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Review Article

Competency based surgical training

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ABSTRACT

With the implementation of the European working time directive and the "new deal" document in the NHS; not only led to a shorter duration of training but also increased the workload intensity on trainee doctors. This leads to a reduced opportunity for personal reflection and feedback from colleagues i.e., consultants, registrars, and fellow senior house officers that leading to a shift from the traditional experiential learning to "competency-based training," where various workplace-based assessments (WBAs) tools are used. This article is about the use of WBAs in improving trainee doctor's competence and workplace performance; explore why they are so unpopular amongst both trainees and trainers and what can be done to improve their work based learning.

Keywords: Competency-based training, Work-based assessments, European working time directives, Assessments

INTRODUCTION

The assessment of a trainee doctor's performance in a clinical setup is not only challenging and important but is also necessary to assure standards, judge competence to practice, set targets for improvements, and most importantly to protect patients.[1]

In the past, educational programs were unorganized, unstructured and had no clear aims or objectives. The involvement of senior doctors in their training was unsystematic and limited, as a result little attention was paid to their learning needs but yet trainees were always supervised when dealing with patients; as all trainee doctors work and remain under close clinical supervision by their seniors. Trainee's progress was monitored through logbooks and end of the year consultant reports, for career progression it was expected that the trainee would have to pass knowledge-based exams, skills were not formally assessed. The training of junior doctors was defined in terms of the amount of time spent in various clinical posts or attachments and it was widely accepted that learning occurs naturally as part of their routine clinical work i.e., learning through experience or experiential learning.[2-4]

With the implementation of the European working time directive (EWTD) and the "new deal" document in the NHS; not only led to a shorter duration of training but also increased the workload intensity on trainee doctors. This leads to a reduced opportunity for personal reflection and feedback from colleagues i.e., consultants, registrars, and fellow senior house officers (SHOs) that leading to a shift from the traditional experiential learning to "competency-based training," where various workplace-based assessments (WBAs) tools are used. The aim of such WBAs tools is to not only provide evidence on a trainee's ability to perform in clinical practice but also some authors are of the view that it can show improvement in the quality of workplace training through supervised reflection and feedback.[5-8]

This article is about the use of WBAs in improving trainee doctor's competence and workplace performance; explore why they are so unpopular amongst both trainees and

trainers and what can be done to improve their work based learning.

CLINICAL COMPETENCE AND ASSESSMENT

What is "clinical competence?" Many definitions of clinical competence exist in the literature with some being more complex while others much simpler and context based. Southgate[9] has defined competence in a doctor as simply "composed of cognitive, interpersonal skills, moral and personality attributes. It is in part the ability, in part the will, to consistently select and perform relevant clinical tasks in the context of the social environment in order to resolve health problems of individuals in an efficient, effective economic and humane manner."[9]

On the other hand a more complex definition of competence by Epstein and Hundert[10] as "the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served."[10] However, some authors would debate that this is "performance" rather than purely "competence."[8]

Competence is not just about a matter of knowing and performing a task or a job in a proficient way but also it is about having that life experience to self-assess, reflect upon strengths and weaknesses, and to make sure that previous knowledge is updated. In medicine clinical competence of a doctor builds upon the foundations of combined basic clinical skills, scientific knowledge and moral development, which can take up to several years to develop and has many different domains such as:[11]

Cognitive: Acquiring and using knowledge to solve problems.

Integrative: Use of bio-medical and psychosocial information in clinical reasoning.

Relational: Communicating effectively with patients, their relatives, carer's and work colleagues.

AFFECTIVE AND MORAL

Patience, willingness and emotional awareness to how to use these skills judiciously and humanely.

It has been mentioned in the literature that "competence is not an achievement but rather a habit of life-long learning."[12] With assessments playing an essential and important role in supporting doctors by not only allowing them to identify, their own learning deficiencies or weaknesses, but also such type of assessments would make them respond to their own learning needs. In an ideal situation, such competency-based assessment tools or WBAs (what the learner does in actual practice) should be able to give a true insight into a trainee's actual performance in a workplace environment (what a learner actually does as a habit when not being observed by an assessor), as well as the power and the strength to adjust to new changes, discover and reproduce new knowledge, and hence improve on overall workplace performance.[13]

WHY THE MOVE TOWARDS COMPETENCY BASED TRAINING?

What do patients expect doctors to be? They expect doctors to be competent in not only know how to diagnose their illness but also to plan their management, and at the same time be able to carry out life-saving practical procedures, behave in a way that is reasonable and expect them to show a caring and humanistic attitude while doing so.[8]

It is important to note that studies have shown that all doctors including the highly experienced may perform at a lower level of competence when they are tired, exhausted, distracted or annoyed and the competence of a less experienced doctor may be particularly prone to the influence of stress.[14,15]

Regrettably and unfortunately, due to a series of high-profile medical negligence related incidences involving the health care professionals, the civil government, journalists and the general public have become very anxious about the quality of healthcare delivered. As a result of these above-mentioned reasons, the system by which a doctor can provide evidence on his/her clinical competence has recently become a focus of their attention, and rightly so as the total liabilities for health care related negligence claims in the UK have been reported as nearly £17 bn (for the year 2010-2011).[16]

Other factors that might or could have contributed towards the introduction of competency based training includes, lack of time to train doctors due to "EWTD," the "new deal document," reduction in continuity of patients care due to shift patterns, significant reduction in personal reflection on part of the healthcare professionals due to increased intensity and work load, poor quality of feedback from colleagues and patients.[5-7,17]

In the UK competency-based training has been introduced since 2005 for its trainee doctors as part of the modernising medical careers (MMC) changes and currently is at the center stage of both the government policy makers and the media. This recent trend towards the direction of a competency-based system or training is not new or distinct only to the UK; in the United State of America (USA) the American Council for Graduate Medical Education has planned its postgraduate medical education as competency based and in other developed countries there has also been an ongoing growing pressure on governments to not only strengthen health related accountability but also to formalize the way doctors learn and practice at the same time.[18]

Therefore, in this time of change it is very important to incorporate the principles of competency-based training into our junior doctor's during their early clinical years, and for the medical professional bodies who are responsible for their training to start to assess and document competencies in a more formalized way.

ASSESSMENT AND EVALUATION OF TRAINEES IN THE UK

Assessment and evaluation are the basis of learning; assessment is concerned with how the learners perform while evaluation tells us how successful the teaching was in reaching its goals.[19]

According to the triangle proposed by Miller, different assessment methods can be used to assess the clinical competence of the trainee. The choice of method used to evaluate the assessment procedure will depend on whether it is for summative purposes i.e., pass or fail affair for promotion and certification or for formative purposes i.e., to help aid learning through feedback or for both of the above purposes (summative and formative). Whatever is the purpose of an assessment, the principal consideration of a well-designed and evaluated assessment system is to make sure that the assessment methods that are chosen are valid, reliable, acceptable and have an educational impact.[20]

Currently in the UK, both summative and formative assessment methods are being used to assess its trainee's competence levels, keeping Miller's pyramid in mind, level one and two is performed by using the traditional assessment tools i.e., written and oral examinations organized by the Royal Colleges for its secondary medical specialties and involve multiple-choice questions (MCQs), best of five questions, extended matching, and short answer questions. Whereas the assessment of clinical reasoning is made through structured complex cases labeled as the "gray cases" and are used to assess competence as well as core knowledge, a trainee cannot progress or proceed towards the next level without passing the above mentioned summative assessments, previous to MMC many SHOs would spend many years in such posts as it was difficult to pass these exams. It is interesting to note that some authors are of the view that these traditional methods need to evolve to become better tools to assess a doctor's competence as well as core knowledge. It has been reported in one study that open-ended MCQs can differentiate between the experienced and junior doctors.[8,21,22]

However, as discussed previously, knows and knows how (Millers level one and two) does not always lead towards the application of clinical knowledge in the workplace environment (levels three and four of Miller's triangle) and as the trainee becomes more senior assessment and evaluation becomes more challenging. At present, level three and level four of Millers triangle are currently being assessed in either a summative way that is by practical clinical examinations such as viva voce and objective structured clinical examinations by the Royal Colleges and the Annual Report of Competency Progression (ARCP) by the deaneries responsible for their training or in both formative and summative way through the introduction of competency based training in which various WBA tools are used for assessments such as mini clinical evaluation exercises (mini-CEX), case-based discussions (CBD), directly observation of procedural skills (DOPS) and mini peer-assessment tools (mini-PAT).[5,23-26]

Literature search has shown that WBAs can be used to show a doctor's knowledge or competence; however, a study has shown that competence does not reliably predict performance in clinical practice.[27] Also WBAs relies heavily on the trainee supervisor's ability and more importantly willingness to accurately assess the trainee and give an honest and a constructive feedback for further learning and improvement, thus making it very difficult to examine clinical competence at level four in Millers triangle ("does" or "performance").

Furthermore educational experts are of the view that even if such tools are used to adequately assess performance in a test environment this will still not assess what a doctor will actually do in practice because of other environmental influences mentioned in the "Cambridge model," therefore it is thought best to only observe and train a doctor in a formative way as possible to ensure effective assessment of clinical skills are maintained.[28]

This is important in foundation years training as in view of the reduced hours of work and shift working pattern due to "EWTD" and the "new deal" the competence of an individual cannot be guaranteed by one supervising consultant and a robust system for assessing competence needs to be implemented in the future.

WBAS

In the UK, as mentioned earlier different WBAs tools have been introduced as part of the MMC changes and currently is at the center stage of both the government policy makers and the media.[6] A number of supervising consultants observe and make global impressions of trainee doctors over a specific period of time during their clinical rotations through WBAs. The main aim of these WBAs is not only to assess and monitor the progress of a trainee doctor in a real clinical setting but also to improve clinical learning through reflective practice; WBAs tools include mini-CEX, CBD, DOPS, 360° appraisals in the form of mini-PAT and the recently added WBAs tool on how to be a good clinical teacher.[6,29-31]

Trainees receive different constructive comments on the WBA performed from their assessors or evaluators in a formative way that is then compiled together with other WBAs and uploaded onto an online portfolio by the trainee; In the UK, WBAs are currently being used in both formative and summative way, that is to say that when assessed by their assessor alone it works as a formative assessment tool that is to help a trainee learn by reflection and through constructive feedback given by their assessors, however at the end of the year placement when combined with other WBAs it is assessed in a summative way (summative assessment of learning) by the educational supervisor through ARCP that is a pass or a fail affair.[6,29-32]

These WBAs are as follows,

CEX

The "mini clinical evaluation exercise" or for short "mini-CEX" was created and then piloted for the first time in the USA and is considered acceptable as an assessment tool for formative purposes.[28,33,34]

An evaluator usually a consultant or a senior trainee doctor observes a trainee's performance in a normal clinical encounter for 15 min and then comments on the specific focus of the interaction (e.g., history taking, examination and overall management of the patient). The assessor may ask different questions to understand the thought processes and management decisions made by the trainee. At the end of the encounter immediate feedback and discussion takes place on the focus of the assessed aspect to help bridge the gap between actual and expected performance. A trainee must complete a minimum required number of mini-CEX per placement. The aim is for the trainee to be assessed in several clinical settings and by different assessors.[35]

DOPS

A trainee doctor performs the procedure and the evaluator mostly a senior based on his observations awards scores according to the pre-set criteria on the assessment form. Favorable outcome depends on the whole performance or all the steps necessary to complete the procedure by the trainee and not just, for example, whether the trainee had cannulated the correct vein during intravenous cannulation. The main aim of DOPS is to determine if the trainee is competent and safe to perform the skill independently or not.[36]

CBD

During the case based discussion or for short CBD, the trainee brings a number of case records that he or she have been involved with, and the evaluator generally picks one out for a detailed discussion. The main emphasis is upon the decision-making involved in the management of the case, rather than the depth of knowledge. A self-assessment form can be completed before the meeting to help the trainee reflect, develop self-awareness, and gauge how their thoughts compare with the assessor.[36]

Multi-source feedback (MSF)

All doctors including trainee's work as part of a big multi-disciplinary team that include nursing and other health care professionals and they must show respect, behave in an acceptable way and be able to communicate effectively with patients, non-medical staff and colleagues. Feedback from multi-disciplinary team members, especially non-medical staff, is invaluable in helping the trainee gain insight into how their interaction is perceived by other professionals. Extreme care needs to be taken that a personality clash does not cloud the assessor's feedback and cause ill feeling between the trainee and his assessor. In MSF online assessment based on trainee, attitude are sent to various multi-disciplinary team evaluators by the trainee himself who then respond anonymously with feedback. It is recommended that this type of assessment should be frequently performed and at different stages of training. Trainees in whom difficulties are identified should be offered help by their trainers, initially at a local training center or through an educational support system.[36]

Clinical supervisors end of the year assessment form

The trainee's educational supervisor collates the completed WBAs into a summary form known as the end of the year assessment form. In the UK, this is submitted towards the ARCP assessment.[36]

Ensuring the assessment has been performed

A system to make sure that the assessment has occurred and trainees that may require a further focused training are picked up at an early stage is very important. In the UK, regional deaneries are the usual organizations responsible for managing the local educational programs and they provide a framework and structure for this to happen, usually a paper and/or electronic trail known as the E-portfolio exists that provide evidence of appropriate training and it makes sure that the assessment has been performed.[36]

EDUCATIONAL EXPERTS AND DOCTORS IN TRAINING VIEWPOINTS ON WBAS

The concept of "assessment-based learning" has recently gained a lot of popularity in the field of medical education, with medical educators focus of attention moving away from examining trainee knowledge level to proving competency through WBAs tools during their various clinical rotations, these assessment tools are not replacements for the traditional methods of assessment as par say but as an add-on method for assessing a trainee in clinical settings.

These WBAs tools are designed by various educational experts and as mentioned earlier can be used in both ways that is formative and summative; their main aim is to not only promote lifelong learning through supervised reflection and feedback but also to provide evidence on a trainee's competence level. It is important to note that WBAs relies heavily on the trainee supervisor's ability and more importantly willingness to accurately assess the trainee and give an honest and a constructive feedback for further learning and improvement through reflection.[7,8,27,37,38]

Although WBAs tools were introduced with good intentions, unfortunately they are not very popular amongst the trainers and trainees, Professor Collins Report[39] in 2010 on "foundation program" for junior doctors questioned the WBAs capacity for assessment, and accepted the fact that they did not have the full support of both the trainers and trainees. However, Collins did recognize the feedback opportunities provided by such assessment; currently WBAs

in foundation years have been renamed as "supervised learning events (SLEs)" to avoid confusion, as previously, though they were meant to be formative many evaluators and trainees were of the opinion that they were summative.[40]

It is important to note that in a competency based assessment system the trainee remains in training until they have been shown to be "competent" to progress to the next stage[33] which makes competency based system an overall summative assessment, whereas informative process irrespective of how a trainee performs will still progress to the next stage or level of training, thus creating an even more a greater degree of confusion amongst trainee and trainers.

Other drawbacks of such competency-based assessment methods are that the trainee who performs reasonably well during early engagements with such tools may get overconfident, and this may hinder the motivation to improve further.[41]

On the other hand, a weaker trainee may get discouraged by the early few poorly performed WBAs and could avoid seeking feedback and help from their trainers. WBAs requires a lot of demand time wise on both trainees and trainers as a result trainees have difficulty in finding evaluators to do their assessment with, there is also a tendency for the trainee to look for less senior evaluators. There is evidence to suggest that senior evaluators and experienced assessors may give lower but more accurate ratings on a trainee's workplace performance.[42]

Literature search on WBAs has shown that there is a perception of low effectiveness amongst trainers,[43] increased administrative burden on trainers and trainees,[44] lack of validity[45] and the creation of a 'tick box' mentality.[46]

A study conducted by McKavanagh et al.[30] have shown that consultants input into junior doctors' WBAs had been relatively poor, with 71% of the trainee doctors in agreement that their consultant supervisors were not very enthusiastic on completing their WBAs.

Multiple reasons for such variable consultant supervisors input could include apathy, a lack of feeling of responsibility due to poor recognition of the importance of the WBAs, a low perception of the effectiveness of the whole workplace assessment process,[43] a more preference for summative rather than formative assessments, a feeling of huge bureaucratic burden[44] and finally a lack of recognition for WBAs in a consultant job plan.

The study also pointed out that junior doctors did not feel that the E-portfolio system used for WBAs compilation and organization had created a very positive learning experience for them and it was felt that it was not a valid way of being assessed and this negative opinion about WBAs has also been reproduced in a number of recent different literature studies.[45-49]

CONCLUSION

It is important that doctors in training are regularly assessed at various levels of their training and their trainers should always supervise them in a supportive way so that not only do they learn in a supportive and in a structural way but also no harm is caused to the patient.

Previously trainees would spend a number of years in various different clinical rotations and would learn through experience, most of their hours were spent on the wards, clinics or operating theatres and were assessed through various traditional methods i.e., formal Royal College examinations, viva voce etc. Work-place clinical skills were not formally assessed however their consultant would give end of the rotation report on his/her overall conduct and clinical skills, they would have end of the year record of in-training assessment where the trainee would be assessed in a formative way and feedback would be given on how to make future improvements, in order to progress to be a consultant it would be expected of the trainee to pass the Royal College exams.

Unfortunately, due to "EWTD" and the "new deal document" for junior doctors not only the number of hours required for the trainee doctor had reduced but also the amount of time required to train a doctor had also increased, hence poorly performing doctors and high patient expectation led to the introduction of a new system of training that is "competency based training" were a trainee had to achieve a certain level of competency before it could proceed to the next level, these competencies were assessed by the use WBA tools based on the Miller's triangle. WBA tools were not a replacement for the previous traditional assessment methods as par say but were an additional formative assessment tools on top of the previous traditional methods of assessments.

Although introduced with good intentions as formative methods of learning and to streamline the previous system of training of junior doctors; Unfortunately it was not well received by both trainers and their trainees and ended up being the center stage of both the government policy makers and the media, and ended up developing a culture of "tick box exercise."

It was thought that poor planning, lack of time due to EWTD, service commitments and inadequate training of supervisors and assessors were thought to be the main reasons. However, after a number of reports various modifications have been made into WBA tools, in the foundation program they have been renamed into SLEs, the Likerd style ratings have been removed and more emphasis has been placed on constructive feedback, a trainee cannot fail an individual SLE however at the end of the year it become an assessment for competence progression that is to say summative assessment of outcome, hence, creating even more confusion amongst trainees and their trainers.

It is important to note this new system of "MMC" has attempted to streamline the training of trainee doctors and

most of the junior doctors are happy that unlike in previous years they don't have to stay in SHOs jobs for a prolong period of time.

However, at every stage of their training they are constantly being assessed multiple times, if applying for foundation year training they get ranked according to their performance based on the situation judgment test, during and at the end of the rotation a trainee gets assessed and if found competent the trainee can only then proceed to the next stage, for the next higher stage or specialist training posts that trainee has to re-apply to various core training posts and gets re-assessed during the structured interview phase, if found competent that is to say had cleared the basic diploma Royal College exams i.e., MRCS/MRCP etc. a trainee will get a specialty post of his/her choice, during and at the end of the 2 years of core training yet again they get re-assessed if not cleared the Royal College exams at that stage they do not proceed to the next level.

Once cleared a trainee can move to the higher level of training. A trainee will not complete his training unless he has been awarded "certificate of completion of training" which can only be awarded if cleared his final "Fellowship" exams and all his supervisors are happy.

With so many summative assessments for the poor trainee doctors before he/she becomes a consultant, that too without the added burden of such time consuming WBAs, both the trainees and their trainers question the need for imposing such an extra bureaucratic burden in the form of WBAs on them, especially in such high pressure and time constraint environment due to EWTD.

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REFERENCES

1. Raven Department of Education. Assessment of Surgical Trainees: Training the Trainers, Module 1: Learning and Teaching. London: Royal College of Surgeons of England; 2006: 44.
2. Holm HA. Postgraduate education. In: Norman GR, van der Vleuten CPM, Newble DI, editors. International Handbook of Research in Medical Education. Dordrecht: Kluwer; 2002: 381-24, 413.
3. Van der Vleuten CPM. The assessment of professional competence: Development, research and practical implications. Adv Health Sci Educ. 1996;1:41-67.
4. Anwar M, Irfan S, Daly N, Amen F. EWTD has negative impact on training for surgeons. BMJ. 2005;331(7530):1476.
5. Department of Health Hours of Work of Doctors in Training: The New Deal. London: Department of Health; 1991.
6. Dean BJ, Duggleby PM. Foundation doctors' experience of their training: A questionnaire study. JRSM Short Rep. 2013;4(1):5.
7. Saedon H, Salleh S, Balakrishnan A, Imray CH, Saedon M. The role of feedback in improving the effectiveness of workplace based assessments: A systematic review. BMC Med Educ. 2012;12:25.
8. Carr SJ. Assessing clinical competency in medical senior house officers: How and why should we do it? Postgrad Med J. 2004;80(940):63-6.
9. Southgate L. Professional competence in medicine. Hosp Med. 1999;60(3):203-5.
10. Epstein RM, Hundert EM. Defining and assessing professional competence. JAMA. 2002;287(2):226-35.
11. Epstein RM, Hundert EM. Defining and assessing professional competence. JAMA. 2002;287:226-34.
12. Leach DC. Competence is a habit. JAMA. 2002;287(2):243-4.
13. Fraser SW, Greenhalgh T. Coping with complexity: Educating for capability. BMJ. 2001;323(7316):799-803.
14. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. Ann Intern Med. 2002;136(5):358-67.
15. Borrell-Carrió F, Epstein RM. Preventing errors in clinical practice: A call for self-awareness. Ann Fam Med. 2004;2(4):310-6.
16. Jaques H. NHS clinical negligence claims are up by 30%. BMJ Career Report. [Publication date 11 Aug 2011].
17. Islam S, Deekes A, Lee A, Hoffman G, Isgar B. Junior doctor titles following implementation of Modernising Medical Careers in the UK. JRSM Short Rep. 2011;2(3):22.
18. Southgate L, Grant J. Principles and standards for an assessment system for postgraduate medical training. PMETB Subgroup on Assessment; 2003.
19. Williamson JML, Osborne AJ. Critical analysis of case based discussions. BJMP. 2012;5:a514.
20. Al-Wardy NM. Assessment methods in undergraduate medical education. Sultan Qaboos Univ Med J. 2010;10(2):203-9.
21. Glavin RJ, Maran NJ. Development and use of scoring systems for assessment of clinical competence. Br J Anaesth. 2002;88(3):329-30.
22. Veloski JJ, Rabinowitz HK, Robeson MR, Young PR. Patients don't present with five choices: An alternative to multiple-choice tests in assessing physicians' competence. Acad Med. 1999;74(5):539-46.
23. Harden RM, Gleeson FA. Assessment of clinical competence using an objective structured clinical examination (OSCE). Med Educ. 1979;13(1):41-54.
24. Harden R, Cairncross C. Assessment of practical skills. Stud Higher Educ. 1980;5:187.
25. Department of Health. Modernising Medical Careers; The Response of the Four UK Health Ministers to the Consultation on "Unfinished Business Proposals for Reform of the Senior House Grade". London: Department of Health; 2003.

26. Department of Health. Modernising Medical Careers: The Next Steps. The Future Shape of Foundation, Specialist and General Practice Training Programmes. London: Department of Health; 2004.
27. Rethans JJ, Norcini JJ, Barón-Maldonado M, Blackmore D, Jolly BC, LaDuca T, et al. The relationship between competence and performance: Implications for assessing practice performance. Med Educ. 2002;36(10):901-9.
28. Weller JM, Jones A, Merry AF, Jolly B, Saunders D. Investigation of trainee and specialist reactions to the mini-Clinical Evaluation Exercise in anaesthesia: Implications for implementation. Br J Anaesth. 2009;103(4):524-30.
29. Curriculum for the Foundation Years in Postgraduate Education and Training Foundation Programme Committee of the Academy of the Royal Colleges, in cooperation with Modernising Medical Careers in the Departments of Health. Available at http://www.mmc.nhs.uk/pages/foundation/Curriculum 2005. Accessed 12 Aug 2013.
30. McKavanagh P, Smyth A, Carragher A. Hospital consultants and workplace based assessments: How foundation doctors view these educational interactions? Postgrad Med J. 2012;88(1037):119-24.
31. Burkill GJ. Work-based assessment for trainees – More than just a few new tools? Clin Radiol. 2008;63(1):12-4.
32. Beard J. Workplace-based assessment: The need for continued evaluation and refinement. Surgeon. 2011;9 Suppl 1:S12-3.
33. Carr S. The Foundation Programme assessment tools: An opportunity to enhance feedback to trainees? Postgrad Med J. 2006;82(971):576-9.
34. Norcini JJ, Blank LL, Arnold GK, Kimball HR. The mini-CEX (clinical evaluation exercise): A preliminary investigation. Ann Intern Med. 1995;123(10):795-9.
35. Norcini JJ. Current perspectives in assessment: The assessment of performance at work. Med Educ. 2005;39(9):880-9.
36. Kathirgamanathan A, Woods L. Educational tools in the assessment of trainees in anaesthesia. Contin Educ Anaesth Crit Care Pain. 2011;11:138-42.
37. Rabinowitz HK, Babbott D, Bastacky S, Pascoe JM, Patel KK, Pye KL, et al. Innovative approaches to educating medical students for practice in a changing health care environment: The National UME-21 Project. Acad Med. 2001;76(6):587-97.
38. Holmboe ES, Sherbino J, Long DM, Swing SR, Frank JR. The role of assessment in competency-based medical education. Med Teach. 2010;32(8):676-82.
39. Collins J. Foundation for Excellence; an Evaluation of the Foundation Programme. Medical Education England. Available at http://www.mee.nhs.uk/pdf/401339_MEE_FoundationExcellence_acc.pdf. Accessed 12 Aug 2013.
40. Chaired by Dr. ED Neville, Supervised learning events evaluation. Academy of Royal College of Medicine. Available at http://www.gmc-uk.org/Learning_and_assessment_in_the_clinical_environment.pdf_45877621.pdf. Accessed 12 Aug 2013.
41. General Medical Council. Workplace Based Assessment: A Guide for Implementation. A GMC/AoMRC Guidance Paper. 2010. Available at http://www.gmc-uk.org/Workplace_Based_Assessment–A_guide_for_implementation_0410.pdf_48905168.pdf. Accessed 25 Dec 2012.
42. Wilkinson JR, Crossley JG, Wragg A, Mills P, Cowan G, Wade W. Implementing workplace-based assessment across the medical specialties in the United Kingdom. Med Educ. 2008;42(4):364-73.
43. Burford B, Illing J, Kergon C, Morrow G, Livingston M. User perceptions of multi-source feedback tools for junior doctors. Med Educ. 2010;44(2):165-76.
44. Whitehouse A, Hassell A, Bullock A, Wood L, Wall D. 360 degree assessment (multisource feedback) of UK trainee doctors: Field testing of team assessment of behaviours (TAB). Med Teach. 2007;29(2-3):171-6.
45. Pereira EA, Dean BJ. British surgeons' experiences of mandatory online workplace-based assessment. J R Soc Med. 2009;102(7):287-93.
46. Menon S, Winston M, Sullivan G. Workplace-based assessment: Survey of psychiatric trainees in Wales. Psychiatr Bull. 2009;33:468-74.
47. Hrisos S, Illing JC, Burford BC. Portfolio learning for foundation doctors: Early feedback on its use in the clinical workplace. Med Educ. 2008;42(2):214-23.
48. Sabey A, Harris M. Training in hospitals: What do GP specialist trainees think of workplace-based assessments? Educ Prim Care. 2011;22(2):90-9.
49. McGill DA, van der Vleuten CP, Clarke MJ. Supervisor assessment of clinical and professional competence of medical trainees: A reliability study using workplace data and a focused analytical literature review. Adv Health Sci Educ Theory Pract. 2011;16(3):405-25.

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