Rapid implementation and improvement of a virtual student placement model in response to the COVID-19 pandemic

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ABSTRACT

Practice-based learning via clinical placement is a core part of a physiotherapy degree with the Chartered Society of Physiotherapy requiring completion of 1000 placement hours over a preregistration degree programme. In April 2020, as a result of the COVID-19 pandemic and subsequent lockdown Connect Health had to cancel 10 student placements as we transitioned to virtual consultations for all clinics. This cancellation of student placements was replicated across the nation with many Higher Education Institutes reporting a backlog of student placements. Without the requisite placement hours students are unable to progress into the next academic year or are unable to graduate. This then reduces the flow of new-graduate physiotherapists into the workforce at a time when there is a plan to grow the physiotherapy workforce to meet primary care demand. In response to this problem a novel placement model to facilitate virtual student placements ('virtual placements') was developed, tested and then rolled out across Connect Health using the Plan-Do-Study-Act quality improvement methodology. The model combines shadowing a broad range of virtual clinics with delivery of patient-facing online exercise classes via the Facebook Live platform and completion of virtual projects to support knowledge consolidation. This virtual student placement model enabled an increase in student capacity of over 400% compared with 2018–2019 with 182 students starting between May and August 2020. The model runs using widely available technology, requires no additional investment and has enabled these students to continue their studies and progress towards qualifying as physiotherapists.

PROBLEM

Connect Health ('Connect') is the largest, independent provider of integrated community Musculoskeletal (MSK) and Physiotherapy services in the UK, serving over 350 000 National Health Service (NHS) patients per year across 26 Clinical Commissioning Groups and over 100 businesses. Connect consists of over 400 clinicians on a national basis and is diverse in terms of range of professional roles. Connect Health serves a broad patient population and have specialist services to accommodate this which includes Persistent Pain, Rheumatology, Orthopaedics, Podiatry and MSK Physiotherapy.

Connect actively supports Higher Education Institutes (HEI's) as a placement provider, accommodating an average of 100 physiotherapy undergraduate student practice placements nationally per year. Ten undergraduate students, from two HEI's, were due to commence their MSK practice placement within Connect in April 2020. However, traditional physiotherapy student placement models are heavily reliant on face-to-face care delivery and clinical mentorship. Therefore, with the novel COVID-19 pandemic resulting in 'lockdown' in the UK,[1] the traditional model of student placements became redundant. This generated a need to develop a new, innovative model for undergraduate student placement provision.

BACKGROUND

The COVID-19 virus is transmitted primarily through respiratory droplets generated by coughing and sneezing, and through contact with contaminated surfaces.[2] WHO on 11 March 2020, declared the COVID-19 outbreak a global pandemic,[3] and the UK went into 'lockdown' on the 23 March 2020.[4] National lockdown and social distancing regulations consequentially resulted in placement providers having to cancel student placements due to a shift to virtual working, redeployment of staff and the increased of students contracting COVID-19 on practice-based placements[5]

Practice-based learning is a global mechanism for HEI's to provide students with experiential learning to bridge the gap between their academic present and their professional future, providing practical opportunity to apply their taught knowledge into skill acquisition. There are over 75 HEI's in the UK who provide physiotherapy preregistration programmes.[6] The provision of clinical

practice placements for students are fundamental to physiotherapy education and the Chartered Society of Physiotherapy (CSP) stipulates that each student must complete a minimum of 1000 hours of practice-based learning.[7] In response to the challenges faced by HEI's to accommodate the 1000 hours of practice-based learning during COVID-19, the CSP issued guidance[8] that compliments that of the Health and Care Professions Council (HCPC),[9] to focus the need for flexible contingency plans to ensure students meet the physiotherapy standards of proficiency on graduation.[10]

Health Education England (HEE) and the HCPC have also implemented a model whereby students can opt into a paid placement as a support worker in order to support the NHS and continue their studies.[5] However, these placements often take longer to set up as students need to be added to the organisational infrastructure for example, pay roll. Further, they are also not accessible to those students with underlying health conditions who are at greater risk from COVID-19-related complications or international students that may have moved abroad to be with family during the pandemic.

The CSP and HCPC have both encouraged HEI's and placement providers to be creative and innovative in their ability to provide workplace learning for students.[8 9] This encouragement highlights the potential significant impact and future workforce risk associated with lack of placement opportunities. With the recent introduction of the 5-year general practice contract framework to assist delivery of the commitments within the NHS Long Term Plan, this framework provided funding for 20 000 new primary healthcare professionals such as Physiotherapists and First Contact Practitioners through the Additional Roles Reimbursement Scheme.[11] Without a new graduate workforce to backfill these posts, there will be significant shortfall within both primary care and physiotherapy service provision. This pressure to train sufficient allied health professionals has been recognised by HEE who have extended their Clinical Placement Expansion Programme to selected allied health professions, including physiotherapy.[12]

The social distancing regulations introduced as part of the COVID-19 response[13] prevents direct patient contact to reduce the risk of COVID-19 transmission. The use of digital technology in response to these regulations in order to maintain service delivery has seen an increase in virtual consultations.[14] Virtual consultations delivered via telephone or video have demonstrated a number of advantages to service delivery including a reduced need for patients to travel to their appointments, ability to provide care to those who are shielding or self-isolating, and supports clinicians to conduct clinical work from home. Connect transitioned to offering all appointments as virtual consultations in[4] March 2020 and then considered the potential to innovate through virtual placements following the need to postpone the 10 undergraduate students who were to commence in April 2020. A search of the published literature returned no results for virtual placements in healthcare indicating that this is a previously unexplored area.

With the national demand for student practice placements increasing, it soon became clear that a virtual student placement model could be expanded throughout Connect to support HEI's in placement provision. The aim of this project was, therefore, to develop a novel model for virtual undergraduate clinical placements for physiotherapy students that would allow fulfilment of the postponed 10 placements and be scalable to be delivered nationally throughout Connect and across multiple HEI's.

MEASUREMENT

The primary evaluative outcome measure for the virtual student placement project was the number of student placements that commenced from April 2020, which was when the original 10 student placements were due to start pre-COVID-19 social distancing regulations. This data will be compared with traditional face-to-face student placement numbers in 2018–2019.

Given the recognition of a national challenge to placement provision across HEIs, and the potential that a virtual placement has to be scalable, a second outcome measure of the number of HEI's we were able to provide placements to was selected.

The 2018–2019 data were extracted from Connect placement records while the 2020 data from virtual placements was readily available to the team. These data were gathered for all Connect services which had provided placements for students since 2018. When Connect was running a traditional, face-to-face student placement model we had 45 students from four HEI's in April–August 2018 and 35 students across five HEI's in April–August 2019.

DESIGN

Initially using a modification of experience-based codesign,[15] it was clear from discussions between the placement team at Connect and existing partner HEI's, that there was a pressing demand for student placements and an appetite for innovation and collaborative working to meet this demand. The virtual student placement project was started in May 2020 following discussions and input from the HEIs as to what requirements a new placement model would need to fulfil.

Following the move to virtual consultations, we continued to complete clinical supervision for clinical staff using Microsoft Teams (Microsoft Corporation, Washington, USA) within Connect and so hypothesised that we could introduce students shadowing virtual clinics as it had proved viable to have qualified clinicians shadowing each other. This software has been made freely available to NHS services.[16] As part of the COVID-19 response Connect has also launched live, online exercise classes using Facebook (Facebook, California, USA) as a medium, to replace the usual class and gym-based
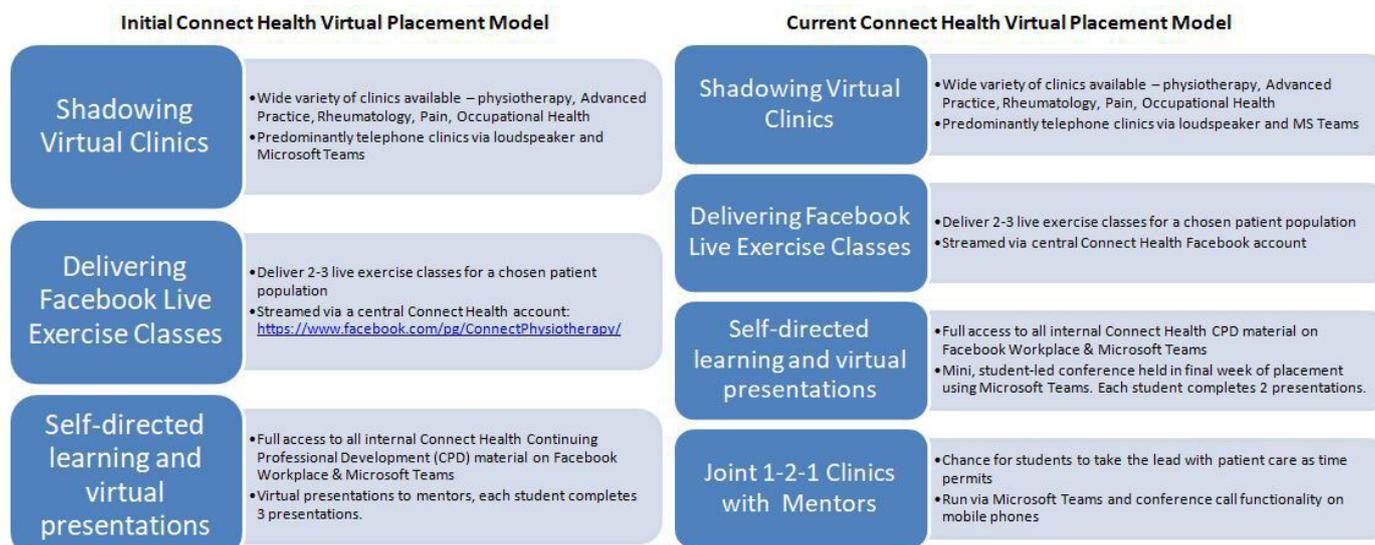
Figure 1 The initial virtual placement model is shown on the left, this model was implemented with the first cohort of students in may 2020. The current connect health virtual student placement model is shown on the right and demonstrates the development following PDSA cycles. PDSA, Plan-Do-Study-Act.

rehabilitation that were publicly available. This presented a novel opportunity for students to plan, lead and deliver an exercise class as part of a clinical placement.

As a result of the shift to virtual clinical delivery due to COVID-19 and a desire to fulfil our commitment to taking students on placement an initial model for virtual placements was developed as outlined in figure 1.

This initial model combined exposure to patient care via shadowing virtual clinics, opportunity to deliver public-facing exercise classes via Facebook Live and knowledge development via self-directed learning and preparation and delivery of virtual presentations. To ensure that the initial model designed would provide sufficient exposure to patients and learning opportunities to contribute toward the required placement hours required by the CSP, two separate HEIs contributed to development of the model.

To gauge initial capacity for placement provision, we gathered expressions of interest from our clinical staff in acting as a clinical mentor for a student on virtual placement, as we anticipated that the number of mentors would be the primary limiting factor to number of virtual placements that we could accommodate. From these responses we were able to provide 24 placements across two partner HEI's starting on 18 May 2020. We planned to continue gathering support of clinicians across Connect with the aim of offering more placements throughout the summer months in order to be able to expand our offering to HEIs across England.

With the initial model finalised, the virtual placements team allocated a lead clinician to coordinate the placements and with a remit to develop the initial model as required, to be able to implement a sustainable, scalable virtual placement offering, using quality improvement (QI) methodology. The virtual placements team agreed to meet weekly via Microsoft Teams to review progress and plan the next stage of the project as well as staying in regular email contact.

STRATEGY

Various methodologies exist to support a QI process. The virtual placements project was a novel, untested idea and in keeping with the aims of the project, we utilised The Model for Improvement[17] which is well suited to use when introducing new systems. The Model for Improvement incorporates Plan-Do-Study-Act (PDSA) cycles within a broader framework and allows experimentation, to test changes and observe the outcome prior to implementing the learning into the next cycle.

We completed three PDSA cycles between May and June 2020 which can be divided into Initiation, Implementation and Improvement. These cycles are fully detailed in table 1.

RESULTS

The primary outcome measure was the number of students starting on placement within Connect (figure 2) in April–August 2020. From April to August 2020, 182 virtual student placements were provided. The traditional face-to-face model over the same time period of April–August in 2018 was able to accommodate 45 placements, and in 2019, 35 placements. The virtual placement provided a placement capacity increase of 404% (2018) and 520% (2019), respectively.

The secondary outcome measure was the number of HEIs we were able to provide placements to. In the period between April–August 2020, placements were provided to students from 8 HEIs using the virtual model. The traditional face-to-face model over the same time period of April–August in 2018 was able to accommodate students from 4 HEI's, and in 2019, 5 HEIs.

Table 1 This table demonstrates the three PDSA cycles undertaken for the virtual student placements project

	Cycle 1 1 to 22 May 2020 Initiation	Cycle 2 25 May to 8 June Implementation	Cycle 3 8 to 30 June Improvement
Plan	We were unable to fulfil 10 planned student placements with two partner HEI's in April due to COVID-19. We had made the transition to virtual working during March–April 2020 and felt there was potential to offer virtual placements starting in May 2020. There was clear demand from our partner HEI's for student placements and so we developed an initial placement model that combined shadowing virtual clinics with creation of online exercise classes using the Facebook live platform and virtual projects and presentations (figure 1).	We agreed further intakes of students on 1 and 8 June, for a total of 40 students, and were able to include students from a third partner HEI. We planned to introduce a student peer mentoring system to minimise the administrative workload on the placement co-ordinators and to give the student an opportunity to develop mentorship skills. Drop-in virtual meetings with HEI link tutors and mentors were scheduled to support clinicians in mentoring virtual students.	We wanted to offer placements to a larger range of HEI's across the country as we knew there was demand and our virtual model had the potential to help meet that demand. We developed a feedback survey to evaluate the patient and clinician experiences of virtual placements.
Do	We took our first cohort of virtual students on 18 May 2020 with a total of 24 students from two partner HEI's and rapidly created a virtual infrastructure to support them within Microsoft Office 365 and Facebook Workplace. We initially struggled to get enough clinics available for students to shadow. However, the virtual shadowing clinics that did run were successful and early adopter clinicians started to get students involved in joint consultations such as leading the subjective assessment component of the consultation.	We improved the process for timetabling clinics for students to shadow and created how to guides to support people with using new technology to build a sustainable virtual shadowing system. We encouraged clinicians to run joint clinics with students where time permitted. The placement team hosted a webinar on our virtual student placement model with engagement from a wide range of HEI's and potential placement providers in order to broaden the reach of our placement model. Students started to host live, online exercise classes via Facebook Live. HEI link tutors held drop in Q&A session to support mentors. These were recorded and shared for those unable to attend live.	We developed a standard virtual student placement model from what we had learnt in Cycles 1 and 2 (figure 1). A student-led virtual conference was developed where projects and presentations were delivered virtually using Microsoft Teams. This provided an opportunity for students to present their projects and receive feedback from their mentors and Connect clinicians.
Study	The limiting factor to the no of students we could take on virtual placement was identified as the number of clinicians volunteering to act as mentors. There was some confusion from clinicians at how to offer up clinics to shadow and how the technology would work. Students were engaged with the idea of online exercise classes via Facebook and started to submit ideas. Students were initially expected to deliver four different virtual projects, but this provided to be too many from both a timetabling and student workload perspective. A primary concern of the mentors was how they would assess students on virtual placement	On 8 June we had a total of 59 students from three cohorts on virtual placement within Connect, each with their own dedicated mentor, surpassing our expectations of the scalability of the virtual placement model in such a short time frame. Virtual projects and classes were running well, and students were becoming adept at managing their time and learning autonomously. The student mentor model proved popular with positive feedback from the students.	60 students within Connect at any one point proved sustainable and we planned our future placement offering to ensure this would be the maximum no of students on placement at any one time with students starting in cohorts of 20. The student led conferences were very successful and allowed a high volume of interaction and feedback between the students and clinicians. Recording these conferences meant that mentors who were unable to attend live could catch up later. Initial feedback surveys using a Likert scale where one is very dissatisfied and five very satisfied showed mean scores of 4/5 for mentors and 4.6/5 for students with the initial virtual placement model.

Continued

Table 1 Continued

	Cycle 1 1 to 22 May 2020 Initiation	Cycle 2 25 May to 8 June Implementation	Cycle 3 8 to 30 June Improvement
Act	We attempted to increase the no of clinics being offered for student shadowing by providing a step-by-step guide and testimonials from early adopter clinicians. We reduced the no of projects that the students were expected to deliver to three to ensure a manageable workload. Discussed with HEI's about supporting mentors with assessing virtual placements, including running a session on 'Assessing Virtual Placements' on an internal study day. We realised this model had the potential to help address the national shortage of student placements and planned to engage with other interested HEI's and organisations via a webinar.	The virtual placement model proved viable and scalable across multiple sectors and offered a part solution to the national shortage of physiotherapy placements. We started to formulate a plan for offering virtual placements through July & August that would be available to HEIs across England.	We were able to offer a further 120 students in rolling cohorts of 20 in June, July and August across national HEIs. Split the placements into North and South so that clinicians and students would be relatively local to each other but maintained the ability for students to shadow any clinic nationally. With the virtual placement model now familiar to Connect clinicians, we were able to ensure we had sufficient mentors available to accommodate the planned volume of students. Shared a guide to running virtual placements on the Connect Health website.[18]

HEI, higher education institutes; PDSA, Plan-Do-Study-Act.

LESSONS AND LIMITATIONS

The initial project aim was to develop a model that allowed for the completion of the 10 postponed student placements in a virtual manner. This then evolved into the development of a sustainable nationwide, virtual student placement model. Throughout this process several key lessons emerged.

A robust virtual infrastructure is vital to running effective placements. With no face-to-face contact between any stakeholders there is a challenge to effective communication between placement coordinators, clinicians, students and HEI's. All students were given a dedicated Connect user account to provide access to this virtual infrastructure.

We used the Microsoft 365 (Microsoft, Washington, USA) platform to run the logistics of the placement with a shared placement calendar enabling students to see all the learning opportunities available. Facebook Workplace is used by Connect for internal communications and a student community group was created within the wider Connect community group to provide a space for student discussion and engagement as well as repository for resources.

To support Connect clinicians in mentoring virtual students we arranged Microsoft Teams meetings with the HEI tutors to provide a forum for question and discussion. These were all recorded and circulated to all mentors afterwards.
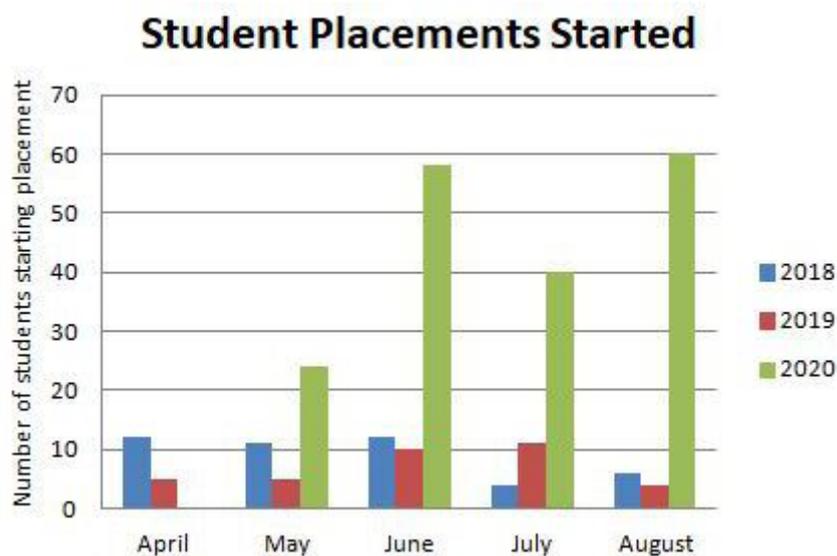
Figure 2 The bar chart demonstrated the number of student placements provided between April–August for three successive years (2018–2019). The blue and red bars highlight placements provided using a face-to-face model, the green bar represents the virtual placement developed within this QI project. QI, quality improvement.

When introducing a new model of practice, role modelling is vital. We had two of our Consultant Physiotherapists involved with the first cohort and this commitment from the senior clinical team signalled the importance of this project. We engaged heavily with the early adopters to support them in virtual mentoring of students and encouraged them to share their success stories and lessons learnt across the clinical workforce. This helped drive the momentum of the project and ensure clinicians were engaged with mentoring and offering clinics for students to shadow virtually. This leadership ensured we had the clinical capacity to support the students on virtual placement.

The iterative nature of QI and the Model for Improvement allowed for experimentation in order to innovate and demonstrate continuous improvement. We made several changes to how the calendar was structured and organised in the first week in order to ensure the administrative workload on the virtual placement team was both manageable and sustainable. We cut one of the virtual projects in week 3 of the first cohort to better support student workload and timetable pressures. We introduced the peer mentor model at the start of week 3 when the second student cohort had started which was not something we had considered in our initial planning. Considering these improvements within the PDSA cycles helped provide structure and consistency throughout the improvement process.

Some unique strengths of this virtual placement model became apparent during implementation. Students were able to shadow a broad range of clinics including physiotherapy, advanced practice, rheumatology, consultant physiotherapist led, specialist pain and occupational health. Students reported that they enjoyed the opportunity to engage with so many different clinical settings and learn from a wide range of clinicians within one placement, which is not usually readily available. The students from the preceding cohort would provide peer-mentorship, alongside the clinical mentor. This peer mentor model provides a novel opportunity for early development of leadership and mentoring skills as well as supporting the continuation of the peer learning associated with traditional placements.

The virtual nature of the placement also enabled those students with pre-existing health conditions or living abroad to complete a clinical placement and thus continue with their studies. Ensuring that students had control over their timetable enabled them to fit the placement to their needs with several students doing flexible hours to accommodate childcare arrangements. Without a virtual placement they would have been unable to complete a practice-based placement and would have had to delay progress through their course thus adding to the future workforce pipeline problem.

While we achieved our aim of creating a virtual student placement model it is not without limitations. The primary limitation, as with all virtual working, is the reliance on technology. For some students and clinicians there is a familiarity issue with virtual platforms. This was addressed in PDSA cycle 2 through appropriate support and development of easy to follow guides to help students and clinicians navigate the new virtual landscape. The key solutions implemented to overcome this problem were:

► Production of walk-through videos to assist clinicians and students in setting up and navigating the central clinic calendar in order to populate shadowing clinics.
► Dedicated 'how-to' guide and walk-through videos for successful delivery of Facebook Live classes.
► Ensuring all students had access to, and understood how to contact, the Connect IT team should they experience any technology issues.

A more difficult challenge to overcome is the accessibility issues some people may experience with technology, for example a clinician with a hearing impairment. Furthermore, while our virtual placement model offers a learning rich environment it is not possible for students to take the lead as much within consultations. Due to information governance risks associated with students working remotely we were unable to give access to clinical records systems for them to input clinical notes. To mitigate this, students were encouraged to write their own notes during consultations and share these with their mentors for discussion afterward allowing them to develop this skill.

The virtual clinic environment also means that there is no opportunity to for students to practice their 'hands-on' objective assessment skills, which is usually seen as a key component of clinical placements. We decided that, rather than trying to artificially include teaching on this, we would better serve students by focusing on the skills needed to run a successful virtual clinic as well as the opportunity to develop skills not previously included on clinical placements such as the delivery of virtual rehab classes.

This is a challenge that many qualified clinicians faced during COVID-19 as well as the students on clinical placement. To this end, the senior clinical leadership within Connect produced a series of webinars to help clinicians' up-skill in virtual consultations and these were made available to all students as well. These skills are likely to form part of the future of healthcare delivery and this model provides a unique learning opportunity for exposure to such skills early in the student's careers.

Examples of these webinars can be found at these URLs:
'Remote Rehabilitation' with Matthew Wyatt: https://www.youtube.com/watch?v=8O__lTQfILU&feature=youtu.be (online supplemental file 1).
'Video Consultations' with Andrew Cuff: https://www.youtube.com/watch?v=DnI2fkFrIZg&feature=youtu.be (online supplemental file 2).

Further, students were encouraged to write up case studies and plan hypothetical objective assessments based on the virtual assessments conducted. This helps to develop the clinical reasoning which underpins a good objective examination and is arguably the most important skill to start developing on placements with the mechanics of objective assessment developed later. It seems likely

that aspects of virtual clinics will be carried forward into service models after the COVID-19 pandemic and thus the opportunity to develop these skills now equips students to thrive in the post-COVID-19 era of service delivery.

Due to the COVID-19 pandemic clinical diaries are quieter than normal due to the interruption of routine care, and this has allowed most students the opportunity to lead on some patient consultations. However, as diaries start to get busier as part of COVID-19 recovery, it is anticipated that this may become more difficult to manage and we may have to scale down our student numbers for the model to remain sustainable.

CONCLUSION

The virtual placements QI project was successful and useful as we were able to design, implement and improve, to arrive at a model for virtual placements that allowed us to achieve our aims. To our knowledge, this is the first report on the implementation of virtual placements in response to the COVID-19 pandemic. We believe this model, or a version of it, could be implemented in any setting running virtual clinics to facilitate the continuation of student placements during the COVID-19 pandemic and thus supporting the progress of students into the workforce.

The QI process was conducted rapidly, in response to an ever-changing environment, and should be considered with respect to its limitations. We continue to run an iterative QI approach to develop a blended student placement model combining the best of both traditional and virtual models as we transition back to face-to-face working. We are also looking to undertake a qualitative evaluation of the student and clinician experience of the virtual student placement model.

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