Internship commencement during COVID-19: the impact of an extended induction model

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Abstract

Background The COVID-19 pandemic necessitated an enforced 8-week induction period (18 May to 12 July 2020) for all new interns in Ireland. These unprecedented circumstances presented a unique opportunity to assess this induction period.

Aim To assess the impact of a prolonged induction period on the technical abilities of interns embarking on their clinical careers.

Method We distributed a 12-item questionnaire to new interns at our institution during the COVID-19 pandemic. Section 1 of the questionnaire was designed to assess the rate of self-reported improvement in the successful and independent execution of practical ‘intern’ tasks. Section 2 of the questionnaire captured the subjective experience of interns during this time in relation to the effectiveness of an 8-week induction period with senior intern support available. Statistical analysis of categorical predictor and ordinal outcome variables was performed using the two-sample Wilcoxon rank-sum (Mann-Whitney) test.

Results Our results demonstrated a statistically significant improvement in the proficiency at first attempt phlebotomy in week 8 compared with week 1 ($p < 0.0001$). There was a significant improvement in placing first-attempt peripheral IV lines in week 8 compared with week 1 ($p < 0.001$). Regarding the need for senior assistance, we demonstrated a statistically significant reduction in week 8 compared with week 1 ($p = 0.046$). There were 95.56% ($n = 43$) of interns that said they would recommend the induction period for future incoming interns.

Conclusion The COVID-19 pandemic has inadvertently identified a model of internship induction that benefits interns, their colleagues and their patients through the production of more technically capable interns.

Keywords Clinical skills · COVID-19 · Induction · Intern · Technical skills · Training

Background

The transition of newly qualified doctors from university to internship has long been a source of significant stress [1, 2]. In an attempt to mitigate this issue in Ireland, a structured 1-week intern induction was introduced in 2019 [3]. Just 1 year later in 2020, newly appointed interns found themselves commencing their professional careers in the midst of a global health crisis unparalleled in its global impact by any disease in recent history. The COVID-19 pandemic necessitated an enforced 8-week induction period (18 May 2020 up to 12 July 2020) for all new interns in Ireland to facilitate an increased workload, reconfigured bed capacity and reduced staffing numbers as a result of sick leave and self-isolation [4]. This series of events has provided the intern class of 2020 with 8 weeks of a structured internship induction compared

Highlights

- We demonstrated a statistically significant improvement in the proficiency at first-attempt peripheral phlebotomy in week 8 compared with week 1 ($p < 0.0001$)
- We demonstrated a statistically significant improvement in the proficiency at placing first-attempt peripheral IV lines in week 8 compared with week 1 ($p < 0.001$)
- We demonstrated a statistically significant reduction in the need for interns to request senior help in week 8 compared with week 1 ($p = 0.046$)
- There were 95.56% ($n = 43$) of interns that said they would recommend the induction period for future incoming interns.
- Over 90% believed that an induction period of 2–4 weeks was sufficient to prepare an intern to commence in their new post.

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Table 1 Section 1: Intern technical tasks

Questions	A	B	C	D	E
(1) On average, what was your success rate with first time phlebotomy in week 1?	0–20%	20–40%	40–60%	60–80%	80–100%
(2) On average, what was your success rate with first time phlebotomy in week 8?	0–20%	20–40%	40–60%	60–80%	80–100%
(3) On average, what was your success rate with first time IV line insertion in week 1?	0–20%	20–40%	40–60%	60–80%	80–100%
(4) On average, what was your success rate with first time IV line insertion in week 8?	0–20%	20–40%	40–60%	60–80%	80–100%
(5) How often did you need a senior colleague to assist with tasks after you had attempted in week 1?	Never	Rarely	Sometimes	Often	Always
(6) How often did you need a senior colleague to assist with tasks after you had attempted in week 8?	Never	Rarely	Sometimes	Often	Always

with the previously standard 1 week of induction. These unprecedented circumstances presented a unique opportunity to assess the impact of a prolonged induction period on the clinical acumen and technical abilities of new interns embarking on their clinical careers.

Aim

To assess the impact of a prolonged induction period on the technical abilities of interns embarking on their clinical careers.

Methods

Study design

We created and distributed a 12-item electronic, anonymous and voluntary questionnaire to new interns commencing their positions at our institution during the COVID-19 pandemic. The aim of the questionnaire was three-fold. Section 1 of the questionnaire was designed to assess

the rate of self-reported improvement in the successful and independent execution of practical ‘intern’ tasks (i.e. peripheral line insertion (first attempt) and phlebotomy (first attempt) and reliance on senior colleagues) at two timepoints (Table 1):

1. 18 May 2020 (week 1) (expedited internship commencement date due to COVID-19)
2. 13 July 2020 (week 8) (8 weeks later at the originally intended internship commencement date)

Section 2 of the questionnaire was designed to capture the subjective experience of interns during this time in relation to the effectiveness of an 8-week induction period with senior intern support available (Table 2). The questionnaire was circulated via an electronic messaging platform on 6 August 2020. The answers provided by each participant registered remained anonymous.

Our survey also included a third section consisting of two open-ended questions with free text answers allowing us to capture the subjective experiences of the intern class of the 2020 pandemic.

Table 2 Section 2: Perception of an 8-week induction period

Questions	A	B	C	D	E
(7) How long did it take for you to feel ‘comfortable’ in your job as an intern?	1–3 days	4–6 days	7–14 days	2–4 weeks	> 4 weeks
(8) How helpful was the extended induction period for you?	Extremely helpful	Very helpful	Somewhat helpful	Not so helpful	No help at all
(9) Would you recommend an extended induction for interns in future years?	Yes	No	Indifferent		
(10) How much of an induction would you recommend?	2 weeks	4 weeks	6 weeks	8 weeks	
(11) Do you think the induction prepared you better for the changeover?	Yes	No	Indifferent		
(12) Do you think that working as an intern during COVID-19 has made you more resilient?	Yes	No			

Statistical analysis

Simple descriptive statistics were used to describe the distribution of answers for each questionnaire item. Results were illustrated in bar chart format. The questionnaire answer options were all ordinal variables in nature. Statistical analysis of categorical predictor and ordinal outcome variables was performed using the two-sample Wilcoxon rank-sum (Mann-Whitney) test. A $p < 0.05$ was taken to be statistically significant. The statistical software used was Stata/IC 13.1 for Mac (64-bit Intel).

Results

We received 45 completed surveys from a total of 57 interns that were contacted giving a total response rate of 78.95%.

Section 1: Intern technical tasks

Phlebotomy

In week 1, at the beginning of the extended induction date on 18 May 2020, 6.67% ($n = 3$) were successful 0–20% of the time, 17.78% ($n = 8$) were successful 20–40% of the time, 42.22% ($n = 19$) were successful 40–60% of the time, 24.44% ($n = 11$) were successful 60–80% of the time and 8.89% ($n = 4$) were successful 80–100% of the time. Eight weeks later, at the original internship commencement date, 0% ($n = 0$) were successful 0–20% of the time, 0% ($n = 0$) were successful 20–40% of the time, 8.89% ($n = 4$) were successful 40–60% of the time, 33.33% ($n = 15$) were successful 60–80% of the time and 57.78% ($n = 26$) were successful 80–100% of the time. These results demonstrated a statistically significant improvement in the proficiency at first attempt peripheral phlebotomy in week 8 compared with week 1 ($p < 0.0001$) (Fig. 1).

Fig. 1 First-attempt phlebotomy success rates at week 1 and week 8

Peripheral IV line insertion

With regard to proficiency at inserting peripheral intravenous lines at week 1: 24.44% ($n = 11$) were successful 0–20% of the time, 31.11% ($n = 14$) were successful 20–40% of the time, 22.22% ($n = 10$) were successful 40–60% of the time, 15.56% ($n = 7$) were successful 60–80% of the time and 6.67% ($n = 3$) were successful 80–100% of the time. At week 8, 0% ($n = 0$) were successful 0–20% of the time, 2.22% ($n = 1$) were successful 20–40% of the time, 24.44% ($n = 11$) were successful 40–60% of the time, 31.11% ($n = 14$) were successful 60–80% of the time and 42.22% ($n = 19$) were successful 80–100% of the time. These results demonstrated a statistically significant improvement in the proficiency at placing first-attempt peripheral IV lines in week 8 compared with week 1 ($p < 0.001$) (Fig. 2).

Senior assistance

In relation to the need to seek help from a senior colleague for an intern task at week 1: 8.89% ($n = 4$) always needed

help, 42.22% ($n = 19$) often needed help, 44.44% ($n = 20$) sometimes needed help and 4.44% ($n = 2$) rarely needed help. At week 8, 0% ($n = 0$) always needed help, 2.22% ($n = 1$) often needed help, 35.56% ($n = 16$) sometimes needed help and 62.22% ($n = 28$) rarely needed help. These results demonstrated a statistically significant reduction in the need for interns to request senior help in week 8 compared with week 1 ($p = 0.046$) (Fig. 3).

Section 2: Perception of an 8-week induction period

When asked how long it took to feel comfortable in their job as an intern, 13.33% ($n = 6$) needed 7–14 days, 26.67% ($n = 12$) needed 2–4 weeks and 53.3% ($n = 24$) needed more than 4 weeks (Fig. 4). A total of 93.3% ($n = 42$) of interns found the 8-week induction period to be either very helpful or extremely helpful. There were 95.56% ($n = 43$) of interns that said they would recommend the induction period for future incoming interns. Over 90% believed that an induction period of 2–4 weeks was sufficient to prepare

Fig. 2 First-attempt peripheral line insertion success rates at week 1 and week 8

Fig. 3 Request for senior help at week 1 and week 8

an intern to commence in their new post. When asked if they thought the induction period helped to prepare for the original commencement date (week 8), 95.56% ($n = 43$) agreed. With regard to whether working during COVID-19

has made them more resilient for future positions, 59.09% ($n = 26$) said yes and 40.91% ($n = 18$) said no. During the 8-week induction period, of the 45 completed questionnaires, 13.33% ($n = 6$) had to self-isolate due to being a COVID-19

Fig. 4 How long did it take for you to feel ‘comfortable’ in your job as an intern?

Table 3 Thematic representation of the negative aspects of COVID-19

Responses	Percent (n)
Longer intern year without graduation or postgraduation vacation	24.24 (8)
The practicalities of PPE/masks/scrubs	18.18 (6)
Social distancing from loved ones	12.12 (4)
Sudden on-call responsibilities with limited exposure to basic intern tasks	12.12 (4)
Frustration while waiting to qualify while ‘senior interns’ worked during the peak of pandemic	12.12 (4)
Difficult to establish role as ‘junior intern’ within established team dynamics	9.09 (3)
Fear of getting COVID-19 and passing it on to team/loved ones	9.09 (3)
Missing teaching/examination opportunities due to cancellation	3.03 (1)

close contact and 2.22% ($n = 1$) had to self-isolate due to testing positive for COVID-19.

Section 3: Perception of internship during COVID-19

Our survey also included two open questions allowing us to capture the subjective experiences of the intern class of the 2020 pandemic. We asked the respondents to describe the most difficult and the most rewarding aspects of commencing internship during the COVID-19 pandemic. Of the 45 participants who completed the survey, 73.33% ($n = 33$) answered these open questions. Thematic analysis is summarised in Tables 3 and 4.

Discussion

It is generally accepted that interns feel unprepared when commencing their positions in both Ireland and the UK [5, 6]. However, recent changes in medical education appear to have improved this sense of preparedness for the workplace [7]. These changes include an increased focus on intern shadowing, the teaching of practical skills and clinical simulation. Despite these clinical reforms, most interns still find the transition stressful due to newly gained responsibility, the need to manage uncertainty, working in multidisciplinary teams, experiencing the sudden death of patients and feeling unsupported [8]. It seems intuitive

that exposing interns to the practical requirements of the position through a standardised and mandatory induction would alleviate most of these stressors.

Despite a general consensus in favour of induction and its intuitive merits, there is a paucity of evidence surrounding its efficacy particularly in Ireland [9]. The expedited commencement date for interns during the COVID-19 pandemic ushered in an 8-week overlap between exiting and entering interns. This 8-week period of supervised induction provided us with the opportunity to assess the impact of such a period on the technical proficiency in the performance of the daily tasks performed by interns in a clinical setting. Our findings support the claim that significantly higher rates of technical success can be achieved with an 8-week induction model for phlebotomy and peripheral IV line insertion with significantly less reliance on senior colleague support. This desirable outcome of technical proficiency produces capable, competent and confident interns. Producing an intern group that is adept at their tasks on day 1 of their independent practice on the ward is in the interest of all interns, their team members and their patients. Our findings are supported by evidence suggesting that extended induction improves performance of objectively assessed clinical skills while simultaneously reducing intern anxiety levels [10, 11]. Among interns, there appears to be an agreement that the shadowing of ‘senior interns’ is the most valued aspect of this induction period and that 1-week induction is too short [12, 13]. Indeed, based on our results of intern opinion, we propose that a period of induction of up to 4 weeks prior to commencing independent internship is likely to be sufficient to arm interns with all the relevant technical skills required to perform their daily tasks. The added benefit of interns being familiar with the current patients at the time of NCHD changeover is highly desirable and is also likely to increase patient safety through continuity of care at the time of changeover.

This study demonstrates the efficacy of an extended induction period in achieving a statistically significant improvement in technical proficiency. It appears that an 8-week induction period is neither feasible nor necessary in the absence of a global pandemic as the majority of interns recommended just a 2–4-week induction period. This approach to intern commencement

Table 4 Thematic Representation of the Positive Aspects of COVID-19

Responses	Percent (n)
Extended supervised induction period	41.18 (14)
Support from senior interns	26.47 (9)
Contributing to the fight against COVID-19	11.76 (4)
Increased resilience/self-discipline	5.88 (2)
Becoming more aware of contact precautions	2.94 (1)
Wearing scrubs everyday	2.94 (1)
The first payslip	2.94 (1)
Skipping the queue at the grocery store	2.94 (1)

would appear to represent a prudent use of healthcare resources which would benefit intern, patient and senior team members alike.

Limitations

The outcome variables are self-reported and so are subject to some recall bias. The trend across all outcomes was persistent and pervasive indicating that the results reported here are likely to represent a real effect.

Conclusion

A period of clinical induction of 8 weeks for new interns significantly improves success rates in the performance of technical skills including first-time phlebotomy and first-time peripheral IV line insertion. There is also a significantly lower reliance on senior colleagues after this induction period. The overwhelming majority of interns were in favour of a 4-week induction period being introduced as standard practice for all new interns. The COVID-19 pandemic has inadvertently identified a model of internship induction that benefits interns, their colleagues and their patients through the production of significantly more technically capable interns.

Declarations

Ethics approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Informed consent Informed consent was obtained from all individual participants included in the study.

Conflict of interest The authors declare that they have no conflict of interest.

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