

## ORIGINAL ARTICLE

# Are educational or quality improvement interventions delivered at the induction or orientation of junior doctors effective?

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## Abstract

There has been significant media scrutiny in the UK of the period when doctors change over into new jobs, with a number of reports highlighting increased mortality. Starting work in a new hospital confers a potential patient safety risk and induction programmes are therefore designed to familiarise doctors with local policies. Little is known about using this time as an opportunity to improve patient outcomes or change practice. The aim was to review interventions which may aid hospital trusts during induction and a strategy to direct future educational and implementation research. A review of Medline, Embase, Cochrane, Scopus and ERIC databases with key terms (induction or orientation, junior doctor or intern, intervention or education or implementation, quality improvement or patient safety or outcome) extracted relevant abstracts. Articles of relevance were analysed and coded as to the type of patient or doctor group, intervention and outcome. Only seven studies were found which generally reported perceived benefits rather than objective outcomes. A significant opportunity to improve evidence based practice and patient safety is being missed by not thoroughly evaluating the impact of induction and orientation of health care professionals.

## Key words

Medical education, Doctors, Induction, Orientation, Quality improvement

## 1 Introduction

During the month of August the media<sup>[1]</sup> and other organisations closely scrutinise the performance of the National Health Service (NHS), as during this period new medical graduates enter the foundation programme and doctors' changeover occurs. Some describe it as the "August killing season"<sup>[2]</sup> or "Black Wednesday" (referring to the first Wednesday that they start work) and in the US it is known as the "July effect" or "July phenomenon". There is evidence to suggest that hospital mortality rates increase during this timeframe, and efficiency decreases<sup>[3, 4]</sup>. Unnecessary deaths occurring in hospitals at this time of year has recently lead to a Coroner's Court questioning the training new doctors receive during their first few weeks of work<sup>[5]</sup>. As well as the potential risk to patient safety, commencing in a new hospital can be a stressful time for the doctors<sup>[6]</sup>, who feel overwhelmed and underprepared which potentially affect their quality of life<sup>[7]</sup>.

Induction programmes, designed to deliver a large quantity of information in a short period of time, have been mandatory for all new doctors since 1997<sup>[8]</sup>. More recently, the General Medical Council (GMC) recommended a period of shadowing before graduation, to familiarise the student doctor with the ward environment and, ideally, the job that they will later undertake<sup>[9]</sup>. Little is known, however, about whether periods of induction or shadowing improve patient outcomes or change practice<sup>[10]</sup>.

## Aim

This review aimed to summarise published literature on induction programmes for doctors and asks the question, “are the interventions delivered effective?”

## 2 Methods

### 2.1 Search strategy

The Ovid version of MEDLINE (1950 to present), the Cochrane Central Register of Controlled Trials (Issue 12, 2011), Embase, Scopus and ERIC databases were searched using key words and Mesh terms for induction, training and orientation which were combined using the “OR” operator. These were all combined with search terms for “doctor” using the “AND” operator. Search filters for randomised trials (RCTs), prospective studies and quality improvement were also applied to ensure that all study designs were identified. Searches were limited to human studies published in English, although the date was not restricted. The search strategy is shown in Figure 1. Duplicate records were removed and the titles and abstracts of citations screened for eligibility by one researcher, using pre-determined selection criteria. Because this is an uncommon topic area and well-defined search strategies do not exist, hand searching of reference lists of included studies was also performed.

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1  Induct*.ti,ab
2  ((induct* ADJ5 (labor OR labour OR pregnen*)))ti,ab
3  1 NOT 2
4  ((new* ADJ2 (staff* OR doctor* OR clinician* OR physician* OR resident*)))ti,ab
5  ((new* ADJ2 start*))ti,ab
6  exp INSERVICE TRAINING/
7  orientat*.ti,ab
8  3 OR 4 OR 5 OR 6 OR 7
9  ((doctor* OR clinician* OR physician* OR resident*))ti,ab
10  8 AND 9
11  BEHAVIORAL RESEARCH/ OR BIOMEDICAL RESEARCH/ OR COMPARATIVE
    EFFECTIVENESS RESEARCH/ OR EMPIRICAL RESEARCH/ OR HEALTH
    SERVICES RESEARCH/ OR OPERATIONS RESEARCH/ OR QUALITATIVE
    RESEARCH/ OR RESEARCH DESIGN/ OR RESEARCH REPORT/ OR
    RESEARCH SUBJECTS/ OR RESEARCH SUPPORT AS TOPIC/
12  CONTROLLED CLINICAL TRIAL/ OR RANDOMIZED CONTROLLED TRIAL/
13  MULTICENTER STUDY/
14  (research OR trial OR stud*).ti,ab
15  exp QUALITY IMPROVEMENT/
16  (quality ADJ improvement)ti,ab
17  11 OR 12 OR 13 OR 14 OR 15 OR 16
18  10 AND 17
19  [Limit to: English Language and Humans and (Age Groups Young Adult 2 to 7 years or
    Adult 2 to 44 years or Young Adult and Adult 19-24 and 19-44)]

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**Figure 1.** Search strategy (Medline Version)

### 2.2 Inclusion of papers

Included were studies either describing or reporting outcomes of induction programmes for doctors. Studies providing information about induction programmes for other healthcare professionals were excluded. Papers including induction

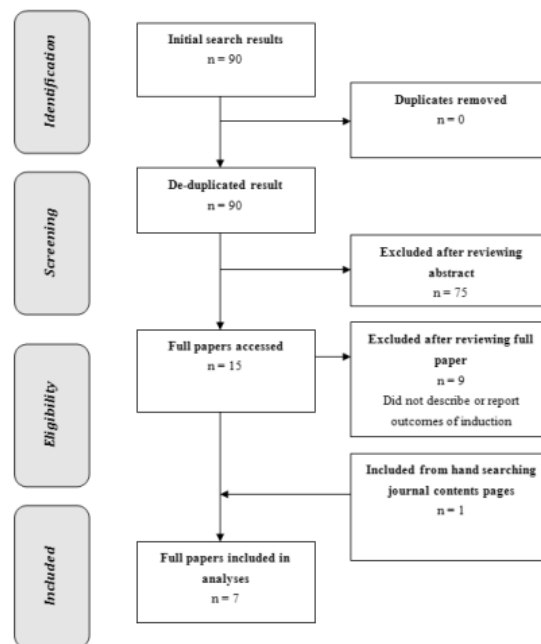
programmes involving a range of healthcare professionals were excluded unless the description or outcomes pertaining to doctors were reported separately. Each abstract was independently read by at least one author and full text articles meeting the inclusion criteria analysed by two authors.

### 2.3 Data extraction

The intervention and numbers of doctors were recorded for each study. Precise details about the nature of the intervention were extracted, including its time scale, location and format. Information relating to evaluation of the intervention was also documented and, where applicable, results were recorded. Differences between reviewers were resolved by consensus.

## 3 Results

Titles and abstracts of 90 papers were identified, 15 full papers obtained and six articles included. One additional article was identified from hand searching reference lists of included articles (see Figure 2).



**Figure 2.** Flow Diagram of papers throughout the review, according to the PRISMA criteria <sup>[11]</sup>

**Table 1.** General study details

First Author	Year of publication	Number of Participants	Country	Stage of training
Madhok <i>et al.</i>	1993	131	UK	Foundation Year Doctors
Berridge <i>et al.</i>	2007	50	UK	New Doctors
Day <i>et al.</i>	2010	12	UK	Speciality Trainee Doctors
Abu-Habsa <i>et al.</i>	2010	60	UK	Acute Care Common Stem Trainees
Magill <i>et al.</i>	2012	N/A	UK	Foundation Year Doctors
Byrne <i>et al.</i>	2012	100	Ireland	New Doctors
Weaver <i>et al.</i>	2012	N/A	USA	New Doctors

Note. UK = United Kingdom, USA = United States of America, N/A = Not reported

The seven included articles reported data from a total of 353 healthcare professionals (see Table 1). All studies described an educational intervention for trainee doctors. Of these, three were designed for new doctors, and four provided training in preparation for subspecialty jobs (see Table 1). Five involved face-to-face teaching, one was a computer-based e-learning module <sup>[12]</sup>, and one was distribution of guidelines <sup>[13]</sup>. All of the interventions took place within the clinical setting, prior to the doctors either beginning work for the first time <sup>[13-17]</sup> or just before they began work in a

new speciality<sup>[12, 18]</sup>. The face-to-face teaching interventions varied in length from one day to two weeks. None of the interventions involved formal assessment of the trainees' knowledge after completion.

### 3.1 Range of evaluation processes used in the studies

One of the articles did not include details relating to evaluation of the education intervention it described<sup>[18]</sup>. The authors stated that "...candidates demonstrated greater confidence" but this was interpreted as an ad-hoc comment rather than formal evaluation, as no other information was provided. Of the six studies providing this information, all used non-randomised designs. Four administered questionnaires to the doctors attending the training<sup>[12, 13, 15, 17]</sup>. However, none of these were validated and only one was conducted both before and after the intervention<sup>[15]</sup>. Another study used service evaluation research to assess if the induction orientation had a direct impact on patient care<sup>[16]</sup>. The last study used a mixed method design comprising focus groups and questionnaires with the aim of capturing a deeper understanding the impact of the intervention had on the participants<sup>[14]</sup>.

### 3.2 Outcomes of the interventions

Results of the interventions are described in Table 2. Only one study assessed the influence of the intervention on patient care. Two described that the interventions were deemed to be "acceptable" and a "positive experience". The intervention in which doctors were trained to use guidelines provided compliance rates to their use. Self-reported confidence of doctors was reported to increase following the intervention in two studies, with another stating that "preparedness" improved.

**Table 2.** Details of how the authors evaluated their interventions

First Author	Evaluation Method	Response Rate (%)	Evaluation time point(s)	What outcome was evaluated?	Results
Madhok	Questionnaire	80	Two months after the distribution of the guidelines	Number of doctors who used the guidelines in the clinical environment	63% used the guidelines
Berridge	Questionnaire	94	The beginning and at the end of the two week programme. Further evaluation occurred one month after the programmes completion.	The questionnaire evaluated the impact of the course had on their self perceived preparedness. The focus group explored a deeper understanding of the participants' fears and how the programme attempted to help them overcome them.	The new doctors' perceived preparedness and confidence increased after the two week programme in both the questionnaire responses and the focus groups discussions
	Focus group	94			
Day	Questionnaire	100	After the intervention	Could the e-learning tool be an acceptable alternative to a lecture programme?	The speciality trainees perceived that the intervention was acceptable
Abu-Habsa	N/A	N/A	On the day of the course, first day of the job, end of week 1, week 6 and 4 months into the new acute care training post.	Self perceived preparedness for providing acute care	Candidates reported greater self confidence in performing practical critical care skills
Magill	Service evaluation	N/A	Audited the management of patients for two months before and two months after the mandatory teaching.	Comparing the management of ENT patients before and after the mandatory teaching	38% of patients were mismanaged before and 19% of patients were mismanaged after the intervention.
Byrne	Questionnaire	94	Before and after the four week mandatory teaching and shadowing	Self perceived preparedness for the role of a junior doctor	52.5% perceived themselves to be prepared prior to the intervention whereas 79.7% perceived themselves to be prepared after the mandatory teaching and shadowing
Weaver	Questionnaire	N/A	After the coaching programme	Did the new hospital doctors find the coaching system an enjoyable experience?	83% felt the intervention was a positive experience

## 4 Discussion

There was little research on the effectiveness of induction or orientation programmes, especially in respect of well conducted controlled studies. Studies that had been performed looked at participant perception rather than patient benefit. This finding is not completely unexpected as induction is often a mandatory undertaking performed at the request of regulatory bodies rather than a process of delivered learning. The complexity of delivering training to a large number of doctors simultaneously makes the pedagogical approach didactic and perhaps not of interest to educators or those interested in quality improvement.

The lack of outcome focused research is in keeping with many reviews of educational interventions<sup>[19-21]</sup>. However, the difficulty in undertaking this research should not prevent it from happening.

## 5 Conclusion

Given the resources (both financial and time) expended on the national induction programme which are at the tax payers' expense, it is important to know that beneficial results are achieved. Alternatively, it could be argued that direct patient benefit should not be the overall aim<sup>[22]</sup> and it is the delivery of effective education that is the critical objective of the induction programme. Regardless the lack of the research in this area is surprising. We recommend that all UK healthcare institutions should evaluate their induction programmes, in particular respect of patient safety and participant behaviour. Well constructed educational and improvement methodologies should be employed utilising the large numbers of participants on these programmes. Moreover, examples of successful orientation or induction interventions should be reported and rewarded so that other institutions can emulate good practice.

The ambition for all healthcare institutions should be to improve the transition of doctors, and all health care professionals, between different stages of training, clinical placements and hospitals in order to improve the quality and safety of care delivered to the patients.

## Conflict of interests

The authors declare that they have no conflict of interests.

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