

## Defining Boot Camp: A Supporting Literature Review

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### Abstract

**Introduction:** Medical education boot camps have been shown to be effective courses to improve skills and confidence although the definition of what a boot camp is and how it differs from a skills course is not clear. We propose the definition of a boot camp to be an intensive course delivered at the start of a new clinical role designed to provide foundation to a curriculum through practical training.

**Method:** PubMed search using term “Boot Camp” and “Boot camp” with abstracts of results reviewed to determine if courses were at a transition in training role and if a curriculum was referred to.

**Results:** There were 109 relevant abstracts referring to boot camp courses. 81% referred to a curriculum and 74% of courses occurred at a transition in training roles. Half of all the abstracts were from surgical or surgical subspecialty curricula.

**Conclusion:** Our definition of a medical education boot camp is supported by the literature review performed. We hope that by defining boot camps it will encourage others to develop curriculum specific courses to support their trainees as they develop and enter new roles.

**Key words:** Simulation, Boot camp, Course, Surgery, Medical

### Introduction

Medical education boot camps have embraced simulation training in order to provide ‘hands-on’ training in a controlled environment. The need for intensive courses covering a wide range of topics from a curriculum comes from increasingly complex management with decreasing opportunities for junior clinicians to gain experience and practice procedural skills (Milburn *et al.*, 2012; Mittal, 2015). Boot camps have been shown to be effective in improving skills and confidence in applying knowledge and skills (Blackmore *et al.*, 2014; Lerner *et al.*, 2018; Kenny *et al.*, 2018; Karmali *et al.*, 2018). In addition, these courses still provide a significant increase to confidence for at least 6 months (Selden *et al.*, 2013).

Whilst these courses have been shown to be an effective way of introducing and refining skills and knowledge there is no clear definition that separates a boot camp from any other course. Blackmore *et al.* defined medical education boot camps as “courses designed to enhance learning and preparation for those entering new clinical roles with simulation-based practice and other related educational strategies” (Blackmore *et al.*, 2014). We feel that a defined curriculum is also necessary from which a boot camp can be distilled to provide training on entering a new clinical role. A boot camp with this definition is truly different to a skills course and should be recognized as such (Table 1).

Our proposed definition of a medical education boot camp is an intensive course delivered at the start of a new clinical role designed to provide foundation to a curriculum through practical training.

In order to establish whether this definition is in keeping with previous boot camps a literature review was performed.

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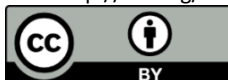
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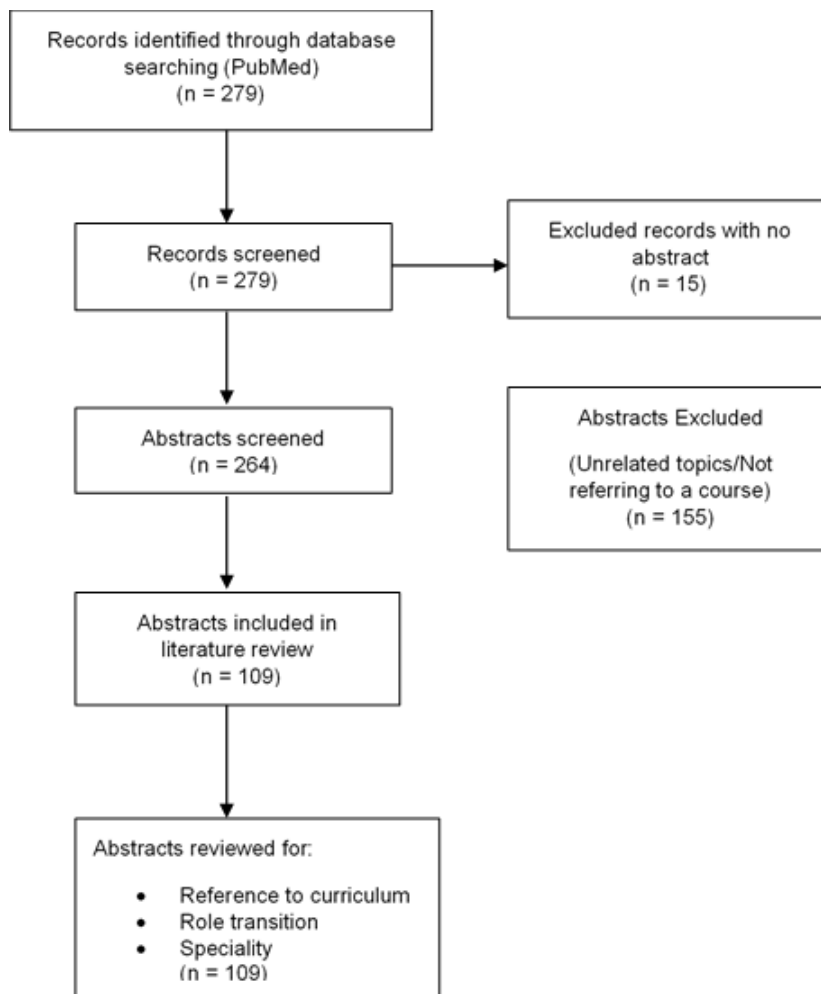
**Table 1: Differences between a boot camp and a skills course**

Boot camp	Skills course
Mapped to syllabus	Particular skill
Intense	Moderate
Before starting a NEW role	Anytime during the training
Majority hands-on	Variable

**Methods**

A PubMed search was performed with the search terms “Boot camp” and “Bootcamp”. The abstracts for each of the search results were analysed by a single reviewer to determine the specialty organising the course and whether there was reference to a curriculum or syllabus.

In addition it was noted whether the course participants were at a transition in training role and at what grade that was. Publications were excluded if there was no abstract or if the content of the abstract did not refer to a clinical course (Figure 1). If the course covered a curriculum beyond a single specialty they were classed as “non-specific”.



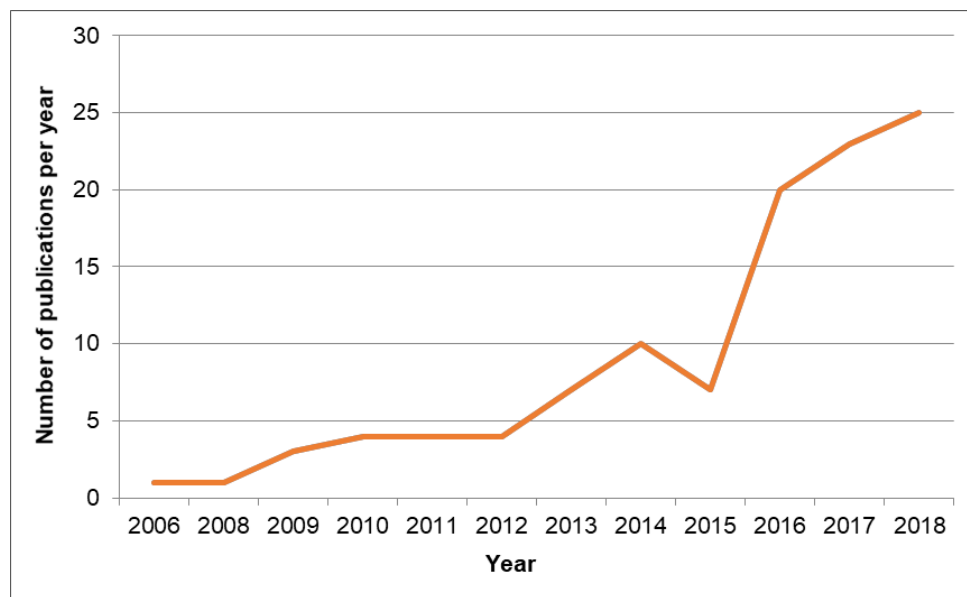
**Figure 1: Literature review method displayed as PRISMA (Moher et al. 2009) flow chart**

**Results**

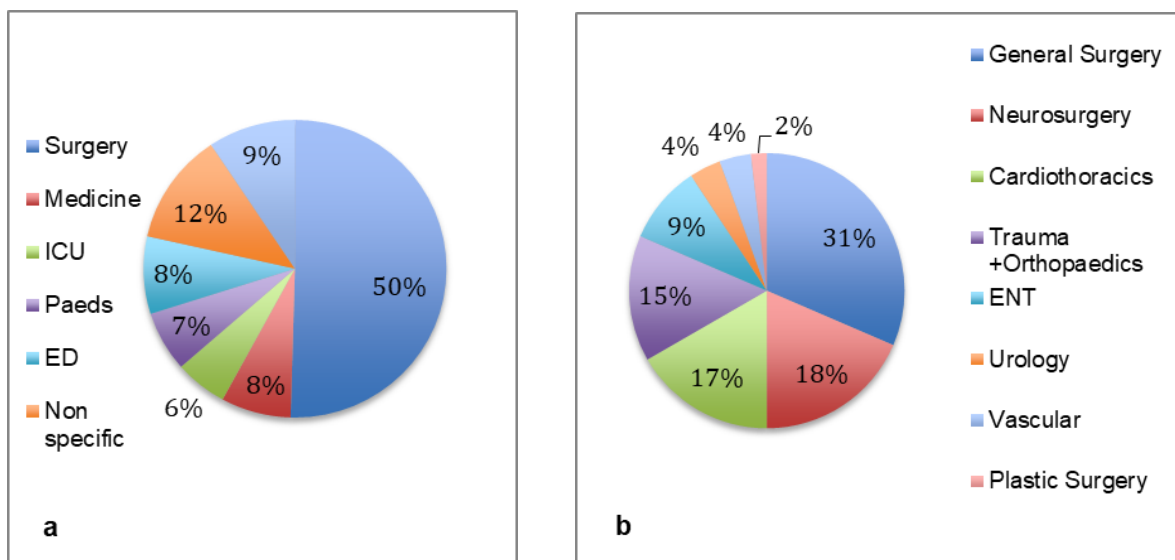
The PubMed search produced 279 results of which 109 were determined to be relevant (Table 2). The earliest paper was from 2006 with publications significantly increasing in number over the last 3 years (Figure 2). Twenty-two different specialties published regarding boot camps in addition to the non-specific category. General surgery published the most (15.6%) and half of all publications were from surgical specialties (50%) (Figure 3 a, b). Medical specialties combined made up 9% of the relevant search results, which was at

a similar level to that of emergency medicine, paediatrics and intensive care.

A curriculum was referred to in 81% of abstracts. The courses occurred at various points in training from medical school to fellows. Most commonly boot camps were for Residents or core trainees (44%) at the beginning of specialist training. A quarter of courses were for newly qualified doctors (Intern or FY1) with 16% of boot camps occurring whilst still at medical school. Overall 74% of boot camps took place at transition points in training when entering new clinical roles.



*Figure 2: Number of publications per year referring to Boot camps*



*Figure 3 (a& b): Number of publications per year referring to Boot camps*

**Table 2: Summary of published abstracts detailing Boot camps.**

Specialty	Total Number of Abstracts	Number with Curriculum	Number at Transition in grade	Training grades with Boot camps
Surgery	54	47	47	Student, Intern/FY1 Resident, ST3 Fellow
General Surgery	17	15	16	Student, FY1/Intern, Resident, Fellow
Neurosurgery	10	8	9	Intern, Resident
Cardiothoracic	9	7	7	Intern, Resident, ST3
Trauma +Orthopaedics	8	8	7	Student, FY1/Intern, Resident
ENT	5	4	4	Resident
Urology	2	2	2	ST3
Vascular	2	2	1	Fellow
Plastic Surgery	1	1	1	Resident
Medicine	10	7	6	Intern, Resident, Fellow
ICU	6	6	3	Resident, Fellow
Paediatrics	7	7	4	Student, FY1, Resident, Fellow
ED	9	5	5	Student, Intern/FY1, Resident
Non specific	13	9	9	Student, Intern, Resident
Other	10	6	6	Student, Intern, Resident
<b>TOTAL</b>	<b>109</b>	<b>87</b>	<b>80</b>	

*Those with curricula identified and those that are specifically at a transition point in training are counted separately. Surgery is subdivided into sub-specialty. Grades listed if specifically referred to in published abstract (FY1= Foundation year 1 doctor – Intern equivalent, ST3= Specialty trainee – Senior resident equivalent)*

## Discussion

The ‘Boot camp’ has clearly become much more popular as a training experience over the last 3 years. This perhaps correlates with a growing understanding of the limitations of current training and methods to improve (Milburn *et al.*, 2012). It is notable that specialties that have a curriculum dominated by procedural skills have published more abstracts related to boot camps. It is probable that surgical specialties lend themselves to the organising of boot camps with a multitude of procedural skills that can be introduced, critiqued and developed.

The proposed definition of medical education boot camps of an intensive course delivered at the start of a new clinical role designed to provide foundation to a curriculum through practical training is supported by the results of this literature search. With 81% of abstracts referring to a curriculum and 74% of courses being aimed at trainees at role transitions it is clear the majority of these courses would adhere to the proposed definition.

Courses were most commonly designed for residents or core trainees (44%), which represents a significant stage of training when roles change from being led to being the leader.

## Conclusion

We have proposed a more specific definition of medical education boot camps in order to differentiate these from other skills courses. A literature search has clearly supported this definition and we hope that by defining boot camps it will encourage others to develop curriculum specific courses to support their trainees as they develop and enter new roles.

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## Appendix:

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