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Enhancing the quality and safety of care through training generalist doctors: a longitudinal, mixed-methods study of a UK broad-based training programme

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ABSTRACT

Objective Changing patient demographics make it ever more challenging to maintain the quality and safety of care. One approach to addressing this is the development of training for generalist doctors who can take a more holistic approach to care. The purpose of the work we report here is to consider whether a broad-based training programme prepares doctors for a changing health service.

Setting and participants We adopted a longitudinal, mixed-methods approach, collecting questionnaire data from trainees on the broad-based training (BBT) programme in England (baseline n=62) and comparator trainees in the same regions (baseline n=90). We held 15 focus groups with BBT trainees and one-to-one telephone interviews with trainees post-BBT (n=21) and their Educational Supervisors (n=9).

Results From questionnaire data, compared with comparator groups, BBT trainees were significantly more confident that their training would result in: wider perspectives, understanding specialty complementarity, ability to apply learning across specialties, manage complex patients and provide patient-focused care. Data from interviews and focus groups provided evidence of positive consequences for patient care from BBT trainees' ability to apply knowledge from other specialties. Specifically, insights from BBT enabled trainees to tailor referrals and consider patients' psychological as well as physical needs, thus adopting a more holistic approach to care. Unintended consequences were revealed in focus groups where BBT trainees expressed feelings of isolation. However, when we explored this sentiment on questionnaire surveys, we found that at least as many in the comparator groups sometimes felt isolated.

Conclusions Practitioners with an understanding of care across specialty boundaries can enhance patient care and reduce risks from poor inter-specialty communication. Internationally, there is growing recognition of the place of generalism in medical practice and the need to take a more person-centred approach. Broad-based approaches to training support the development of generalist doctors, which is well-suited to a changing health service.

Strengths and limitations of this study

- This is the only study of the generalist training programme, introduced in England in 2013.
- The data, collected from multiple sources (including comparator groups and trainees' workplace supervisors), using multiple methods, at multiple points over time, are a strength of the study.
- As participants in a new programme, a weakness is the potential biased responses of BBT trainees. However, confidentiality and their ability to provide detailed and sometimes critical narratives about their experiences indicate that partiality was not a problem.
- We acknowledge that our sample of workplace supervisors is small, and we recognise the need to collect more data from trainers.

INTRODUCTION

Risks to quality of care and patient safety resulting from pressures on healthcare services created by increased patient throughput and changes in patient demographics have been well documented.[1–4] One approach to managing changing patient needs has been to develop training for a new kind of generalist doctor.[5] Recently, the UK Shape of Training Steering Group (UKSTSG) identified three areas 'where there is a clear patient need for more generalists': unscheduled hospital care, particularly for patients with multiple comorbidities; continuity of hospital care and 'more doctors who can work at the boundary between primary and secondary care'.[6] Their view is that we should be 'creating more doctors with generalist skills' and they suggest that more consultant posts will be 'general with a specialist interest'. The recent trend towards superspecialism[7] is challenged by the expectations of the UKSTSG[6] and internationally by others who have drawn attention to the negative consequences of increasing specialisation and the importance of generalism.[8–10] In the USA, Hackner *et al*[11] evidence the benefits for patient care that generalists

Table 1 Questionnaire data used in analysis (and response rates for BBT cohorts)

	Cohort 1		Cohort 2		Totals	
	BBT2013 (response rate)	Comparator 2013	BBT2014 (response rate)	Comparator 2014	BBT	Comparator
Baseline	38 (90%) (November 2013)	42 (CT/ST1) (November 2013)	24 (83%) (August 2014)	48 (CT/ST1) (August 2014)	62	90
Exit	31 (86%) (June 2015)*	31 (CT/ST2) (June 2015)	23 (96%) (June 2016)*	48 (CT/ST2) (June 2016)	54	79

*Trainees about to enter CT2/ST2.
BBT, broad-based training.

(alternatively referred to as 'hospitalists' or 'internalists') can have for multimorbid patients in hospital which can result in reduced length of stay.[12–14] While a generalist approach should not be seen as a universal panacea, and it is important to recognise the continued need for highly specialised care for certain patients,[15] for those with complex care needs, patient safety is enhanced by the generalist's broad-based understanding and skills in working across specialty boundaries.[8] This can mitigate the risks for patients from fragmented, single-disease care that fails to adopt a whole person approach.[16]

In 2013, in harmony with a move towards broad-based general training in the UK, the Academy of Medical Royal Colleges (AoMRC) introduced the 2-year post-foundation broad-based training (BBT) programme. Trainees following this programme undertook 6-month rotations in four specialties: general practice (GP), core medical training (CMT), paediatrics and psychiatry. The BBT programme aimed to develop practitioners who: are adept at managing complexity within patient presentations; have a firm grounding in the provision of patient-focused care; bring a wider perspective to healthcare provision; and promote greater integration and understanding across the specialties involved. The aims recognise inherent concerns for patient safety arising from managing complex multimorbid patients in a system designed for single-disease states. As the AoMRC introduced BBT, they also commissioned Cardiff University to conduct an evaluation, funded by Health Education England. The principal aim of our study was to consider whether the BBT programme better prepared doctors for the changing health service, compared with those following conventional pathways. The underlying contention is that the development of doctors who adopt a more generalist approach to care will better serve the needs of patients.

METHODS

We adopted a longitudinal, mixed-methods approach collecting data from questionnaires to BBT trainees and comparator groups of trainees, focus groups with BBT trainees attending 6 monthly national meetings and semi-structured, one-to-one interviews with a sample of trainees and their Educational Supervisors post-BBT.

This paper draws on data collected from the first two cohorts of BBT trainees (BBT2013 and BBT2014; n=62 at baseline, from seven English Local Education and Training Boards (LETBs)) over 3 years. The programme began in August 2013. As funding for this study was confirmed in October 2013, our first data collection point was November 2013. For cohort 2, baseline data were collected in August 2014. Exit data were collected in June 2015 (BBT2013) and June 2016 (BBT2014). Response rates for BBT trainees at exit reflect the incidence of departures during the programme (table 1). Comparator groups comprised trainees from the four BBT specialties in their first year of core or specialty (CT1/ST1) at baseline, and from the same LETBs. They were recruited by open invitation via the training programme directors. We oversampled to avoid attrition and selected a subsample for analysis. As the second cohort of BBT trainees was small, our comparator sample was twice the size of the BBT group.

Questionnaires enable collection of large amounts of data over time.[17] The questionnaires contained open and closed questions about trainees' learning, motivations, experiences and aspirations, informed by the programme aims, the wider literature, discussion with the research team and piloting. Questionnaires were administered either face-to-face at the twice-yearly national meetings (paper-based) or through Bristol Online Surveys (for non-attendees and comparator groups). All questions were optional and return of questionnaires was voluntary. We issued reminders to help maximise response rates. Reasons for non-participation are unknown. We analysed the data using SPSS to explore variable frequencies, specifically participants' responses to statements on 10-point or 6-point scales. Scales were reconfigured as 3-points to avoid small numbers in some analysis cells in the comparisons, where we used the Mann-Whitney U test for non-parametric data.[18] Missing data were not included.

Focus groups enabled explorations of perceptions and experience.[19] Focus groups (n=15) were held with BBT trainees (approximately two groups of each cohort at each of the twice-yearly national meetings for the 2 years of their programme; with an average of about eight trainees per focus group). In these discussions,

Table 2 Comparison of responses to statements: BBT trainees and comparators at baseline

Statement	Cohort	Confidence % (n) at baseline (10-point scale) 1–4	5–7	8–10	Mode (range)
(1) Practitioners with a wider perspective on healthcare provision	BBT 2013 & 2014	2% (1)	11% (7)	87% (54)	8 (1–10)
	Comp 2013 & 2014	26% (23)	54% (49)	20% (18)	7 (1–10)
(2) Trainees with an understanding of how specialties complement one another	BBT 2013 & 2014	2% (1)	24% (15)	74% (46)	9 (1–10)
	Comp 2013 & 2014	14% (13)	50% (45)	36% (32)	7* (1-10)
(3) Trainees who can apply learning across related specialties	BBT 2013 & 2014	2% (1)	10% (6)	89% (54)	9 (2–10)
	Comp 2013 & 2014	11% (10)	60% (54)	29% (26)	7 (2–10)
(4) Practitioners adept at managing patients with complex medical presentations and the associated risk assessment and management	BBT 2013 & 2014	2% (1)	19% (12)	79% (49)	8 (1–10)
	Comp 2013 & 2014	23% (21)	48% (43)	29% (26)	8 (2–10)
(5) Trainees who have a firm grounding in the provision of patient-focused care	BBT 2013 & 2014	2% (1)	19% (12)	79% (49)	8 (2–10)
	Comp 2013 & 2014	6% (5)	57% (51)	38% (34)	7 (3–10)

Statement (1) (Mdn=7), U=762.0, *z*=−7.14, P<0.001, r=−0.62; statement (2) (Mdn=7), U=1322.5, z=−5.57, P<0.001, r=−0.45; statement (3) (Mdn=8), U=878.5, z=−7.17, P<0.001, r=−0.58; statement (4) (Mdn=7), U=1067.0, z=−6.58, P<0.001, r=−0.53; statement (5) (Mdn=8), U=1669.5, z=−4.29, P<0.001, r=−0.35.
*Multiple modes exist, the smallest is presented.
BBT, broad-based training; comp, comparators.

we explored trainees' experiences and attitudes. After completion of the programme, 21 BBT trainees agreed to a semi-structured telephone interview. We asked them to identify their current Educational Supervisor who we then approached for a telephone interview (n=9). The telephone interviews provided indications of how the BBT experience had prepared them for their next stage of training.

The interview and focus group data were managed in Nvivo and analysed using a coding frame (matrix) of *a priori* themes developed from programme documentation and the wider literature. Using the initial coding frame, this directed content approach to the analysis[20] entailed: (1) independent coding by a member of the project team who populated the matrix with extracts from the transcripts; (2) identification of subthemes, expanding the coding frame; (3) concordance testing of coded samples; (4) discussion within the project team, leading to the integration of themes; (5) validation via feedback of interim findings to key informants.

Participation was voluntary, informed consent was obtained at each stage and reported data were anonymised.

RESULTS

Trainee gains from broad-based training

Participants self-rated their confidence in a set of training outcomes on a 10-point scale from low to high. Analysis of these data shows that, when compared with the comparator group, BBT trainees were *significantly* more confident that their training would result in: wider perspectives (statement 1), understanding how specialties complement one another (statement 2) and ability to apply learning across specialties (statement 3) (table 2). The BBT trainees were also notably more confident that their training would lead to them being able to manage complex patients (statement 4) and provide patient-focused care (statement 5). The mode rating for BBT trainees was higher and the range narrower; these differences were statistically significant (P<0.00, Mann-Whitney U test).

Understanding the links between specialties was a theme identified in the coding of open comments from the BBT questionnaires. At exit, BBT trainees identified benefits from their training:

> I will be able to draw upon my experience from my paediatrics, psychiatry plus medicine rotations to help me while working in General Practice in future. (BBT2013.ExitQu)

The benefit of wider experience was also noted in the open comments from those in comparator groups. In terms of things they wanted to improve in their own training, some explicitly suggested the value of 'more experience of other specialties to increase breadth and depth of knowledge' (Comp2014.ExitQu). Indeed, comparator groups were open to undertaking an additional 6 months training in the BBT specialties. For both Comp2013 and Comp2014, more than half would consider an extra 6 months in paediatrics. The proportions were similar for GP and CMT, and nearly 40% would consider 6 months training in psychiatry.

From our interviews with trainees post-BBT (in their CT2/ST2 posts) and their Educational Supervisors, experience from all four BBT specialties was noted as having merit in caring for patients in their chosen specialty.

Table 3 Comparison of responses to statements: BBT trainees and comparator groups at exit

Statement	Cohort	% (n) at exit		
		Never/rarely	Sometimes/often	Most of the time/always
I have felt isolated	BBT 2013 & 2014 exit	54% (29)	44% (24)	2% (1)
	Comp 2013 & 2014 exit	47% (37)	53% (42)	0% (0)
It has been easy to feel part of the team	BBT 2013 & 2014 exit	4% (2)	31% (17)	65% (35)
	Comp 2013 & 2014 exit	4% (3)	44% (35)	52% (41)

BBT, broad-based training; comp, comparators.

For example, one trainee working in care of the elderly noted:

> Having done 6 months in psych and then general medicine…has come in really useful in the care of the elderly job. (BBT2013.PostIntv.f)

Educational Supervisors commented on the value of trainees' experience in other specialties. They saw that BBT had allowed them to 'join up the dots' across specialties (EdSupIntv.m). Post-BBT trainees highlighted their knowledge of primary care as particularly beneficial. Their appreciation of GPs' abilities and their awareness of challenges in GP settings enabled them to better understand referrals to secondary care, and tailor discharges and communications to GPs appropriately. Secondary care also appeared to benefit in this regard; trainees felt that they had an improved understanding of other specialties within their secondary care setting and a greater ability to communicate with them.

> That experience in paediatrics was very helpful because it enabled me to know how the paediatric wards function…the kind of things that paediatricians would want to be referred…and things they wouldn't. (BBT2014.PostIntv.f)

Benefits to patient care

'Adding skills to the team' was another key theme from the post-BBT interviews. The knowledge, confidence and patient-centred approach that the trainees demonstrated in their career specialty appeared to have tangible benefits for the wider team. One trainee observed that while many paediatric doctors 'do not have any experience with psychiatry' and 'find it difficult to communicate' with children with mental health problems, she felt better equipped for these instances:

> I've been happy to liaise with the psychiatry team… You just feel more comfortable with that kind of discussion than the people who haven't done any psychiatry. (BBT2013.PostIntv.f)

The ability to apply knowledge from other specialties and the positive consequences of this for patient care were also described in the focus groups. The following extract, in particular, highlights patient safety implications of generalist experience when supporting patients with multiple problems:

> I think we're probably… safer doctors… So if you're in acute medicine and you get a patient come in from the psychiatric ward and if you've done psychiatry, you understand what's going on with that patient a lot better, and you're able to treat them better. I think patients get better care. (BBT2014.Nov2015.FGA)

Trainees also expressed concerns about how highly specialised mind-sets might compromise patient care. In this excerpt, a trainee describes their experiences on a cardiology ward during their BBT training:

> Over 50% of the in-patients on our ward have not come in with cardiology problems and their (cardiologists') faces when you present the patient in the morning, "this is a little old lady who lives on her own and she fell over and that's why she's here". And they're going like "oh"… They're very specialist and they want to stick a catheter in her and open up the artery… I am stereotyping, but it's really true. (BBT2014.Nov2016.FGA)

Educational Supervisors' opinions confirmed that BBT trainees were better equipped to deal with the patients with complex health needs. One described them as 'an answer to the future of the training in my view, or the future specialists'. BBT trainees believed that having a broader perspective enhanced their ability to communicate effectively across specialties, as noted above. How this understanding was seen as benefiting patient care is exemplified in the following extract:

> So in acute medicine I understand the GP's view… I know what to put on the discharge summary…to make sure this patient gets the best out of community. The same for GP… I understand…the acute medical team and what needs to be done from their point of view… I think that's really, really important, understanding from both sides, especially with complicated patients, which are a lot of the patients that we see. (BBT2014.Nov.2015.FGA)

In focus groups the BBT trainees commented on how exposure to different specialties gave them greater

awareness of the patient journey. They felt that experiencing the four specialties developed greater understanding of services which they used to prepare patients:

> Going into General Practice I'll actually be able to give my patients a very informed understanding of what's going to happen to them, and actually use the services appropriately. (BBT2013.Nov2014.FGD)

During the focus group discussions, there were occasional voices that questioned the link between some of the specialties and spoke of the challenge of applying learning across specialties:

> Paediatrics links very well with General Practice but it doesn't link very well with either of the other two. (BBT2013.May2014.FGC)

This, however, was a minority view. More generally, trainees commented on how BBT training had developed their 'ability to appreciate patient care holistically' (BBT2013.ExitQu). The perceived value of this holistic approach was highlighted in responses to the question, 'what has been the best thing about BBT?'. For example, one trainee reflected that learning across the four specialties 'really helps us understand how to manage complexity in physical, social and mental well-being' (BBT2014.ExitQu). By considering both the psychological, and physical needs of the patient, trainees felt able to adopt a more holistic approach. Following experience in psychiatry, they reported being more aware of the emotional as well as physical problems facing the patients they encountered elsewhere in the health service.

Unintended consequences

Embarking on the broad-based programme was not without cost for trainees. For some, there was a feeling of isolation, or being an 'outsider', compared with those on traditional pathways who were seen as having 'a real sense of community together' (BBT2014.Nov2014.FGB). Some BBT trainees reported that they struggled to fit in and did not feel 'really part of anything' (BBT2015.Nov2015.FGC). Another trainee described a division in paediatrics between those who had committed to that specialty and those who had not, and experienced different treatment as a result. Other trainees shared experiences of being 'overlooked for procedures' (BBT2013.Nov2014.FGD) and generally being regarded as less important as traditional trainees' needs were prioritised:

> Seen as "not needing to know things" as not going into that specialty. Frequently left off lists for presentations/training etc. On a few occasions told I could not go to clinic as the CTs (core trainees) wanted to. (BBT2013.ExitQu)

However, being treated differently was also seen to hold some advantages for BBT trainees. Special treatment from supervisors who wished to recruit to the specialty could result in enhanced learning opportunities:

> If you're a GP trainee doing, I don't know, psychiatry or paediatrics, it's very much, "oh you're going to be a GP"… Whereas the broad-based trainee you're seen as a potential convert. So you get a fantastic experience because of that. They take a lot more of an interest. (BBT2015.May2016.FGB)

We were able to use our survey data to explore these perspectives in relation to those on conventional training programmes. Participants rated their responses to views statements on a 6-point scale from never to always (table 3). Interestingly, while a sizeable proportion of BBT trainees felt isolated at least sometimes (46%), these proportions were lower than those found in the comparator groups (53%) and seem to reflect a widespread sentiment. The responses to a statement about feeling part of the team were also similar in both groups and differences were not statistically significant.

DISCUSSION

Education is a complex and social process[21 22] and causal links between a training experience and its impact on participants' behaviour and patient care are not susceptible to ready assessment. That said, our study offers a rare insight into a medical education initiative from its inception. It benefits from multiple data sources (including comparator groups of trainees) at various points over time. Nonetheless, we recognise that we consulted a small sample of workplace supervisors for their perspectives on the benefits or drawbacks of BBT and an extended longitudinal study could further explore whether observed changes are maintained over time. What our data do demonstrate is that the BBT experience enabled trainees to understand referrals and to tailor discharges appropriately. It fostered greater awareness and appreciation of the pressures experienced by colleagues in different specialties. Importantly, in terms of the quality and safety of patient care, by considering the psychological as well as physical needs of patients, trainees felt able to adopt a more holistic approach, appreciative of the whole patient journey.

It is notable that in revising the internationally accepted physician competency framework, CanMEDS draw particular attention to the concept of collaboration which they identify as a key change.[23] 'Collaborator' is one of seven defined roles of the physician and is described as 'work(ing) effectively with other healthcare professionals to provide safe, high-quality, patient-centred care'. It is argued that this requires trust and respect and an understanding of others' roles. Our study demonstrates that BBT developed trainees with a wider perspective on healthcare who understand how different specialties are complementary to one another.

In order to further improve service quality, clinical outcomes and the patient experience, there is growing recognition of the essential need to take a person-centred approach.[23–27] Improving quality is about making

healthcare safe, effective, patient-centred, timely, efficient and equitable.[28] Our evidence suggests that a broader training experience develops practitioners whose abilities accord with these principles. Practitioners with an understanding of care across specialty boundaries can enhance patient care and reduce risks from poor inter-specialty communication.

High patient demands and complex care needs at a time of economic challenge have focused attention on maximising existing resources and provision. Internationally, the place of generalism in medical practice is increasingly seen as a necessity for the development of a sustainable healthcare service that can meet the demands of both acutely ill patients in emergency departments, and those with multiple morbidities.[6 29] In rural Australia, for example, faced with a healthcare service that has inadequate numbers of doctors, a growing and ageing population with multimorbidities, and increased expectations about access to services, health planners are looking to generalist provision as a means of maintaining patient care and safety.[29] Similarly, in the USA there are calls for the reinstatement of general physicians at the heart of hospital care to support patient safety and quality.[30] The recent report from the UKSTSG[6] recommends that Royal Colleges revise their curricula to address the generalist agenda and ensure that doctors are equipped with more generic skills to support acute emergency care and patients with complex multimorbidities.

Relevance to future contexts

As an example of generalist training, the BBT programme seems to accord with the direction of travel for healthcare provision.[31] Certainly, the generalist outlook is critical to the outcomes of patients with multiple chronic diseases that straddle the boundaries between traditional specialties. BBT trainees spoke confidently about how their wider perspective and cross-specialty skills equipped them to work with growing numbers of patients with complex health needs. Although BBT is no longer running in England, and recruitment in Wales has ceased, the relevance of generalist training remains high on the national agenda. Indeed, the recent review of Shape of Training[6] is unequivocal in stating that 'training doctors with generalist clinical and professional capabilities' is the best way to 'respond to the demand from service provider organisations'.[6] By revealing the benefits and unintended consequences of this example of generalist training, our study can inform future developments.

CONCLUSION

The aims of BBT are particularly relevant to the complex and evolving requirements in our current and future National Health Service. Our findings reveal the nascent success of the BBT initiative from the perspective of trainees and their Educational Supervisors. Recruitment has ceased in England and Wales, despite positive reviews, which suggests to us that this generalist approach to training was perhaps ahead of its time. In addressing the generalist agenda, the results of our study contribute significantly to current debates about the organisation of healthcare in the light of demographic change and the training needs of doctors within it.

Contributors AB and LP designed the study. AB, KLW, EM, JM, LA and LP contributed to the design of data gathering instruments. Under the overall direction of the study lead, AB, data were collected by KW, EM, JM, LA and LP with KW and EM taking primary responsibility. Data analysis was largely undertaken by KW and EM with the oversight of study lead AB. AB drafted the paper. LP, EM, KW and LA made revisions. AB, KW, EM, JM, LA and LP have given their final approval of the version to be published and have agreed to be accountable for all aspects of the work including any issues related to accuracy or integrity.

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Competing interests None declared.

Patient consent Detail has been removed from this case description/these case descriptions to ensure anonymity. The editors and reviewers have seen the detailed information available and are satisfied that the information backs up the case the authors are making.

Ethics approval Research ethical approval was obtained from Postgraduate Medical and Dental Education Ethics Committee, Cardiff University, UK (02/10/2013).

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