GUIDELINES AND AUDIT
IMPLEMENTATION NETWORK

Audit of Effectiveness of F2 doctor

Clinical Audit Projects

September 2013

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Introduction

In Northern Ireland, the Guideline Audit Implementation Network (GAIN) performs a regional role to deliver audit, guidelines, teaching and medical device evaluation to a high standard. GAIN was established in August 2007 by the amalgamation of three organisations Northern Ireland Regional Audit Advisory Committee (NIRAAC); Multi-professional Audit Group (RMAG) and Clinical Resource Efficiency Support Team (CREST). GAIN has a safety and quality improvement role in Northern Ireland's Health and Social Care Services through the commissioning of regional audits and guidelines, the promulgation of good practice and the publication and facilitation of guideline implementation. The work of GAIN is focussed on improving the delivery and care for patients whilst advocating quality and best practice in healthcare.

The Foundation Programme was introduced as a two year training scheme for United Kingdom medical graduates in August 2005. For the first time in the post graduate medical setting, a new UK medical graduate followed a nationally agreed learning portfolio. The first Foundation Curriculum was published setting out all the required competences of the post graduate medical training programme specifying in detail curricular outcomes. This initial 2005 Foundation Curriculum was revised and updated in 2007 and further revised for graduates who commenced their training from August 2010. The Foundation Curriculum (2010) was endorsed by the General Medical Council's Education and Training Committee who took over this role from the Post Graduate Medical Training Board (PMETB) in April 2010. Thus the new Foundation Curriculum was mapped for the first time to the tenets of *Good Medical Practice* (2009 Edition). Under the heading of *maintaining good medical practice* the curricular outcomes specified that lifelong learning, research, evidence guidelines and care protocols along with audit were important aspects to be demonstrated and evidenced by all Foundation doctors. The evidence for sign off from Foundation Programme training in the time span 2010-2012 was that all Foundation doctors were required to show 'participation in an audit project'.

An application was submitted to GAIN for funding to review and evaluate the audit activity of a cohort of Foundation doctors. This report describes the background and introduction of audit into medical practice; the Foundation Curriculum requirements that pertained for the cohort of doctors studied along with the data collection and the subsequent data analysis. When this group of Foundation doctors completed their two years of Foundation Programme training all their audit activity was assembled using a paper based process. A template was already in existence to monitor audit activity. This template was primarily designed as a checklist to

facilitate Foundation doctors and their Foundation Educational Supervisors capture the essentials of their audit activity on a single A4 page.

Background

Medical audit was brought into modern United Kingdom medical practice in 1989 when the white paper '*Working for Patients'* formalised audit arrangements and made it mandatory for all doctors to participate in audit activity. In the early 1990s, the term medical audit became clinical audit as it was extended across other groups of healthcare professionals.

The definition of clinical audit as:

"*a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change. Aspects of the structure, processes, and outcomes of care are selected and systematically evaluated against explicit criteria. Where indicated, changes are implemented at an individual, team, or service level and further monitoring is used to confirm improvement in healthcare delivery."*

This definition is most widely used and was developed in the late 1990s by the National Institute of Clinical Excellence NICE (now renamed National Institute for Health and Care Excellence) in conjunction with the Commission for Health Improvement (CHI) and the Royal College of Nursing (RCN). It was published in the paper *Principles for Best Practice in Clinical Audit*. The key component of clinical audit is that performance is reviewed or audited to ensure that what *should* be done is *being* done and if it is not, a framework is provided for improvements to be implemented.

Clinical audit was formally incorporated into the healthcare systems of a number of countries including the UK National Health Service in 1993. In the late 1990s audit was placed at the heart of the new clinical governance structures. Clinical audit forms part of this system which seeks to improve the standard of clinical practice (see Diagram 1). In 2000, the NHS plan again proposed mandatory involvement in audit for all doctors. Following the Bristol Inquiry in 2001 it was recommended that all healthcare professionals be provided with hospital support for audit and it should be an integral part of the contract of employment. Participation rates were low and by 2007, in a white paper entitled *Trust, Assurance and Safety* resulted in government support being given to reinvigorate clinical audit with the setting up of a national clinical audit advisory group (NCAAG) under the chairmanship of Dr Nick Black. At this time, the government confirmed that audit would be at the centre of future recertification for healthcare professionals. The Care Quality Commission (CQC) introduced *Standards for Better*

Health in 2009 and required all Trusts in England to have a clinical audit strategy that aligned with regional and/or national audit priorities.

Foundation Programme Training outcomes

Foundation Programme e-Portfolios are reviewed in June/July annually by the respective Foundation School before each year cohort of Foundation doctors' progress to post Foundation training schemes. This process of e-Portfolio review agreed on a national basis was devolved to individual Foundation Schools which could specify additional local requirements. In 2013, a significant change was instituted with the introduction of Foundation ARCP. ARCP or Annual Review of Competence Progression was introduced with defined outcomes for Foundation year 1 and 2 respectively. These outcomes are monitored and benchmarked against other Foundation Schools through the data submitted for the United Kingdom Foundation Programme Office (UKFPO) Annual Report.

Regional Foundation Generic Skills for F2 doctors

When the first cohort of Foundation doctors started in 2005-2007 in Northern Ireland, to fulfil the training needs and deliver the requirements of the new Foundation Curriculum, training days were organised at Northern Ireland Medical and Dental Training Agency (NIMDTA). These training days focussed on generic skills not delivered in the local education provider i.e. Trust, GP practice or Public Health Agency placements. The logistics of ensuring that all F2 doctors (initial number circa 229 doctors) received this training was overcome by providing the training on a regional basis. It was delivered on six separate occasions for each of the modules or training days being provided. Starting in August 2006, training days included a half-day session on clinical audit delivered by two experienced Trust based audit facilitators.

In the first cohort of F2 doctors 75% of the doctors had graduated from QUB and the rest of the doctors (25%) were International Medical Graduates. A particular need to deliver clinical audit training was recognised as not all of the F2 doctors had received the necessary audit skills during their undergraduate medical education. During these sessions the concept of a group approach to audit was formulated.

It was recognised by the audit facilitators delivering the training that many doctors undertake a 'career audit or what they termed a 'CV audit'. This was described as an audit being started, the data collection remaining incomplete and although considerable work may be expended on the task the audit may never be presented, no evaluation and no re-auditing was likely to

occur. Closing the audit loop was unlikely to occur with a 'career' or 'CV audit'. The title and objective of this audit was likely to occupy a line on the doctor's CV but the audit might never be finished or presented for any real benefit to accrue. To overcome this difficulty, regularly encountered by audit facilitators and offered as an explanation for an unfinished audit, the concept of a group of three F2 doctors doing one audit was proposed.

As a new departure in 2006 all placements for Foundation doctor post were shortened to four months rather than the traditional old style Senior House Officer posts which lasted six months. Thus a group of three F2 doctors in the same placement over the course of one year would have the opportunity to start, continue and finish one audit over that year.

The Generic Skills training in clinical audit provided since 2006, has been refined and adapted as the experience of audit in the undergraduate years has improved for UK medical graduates. The current editions of the Foundation Curriculum have taken audit in a new direction as the emphasis is shifting to plan, do, study, act cycles and quality improvement approaches.

Supporting Evidence from UK

In each year since 2007, over seven thousand Foundation doctors have progressed from Foundation Programme training annually, across the UK. To date only one paper of the audit experience of Foundation doctors has been published (Cai, Greenall and Dau Ding 2009: Full text of this paper appended to this report). Three F2 doctors teamed up to collect information on the extent to which audit activities by Foundation doctors were completed within normal working hours. They issued questionnaires to 119 Foundation doctors at a single hospital site in England with a 77% response rate. Although many of the doctors participated in audit activity a significant number (57% of F1 doctors and 28% of F2 doctors) failed to complete their audit as reported in this paper. They defined a 'completed audit' as an audit that included data collection, analysis and formal presentation to the respective department. The reasons why audits were not completed were identified with a recommendation that '*audit departments, clinical leads and doctors in training should work together to perform audits during working hours that are of clinical interest to improve clinical standards and benefit patients'*.

Evaluating the audit activity of a cohort of Foundation Doctors

The requirement to show 'participation in an audit' for all F2 doctors was evaluated in the Northern Ireland Foundation School in this report. All F2 doctors signed off from the 2010 – 2012 Foundation Programme, submitted a standardised clinical audit summary form as part of their ePortfolio evidence. A copy of this form is attached as Appendix ANIMDTA Clinical Audit Summary Form entitled Appendix. The data from all 227 audit forms submitted was entered into an Excel spread sheet for subsequent data analysis.

The following headings are used on the Clinical Audit Summary Form:

- Name of Foundation doctor and GMC number
- Name of Audit Supervisor
- Department and Location
- Individual/Group (names of other doctors or healthcare workers)
- Input from local audit department (Yes/No)
- Type of input: Registration; Advice; Actual support with data collection; graphs and presentation material
- Audit Title
- Audit Aim/Purpose
- Objectives of audit
- Standards used
- Sample size
- Audit outcomes
- Was the audit presented? Yes/No
- If yes to whom and was feedback received
- If no, explanation/reason
- Slides from presentation if presented
- Project time scales: date started and date completed
- Signature of supervising senior doctor/GMC number.

Analysis of Foundation Doctor's Audit Activity

Knowing the difference between audit and research is a vital first step in the 'evaluation' of audit activity. Although audit and research have much in common in that they share a rigorous approach to methodology in terms of design, procedure, analysis and interpretation of data, they are different. At times, the distinction between audit and research can be blurred. The Generic Skills training programme clarifies the differences as follows. Clinical audit is a way of finding out whether you are doing what you should be doing by asking if you are following guidelines and applying best practice. Audit activity should be measured against a standard. In contrast research evaluates practice or compares alternative practices, with the purpose of contributing to a body of knowledge by asking what you *should* be doing. Research usually involves an attempt to test a hypothesis.

Inadvertently, some senior doctors direct a Foundation doctor's audit activity in the direction of a piece of research and this is the case with some of the projects in this dataset. Very few (two) of the submissions from Foundation doctors in this analysis were research presented as audits. Frequently such reviews of patient groups or conditions are presented at monthly departmental audit meetings and it is considered as audit by the clinical team who instigated the work.

Table 1: providing overview of audit data

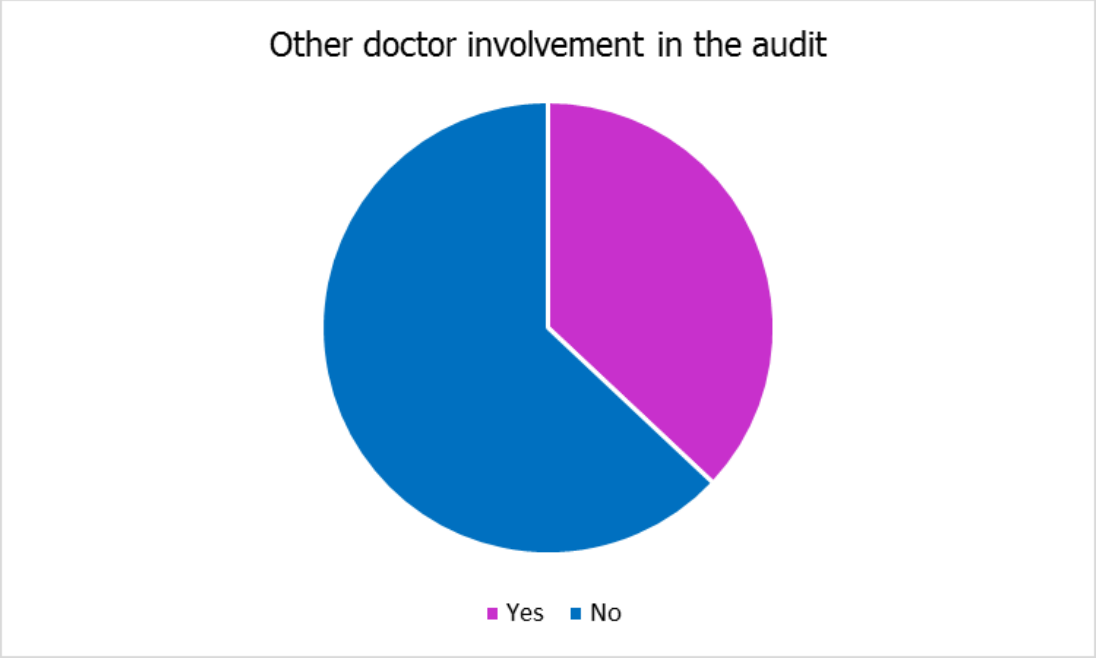
	n	%
Total number of audits	227	100
Audit involved another doctor	84	37
Audit input from audit department	161	71
Audit input from audit facilitator	54	24
Range of audit sample size	4 - 1,711	-
Audit presentation	164	72

Audit terminology should include the criterion or criteria, standard, target, benchmark, measurement and indicator.

A total of 227 forms were available for analysis. This figure represents the total number of projects carried out by Foundation doctors either individually or in collaboration with other F2 doctors. The involvement of another doctor may have been a second Foundation doctor but in many instances reviewing the names submitted, this shows the audit involved a higher grade doctor in training. This is a good idea as the more senior doctor can assist and guide the doctor with less experience and urge a higher rate of audit completion. Many of these audits

undertaken within departments/units reflect the team's review of their clinical activity using specialty guidelines or recognised standards. Thus greater involvement of the team in a specialty or department means these audits were more likely to have been presented and stimulated discussion with feedback given directly to the Foundation doctors concerned. This reinforces the positive aspects of participation in audit activities for the doctors involved.

Diagram 1



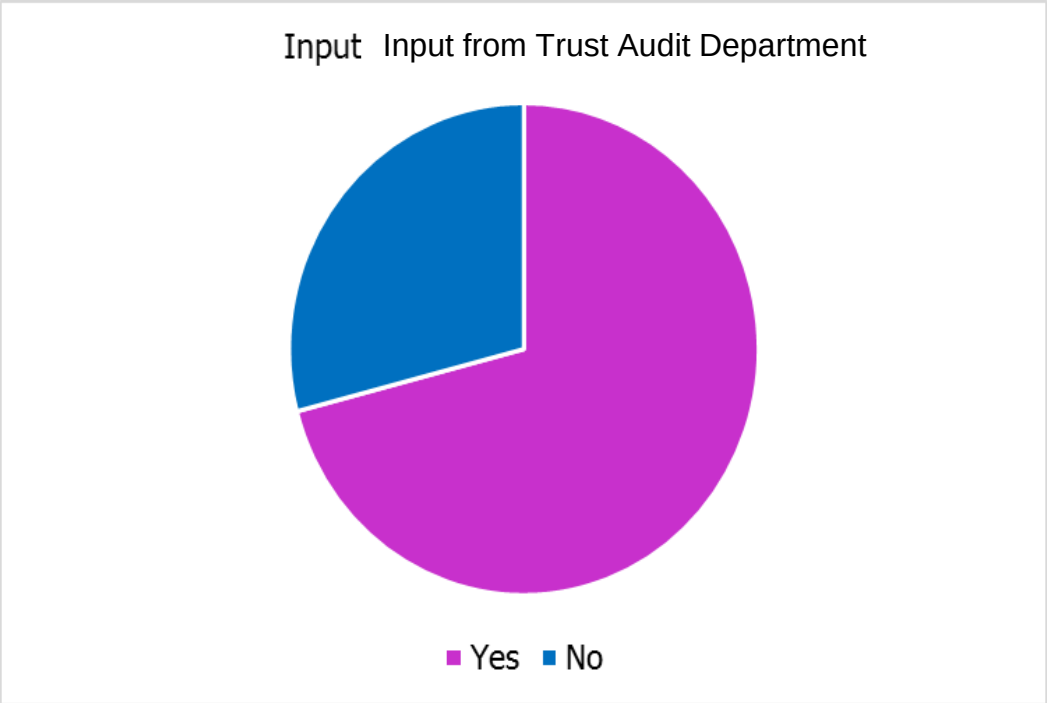
Yes=37% (n=84)
No=63% (n=143)

As part of the Generic Skills training delivered to the F2 doctors, the audit facilitators emphasised the importance of involving the respective trust audit department. They highlighted the expertise available and encouraged doctors to participate by using existing audit tools made available through medical Royal Colleges or national specialty bodies or by advising the doctors to participate in re-audits.

The Royal College of Emergency Medicine (RCEM) provides all Level 1 Emergency Medicine Departments the opportunity to participate with defined timelines using specified consecutive patients recruited using nationally piloted audit tools. These audits focus on pertinent and important questions with respect to the management of common clinical conditions. These national audits frequently focus on subject material which has patient safety importance and impact. Since 2003, RCEM conducts three audits annually. Data is collected and submitted for analysis at the college. Reports identify individual performance against RCEM standards and each department can see how they compare in relation to all other hospitals who participate.

Participating in nationally organised audits drives higher rates of audit completion with the expectation that this will improve care across the UK. One example cited by a proportion of the Foundation doctors was the surviving sepsis audit. At least five local Emergency Medicine departments participated in their recent 2011-2012 surviving sepsis audit.

Diagram 2

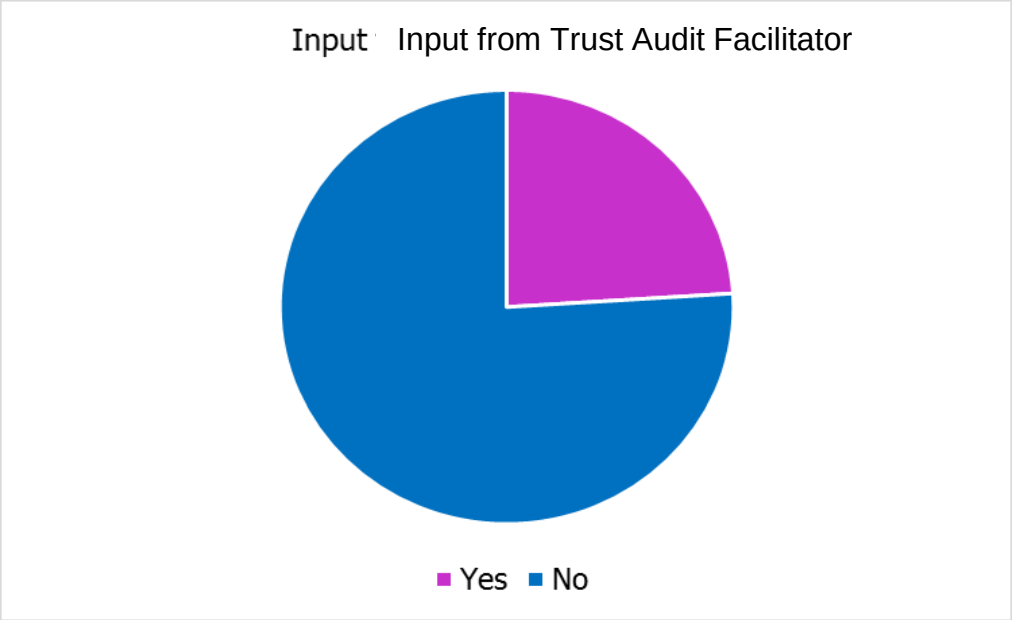


Yes=71% (n=161)
No=29% (n=66)

The value of the RCEM audits being repeated on a three yearly cycle means improvements in assessing and diagnosing patients is built into the training and education on offer in Emergency Medicine Departments. When the data is collected prospectively doctors learn how best to assess patients at risk of sepsis and how to improve patients' survival by prompt diagnosis using diagnostic and care bundles.

Diagram 2 shows the high level of involvement by Trust audit departments. This input may be simply registration of the audit or advice from an experienced audit facilitator. Actual support with data collection and assistance with making graphs and tips on presentation of the audit is made available by some local audit facilitators as displayed in Diagram 3 below. Please note there were two audits which did not require input from a Trust Audit Facilitator and were therefore recorded as not applicable.

Diagram 3



Yes=24% (n=54)
No=76% (n=171)

The importance of the methodology employed in audit planning must consider the most effective and accurate way of collecting the data required. Retrospective data was used predominantly in those audits which looked at existing records or prescribing. Whereas data collected prospectively, was more likely to be used in national audits. These audits have planned timelines using consecutive patients presenting with specific conditions.

Another notable contributor to audit activity is the Royal College of Obstetrics and Gynaecology (RCOG). The RCOG produces guidelines as an aid to good clinical practice. They have the RCOG Guidelines app (application) available for both Android and iOS devices. The RCOG guidelines have a green banner across the top of the first page and are now called 'Green-top Guidelines' which are a series of recommendations focused on areas of clinical practice in the specialty. An external analysis of RCOG recommendations and guidelines show that 9-12% are based on best quality or Grade A evidence with about 40% based on 'recommended best practice' or sometimes called 'expert opinion'.

The most difficult aspect of the analysis of this information was to try and classify the audit subjects. The audits undertaken by this group of Foundation doctors proved a difficult task as the scope and variety of audits presented is very wide. Each audit was categorised using the titles and the following broad topics featured strongly: prescribing / drugs; management of conditions; treatment; record keeping; monitoring of treatment; transfers and referrals and

protocol adherence. Audit titles involving management accounted for 75 of the total 227 audits with prescribing activities in 57; medical notes or records reviews accounted for 51 studies. A list of audit titles and their groupings can be found in Appendix C. The Royal College of Physicians have a number of medical records based standards which have been extensively used by this group of Foundation doctors to look at medical records and clinical notes. The General Medical Council (GMC) standards on clinical note writing, has also featured strongly in the audit activity study. Five re-audits were submitted. The full list of audit titles with objectives/aims and standards used are appended as Appendix C.

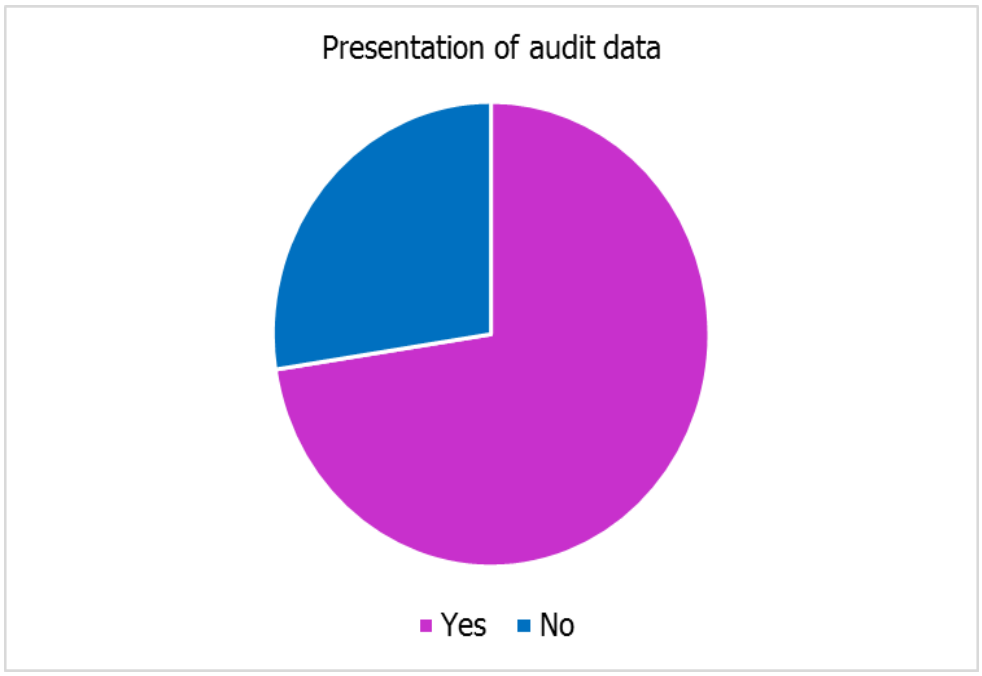
Sample size can be an indicative measure of an audit which gives a snapshot in time. Where large numbers are processed the likelihood is that numbers in excess of hundreds may be needed in some instances to be representative of the population, condition or process being audited. If a large number is audited this may be a marker to indicate the work is likely to be delving into a research activity rather than audit activity. One other factor which may have skewed the audit sample size range in the results chart below is where in a General Practice setting where the sample size is all the patients on a GP list. This may give a misleading impression or be incorrectly labelled as sample size. Fourteen doctors did not give information on sample size in their audit projects and were therefore recorded as not applicable.

Diagram 4

Diagram 4 shows actual data numbers not as percentages.

Sample Size Range		Project Numbers
0-24	=	81
25-49	=	65
50-74	=	38
75-99	=	6
≥100	=	23
Not provided	=	14

Diagram 5

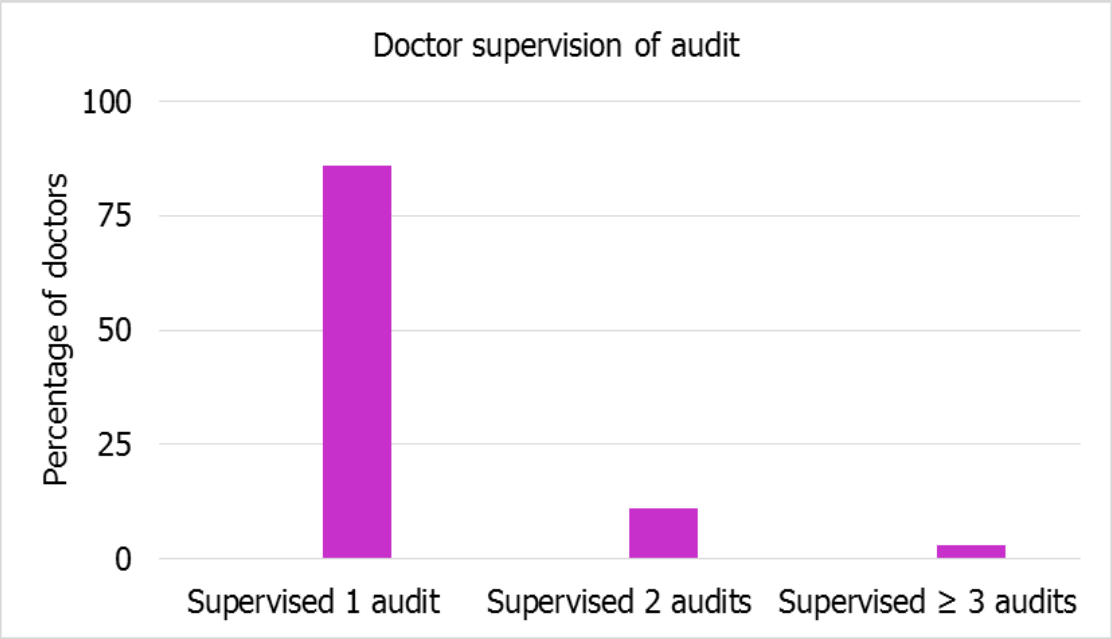


Yes=72% (n=164)
No=27% (n=62)
Not recorded = 1% (n = 1)

The emphasis on achieving sufficient data collection with analysis means that the information is more likely to get to the stage that the data is shared with other colleagues at a departmental audit meeting.

The goal of making a presentation of their audit information is reinforced as an end point to the Foundation doctors. It is therefore gratifying that almost three quarters of the F2 doctors do get the opportunity to present their work. The feedback given at presentation serves to motivate and engender a positive attitude to audit activity.

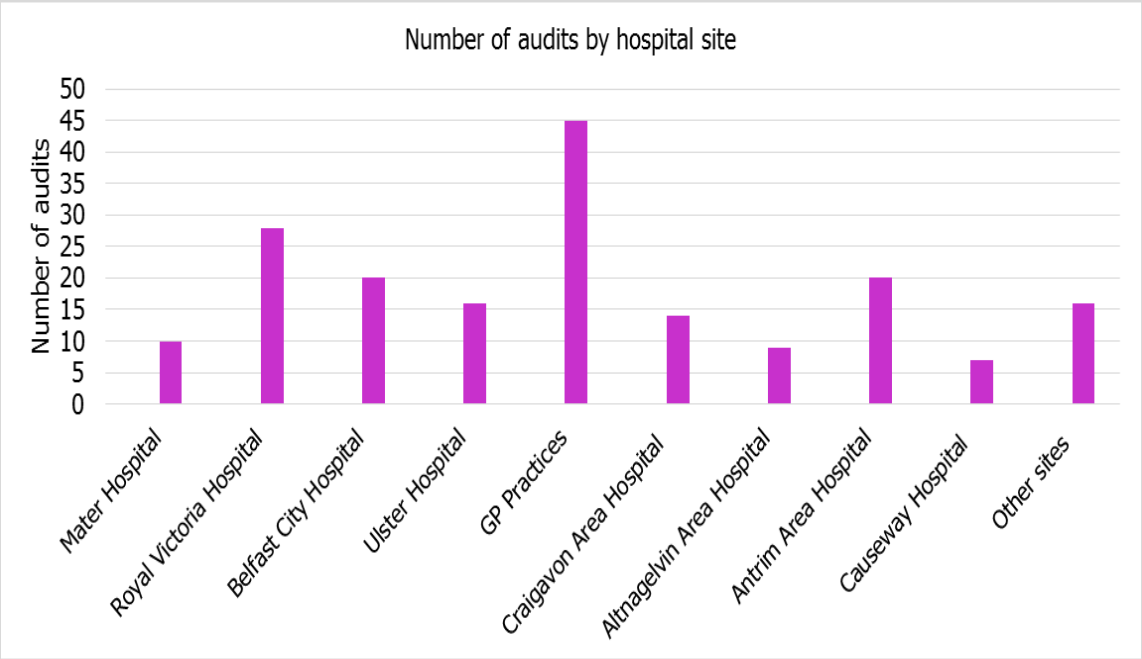
Diagram 6



Actual data (not as %)
Supervised 1 audit = 157
Supervised 2 audits = 20
Supervised ≥3 audits = 5
No supervisors signature = 45

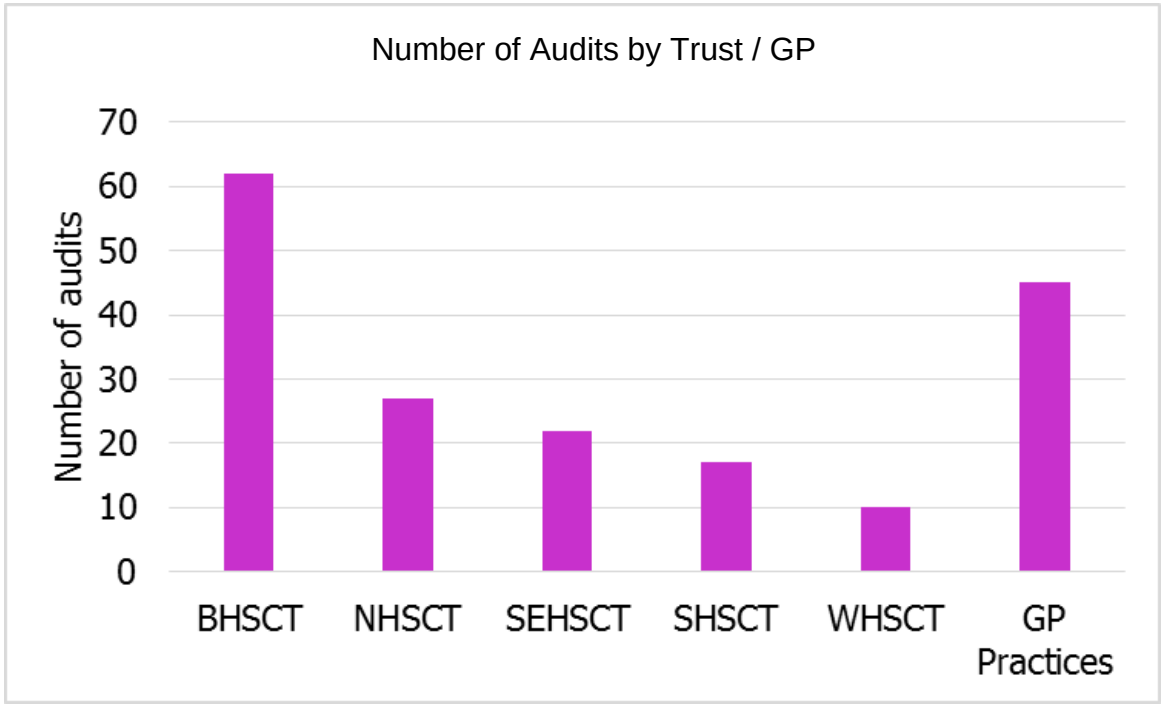
Over 12% of audits were supervised by senior doctors who had already been involved in another audit with a Foundation doctor in the same year.

Diagram 7



In Diagram 7 other sites indicates the varying locations of the many general medical practice sites where F2 doctors were allocated. Thus the information conveyed in Diagram 7 reflects well on the organisation and promotion of audit activity in General Practice. Each year 60 F2 doctors are offered placements in GP for four months. During each four month period regular tutorials are convened which offer a peer group the opportunity to deliver their GP audits to their GP Trainers and other members of the GP team. At the end of the four month period the audits are presented at the weekly tutorial session. The number of audits by hospital sites in Diagram 7 shows the clinical audit activity and relates to the varying numbers of Foundation doctors at these sites.

Diagram 8



The analysis of this dataset shows that the Foundation doctors at the F2 level in Northern Ireland are active in clinical audit. A significant amount of effort is expended and it would enhance the work of these Foundation doctors if their audit projects were used to inform and improve patient outcomes and care at a regional level.

Future trends and direction of Foundation Programme Training

In 2012, a decision was made to invite personnel trained in quality improvement techniques by the Institute of Health Care Improvement at Harvard to deliver the Generic Skills sessions for all F2 doctors across the region. This initial move away from traditional clinical audit has been reinforced by the success of two Foundation doctors from Northern Ireland winning the CASC national awards as Audit Junior Doctor of the Year in 2012 and 2013. Both of these doctors were involved in the Safety Quality Experience (SQE) programme in 2011 in the South Eastern Trust (SET).

The team from the SET deliver the Quality Improvement training as part of the Foundation Generic Skills training and inclusion of national finalists and award winners as part of the team delivering this training will continue to inspire successive cohorts of current and future Foundation doctors to contribute to quality improvement projects with tangible benefits for patient safety and quality improvement.

Recommendations

An acknowledgment of the valuable audit activity performed by Foundation doctors is required. Building on their efforts with appropriate oversight has the potential to inform and improve patient outcomes and care at a regional level.

The good practice promulgated by the clinical audit activities of the Royal College of Emergency Medicine (RCEM) could be used as a template for Northern Ireland regional audit activities. This would allow departments in hospitals and other locations to contribute to regional audit or quality improvement activities with a focus on issues of regional relevance and importance. This would provide an opportunity for units/departments to share good practice and learn across the region.

NIMDTA will deliver Audit/Quality Improvement training for all Foundation Doctors as part of their Foundation Generic skills programme of training

Project Team

Ms Angela M Carragher

Bibliography

General Medical Council www.gmc-uk.org/

Royal College of Physicians www.rcplondon.ac.uk/

Royal College of Paediatrics and Child Health www.rcpch.ac.uk/

Royal College of Obstetricians and Gynaecologists www.rcog.org.uk/

Royal College of Emergency Medicine www.collemergencymed.ac.uk/

Royal College of Surgeons www.rcseng.ac.uk/

UK Foundation Programme Office www.foundationprogramme.nhs.uk/

World Health Organisation www.who.int/

Care Quality Commission www.cqc.org.uk/

National Institute of Clinical Excellence www.nice.org.uk/

Healthcare Quality Improvement Partnership www.hqip.org.uk/

National Quality Improvement and Clinical Audit Network www.hqip.org.uk/NQICAN/

National Advisory Group on Clinical Audit and Enquiries www.england.nhs.uk/ourwork/qual-clin-lead/clinaudit/nagcae/

The Scottish Intercollegiate Guidelines Network (SIGN) www.sign.ac.uk/

Guidelines and Audit Implementation Network www.gain-ni.org/

Appendix A

NIMDTA Foundation Doctor Clinical Audit Summary Form

Northern Ireland mdta Medical & Dental Training Agency

Clinical Audit /Quality Improvement SUMMARY FORM
This form must be completed when you have finished your project.

YOUR DETAILS

Your Name:

Your Supervisors Name:

Your Department/Location:

Did audit involve any other F2's/other Dr's? ☐ YES ☐ NO
If yes, please list names:

PROJECT SUPPORT

Input from Local Audit /QI Department? ☐ YES ☐ NO What input? ☐ Registration ☐ Advice ☐ Actual Support

Input from Local Facilitator? ☐ YES ☐ NO What input? ☐ Registration ☐ Advice ☐ Actual Support

PROJECT DETAILS

Project Title:

Aim/Purpose:

Objectives

Standards used:

Sample Size used

Audit / QI Outcome

Was this project presented? ☐ YES Have PowerPoint slides been attached? ☐ YES

If yes, please detail to whom, and what (if any) feedback was given

If no, please detail why?

Project timescales: Date Started: Date Completed:

Signature/GMC number Date : ____/____/_____

Supervisors Signature: _____ Date : ____/____/_____

UK Junior Doctors' Experience of Clinical Audit in the Foundation Programme

Andrew Cai, John Greenall and Dau Col Dau Ding

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BACKGROUND: An assessment of the extent of Foundation Doctors' involvement in clinical audit and actual or perceived barriers to their completion within normal working hours. **METHOD**: Questionnaire of 119 Foundation Doctors in a South East England Hospital NHS Trust, July 2008. RESULTS: 92 of the 119 trainees responded (77.3%). The majority of F1 and F2 doctors had attempted 1-2 audits (73.7% and 65.7% respectively). 30.2% and 58.5% of all attempted audits were completed by F1s and F2s respectively. Thirty-three (57.9%) F1s and ten (28.6%) F2s failed to complete an audit. Trainees disagreed that audits can be completed within working hours (mean score 2.1 on a scale of 1-5) and that they could undertake audits in their areas of specialist interest (mean score 2.6). **CONCLUSIONS**: A large number of Foundation Year doctors did not complete audits. Confusion as to the definition of "audit" and "completed audits", and a conflict of interests between the audit departments and trainees, were barriers to audit completion and satisfaction among trainees. Audit departments, clinical leads and trainees need to work together to perform audits during working hours that are of clinical interest in order to improve clinical standards and benefit patients, junior trainees and senior clinicians.

INTRODUCTION

The Foundation Programme[1,2,3] is a 2-year, ubiquitous, vocational curriculum undertaken by newly qualified doctors wishing to proceed onto specialty training in the United Kingdom (UK). Since 2006, Foundation Year Trainees in the UK have been required to complete one clinical audit during their two year programme. We review the practice of audit and doctors' attitudes to the difficulty in performing audits at a National Health Service (NHS) hospital trust comprising three hospital sites in the South East of England. The Foundation Programme demands that Foundation Year Trainees are able to consider the relevance of clinical audit and describe the audit cycle with regard to developing patient care, clinical governance and risk management. They are expected to undertake a clinical audit and recognize how it relates to the improving clinical standards and addressing clinical governance[1]. Clinical audit can be defined as the process of reviewing the delivery of care to identify deficiencies so that they may be remedied[4]. Whilst it was initially used in assessing medical practice against local standards, audit 'has evolved conceptually as a mechanism through which evidence-based

guidelines can be introduced into routine clinical practice"[5]. Apart from fulfilling the requirements of the syllabus, reasons for audit include professional education and the opportunity to improve patient care[6]. Barriers to audit might include: disagreement amongst professionals as to what constitutes a good audit[5]; organisational impediments; and a lack of resouces[6]. This study therefore sets out to investigate the level of audit activity in a hospital trust in South East England amongst all Foundation Year Trainees. Importantly it will also assess doctors' attitudes and views towards the audit process and perceived or actual barriers to their completion.

METHOD Questionnaires were sent to all Foundation Year 1 (F1s = 63 in total) and Foundation Year 2 (F2s = 56 in total) Trainees in the trust (119 doctors). The study group involved trainees in the Foundation Programme from 31st July 2007 to 30th July 2008. Doctors who had been transferred out of the trust were not included in the study. There were no doctors who had transferred into the trust and were in the Foundation Programme. A study representative at each of the 3 hospital sites was tasked to distribute the questionnaires. Trainees were asked to complete the questionnaires in an informal setting and to return them directly to the site representative. The study environment was variable, and questionnaires were distributed and completed on the wards or at group teaching sessions. Participants were given the choice of completing and submitting their form immediately, or submitting it at a later date. Data collection was commenced 11 months after the trainees had commenced employment in the trust and concluded after 2 weeks. This was invoked as many trainees were clearing annual-leave requirements towards the end of their hospital posting, and the consensus that very few audits would be officially completed at that stage of training in the summer. Questions were drawn from previous studies to the barriers to audit in our Trust. In the first section of the questionnaire, participants were asked about: "the number of all audits attempted or applied for"; "the number of new audits attempted or applied for"; "the number of audits completed and presented so far"; and "the number of audits started but never completed". The second part of the questionnaire assessed subjective opinions on barriers to completing audits. Participants were asked to rate the following 5 statements on a comparative scale of 1-5 (1 being "strongly disagree" and 5 being "strongly agree"): "The audit department is helpful in approving audits"; "senior staff are helpful in involving me in audits"; "I can complete audits within official working hours"; "most audit opportunities are in my area of interest"; "most audit opportunities are of clinical value". Results were collated and tabulated and presented at local meetings where feedback was received.

RESULTS Ninety-two out of a possible 119 (77.3%) Foundation Year Trainees completed the questionnaire (57/63 - F1s, 35/56 - F2s). There were 106 total attempts at audit for the F1

trainees and 65 total attempts for the F2s. Most trainees had attempted 1 or 2 audits in their respective year (42 F1s at 73.7% and 23 F2s at 65.7%). 5 F1s (8.8%) and 3 F2s (8.6%) had neither attempted nor applied for any audits. Ten F1s (17.5%) and 9 F2s (25.7%) had attempted more than 2 audits (Table 1).

Table 1: Number of audits attempted by trainees

Number of all audits applied for or attempted	**F1s**		**F2s**	
	Number	**Percentage (%)**	**Number**	**Percentage (%)**
0	5	8.8	3	8.6
1	21	36.8	17	48.6
2	21	36.8	6	17.1
3	3	5.3	3	8.6
4	2	3.5	5	14.3
5	4	7.0	0	0
6	1	1.8	0	0
7	0	0	1	2.8
Total	**57**	**100**	**35**	**100**

The results for the total number of completed audits (i.e. an audit that included data collection, analysis and formal presentation to the respective department) are summarized in Table 2. For F1s, 32 out of a total 106 attempted audits were completed (30.2%), this percentage rising for F2s (38/65; 58.5%). Thirty-three (57.9%) F1s and 10 F2s (28.6%) failed to complete any audit, with a number able to complete one audit presentation in the year: 18 F1s (31.6%) and 16 F2s (45.7%). Table 2: Number of audits completed by trainees

Number of completed audits	F1s		F2s	
	Number	Percentage (%)	Number	Percentage (%)
0	33	57. 9	10	28.6
1	18	31.6	16	45.7
2	5	8.8	6	17.1
3	0	0	2	5.7
4	1	1.7	1	2.9
Total	**57**	**100**	**35**	**100**

With respect to new and original audits attempted by trainees, this was achieved by 66.7% of F1s and 74.3% of F2s (Table 3). There was no formal data on the number of audit loops being closed. Table 3: Number of new audits designed by trainees

Number of new audits attempted or applied for	F1s		F2	
	Number	Percentage (%)	Number	Percentage (%)
0	19	33.3	9	25.7
1	25	43.9	19	54.3
2	9	15.8	3	8.6
3	1	1.75	2	5.7
4	1	1.75	2	5.7
5	2	3.5	0	0
Total	**57**	**100**	**35**	**100**

With regard to barriers to completion of audits (Table 4), results were notably equivocal for "helpfulness of the audit department and senior staff" (both averaging 3.1 on the comparative scale of 1-5), and "the clinical value of the audits available" (mean score 3.2). The mean score for "completing audits within official hours" was 2.1 with a similar trend observed in "the audits available in an area of interest" (mean score 2.6). Table 4: Trainees' experiences with audit

Statement		**Score¶**					**Total responses**
		1	**2**	**3**	**4**	**5**	
Audit department is helpful	Percentage %	9.1	12.5	44.3	22.7	11.4	100
	Numbers	8	11	39	20	10	88
	Mean score	0.1	0.3	1.3	0.9	0.6	**3.1**
Senior staff are helpful	Percentage %	15.4	20.9	23.1	22.0	18.7	100
	Numbers	14	19	21	20	17	91
	Mean score	0.2	0.4	0.7	0.9	0.9	**3.1**
Audit completed in working hours	Percentage %	46.2	22.0	16.5	8.8	6.6	100
	Numbers	42	20	15	8	6	91
	Mean score	0.5	0.4	0.5	0.4	0.3	**2.1**
Audits in the area of interest	Percentage %	18.7	30.8	25.3	17.6	7.7	100
	Numbers	17	28	23	16	7	91
	Mean score	0.2	0.6	0.8	0.7	0.4	**2.7**
Audits have clinical value	Percentage %	7.7	18.7	30.8	34.1	8.8	100
	Numbers	7	17	28	31	8	91
	Mean score	0.1	0.4	0.9	1.4	0.4	**3.2**

¶Key: 1= strongly disagree; 2=disagree; 3 = equivocal; 4 = agree; 5 = strongly agree NB: Some forms were incomplete, and therefore responses may not add up to 92.

CONCLUSIONS Although audit is well established to be beneficial in improving clinical practice[7], this study suggests that trainees under-perform against the curriculum of the Foundation Programme. Historically, the level of audit activity amongst doctors has been low; for example, McCarthy (1997) demonstrated that whilst doctors see the conceptual value of audit, approximately one-third only had presented their data at a pertinent audit meeting[8]. These results have been replicated in numerous other studies[9,10,11]. We believe that this data-set is the first available for junior trainees who have undertaken the Foundation Programme curriculum, with a good response rate of 77.3%, and incorporates the contractual pressures invoked by a European Working Time Directive (EWTD)-compliant Rota[12,13]. While the results show that the majority of respondents (>90%) had attempted an audit, most significantly the majority of audits that were started were not completed. A large percentage of F1s (57.9%) and F2s (28.6%) failed to complete an audit at all. Similar numbers have been reported, even among senior pediatric trainees at registrar level, where one study demonstrated that whilst audit activity was above 90%, only 16% had completed the audit cycle[14]. One possible explanation is that many trainees appear to have a sub-optimal comprehension about audit and its process. Our consensus was that some trainees attempted audits that were too large or unmanageable, or even of insufficient quality, in striving to achieve a peer publication from their work. When realized that the publication value is poor, or that the audit design is flawed, many trainees lose interest and fail to complete. Another concept highlighted by this study is confusion over the definition of a "completed audit". For consideration of completion of an audit, a trainee has to demonstrate both the ability to collect the data and present it to among his peers in a formal meeting. This generally amounts to completion of 5 out of the 6 stages of the audit loop[15]. Surgical morbidity and mortality presentations had been considered audit by some trainees, as they were termed by the trust as a "surgical audit". However, the overall clinical consensus is that they are not audit but formative educational meetings because no systemic local or national standards were employed for comparison. This poor understanding of audit has been well described previously[16]. Potential barriers to the completion of audit include some of the issues raised in this study. In this sample, doctors were equivocal about whether the barrier was the audit department or lack of senior support. This reflected the variability of experience as well as the lack of teaching of the purpose and methods of audit in the undergraduate curriculum. They were also equivocal about the clinical value of audits they had completed. By comparison, a study in Leeds showed that less than half of the 232 respondents were aware of subsequent change in clinical practice and 27% felt it was "a waste of time"[7].

However this study did not focus on the junior doctor in the beginnings of their postgraduate training. Trainees felt that an additional barrier to audit completion included difficulty in completing audits within their working hours. All Foundation Year Trainees in the trust were working to a EWTD-compliant Rota during the year, where trainees did not exceed 48 hours a week of on-site hospital clinical duties. Trainees also found it difficult to undertake audits in their area of clinical interest. Although part of the reason is circumstantial - the Foundation Year Programme mandates that trainees rotate around various core specialties - this may also reflect a lack of understanding of what the audit cycle actually incorporates, and how it is not formal research in itself[15]. Approval of audit studies was also thought to be problematic because such meetings only took place monthly with a pre-determined agenda, and consequently, this meant that approval might take several months to obtain for trainees who would actually be based in the trust for no more than 12 months in 3 different specialty departments. There were a number of limitations of the study, one being the small sample size. Secondly, in asking trainees to rate each of the six statements from 1 to 5, trainees who did not complete audits tended to score 3 (neither agree or disagree), and as the results above show, they represented a considerable proportion. A larger sample size and a semantic differential scale (rating responses between 1 and 7) might have been more discerning. The fact that some trainees may have included "audits" which on reflection did not meet the criteria for inclusion was not only interesting but may also have distorted results. Finally, audits that involved joint effort among trainees, but were presented only by one of them in the absence of the others were still regarded by some trainees to be "completed and presented" by all of them. This study has highlighted a number of issues which need to be addressed for clinical audits to be successfully completed during the Foundation Programme. The authors believe that poor completion rates are most probably the result of poor understanding of audit. Potential solutions include teaching medical students concepts of audit; giving structured teaching early in the Foundation Programme; instituting regular audit meetings; incorporating audit as part of contracted working hours; defining audit more clearly among trainees and clinical staff and encouraging more cooperation and integrative liaison with the audit department to process audit proposals quickly and efficiently. Additionally, doctors' contractual pay-bandings should reflect any out-of-hours work undertaken on audits that improve clinical governance for their Trusts. However, in spite of all these considerations, we speculate that because trainees are only in each post for no more than 4 months during their foundation years, and with the restriction of working hours, the expectation of foundation year trainees to have undertaken and properly understood an audit cycle, implemented change and closed the audit loop is unrealistic. It would be more helpful to the trusts and trainees for audits to be part of the specialty training programme onwards, where trainees stay in a department for a

longer time even as they move from one team to another. Further studies might consider in detail the difficulties in each step of the audit cycle[15] and explore: Foundation Trainees' use of the audit department; guidance from senior members of staff; and perceived benefits in clinical practice. Ultimately, audits must implement change[17] and all truly successful clinical audits should aid in some way to achieving our fundamental goal in medicine; that being the best clinical practice and best quality of care.

Competing Interests
None declared

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