



SERVICE EVALUATION, OUTCOME MEASUREMENT AND PASCOM-10

A review of the literature

INTRODUCTION

This article reviews the theories of service evaluation before considering the options in outcome measurement and the role PASCOM can play in facilitating service evaluation.

Living through a sustained period of public sector austerity is having an impact on the provision and commissioning of health services across England. Clinical Commissioning Groups (CCGs) are carefully considering the services they provide to local communities, and increasingly the term 'rationing' is appearing in media stories. It is then incumbent on podiatric surgeons to provide evidence to CCGs of their real-world clinical effectiveness. One such approach to collecting this evidence is through service evaluation and the collection of patient-reported outcomes.

WHAT IS SERVICE EVALUATION?

Studies of surgical intervention fall into three broad categories: research, audit and service evaluation. Twycross & Shorten suggest that the study question will inform choice of study design. Research intends to answer a question and in doing so create new knowledge.¹

Audit has the intention of measuring activity or provision against previously stated standards. Audit may reveal a failure of process, leading in turn to the implementation of new processes and then re-audit.² Within the NHS, the Plan, Do, Study, Act (PDSA) cycles provide a standard framework for auditing and implementing service change.³ Finally, service evaluation seeks to evaluate the quality or effectiveness of a service in achieving pre-defined objectives.¹ In comparison to audit and research, service evaluation assesses the outcomes associated with current service provision with the premise of determining whether a service is achieving its intended aims.² The national Research Ethics Service states that a service evaluation will answer 'what standard does this service achieve?', while audit will answer 'does this service reach a predetermined standard?'.⁴ There are no predetermined national standards for many of the treatments we offer in podiatric surgery.

Service evaluation may be undertaken alongside clinical audit under the umbrella of clinical governance and so PDSA cycles may be seen as a component of evaluation.^{2,5} When service evaluation includes a PDSA cycle, the process itself may be enough to promote

change and improve care by identifying failures to meet set standards.⁶

THEORIES OF SERVICE EVALUATION

The origin of service evaluation can be found in the wider service sector industries, with the 'service' provided analogous with a product or goods in manufacturing or retail. Within healthcare the concept has been driven by the demand to be more customer focused.⁷ Evaluation in this context refers to the assessment of quality, and so service evaluation and quality assurance (QA) are inextricably linked.⁷ It is deemed important to meet or exceed patients' expectations of healthcare, perhaps now more than ever before in the rapidly changing and increasingly competitive UK health economy. To assist service evaluations, various approaches have been proposed. In 1988, Donabedian suggested a model for examining the quality of healthcare with evidence drawn from three sequential categories: structure, process and outcome.⁸ Multiple elements may influence quality judgements and the outcome of care itself will be influenced by the process (e.g. treatment provided) and the structure (e.g. staffing and facilities).



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Donabedian's model for evaluation has stood the test of time and is still applied today in various formats.⁹ Critics of this approach point to the linear nature of the model from structure through to outcome, which may not elicit the relationship between each domain; patient factors are also largely ignored.¹⁰

Perhaps the most prolific model is SERVQUAL (service quality),¹¹ which places the customer's evaluation of service at the centre of its approach. Although not intended specifically for healthcare, it has been widely adopted for this purpose. The SERVQUAL instrument was later revised to provide five dimensions of quality: reliability, assurance, tangibles, empathy and responsiveness.⁷ In healthcare, SERVQUAL analysis identifies gaps between the patient's expectation of care, their perception of the care received and the actual delivery of care.¹² Criticisms have been made of the reliability and validity of the SERVQUAL approach and its measurement scales but it remains an extremely popular approach.

Other models used in service evaluations include Fuzzy Set Theory, which can address some of the ambiguities in human subjective judgements, and Fuzzy Analytic Hierarchy Process, which evaluates the frameworks around service quality and is a useful measure of hospital performance.⁷ Six Sigma is a proprietary model of service evaluation that has its roots in manufacturing. This is a process driven model, where change is introduced, often in cultures resistant to change, with the intention of building better processes, resulting in improved outcomes, reduced errors and improved customer satisfaction.¹³ Six Sigma is said to 'invigorate an ambivalent work force' and has been applied in healthcare settings.^{13,14}

QUALITY ASSURANCE

Service evaluation and QA are intertwined. As such, service evaluations will make a judgement of quality in relation to the outcome of prescribed treatment. Quality has been defined as the degree or standard of excellence.¹⁵ Within healthcare, and particularly when evaluating treatments or interventions, Bowling states that quality relates to 'effectiveness with regard to improving the patient's health status, and how well it meets the professionals' and public's standards'.² QA is defined as 'a pledge to the public by those within various health disciplines that they will work towards the goal of an optimal achievable degree of excellence in the services rendered'.¹⁶ Maxwell, in considering quality of healthcare provision, supported Donabedian's model but added to it with six specific dimensions of healthcare quality: access to services, relevance, effectiveness, equity, acceptability and efficiency or economy.¹⁷ There are many methods by which quality or success can be evaluated but in the context of elective surgical treatment for a painful condition, it is most appropriate to place the patient and their interpretation of the outcome at the centre of that assessment through the use of patient-reported outcome measures alongside measures of satisfaction and judgements.¹⁸

The weaknesses of the service evaluation approach to investigating surgical treatment must also be understood. Evaluations can result in improvement in patient care but there is a risk that some or all of the measured improvement will be lost when the evaluation stops. Therefore, for service evaluations to achieve their goal of QA, they must be ongoing or cyclical.⁹ A recent report by The Health Foundation confirms that evaluation of care can lead to improvements, but that any evaluation must be ongoing.¹⁹

Further criticism of service evaluations relates to their inability to control variables in the same way as a truly experimental design, such as a randomised controlled trial. In service evaluations the study population are self-selecting with

no guarantee of a homogenous cohort. No attempt is made to control confounding variables and the inclusion/exclusion criteria are only those dictated by the service in its usual delivery of care. As such, considerable caution must be applied to the interpretation of any outcome data beyond general statements around quality, safety and effectiveness. Unlike a formal experimental design there is no attempt at power calculations to determine sample size and so any post hoc statistical analysis must account for this, ultimately weakening the significance of any findings.

SERVICE EVALUATION IN PODIATRIC SURGERY

Podiatry does not have a long tradition of service evaluation or QA. In 1992 Renwick wrote that QA was a novel concept.²⁰ She pointed to a publication by the (then) Society of Chiropodists entitled *Guidelines on Standards of Chiropody*. These were published in 1991 and were the first of their kind. Without agreed standards it is challenging if not impossible to set a quality agenda. Renwick went on to recommend a QA strategy for podiatry, but there is no evidence this was ever implemented.²⁰

Podiatric surgery is a relatively new sub-speciality of podiatry; the first NHS departments opened in the latter part of the 20th Century.²¹ Inherent within the development of podiatric surgery is the concept of expanding scope of practice and challenging the established medical hegemony,²² and to that end podiatric surgeons have been keen to evaluate and audit their activity. Unfortunately, as with the wider foot and ankle surgery literature, much of what has been published has been in the format of case studies or small audits, and adoption of patient-reported outcomes is a relatively recent development. Many early authors were keen to demonstrate successful outcomes associated with either specific procedures or the overall service and to that end most relied on outcome data in the format of complications, satisfaction rates and pain scales with no attempt to standardise methodologies.²³⁻²⁵ The first paper to identify the need for formal service evaluation was published by Tollafield & Parmar in 1994. Entitled *Setting Standards for Day Care Foot Surgery* it laid out a structure for analysing outcomes in a manner consistent with PDSA cycles.²⁶

PATIENT-REPORTED OUTCOMES AND CLINICAL RATING SCALES

It is apparent that a large range of outcomes have been chosen by authors to evaluate surgery including radiographic measures, joint range of motion, measurement of peak plantar pressure, complication rates, pain scales, clinical rating scales, patient satisfaction, cosmesis and, rarely, measures of health status.^{27,28}

One clinical rating scale stands out as a frequent choice - the American Orthopaedic Foot and Ankle Society Hallux scale, referred to simply as AOFAS - and is by some way the most popular scale amongst foot and ankle surgeons worldwide.²⁹ This scale applies a mixture of subjective patient responses and clinical assessment of the foot, and includes some questions that are entirely inappropriate in certain contexts, such as evaluation of joint range of motion following arthrodesis (when movement is permanently eradicated). Despite its enduring popularity, the AOFAS scale has been widely criticised for many years, with concerns raised around poor construct validity, skewed data, poor correlation with other instruments and limited score precision.^{30,31} Its continued use points to the relative ease with which the paperwork is completed and the widespread understanding and acceptance of the scale amongst the orthopaedic community.

It is clear that for an evaluation of quality to be made in relation to treatment, an assessment that is directly relevant

to the patient is critical. The intention of podiatric surgery is typically to relieve pain, improve overall foot function and restore or maintain mobility. Patients themselves state that their expectation of foot surgery is that it will restore function, relieve pain and improve shoe fitting.³²⁻³⁴ These patient-focused elements of foot health will inform a patient's overall health status and therefore also their Health-Related Quality of Life (HRQOL). It is then fitting to utilise instruments capable of determining change in HRQOL following an intervention; such instruments are known collectively as Patient-Reported Outcome Measures (PROMS). Any change in HRQOL, as measured by PROM instruments, may be used as an indirect measure of the quality or success of an intervention. One of the first English podiatric surgery evaluations to focus on quality of life utilised the Foot Health Status Questionnaire (FHSQ) to investigate outcomes.³⁵ Others soon started utilising the FHSQ to evaluate whole services and specific procedures.³⁶

Measures of HRQOL or health status include the generic Short form 36, which is perhaps the most popular instrument of its kind, or the Euroqol EQ-5D, which is popular in the UK and Europe.^{31, 37} The EQ-5D is a simple instrument consisting of five domains and a question in each domain alongside a health thermometer. It has been used widely to assess the impact of disease on HRQOL. The simplicity of the EQ-5D means that, although it is able to detect

the impact of systemic disease, it is less sensitive to those diseases localised to a specific region, such as the foot.³⁸ Even the more complicated Short form 36 lacks sensitivity when used to assess the painful foot.³⁹ In response to this concern, a podiatry-specific version of the EQ-5D known as the Podiatry Health Questionnaire (PHQ) was developed and subsequently used to audit the outcome of core podiatry treatment.⁴⁰ The PHQ is focused on the typical elderly core podiatry cohort with questions around hygiene, worry and nail care, so is not well suited to podiatric surgery.

Regional PROMS are increasingly popular, seen as more sensitive than the generic measures. Regional measures relevant to the foot include the FHSQ,⁴¹ The Bristol Foot Score⁴² and the Foot Function Index, which was validated in the context of rheumatoid arthritis.⁴³ The FHSQ was an attractive instrument because it was developed with input from focus groups of podiatric surgeons, and was subsequently validated in the context of podiatric surgery.⁴⁴

The use of regional PROMS that have all been through a process of validation and reliability testing is a step in the right direction but neither the FHSQ or the Foot Function Index were developed from the ground up with patient input, relying instead on expert opinion to set the questions.²⁷ As such, these instruments cannot be considered valid for the assessment of outcome from the patient's perspective and it is uncertain whether the questions asked are of relevance to the patient cohorts under investigation. The FHSQ has not been without critics and questions have been raised about its reliability and validity.^{27,45}

The Bristol Foot Score was created with input from patients, with the intention of developing a patient-centred instrument, but although well designed, its focus is directed towards general podiatry practice rather than foot surgery. It is recognised that regional PROMS are able to focus in on the symptoms of specific relevance to the patient, symptoms which may otherwise be missed by the more generic or global instruments.²⁷ This has been borne out by the work of Dawson and colleagues who found that their regional measure, the Manchester-Oxford Foot Questionnaire (MOXFQ), was more sensitive than generic PROMS in detecting changes in foot HRQOL.³⁹

The MOXFQ has been through a thorough development process including a relevant patient group, addressing the concerns raised by Parker et al and affirming its construct validity.^{27,39}

The MOXFQ is a modification of the Manchester Foot Pain and Disability Questionnaire; alterations were made following patient focus groups before extensive testing of reliability and validity.³⁹ The instrument has subsequently been through additional testing for responsiveness, minimal clinically important differences and comparison with previously well-accepted instruments.^{39, 46, 47}

Initially the MOXFQ was developed and validated in the context of patients waiting for (and following) hallux valgus surgery, the first ever PROM developed specifically for foot surgery. Later studies extended the validation to cover all foot and ankle surgery.³⁹ Beyond the work of the development team, a number of foreign language versions have been developed and readability has been favourably compared with the FHSQ.⁴⁸ The MOXFQ has been utilised by podiatric surgeons to evaluate service provision alongside the EQ-5D.⁴⁹ The same team also utilised the MOXFQ in the assessment of hallux valgus outcomes⁵⁰ but both studies suffered from relatively short follow-up periods of six months. Others have also evaluated hallux valgus surgery with the MOXFQ but only one study, independent of the questionnaire's authors, has utilised it to evaluate hallux rigidus treatment.⁵¹ This small-scale study investigated the cheilectomy procedure but inappropriately applied an untested index score, invalidating the results.

Orthopaedic surgeons have widely adopted the MOXFQ, as evidenced by conference proceedings, and in 2010 the questionnaire was adopted by the College of Podiatry and it is embedded within PASCOM-10.

PASCOM AND PATIENT SATISFACTION

PASCOM has been available in various forms for several years, but in 2010 the system was re-launched as a web-based audit tool and rebranded as PASCOM-10. PASCOM captures patient data relating to the episode of care and includes surgical data, outcomes, satisfaction and complications, all of which can subsequently be reviewed via automated reports.

In 2003, Rudge & Tollafield presented a detailed explanation of PASCOM and its patient satisfaction questionnaire (PSQ-10) along with audit data from nine surgical centres.⁵² It is clear from this paper that the patient satisfaction questionnaire, now termed the PSQ-10, went through no formal validation although it was subsequently tested for

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reliability, successfully demonstrating that satisfaction did not change over time.⁵³ The data produced by the PSQ-10 appear to result in clustering or skew towards the higher scores, a consequence of the weighting given to the various questions and therefore suggesting a failure to offer respondents an adequate choice of answers.⁵² Despite these drawbacks the instrument remains in current clinical use nationally.

Though many authors refer to it, attempt to measure it and analyse it, patient satisfaction can be difficult to quantify and few have attempted to define it.² Patient satisfaction has been described as a *'judgement made by a recipient of care as to whether their expectations for care have been met or not'*.⁵⁴ Satisfaction can then be perceived as a direct consequence of meeting a patient's expectations.⁵⁵ Patrick Shelton defines six components of patient satisfaction: access, convenience, communication, perceived quality of healthcare received, personal caring approach and finally healthcare facilities and equipment.⁵⁶ Surveys to measure patient satisfaction have long been proposed, and particularly so in the NHS, but their use has often been reserved for hotel services such as cleanliness, rather than as a measure of clinical outcome.⁵⁷ The PSQ-10 questionnaire is popular amongst podiatric surgeons and has been in use since 2000.⁵²

PASCOM-10 AS A SERVICE EVALUATION INSTRUMENT

The original concept behind the PASCOM project was *'to provide a structured framework in which to collect and compare data relating to the characteristics, outcomes and patient experiences of foot surgery performed by podiatrists'*.⁵² The original authors themselves referred to PASCOM as an evaluation tool for podiatric surgery and so it seems fitting to critique its use in service evaluations. Within healthcare, evaluation refers to the assessment of quality; PASCOM-10, the current version of the system, is very much patient focused with specific instruments addressing patient satisfaction and quality of life. This is in addition to specific measures of quality such as the incidence of complications and the clinician's opinion of the success or failure of surgery.

Concerning Donabedian's model for examining quality in healthcare, PASCOM-10 arguably fulfils two of the three stated categories; namely process (surgery) and outcome.⁸ Where it fails to meet Donabedian's model is in evaluating structure, PASCOM-10 simply does not consider the impact of facilities, staffing or access, although in its defence the PSQ-10 questionnaire does make some tentative steps towards evaluating structure.

PASCOM-10 perhaps is a better fit for the SERVQUAL model proposed by Parasuraman et al which is very much customer focused; it could be argued that PASCOM-10 is to some extent able to address the five dimensions of quality:

reliability, assurance, tangibles, empathy and responsiveness.¹¹ Through interpretation of pre-operative MOXFQ data, responses to the PSQ-10 and assessment of clinical outcomes, it is possible using PASCOM-10 data to draw tentative conclusions about patient expectation of care and compare with the actual care delivered in line with a SERVQUAL-type analysis. PASCOM does not however specifically assess patient expectation or perception ahead of treatment, although it is considered retrospectively; PASCOM-10 cannot then be said to be a perfect fit with SERVQUAL.

With reference to Maxwell's six dimensions of quality healthcare provision, PASCOM is able to address three of these: quality, relevance and effectiveness, but is not well suited to address access, equity or efficiency. When attempting to fit PASCOM-10 into existing models or concepts of service evaluation, it becomes apparent that PASCOM-10 is perhaps too clinically orientated.¹⁷ Understandable perhaps as the system was built from the ground up by clinicians and significantly without patient input or reference to existing models of assessing customer satisfaction. Further to that, the elements of service evaluation that cannot be examined by PASCOM-10 such as equity, accessibility, structure, or economy arguably have their routes in healthcare management and public policy, and as such are areas that clinicians are inherently less focused on.

Despite its poor fit with service evaluation models, PASCOM-10 does serve a useful role as an instrument for evaluating podiatric surgery with reference to clinical and patient focused outcomes. As such, PASCOM-10 can be utilised as part of a wider service evaluation strategy. ■

REFERENCES

1. Twycross A, Shorten A, Service evaluation, audit and research: what is the difference? *Evid Based Nurs* 2014; **17**: 65–66. doi:10.1136/eb-2014-101871.
2. Bowling A, *Research Methods in Health*. 4th Edn. Maidenhead: Open University Press, 2014.
3. NHS Institute. Plan, Do, Study, Act (PDSA) 2008. http://www.institute.nhs.uk/quality_and_service_improvement_tools/quality_and_service_improvement_tools/plan_do_study_act.html (accessed March 30, 2016).
4. National Research Ethics Service. *Defining Research* 2009:1–8.
5. van Tiel FH, Elenbaas TWO, Voskuilen BMAM, Herczeg J, Verheggen FW, Mochtar B, et al. Plan-do-study-act cycles as an instrument for improvement of compliance with infection control measures in care of patients after cardiothoracic surgery. *J Hosp Infect* 2006; **62**: 64–70. doi:10.1016/j.jhin.2005.05.016.
6. Wheatland B, Porter C, Gilles M, Greenfield C, Larson A, Initiating a PDSA cycle—improving management of diabetes in rural WA. *Aust Fam Physician* 2006; **35**: 650–652.
7. Büyükköçkan G, Çifçi G, Güleriyüz S, Strategic analysis of healthcare service quality using fuzzy AHP methodology. *Expert Syst Appl* 2011; **38**: 9407–9424. doi:10.1016/j.

- eswa.2011.01.103.
8. Donabedian A, Special article: The quality of care: How can it be assessed? *JAMA* 1988; **260**: 1743–1748
 9. Reeve C, Humphreys J, Wakeman J, A comprehensive health service evaluation and monitoring framework. *Eval Program Plann* 2015; **53**: 91–98. doi:10.1016/j.evalprogplan.2015.08.006.
 10. Mitchell PH, Ferketich S, Jennings BM, Quality health outcomes model. American Academy of Nursing Expert Panel on Quality Health Care. *Image J Nurs Sch* 1998; **30**: 43–46
 11. Parasuraman A, Zeithaml V, Berry L, A conceptual model of service quality and its implications for future. *J Mark* 1985; **49**: 41–50. doi:10.2307/1251430.
 12. Mečev D, Goleš Kardum I, Primary Healthcare Service Quality Measurement : Servqual Scale. *Ekonom Vjesnik / Econviews* 2015; XXVIII: 161–77
 13. Lazarus IR, Novicoff WM, Six sigma enters healthcare mainstream. *Manag Healthc Exec* 2004; **14**: 26–32
 14. Yun EK, Chun KM, Critical to quality in telemedicine service management: application of DFSS (Design for Six Sigma) and SERVQUAL. *Nurs Econ* 2008; **26**: 384–388
 15. *Collins Compact English Dictionary*, 3rd Edn. Glasgow: Harper Collins, 1994.
 16. *The Free Medical Dictionary*. Quality assurance | definition of quality assurance by Medical dictionary 2016. <http://medical-dictionary.thefreedictionary.com/quality+assurance> (accessed March 30, 2016).
 15. Maxwell RJ, Quality assessment in health. *Br Med J (Clin Res Ed)* 1984; **288**: 1470–1472. doi:10.1136/bmj.288.6428.1470.
 16. Maher A, Kilmartin TE, Patient Reported Outcomes; A new direction for podiatric surgery? *Pod Now* 2011; **13**: 36–37
 17. The Health Foundation. *Evaluating Healthcare Quality Improvement*. Summ Learn 2011.
 18. Renwick P, Quality assurance in podiatry. *Int J Health Care Qual Assur* 1992; **5(6)**.
 19. Borthwick AM, Challenging medical dominance: podiatric surgery in the National Health Service. *Br J Pod* 1999; **2**: 75–83
 20. Borthwick AM, Dowd O, Medical dominance or collaborative partnership? Orthopaedic views on podiatric surgery. *Br J Pod* 2004; **7**: 36–42
 21. Price M, Tasker J, Taylor NG, Putting the knife to the test. *Pod Now* 2000; **3**: 455–460
 22. Farrar MJ, Pickard JM, Binns M, Ambulatory forefoot day-case surgery. *Ambul Surg* 1995; **3**: 97–99
 23. Kilmartin TE, Podiatric Surgery in a Community Trust; a review of activity, surgical outcomes, complications and patient satisfaction over a 4 year period. *Foot* 2001; **11**: 218–227. doi:10.1054/foot.2001.0721.
 24. Tollafeld DR, Parmar DG, Setting standards for day care foot surgery . A quinquennial review . Part I. *Br J Podiatr Med Surg* 1994; **6**: 7–20
 25. Parker J, Nester CJ, Long AF, Barrie J, The problem with measuring patient perceptions of outcome with existing outcome measures in foot and ankle surgery. *Foot Ankle Int / Am Orthop Foot Ankle Soc [and] Swiss Foot Ankle Soc* 2003; **24**: 56–60. doi:10.1177/107110070302400109.
 26. Beeson P, The surgical treatment of hallux limitus/rigidus: A critical review of the literature. *Foot* 2004; **14**: 6–22. doi:10.1016/j.foot.2003.09.001.
 27. Kitaoka HB, Alexander I, Adelaar RS, Nunley JA, Myerson MS, Sanders M, Clinical rating systems for the ankle-hindfoot, midfoot, hallux, and lesser toes. *Foot Ankle Int* 1994; **15**: 349–353
 28. Guyton GP, Theoretical limitations of the AOFAS scoring systems: an analysis using Monte Carlo modeling. *Foot Ankle Int* 2001; **22**: 779–787
 29. SooHoo NF, Shuler M, Fleming LL, Evaluation of the validity of the AOFAS Clinical Rating Systems by correlation to the SF-36. *Foot Ankle Int / Am Orthop Foot Ankle Soc [and] Swiss Foot Ankle Soc* 2003; **24**: 50–55. doi:10.1177/107110070302400108.
 30. Schneider W, Knahr K, Surgery for hallux valgus. The expectations of patients and surgeons. *Int Orthop* 2001; **25**: 382–385. doi:10.1007/s002640100289.
 31. Tai CC, Ridgeway S, Ramachandran M, Ng VA, Devic N, Singh D, Patient expectations for hallux valgus surgery. *J Orthop Surg* 2008; **16**.
 32. Wilkinson AN, Maher AJ, Patient expectations of podiatric surgery in the United Kingdom. *J Foot Ankle Res* 2011; **4**: 27. doi:10.1186/1757-1146-4-27.
 33. Claisse PJ, Jones LA, Mehata R, Reporting foot surgery outcomes in everyday practice: Using a foot-related quality of life measure. *Br J Pod* 2005; **8**: 112–117
 34. Maher, AJ, Metcalfe SA, A report of UK experience in 917 cases of day care foot surgery using a validated outcome tool. *Foot* 2009; **19**: 101–106. doi:10.1016/j.foot.2009.01.002.
 35. Kind P, Dolan P, Gudex C, Williams A, Variations in population health status: results from a United Kingdom national questionnaire survey. *BMJ Br Med J* 1998; **316**: 736–741. doi:http://dx.doi.org/10.1136/bmj.316.7133.736.
 36. Macran S, Kind P, Collingwood J, Hull R, McDonald I, Parkinson L, Evaluating podiatry services: Testing a treatment specific measure of health status. *Qual Life Res* 2003; **12**: 177–188. doi:10.1023/A:1022257005017.
 37. Dawson J, Coffey J, Doll H, Lavis G, Cooke P, Herron M, et al. A patient-based questionnaire to assess outcomes of foot surgery: Validation in the context of surgery for hallux valgus. *Qual Life Res* 2006; **15**: 1211–1222. doi:10.1007/s11136-006-0061-5.
 38. Fardon L, Barnes A, Littlewood K, Harle J, Beecroft C, Burnside J, et al. Clinical audit of core podiatry treatment in the NHS. *J Foot Ankle Res* 2009; **2**: 7. doi:10.1186/1757-1146-2-7.
 39. Bennett PJ, Patterson C, Wearing S, Baglioni T, Development and validation of a questionnaire designed to measure foot-health status. *J Am Podiatr Med Assoc* 1998; **88**: 419–428. doi:10.7547/87507315-88-9-419.
 40. Barnett S, Campbell R, Harvey I, The Bristol Foot Score: developing a patient-based foot-health measure. *J Am Podiatr Med Assoc* 2005; **95**: 264–272. doi:95/3/264 [pii].
 41. Budiman-Mak E, Conrad KJ, Roach K, The Foot Function Index: A measure of foot pain and disability. *J Clin Epidemiol* 1991; **44**: 561–570
 42. Bennett PJ, Patterson C, Dunne MP, Health-related quality of life following podiatric surgery. *J Am Podiatr Med Assoc* 2001; **91**: 164–173
 43. Trevethan R, Evaluation of two self-referent foot health instruments. *Foot* 2010; **20**: 101–108. doi:10.1016/j.foot.2010.07.001.
 44. Dawson J, Doll H, Coffey J, Jenkinson C, on behalf of the Oxford. Responsiveness and minimally important change for the Manchester-Oxford foot questionnaire (MOXFQ) compared with AOFAS and SF-36 assessments following surgery for hallux valgus. *Osteoarthritis Cartil* 2007; **15**: 918–931. doi:10.1016/j.joca.2007.02.003.
 45. Dawson J, Boller I, Doll H, Lavis G, Sharp R, Cooke P, et al. Minimally important change was estimated for the Manchester-Oxford Foot Questionnaire after foot/ankle surgery. *J Clin Epidemiol* 2014; **67**: 697–705. doi:10.1016/j.jclinepi.2014.01.003.
 46. Alvey J, Palmer S, Otter S, A comparison of the readability of two patient-reported outcome measures used to evaluate foot surgery. *J Foot Ankle Surg* 2012; **51**: 412–414. doi:10.1053/j.jfas.2012.03.001.
 47. Maher AJ, Kilmartin TE, An analysis of Euroqol EQ-5D and Manchester Oxford Foot Questionnaire scores six months following podiatric surgery. *J Foot Ankle Res* 2012; **5**: 17. doi:10.1186/1757-1146-5-17.
 48. Maher AJ, Kilmartin TE, Patient reported outcomes following the combined rotation scarf and Akin's osteotomies in 71 consecutive cases. *Foot* 2011; **21**: 37–44. doi:10.1016/j.foot.2010.11.002.
 49. Harrison T, Fawzy E, Dinah F, Palmer S, Prospective assessment of dorsal cheilectomy for hallux rigidus using a patient-reported outcome score. *J Foot Ankle Surg* 2010; **49**: 232–237. doi:10.1053/j.jfas.2010.02.004.
 50. Rudge G, Tollafeld D, A critical assessment of a new evaluation tool for podiatric surgical outcome analysis. *Br J Pod* 2003; **6**: 109–119
 51. Taylor NG, Tollafeld DR, Rees S, Does patient satisfaction with foot surgery change over time? *Foot* 2008; **18**: 68–74. doi:10.1016/j.foot.2008.01.003.
 52. Alhashem AM, Alquraini H, Chowdhury RI, Factors influencing patient satisfaction in primary healthcare clinics in Kuwait. *Int J Health Care Qual Assur* 2011; **24**: 249–262. doi:10.1108/09526861111116688.
 53. McKinley RK, Stevenson K, Adams S, Manku-Scott TK, Meeting patient expectations of care: the major determinant of satisfaction with out-of-hours primary medical care? *Fam Pract* 2002; **19**: 333–338. doi:10.1093/fampra/19.4.333.
 54. Shelton PJ, *Measuring and Improving Patient Satisfaction*. Gaithersburg: Aspen, 2000.
 55. Fitzpatrick R, Surveys of patient satisfaction: II--Designing a questionnaire and conducting a survey. *BMJ* 1991; **302**: 1129–1132. doi:10.1136/bmj.302.6785.1129.