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Burford, Bryan; Mattick, Karen; Carrieri, Daniele; Goulding, Anna; Gale, Thomas; Brennan, Nicola; Vance, Gillian

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Bryan Burford ,[1] Karen Mattick,[2] Daniele Carrieri ,[2] Anna Goulding,[1] Thomas Gale,[3] Nicola Brennan,[3] Gillian Vance[1]

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[1]School of Medicine, Newcastle University, Newcastle upon Tyne, UK
[2]University of Exeter Medical School, University of Exeter, Exeter, UK
[3]Collaboration for the Advancement of Medical Education Research (CAMERa), Peninsula Medical School, Faculty of Health, University of Plymouth, Plymouth, UK

Correspondence to
Bryan Burford;
bryan.burford@newcastle.ac.uk

ABSTRACT

Objectives This study considered a novel 'interim' transitional role for new doctors (termed 'FiY1', interim Foundation Year 1), bridging medical school and Foundation Programme (FP). Research questions considered effects on doctors' well-being and perceived preparedness, and influences on their experience of transition. While FiY1 was introduced in response to the COVID-19 pandemic, findings have wider and ongoing relevance.

Design A sequential mixed-methods study involved two questionnaire phases, followed by semi-structured interviews. In phase 1, questionnaires were distributed to doctors in FiY1 posts, and in phase 2, to all new FP doctors, including those who had not undertaken FiY1.

Setting and participants Participants were newly qualified doctors from UK medical schools, working in UK hospitals in 2020. 77% (n=668) of all participants across all phases had undertaken FiY1 before starting FP in August. The remainder started FP in August with varying experience beforehand.

Outcome measures Questionnaires measured preparedness for practice, stress, anxiety, depression, burnout, identity, and tolerance of ambiguity. Interviews explored participants' experiences in more depth.

Results Analysis of questionnaires (phase 1 n=441 FiY1s, phase 2 n=477 FiY1s, 196 non-FiY1s) indicated that FiY1s felt more prepared than non-FiY1 colleagues for starting FP in August (β=2.71, 95% CI=2.21 to 3.22, p<0.0001), which persisted to October (β=1.85, CI=1.28 to 2.41, p<0.0001). Likelihood of feeling prepared increased with FiY1 duration (OR=1.02, CI=1.00 to 1.03, p=0.0097). Despite challenges to well-being during FiY1, no later detriment was apparent. Thematic analysis of interview data (n=22) identified different ways, structural and interpersonal, in which the FiY1 role enhanced doctors' emerging independence supported by systems and colleagues, providing 'supported autonomy'.

Conclusions An explicitly transitional role can benefit doctors as they move from medical school to independent practice. We suggest that the features of supported autonomy are those of *institutionalised liminality*—a structured role 'betwixt and between' education and practice—and this lens may provide a guide to optimising the design of such posts.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This was the one of the largest studies undertaken in a critical phase of the COVID-19 response of UK medical education.
⇒ Collecting contemporaneous data from a large sample of newly qualified doctors as they entered practice in the novel interim Foundation Year 1 (FiY1) role provides unique insight into their experience.
⇒ The mixed-methods design provides understanding of how the FiY1 role affected doctors, and elaborates on why it had those effects.
⇒ The denominator of those who received the survey link is not known, so a response rate cannot be calculated; however, participants constituted approximately 10% of the total population of newly qualified F1s, and as such this represents a minimum response rate.
⇒ Survey respondents reflected a convenience sample from the national population of newly qualified doctors; sampling and response bias cannot be eliminated on the basis of self-selection, but the data suggest a breadth of experience and opinion has been included.

INTRODUCTION

Finding new ways to support medical students through the challenges of the transition from medical school to practice[1–3] is essential for ensuring a capable and confident workforce. The challenges of transition are often viewed as issues of 'preparedness'.[4–6] Encompassing elements of metacognition and identity, this can have long-term consequences: doctors who feel underprepared for starting post-graduate training may be at a higher risk of burnout, even several years later.[7] Improving the transitional experience of new doctors may therefore benefit not just their own well-being, but amid growing concern about the retention of the clinical workforce,[8 9] also the wider sustainability of the healthcare system.

In undergraduate medical education, there are several examples of roles specifically designed to bridge the transition to practice, and so enhance preparedness, such as the UK

'student assistantship'.[10–12] However, as medical students do not have the statutorily-determined authority or responsibility of doctors, there is a limit to the authenticity of such experiences. There has been a gap in the literature regarding explicitly transitional roles which occur *after* qualification.

With the disruption of the COVID-19 pandemic in 2020, medical students were often called on to support the medical workforce. While some of these roles were still undergraduate placements,[13] there were instances where students graduated and started work as doctors earlier than usual.[14] However, there has been limited evidence published to date of the impact of these initiatives.[15]

This paper examines a transitional graduate role introduced in 2020. Despite the circumstances of its introduction, it offers an opportunity to understand how such a role may shape transitions beyond that context. Theoretical approaches to medical career transitions have included activity theory,[16] communities of practice,[17] progressive independence[18] and liminality.[19] These variously consider structural features and individual experiences of transition between roles. While our thinking was informed by awareness of all these, we did not seek to use any particular theoretical lens at the outset.

Study context and objectives

The interim Foundation Year 1 (FiY1) post was introduced across the UK in April 2020 as a response to growing concern about the workforce impact of the developing COVID-19 pandemic. We understand it to be the largest such initiative in terms of numbers of doctors involved.

Normally, UK medical students graduate in May–June, and begin work as Foundation Year 1 doctors (F1s) in August. In 2020, many final year medical students were able to graduate and start work as early as April, as long as they had met core requirements. FiY1s had the same regulatory status as F1s, being provisionally registered with the UK regulator (the General Medical Council (GMC)), with a licence to practice. The primary function of the FiY1 role was to supplement the medical workforce, and they were intended to be supernumerary to normal rotas. Between April and July, approximately 4662 FiY1 posts were created across the UK.

This paper presents data from a study conducted between April and December 2020. It addresses two questions:

1. How did experience of FiY1 affect well-being and perceived preparedness?
2. What shaped doctors' experiences of transition to practice in FiY1?

Commissioned by the GMC as an evaluation of FIY1,[20] the findings of this study go beyond evaluation, and the findings of other studies of FiY1,[21] to have wider relevance to the transition of new doctors in other contexts.

METHODS

Design

Sequential explanatory mixed methods, in which qualitative methods are used to explain findings from quantitative data,[22] were used, reflecting the research questions' interest in both system-level patterns and individual, subjective experiences. The questionnaires addressed the first research question to provide evidence of effects that the FiY1 role had on participants and their transition to F1. The interviews addressed the second research question, to develop understanding of how those experiences were shaped.

Setting, participants and recruitment

Participants were newly qualified doctors who graduated from UK medical schools in 2020. All were working in UK hospitals, in a range of clinical specialties. For questionnaires, convenience sampling was facilitated through an initial invitation and online survey link distributed by the UK Medical Schools Council in April 2020. Respondents to this were asked whether they had applied for an FiY1 post (or not), their reasons why (or not) and for demographic information.

There were then two main phases of questionnaire data collection. Phase 1 (May–June) focused on FiY1, and phase 2 (August–October) on the first months of F1. A link to the phase 1 questionnaire was sent to FiY1 volunteers in May–June, with follow-ups sent 21 days after completion to collect longitudinal data. An anonymising ID within URLs was included to allow questionnaires to be linked. For phase 2, a fresh invitation was distributed to all new F1s by the UK Foundation Programme Office to encourage those who had not been FiY1s to take part. The phase 2 questionnaire was distributed 10 days after the start of F1 in August to all who responded to this invitation, and to those who had responded in phase 1. A second phase 2 questionnaire was distributed 8 weeks later to identify the persistence of any effects of FiY1.

For qualitative interviews, a purposive sample of questionnaire respondents (including some who had not undertaken FiY1) was selected to ensure representation of gender, age group, ethnicity, geography and high and low stress (as indicated in phase 2). A sample size of around 20 was considered to be appropriate, reflecting the intended breadth and depth of our methodological approach[23] and prior experience.[24] A sample of 30 was approached in order to allow for some drop-out. This sample was contacted by email by AG and DC to arrange a convenient time for interview.

Questionnaire content

Questionnaire content presented in this paper, recording different elements of work, well-being, tolerance of ambiguity and identity, is summarised in table 1. Questionnaires were piloted with four FiY1 doctors, leading to minor revisions for clarity and hosted securely on onlinesurveys.ac.uk. A copy of the phase 1 questionnaire is provided as given in online supplemental material 1.

Interview content

Individual semi-structured interviews were conducted by video call (using Zoom) by AG and DC in

Table 1 Questionnaire content

Phase 1 (May–June 2020)	Phase 2 (August–October 2020)
Preparedness for FiY1.* Location of work in the 3 weeks before completing the questionnaire. Experience of ambiguity.† Frequency of specific activities (27 items).‡	Preparedness for F1.* Experience of ambiguity.† Preparedness for specific activities (25 items).‡
Perceived Stress Scale (PSS).[25] Hospital Anxiety and Depression Scale (HADS).[44] Copenhagen Burnout Inventory (CBI, personal and work burnout subscales).[26]	
Tolerance of Ambiguity in Medical Students and Doctors (TAMSAD).[27]	
Professional identity: Ingroup Ties, Centrality, Ingroup affect.[28]	

*A single item with wording derived from the GMC's National Training Survey.[45]
†Nine items reflecting different types of ambiguity as described in the literature.[46 47]
‡Derived from the GMC's outcomes for graduates.[48]
FiY1, interim Foundation Year 1; GMC, General Medical Council.

November–December 2020. Interviews were audio-recorded with participants' consent on biometrically secured mobile phones, recordings securely uploaded to a transcription service and transcribed verbatim.

Interviews covered participants' experiences at the start of the pandemic and their transitions into FiY1 and F1. The underlying approach was phenomenological, in that we wished to understand participants' lived experience of their living and working through the pandemic. To prompt recall, a graphic of the pandemic timeline was shared beforehand, although it was not needed by all participants. Interviews lasted between 26 and 93 min (median 62 min).

Quantitative analysis

Scales were coded following conventions in the literature: the Perceived Stress Scale (PSS) was calculated as a sum (range 0–40),[25] the Copenhagen Burnout Inventory (CBI) subscales[26] and the Tolerance of Ambiguity in Medical Students and Doctors (TAMSAD)[27] transformed and summed (range 0–100), and identity subscales[28] reported as means between 1 and 5. The Hospital Anxiety and Depression Scale (HADS) subscales were summed and dichotomised using thresholds validated for medical students as indicating a risk of depression (scores≥8) or anxiety (scores≥13).[29] In cases with missing data, valid mean substitution[30] was used for scales where an individual was missing 10% of item scores. In phase 1, 19 respondents had imputed scores in this way on at least one scale, and 39 in phase 2. Most of these were due to missing values on the longer TAMSAD scale. Three participants in phase 1 and 14 in phase 2 had scales omitted from some analysis due to missing values.

All analyses were carried out using R version 4.3.1.[31] Analyses reported in this paper are multiple linear regression, binomial logistic regression and linear mixed-effects regression.[32] In developing regression models, covariates (gender, age, ethnicity and TAMSAD) were retained in final models only if they influenced model fit as demonstrated by the Akaike information criterion (AIC) reported by R's drop1() function. Box-Cox transformation[33] was undertaken on the overall preparedness measure, where skewness risked distortion of regression findings.

Qualitative analysis

Reflexive thematic analysis[34] was undertaken on the interview data. First, a sample of transcripts were free coded by AG, DC and KM, who agreed a set of codes to apply to all transcripts. Remaining transcripts were then coded by DC and AG, with regular review meetings with KM and discussion of developing findings with the rest of the project team. While formal member checking was not carried out, involvement of the project advisory group (see below) provided insight and external assurance of the credibility and dependability of interpretation. In alignment with the analytical method, our interpretation is informed by our varied subjectivities as a research team providing different lenses to derive meaning from data. This is aligned with an underlying hermeneutic phenomenological approach.[35]

Themes were presented initially in a report for the GMC,[20] and have been further refined in this paper. All authors reviewed this developing draft to ensure coherence with the data.

Ethical considerations

All data were collected and stored securely. No personally identifiable information was stored with data, and use of quotes has ensured individuals cannot be identified. An information sheet distributed with questionnaire invitations explained the use of anonymised data, and that completion would indicate implied consent for use of data in analysis. For interviews, a consent form and information sheet were distributed to participants at least 3 days before the interview, and verbal consent provided before recording began.

Stakeholder involvement

Patients and the public were not involved in the development or conduct of this project. While patients were of

course recipients of care delivered by FiY1s, the focus of the project was on the perceptions of those new doctors themselves, and while patient insights into transitional roles would be of interest, that would have been a very different research question.

We did, however, have extensive stakeholder involvement, including new graduates entering FiY1, as part of a project advisory group which met frequently during the project. This group advised on the design of the study, the acceptability of recruitment strategies and questionnaire tools, and provided sense-checking for emerging findings. The rigour of the study was further enhanced through the involvement of an academically diverse research team including clinicians and non-clinical medical education researchers. This enhanced reflexivity, and by extension credibility and trustworthiness of the interpretation of findings.

RESULTS

Full details of respondent demographics for questionnaires and interviews are available in online supplemental material 2.

Quantitative findings

Questionnaire data from respondents who had qualified outside the UK or did not indicate their medical school, who had qualified before 2020, or had not been working clinically in the 3 weeks before completing the questionnaire, were excluded.

Analysis of the longitudinal completion of the phase 1 questionnaire showed no effects of time on any scales, and so the analysis presented here uses just the first completion by 441 FiY1s (approximately 9% of all FiY1s across the UK).

For phase 2, responses from 679 individuals (approximately 10% of all F1s, including 477 who had been FIY1s) were included (277 responded in August only, 130 in October only, 272 both times). Phase 2 respondents included 251 who had completed the phase 1 questionnaire. Cronbach's alpha for all scales across both phases was >0.7.

Covariate effects on well-being and preparedness

The inclusion of covariates in regression analyses identified some consistent effects: men indicated lower stress and burnout, and were less likely to be at risk of anxiety than women; White respondents indicated lower stress, and indicated feeling more prepared than other ethnic groups. Tolerance of ambiguity as measured by TAMSAD was a significant contributor to regression models predicting well-being measures. The role of this construct in modifying well-being measures is to be examined in future analysis.

Details of all covariate effects are available in the regression tables provided as online supplemental material 3.

Effects of FiY1s' work on their well-being

FiY1s' scope of practice was not restricted in comparison to F1s'. Reported frequencies of activities they had undertaken showed that they were carrying out many of the activities expected of new doctors (see Online supplemental material 4). This indicates that the transitional role gave them clinical exposure similar to that of F1s.

Consequently, most phase 1 respondents had worked with COVID-19 patients (n=334, 76%), and of these 42% (n=141) had worked in COVID-specific wards. Reflecting this, large numbers had undertaken activities relating to end-of-life care and the treatment of acutely ill patients (prescribing oxygen, arterial blood gas, blood transfusion and immediate life support). Regression analysis found that carrying out these activities had adverse effects on stress and burnout (see table 2). Full summary tables for these analyses are in online supplemental material 2.

No activities were associated with increased risk of anxiety or depression, but three were linked to a *lower* risk of depression: urethral catheterisation (OR=0.38, CI 0.16 to 0.81, p=0.0179), initial assessment of a patient (OR 0.34, CI 0.15 to 0.81, p=0.0102) and prescribing medication (OR 0.26, CI 0.08 to 0.98, p=0.0275). Identifying a practice-based learning event in the previous 3 weeks was associated with lower burnout (personal burnout β=−3.98, CI −7.43 to −0.53, p=0.0240; work burnout β=−3.88, CI −7.28 to −0.48, p=0.0252). This could suggest a lack of pressure allowing for learning events to occur, or it could suggest that educational value mitigates adverse effects. We cannot know enough about the context of these events to be sure.

Further demonstrating the stresses of clinical work in this period, exposure to all examples of ambiguity (operationalised in terms of their own knowledge, others' clinical knowledge, overall perceptions of medicine and others' expectations of them) was associated with higher stress, burnout, anxiety or depression. All regression tables are found in online supplemental material 2.

The impact of FiY1 on the transition to F1

The analyses above indicate the impact on participants' well-being of clinical experience *during* the transitional FiY1 role. The data collected in phase 2 allow us to consider the longer-term impact of that experience as doctors started F1.

To identify any self-selection bias among those who applied for FiY1 posts, a preliminary analysis considered FiY1s' preparedness for FiY1 as measured in phase 1, and found this did not significantly differ from the preparedness for F1 reported by non-FiY1s in August. This suggests baseline preparedness of the two groups for starting work was similar, and so risk of selection bias is small.

Recognising that some F1s had clinical experience other than FiY1 in the period since their final year ended (eg, working in paid assistantship roles), we coded experience in three categories: FiY1 (n=477 unique respondents), 'Other experience' (n=55) and 'None' (n=146). This was included with the month of phase 2 questionnaire completion as a predictor of perceived preparedness for F1. Figure 1 illustrates a significant interaction effect from this analysis, showing that at the start of

Table 2 Regression coefficients for significant effects of undertaking activities during FiY1 on adverse well-being

	Stress	Personal burnout	Work burnout
Managed symptoms of patients who are at the end of life	β=2.45, p=0.0002 (CI 1.18 to 3.73)	β=4.95, p=0.0083 (CI 1.28 to 8.63)	β=6.93, p=0.0002 (CI 3.35 to 10.51)
Broken bad news to a patient	β=2.17, p=0.0003 (CI 0.99 to 3.35)	β=4.11, p=0.0186 (CI 0.69 to 7.53)	β=5.80, p<0.0007 (CI 2.46 to 9.14)
Supported families when patients are at the end of life	β=2.04, p=0.0006 (CI 0.89 to 3.19)	β=3.46, p=0.0419 (CI 0.13 to 6.80)	β=4.60, p=0.0059 (CI 1.33 to 7.87)
Completed a death certificate	β=1.29, p=0.0462 (CI 0.02 to 2.55)	β=3.95, p=0.0336 (CI 0.31 to 7.59)	β=4.07, p=0.0258 (CI 0.50 to 7.65)
Discussed DNAR [do not attempt resuscitation] decisions with colleagues, patients or next of kin	β=1.66, p=0.0048 (CI 0.51 to 2.82)	No significant effect	No significant effect
Prescribed and administered oxygen	β=2.53, p<0.0001 (CI 1.35 to 3.71)	β=5.27, p=0.0027 (CI 1.84 to 8.69)	β=5.95, p=0.0006 (CI 2.59 to 9.31)
Carried out arterial blood gas and acid base sampling in adults	β=1.27, p=0.0457 (CI 0.02 to 2.52)	β=3.98, p=0.0288 (CI 0.41 to 7.55)	β=4.33, p=0.0155 (CI 0.83 to 7.84)
Taken blood cultures	No significant effect	No significant effect	β=4.62, p=0.0122 (CI 1.01 to 8.22)
Carried out blood transfusion	β=1.28, p=0.0400 (CI 0.06 to 2.50)	β=3.56, p=0.0469 (CI 0.05 to 7.07)	β=4.00, p=0.0232 (CI 0.55 to 7.45)
Carried out immediate life support	β=2.42, p=0.0056 (CI 0.71 to 4.13)	No significant effect	No significant effect

Statistics are regression coefficients and 95% CIs from multiple linear regression. Positive coefficients indicate a higher score (ie, worse well-being) if the activity is undertaken, negative coefficients indicate a lower score (ie, better well-being).
FiY1, interim Foundation Year 1.

August, former FiY1s reported feeling more prepared than those who had other experience, or had not been working medically. This effect persisted in October, despite convergence of the other two groups. Overall, there is evidence of a robust effect of FiY1 enhancing perceived preparedness not just at the start of F1, but also after 2 months in practice.

There were some effects on identity measures in August. Those who had undertaken FiY1 scored higher on the 'ingroup affect' aspect of social identity (example question: 'In general, I'm glad to be a doctor') and 'ingroup ties' (example question: 'I have a lot in common with other doctors'), compared with those who had not worked at all (β=0.26, CI 0.09 to 0.44, p=0.0026; β=0.23, CI 0.02 to 0.44, p=0.0359). Interestingly, those who had other experience before F1 also scored higher on ingroup affect than those with no experience (β=0.46, CI 0.17 to 0.75, p=0.0021), suggesting that this was not related to occupying the medical role per se, but perhaps a contrast with having worked in a non-medical capacity. There were no effects on the centrality of the doctor identity (example question: 'In general, being a doctor is an important part of my self-image').

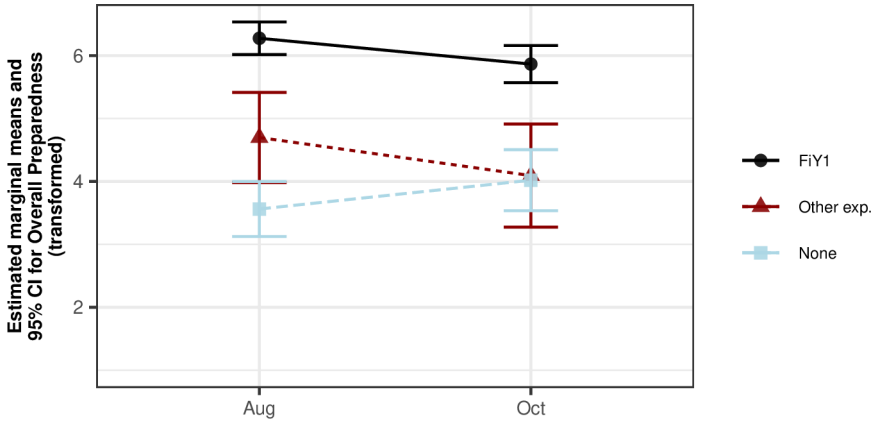

Figure 1 Plot of interaction between questionnaire time point and experience before F1, for overall preparedness measure.
FiY1, interim Foundation Year 1.

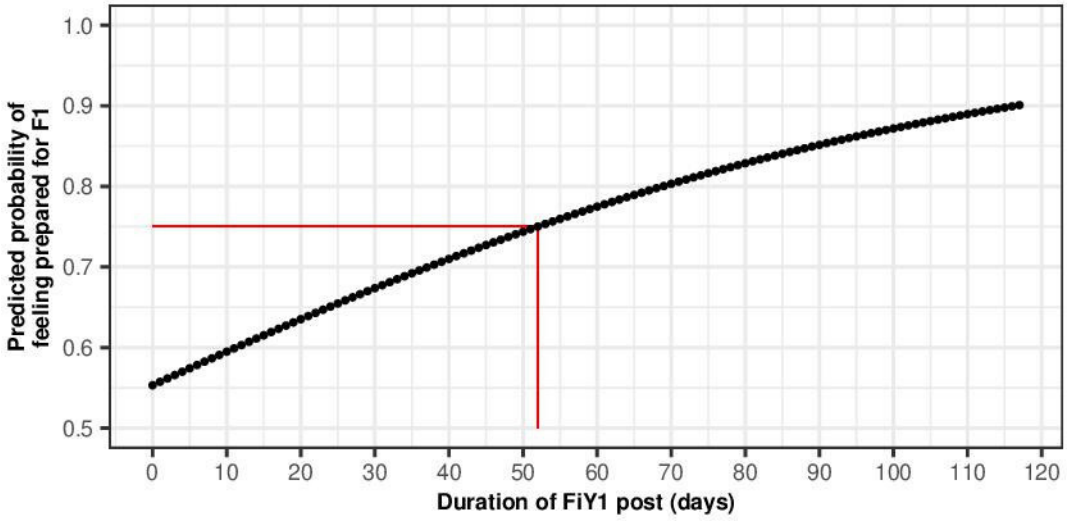

Figure 2 Predicted probabilities of FiY1s feeling prepared at the start of F1, from duration of FiY1 post. Red line indicates predicted probability of 0.75 at 52 days duration. FiY1, interim Foundation Year 1.

Effects of FiY1 duration on preparedness

We also considered the effect of the reported duration of FiY1 on overall preparedness for F1 reported in August. Reported duration of FiY1 post (range 6–117 days, mean 65.47, SD 18.85) was included as the sole predictor of dichotomised overall preparedness in a logistic regression. This found a significant, although small, effect of duration on the likelihood of an FiY1 being prepared (OR=1.02, CI 1.00 to 1.03, p=0.0097). Figure 2 illustrates the predicted probabilities derived from this model. With a minimal duration, the probability of feeling prepared is just slightly greater than 0.5. A duration of 52 days is necessary for a probability of 0.75 (indicated by the red line in figure 2), and of 117 days (nearly 17 weeks) to almost guarantee preparedness with a probability approaching 0.9. A prolonged transitional experience therefore seems necessary to substantially increase the probability of feeling prepared.

Effects on well-being of having undertaken FiY1

Despite the adverse effects of exposure to challenging activities identified in phase 1, having undertaken FiY1 showed some evidence of benefit on well-being measures in August. Compared with those who had undertaken FiY1 (n=389), there was a trend towards a higher likelihood of being at risk of anxiety or depression among those who had other experience (n=43; for anxiety OR=2.37, CI 0.97 to 5.36, p=0.0452; for depression OR=2.23, CI 0.97 to 4.76, p=0.0460). Interestingly, the effect of having no experience since completing medical school compared with FiY1 was not significant. There were no significant effects on stress or burnout measures.

Qualitative findings

The quantitative analysis identified effects of an FiY1 post on doctors' well-being and preparedness across a large sample. Analysis of qualitative data allowed us to explore in more detail individuals' experiences of work through FiY1 and into F1, and through their perceptions understand the structural and social features which may have contributed to those wider effects.

Supported autonomy in the transition to practice

Participants indicated that the experience of transition to practice was enhanced by the opportunity to work as an independent practitioner, but with the explicit support of colleagues and structures. We term this 'supported autonomy', and data suggested that the transitional FiY1 post provided more opportunities for this than the normal start of F1, perhaps providing a direct link to perceived preparedness.

Increasing autonomy for FiY1s was illustrated by references to increased perceived competence, and a transformative shift into the role of a doctor *before* beginning F1.

> By the end of the two months [of FiY1], 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 … [it] allowed me to have a much nicer start to F1. (Interview 4, female)

The transformative impact of the transitional role, becoming 'a different person', was also apparent in other statements about the responsibility and purpose that comes with work as a doctor compared with an undergraduate placement. As a doctor, they could 'make a difference'.

> 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. (Interview 19, male)

The responsibility inherent in this role was an important contrast with the opportunities afforded by undergraduate placements, even, it seemed, if the practical experience was the same:

> 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 want to have to make the same mistake twice. (Interview 19, male)

Facing the realities and responsibilities of autonomous practice had potential to be challenging, even upsetting, but could become a positive learning experience with support. A supportive learning environment included structural elements outside the immediate control of trainees or their colleagues, as well as more proximal interpersonal factors.

Organisational and structural support

The interim nature of FiY1 contributed directly to perceived support. Some participants referred explicitly to it as a protected period, one calling it a 'sheltered couple of months' (interview 16, male). Being paid contributed to a sense of being an autonomous member of the team, with parity with the role of existing F1s.

> If you're paid, then you really are a member of the team. And we were paid the same as the F1s […]. 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, ma'le)

Interestingly, the same participant noted that the protection afforded by FiY1 status meant it was also possible to acknowledge that they were *not* F1s, and be more transparent about their learning: 'it feels like you're allowed to not know things' (interview 20). There is an oscillation between learner and clinician apparent here. The balance of autonomy and protection afforded by the FiY1 structure is the core of what we identify as supported autonomy.

Being, in principle at least, supernumerary, also contributed to the support afforded by the FiY1 experience. Alongside other workforce responses to COVID, FiY1s were often working in larger, more fluid, teams than are typical in F1. These were experienced as having a more permeable hierarchy, with support directly available from consultants as well as near-peers. This created a perception of a safe learning environment.

> It's very kind of like [a] 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)

However, there were references to an absence of support structures—for example, there being no informal spaces in the workplace: 'they have removed all of the furniture from our doctors' mess to prevent us sitting with each other' (interview 7, female). Although formal support was available to some, it was not necessarily felt to be appropriately organised, or effective. Formal sessions could be seen as tokenistic, perhaps because it was not embedded in the realities of working patterns.

> They put this mindfulness session at eleven on Tuesday. How am I supposed to do a 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)

Interpersonal and team support

There were clear examples of interpersonal support often being informal, reducing the stresses of challenging events and easing the transition to autonomy.

> 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)

The social context of the pandemic, in the national lockdown which ran from March to June 2020 and subsequent ongoing restrictions, presented barriers to much interpersonal support. Notably, the lack of opportunity to develop social relationships outside of work were felt to have material effects within work, including the learning opportunities afforded by feeling at ease to ask questions. This indicates that social relationships can facilitate learning.

> 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)

There is functional relevance here, not just for the doctors' well-being, but also their professional development. Social isolation was directly associated with professional isolation, which inhibited learning.

A challenge to support could arise from a lack of clarity about the FiY1 role, leading to uncertainty and even a sense of chaos. In some cases, FiY1s were perceived as having the same role as students, and so their skills being underutilised, but in others—even within the same post—they were perceived to be 'encroaching' on F1s' responsibilities. As with the earlier quote from respondent 20, there is a sense of oscillation in the role between trusted professional, and questionable learner.

> 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 there was some encroachment on territory. (Interview 7, female)

In this sense a lack clarity of FiY as a structure could be translated to interpersonal conflict.

DISCUSSION

Principal findings

Our mixed-methods study found that doctors in a novel transitional post performed the same activities as an F1, and that undertaking such a post was associated with doctors feeling more prepared for their first Foundation Programme post. Aspects of FiY1 work associated with end-of-life and acute care were associated with adverse well-being during their FiY1 post, but the overall well-being of those who had undertaken FiY1 did not suffer on starting F1. The benefits for preparedness and longer-term well-being may be due to structural and interpersonal features of the learning environment that support the development of professional autonomy.

Strengths and weaknesses of the study

In the context a period of unique strain on the medical workforce, we feel that the participation of 9%–10% of the eligible UK-wide population, not all of whom may have received the survey, shows good engagement. However, conclusions from quantitative findings must have the caveat of risks from convenience sampling and response bias. Nonetheless, the range of responses in our quantitative and qualitative data reassure us that we engaged those with positive and negative views or experiences.

Strengths and weaknesses in relation to other studies

Our data on preparedness and well-being is supported by similar findings from another survey which collected data from F1s in August–September 2020.[21] While findings from both that and our own survey must be considered in light of risks of sampling bias, their agreement provides some reassurance of the robustness of our findings. Our study adds to that survey by providing data contemporaneous with the FiY1 period, as well as later, and adds the depth of our qualitative data. Comparison with data from 2015[24] shows that the activities of FiY1s were similar to those of F1s before the pandemic (see online supplemental material 4), and so increased preparedness is not because the interim role was 'easier' or more straightforward. In fact the pandemic context presented additional challenges for participants, in dealing with severe illness and patient death.

Experience of practice as a medical student, in clinical placements or in simulation, has been found to enhance preparedness,[1 17 36 37] so our findings that working *as a doctor* in a transitional role has a similar effect should not be a surprise. The literature indicates that alignment between undergraduate assistantship placements and F1 specialty may be beneficial for well-being,[38] and we cannot dismiss such an effect here—while FiY1 jobs were predominantly in medical specialties, they varied as did F1 jobs, and we cannot test for alignment.

Explaining the impact of a transitional role

We have used the term *supported autonomy* to describe the adaptive transition to practice. This term has been used in medical education before,[39] but our use differs somewhat. We are describing a holistic transition to autonomous working akin to the idea of 'progressive independence',[18] but with emphasis that the well-being of the individual is supported as much as their work and clinical learning. References to the isolation of the pandemic lockdown context illustrated that well-being can affect work, just as our quantitative data show that work affects well-being. This aligns with extensive work linking professional autonomy with well-being.[40] Our quantitative findings that those who had worked clinically felt a closer bond to their professional group may also relate to this point.

Support was found to come from the wider team (recently shown to be an important element of preparedness[6]), perhaps more than formal supervisory relationship. This challenges an often-perceived dichotomy of service and learning, and places the learner as a person, as well as a practitioner, at its centre. Informal support such as that illustrated in our data cannot be legislated for, and the capacity created by large teams and flat hierarchies could have been a consequence of the specific context of the pandemic. However, their providing space in which informal support could emerge is an important lesson for future practice.

We suggest that the particular benefits of the FiY1 role can be understood by viewing it in terms of its *liminality*. Liminality is defined as the state of being 'betwixt and between' roles,[19 41] in our context that is between medical student and practising doctor. FiY1s are in a bounded space where they are 'no longer a student but still not an F1' (to paraphrase Gordon *et al*[19]). While FiY1 provided opportunities for learning which are simply not possible in undergraduate practice, it also provided opportunities and support not available in regular F1 posts which are part of the core workforce.

Table 3 How features of the FiY1 role reflect features of institutionalised liminality

Feature of institutionalised liminality*	Feature of FiY1
Finite, bracketed time	While duration of the FiY1 post was in the control of the doctor, the start of F1 in August provided a clear end point.
Social guidance	FiY1 experiences which provided space and time for informal as well as formal support were more positive. This can be equated with the 'guidance from elders and support from a communitas' described by Ibarra and Obodaru,[41]p54.
Legitimate narrative	Structural features—being registered, being paid—provided objective legitimacy, and the experience of FiY1 appeared more beneficial where this was mutually understood.
Predetermined progressive outcome	The destination of FiY1 in the transition to F1 was clearly understood by all.

*Ibarra and Obodaru[41] assert the degree of institutionalisation increases with these features.
FiY1, interim Foundation Year 1.

While initially derived from settings where there is a formal and constrained liminal period from which an individual emerges in a different state (eg, rites of passage to adulthood), in occupational contexts decreasing 'institutionalisation' has been identified, where there is not a clear separation of an individual's current and eventual roles.[41] This lack of institutionalisation may be more stressful, because it increases uncertainty about progress and destination.

The benefits of FiY1 may therefore be explained if we view it as an institutionalised liminal role ('liminar'), unlike the less institutionalised liminality of medical student placements or the usual transition to F1.

Implications for clinicians and policymakers

Four features of liminality have been suggested as reflecting its degree of institutionalisation[40] and FiY1 reflects them all: finite, bracketed time; built-in guidance and support from a community; a legitimate narrative to make sense of the experience, and a predetermined progressive outcome. The 'interim' of its name emphasises its time-limited nature. Support—while variable—provides belonging and guidance. Being registered and paid gives the trainee a legitimate pathway to their clearly defined F1 role. (There is a parallel with communities of practice, in that institutionalised liminality may provide a formal legitimacy as a new worker enters the periphery of that community.[42])

Studies of paid undergraduate roles during the pandemic[13 43] suggest that payment is a legitimising factor in its own right (and indeed those with 'other experience' in our questionnaire responses indicated paid work). However, the additional status and responsibility of being qualified and registered may bring benefit through additional legitimacy, and providing the predetermined outcome of progression to F1.

Table 3 summarises features of FiY1, and how they reflect aspects of institutionalised liminality.

Viewing FiY1 as a prototype of an institutionalised liminar may provide practical indicators for the development of further transitional roles to support medical students' transition to practice. A caveat on their effectiveness may come from the lack of clear understanding of the role among some team members, but this is something that may be addressed through clear signposting, were such a role to be introduced.

Unanswered questions and future research

Ongoing further analysis is examining quantitative and qualitative data in more detail. We are conducting a follow-up qualitative study with a sample of questionnaire respondents to explore longer-term effects of starting work during the pandemic.

The liminality of the FiY1 role remains a unique instance of a widespread, institutionally liminal role, as to date 2020 remains the only time it has been implemented. Further work examining the experience of liminality in late undergraduate and early postgraduate placements may expand on the nature and utility of liminality in medical education.

CONCLUSION

An explicitly transitional interim post enabled supported autonomy in the transition from medical student to qualified doctor, with evidence of improved preparedness for practice of Foundation doctors. The features of that post suggest that a theoretically informed institutionalised liminar may provide a supportive context for new doctors to develop professional autonomy.

Twitter Bryan Burford @BBMedEd

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ORCID iDs
Bryan Burford http://orcid.org/0000-0003-4687-7556
Daniele Carrieri http://orcid.org/0000-0002-3143-8430

REFERENCES

1 Brennan N, Corrigan O, Allard J, *et al*. The transition from medical student to junior doctor: today's experiences of tomorrow's doctors. *Med Educ* 2010;44:449–58.
2 Teunissen PW, Watling CJ, Schrewe B, *et al*. Contextual competence: how residents develop competent performance in New settings. *Med Educ* 2021;55:1100–9. 10.1111/medu.14517 Available: https://onlinelibrary.wiley.com/toc/13652923/55/9
3 Chang LY, Eliasz KL, Cacciatore DT, *et al*. The transition from medical student to resident: a qualitative study of new residents' perspectives. *Acad Med* 2020;95:1421–7.
4 Burford B, Vance G. When I say … preparedness. *Med Educ* 2014;48:849–50.
5 Monrouxe LV, Grundy L, Mann M, *et al*. How prepared are UK medical graduates for practice? A rapid review of the literature 2009–2014. *BMJ Open* 2017;7:e013656.
6 Gale T, Brennan N, Langdon N, *et al*. Preparedness of recent medical graduates to meet anticipated Healthcare needs. 2021. Available: https://www.gmc-uk.org/about/what-we-do-and-why/data-and-research/research-and-insight-archive/preparedness-of-recent-graduates-to-meet-anticipated-healthcare-needs
7 GMC. State of medical education and practice 2019. London: General Medical Council. Available: https://www.gmc-uk.org/-/media/documents/somep-2019---full-report_pdf-81131156.pdf
8 Brennan N, Langdon N, Bryce M, *et al*. Drivers of international migration of doctors to and from the United Kingdom [Report for the GMC]. 2021. Available: https://www.gmc-uk.org/-/media/documents/drivers-of-international-migration-research-final-report_pdf-88769526.pdf
9 House of Commons Health and Social Care Committee. Workforce: recruitment, training and retention in health and social care. Third Report of Session 2022–23; 2022. Available: https://committees.parliament.uk/publications/23246/documents/171671/default/ accessed 22nd November 2022
10 Tweed MJ, Bagg W, Child S, *et al*. How the Trainee intern (TI) year can ease the transition from undergraduate education to postgraduate practice. *N Z Med J* 2010;123:81–91.
11 Scicluna HA, Grimm MC, Jones PD, *et al*. Improving the transition from medical school to Internship - evaluation of a preparation for Internship course. *BMC Med Educ* 2014;14:23.
12 Braniff C, Spence RA, Stevenson M, *et al*. Assistantship improves medical students' perception of their preparedness for starting work. *Med Teach* 2016;38:51–8.
13 Edmiston N, Hu W, Tobin S, *et al*. "Correction: 'you're actually part of the team': a qualitative study of a novel transitional role from medical student to doctor". *BMC Med Educ* 2023;23:165.
14 Klasen JM, Vithyapathy A, Zante B, *et al*. The storm has arrived": the impact of SARS-Cov-2 on medical students. *Perspect Med Educ* 2020;9:181–5.
15 Pravder HD, Langdon-Embry L, Hernandez RJ, *et al*. Correction to: experiences of early graduate medical students working in New York hospitals during the COVID-19 pandemic: a mixed methods study. *BMC Med Educ* 2021;21:160.
16 de Feijter JM, de Grave WS, Dornan T, *et al*. Students' perceptions of patient safety during the transition from undergraduate to postgraduate training: an activity theory analysis. *Adv Health Sci Educ Theory Pract* 2011;16:347–58.
17 Illing JC, Morrow GM, Rothwell nee Kergon CR, *et al*. Perceptions of UK medical graduates' preparedness for practice: a multi-centre qualitative study reflecting the importance of learning on the job. *BMC Med Educ* 2013;13:34.
18 Kennedy TJT, Regehr G, Baker GR, *et al*. Progressive independence in clinical training: a tradition worth defending? *Acad Med* 2005;80(10 Suppl):S106–11.
19 Gordon L, Rees CE, Jindal-Snape D. Doctors' identity transitions: choosing to occupy a state of 'betwixt and between. *Med Educ* 2020;54:1006–18.
20 Burford B, Vance G, Goulding A, *et al*. Medical graduates: the work and wellbeing of interim foundation year 1 doctors during COVID-19. Report for the GMC; 2021. Available: https://www.gmc-uk.org/-/media/documents/fiy1-final-signed-off-report_pdf-86836799.pdf
21 Moore CJS, Blencowe NS, Hollén L, *et al*. Interim foundation year one (Fiy1) and preparedness for foundation year 1: a national survey of UK foundation doctors. *Med Teach* 2022;44:622–8.
22 Creswell JW, Clark VLP. Designing and conducting mixed methods Research. 3rd edition. Chapter 3 core mixed methods designs. London: SAGE Publications, Inc, 2017: 51–100.
23 Braun V, Clarke V. To saturate or not to saturate? questioning data saturation as a useful concept for thematic analysis and sample-size rationales. *Qualitative Research in Sport, Exercise and Health* 2021;13:201–16.
24 Vance G, Jandial S, Scott J, *et al*. What are Junior doctors for? the work of foundation doctors in the UK: a mixed methods study. *BMJ Open* 2019;9:e027522.
25 Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *Journal of Health and Social Behavior* 1983;24:385.
26 Kristensen TS, Borritz M, Villadsen E, *et al*. The Copenhagen burnout inventory: a new tool for the assessment of burnout. *Work & Stress* 2005;19:192–207.
27 Hancock J, Roberts M, Monrouxe L, *et al*. Medical student and junior doctors' tolerance of ambiguity: development of a new scale. *Adv in Health Sci Educ* 2015;20:113–30.
28 Cameron JE. A three-factor model of social identity. *Self and Identity* 2004;3:239–62.
29 Marfell NR. Measuring depression and anxiety in medical students: is HADS an appropriate tool? [MPhil Thesis]. Cardiff University, 2019
30 Dodeen HM. Effectiveness of valid mean substitution in treating missing data in attitude assessment. *Assessment & Evaluation in Higher Education* 2003;28:505–13.
31 R Core Team. A language and environment for statistical computing. Vienna, Austria: R foundation for statistical computing, 2021. Available: https://www.R-project.org
32 Bates D, Maechler M, Bolker B, *et al*. Fitting linear mixed-effects models using Lme4. *J Stat Softw* 2015;67:1–48.
33 Venables WN, Ripley BD. Modern applied Statistics with S. Fourth edition. New York, NY: Springer, 2002.
34 Braun V, Clarke V. One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology* 2021;18:328–52.
35 Alsaigh R, Coyne I. Doing a hermeneutic phenomenology research underpinned by Gadamer's philosophy: a framework to facilitate data analysis. *International Journal of Qualitative Methods* 2021;20.
36 Monrouxe L, Bullock A, Cole J, *et al*. How prepared are UK medical graduates for practice. 2014. Available: https://www.gmc-uk.org/-/media/gmc-site-images/about/how-prepared-are-uk-medical-

graduates-for-practice.pdf?la=en&hash=1D87E30FB8A260AB20D662629D0F654FB64695FA
37 Burford B, Whittle V, Vance GHS. The relationship between medical student learning opportunities and preparedness for practice: a questionnaire study. *BMC Med Educ* 2014;14:223.
38 Monrouxe LV, Bullock A, Tseng H-M, *et al*. Association of professional identity, gender, team understanding, anxiety and workplace learning alignment with burnout in Junior doctors: a longitudinal cohort study. *BMJ Open* 2017;7:e017942.
39 Jenkins TM. Dual autonomies, divergent approaches: how stratification in medical education shapes approaches to patient care. *J Health Soc Behav* 2018;59:268–82.
40 West M, Coia D. Caring for doctors, caring for patients. London: General Medical Council. Available: https://www.gmc-uk.org/-/media/documents/caring-for-doctors-caring-for-patients_pdf-80706341.pdf
41 Ibarra H, Obodaru O. Betwixt and between identities: liminal experience in contemporary careers. *Research in Organizational Behavior* 2016;36:47–64.
42 Lave J, Wenger E. Situation learning: legitimate peripheral participation. Cambridge: CUP, 1991.
43 Callaghan JP, Freimane KZ, Kearney GP, *et al*. L)Earning: exploring the value of paid roles for medical students. *Clin Teach* 2023;20:e13563. 10.1111/tct.13563 Available: https://doi.org/10.1111/tct.13563
44 Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand* 1983;67:361–70.
45 GMC. National training surveys. Available: https://www.gmc-uk.org/education/how-we-quality-assure-medical-education-and-training/evidence-data-and-intelligence/national-training-surveys
46 Tonelli MR, Upshur REG. A philosophical approach to addressing uncertainty in medical education. *Acad Med* 2019;94:507–11.
47 Fox RC. The evolution of medical uncertainty. *Milbank Mem Fund Q Health Soc* 1980;58:1–49.
48 General Medical Council. *Outcomes for graduates*. London: General Medical Council, 2018.