CHAPTER 1

The Importance of Accurate Assessment and Outcome Measurement

OVERVIEW

This chapter focuses on the requirement of allied health professionals (AHPs) to undertake thorough and accurate assessment and measurement. Developments and policy directions in health and social care practice in recent years include:

- a demand for evidence-based practice;
- a shift towards the use of standardised assessments;
- a requirement to measure outcomes and demonstrate effectiveness;
- a focus on person-centred practice;
- a demand for robust governance and audit activities;
- and the use of standards, care pathways, protocols, and guidelines.

The chapter discusses some of the advantages and limitations of standardised versus non-standardised tests. We also explore the complexity of assessment, including the challenges of measuring human behaviour and the impact of the environment, and reflect upon how such complexities influence what can be measured and the adequacy of these measurements.

QUESTIONS TO CONSIDER

What is the relationship between assessment, evaluation, and outcome measurement?

What is evidence-based practice?

How do you track down the best evidence?

What is the difference between a standardised and non-standardised assessment?

What is the difference between a standard, a guideline, and a protocol?

How does human function influence assessment and outcome measurement?

Principles of Assessment and Outcome Measurement for Allied Health Professionals: Practice, Research and Development, Second Edition. Alison J. Laver-Fawcett and Diane L. Cox.

ASSESSMENT AS A CORE PART OF THE THERAPY PROCESS

Assessment is a core component of health and social care. We defined **assessment** in the *Introduction* as the overall process of selecting and using multiple data collection tools and various sources of information to inform decisions required for guiding therapeutic intervention during the whole therapy process. Assessment involves interpreting information collected to make clinical decisions related to the needs of the person, the appropriateness and nature of our interventions, and the evaluation of the outcomes.

Assessment is an essential part of a quality service and the health care process, and is central to the management of any disability. The health care process has been described as (Austin and Clark 1993, p. 21):

1. a needs analysis of the client;
2. identification of what service needs to be provided;
3. identification of the provider of the service;
4. provision of the service;
5. evaluation of the service provided.

Assessment is the first step in the health care process and provides the foundation for effective treatment. Assessment occurs again at the end of the health care process in the form of evaluation. Re-assessment is necessary at several stages during the process 'service provision' because without thorough and accurate assessment the intervention selected may be inappropriate and/or ineffective (see Figure 1.1).

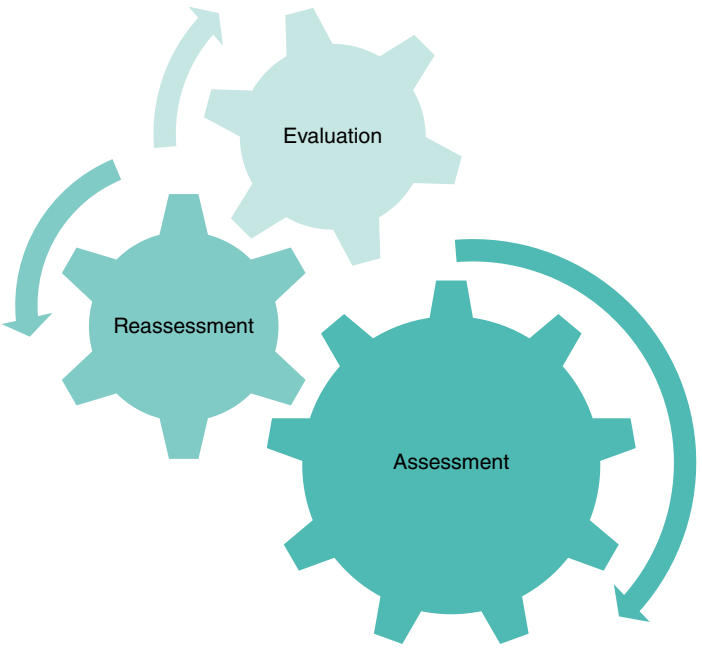


FIGURE 1.1 The relationship between assessment, reassessment and evaluation.

THE IMPACT OF HEALTH AND SOCIAL CARE POLICY ON ASSESSMENT PRACTICE

The organisational and policy context for health and social care has been under frequent change and reform, particularly over the past two decades. In recent years, the provision of health and social care has been exposed to a more market-oriented approach in which government fundholders, commissioners, and organisations that procure therapy services have become more concerned about 'value for money' and require assurances that the service provided is both clinically effective and cost-effective. The demand for cost-effective health care is obliging AHPs to be able to prove the efficacy and efficiency of their interventions. In the current policy context that focuses on cost-effectiveness, quality, standards, value, and evidence-based practice (EBP) the ability to demonstrate service outcomes has become increasingly important (Rycroft-Malone 2004; Rycroft-Malone et al. 2004). In 2014, Greenhalgh cautioned us to return to real evidence-based [medicine] practice, characterised by expert judgement and shared decision making (Greenhalgh, Howick, and Maskrey 2014).

An emphasis on clinical governance means that therapists are more overtly responsible for the quality of their practice and this is reflected in an increase of evidence-based practice (Veenstra et al. 2017). AHPs need to be aware of the reasons that drive their practice, it is only reasonable to be influenced by financial and political drivers when the resultant change in practice yields true benefits for service users. Unsworth (2000) noted 'pressures to document outcomes and demonstrate the efficacy of occupational therapy intervention arise from fiscal restraints as much as from the humanitarian desire to provide the best quality health care to consumers. However, measuring outcomes is important in facilitating mutual goal setting, increasing the focus of therapy on the client, monitoring client progress, as well as demonstrating that therapy is valuable' (p. 147).

THE DEMAND FOR EVIDENCE-BASED PRACTICE

Evidence-based practice is commonly referred to as EBP. AHPs should explicitly be working towards achieving EBP in all areas of their practice. EBP has developed from work on evidence-based medicine (EBM), EBP expands the concept of EBM to apply across all health care professionals. *So what is evidence-based medicine?* EBM has been defined as:

> *the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research.*
>
> (Sackett et al. 1996, p. 71)

Sackett and his colleagues further described 'individual clinical expertise' as the 'proficiency and judgment that individual clinicians acquire through clinical experience and clinical practice'. They stated that a clinician's increasing expertise can be demonstrated in a number of ways 'especially in more effective and efficient diagnosis and in the more thoughtful identification and compassionate use of individual patients' predicaments, rights, and preferences in making clinical decisions about their care'.

SO WHAT IS EVIDENCE-BASED PRACTICE?

EBP focuses on making the best decisions for each client and using the best information available (Law and MacDermid 2014). The knowledge and use of evidence-based practice by AHPs in the United Kingdom (UK) can differ across the professions (Upton and Upton 2006). Driever (2002) and Rycroft-Malone et al. (2004) have suggested that evidence needs to be drawn from multiple sources such as standards, evaluation data, research, clinical experience, patient experience, values and circumstances, and the local practice context. Engaging in practices that are driven solely by research evidence and/or by organisational factors, are at odds with the intent of EBP as outlined by the founders, and could shape the AHP's practice, outside of a professions philosophy, and the client's needs (Gustafsson, Molineux, and Bennett 2014). To identify the best available external evidence AHPs need to seek relevant research, and should particularly seek patient-centred clinical research into the accuracy and precision of standardised tests and the efficacy of therapeutic interventions. When new evidence is acknowledged sometimes it can invalidate previously accepted tests and treatments. AHPs are beholden to replace old unsubstantiated practices with evidence-based practices that are more effective, more accurate, more efficacious, and safer (Sackett et al. 1996).

IMPLEMENTATION OF EVIDENCE-BASED PRACTICE

In practice, implementing EBP may be difficult. There are many potential barriers to its full implementation, including lack of time, lack of access to literature, and lack of skills in finding and interpreting research (Upton and Upton 2006). In a later study by Upton et al. (2012) they demonstrated that newly qualified practitioners have a good understanding and knowledge of EBP, although they need support to translate their knowledge into practice. Some of the strategies that have been suggested for supporting evidence-based practice (Law and MacDermid 2014) include:

- fostering a supportive environment in the workplace for EBP;
- providing continuing education to develop skills in literature searching, critical appraisal, and research methods;
- collaborating/participating in research evaluating therapy interventions;
- participating in or establishing a journal club;
- focusing on reading research articles that have a rigorous study design, or reviews that have been critically appraised;
- accessing evidence-based clinical guidelines.

In order to use evidence it is necessary to undertake a number of tasks, search for and locate the evidence related to a specific clinical question.

- Appraise the evidence collected.
- Store and retrieve the evidence when required.
- Ensure the body of evidence used to inform clinical decisions is kept updated.
- Communicate the findings from the evidence and use these findings in clinical practice (Belsey and Snell 2003).

Greenhalgh et al. (2014) suggested that any evidence must be individualised for the person. They reminded us that evidence-based practice relies on us being able 'to individualise evidence and share decisions through meaningful conversations in the

context of a humanistic and professional clinician–patient relationship' (p. 5). Mickan et al. (2019) following a small-scale study suggested that 'a tailored small group EBP education intervention can enhance AHPs' self-efficacy to develop answerable questions, search the literature, critically appraise, apply and evaluate research evidence. Through practicing these behaviours and sharing new learning with their peers, allied health professionals can enhance their capability and motivation to use research evidence to potentially improve clinical practice' (p. 131).

SO HOW DO YOU TRACK DOWN THE BEST EVIDENCE?

In terms of databases, a good place to start is the **Cochrane Library** (https://www.cochranelibrary.com/about/about-cochrane-library#databases [accessed 2 April 2019]), which provides a collection of separate databases. These provide coverage of evidence-based reviews, controlled trials, and clinical answers. The databases are:

1. The Cochrane Database of Systematic Reviews (CDSR)
2. Cochrane Central Register of Controlled Trials (CENTRAL)
3. Cochrane Clinical Answers.

BMJ Best Practice (https://bestpractice.bmj.com/info/toolkit/discuss-ebm/what-is-the-best-evidence-and-how-to-find-it [accessed 2 April 2019]) suggest two further useful ways to find the best evidence available:

1. Pick the best systematic review
2. Read trustworthy guidelines.

PROSPERO is an international prospective register of systematic reviews (https://www.crd.york.ac.uk/prospero [accessed 2 April 2019]) includes structured abstracts of systematic reviews, by the Centre for Reviews and Dissemination in York.

The **Scottish Intercollegiate Guidelines Network** (SIGN) has published many clinical guidelines of relevance to AHPs. These can be accessed at www.sign.ac.uk (accessed 2 April 2019).

LEVELS OF EVIDENCE AND GRADES OF RECOMMENDATIONS

Previously, when examining and reporting on evidence, researchers and clinicians applied a grading system, for example the system proposed by Gray (2001):

- Level I: systematic review of multiple well-designed randomised controlled trials (RCTs). The term meta-analysis is used to describe quantitative approaches to synthesising evidence from multiple randomised controlled trials.
- Level II: one properly designed RCT of appropriate size.
- Level III: well-designed trials without randomisation single group pre–post cohort, time series or matched control studies.
- Level IV: well-designed non-experimental studies from more than one centre or research group.
- Level V: opinions of respected authorities, based on clinical evidence, descriptive studies, or reports of expert committees.

This system has been used in a number of therapy guidelines.

In 2004, the Grading of Recommendations Assessment, Development and Evaluation (GRADE), Working Group (http://www.gradeworkinggroup.org) proposed a system for grading the quality of evidence and the strength of recommendations that can be applied across a wide range of interventions and contexts. The GRADE system offers four levels of evidence quality: high, moderate, low, and very low (Guyatt, Cook, and Haynes 2004; Guyatt et al. 2008a), and classifies recommendations as strong or weak (Guyatt et al. 2008b).

Balshem et al. (2011) further the work of the GRADE working group and explain in detail what evidence is and is not (Table 1.1).

Table 1.2 summarises GRADE's (Balshem et al. 2011) approach to rating the quality of evidence, which begins with the study design (trials or observational studies) and addresses five reasons to possibly rate down the quality of evidence: risk of bias; inconsistency; indirectness; imprecision; publication bias. The table also suggests three reasons to possibly uprate the quality: large effect; dose response; and all plausible residual confounding (p. 404).

Signpost, see *Chapter 10: Selecting and Appraising Assessments and Outcome Measurements*.

The key to using the evidence is the ability to critically appraise it and make decisions as to whether the evidence is robust and whether it applies to your clinical situation and should be used to influence your practice. Critical appraisal has been defined as 'a method of assessing and interpreting the evidence by systematically considering its validity, results and relevance to the area of work considered' (Belsey and Snell 2003, p. 2). Criteria for examining the quality of research studies in order to assess the evidence are provided by Scottish Intercollegiate Guidelines Network (SIGN; www.sign.ac.uk [accessed 20 May 2019]):

- clear aim stated
- appropriate sampling strategy applied
- valid and reliable measurement tools used

TABLE 1.1 Significance of the four levels of evidence.

Quality level	Current definition (2011)	Previous definition (2004)
High	We are very confident that the true effect lies close to that of the estimate of the effect	Further research is very unlikely to change our confidence in the estimate of effect
Moderate	We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different	Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate
Low	Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect	Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate
Very low	We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect	Any estimate of effect is very uncertain

Source: Balshem et al. (2011).

TABLE 1.2 GRADE approach to rating the quality of evidence.

Study design	Initial quality of a body of evidence	Lower if	Higher if	Quality of a body of evidence
Randomised trials	High ⟹	Risk of bias –1 Serious –2 Very serious Inconsistency –1 Serious –2 Very serious Indirectness –1 Serious –2 Very serious Imprecision –1 Serious –2 Very serious Publication bias –1 Likely –2 Very likely	Large effect +1 Large +2 Very large Dose response +1 Evidence of a gradient All plausible residual confounding +1 Would reduce a demonstrated effect +1 Would suggest a spurious effect if no effect was observed	High (four plus: ⊕⊕⊕⊕) Moderate (three plus: ⊕⊕⊕◯) Low (two plus: ⊕⊕◯◯) Very low (one plus: ⊕◯◯◯)
Observational studies	Low ⟹			

Source: Balshem et al. (2011).

- adequate literature review provided
- all participants accounted for adequately
- statistical methods described fully and were appropriate
- statistical significance assessed
- outcomes clearly stated
- population similar to the clinical group of interest
- bias addressed.

Assessment is complex and the therapist needs to take many inter-relating factors into consideration. Therefore, assessment requires careful planning and conscious decision making in order to select the optimum assessment strategy for a particular client's needs. It is unlikely that one assessment will be suitable for all people with a particular diagnosis, so the AHP needs to combine the best evidence with a client-centred approach.

REFLECTION POINT

Now we have explored what evidence-based practice is, you can reflect upon your own assessment practice, or the assessment approaches that you have observed whilst on clinical placement if you are a student.

To assist you with reflecting on how much your practice is based on evidence, please turn to 'Worksheet 1.1', which you will find at the end of this chapter.

THE APPLICATION OF STANDARDISED ASSESSMENTS

A standardised assessment 'has a set, unchanging procedure' that the AHP must follow precisely when administering it; standardised assessments also require 'a consistent system for scoring' (RCOT 2020). The use of standardised assessments helps

to 'ensure minimal variation in the way [tests are] carried out at different times and by different testers'. Reducing the amount of variation in test administration helps to make a test more reliable when it is applied over time or used by different AHPs. Test scores need to be stable over time and across testers if the results are to be used to measure clinical change in order to evaluate outcomes.

Signpost: For more details about standardisation, see *Chapter 7: Standardisation* and *Chapter 14: Test Development*.

Historically, AHPs have favoured the use of non-standardised assessments, particularly informal interview and unstructured observation (for example of movements, posture, and the observation of activities of daily living). AHPs have adapted existing standardised tests to suit their clinical environment (for example, see Shanahan 1992), with a trend towards the development of assessments on an individual department or service basis. This has the advantage that the assessment process can be tailored to the particular client group and to the practice environment. However, a major limitation is that majority assessments 'home grown' in individual departments are not rigorously standardised, nor are they backed by research that examines their reliability and validity (see Chapters 7 and 8).

Standardisation is defined as: 'made standard or uniform; to be used without variation; suggests an invariable way in which a test is to be used, as well as denoting the extent to which the results of the test may be considered to be both valid and reliable' (Hopkins and Smith 1993, p. 914).

Standardised test/measure/assessment/instrument has been defined as a: 'published measurement tool, designed for a specific purpose in a given population, with detailed instructions provided as to when and how it is to be administered and scored, interpretation of the scores, and results of investigations or reliability and validity' (Cole et al. 1995, p. 22).

In the environment of evidence-based practice, AHPs are being encouraged to utilise more standardised assessments in their practice in order to ensure that their assessments are as valid and reliable as possible and to enable the measurement of outcomes. Previously, many of the standardised tests that AHPs adopted were not developed by AHPs and were 'borrowed' from other fields, such as experimental and clinical psychology (see McFadyen and Pratt 1997). A disadvantage of this practice of 'borrowing' tests from other disciplines was that the tests did not always fit well with AHPs' philosophy and practice and the use of standardised tests was often rejected because they lacked good clinical utility and face validity (see *Chapter 8*: *Validity and Clinical Utility*). As a result, there was a need for AHPs to develop valid, reliable, sensitive, and clinically useful assessments of people's functional performance (Fisher and Short-DeGraff 1993). The last 20 years have seen developments in AHP research that have led to an increase in the number of standardised assessments that have been developed by AHPs. Clinicians now have a much wider choice of suitable standardised assessments from which to select appropriate measures for their client group.

AHPs have tended to undertake a formal assessment on referral and then informally monitor the person's progress during treatment. With the emphasis on evidence-based practice, it is no longer sufficient for AHPs to undertake one assessment to provide a baseline from which to plan treatment; ongoing evaluative assessment is also required to monitor the effectiveness of intervention in a reliable and sensitive manner.

THE USE OF STANDARDISED VERSUS NON-STANDARDISED ASSESSMENTS

Previously AHPs' assessment tasks and protocols were subjective and decentralised and 'the norms against which the patient's performance was judged was based upon the AHP's testing and treatment experiences with previous patients' (Borg and Bruce 1991, p. 541). As the allied health professions developed and strived to build a more scientific foundation for practice, there was an identified need for assessment processes to become standardised, evidence-based, and more centralised. However, even today a significant proportion of AHPs continue to adopt predominantly non-standardised forms of assessment. *NB: @OTalk data May 2019*.

Historically, several authors (e.g. Eakin 1989; McAvoy 1991) have discussed the trend for AHPs to continually reinvent the wheel in terms of the assessment tools they use. This was and is exemplified by the number of 'home-grown checklists' that clutter our practice, and the tendency to alter standardised assessments rather than identify appropriate AHP measures. There are a number of reasons why AHPs continue to use non-standardised assessments. For example, AHPs have reported the following reasons (Hong 1996; Hatfield and Ogles 2007; Laver 1994; @OTalk, May 2019):

- a lack of suitable standardised assessments;
- poor resources limit their ability to purchase standardised measures;
- limited access to training on the specifics of the assessment leading to difficulty in interpreting scores;
- standardised assessments can be lengthy to administer and AHPs report that they do not have the time or the length of the test makes it too tiring for patients;
- non-standardised assessments are flexible in terms of procedures, settings, and the manner in which the assessment is administered and are, therefore, perceived as being more client-centred;
- non-standardised assessments are seen as useful for observing functional ability in the person's home environment, for addressing the qualitative aspects of performance, and for exploring the dynamics between the client and caregiver.

Neale (2004) described the difficulty with standardised assessments and outcome measures. She reported that, in her work setting comprising a rehabilitation ward and stroke unit, her team 'use the Barthel ADL Index (Mahoney and Barthel 1965) which is completed at the weekly multi-disciplinary meeting . . . but it is not sensitive to the changes we see in patients during rehabilitation . . . the person can have the same score but still be showing marked improvement. We bemoan the Barthel, but the same difficulty arises with the other ADL assessments' (pp. 25–26). She commented on the issue of time: 'using a test takes up at least one treatment session to administer and more time to evaluate' (p. 25).

However, Neale (2004) also provided an example of how the use of a standardised assessment helped to identify a previously undiagnosed deficit:

> *I have acquired various standardised assessments for the department over the years. I do not use any with every patient. I learnt early that this may mean I miss things – when I first had the Balloons Test (Edgeworth et al. 1998), I practiced on one 'well recovering' stroke patient. Neither she nor I had noticed any indication of inattention in hospital. The test showed she missed the bottom left quadrant – and she subsequently reported the effects when serving food/covering a pie when at home. (p. 25)*

Another common practice has been to take different parts of standardised tests or individual test items and integrate these into a 'therapist-constructed' tailored assessment battery for a specific client group or service (Hong 1996). However, once the standard procedure for test administration and scoring has been changed, even in a small way, the reliability and validity of that part of the test or test item can no longer be guaranteed (see Chapters 7 and 8). Therefore, although the test items might have been generated from a standardised test the ensuing 'therapist-made' assessment cannot be viewed as standardised. A further limitation of this practice, of using test items/parts drawn from standardised tests, is that the original source of, or reference for, the test item is rarely recorded on the tailored assessment and forms. This means that, once the AHPs involved in developing the tailored assessment leave the service, the AHPs who replace them are unaware of the original sources and the rationale for the development of the tailored 'therapist-constructed' assessment battery. Consequently, AHPs using inherited 'therapist-constructed' assessments can find it difficult to justify the reasons for carrying out these non-standardised assessments (Hong 1996).

If AHPs are using non-standardised assessments, it is critical that they are fully aware of their limitations. The findings from a non-standardised assessment are open to interpretation and are, therefore, much more subjective than the findings gained from a standardised measure. Furthermore, because detailed procedures for administering and scoring the test are rarely available for non-standardised assessments, it is not possible for the AHP to reliably repeat the assessment with the client in order to evaluate the effects of treatment. It is even more unreliable if another AHP tries to repeat the assessment with the same client at a later time.

AHPs should not underestimate the consequences of continuing to use non-standardised assessments where standardised measures of the same construct or area of function exist. This was demonstrated in a study by Stewart (1999). Stewart compared the results of a non-standardised assessment with a standardised measure of severity of disability in a group of elderly people. The purpose of her study was to examine if there were differences in outcomes and explore the consequences for service entitlement. The results of the study indicated that the non-standardised measure had 'restricted ability to identify and measure accurately the degree of disability of older people' and 'that because of the limited psychometric rigour of the [non-standardized measure] one consequence for service provision may be that a vulnerable group, elderly frail people, are denied services unnecessarily' (p. 422). Stewart concluded that 'when clinical judgement is based on objective assessment arising from the use of standardized instruments rather than intuitive guesswork, occupational therapists' decision making can be seen to be more rational and consequently defensible' (p. 422).

BENEFITS OF APPLYING STANDARDISED MEASURES

The use of improved, appropriate, sensitive, and standardised measures within occupational therapy and physiotherapy research and clinical practice would aid these professions at several different levels (Duncan and Murray 2012; Jette et al. 2009):

- **Health care policy level:** in a wide sense the principles of current health care (clinical governance, evidence-based practice, demonstrable effectiveness) demand accountability and quality of service; funding for services is becoming increasingly linked to evidence of effectiveness and efficiency.

- **Perception of the AHPs:** it is essential that AHPs present their assessment data, interventions, and outcome data in a format that educates other professionals, service users, and lay persons about the unique roles that AHPs have in the inter-disciplinary team.
- **Research/theory – practice gap within the professions:** AHPs continue to experience a gap between theory and related research and what is actually occurring in clinical practice.
- **Dissemination of findings:** the use of standardised assessments and outcome measures in research and results disseminated in professional literature, may be incorporated into clinical practice more easily if similar scales are already in use in practice and AHPs are comfortable with implementing different standardised tools.
- **Clinical research endeavours:** a vast majority of therapy research involves small sample sizes and research undertaken at a single site or in non-practice settings (e.g. simulated environments within university programmes); if outcomes measures were a routine aspect of therapy, then clinically based research and multi-centre trials would be much easier to undertake.
- **AHP level:** the use of standardised measures can improve communication among practitioners, foster consistency, and reaffirm knowledge and skill (Lewis and Bottomley 1994).
- **Client level:** the client receives an improved service in which assessment and outcome data is based on reliable, valid, and sensitive measures.

In conclusion, many non-standardised 'therapist-constructed' assessments continue to be used in practice and have both strengths and limitations. AHPs should be clear as to the theoretical foundations of all their assessment procedures, including both standardised and non-standardised tests. Where components of standardised tests are used in a 'therapist-constructed' assessment battery, AHPs should be able to quote the original source and the rationale for the test item's use in the ensuing non-standardised assessment. In cases where non-standardised assessments are used without such theoretical underpinning or rationale, professional credibility and client welfare can be at risk. Inadequate, and even inaccurate, decisions may be made from non-standardised assessments that can have negative consequences for both individual client care and, where the effectiveness of physiotherapy and occupational therapy intervention cannot be reliably demonstrated, for the service provision as a whole.

THE REQUIREMENT TO DEMONSTRATE EFFECTIVENESS

So what do we mean by the term 'effectiveness'? An effect is the power to produce an outcome or achieve a result. Effectiveness, in a clinical setting, relates to whether or not the anticipated therapeutic outcome is achieved during the therapeutic process. So the effect of therapy is the identifiable outcome that can be recorded at an agreed point (often the end) of the therapeutic process. Clinical effectiveness (also referred to as effective practice) is achieved when an action, intervention or system does what it is intended to do (RCOT 2020).

Two related, but significantly different terms, are efficacy and efficiency. These are also important for AHPs to consider and are defined briefly, along with some other terms related to effectiveness and outcome measurement, in Table 1.3.

TABLE 1.3 Definition of terms related to effectiveness and outcome measurement.

Term	Definition
Effectiveness	Whether treatments do more good than harm in those to whom they are offered under the usual conditions of care, which may differ from those in the experimental situation. Effectiveness is the measure of the ability of a programme, project or work task to produce a specific desired effect or result that can be measured. Relates to outcomes, not the efficiency of performance (Center to Advance Palliative Care n.d.).
Clinical effectiveness	'The degree to which a therapeutic outcome is achieved in real-world patient populations under actual or average condition of treatment provision' (Maniadakis and Gray 2004, p. 27).
Cost-effectiveness analysis	An analysis that 'compares the costs and health effects of an intervention to assess whether it is worth doing from the economic perspective' (Phillips and Thompson 2003, p. 1). Costs are categorised as: direct costs for the service and patient, service costs (staff time, equipment, drugs), patient costs (transport, out-of-pocket expenses), indirect costs (production losses, other uses of time), intangibles (e.g. pain, suffering, adverse effects) (p. 2).
Efficiency	Measure of production or productivity relative to input resources. Efficiency refers to operating a programme or project, or performing work tasks economically. Relates to resources expended or saved, not the effectiveness of performance.
Efficacy	This involves assessing whether a treatment actually works for those who receive it under ideal conditions and is the province of research. It has been defined as 'the degree to which a therapeutic outcome is achieved in a patient population under rigorously controlled and monitored circumstances, such as controlled clinical trials' (Maniadakis and Gray 2004, p. 27).
Outcome measure	A standardised instrument used by AHPs to establish whether their desired outcomes have been achieved.
Performance measure	Generic term used to describe a particular value or characteristic designated to measure input, output, outcome, efficiency or effectiveness. Performance measures are composed of a number and a unit of measure. The number provides the magnitude (how much) and the unit is what gives the number its meaning (what) (Center to Advance Palliative Care n.d.).
Performance measurement	A management tool for enhancing decision making and accountability. Performance measurement as a strategic process is used to assess accomplishment of organisational strategic goals and objectives (Center to Advance Palliative Care n.d.).

Why do we need to demonstrate effectiveness? 'All professions that hope to advance their practices must take three giant leaps forward to achieve their goals. They must first **document the status and process of practice**, then **develop valid standards of practice** and always they must **test the outcome** of their actions on behalf of their clients' (Cole et al. 1995, p. 2). As Cole et al. pointed out 'not everything we do in the name of therapy is successful or the final word' (p. 5). We may use practices that have been handed down from generation to generation of AHPs because they appear beneficial and we feel they make a difference, but nowadays 'clients should be ensured some

appropriate level of outcome measurement' (p. 4) and 'individual therapists must determine what procedures are truly beneficial and directly related to outcomes' (p. 5).

So how do we demonstrate effectiveness? Standardised outcome measures are used to demonstrate whether or not your interventions are effective. Outcome data collected routinely will allow you to form a clearer idea over time about what aspects of your practice are effective and what aspects need to be changed, so you can base future treatment on the results of your findings with similar clients. Outcome measurement is undertaken by administering an outcome measure on at least two occasions. This is done to document change over time in the agreed focus of therapy in order to establish whether it has been influenced by the intervention to the anticipated degree and has achieved the desired outcome.

Cole et al. (1995) identified three basic standards for users of outcome measures:

- 'selecting the appropriate measure for a given population based on scientific evidence;
- administering the measure according to the developer's procedure;
- interpreting the results consistent with evidence of reliability and validity, and comparison to empirically derived norms of comparison group' (p. 171).

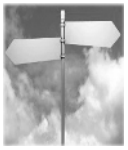
Signpost: For more information, see *Chapter 3: Purposes of Assessment and Measurement* and *Chapter 5: Test Administration Reporting and Recording*.

A FOCUS ON CLIENT-CENTRED PRACTICE

The World Health Organization (WHO 2001) emphasised that all health professionals should pay attention to insider perspectives of people with disability. In recent years, policy in the UK has had a greater focus on the service user being given adequate information to make an informed choice about his or her health and/or social care. Health and social care professionals are mandated to listen to the needs of the service user and respond to these identified needs as an integral part of any care package or therapeutic process (Clouston 2003; Edwards and Elwyn 2009). A series of National Service Frameworks (NSFs) have put an emphasis on placing the service user and his/her family at the centre of the health care process, not just as a service recipient.

Applying these principles means that the therapeutic intervention, whilst it may be influenced by guidelines, protocols, or standards, is not the same for each client with the same diagnosis. AHPs now have to consistently use self-report and proxy assessment methods to seek information about the wishes, needs, priorities, problems, and goals of the service user (and where appropriate the carer). AHPs have to analyse traditional observational assessment data in the light of self-report and proxy data and then negotiate the desired outcomes and therapeutic approach with the service user. AHPs have needed to develop client-centred outcome measures to capture self-report data reliably and provide robust evaluative measures of the client's and carer's perceptions and experience of the therapeutic outcome.

Signpost: For more information, see *Chapter 2: Methods of Assessment and Sources of Assessment Data*.



THE DEMAND FOR GOVERNANCE

'Clinical governance is a system for improving the standard of clinical practice' (Starey 2003, p. 1). The Department of Health (DoH) has defined clinical governance as a framework 'through which NHS organisations are accountable for continuously

improving the quality of their services and safeguarding high standards of care, by creating an environment in which clinical excellence will flourish' (2004, p. 29). Clinical governance emphasises the responsibility that health organisations and their staff have to monitor the quality of their services and to continually work towards modernisation and improvement. Social care organisations and their staff, as outlined in *Modernising Social Services* (DoH 1998), hold similar responsibilities. This document outlined three main priorities: promoting independence; improving protection; and raising standards. An aspect of this is *Best Value*, which means that staff have to provide their services based on clear standards related to both the quality and the cost of the service and that services have to be delivered in the most effective, economic, and efficient way. For more information, see the UK government website: https://www.gov.uk/government/news/clinical-governance-guidance (accessed 21 May 2019). The Health and Social Care Information Centre was a special health authority that became a statutory body on 1 April 2005; this changed its name to NHS Digital on 20 April 2016. The NHS Long Term Plan (2019) highlights the importance of 'strong governance and accountability mechanisms in place for systems to ensure that the NHS as a whole can secure the best value from its combined resources' (p. 111).

Clinical audit: Clinical audit has been defined 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 specific criteria. Where indicated, changes are implemented at an individual, team, or service level and further monitoring is used to confirm improvement in healthcare delivery.*
>
> (DoH 2004, p. 29)

Audit is the systematic and critical analysis of the quality of clinical care including diagnostic and treatment procedures, associated use of resources, outcomes and quality of life for clients (Johnston et al. 2000). Audit is a quality process that compares actual performance in a specific setting against agreed standards of practice.

THE USE OF STANDARDS, PROTOCOLS, GUIDELINES AND CARE PATHWAYS

What is the difference between a standard, a guideline, and a protocol? These three terms are defined briefly, along with some other relevant terms, in Table 1.4.

Practice guidelines: practice guidelines form part of the evidence base from which AHPs should work (see www.nice.org.uk/guidance). The National Institute for Health and Care Excellence (NICE) provides reviews of the evidence across broad health and social care topics. They are written on a clearly defined topic and require a systematic search in order to be based on the best available evidence. The development of practice guidelines involves the collection and review of:

- scientific evidence (literature reviews, meta-analyses, literature synthesis)
- professional opinions (experts)
- practice experience
- cost concerns.

TABLE 1.4 Definitions related to standards, protocols, and guidelines.

Term	Definition
Care pathway	'[A] pathway for a specific user group which determines locally agreed, multidisciplinary health practice and is based on the available guidelines and evidence' (DoH 2004, p. 29).
Standards	A basis for measurement. They provide a definite level of excellence. The Center to Advance Palliative Care (n.d.) defines a standard as an established measurable condition or state used as a basis for comparison for quality and quantity. The term 'standard' refers to a high level of quality, skill, ability, or achievement by which someone is judged. The Collins English Dictionary defines a standard as 'an accepted example of something against which others are judged or measured' or 'a level of quality'.
Protocols	Plans of care for clients presenting with similar conditions, diagnoses, or problems. The DoH (2001) defines a protocol as 'a plan detailing the steps that will be taken in the care or treatment of an individual' (p. 158).
Guidelines	Clinical guidelines are systematically developed statements that assist clinicians and clients in making decisions about appropriate treatments for specific conditions (NHS Executive 1996). Preferred practice guidelines provide the recommended approach to guide the provision of care related to a particular issue. They must be flexible to take into account the exceptions/variations needed to meet the wide range of client/family expectations and needs. Guidelines may be consensus- or evidence-based (Center to Advance Palliative Care n.d.).
Care management	The DoH (2001) defines this as 'a process whereby an individual's needs are assessed and evaluated, eligibility for service is determined, care plans are drafted and implemented, and needs are monitored and reassessed' (p. 152).
Care planning	'[A] process based on an assessment of an individual's assessed need that involves determining the level and type of support to meet those needs, and the objectives and potential outcomes that can be achieved' (DoH 2001, p. 152).
Care package	'[A] combination of services designed to meet a person's assessed needs' (DoH 2001, p. 152).

Once this information has been collected, draft guidelines are drawn up and a consensus and refining process is undertaken, which may involve:

- the input of experts;
- consensus conferences (usually involving representatives of the full range of stakeholders);
- methods for obtaining official commitment and sign-up from stakeholder organisations to the proposed guidelines;
- seeking any additional evidence and adding value judgements.

The output from this process would usually comprise:

- the clinical guidelines being formatted as a written document;
- publication and distribution of the guideline to all relevant staff/organisations;
- an implementation strategy to ensure that the guidelines lead to changes in practice where required.

Criteria for acceptable guidelines: Reinauer (1998) cites the work of Lohr (1997) who gives the following criteria for judging the quality of guidelines:

- Reliability and reproducibility
- Scientific validity
- Clinical applicability
- Clinical flexibility
- Clarity
- Multidisciplinary approach
- Scheduled review
- Documentation of procedures, evidence, etc.

Many clinical guidelines and statements of good practice highlight the importance of assessment.

For example, the *National Clinical Guidelines for Stroke*, which were developed by the Royal College of Physicians Intercollegiate Stroke Working Party (RCP 2016 [5th edition]), state that:

- Organisations and teams regularly involved in caring for people with stroke should use a common, agreed terminology and set of data collection measures, assessments, and documentation (Section 2.6.1).
- Measurement of function is central to the rehabilitation process.
- Many valid tools exist and it is important when considering the use of an assessment measure to understand which domain of the WHO ICF framework the instrument is measuring, and to ensure that the instrument is appropriate to the intervention in question (Wade 1992).
- Clinicians should be trained in the use of measurement scales to ensure consistent use within the team and to provide an understanding of their properties and limitations (Section 2.9).
- Routine screening should be undertaken to identify the person's level of functioning, using standardised measures (RCP 2016).

The Complexity of Assessment

Assessment involves highly complex skills that combine knowledge, experience, creativity, and original thought. From an outsider's viewpoint AHP assessment may look easy; an observer may think that it does not require a person to hold a degree in order to watch someone get dressed and to say whether s/he could do it or not, or to watch someone walk across a room and say whether s/he has problems with balance. Creek (1996) discusses the complexity of simple everyday activities, such as making a cup of tea, and explains how the therapeutic use of such activities requires training at an honours degree level. AHP assessment is actually very multifaceted and intricate.

The AHP needs to observe *how* the person performs and specify *where* and *when* s/he struggles. The AHP then hypothesises the *underlying causes* for the problems observed and records *how* the person responds to different prompts and cues. It is not enough to know that a person cannot manage a task, the AHP must also understand *why* in order to plan the appropriate treatment. For example, treatment will be very different for a person following a stroke who cannot dress owing to spasticity and reduced sensation in one arm compared to a person unable to dress because of visual neglect and body scheme deficits, although at first glance both the diagnosis and the functional problem may appear similar. The AHP has to use all available information and observations to estimate the person's *underlying capacity*, s/he then considers those observations and proxy report data about the person's *current function* and forms hypotheses for any *discrepancy* between likely capacity and actual functional performance. Then the AHP plans an intervention to support the person to maximise his/her capacity and reach his/her *full potential*. When developing an intervention the AHP has to *predict future outcomes* and plan *how* and *when* these outcomes will be measured in order to *evaluate the effectiveness* of the intervention.

There are several key reasons why physiotherapy and occupational therapy assessment is complex and needs to be multifaceted. These relate to the:

- nature of therapeutic practice;
- nature of human occupation and occupational performance;
- the complexity of measuring human function;
- influence of the demands of the assessment task;
- impact of the familiarity of the task;
- effect of the environment in which the assessment is undertaken;
- and the constraints of the practice setting.

These issues will now be explored briefly.

The Nature of Practice

> *The evolution of medicine and rehabilitation has been a mixture of science, philosophy, sociology, and intuition. Some of the finest practitioners may be some of the worst scientists. However, they may have an extraordinary intuitive science. Because of this fine mixture, it is difficult to quantify assessments, treatments, and outcomes. Nevertheless, this needs to be done.*
>
> (Lewis and Bottomley 1994, p. 139)

AHPs are engaged in practice that is focused upon recovery, rehabilitation, and remediation. They tend to use both quantitative and qualitative approaches to assessment. Consequently, some aspects of assessment are standardised, specific, and meticulous whilst other aspects are intuitive, fluid, and creative. AHPs have to balance, reconcile, and incorporate information from both approaches into the overall assessment process and resulting documentation. The proportion of art and science varies from AHP to AHP and is influenced by: the emphasis of their preregistration education and training; the influence of supervisors, mentors, and peers; the nature of their continuing professional development (CPD); the clinical setting in which they work; and the type of client group they serve.

AHPs are trying to consider the whole person during the assessment process. Therefore, the domain of concern for an assessment is very broad and covers different levels of function from pathophysiology to societal limitation (see *Chapter 11: Applying Models to Assessment and Outcome Measurement*). An AHP considers macro issues such as the person's environment, family support, roles, and values in addition to undertaking micro-level assessment of very specific areas such as range of motion and muscle tone.

The therapeutic process is person-centred. This means that each assessment should be individually tailored to the person and should lead to an individualised intervention programme. More frequently services are developing protocols for people with similar diagnoses or problems and AHPs will use such protocols to guide their choice of assessment tools and interventions for a client group. The AHP needs to gain a clear picture of the individual, which includes his/her past life, present situation and hopes for the future, and his/her roles, motivation, locus of control, attitudes towards his/her condition and towards therapy. The AHP uses this information to understand how the medical diagnosis and prognosis may impact upon that person's quality of life. As the assessment progresses, and the unique aspects of the person's presentation emerge, the AHP refines the assessment in order to target the specific therapeutic needs and goals of the person.

AHPs work in a wide variety of practice settings so they need to be able to conduct assessments in a range of environments. This may involve undertaking an assessment in a person's home or workplace, a hospital ward or outpatient clinic, a therapy department, a GP practice, a school classroom, or a nursing home. AHPs do not always have easy access to all the environments of relevance to a client and will use simulated environments for assessment. The accuracy of the simulated environment will have a significant impact on the usefulness of the assessment scores for the prediction of the person's likely functioning in his/her natural environment (Austin and Clark 1993). For example, a mobility assessment undertaken on an expanse of level lino flooring in a physiotherapy department may not produce a good predictor of the person's safety when mobilising on different types of flooring in the cluttered environment of his/her home.

Therapy is provided frequently within a multidisciplinary context. AHPs need to liaise with other professionals and share the assessment process and results obtained for each service user and for the client group as a whole. When working in a team it is important not to have too much overlap, such that several members of the team ask the person the same questions, nor should there be any gaps in the assessment, where members of the team assume that another professional has assessed that area. This means that good communication and a clear understanding of the role of each member of the team is critical for an efficient, effective, and thorough multidisciplinary assessment.

Another factor that complicates assessment in a multidisciplinary setting is that of attempting to evaluate outcomes.

How can you be sure that your intervention has led to the observed changes in function, rather than the intervention performed by another team member or combination of interventions working in conjunction?

This can create an issue for AHPs. We are being encouraged to measure outcomes and demonstrate the effectiveness of our intervention. However, in many

instances, we believe that our clients benefit from a multidisciplinary approach and that it would be unethical to withhold another intervention in order to limit potential confounding variables when measuring outcomes. The client's perspective in this has been well described by Bonnie Sherr Klein in her book *Slow Dance,* in which she describes her experience of having a stroke:

> *After my exalted [physiotherapist] told me I should stop my acupuncture sessions with Bernard, I didn't have much faith in him either. 'If you do so many therapies at once, how can we tell which one is working?' he asked. 'I don't give a damn which one works,' I muttered to myself. 'I just want to get better.' It seemed like typical professional chauvinism. Bernard said no one thing was responsible for my progress; we were a team, all of us, including me.*
>
> (Sherr Klein 1997, p. 220)

The Nature of Human Performance

Human behaviour is organised by roles. A **role** is a part played or a position held in a social context that fulfils an expected and/or chosen function and these roles are fulfilled through the performance of tasks, activities, and occupations. The individual sees **occupations** as part of his/her identity, and they can be categorised in terms of self-care, productivity and/or leisure occupations (RCOT 2020). An **activity** is a task or sequence of tasks, performed by an individual or a group that may contribute to an occupation or occupations (RCOT 2020). Whilst a **task** is defined as: 'a self-contained stage in an activity; a definable piece of performance with a completed purpose or product; a constituent part of an activity' (COT 2003, p. 60).

For AHPs **environment** means much more than the commonplace understanding of 'environment' as our physical surroundings; rather environment is defined as the set of circumstances and conditions (e.g. physical, social, cultural) in which a person lives, works and develops, that can shape and be shaped by occupational performance (RCOT 2020).

The performance of tasks, activities, and occupations can form everyday routines, which are habitual chains of behaviour with a fixed sequence, such as getting up, washed, dressed, and eating breakfast. Tasks, activities, and occupations also contribute to less frequent life events, such as giving birth to a child, planning a marriage ceremony, or achieving a qualification. Human behaviour is also organised in this way to enable some people to achieve exceptional things, such as a mountaineer climbing Everest, an athlete winning a race and becoming an Olympic medallist, or a person fighting for their life in a war zone. The ordinary or extraordinary things that people engage in each day are central to the manner in which each person lives his or her life. There are many factors that influence the occupations, activities, and tasks that people choose or feel compelled to do and which support or restrict their performance. These factors include wider environmental factors such as culture, norms, and values, and the person's social and physical environment and personal factors such as age, gender, personal capacity, and the impact of illness and adversity (Watson 2004). So not only must the AHP decide whether they will assess the person's ability through consideration of occupations and/or activities and/or tasks. They also have to assess the person's environment and evaluate the impact (whether supporting or limiting) of that environment on the person's ability to perform desired and necessary tasks, activities, and occupations.

Who we are, what we are, who we become, and how we achieve our dreams and aspirations are shaped by the tasks and activities we perform. However, these can also limit our potential and prevent us from achieving our goals and fulfilling our potential. Sometimes this is our choice, but for many people this results from a lack of opportunity. The constraints of their physical and sociocultural environment limit the variety and choice of their occupations (Watson 2004). As AHPs, we need to consider how this affects our clients, but we should also consider how this impacts the way in which we achieve our roles as AHPs.

For example:

Are we doing tasks and activities that could be delegated to other members of the team?

Is there an expectation to discharge patients in a set time frame that limits a full and personalised assessment process for each client?

Are the financial constraints of our organisation preventing us from purchasing a well-evidenced standardised assessment that we have identified as a valid and reliable outcome measure?

Each person has a unique set of experiences, values, norms, and expectations and these factors contribute to the nature of the therapeutic relationship formed between the client and AHP (Austin and Clark 1993, p. 22). People come to therapy with a unique set of roles, occupations, activities, and tasks. Although there are activities that everyone needs to do in some form or another, such as eating, sleeping, washing, toileting, and finding a way to move around, a large percentage of our activities are culturally and personally determined (see Abraham Maslow's 1943 work *Hierarchy of Needs*; and for use of Maslow's hierarchy by therapists, see Lewis and Bottomley 1994, pp. 70–71). This means that AHPs need to tailor their assessments for individual clients and cannot develop a standard process for assessment that can be applied in its entirety to every single client.

The Nature of Human Function and the Complexity of Measuring Outcomes

For AHPs, **function** is defined as the ability to perform tasks, activities and/or occupations to expected levels of competency. Dysfunction occurs when a person cannot perform tasks, activities and/or occupations to these normal standards of proficiency. Function is achieved through the interaction of performance components. These are subsystems within the individual, such as the motor system, the sensory system, or the cognitive and perceptual systems. As the interaction between the motor, sensory, perceptual, and cognitive systems is complex the definition of each system implicitly refers to the functioning of other systems. For example, Allport (1955) has defined perception as relating to our awareness of the objects or conditions about us and the impression objects make upon our senses.

Perception relates to the way things look, or the way they sound, feel, taste, or smell. Perception involves, to some degree, an understanding awareness, a 'meaning' or a 'recognition' of objects and the awareness of complex environmental situations as

well as single objects. This definition implicitly refers to both the sensory and cognitive systems. For example, before an awareness of objects and conditions is registered sensory stimuli have been received from the environment, transmitted by the visual, auditory, gustatory, olfactory, and/or somatosensory systems to the brain, and the cognitive system is involved with accessing information, stored in the memory, required to recognise stimuli in the context of experience. It appears that tightly defined experimental conditions are required in order to attempt to evaluate the discrete functioning of any one system. In practice settings, where the aim is to assess the individual in their everyday context, the imposition of such experimental conditions impinges on the ecological validity of assessment. Therefore, during clinical evaluation it is preferable to evaluate the motor, sensory, perceptual, and cognitive systems together.

Function is dynamic, not static, and this can make it challenging to obtain a 'true' baseline of function at the start of the therapy process. Health professionals are being encouraged to embrace EBP. This means that AHPs need to evaluate the effects of their intervention using outcome measures. When undertaking assessment to evaluate the effects of an intervention the AHP needs to be aware that the person's scores on an outcome measure are open to a degree of 'error' and s/he will need to take any confounding variables into consideration when interpreting the person's performance on the outcome measure. A person's functioning can be influenced by several factors, for example:

- changing levels of pain
- concentration
- anxiety
- fatigue
- response to a drug regime
- level of stiffness.

Therefore, a single assessment might not present a true and complete picture of the person's ability. Variability in a person's function can be more extreme for certain diagnoses. People with Parkinson's disease, for example, may have very different levels of ability depending on the timing and effects of their medication. An AHP should try to undertake different parts of the assessment on different occasions, varying the time of day and the assessment environment. Test anxiety can impact performance, and clients' performance often improves as their AHP becomes familiar and good rapport is established.

When evaluating the outcome of intervention the AHP must be aware that a person's function may change for many reasons. For example, improvements may be observed as a result of a specific intervention or the success of a combination of interventions. This is important because therapy is rarely the sole intervention and often is provided in a multidisciplinary context. Other factors, that may result in observed improvements in function include:

- a belief/hope that change in function is possible
- a placebo effect
- a strong sense of locus of control
- good copying strategies
- high motivation
- good rapport with the AHP
- and feelings of acceptance and support.

When undertaking assessment to provide an accurate baseline and/or evaluate the effects of an intervention the AHP needs to define the specific area to be measured and will need to consider any confounding variables when interpreting the person's performance on the outcome measure.

Another factor that can complicate the measurement of outcomes is the person's level of insight. The AHP needs to assess whether the person has insight into the nature and severity of his/her condition because the need for insight is fundamental to the success of the therapeutic process. A lack of insight can impact on the accuracy of any self-report data collected from the service user and can hinder the negotiation of treatment goals and the formulation of an agreed plan for intervention. Insight may improve during the intervention and this can enable a more realistic treatment plan to be renegotiated. However, when goals are renegotiated mid intervention, the baseline assessment, which founded the original treatment goals, may no longer be accurate or appropriate to the renegotiated treatment goals and this can lead to serious complications in the interpretation of any measures of outcome (Austin and Clark 1993).

Interventions sometimes span several weeks, months, or even years. AHPs should, therefore, be aware that habituation effects may impact self-report and proxy data when measuring outcomes over a long time period. Some people progress through the intervention period constantly adapting to the changes in their ability or symptoms; because of these adaptations in response to treatment the service user and carer may lose sight of his/her original level of function and not notice the degree of change that has occurred since the baseline assessment (Austin and Clark 1993).

Timing the evaluation is an important consideration. For example, if AHPs are concerned with long-term benefits of intervention for their clients then a final assessment at discharge does not provide the whole picture when measuring outcomes. One must not assume that function will always plateau post discharge. Sometimes some of the progress achieved during treatment can be lost post discharge when the service user no longer has the AHP for support and encouragement or fails to keep up with an exercise programme once therapy is terminated. For other people the skills, abilities, and attitudes they acquired during the intervention period can inspire progress and function continues improve over time (Austin and Clark 1993). When measuring outcomes it is important to consider the intervention period or number of therapy sessions that are anticipated in order to obtain the desired change. The timings of measurements are critical and the AHP needs to judge the spacing of measurement and not undertake the final measurement too early before the service user has had the opportunity to gain the maximum change possible.

The Influence of the Level of Task Demand

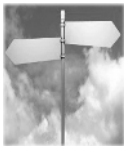
Performance is affected by how demanding or difficult a task is and by the person's capacity, motivation, experience, and knowledge. AHPs need to take these factors into account during assessment. Experience, knowledge, and capacity are interrelated. This relationship is complex and subject to individual variation, so these factors are difficult to separate and assess in isolation. How an AHP structures the assessment and their reasoning and interpretation of assessment data is critical to their ability to untangle these complex influences upon performance. Task demand has been defined as 'the amount of cognitive and physical skill required to perform the task' (Culler 1993, p. 218). When a person goes to perform a task they firstly obtain factual information about the demands of a task. From this information they

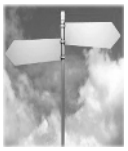
develop ideas, insights, and beliefs related to the task, and then create strategies to complete the task more efficiently.

A person's capacity, defined in terms of the amount of information that the central nervous system can handle and process, is limited. The brain has limits for the quantity of sensory information (experienced through the visual, tactile, auditory, olfactory, gustatory, and proprioceptive systems) that it can process at a time. For example, the auditory system can only process a certain amount of auditory stimulation at a time, which is why it is hard to concentrate on two people speaking simultaneously. All tasks place demands on the capacity of at least some of the body's sensory systems and, consequently, on the brain's ability to process sensory stimulation. The level and quality of a person's performance will be determined by the demands of a task if the demands of that task are within a person's capacity. For example, a person may have the capacity to perform two different tasks, such as eating cereal from a bowl with a spoon and eating a meal using a knife and fork. Although the person can do both tasks, they are likely to eat cereal with greater ease because it is a less demanding, easier, task. If the person reaches the maximum level of his/her capacity then performance will be limited by his/her capacity, not by the task demands.

Capacity alters in relation to both the normal developmental processes and to pathology. In terms of normal development, infants learn to use spoons before they learn to use knives and forks. Although organically based capacities decrease with age, many everyday tasks are considered to make relatively few demands, and on these tasks it is expected that performance will not vary with age (Welford 1993). However, some more complex tasks do load one or more capacities and performance can be a function of age. The onset of any limitation depends on the nature of the task demands, the individual's capacity, and on the rate at which capacities decline; i.e. the greater the capacity and the slower the rate of decline, the later will performance begin to decrease as a function of age (Craik 1977; Welford 1993). Capacity can be reduced as the result of an injury or illness. For example, a person who has experienced a stroke and who has associated motor and sensory deficits and a resultant limited capacity in the motor and sensory systems, may be unable to eat either using a spoon or using a knife and fork. The difference in task demand is not the issue, in this example, because the problems in task performance are related to the person's reduced motor and sensory capacity.

Performance at all ages is affected by the task demand, and the individual's capacity, experience, and knowledge. In addition, factors related to volition and societal expectations will also have an impact. Although all these factors (task demand, capacity, experience, knowledge, volition, and societal expectations) are acknowledged as important, it can be very difficult to distinguish between them and to identify the point at which a change in performance is related to pathology. This is why normative data provided in standardised normative assessments (see *Chapter 7: Standardisation*) is useful when an AHP needs to conduct a discriminative assessment (see *Chapter 3: Purposes of Assessment and Measurement*).





Some criterion-referenced assessments (see *Chapter 7: Standardisation*) take task demand into account and may present assessment items as a hierarchy from the simplest to the most complex task. For example, the Assessment of Motor Process Skills (AMPS; Fisher 1995) provides descriptions for a choice of Instrumental Activities of Daily Living (IADL) that have been calibrated through research to create a hierarchy from easiest to hardest task. Using hierarchies of task demand can save unnecessary testing time for both the AHP and client. For example, the Rivermead ADL Assessment (Whiting and Lincoln 1980) is structured in terms of a hierarchy of items comprising increasingly demanding personal and household tasks. The AHP

decides where on the hierarchy to begin testing, based on their hypothesis about which tasks the person may not be able to manage. If the person can perform the selected task then the AHP ensures s/he can perform the three preceding tasks and then progresses testing up the hierarchy until s/he fails to perform three consecutive tasks. Other assessments may be graded so that the person can be presented with progressively more demanding tasks as his/her ability increases, for example an assessment of meal preparation could be graded from using a pre-packaged cold meal to preparing a hot, three-course meal using raw ingredients (Culler 1993).

The Impact of Familiarity on Performance

Familiarity and practice influence performance. When a person practices a task over time the demands of the task are learned and the person becomes more efficient in the use of his/her capabilities related to performing that task; the task becomes perceived as easier. A good example is learning to drive a car. Two adults may have the same capacities but the person who is familiar with driving a car will be better at driving than the person with no driving experience. Another example is that of cooking, 'it is less demanding for a person to cook a familiar recipe from memory than to follow a new recipe from a cookbook' (Culler 1993, p. 218). Therefore, AHPs need to be aware of how familiar or novel assessment tasks are to their clients. In addition, following a reduction in capacity, AHPs can use practice and repetition to increase a person's task performance and use ongoing reassessment of the task to monitor progress. When repeating an assessment in this way, the AHP must be able to differentiate between changes that result because the assessment is now familiar and changes that have resulted in the person's capacity. Improvements in motor function are an example of this. Therefore, parallel forms of an assessment (see *Chapter 9: Reliability*) could be used, where an unfamiliar task of the same demand and assessing the same capacity is given in place of the familiar assessment task.

The Influence of Environment upon Performance

The environment in which an assessment is undertaken may also impact upon performance and can have an enabling or constraining effect on a person's function (Law et al. 1996). The term environment usually makes people think about the physical elements (including accessibility, architectural barriers, and structural adaptations) of a person's setting. However, AHPs need to think about the environment in a broader context. In the *International Classification of Functioning, Disability and Health* (ICF), the World Health Organization (WHO 2001) describes disability and functioning as outcomes of interactions between health conditions (diseases, disorders, and injuries) and contextual factors. Contextual factors include external environmental factors, which are defined as 'the physical, social and attitudinal environment in which people live and conduct their lives' (p. 10, section 4) and are subdivided into social attitudes, architectural characteristics, legal and social structures, as well as climate and terrain.

The terms external environment and non-human environment have been used interchangeably in the therapy literature. Interaction with our environment facilitates the initial development, as well as maintenance of, all performance components (Mosey 1981). Cultural and social factors need to be taken into account when selecting appropriate occupations for assessment and treatment. The non-human environment, in the form of setting and tools, needs to be carefully selected and structured during assessment in order to ensure meaning for the patient and fulfil the therapeutic

purpose. An individual must interact with the non-human environment to engage in occupations. An activity (such as washing) occurs in a physical and social environment (washing may take place in a bathroom or by a river and the activity will be influenced by social and cultural norms). The performance of an activity may also involve the use of objects (washing may require the use of a washing bowl or basin, soap, and towel). When an AHP uses the performance of daily living activities as a method of assessment s/he consciously structures an environment for this performance and selects specific tools for the patient to interact with. An intervention that increases the enabling aspect of the environment for an individual and thereby creates a compatible person–environment–occupation fit will increase, or with a progressive condition perhaps maintain, function. AHPs are involved with assessing and where necessary adapting a person's environment or teaching the person compensation techniques to help them to cope with the challenges placed by negotiating the environment with a particular impairment. For example, if an AHP modifies a kitchen to increase accessibility for a person in a wheelchair then the fit between the person's capacities, the kitchen environment and the activities of meal preparation, washing up, and laundry will improve leading to increased independence.

Familiarity with an environment may influence assessment results; the impact of familiarity does not just apply to the activity or task to be assessed but also to the familiarity of the environment in which the assessment is to be undertaken. For example, 'a familiar environment (e.g. kitchen at home) is less demanding than a new environment (e.g. clinic kitchen)' (Culler 1993, p. 219) and an AHP could expect a client to be more independent within his/her own kitchen than in unfamiliar kitchen areas. Even if the familiarity of an environment does not impact the final outcome of an assessment it may affect the speed at which the task is completed. It is quicker, as we know, to make a cup of tea in your own kitchen because you know where everything is kept. You will still be independent making a cup of tea in a friend's kitchen but probably it will take you more time because you will be searching in the unfamiliar environment for the items and ingredients you need. The home environment does not always facilitate function, for example, people may be able to mobilise better on the hard, flat surface of a physiotherapy department or hospital ward than on the different carpet textures (e.g. carpet, floorboards, rugs, lino, tiles) in their own homes.

The World Health Organization (WHO 2001) recommends that 'to assess the full ability of the individual, one would need to have a "standardized environment" to neutralize the varying impact of different environments on the ability of the individual' (p. 15). WHO suggests that there are a number of environments that can be used for this purpose:

a. an actual environment commonly used for capacity assessment in test settings;
b. an assumed environment thought to have an uniform impact;
c. an environment with precisely defined parameters based on extensive scientific research.

AHPs are often involved in conducting assessments in people's own home and work environments, as they need to evaluate both environmental barriers and environmental supports to performance. Assessment at home is considered useful because people are more likely to behave and communicate in their normal way in familiar surroundings. The AHP can build a more accurate picture of the person's needs during a home assessment. A home assessment can also facilitate access to the views and the needs of any carer. The environment selected for assessment is especially important for people with certain conditions. For example, the influence of

context and environment on the function of a person with dementia is critical to assess (Tullis and Nicol 1999).

Where safety is of concern, it is critical to assess the person in the environment where s/he will be functioning to examine the relationship between potential environmental hazards and the person's ability. Once potential hazards have been identified, changes to the environment can be made to reduce the risks, for example a risk of falls. Some therapy assessments have been designed for use in the home environment. For example, the Safety Assessment of Function and the Environment for Rehabilitation (SAFER Tool; Letts et al. 1998) was developed to assess people's abilities to manage functional activities safely within their homes and the Home Falls and Accidents Screening Tool (Home Fast; Mackenzie, Byles, and Higginbotham 2000) was developed to identify hazards associated with falls in the home.

The Constraints of the Practice Setting

The practice setting will influence the AHP's choice of assessment and may serve to enhance or constrain the assessment practice. For example, if an AHP moves to a service that encourages standardised assessment and has a range of published tests available then knowledge of different tests and skills in standardised assessment may increase. Conversely, an AHP may be experienced with a particular standardised test but find that it is not available in a new practice setting or that with the demand of their new caseload there is not enough time to administer the test in full. It may not be possible in some settings to assess the client at several different times in varying test environments and cover all the areas of interest within the assessment. Therefore, the AHP needs to use clinical judgement to select the most effective assessment strategy within the physical and political boundaries of the practice environment. They may only be able to conduct a brief assessment and will need to make decisions about the person's overall ability and prognosis from limited data projections (see section on 'Predictive Validity' in *Chapter 8: Validity and Clinical Utility*). The quality of the AHP's clinical reasoning can be critical.

CONCLUSION

In conclusion, the AHP needs to be like an experienced chef: not following rigidly a set recipe but combining knowledge of different techniques and knowing which ingredients and flavours can be combined in a creative way for each particular situation.

> *Evidence based medicine is not 'cookbook' medicine. Because it requires a bottom up approach that integrates the best external evidence with individual clinical expertise and patients' choice, it cannot result in slavish, cookbook approaches to individual patient care. External clinical evidence can inform, but can never replace, individual clinical expertise, and it is this expertise that decides whether the external evidence applies to the individual patient at all and, if so, how it should be integrated into a clinical decision. Similarly, any external guideline must be integrated with individual clinical expertise in deciding whether and how it matches the patient's clinical state, predicament, and preferences, and thus whether it should be applied.*
>
> (Sackett et al. 1996, p. 71)

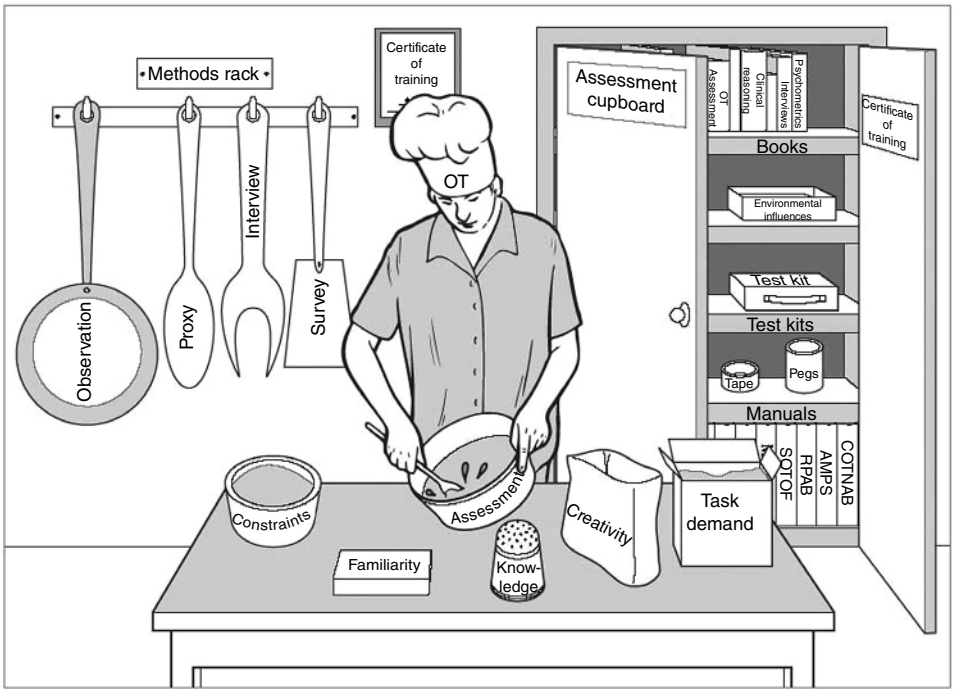


FIGURE 1.2 The AHP as a creative and expert chef. *Source*: Reprinted from Laver Fawcett (2002). © (2002), with permission from Elsevier.

AHPs need to adopt outcome measures that document the efficacy of their interventions, and guide clinical decisions and treatment planning. These measures need to be clinically appropriate, functionally relevant, valid, reliable, and responsive to change (Duncan and Murray 2012; Jette et al. 2009; Wright, Cross, and Lamb 1998). Not only should AHPs critique and implement valid and reliable assessments in their practice, they should also be prepared to add to the growing body of research into therapy measures. This may be by collaborating with a test developer to add to data on inter-rater reliability or by contributing your views to studies of clinical utility and aspects of validity.

Richards (2002) challenged AHPs to contribute to the national political agenda: 'it behoves . . . AHPs to contribute expert assessments which stand up to scrutiny, form a sound foundation for their intervention and link with valid outcome measures that clearly demonstrate the value of their contribution to efficient and effective service provision' (p. xviii).

We should not underestimate the responsibility we have to make sound judgements about our service users' abilities and dysfunction. The distance between theory and practice can sometimes feel like a wide chasm. We 'know' that we should be using valid, reliable, standardised measures in our practice. Assessment processes without a strong evidence or theoretical base are still occurring more often than we feel comfortable to admit. As, the demands of the everyday practice settings in which AHPs work, with limited time to review potential assessments and try them out, and few resources to purchase a new test, even when there is strong evidence for its application. No matter how competent an AHP is at providing treatment, this will be inadequate if it is based on faulty evaluation and decision making regarding the patient's deficits and the resulting intervention plan.

AHPs need to embrace EBP as an opportunity rather than a threat. It is about doing the very best we can for our clients. It also helps to further the development and standing of our professions, which assists in ensuring ongoing and ideally increased funding for providing occupational therapy and physiotherapy to those people who would benefit from these services. Achieving EBP is a step-by-step process. This book aims to assist AHPs to move towards a greater evidence base in their assessment and measurement practice. The first step is to raise a question or series of questions. Worksheets have been developed for each chapter to enable you to raise and answer questions related to different aspects of your assessment and measurement practice.

REFLECTION POINT

Let us begin with a global question:

> How should I organise my assessment process in order to collect the right information, at the best time and in the most effective and efficient way to provide reliable, valid, and responsive measurement in a manner that is acceptable to my clients?

Once you have formulated a question as a focus for EBP, the second step is to search for evidence. Within the book we have reviewed literature and research that will provide foundational knowledge for helping you to start the journey towards answering this question. As it is such a big question, it is helpful to break it down into a series of more specific questions. We have noted the main chapter(s) that have been written to help you to answer each of these questions:

The following table provides signposting to other chapters in the book.

Why am I collecting assessment and measurement data?	See Chapter 3 on Purposes of Assessment and Measurement
Who is the best source for this information?	See Chapter 2 on Methods of Assessment and Sources of Assessment Data
What is the best method for collecting this information?	See Chapter 2 on Methods of Assessment and Sources of Assessment Data
What level of measurement is required?	See Chapter 4 on What is Measurement?
How can I ensure my measurements are valid?	See Chapter 8 on Validity and Clinical Utility
How do I evaluate whether my assessment process and the specific measures used are acceptable to my clients?	See sections on 'Face Validity' and 'Clinical Utility' in Chapter 8 and section on 'Test Critique' in Chapter 10
How can I ensure my measurements are reliable?	See Chapter 9 on Reliability
How can I ensure my outcome measures are responsive to a clinically relevant degree of change?	See Chapter 9 on Reliability
How do I prepare for an efficient and effective test administration?	See Chapter 5 on Test Administration, Reporting and Recording
How do I build rapport with my client?	See Chapter 5 on Test Administration, Reporting and Recording

How do I ensure that my test administration remains standardised?	See Chapter 5 on Test Administration, Reporting and Recording
How do I communicate the results of my assessment?	See Chapter 5 on Test Administration, Reporting and Recording
How do I combine the best available evidence with my clinical experience and my knowledge of my client's preferences?	See Chapter 6 on The Importance of Clinical Reasoning and Reflective Practice in Effective Assessment
How do I categorize the myriad of information and observational data collected about a person into a meaningful and organised assessment?	See Chapter 11 on Applying Models to Assessment and Outcome Measurement
How do I fit my assessment practice into the wider context of a multidisciplinary team and/or inter-agency approach?	See Chapter 11 on Applying Models to Assessment and Outcome Measurement
How do I set about identifying appropriate standardised tests for my service?	See Chapter 7 on Standardisation and Chapter 12 on Implementing the Optimum Assessment and Measurement Approach
How do I combine the best available evidence with my clinical experience and my knowledge of my client's preferences in order to implement the optimum assessment and measurement approach?	See Chapter 12 on Implementing the Optimum Assessment and Measurement Approach and Chapter 14 for a case study example

We have included a number of worksheets in this book, which can be used to focus your learning. If you are a pre-registration student you might use the worksheets on clinical placement to explore the assessment processes being used by your supervisor and his/her colleagues. If you are a practicing AHP you could use the worksheets, alone or with colleagues, as a focus for your own CPD – remember to put a copy of any completed worksheets in your CPD portfolio as evidence of your work – or for your team or department's service development activities.

WORKSHEET 1.1 Evidence-based Practice

Question	Comments
Do you currently base your assessment practice on evidence?	Yes, all assessments evidence based Partly, some assessments are evidence based No, none of the assessments used are evidence based
What else, apart from evidence, do you use to guide your assessment decisions/practice?	
Think of an instance where you changed your assessment practice based on evidence (e.g. acquired from journal article, conference presentation, or course)	What was your previous practice? What was the evidence that convinced you to change? What changes did you make? What have been the outcomes of the change?
What other areas of your assessment could benefit from being changed?	Do you need to seek more evidence related to these areas of assessment?

REFERENCES

@OTalk data, May 2019. See 'Introduction' chapter for full details.

Allport, F.H. (1955). *Theories of Perception and the Concept of Structure: A Review and Critical Analysis with an Introduction to a Dynamic-Structural Theory of Behavior*. Wiley.

Austin, C. and Clark, C.R. (1993). Measures of outcome: for whom? *British Journal of Occupational Therapy* 56 (1): 21–24.

Balshem, H., Helfand, M., Schünemann, H.J. et al. (2011). GRADE guidelines: 3. Rating the quality of evidence. *Journal of Clinical Epidemiology* 64 (4): 401–406. https://doi.org/10.1016/j.jclinepi.2010.07.015.

Belsey, J. and Snell, T. (2003). *What is Evidence-based Medicine?* London: Hayward Medical Communications.

Borg, B. and Bruce, M. (1991). Assessing psychological performance factors. In: *Occupational Therapy: Overcoming Human Performance Deficits* (eds. C. Christiansen and C. Baum), 538–586. Thorofare, NJ: Slack, Inc.

Center to Advance Palliative Care (n.d.). Toolkits for Palliative Care Programs. Available at capc.org (accessed 30 November 2020).

Clouston, T. (2003). Narrative methods: talk, listening and representation. *British Journal of Occupational Therapy* 66 (4): 136–142. https://doi.org/10.1177/030802260306600402.

Cole, B., Finch, E., Gowland, C. et al. (1995). *Physical Rehabilitation Outcome Measures*, 24–78. Baltimore: Lippincott Williams & Wilkins.

Craik, F.I.M. (1977). Age differences in human memory. In: *Handbook of the Psychology of Aging* (eds. J.E. Birren and K.W. Schaie). New York: Van Nostrand Reinhold.

Creek, J. (1996). Making a cup of tea as an honours degree subject. *British Journal of Occupational Therapy* 59 (3): 128–130. https://doi.org/10.1177/030802269605900310.

Culler, K.H. (1993). Occupational therapy performance areas: home and family management. In: *Willard and Spackman's Occupational Therapy*, 8e (eds. H.L. Hopkins and H.D. Smith), 207–269. Philadelphia: Lippincott Williams & Wilkins.

Department of Health (DoH) (1998). *A First Class Service: Quality in the New NHS*. London: Department of Health.

Department of Health (DoH) (2001). *Reference Guide to Consent for Examination or Treatment*, 1e. London: Department of Health.

Department of Health (DoH) (2004). *Choosing Health: Making Healthy Choices Easier*, vol. 6374. London: The Stationery Office.

Driever, M.J. (2002). Are evidenced-based practice and best practice the same? *Western Journal of Nursing Research* 24 (5): 591–597.

Duncan, E.A. and Murray, J. (2012). The barriers and facilitators to routine outcome measurement by allied health professionals in practice: a systematic review. *BMC Health Services Research* 12 (1): 96. https://doi.org/10.1186/1472-6963-12-96.

Eakin, P. (1989). Assessments of activities of daily living: a critical review. *British Journal of Occupational Therapy* 52 (1): 11–15. https://doi.org/10.1177/030802268905200104.

Edwards, A. and Elwyn, G. (eds.) (2009). *Shared Decision-Making in Health Care: Achieving Evidence-Based Patient Choice*. Oxford University Press. 9780199546275.

Fisher, A.G. (1995). *Assessment of Motor and Process Skills (AMPS)*. User Manual, Vol. 2. Fort Collins, CO: Three Star Press.

Fisher, A.G. and Short-DeGraff, M. (1993). Improving functional assessment in occupational therapy: recommendations and philosophy for change. *American Journal of Occupational Therapy* 47 (3): 199–201.

GRADE Working Group (2004). Grading quality of evidence and strength of recommendations. *British Medical Journal* 328 (7454): 1490. https://doi.org/10.1136/bmj.328.7454.1490.

Gray, J.A.M. (2001). *Evidence-Based Healthcare*. Elsevier Health Sciences.

Greenhalgh, T., Howick, J., and Maskrey, N. (2014). Evidence based medicine: a movement in crisis? *BMJ* 348: g3725. https://doi.org/10.1136/bmj.g3725.

Gustafsson, L., Molineux, M., and Bennett, S. (2014). Contemporary occupational therapy practice: the challenges of being evidence based and philosophically congruent. *Australian Occupational Therapy Journal* 61 (2): 121–123. https://doi.org/10.1111/1440-1630.12110.

Guyatt, G., Cook, D., and Haynes, B. (2004). Evidence based medicine has come a long way. *BMJ* 329: 990. https://doi.org/10.1136/bmj.329.7473.990.

Guyatt, G.H., Oxman, A.D., Kunz, R. et al. (2008a). What is "quality of evidence" and why is it important to clinicians? *BMJ* 336 (7651): 995–998. https://doi.org/10.1136/bmj.39490.551019.BE.

Guyatt, G.H., Oxman, A.D., Kunz, R. et al. (2008b). Going from evidence to recommendations. *BMJ* 336 (7652): 1049–1051. https://doi.org/10.1136/bmj.39493.646875.AE.

Hatfield, D.R. and Ogles, B.M. (2007). Why some clinicians use outcome measures and others do not. *Administration and Policy in Mental Health and Mental Health Services Research* 34 (3): 283–291. https://doi.org/10.1007/s10488-006-0110-y.

Hong, C.S. (1996). The use of non-standardised assessments in Occupational Therapy with children who have disabilities: a perspective. *British Journal of Occupational Therapy* 59 (8): 363–364. https://doi.org/10.1177/030802269605900804.

Hopkins, H.L. and Smith, H.D. (1993). *Willard and Spackman's Occupational Therapy*, 8e. Philadelphia: Lippincott Williams & Wilkins.

Jette, D.U., Halbert, J., Iverson, C. et al. (2009). Use of standardized outcome measures in physical therapist practice: perceptions and applications. *Physical Therapy* 89 (2): 125–135. https://doi.org/10.2522/ptj.20080234.

Johnston, G., Crombie, I.K., Alder, E.M. et al. (2000). Reviewing audit: barriers and facilitating factors for effective clinical audit. *BMJ Quality & Safety* 9 (1): 23–36.

Sherr Klein, B. (1997). *Slow Dance: A Story of Stroke, Love and Disability*. Toronto: Vintage.

Laver, A.J. (1994). The Development of the Structured Observational Test of Function (SOTOF). Doctoral dissertation. University of Surrey.

Laver Fawcett, A.J. (2002). Assessment. In: *Occupational Therapy and Physical Dysfunction: Principles, Skills and Practice* (eds. A. Turner, M. Foster and S. Johnson), 107–144. London: Churchill Livingstone. Chapter 5.

Law, M., Cooper, B., Strong, S. et al. (1996). The person-environment-occupation model: a transactive approach to occupational performance. *Canadian Journal of Occupational Therapy* 63 (1): 9–23. https://doi.org/10.1177/000841749606300103.

Law, M.C. and MacDermid, J. (eds.) (2014). *Evidence-Based Rehabilitation: A Guide to Practice*, 3e. Slack Incorporated. 10 1-61711-021-3.

Letts, L., Scott, S., Burtney, J. et al. (1998). The reliability and validity of the safety assessment of function and the environment for rehabilitation (SAFER tool). *British Journal of Occupational Therapy* 61 (3): 127–132. https://doi.org/10.1177/030802269806100309.

Lewis, C.B. and Bottomley, J.M. (1994). Assessment instruments. In: *Geriatric Physical Therapy: A Clinical Approach*. Norwalk, CT: Appleton & Lange.

Lohr, K.N. (1997). The quality of practice guidelines and the quality of health care. In: *Guidelines in Health Care Practice*. Report on a WHO Meeting, Schloss Velen, Borken, Germany, 26–28 January 1997. Copenhagen: WHO Regional Office for Europe.

Mackenzie, L., Byles, J., and Higginbotham, N. (2000). Designing the home falls and accidents screening tool (HOME FAST): selecting the items. *British Journal of Occupational Therapy* 63 (6): 260–269. https://doi.org/10.1177/030802260006300604.

Mahoney, F.I. and Barthel, D.W. (1965). Functional evaluation: the Barthel Index: a simple index of independence useful in scoring improvement in the rehabilitation of the chronically ill. *Maryland State Medical Journal* 14: 61–65.

Maniadakis, N. and Gray, A. (2004). Economic evaluation. In: *Outcome Measures in Orthopaedics and Orthopaedic Trauma*, 2e, 34–46. London: CRC Press.

McAvoy, E. (1991). The use of ADL indices by occupational therapists. *British Journal of Occupational Therapy* 54 (10): 383–385. https://doi.org/10.1177/030802269105401009.

McFadyen, A.K. and Pratt, J. (1997). Understanding the statistical concepts of measures of work performance. *British Journal of Occupational Therapy* 60 (6): 279–284. https://doi.org/10.1177/030802269706000614.

Mickan, S., Hilder, J., Wenke, R., and Thomas, R. (2019). The impact of a small-group educational intervention for allied health professionals to enhance evidence-based practice: mixed methods evaluation. *BMC Medical Education* 19 (1): 131. https://doi.org/10.1186/s12909-019-1567-1.

Mosey, A.C. (1981). *Occupational Therapy: Configuration of a Profession*, 67–69. New York: Raven Press.

Neale, M. (2004). Why I have difficulty with standardised assessments and outcome measures. *NANOT News: Journal of the National Association of Neurological Occupational Therapists* 24 (Winter): 25–26.

NHS Executive (1996). *Clinical Guidelines: Using Clinical Guidelines to Improve Patient Care within the NHS*. NHS Management Executive.

NHS (2019). The NHS Long Term Plan. https://www.longtermplan.nhs.uk (accessed 21 May 2019).

NHS Digital (n.d.). Patient Reported Outcome Measures (PROMs). https://digital.nhs.uk/data-and-information/data-tools-and-services/data-services/patient-reported-outcome-measures-proms (accessed 20 May 2019).

Phillips, C. and Thompson, G. (2003). *What is Cost-effectiveness?* London: Hayward Medical Communications.

Reinauer, Prof. Dr H. (1998). AWMF and Clinical Guideline Program in Germany. Presentation at the *International Conference on Clinical Practice Guidelines, 4* September 1998, Frankfurt/Main, Germany. Available at: https://www.awmf.org/service/gesamtarchiv/awmf-konferenz/frankfurtmain-4-sept-1998.html (accessed 8 December 2020).

Richards, S. (2002). Foreword. In: *Occupational Therapy and Physical Dysfunction: Principles, Skills and Practice* (eds. A. Turner, M. Foster and S.E. Johnson), 633. Edinburgh: Churchill Livingstone.

Royal College of Occupational Therapists (RCOT) (2020). Assessments and Outcome Measures Resource, 2020. Available to members at: https://www.rcot.co.uk/practice-resources/occupational-therapy-topics/assessments-and-outcome-measures.

Rycroft-Malone, J. (2004). The PARIHS framework—a framework for guiding the implementation of evidence-based practice. *Journal of Nursing Care Quality* 19 (4): 297–304. https://journals.lww.com/jncqjournal/Citation/2004/10000/The_PARIHS_Framework_A_Framework_for_Guiding_the.2.aspx.

Rycroft-Malone, J., Seers, K., Titchen, A. et al. (2004). What counts as evidence in evidence-based practice? *Journal of Advanced Nursing* 47 (1): 81–90. https://doi.org/10.1111/j.1365-2648.2004.03068.x.

Sackett, D.L., Rosenberg, W.M., Gray, J.M., et al. (1996). Evidence based medicine: what it is and what it isn't. *BMJ* 312: 71–72. https://doi.org/10.1136/bmj.312.7023.71.

Shanahan, M. (1992). Objective and holistic? Is this occupational therapy assessment in Ireland. *Irish Journal of Occupational Therapy* 22 (2): 8–10.

Starey, N. (2003). *What is Clinical Governance?* London: Hayward Medical Communications.

Stewart, S. (1999). The use of standardised and non-standardised assessments in a social services setting: implications for practice. *British Journal of Occupational Therapy* 62 (9): 417–423. https://doi.org/10.1177/030802269906200907.

Tullis, A. and Nicol, M. (1999). A systematic review of the evidence for the value of functional assessment of older people with dementia. *British Journal of Occupational Therapy* 62 (12): 554–563. https://doi.org/10.1177/030802269906201206.

Unsworth, C. (2000). Measuring the outcome of occupational therapy: tools and resources. *Australian Occupational Therapy Journal* 47 (4): 147–158. https://doi.org/10.1046/j.1440-1630.2000.00239.x.

Upton, D. and Upton, P. (2006). Knowledge and use of evidence-based practice by allied health and health science professionals in the United Kingdom. *Journal of Allied Health* 35 (3): 127–133.

Upton, P., Scurlock-Evans, L., Stephens, D., and Upton, D. (2012). The adoption and implementation of evidence-based practice (EBP) among allied health professions. *International Journal of Therapy and Rehabilitation* 19 (9): 497–503. https://doi.org/10.12968/ijtr.2012.19.9.497.

Veenstra, G.L., Ahaus, K., Welker, G.A. et al. (2017). Rethinking clinical governance: healthcare professionals' views: a Delphi study. *BMJ Open* 7 (1): e012591. https://doi.org/10.1136/bmjopen-2016-012591.

Wade, D.T. (1992). Measurement in neurological rehabilitation. *Current Opinion in Neurology* 5 (5): 682–686.

Watson, R. (2004). New horizons in occupational therapy. In: *Transformation through Occupation* (eds. R. Watson and L. Swartz). Wiley.

Welford, A.T. (1993). The gerontological balance sheet. In: *Adult Information Processing: Limits on Loss* (eds. J. Cerella et al.), 3–10. New York: Academic Press.

Whiting, S. and Lincoln, N. (1980). An ADL assessment for stroke patients. *British Journal of Occupational Therapy* 43 (2): 44–46. https://doi.org/10.1177/030802268004300207.

World Health Organization (2001). *International Classification of Functioning, Disability and Health (ICF)*. Geneva: World Health Organization.

Wright, J., Cross, J., and Lamb, S. (1998). Physiotherapy outcome measures for rehabilitation of elderly people: responsiveness to change of the Rivermead Mobility Index and Barthel Index. *Physiotherapy* 84 (5): 216–221. https://doi.org/10.1016/S0031-9406(05)65552-6.

RESOURCES

BMJ Best Practice (n.d.). What is the best evidence and how to find it. https://bestpractice.bmj.com/info/toolkit/discuss-ebm/what-is-the-best-evidence-and-how-to-find-it (accessed 2 April 2019).

Centre for Evidence-Based Medicine, University of Oxford (n.d.). Develops, promotes and disseminates better evidence for health care. https://www.cebm.ox.ac.uk/ (accessed 2 April 2019).

National Institute for Health and Care Excellence (NICE) (n.d.). Search 'evidence based practice'. https://www.evidence.nhs.uk/search?q=evidence+based+practice.