<0.05, ** p<0.01, *** p<0.001

Table 9 summarises the practical procedures which were associated with differences in wellbeing scores. Several were associated with higher stress and work burnout, while three were associated with higher personal

burnout. Two were associated with *lower* risk of depression, and one with lower work burnout. There were no effects on risk of anxiety. Most of those associated with adverse wellbeing – prescribing oxygen, arterial blood gas, blood transfusion, immediate life support – will be more common in the treatment of acutely ill patients and are likely to be performed under pressure. In contrast, carrying out catheterisation and ECG were associated with better wellbeing, perhaps because they reflect a less pressurised context.

Table 9. Regression coefficients for clinical procedures associated with changes in wellbeing measures

	Stress	Personal burnout	Work burnout	Depression
Prescribed and administered oxygen	2.50 (CI 1.34 to 3.65) ***	5.80 (CI 2.43 to 9.17) ***	6.53 (CI 3.22 to 9.84) ***	
Carried out arterial blood gas and acid base sampling in adults	1.45 (CI 0.23 to 2.66) *	3.91 (CI 0.42 to 7.40) *	4.40 (CI 0.96 to 7.84) *	
Taken blood cultures	1.35 (CI 0.09 to 2.61) *	3.92 (CI 0.30 to 7.53) *	5.35 (CI 1.80 to 8.90) **	
Carried out cannulation	2.00 (CI 0.31 to 3.68) *			
Carried out blood transfusion			3.67 (CI 0.23 to 7.11) *	
Carried out immediate life support	2.47 (CI 0.75 to 4.18) **			
Carried out ECG				OR=0.44 (CI 0.20 to 0.90) *
Carried out urethral catheterisation (male or female)			-3.48 (CI -6.80 to -016) *	OR=0.28 (CI 0.10 to 0.65) **

Statistics for stress and burnout are regression coefficients and 95% confidence intervals from multiple linear regression. Positive coefficients indicate a higher score (ie more adverse wellbeing) for undertaking the activity, negative coefficients indicate a lower score (ie better wellbeing). For depression, odds ratios lower than one indicate the activity was associated with a lower risk of meeting the threshold of risk.
* p<0.05, ** p<0.01, *** p<0.001

There were also effects, on personal burnout and depression only, of activities associated with communication and clinical judgement. Having 'sought advice in a situation of uncertainty', was associated with much higher personal burnout, albeit with a very large confidence interval (β=13.27, CI 0.30 to 26.24). In light of the findings relating to exposure to ambiguity in the next section, we infer this effect may be due to the situation of uncertainty reflected in the wording. It is perhaps notable that there was no similar effect on work burnout. Two other activities were associated with lower risk of depression: 'Made initial assessment of patient' (OR 0.34, CI 0.16 to 0.82, p<0.05) and 'Prescribed medication' (OR 0.29, CI 0.10 to 1.07, p<0.05).

Carrying out the other activities included in the questionnaire was not associated with any difference in wellbeing scores. These mostly constitute the most frequent activities undertaken by nearly all the sample, and the least frequent: 'completed discharge documentation', 'discussed a patient's care and treatment with them', 'maintained handwritten or electronic patient notes', 'carried out venepuncture', 'prepared and administered injectable drugs', 'set up an infusion', 'carried out peak expiratory flow respiratory function test', 'carried out or assisted with cardiopulmonary resuscitation', 'taken, or instructed patients how to take, a swab' and 'carried out nasogastric tube placement'.

Finally, having had a practice-based learning event was associated with lower burnout (personal burnout β=-4.04, CI -7.45 to -0.64, p<0.05; work burnout β=-3.85, CI -7.21 to -0.48, p<0.05). Inclusion of learning event as a covariate in other analysis indicated that, meaning perceived learning may mitigate any detrimental effects on burnout.

5.2.3 Effects of exposure to ambiguity on wellbeing

We also considered how wellbeing varied with exposure to different aspects of ambiguity in practice. These were also coded as binary variables, indicating no experience or some experience. The items referred to ambiguity rooted in the limits of the respondent's own knowledge (for example 'the nature of a patient's symptoms was not clear to you' or 'you did not know what the outcome would be for a patient'), and more general ambiguity (for example 'it was not clear what the desirable outcome for a patient would be', 'you felt that no-one knew the right course of action to take for a patient').

Exposure to all forms of ambiguity was associated with higher stress and burnout (all coefficients are given in the appendix). This suggests that ambiguous situations arising from limitations of the participants' own knowledge, the limitations of others, or of medicine itself, all contributed to stress.

By contrast, just three forms of ambiguity were associated with a higher risk of anxiety or depression. Two were associated with higher risk of anxiety: 'you felt that no-one knew the right course of action to take for a patient' (OR 2.32, CI 1.06 to 5.38, p<0.05) and 'you did not know what other healthcare professionals expected of you' (OR 6.25, CI 1.81 to 39.35, p<0.05). The latter was also associated with higher risk of depression (OR 4.29, CI 1.65 to 14.64, p<0.01), as was '[experiences which] challenged your expectations of what medicine can achieve' (OR 2.44, CI 1.16 to 5.61, p<0.01). These suggest a link between the risk of anxiety and depression and ambiguity rooted in others, rather the participants' own limitations.

5.3 Perceptions of training within FiY1

Participants were asked 'Do you feel you have received, during your FiY1 post, adequate and appropriate training for working during the COVID-19 outbreak?'. The majority who answered this question (342/442, 77%) indicated that they felt training was adequate. Of these, 276 provided a free text response to the question 'briefly describe your training experience - what it involved, how it was delivered, what was good about it, what could have been improved'.

Table 10 summarises themes identified in analysis of these responses referring to the *content* of training described by this group. Most frequent were references to COVID-19 specific elements of training, including use of PPE. Next were mentions of support received, among which the buddy system and shadowing were specifically mentioned - effective shadowing providing a basis for FiY1s' progression as they took on more responsibility. There were also references to having an introduction to hospital processes and staff, and specific clinical activities.

Table 10. Frequencies of references to aspects of training from FiY1s who felt their training during FiY1 was adequate

Theme	Examples	Number of references
COVID-specific training (references were explicit that training related to COVID-19)	PPE/fit testing Life support/resuscitation related to COVID-19 Identification, treatment, control, discharge of COVID-19 patients Updates on hospital response Practising trace calling	172
Support	Buddy system Shadowing Supervision / Mentoring Support from seniors/colleagues/peers Pastoral support	89
Practical introductions	Hospital systems / IT Induction to Trust/Site/Ward Meet key people	45
Life support	Life support/resuscitation Non-invasive ventilation	21
Procedures	Clerking patients Venepuncture/arterial blood gases/cannulation Transfusions Prescribing (medication and fluids) Aseptic technique	14
Other	Death certificates Ward round notations Escalation pathways Specialty-specific training	12

The method or form the training took was also important. Of those who felt that their training was adequate, having a range of modes of delivery was important and a mixture of online and in-person methods was felt to be effective (n=35). There was a recognition that due to the pandemic, online learning was necessary. It was also important that teaching was delivered regularly (n=23).

Of the 86 free-text respondents who felt that their training was not adequate, 30 mentioned it being short in duration, with six mentions of receiving no training at all. There were 44 references to COVID-19 specifics being absent or poor, 22 of which related to PPE. These respondents also felt that online learning was not as effective as face-to-face teaching (13 mentions), and others indicated demonstrations were not useful without the ability to practise (this could refer to online training, or instances where equipment was not available or social distancing precluded practice). There were however very few references suggesting that the buddying system had not worked, or that supervision or support were insufficient.

6   Results: F1 questionnaire data (Phase 2)

In this chapter we consider the Phase 2 questionnaire completed by F1s, including those who had, and who had not, undertaken FiY1. Recognising that some respondents had experience other than FiY1 between early graduation and starting F1, several options were available in the questionnaire. For analysis we coded this experience in three categories: 'FiY1', 'Other experience' and 'None'.

6.1   The preparedness of those who did and did not do FiY1

One of our key areas of interest was the effect of participating in FiY1 on preparedness. We asked questions of preparedness in both Phase 2 questionnaires, to see whether judgements of preparedness would persist with a more retrospective judgement. This analysis was limited to graduates of UK medical schools in 2020, as the experience of medical school in different countries, or having graduated in previous years would confound any preparedness. A preliminary analysis including Phase 1 data on reported preparedness for FiY1 excluded the possibility of a self-selection bias – namely that graduates who undertook FiY1 posts had felt more prepared than others.

Linear mixed effects regression considered the effects of experience (FiY1, other experience or no experience) and time (August or October questionnaire completion) on measures of perceived preparedness: overall preparedness on starting F1, and preparedness for 25 of the activities included in the Phase 1 questionnaire. An interaction effect was included where it contributed to models. As with other analyses, demographic variables were included as covariates where appropriate.

The key finding is that at the start of August, those who had completed an FiY1 post reported feeling more prepared than those who had not been working medically. This effect was present for overall preparedness, and for all but five of the measures of preparedness for specific activities. The exceptions were giving infusions, injections, ECGs, respiratory function tests and swabs – most of which were lower frequency activities for FiY1s (as shown in table 6).

For overall preparedness, and for most of the specific measures, this effect persisted in the retrospective October questionnaire. Figure 2 illustrates a significant interaction for the overall preparedness measure, showing that FiY1 remained higher despite convergence of the other two groups. [†] For some specific items (end of life care, DNAR, supporting families, death certification, venepuncture and oxygen), the difference between FiY1 and others did not persist.

Some items (overall preparedness, discharge documentation, prescribing medication, initial assessment, discussing treatment and seeking advice), also showed FiY1s feeling more prepared than those who had other experience before starting F1. Perceived preparedness for discharge documentation and prescribing medication converged between these groups in October.

Overall, there is evidence of a robust effect of FiY1 enhancing perceived preparedness not just at the start of F1, but also retrospectively after two months in practice.

[†] All discussion and illustration of means in this section refers to estimated marginal means, which are derived from the model rather than directly from the data.

Figure 2. Plot of interaction between questionnaire time point and experience before F1, for overall preparedness measure.
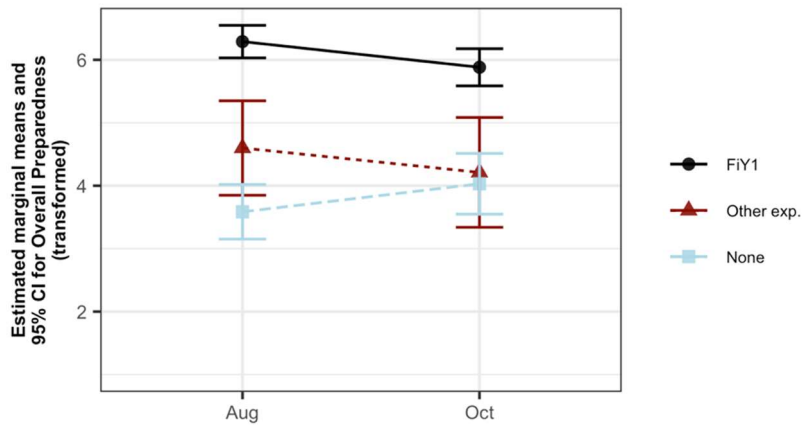

6.1.1 Effects of FiY1 duration on preparedness

Reasoning that the longer a doctor was in an FiY1 post, the more experience they gained, we also considered the effect of the duration of FiY1 on overall preparedness. This duration was derived from participants' reports of the dates on which they had started and finished their role, and varied from 6 to 117 days (mean 66 days, sd 18.5 days).

For this analysis, in order to understand the practical impact of increasing duration, we dichotomised the measure of preparedness such that responses 'Agree' or 'Strongly agree' were considered to be 'Prepared' and other responses 'Unprepared'. A logistic regression with duration as a sole predictor found a significant effect of duration on the simple likelihood of an FiY1 being prepared. In this model, each day of FiY1 employment increases preparedness marginally (OR= 1.02, CI 1.00 to 1.03, $p<0.05$).

Figure 3 plots the predicted probability of preparedness against duration. This shows that with a minimal duration the probability of feeling prepared is just slightly greater than 0.5. A duration of 51 days (7 weeks) is necessary for a probability of 0.75, and of 120 days (17 weeks) to almost guarantee preparedness with a probability of 0.9. A prolonged experience is therefore necessary to substantially increase the probability of preparedness.

Figure 3. Predicted probabilities of FiY1s feeling prepared at the start of F1, from duration of FiY1 post
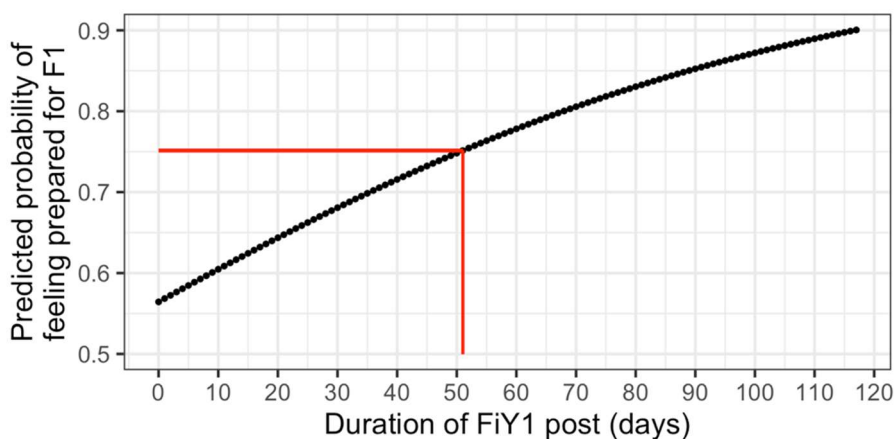
The red line shows the number of days of FiY1 duration required for the probability of feeling prepared for F1 to exceed 0.75.

## 6.2 The wellbeing of those who did and did not do FiY1

Analysis of Phase 2 data allows further consideration of the impact of FiY1 on wellbeing, by allowing comparison with those who had not been FiY1s. Table 11 gives descriptive statistics for perceived stress and burnout, for the different types of experience.

Table 11. Descriptive statistics for repeated wellbeing measures from Phase 2 questionnaires

Scale (theoretical range)	Experience	August		October	
		Mean (sd)	Range	Mean (sd)	Range
Perceived stress scale (0-40)	FiY1	15.35 (6.81)	0-38	16.07 (7.12)	0-39
	Other experience	16.82 (5.22)	7-27	15.74 (6.88)	6-32
	None	17.32 (5.97)	4-32	17.82 (7.12)	3-34
Work burnout (0-100)	FiY1	41.77 (18.93)	0-100	45.36 (20.31)	0-100
	Other experience	40.29 (15.13)	3.57-75	42.33 (19.2)	10.71-85.71
	None	43.29 (20.17)	3.57-96.43	48.61 (19.56)	7.14-96.43
Personal burnout (0-100)	FiY1	44.04 (17.6)	0-95.83	47.2 (19.49)	0-100
	Other experience	46.26 (19.56)	12.5-79.17	46.14 (18.52)	8.33-91.67
	None	47.35 (19.1)	0-87.5	49.65 (20.34)	4.17-91.67

There was no significant effect of experience on these measures, and no significant interaction effects – the measures increased for all groups. This indicates that despite adverse effects on wellbeing associated with some FiY1 experiences, as shown in the Phase 1 data, these did not place FiY1s in a worse position than those who had different experiences. Figure 4 illustrates the effect on work burnout, but the pattern was similar for all variables.

Figure 4. Plot of the interaction between questionnaire time and experience before F1, for work burnout
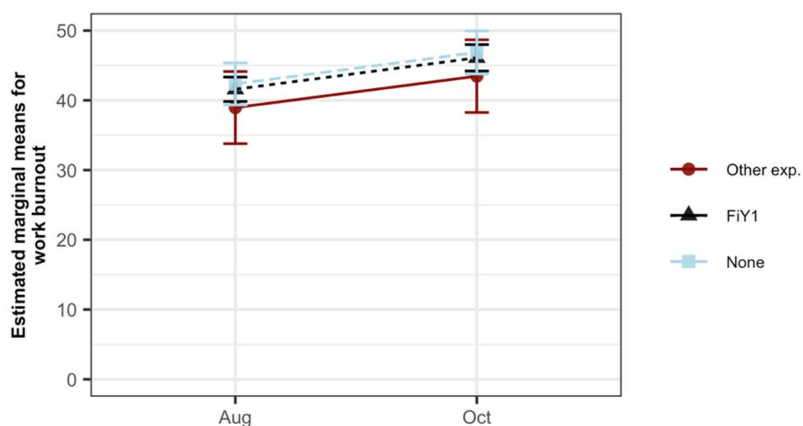
There is some evidence for a *protective* effect of FiY1 on starting F1. Table 12 illustrates the frequencies of those meeting the thresholds in August. Logistic regression indicated that those who had undertaken FiY1 were less likely to meet the threshold for risk of depression than those who had no experience (OR= 0.55, CI 0.33 to 0.95). The similar pattern for anxiety observed here is not significant, and is confounded by gender.

Table 12. Frequencies of participants meeting thresholds for risk of anxiety and depression on HADS subscales in August

	FiY1	Other experience	No experience
Anxious	38 (10%)	8 (21%)	20 (17%)
Not anxious	355 (90%)	31 (79%)	101 (84%)
Depressed	49 (12%)	9 (23%)	25 (20%)
Not depressed	345 (88%)	30 (77%)	97 (80%)

Individuals are at risk of anxiety if their subscale score was ≥13, and at risk of depression if their subscale score ≥8. 59

6.3   Effects of experience on tolerance of ambiguity

In the above analyses, we included the TAMSAD measure as a covariate, reasoning that tolerance of ambiguity may temper any effects on wellbeing related to *exposure* to ambiguity, whether directly defined or implicit in clinical procedures. We also however considered the direct effects of experience on TAMSAD, using questionnaire time point as a predictor in Phase 1 and FiY1 experience as a predictor for Phase 2 data.

Analysis indicated that there was no change between time points during either Phase 1 or Phase 2. The Phase 2 analysis did find an effect of experience, with FiY1s having higher scores, suggesting that they felt more tolerant of ambiguity than those with no experience. As with other measures, the scores of those with other experience did not differ from either group. The interaction effect was not significant, indicating that this difference was present in August and October.

TAMSAD did appear to vary with type of experience, however. Considering just the first Phase 1 questionnaire, TAMSAD scores were higher with exposure to end of life care, breaking bad news, and supporting families at the end of life, giving or prescribing oxygen, swabs, respiratory function tests, venepuncture and discussing treatment. TAMSAD also varied with exposure to ambiguity – being lower for those who had experience of 'it not being clear what the desirable course of action for a patient would be' and 'not knowing what other healthcare professionals expected of you'. That tolerance of ambiguity appears to vary with experience sheds some light on the type of construct it may be – suggesting it may have properties of a dynamic state rather than being (purely) a static trait.

6.4   The impact of FiY1 on identity

Finally, we consider effects on professional identity. The three identity measures were mostly stable across time in both phases. However, questionnaire time was a significant predictor of ingroup ties in Phase 1, meaning that respondents felt a closer bond to the group 'doctors' later in their FiY1 placement. In Phase 2, FiY1s scored higher on the ingroup affect subscale, indicating that they felt more positive about being a doctor than those with no medical experience from April.

Carrying out some activities may be associated with increased identity through a behavioural 'fit', and so we also considered the effects of having undertaken the different activities in Phase 1. This identified some significant effects, although these are isolated and we do not wish to over-interpret them. Firstly, an effect of end of life care on centrality, indicating that the identity of being a doctor was more important or accessible to those who had been involved in that activity. This may be interpreted as reflecting the value of the social and personal contribution they had made through being a doctor in such circumstances. Secondly, an effect of having had a learning event on ingroup ties, suggesting a bond with other doctors was associated with developing their medical knowledge. An effect of prescribing oxygen on ingroup ties implies this procedure is important. Finally, an effect of catheterisation on ingroup affect, suggests this makes them feel more positive about their group membership. However, why this may be is unclear.

7   Results: Free text journal data

7.1   Challenging and rewarding experiences during FiY1 (journal data, summer 2020)

Responding to a prompt to describe 'a challenging experience' and 'a rewarding experience' during FiY1, free-text 'journal' entries were provided by 53 respondents, 3 of whom provided two entries, and 1 three entries in the time period May to August 2020. A summary of these respondents' demographics is included in the appendix.

Thematic analysis of the journal data identified five main themes. The first three were predominantly reported as negative elements of respondents' experiences, while the last two were mainly reported as positive:

- Theme 1: Job set up issues
- Theme 2: Clinical work pressure
- Theme 3: Challenging team experiences
- Theme 4: Acquiring clinical and management experience
- Theme 5: Rewarding team experiences

Theme 1. Job set up issues. This theme captures the structural challenges FiY1 doctors identified around the set-up of their role, before the beginning of their placement. These included what some felt was chaotic governance on part of employers and delays in starting the FiY1 post.

> *I have not yet started as an FiY1, because of a lot of administrative red tape and poor communication between the UKFPO, my medical school […], HEE, and the [hospital] I am meant to start at. This has been incredibly frustrating and destabilising as I was graduated early specifically to take up a post, but have instead found myself in an unemployed limbo for the last two months, dropped between my medical school [and] my Trust that has not yet employed me, because they were at capacity.* Journal entry, female FiY1, Wales

When starting in FiY1 posts, there was often a lack of clarity about roles and responsibilities, with some FiY1s feeling they were not recognised as qualified doctors, and still treated as medical students. One respondent noted that there had been opportunity for the Trust to introduce them, but this had not been taken.

> *I was a bit irritated by how I was continually called an F0, even though I am now a qualified doctor and no longer a medical student. There was one incident when a core trainee approached my FY buddy and said she thought I shouldn't be clerking patients from ED because the other F1s don't clerk in this hospital. I felt this unfair because now is a great opportunity to clerk and to continue learning how to clerk.*
> Journal entry, female FiY1, Scotland

> *Other members of staff not knowing our role – questioning whether we are allowed to see patients on our own, or order scans or prescribe. We get emails every day from the Trust – why have none of them explained who this new batch of staff members are?*
> Journal entry, female FiY1, England

This lack of clarity also had implications for team working, once FiY1s were established in post (see Theme 3: Challenging Team Experiences).

Theme 2. Clinical work pressure. This theme captures the work-related organisational challenges mentioned by FiY1s once they started their post. These included dealing with very unwell patients, end of life care and patient death. Clinical pressures were often intensified by the broader pandemic context and, in some instances, by

the need to wear PPE, which was time consuming to put on and take off and could hamper communication. The first quote below indicates how this clinical pressure could create situations where the FiY1 felt uncomfortable with the way in which patients were being managed.

> *On several occasions I have assessed very unwell, septic patients. It is always nerve-wracking to do this for the first time; you are very aware that if you miss something or make a mistake, there could be serious consequences for the patient. I have also seen a couple of patients poorly managed by surgeons on the ward […] It's been frustrating to watch this at the level of a junior and feel unable to do much due to the hierarchy in the department.* Journal entry, female FiY1, England

> *Being in a COVID19 area has also presented its own challenges, particularly at the beginning when I realised that I would likely catch the virus. While we have the PPE recommended by PHE, it nevertheless feels inadequate and the proof of it is that the vast majority of trainees, despite using that PPE, have had COVID.* Journal entry, female FiY1, England

Theme 3. Challenging team experiences. This theme highlights the challenges FiY1s experienced in the workplace due to difficult relations with their teams. FiY1s often reported a feeling of under-preparedness to deal with a difficult team environment, with stressed and sometimes hostile colleagues. These challenging experiences could be heightened due to a lack of a coherent team, given the ad hoc composition of teams in COVID-19 specific areas. FiY1s described suboptimal levels of support, either too much or too little.

> *Often I have felt that I either have too little or too much support. It's either [others] will take all the complicated/interesting patients and you can do the easy jobs in which case I am not learning how to be a doctor. Or we are left to do everything and blamed when things go wrong.* Journal entry, female FiY1, England

> *I feel like overall the transition from medical student to doctor is not easy. I'm in a COVID-19 area that has specifically been created for the pandemic, which means that I am not a member of a stable team. […] That also means that we do not have an FY1 buddy (because there's no FY1 in this unit), and therefore learning the job very much depends on the doctor(s) that is/are on duty for the day.* Journal entry, female FiY1, England

Uncertainty over the FiY1 role is a recurrent theme in these experiences. The varied support may reflect what other respondents reported as inconsistent recognition of their intended role – for example, some described feeling useless, while others felt to be 'exploited workhorses'. Negative experiences were compounded by an antagonism some respondents perceived, particularly from FY1s, intensified by the experience of an unclear status with respect to responsibilities, leave entitlement, and working hours. However, while there were instances of challenging relationships with F1 doctors, there were examples of F1 doctors providing strong support and training for FiY1s.

> *It has been difficult to bond with the odd FY1 at times. I feel I have had to work with a few difficult doctors, and this has been emotionally draining. I wasn't quite prepared for this aspect of work and became upset this week when a doctor was being rude and abrupt all week on the ward. The doctor has since apologised fully. However, I have found that the FiY1 role has created a bit of animosity between us and the normal FY1s. They felt uncomfortable supervising us to begin with and weren't really aware of our roles. We were told many times we weren't needed.* Journal entry, female FiY1, England

One participant described an extreme case where it appeared F1s left FiY1s to do their work. We cannot verify the facts of this statement, but that the FiY1 had a perception that F1s were treating them in this way is indicative of a lack of communication and understanding in this workplace.

> *Because our role hasn't existed before (FiY1), some of the existing F1s (who were understandable frustrated that they couldn't move on to their next rotations) have seen us as workhorses. On many occasions the F1s would make us do the ward round (which would last for 4-6 hours), and then would go home several hours before the end of their shift when the weather was nice, whilst we were still doing jobs until the end of our timetabled hours. When we have been overstaffed, the F1s take days off amongst themselves; we were never included in this. There was very little notice or indeed care taken at a senior level regarding this, and the registrars were often more interested in the politics of their own rotas.* Journal entry, female FiY1, England

Some FiY1s reported discomfort when asked by team members to act in ways that clashed with their sense of professionalism, indicating a risk of moral injury.

> *I've been asked to do things I was not meant to do alone (like reviewing an acutely unwell patient), and surely I have had to say that I wasn't meant to see that patient by myself, but I feel like some doctors were not aware of our limits and the responsibilities linked to this specific job.* Journal entry, female FiY1, England

> *Consultant has asked me "to lie" and not tell the patient the result of the scan if they ask until the pathology result is back. The patient was getting discharged and the pathology results would need another 10 days. Even though not ideal knowing results in chunks, I did not think this was appropriate not to let the patient know and lie to them as the patient had the right to know if they wanted to.* Journal entry, female FiY1, Scotland

Theme 4. Acquiring clinical and management experience. While the absence of support in a clinically challenging environment sometimes created problems for FiY1s, there were also reports of rewarding experiences. Notably, some commented on how they felt the FiY1 role was incredibly useful and 'indispensable'. Clinical challenges, such dealing with complex clinical cases, could be rewarding, but there were also references to the value of more mundane elements of work. This FiY1 explicitly refers to experiences they could not have had in their student assistantship.

> *I have genuinely LOVED every single day of my FiY1 position. I hope it becomes a mandatory part of training for future trainees as the incorporation of working with computer systems on its own is an utterly invaluable experience. […] I had the unique and fantastic experience of working on almost every ward. […] Being asked to perform actually very simple tasks that I had not done as a student, eg NG tube insertion or blood cultures, taking blood from PICC lines etc. That is why it was an absolutely indispensable experience for me to be an FiY1. I had a unique opportunity to learn these skills that I don't feel I would have had the same experiences of in the assistantship due to the lack of personal responsibility to the tasks.* Journal entry, male FiY1, Northern Ireland

This experience was identified as benefiting their anticipated transition to F1.

> *The whole experience of FiY1 is a positive one in the sense that we are so much better prepared for August- brilliant opportunity to shadow and learn from current F1s, minimises risks that come from being dropped in deep end as the only F1 on the ward in August time.* Journal entry, female FiY1, Northern Ireland

I'm now comfortable assessing very unwell patients; I can prioritise jobs under time pressure and delegate. There have been some real advantages to being in a busy FiY1 job, and there have been some lovely members of staff (including juniors) who have taken us under their wing, taught us, and made the job enjoyable!

Journal entry, female FiY1, England

Rewarding experiences often involved acquiring clinical experience and confidence through significant interactions with patients and their family/carers, having time to build relationships with patients (this was particularly important since family and carers could not visit due to COVID-19 restrictions), and receiving positive feedback from patients.

It has been rewarding to get to know my patients well and have conversations about their care with family and other departments. Journal entry, male FiY1, England

Theme 5. Rewarding team experience: Although negative team experiences were common in journal data, some respondents did mention having received positive feedback from team members and how they found it rewarding and meaningful – both to balance the hostility depicted in theme 3 above, and, more broadly, as a contributing factor to the development of their professional identity and confidence.

I feel the team members are pleased to have me and the assistance I can provide. They have commented that I am settling in well and improving. They have been very supportive and I feel a part of the team. Journal entry, female FiY1, England

7.2 Summary

An important finding from FiY1 accounts appears to be the clash between an often negative, challenging team experience (described in Theme 3), and a typically positive, rewarding experience with patients (described in Theme 4). The challenging team experiences may be because the FiY1 role disrupted the established team structure, compounded by a lack of clarity amongst teams as to what can be expected. The rewarding patient experiences may have been facilitated by the fact that FiY1 had more time available to spend with patients, and their family members and carers.

8   Results: Interview data

8.1   Reflections on experiences during 2020 (Interview data, autumn 2020)

A purposive sample of respondents who had already completed questionnaires and journal entries were interviewed (see Table 13 below).

Table 13. Interview participant demographics

Interview ID	FiY1 experience	Gender	Foundation School for F1	Stated ethnicity	Age group
Interview 1	non-FiY1	Male	England (South)	Other	Under 25
Interview 2	non-FiY1	Female	England (South)	Other	Under 25
Interview 3	FiY1	Female	Wales	White	25 or over
Interview 4	FiY1	Female	England (South)	White	Under 25
Interview 5	FiY1	Male	England (South)	Other	Under 25
Interview 6	non-FiY1	Male	Northern Ireland	White	Under 25
Interview 7	FiY1	Female	England (South)	White	25 or over
Interview 8	non-FiY1	Female	England (North)	Other	Under 25
Interview 9	FiY1	Male	Northern Ireland	White	Under 25
Interview 10	FiY1	Female	England (North)	White	Under 25
Interview 11	FiY1	Female	England (North)	Other	Under 25
Interview 12	FiY1	Male	England (South)	Other	25 or over
Interview 13	FiY1	Male	Scotland	White	25 or over
Interview 14	FiY1	Male	England (North)	White	Under 25
Interview 15	FiY1	Female	England (North)	Not given	25 or over
Interview 16	FiY1	Male	England (South)	White	25 or over
Interview 17	non-FiY1	Male	England (South)	White	25 or over
Interview 18	FiY1	Male	England (North)	White	25 or over
Interview 19	FiY1	Male	England (South)	White	Under 25
Interview 20	FiY1	Male	England (North)	White	Under 25
Interview 21	FiY1	Female	England (North)	White	25 or over
Interview 22	FiY1	Male	England (North)	Other	Under 25

During the interview, respondents talked through their experiences against a timeline, from the emergence of the Covid pandemic in early spring, through to their being established as F1 doctors in their first rotation in autumn 2020. This provided rich insights and reflection upon their experiences. Thematic analysis of the interview data identified five main themes:

- Theme 1: Trainees' overall experience of the pandemic
- Theme 2: Negative transitions to FiY1 and F1
- Theme 3: Positive transitions to FiY1 and F1
- Theme 4: Features of a positive training environment
- Theme 5: Features of a negative training environment

In this section, we focus instead on three key findings derived from these themes, describing participants' experiences of entering work during the pandemic. This is because some themes would be partially duplicative of previous sections (eg journal data). Most participants had entered work as FiY1 doctors before moving into their first F1 rotation in August 2020 (17/22 interviewees), but some had undertaken other paid or voluntary healthcare roles or taken a break between medical school and F1 (5/22 interviewees). The three key findings are summarised here and covered in more detail in the subsequent sections:

1. **Covid disruption:** Participants described how the early stages of the Covid pandemic had disrupted activities prior to the FiY1 posts being available (eg clinical placements, electives, exams, graduation) and caused considerable uncertainty. (Theme 1)

2. **Supported autonomy:** Through accounts of experiences in the FiY1 role and subsequent transition into F1, it was clear that challenging experiences en route to working more autonomously were frequent, but not necessarily negative experiences, if accompanied by a supportive training environment. (Themes 2-3)

3. **Optimal training environments:** Participants described the nuanced features of induction and training environments that supported optimal medical training and the impact on trainee perceptions of medicine and career intentions. These included the opportunity to undertake clinical work with an appropriate level of supervision and support, which were often reported within larger teams and 'flatter' or more permeable team structures. (Themes 4-5)

A striking observation across all interviews was that participants reported very diverse experiences, even amongst those who did FiY1 posts, which appeared to be influenced by several factors such as prevalence of COVID-19 in that part of the country, hospital staffing, more systemic issues such as Trust size, leadership and ways of working, and training speciality. All quotations are followed by the participant code and contextual information.

8.2 Covid disruption in the early stages of the pandemic

8.2.1 Finishing medical school and coping with rumours

The emergence of the COVID-19 pandemic led to substantial uncertainty and disruption for final year medical students, including the short-notice cancellation of placements and electives for many, and a move to online teaching.

> *And within the space of a few days we went from everything being life as normal to suddenly elective was cancelled.* Interview 13, male FiY1, Scotland

> *I was the only one [laughs] whose placement wasn't cancelled, like kind of asked to continue onto the third week, and it was quite uncertain.*
> Interview 1, male non-FiY1, England

Prior to the announcement of early graduation and FiY1, there were many rumours spreading amongst the medical student body.

> *There [were] lots of rumours. I think there was sort of news or information from like other countries like Italy which may have had some medical students get involved a bit earlier.*
> Interview 5, male FiY1, England

Thus, regular, timely and supportive communication from the medical schools and placement providers was particularly important. There were many examples of good practice, such as rapid provision of online learning or the set-up of communication channels to keep students informed.

> *I think in my medical school I felt quite generally quite well supported. We, I think quickly managed to sort of setup sort of virtual learning, like Zoom seminars and things like that to try and prepare us for whatever role we'd end up doing, and so in that regards I felt quite supported.* Interview 5, male FiY1, England

The [medical school] was really proactive and they said pretty early on, like we're going to try and give you as much teaching as we can online and we're going to try and do all the same things that we would have done, just in a virtual setting… we had online clinical skills, which you wouldn't think was going to be very useful but actually it was brilliant.

Interview 12, male FiY1, England

The national media was a key source of information, however tentative and/or incomplete and/or rapidly changing, during the early stages of the pandemic. Whilst waiting for an official announcement, students looked to what was happening in Europe, where the impact of Covid was felt earlier than in the UK. The news of early graduation was again broken abruptly, and students often gained their information first from national media rather than medical school communications.

At first it was just sort of messages … you would just hear rumours of, oh, they, they're gonna graduate us, or like maybe we'll get to help out in this … I think the first time we actually heard anything about it was when Boris Johnson was still doing the nightly Covid sort of situation during lockdown … one day they came out and said, 'We are graduating all final year medical students, and they will work on the front line', and that was the first we heard about it, and we were like 'Oh, okay'.   Interview 19, male FiY1, England

8.2.2   Graduation and deciding 'What Next?'

A significant consequence of the pandemic, after the curtailment of placements and cancellation of exams, was the lack of 'real-world' graduation ceremonies. While many medical schools provided online virtual graduation, the transition from student to doctor was anti-climactic for some. The sense of graduation being a rite of passage and directly linked to the internalisation of a professional identity was indicated by one reference to 'acquiring the title of doctor in my head' (Interview 4, female FiY1, England).

I think generally it was just [..] a bit flat. And even though, yeah, I said that I wasn't too bothered about the actual ceremony, but it was a bit strange to […] get an email saying, 'oh yeah, you've graduated' and then have a virtual graduation on Zoom […] [the Medical School] were doing their best and it was [..] still like a nice gesture […] but […] you then close your laptop and you're sort of sat there in a room with one of my housemates. I'm like, 'ah, well. So – [chuckles] there you have it'.   Interview 14, male FiY1, England

Participants described their decision-making process as to whether to undertake an FiY1 role, extending the free text sign up data provided previously (see section 4), with many wishing to graduate early and help the pandemic response in the NHS. One respondent referred to military metaphors in the language being used – fighting, deployment – and that this was a motivation to 'be out there…fighting this fight' (Interview 7, female FiY1, Wales), suggesting an urgency and a moral imperative behind their decision. This interpretation is supported by other participants.

I really wanted to be working early. And… felt guilty in a way, that I wasn't doing, kind of, my bit to be helping along in the NHS.   Interview 20, male FiY1, England

And then the second thing is the kind of like moral obligation. So like feeling like a bit of a... I'm not saying that in a virtuous way, I'm just feeling... it was like a bit of a pressure to kind of go and help out and I did want to help out.   Interview 12, male FiY1, England

However, it was not always easy to locate and apply for an FiY1 post. While some had positive experiences, there were many accounts of poor communication and feeling 'messed around', leading to significant frustration. Some had to travel long distances to hospitals that they were unfamiliar with. Others took the

opportunity provided by not being able to find an FiY1 post to have a break before starting F1, while others living on their own were pleased to escape the restrictions of lockdown: "At least…I'm out of this prison" (Interview 15, female FiY1, England). One participant reflected the irony of being unable to find a post during the pandemic.

> *In the midst of a pandemic […] I'm hearing on the media every day, 'Hospitals are at capacity, we need staff, NHS workers are exhausted', and the hospital's saying, 'We don't need you, we have enough'.* Interview 7, female FiY1, Wales

> *So I thought I'd just leave it … I'm gonna be working for the rest of my life, so [laughs] I might as well just take these two months off and … enjoy the quarantining time with my family.* Interview 11, female FiY1, England

8.3 Supported autonomy

Through their accounts of experiences in the FiY1 role, and subsequently their transition into the F1 role, it was clear that challenging experiences were frequent in respondents' transition to working more autonomously. However, these challenging experiences were not necessarily negative, and could provide substantial learning opportunities, if accompanied by a supportive training environment. These features contributed to the idea of 'supported autonomy', where the new doctor increasingly functions as an independent practitioner, but with the explicit support of colleagues and structures. In this 'supported autonomy' mode, trainees appeared to be more likely to construe very challenging (including traumatic) experiences – which were unavoidable in hospital environments under pressure – as learning experiences. This worked both ways: learners could be supported to learn from traumatic experiences, but a lack of support could contribute to the trauma they experienced.

8.3.1 Challenges of early clinical practice

Respondents described a number of clinically challenging experiences, such as taking responsibility, dealing with ambiguity, and managing clinically and ethically difficult situations. However, these experiences were often experienced positively as they provided invaluable opportunities to learn and develop skills. The following example of an FiY1 who successfully diagnosed a blood clot in the lung illustrates the validation of applying knowledge and skills for a patient's benefit:

> *I think the most satisfying experience I had was definitely diagnosing a man with a blood clot in the lung, when it hadn't really been suspected up until that point […] from having like a really thorough look at the notes that came with him from the ambulance and assessing him really thoroughly I worked out that he'd had a blood clot and when, when he went and had a test for it, it was confirmed it was positive and it was like, it was nice because I think it was the only time when I, I sort of pushed for that and everyone was like 'oh, okay, well we'll investigate that then'.* Interview 18, male FiY1, England

Respondents often had doubts about their clinical ability, particularly when starting FiY1, as a result of not having completed all undergraduate teaching, placements, and assessments. However, exposure to clinical experience and dealing with unwell patients could improve confidence. That FiY1 was a transitional role was highlighted in references to still feeling like a medical student. The support of others, including the tacit recognition of being in a learning role, was an important element in moving forwards through this transitional state by means of learning in practice. The support and protection of FiY1 had benefits for starting F1.

I very much still felt like I was a med student. I very much still felt like I was, you know, sometimes in the way and not really being overly helpful and everyone being a bit like, why have they bought you in, kind of thing?   Interview 4, female FiY1, England

As an interim, you know, it feels like you're allowed to not know things as long as you've done the basics. And the basics is that framework [...] I've seen a patient, I've done the simple stuff, this is what I think is happening, where do I go from here? Sounds a lot better than, I've seen a patient, I don't know what to do.   Interview 20, male FiY1, England

I think it was, luckily it was a kind of just sheltered... a kind of sheltered couple of months where you could learn various things. So, when I actually became an F1 there were a lot of things that I'd already learned and didn't have to worry about. So I think the burden of becoming an F, a proper F1, and let's say that night... that night shift for example would have been a lot more burdenous [sic] if I hadn't had learned all the other things, kind of, more the small things.   Interview 16, male FiY1, England

The need to work and perform as a doctor, when faced with unwell patients, supported FiY1s subjective transition into the role and doubts about their ability. The first quotation below, with references to becoming 'real', and 'making a difference', suggests how they perceived the role differed from their, by implication 'unreal', student experience. The demands of responsibility created motivation, and focus, and shaped their self-perception, challenging a sense of being an 'imposter'.

I felt very quickly that everything became real. After a few weeks I actually did feel that imposter syndrome left very quickly, because the patients were interesting and very sick, and then, it suddenly just hit me that what we did made a difference, and I think that, so I think it really helped, and was really good. It was excellent teaching, and I've learned so much from it. I don't think I would've learned that much, even had I done the same thing as a student, I think the weight of the responsibility, however small it actually was, the sort of perceived responsibility made me learn things ten times faster, because I didn't want to have to ask the same question twice, and I didn't wanna have to make the same mistake twice.   Interview 19, male FiY1, England

Implementing ethical practice was challenging in the workplace, and more ambiguous than the perhaps more theoretical understanding developed during medical school. The examples below show how potentially traumatic experiences for the new doctors were described in the context of the support provided by others. In the first example, an FiY1 was part of a team responsible for inserting a tube for feeding an anorexic patient. The FiY1's colleagues acknowledged the experience may be distressing, and so enabled them to be open about that distress. The second example occurred early in an F1 post and illustrates the challenges of end of life care. Here it is clear that the valued support was *informal*, and based on *interpersonal* communication.

We were, kind of, prepped beforehand, saying, 'This is gonna be distressing and it's gonna be difficult. It's difficult for the patient, and it's going to be difficult for you helping.' You know, I think... I think it was quite well supported.   Interview 20, male FiY1, England

There I was at kind of three o'clock in the morning explaining to a family who don't speak English what, like how their mum died, why their mum died [...] I was kind of wholly unprepared for that kind of experience. One of the doctors realised it was quite upsetting, hard for me, and he was just like 'shall we... do you want a cup of tea or whatever?' Kind of sit down and talk about it kind of thing, which I found really, really like nice, and their critical care outreach team, nurse, he also kind of like took me aside and was just like 'you okay?' And that, that was really important.   Interview 16, male FiY1, England

Despite challenges in the journey to working autonomously, support from colleagues could make the experience more manageable and acceptable.

8.3.2   Particular challenges posed by COVID-19

In addition to the inevitable challenges of early clinical practice, there were some particular challenges presented starting work in the context of COVID-19. The social isolation created by the impact of COVID-19 reduced informal contact in work and beyond, which made the transition to work and the development of friendships more difficult. One respondent noted that this social isolation also has consequences for practice, as the development of relationships outside of work enabled them to seek support *in* work. The absence of informal professional networks reduced opportunities to debrief, off-load frustrations and sense-check individuals' experiences. This social adjustment was reported as worse for those who moved to a new area or hospital. While buddying systems were beneficial, they did not always happen as intended, which could compound isolation and uncertainty.

> *I think there is a lot of isolation even in people that are going to work every day at the hospital and seeing their colleagues, it's still quite isolating because we couldn't go after work for a pint, I couldn't develop friendships outside the ward …. go across the street to the pub and sit with them and have a beer and decompress… Those are the things that are really hard and really frustrating and I'm getting tired of - and I didn't even work through the first peak, you know?*   Interview 7, female FiY1, Wales

> *I think also the fact that people weren't really socialising outside of work made it a bit harder to sort of become more friendly with your colleagues and things like that. So it made it a bit more difficult to sort of [pause] get to the sort of friendly stage where you could feel more at ease to trust to ask them silly questions […] it would take a bit longer to develop that sort of level of friendship before you could feel more comfortable like asking them for help.*   Interview 5, male FiY1, England

As with the journal data (see section 7), participants highlighted uncertainty surrounding the FiY1 role, remit and responsibilities at an individual, team and structural levels, which was introduced in response to COVID-19. Their status as a transitional or liminal role, with aspects of medical student and doctor responsibilities, led to markedly different expectations of them by others, with some expecting too little of FiY1s and others too much. The first quotation below reveals a participant describing an environment that they felt was chaotic and where staff seemed to have little knowledge of the FiY1 role. As with the journal data, they refer to antagonism from F1s. However, the second quote describes a situation where the FiY1 was treated as a doctor, and included in the medical team from the outset.

> *It was a little bit the Wild West [laugh]. It was all very chaotic, it very much seemed like everyone was sort of flying by the seat of their pants as far as interims [FiY1s] were concerned, they were like, 'Oh, you're an interim, okay great. Can you do this? Can you prescribe?' […] Some of the junior doctors I think were a little bit… mostly they were fine but I had some instances where they were a little bit, it felt that was some encroachment on territory.*   Interview 7, female FiY1, Wales

> *I definitely felt like a real doctor from really day one. Like I, from day one I was doing the exact same tasks really as the other F1s, I was very much included in the ward rounds, I was very much included in like the main aspects of sort of ward life.*
>   Interview 9, male FiY1, Northern Ireland

Participants also described organisational features in relation to COVID-19 measures that led to concern about their own, the team, or patients' safety. These were the FiY1s' perceptions of risk, which might have been partly due to their uncertainty and lack of familiarity with the working environment, or might have been more substantial. Examples included lack of PPE, inconsistencies or lack of clarity around safety measures within hospitals, and management of COVID-19 patients. Social distancing was impossible in some hospital spaces, while PPE could inhibit communication between colleagues, and with patients. The volume of patients led to challenges in identifying responsibility for patient care and staying on top of routine patient administration.

> *That was very difficult, not from a patient perspective but from a job environment perspective, there were some safety issues, people didn't know who patients belonged to, everybody was staying late every day for an hour, two hours, because it was just like, 'Is this my patient? Do I have to discharge them? How do I update the list?'. Like it was carnage, it was carnage.*
> Interview 7, female FiY1, Wales

8.3.3   Impact of FiY1 on F1 and beyond

FiY1s prepared trainees for F1 work by providing a realistic and honest picture of what would be expected of them and the day-to-day environment in which they would be working. Their sense of preparedness for F1 was moved back in time, so that their initial 'fumbling' practice happened in the FiY1 period rather than on starting F1. There were references to the transformative experience of FiY1, and how exposure to challenges progressed them as professionals.

> *By the end of the two months, I was a different person professionally. I knew exactly what I was doing on a daily basis, I was smooth, I knew sort of the regular daily things that I would have to do and, and I guess, then carrying that forward, I didn't then have that transition at the beginning of F1 because I'd already done it in FiY1. So instead of being sort of a fumbling, half doctor at the beginning of F1, I was a fumbling, half doctor at the beginning of FiY1 and so like the time I did F1, I was... [it] allowed me to have a much nicer start to F1.*
> Interview 4, female FiY1, England

> *The textbook answer isn't always the right answer because maybe the patient doesn't want to do that. Well, now what do you do? You know, or there's a complication because they've got a comorbidity […] So having to actually deal with those things a bit more and then being told that that was the right thing to do in a, a slightly more, kind of, more complex case was, was good for my, kind of, confidence.*
> Interview 20, male FiY1, England

The influence of FiY1 on future career decisions varied too. Most participants did not seem to be actively considering their career options at this stage. Most recognised that experiences of different specialties affected their perceptions of those specialties in a way that might inform their later choice, both clinically and in terms of team cultures.

> *I don't know whether it swayed me either way. I don't know whether it's had a kind of grand effect on kind of what I would do. I've just kind of enjoyed it and I'm still kind of going to pursue medicine, it's not going to kind of like change things too much.*
> Interview 16, male FiY1, England

It solidified ideas about what I have about what I like to do and the kind of culture and place that I like to work. It's, it felt rewarding to me because I felt like I was practising something that I had learned to do. Yeah, so quite a big impact really.

<div align="right">Interview 18, male FiY1, England</div>

However, one participant had an extremely negative experience, which made them reconsider their career in medicine completely. This appears to be related to the reality of F1, rather than the context of FiY1 and COVID-19, but it is possible that the additional uncertainty and strain added to their negative perceptions of life as a junior doctor.

I've seen what it would involve to be training as an [name of medical specialty] doctor and I can't be with those people. I can't- I'm not happy to be changing places every six months, going to [place name] to live in a student accommodation at the age of [mid-thirties].So, it's changed radically what I am going to do, and I think – I never ever, ever in my life intended to – I've never, for example, considered being a GP…It's like my idea of, kind of, hell on paper, and now I'm thinking maybe it's the only thing I can actually survive because it's three years? I've thought about being a researcher before….and now it's like, that I think is the career I should pursue…The only problem is, now I am, like, I need to survive this F1 first. I think it's changed radically the way I see medicine.

<div align="right">Interview 15, female FiY1, England</div>

For those who did not get the opportunity to undertake an FiY1 placement, there was a sense that they had missed out on intermediate training, and that the gap between graduating in March and practising again in August was too long:

In the past four months I think it's been a huge learning curve, going from abrupt finishing Medical School in March to actually starting here as a doctor. I would have liked to have done an interim post just because I think it would have given me the option to kind of learn all the bits and bobs that I had [missed].   Interview 8, female non-FiY1, England

8.4   Optimal training environments

Participants described the nuanced features of training environments that supported optimal medical training and their impact on perceptions of medicine and career intentions. These included the opportunity to undertake clinical work with an appropriate level of supervision and support, which we have encapsulated with the term 'supported autonomy'. Several structural or organisational, rather than individual, factors enabled supported autonomy and we outline below those we identify as the most important.

8.4.1   Structured and timely induction

A structured and timely induction (including site-specific familiarisation) made for a good transition. The *length* of induction training was not necessarily important, if it provided focused information on what to expect. Induction training in person was also beneficial, in part because of the social contact with other new starters. The explicit discussion of wellbeing by their employer was also valued. In one location, the current F1 doctors had written a document informing the incoming FiY1s about their main duties. This was useful in terms of the information provided, but perhaps also indicated a welcoming culture, addressing or avoiding concerns about role uncertainty and conflict.

I think that the induction was actually really good [...] It was only half a day actually, but it was probably more comprehensive than my actual F1 induction that went on for a whole week [...] it kind of told us what to expect and why we would be doing it and what our responsibilities would be, and kind of alleviated [...] some concerns from people from that front.   Interview 14, male FiY1, England

I think that was important as well [that induction was in person] 'cos I think if we did it on-online, we would've been even more overwhelmed when we started because we got to see the other doctors that were starting.   Interview 20, male FiY1, England

The FY1s got together and wrote quite an extensive seventy-page document about [...] the kind of day-to-day jobs of being an FY1 and how to do those. So, prior to starting I read the whole thing and made my own notes from it that I put on my phone, which I still use now.   Interview 13, male FiY1, Scotland

While most participants had received training on starting FiY1, as demonstrated by the quantitative data analysis (pp18-19), some did miss their induction which sometimes led to difficulties in the development of practical skills, awareness of computer systems and in accessing a supportive social network.

8.4.2   Wellbeing support

Participants highlighted very important issues related to the provision of wellbeing and general health support (eg social spaces and opportunities to connect with colleagues). These included a lack of support, a difficulty in accessing any existing support (eg because incompatible with working schedule), a lack of informal opportunities and spaces in the workplace to connect with colleagues, or a lack of trust in the support available (eg they felt it was tokenistic, or saw that it was withdrawn after the first wave). In addition, where support was present during FiY1, it was then sometimes notable through its subsequent absence during F1.

They put this mindfulness- mindfulness session at eleven on Tuesday. How am I supposed to do mindfulness session at eleven when I'm working? [...] I can't take days off. It's just the whole- the whole support scheme as a doctor I feel is non-existent.
                                                   Interview 15, female FiY1, England

Those kind of formal processes of supporting, I don't really engage with at all, and I know a lot of people who also won't engage with those kind of formal implementations, it's more the kind of informal chats, the like, yeah, it... yeah, it's the informal chats and the cups of tea, off-hand and like that kind of support which I personally engage with a lot more, which obviously you guys can't suggest to implement these informal processes.
                                                   Interview 16, male FiY1, England

Some reflected on the need for wellbeing/mental health training and support to be more embedded in medical training, including in the recognition that there is a risk of burnout and mental ill-health.

Actual and practical support and advice [...] around how the transition may affect people from- from a medical student to an F1, and how they might cope with responsibilities and pressure. And, like, [...] how it can affect your mental health and the difficulties and – you know, maybe a bit more of an honest discussion about doctors burning out because it doesn't really get mentioned.   Interview 14, male FiY1, England

There were indications that what participants believe or expect medicine to be may make them vulnerable to negative experiences. One FiY1 indicated their view of medicine is that it is curative, and so the inability to help

more patients is a failure. This suggests that a personal belief system about medicine may mediate experience. Another respondent felt that high workload and lack of time was stressful, but also indicated that they felt some of the administrative tasks they undertook were not a part of medicine.

> *The identity of being a doctor is really important to me, as I think to most medics. […] But I think the difficulty for people who went through first peak of COVID is that they didn't feel like doctors because they weren't able to help patients that were so unwell and dying.*
>
> Interview 7, female FiY1, Wales

> *Yeah, but it's just the nature of the job is – I think that is part of my disappointment. […] you have to be able to do four things at the same time, literally, because you are, like, prescribing something and then someone comes and tells you this, and then another person comes and tells you this, […] and then the phone rings. And it's just […] not a nice place to be working in. And then, the skills you need to have, it's like, you need to do a discharge letter so, you need to summarise the clinical – you know, you do loads of things that are not medicine. It's not medicine. I don't make any decision, […] I don't know how to explain it. It's just bureaucracy.*
>
> Interview 15, female FiY1, England

3.3 The role of supervised practice, teamwork and hierarchy

There were several features of work, reflecting the organisational context and the composition and management of teams, which shaped the experience of transition, both to FiY1 and F1. These features could have positive or negative influences. The opportunity to practice clinical work under direct supervision – especially in the early stages – was another crucial element of a good training environment. Respondents felt a successful learning environment was one that would develop their independence by allowing them to be challenged to go beyond their comfort zone and gain new skills. They appreciated the provision of timely supervision and support, including pastoral/emotional support when needed. If it was not possible to supervise trainees during their clinical work, having systems in place to follow up and debrief in a timely way were still highly valued.

> *I ended up staying about an hour late that day with this patient, and then trying to sort of fumble my way through it, and then I spoke to the Registrar the next morning, about, about the patient and about what I could've done differently, and what they ended up, and […]…after about an hour, one of them realised that I shouldn't have been there, and sent me home, and so I just spoke to them about what happened to her, and how things went, and then also how I could've potentially done a bit better in that sort of initial sort of ten, fifteen minutes of seeing them. So it was really good learning from that, but it was definitely quite scary.*
>
> Interview 19, male FiY1, England

The social organisation of work, and the ways in which teams were formed and communicated, was an important determinant of the support available and therefore the effectiveness of the learning environment. Working in big, well-staffed teams that were collaborative, connected and inclusive – that is with a flat/permeable hierarchy and working culture in which it is easy to access, talk to and raise concerns honestly with all team members – contributed significantly to a safe learning environment. This helped development of teamwork, clinical skills, and professional identity.

It was really well supported […] the SHOs were around and the Regs were around, because there wasn't too much other things going on […] There was time to do things. […] we could take our time with doing things that we thought were a bit trickier […] i-if we saw patients that we thought we didn't really know what to do, we would do the basics and then go and ask a senior and there was always that time and support.

Interview 22, male FiY1, England

It's very kind of like flattened hierarchy in my job at the moment. So sometimes you'd ask for advice from the consultant who were all very approachable, and sometimes it would kind of be the F2 or whatever.   Interview 16, male FiY1, England

Issues around a lack of support appeared to be exacerbated by general understaffing and/or a high presence of transitory staff such as locums (with high turnaround) and staff experiencing significant pressure. These factors could vary within organisations, indicating that team culture can be established at a level below that of organisations. One trainee described positive and negative experiences within the same hospital.

So, unlike on the Medical Unit where I feel like I got to know most of the team, most of the Senior and Middle Grade Doctors fairly quickly just from being there every day, now [in surgery] I feel like, it feels much less more dispersed, there are many times when it's really unclear who to escalate things to if you want to, or how to do it. Calling switchboard and being put through to like random people, that kind of thing is quite stressful.

Interview 18, male FiY1, England

The first two months on top of everything else were really quite difficult because I went into a lot of ward politics at the time... The consultant was a locum and he wasn't particularly invested in you know my training or opportunities for me to go to even mandatory things, let alone you know opportunities for me to learn or go to conferences […] And it was quite an unpleasant place to work and we were so poorly managed on the ground it was really intense […] there would be days where I wouldn't get breaks or there would be days where you felt you know sometimes guilty for going to the toilet [laughs]
.   Interview 17, male non-FiY1, England

Effective support was particularly important when experiences involved elements of moral injury, mostly arising from a sense of clash between their 'ideal world' medical school training and their awareness of instances of suboptimal care offered by the hospital in which they were placed. Such instances of perceived suboptimal care were related to the intensified pressure posed by COVID-19, while others were more structural and related to the messy reality of hospital practice and other contextual factors such as understaffing, or working in small or rural Trusts that could not offer certain services. Some also reported distress related to a lack of alignment between their perception of management priorities and the clinical work in hospitals.

Medicine is the management of uncertainty, it is the management of uncertainty, it is an art and a science and it is about team work and that was all stuff that they tell you in med school and you're like, 'Yeah, yeah, yeah, I know', but now I really know it, like I believe it. I think I've also internalised a lot more a kind of general distress at like management and bureaucracy […] The people up there making the rules don't necessarily know, care or understand what it's like to actually be the doctors working on the wards and having to deal with these patients.   Interview 7, female FiY1, Wales

3.4 Structural elements of FiY1: staffing levels and payment

There are some structural features of FiY1 which shaped the participants' experiences. FiY1s were not part of F1 rotas, meaning they were additional (supernumerary) medical staff. This seemed to be an important factor of providing them with an optimal training environment, perhaps because there was more time for their learning, or simply because workload was spread between more medical staff. Being paid enabled learners to genuinely feel part of the team and take on the responsibility of being a clinician.

> *I think that the fact that we were made doctors earlier but on top of the staffing that was already there, meant that we were much more prepared and much more safe when we started in F1. [...] If you're paid, then you really are a member of the team. And we were paid the same as the F1s, like, we just didn't have the extra pay [from out-of-hours work]. So, we were like, we are actually equal. So, it meant that you never slacked really, cos you were like, 'I'm paid just the same as you and I should be treated the same really'.*
>
> Interview 20, male FiY1, England

In relation to the FiY1 role specifically, the limited hours and constraints on out-of-hours working eased them into the role of junior doctor. However, it did mean that the transition to full rotas on starting F1 was a challenge and the step up in time commitment and responsibility from the FiY1 to the F1 role was still felt to be significant.

> *I think kind of my standout difficult things have been … since I've become an F1 properly I think. That's when I had to do medical on-calls and night shifts and things... If I'd gone into the night shifts that I had to do at the very beginning of F1 without a kind of two months of almost protected kind of learning time as a doctor, it would have been like very, very horrible.*
> Interview 16, male FiY1, England

> *We [FiY1s] worked nine to five, Monday to Friday, which is very nice, compared to now [laughs]. Erm, so it was nice having that just, kind of, no on-calls, no nights.*
> Interview 20, male FiY1, England

> *So now I'm an F1, oh well, it is, it's just terrible, you've got bad rotas, you do night shifts and yeah, I think it definitely is the difference between being a medical student and an interim and being an Fi and now you just can't... now you just get on with it because you're just an F1 doctor.*
> Interview 3, female FiY1, Wales

8.5   Summary

In summary, the qualitative data derived from semi-structure interviews highlights the varied experiences of final year medical students who graduated in 2020. Many graduated early and undertook an FiY1 role. All interview participants went on to take up an F1 role in August 2020. Their experiences in the FiY1 during this unprecedented pandemic period were challenging but, for many, an excellent learning opportunity when well supported which prepared them well for the subsequent F1 role. Through this study, we have identified supportive autonomy as a critically important situation to aspire to, and we have identified the features of training environments that are well placed to support this.

9 Discussion

9.1 Key findings

We began the project with four main research questions relating to the attractions of FiY1, the experience of those who undertook the posts, how their transition to F1 compared to those who did not, and the ongoing impact of the FiY1 experience. We have addressed these questions drawing on quantitative and qualitative data from diverse samples of participants from across the UK, and provided findings and insights that go beyond the a priori questions to say more about the FiY1 experience, and the potential transferability beyond the context of COVID-19.

In this section we summarise the key findings. Subsequent sections consider the findings in a wider context of previous research, theory and policy. We draw inferences about the generalisability and transferability of our findings, but it should be remembered that there is no such thing as 'typical' experience, and that every doctor's experience will differ. We also emphasise that all our data is based on self-reports by the FiY1/F1 participants – whether in questionnaires or interviews. We trust our data and interpretations are credible, but they are not triangulated with other viewpoints, such as those of supervisors, other healthcare professionals, managers or patients.

With those caveats in mind, the headline finding is that overall, our FiY1 participants found the initiative to be a largely positive and beneficial experience. Their responses suggest some advantages for starting F1, and no substantial disadvantages, compared to peers who had not undertaken these posts. However, the extent to which the experience was beneficial seemed to depend on support provided by others, enabling the development of what we have called 'supported autonomy'.

Key finding 1: FiY1 was attractive to medical students

Many FiY1s were attracted to the role by multiple factors, most frequently a desire to prepare themselves for F1, and an altruistic drive to contribute to the NHS in a time of need, although some described a sense of obligation. While some graduates preferred not to undertake FiY1 for reasons such as health concerns, or simply wanting a break, a majority of questionnaire respondents who had not been FiY1s would have liked to be, but faced logistical challenges that hindered them from taking on these roles.

Demographic differences suggested that White graduates were more likely to be FiY1s, and this may reflect concerns among ethnic minority doctors about the risk of COVID-19. Younger graduates, who may have fewer commitments, were also more likely to take on FiY1.

Key finding 2: FiY1s' work was variable but often similar to the work of F1s

FiY1s worked across a range of clinical environments, although most were deployed in medical wards. The majority had worked with COVID-19 patients, sometimes in COVID-specific areas – frequencies which reflected the number of cases in a region.

FiY1s performed a range of clinical activities, at frequencies which were comparable to those identified in F1s' work in 2015. [8] The main exception was end of life care in which FiY1s were involved far more frequently, most likely reflecting their working with or around COVID-19 positive patients.

Key finding 3: FiY1 experience benefitted preparedness and the transition to F1

Questionnaire data indicated that on starting F1, those who had worked as FiY1s felt more prepared than those who had not been working since April 2020. For some measures, including overall preparedness, they also felt more prepared than those who had non-FiY1 clinical experience in the period before starting F1. This was retained into October for the overall measure and for several specific measures.

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.

Qualitative data suggested that for some, FiY1 constituted a transitional period which allowed them to be more prepared for starting F1, with any unpreparedness they may have felt at the start of F1 instead experienced at the start of FiY1. Comparison with data from the GMC's National Training Survey (NTS) indicates that our FiY1 respondents' preparedness for FiY1 was similar to the 2019 F1 cohort's preparedness for F1. [26] Phase 2 data suggests that our FiY1 respondents were more prepared, and non-FiY1 respondents were less prepared to start F1 than the 2019 cohort. [26] This is in the context of a decreasing trend in F1s' reported preparedness in the NTS, yet the 77% of FiY1s indicating preparedness for F1 exceeds the highest proportion of F1s in recent years. [26]

Key finding 4: FiY1 experience had limited impact on participants' wellbeing

Exposure to acutely ill and dying patients was associated with higher stress and burnout during FiY1, but on starting F1 there was no difference in wellbeing measures between those who did, and did not, do FiY1. This is reassuring, in showing that the additional period of work associated with FiY1 did not add to the burden of early F1 experience. We also found that having been an FiY1 has a protective effect with regard to the risk of depression on starting F1.

Comparison with work burnout data from the NTS in 2018 [25] and 2019 [26] suggests that our sample of F1s felt generally less burned out than in previous years, while this could reflect the difference in timing (the NTS is usually completed in spring, when F1s have been working for 7-8 months), we also note a similar pattern from the 2020 NTS which was completed in July-August 2020. [65]

Key finding 5: 'Supported autonomy' was promoted by positive learning environments and attention to wellbeing

Participants faced challenging experiences during their FiY1 posts, but these were not necessarily negative if accompanied by support from colleagues. Indeed, traumatic experiences could provide effective learning and development with appropriate support, while a lack of support could compound a negative experience. The importance of support in developing autonomous practice is obviously not unique to FiY1, but there were features of the FiY1 context – such as exposure to end of life care and being in paid roles additional to the core rota – which highlighted opportunities for support.

Effective support was clinical, social and pastoral – encompassing elements of both work and wellbeing. Some support, such as working limited hours, induction and buddying, was at a system level design of FiY1, while other informal support was more ad hoc and interpersonal. Experience of both formal and informal support varied widely, reflecting local teams and leadership, overall staffing levels, and the extent to which FiY1s were new, additional roles.

9.2 Relevant literature published during our study

Since the beginning of this project, several other studies have considered the impact of the COVID-19 pandemic on healthcare students and professionals. We are also aware of other cases elsewhere in the world where medical students have graduated early, or entered the workforce ahead of graduation. However, as yet, few rigorous empirical studies have reached publication.

Most directly comparable to our data is the annual F1 induction survey for the UKFPO, which in 2020 included data from 364 FiY1s across the UK. [‡] This showed similar overall preparedness of F1s to our data. It did not break this down by FiY1 experience, although a separate item found 69% of FiY1s reported that they felt FiY1 had helped their preparedness.

Several publications have reported findings from a survey of just under 2000 UK medical students and 166 FiY1s. These have found a negative effect on wellbeing of some factors related to their medical student experience (electives being cancelled, the strain of wearing protective equipment), [66] and a perceived lack of information about PPE given to FiY1s. [67] This survey was conducted in May 2020 and may reflect acute concerns at that point in time. A separate survey of 746 F1 doctors asked about training and support, and found a high proportion had not received any formal training around COVID-19 safety, support around their own health issues, or on how the impact of COVID-19 may affect their progression. [68] This may reflect the additional uncertainty and change experienced by those F1s who were in post when the pandemic struck, compared to the FiY1s who knew they were entering practice in a pandemic. Our findings suggest that while the period before starting FiY1 was uncertain, for many FiY1s COVID-specific training was provided on their starting work.

Studies have considered the impact of COVID-19 on clinicians' wellbeing internationally. A scoping review of risks to physical and mental health published in July 2020 reported 10 studies already indexed. [69] Surveys have found exposure to COVID-19 patients is associated with higher stress (USA, UK), [70, 71] and concerns about contracting the disease, and the safety of family members (Pakistan). [72] Risks of moral injury have been identified as the result of questions of resource allocation challenging norms and ethical beliefs. [73, 74, 75] In the context of these findings our FiY1 sample's experience does not seem particularly adverse, and while challenging experiences were described, overall there are few concerns for these doctors' wellbeing. A study from Scotland [76] focused on identifying the support priorities for doctors during COVID-19, but was not restricted to F1s or FiY1s.

It is likely that further literature will emerge in coming months, and our findings, as the largest national study of the FiY1 initiative, will contribute to a fuller picture of the pandemic experience of junior doctors in the UK, and worldwide.

9.3 Beyond the pandemic context

Our findings have implications for the period before and after graduation, beyond the specifics of FiY1 and the COVID-19 context. Our concept of 'supported autonomy', while based in the experience of FiY1s, has relevance to the transitions of all new doctors. In this section we consider background which may translate our findings to a wider context. Firstly, we consider here the relevance of our findings to the GMC's work on doctors' wellbeing. We then elaborate on our concept of 'supported autonomy' in the context of earlier literature on workplace learning.

[‡] Available at https://www.surveymonkey.com/results/SM-HPHQYD367/

9.3.1 How FiY1 provided support for doctors' wellbeing

Much of this project has focused on wellbeing. The recognition that organisational and educational support can protect healthcare professionals' wellbeing has grown in recent years. In 2019 both the GMC [23] and Health Education England [24] published wide-ranging reports, drawing on a breadth of evidence, identifying how those responsible for education, training and employment could better protect the wellbeing of learners and staff. The GMC report identified an 'ABC' of factors which shaped doctors' wellbeing – Autonomy, Belonging and Competence. Our findings can be linked to this framework.

Autonomy: "The key workplace factors … that impact on autonomy and control are voice and influence in a just workplace; the right work conditions; and manageable and predictable work schedules and rotas." (p35)

Autonomy is important because it provides a doctor with control, allowing them to be self-directed in their practice and their judgements. For our sample the way in which the shift to autonomy was managed contributed to their transition to practice. Interpersonal support which allowed them to respond in their own way to challenges was an important facilitator of autonomy. Adverse experiences, including those where moral injury may arise from values being challenged or undermined, were contrary to autonomy in this sense.

Structural features of FiY1 also support autonomy. The limited working hours of FiY1s, meaning they were less likely to work anti-social hours, were felt to be a benefit, as was being supernumerary. Being paid for the role was important in many ways, not just practically – the responsibility symbolised by being a paid member of staff was crucial. It also reflects fairness, and the 'just workplace' element of autonomy, as it represents that they are on a par with F1s within the organisation.

Conversely, autonomy was challenged by the general context of COVID-19. The abruptness of the cancellation of final year placements and assessments left students in a period of uncertainty, with restricted opportunities. While medical schools generally adapted quickly to online learning, and interview participants largely felt that communication from schools was good, this uncertainty may have undermined autonomy by removing, for a time at least, students' feeling of control over their learning and development.

Belonging: "Central to doctors' sense of belonging is the quality of team working and the culture and leadership within their teams and organisations." (p49)

Becoming a part of a clinical team is an important element of the transition to practice. We heard of some lack of clarity about the purpose and scope of FiY1s among clinical teams, reflecting it being a new role and perhaps making it harder for doctors to find a place in the clinical environment. However, we also heard of structural and interpersonal features which provided support.

There were specific challenges to this in the context of COVID-19, and particularly the social isolation experienced during national lockdown. Notably, one of the interview participants linked the inability to socialise with colleagues outside of work to relationships within the workplace, potentially limiting their comfort in asking for help: professional relationships are also social relationships.

Structural features of FiY1 – the formality of the role, and again the fact of being paid – symbolically demonstrate belonging in the sense of being part of an organisation. Interpersonal contact from colleagues who reached out to them was indicative of belonging to a team, and may indeed have been more effective if people were reluctant or unable to access formal processes. This echoes findings from a recent review of wellbeing interventions conducted by two of the current project team, [32] which identified 'connectedness' within the workplace as a factor that can mitigate challenges to wellbeing. This is a belonging expressed in social networks, rather than necessarily an internalised psychological identity, although the two are linked.

Our data contained surprisingly little about the wider societal context of the pandemic, and the increased cultural portrayal of NHS workers as 'heroes'. While there were references to a heroic narrative in their initial introduction to FiY1, the reality appears not to have maintained this.

Competence: "The need for competence is met when workloads do not exceed the ability of staff to deliver this high-quality, safe and compassionate care. This also involves ensuring that doctors and students have enabling and supportive supervisory support." (p59)

Competence is the area most obviously pertinent to the experience of FiY1, and indeed F1s, reflecting as it does the provision of supervision. For FiY1s a formal supervisory role would encompass that of the F1 buddy, and we heard of varied experiences regarding this. It is also linked to the capacity of doctors to deliver care, working to their level of training, and the extent to which the environment affords an appropriate workload. The limits on working hours within FiY1 are again relevant here, and reflect an aspect of work which was more protective of FiY1s than normal F1 working.

Competence is also closely linked to perceived preparedness. Our finding that FiY1s felt more prepared for F1 than non-FiY1 peers may be linked to their ability to develop autonomy during FiY1, but it also allowed them to develop competence. We know from a previous study of the work of Foundation Programme doctors that the most frequent activities undertaken by FiY1s were those which form the majority of F1s' work. [8] The fact that they were doing these before starting work as an F1 appears to be an important part of their feeling prepared to start F1. We infer that experience and learning during the transitional period of being an FiY1 informs their preparedness, and that consequently they feel more developed as a doctor on starting F1.

9.3.2 Supported autonomy

Although there are discrete changes in status that come with qualification, registration and employment, there is not an immediate subjective transition from student to doctor, and aspects of the transition straddle these milestones. As they start work, doctors occupy a transitional or liminal state. FiY1 highlighted this transitional state, with the 'interim' of the job title indicating explicitly it was time limited.

Earlier work on the topic of preparedness has theorised that the concept of 'legitimate peripheral participation' [77] can be applied to the workplace learning experiences of final year medical students. This concept was derived from consideration of apprenticeship models of learning, whereby learners begin on the periphery of practice, moving to a fuller role as experience is gained. Student assistantships were intended to provide this experience in the context of the outcome-focused educational model of modern medical curricula. This resonates with the argument that preparedness can only meaningfully be driven by experience, not decontextualised competence. [11] An element that FiY1 provides, which a student placement cannot directly replicate, is that of responsibility. With a formal, paid role, FiY1s are undertaking a 'responsibility apprenticeship', as well developing skills.

Our findings also add an element which is somewhat missing from earlier literature - ensuring the wellbeing of the learner. While models of workplace learning include the role of structural and interpersonal relationships, the focus on learning can ironically minimise attention paid to the individual learner. Our findings show that successful transition benefits from a supportive system. Earlier work has noted this, but not articulated this effect as we have done.

We propose that the period of transition exemplified by the FiY1 experience is one of 'supported autonomy'. We suggest this brings together the importance of learning through experience, exemplified by Lave & Wenger and others, [77, 78] and the role of support in managing wellbeing. Explicitly bringing this element of care for learners to an educational process, reinforces messages of the GMC's wellbeing report. While not designed to

do so, it seems that for many FiY1s at least, the initiative managed this balance of structural constraints that give new doctors delineated, but rewarding, practice, and the interpersonal support of colleagues.

The support referred to by our 'supported autonomy' is not just pedagogic – supporting *learning*, but rather is holistic – supporting the *person* in ways not exclusively linked to learning. The notion of support bridges our two a priori features – work and wellbeing. Support shapes learning as part of work, but also wellbeing. Following this period, the fully autonomous doctor should not just have the competence to practise safely, nor even the experience to practise confidently, they must be able to emerge from the transition to practice unscathed.

9.4   Implications – what constitutes a good interim role

We have indicated that the overarching experience of FiY1, at least as reported by FiY1 doctors themselves, was of a supported transition to practice, and an apprenticeship in the responsibility of being an F1. But in considering the implications for future policy, we must consider how much of this is unique to the FiY1 experience, and how much is (or could be) part of a normal transition to F1.

At the time of writing, the future of an FiY1-like initiative is uncertain, but we would suggest that there are features of FiY1 which uniquely provide a learning environment in which supported autonomy could develop. The ways in which its structural properties map to the ABC of *Caring for Doctors, Caring for Patients* indicate why this may be.

In table 14 we suggest the key features which may define a 'good' FiY1-like role in the future. Many of these reflect current practice for F1s, but there are some important points which make an interim role distinct. These encompass the definition of the role, the resources required, and the responsibilities of others.

Firstly, it is important that the interim role is that of a doctor, and not a student. FiY1 is distinct from any medical student role in its regulatory status, and its being paid. Student assistantships may offer some elements of supported autonomy, but they cannot offer the parity of status of being a provisionally registered doctor, and an NHS employee. While the learning in some respects may be comparable, the *being* is not. Critical to FiY1 is that the doctor develops experience of responsibility, which cannot be gained as a student under current legislation.

The role should be explicitly transitional, and distinct from F1, to avoid encroachment on the F1s' own development. Our data show that FiY1s were performing many of the duties of an F1, [§] which could be a challenge for delineating roles, but could also free F1s for a more developmental role themselves. We know from earlier work that F1s see themselves least as 'learners' after 'support' or 'independent practitioners', [8] because of their responsibilities for service delivery, and any new transitional role could play a complementary part in sharing service delivery and optimising learning for both groups.

Secondly, there are resource implications. Reducing or eliminating the demands of working anti-social hours – such as weekends and overnight – at a point of transition allows new graduates to adapt to working more gradually, protecting their wellbeing. The duration of the interim role is also important. One of the criticisms of student assistantships is that they can vary from two weeks to two months. Our analysis suggests that a longer

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[§] It is possible that the requirement for FiY1s to perform these tasks was elevated by the pandemic context, and in 'normal' circumstances this would not be required, which may be a risk to the experience gained in future. However, the evidence that they could, and did, perform these tasks indicates the potential for an interim role in supporting service delivery.

period is necessary to derive a sense of increased preparedness. While consideration beyond perceived preparedness will be necessary, our data suggest a period of at least two months is necessary to substantially increase the likelihood of a new F1 feeling prepared.

Finally, it is important that the role is understood not only by the interim doctor, but also their colleagues across professions, and their supervisors and seniors. Some variability of experience is inevitable in any new job or placement. However where variability stems from others not knowing what someone is expected to do, allowed to do, or capable of, there is scope to reduce the extent of that variability. This will ensure they are given appropriate duties, and appropriately supervised by colleagues. This should also encompass awareness of the importance of informal social support within and outside of the workplace – supplementing formal induction with personal introductions, provision of space and facilities to unwind, ways to connect with the team in a social, as well as professional, context. Some of these are referred to in *Caring for Doctors, Caring for Patients*, but the confluence of social and professional relationships should not be underestimated.

Table 14. The features of a good interim role

Feature	Benefits	Challenges
A role as a paid, qualified professional.	Parity of esteem. Raises expectations of others, and the trainee.	Cost.
A clear application and appointment process.	Clarity of role and responsibilities. Provides control/autonomy to trainee.	Administrative set up for matching processes Perceptions by applicants of bureaucratic barriers.
An explicitly transitional, supernumerary role.	Clarifies expectations, gives direction to role. Ensures the interim role is developmental.	Cost. Additional supervisory load. Risk of being tasked with duties not appropriate for medical role.
A role that avoids anti-social hours.	Reduces physical demands on transition to work.	
A role long enough to make a difference – minimum 2 months.	Provides sufficient experience to increase preparedness for F1.	Cost increases with time in post. Will require early graduation (though in turn saves costs of undergraduate training).
A mutually understood role.	Expectations are appropriate to the level of experience. Training experience of F1s is protected.	Cost of communicating clearly across professions and grades.
A role with clear responsibilities and duties.	Ensures sufficient workload. Ensures varied experience and duties that align to that of an F1. Provides workforce capacity to free F1s for more development.	Risk of encroachment on F1 role. Need for training of F1 buddies
Space for informal as well as formal support.	Ensures wellbeing is integrated with work, reflecting the ABC of *Caring for Doctors, Caring for Patients*.	Changing workplace cultures. Specifying *informal* support may appear contradictory.

9.4.1   Longer-term reflections and further work

When we began this project, we anticipated that the impact of COVID-19 would be acute, and that it would cause relatively short-term disruption to educational experience. Our interviews were planned for November 2020 with an assumption that trainees would be in a position to reflect on their experience retrospectively, whereas in fact they coincided with the acceleration of the second wave of cases. It was therefore too soon to realistically consider any longer-term impact on their views of medicine. Some follow up of this group, to identify any longer-term effects on them as doctors, is advisable.

As our focus has been on the experience of new graduates, we do not have the perspectives of other professions and other team members, nor of the organisational systems, to understand whether FiY1s delivered what was intended or hoped. Further work is necessary in this area before firm conclusions around value can be drawn. We have suggested that the learning from FiY1 may transfer to a potential interim role in the future. Any such development will need to consider in more detail how much of the FiY1s' experience, including the support received, was specific to the conditions of the pandemic – clinical and social.

One year on from the announcement of FiY1, it is apparent that the impact will be far longer than we could have anticipated. There is a cumulative impact, not just on the cohort which graduated in 2020, but for years to come. The clinical placements of today's final year students will have been skewed by COVID-19, and those in earlier years of medical school are having an experience that is also constrained by lockdowns and limits on their social interactions. The impact of this may dissipate, but the risk of ongoing disruption cannot be ignored. At least two years' intake to medical schools will have been shaped by the replacement of A-levels, with unknown consequences. This, as well as the long-term effects on the graduates of 2020, will require longer term follow up.

We also need to consider the longer-term effects of COVID-19 across the medical workforce. All doctors, from consultants who were displaced from their normal areas of work into acute care, to GPs who have had to adapt to remote consultations, have had to change their ways of working and faced challenges for which they may have been little prepared. They now face backlogs of cases, and concerns about legal action arising from the demands of care during COVID-19. [79]

The most recent NTS (completed in July and August 2020) shows a perceived impact on training among trainees and trainers. [65] Large majorities identified a significant impact of COVID-19 on their day-to-day practice, felt that training was disrupted and opportunities to gain competencies required for progression were limited. We also know that academic trainees have found their research suspended as they were called into clinical work. [80]

The ramifications of the pandemic for medicine, and for medical education will take a long time to unravel. As the NHS looks towards recovery, not only of the healthcare system, but of the people who work in and deliver that system, the importance of education and training as part of that recovery should not be overlooked.

9.5 Conclusions

The FiY1 post, based on our data, was a valuable experience for most who undertook it, and we can point to structural features which may enhance any future experience. Our data suggest that the formal, paid role of the FiY1 post adds something beyond undergraduate placements and assistantships. In particular, it provides an 'apprenticeship' in the *responsibility* of being a doctor, but with fewer of the demands. The notion of supported autonomy, where work and wellbeing are both supported in a holistic way, has potential for benefit beyond the acute demands of the pandemic context.

Acknowledgements

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