Elizabeth Casson Memorial Lecture 2022:

Optimising Performance, Clinical and Economic Outcomes in Occupational Therapy Service Delivery

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Abstract

The rise in health and social care costs has prompted a critical look at the way health and social care services for children and adult are managed and delivered. There has been a gradual but significant change in assessing the performance and evaluating the outcomes of services. Where once only performance outcome data related to service efficiency were required, now evidence of clinical effectiveness and cost-effectiveness is demanded. When evaluating the outcomes of service delivery, it is important to measure performance outcomes (related to service efficiency), clinical outcomes (related to service effectiveness), and economic outcomes (related to cost-effectiveness of the service) in a whole system approach. This lecture examines the interdependent relationship between performance, clinical and economic outcomes in service delivery which is underpinned by strong leadership, the application of various service improvement strategies and collaborative research between managers, clinicians, researchers and health economists, with patient and public involvement. Service improvement strategies based on practice-based and research-based evidence will be suggested to optimise performance, clinical and economic outcomes. My lecture concludes that occupational therapists should adopt these service improvement strategies and conduct clinical researches and economic evaluations to develop an efficient, effective and cost-effective service which can meet the client's needs by using allocated resources and is value for money from a commissioning perspective.

Key Words

Casson Lecture, Outcomes, Efficiency, Effectiveness, Cost-Effectiveness

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INTRODUCTION

It is a great honour to present the 2022 Elizabeth Casson Memorial Lecture. I would like to thank my nominator, Ying Herng Heng, and the Royal College of Occupational Therapists (RCOT) for giving me this opportunity to share my experience in service improvement to promote the practice and value of occupational therapy (OT). It is always my passion to achieve better performance outcomes for the service and better clinical outcomes for the clients and that interventions provided are cost-effective.

The rise in health and social care costs has prompted a critical look at the way health and social care services for children and adult are managed and delivered. In the past 20 years, there has been a gradual but significant change in assessing the performance and evaluating the outcomes of services and that clinical services provided are expected to be efficient, effective and cost-effective. Where once only performance outcome data related to service efficiency were required, now evidence of clinical effectiveness (clinical outcome) and cost-effectiveness (economic outcome) is demanded. To meet this demand, occupational therapists must continue to innovate the structure and processes of service delivery to improve the service efficiency, and to conduct research to demonstrate the effectiveness and cost-effectiveness of occupational therapy services.

In this lecture, I will briefly review the historical and current perspective of outcomes, and then discuss the interdependent relationship between performance, clinical and economic outcomes in service delivery which is underpinned by strong leadership, the application of various service improvement strategies and collaborative research between managers, clinicians, researchers and health economists, with patient and public involvement. Examples of strategies based on practice-based and research-based evidence will be suggested to optimise performance, clinical and economic outcomes. At the end of this lecture, I will propose what we need to focus on in service development, clinical practice and research.

HISTORICAL AND CURRENT PERSPECTIVE OF OUTCOMES IN SERVICE DELIVERY

In the 1960s, Donabedian conceptualised the quality of a clinical service using the triad of structure, process, and outcome of care (Donabedian, 1966). Structure includes the physical facility, equipment, and human resources, as well as organizational features such as staff training and payment methods. Process refers to the actions, activities, and procedures that occur between the service providers and clients (Donabedian, 1980). Outcome refers to the change in a client's current and future health status that can be attributed to clinical services provided and is the result of the structure and process of service delivery (Donabedian, 1980 & 2003).

Tarlov et al (1989) suggested to expand the domain of outcome by adding client satisfaction and economic effects. It formed the initial framework for optimising clinical outcome (treatment effectiveness and client satisfaction) and economic outcome (cost-effectiveness) by improving the structure and process of the service (related to performance outcome – efficiency of the service).

Since then there were different quality improvement frameworks developed in the last 40 years to provide a structure for achieving better performance, clinical and economic outcomes. Some of these frameworks have been used in the health and local authority services in the United Kingdom (UK). For examples:-

- McKinsey 7S - Structure, Systems, Style, Staff, Skill, Strategy, Shared Values (Waterman, 1982).
- Maxwell's Six - Effectiveness, Acceptability, Efficiency, Accessibility, Equity and Relevance / Appropriateness (Maxwell, 1984 and 1992).

- Six Sigma (Harry, 1994).
- Total Quality Management (Joss and Kogan, 1995).
- Balanced Scorecard (Kaplan and Norton, 1996).
- Clinical Governance Framework (Department of Health, 1997; NHS Executive, 1999a).
- Continuous Quality Improvement (Leebov et al, 2003).

These quality improvement frameworks set the foundation to improve the quality and safety of health service delivery. However, mechanism to assess the performance and measure outcomes of services needed to be in place. There are different developments in the last 20 years. I will highlight two important developments.

In 1999, the National Health Services (NHS) Performance Assessment Framework (PAF) was published to introduce a broader-based approach to assessing performance in the NHS (NHS Executive, 1999b). This framework was based on the Balanced Scorecard approach. The framework highlighted six areas of performance: health improvement, fair access to services, effective delivery of appropriate health care, efficiency, patient/carer experience, health outcomes of NHS care (Chang, et al, 2002).

In 2010, the NHS Outcomes Framework (OF) was developed after consultation with NHS providers (Department of Health, 2010). Performance indicators in the OF focus on improving health and reducing health inequalities (NHS Digital, 2021). Based on this outcomes framework, commissioners from Clinical Commissioning Groups (CCGs) and other commissioning bodies use a set of performance indicators (PIs) and key performance indicators (KPIs) to measure the performance and clinical outcomes of clinical services.

Within the OT practice, achieving performance, clinical and economic outcomes are important goals in service delivery. For example, evaluation of the effectiveness of OT interventions is identified as one of the eight global OT research priorities set by the World Federation of Occupational Therapists (WFOT, 2016). The WFOT published the Quality Evaluation Strategy Tool (QUEST) (WFOT, 2020) with seven quality dimensions from the perspective of structure, process, and outcome: appropriateness, sustainability, accessibility, efficiency, effectiveness, person-centeredness, and safety. The WFOT recently published a tool for economic evaluation which serves as a resource for occupational therapists to evaluate the cost-effectiveness of service provided (WFOT, 2021a).

In 2021, the RCOT developed the top 10 priorities for OT research in the UK. The clinical effectiveness and cost-effectiveness of OT services are part of the research priorities (RCOT, 2021a; Watson et al, 2021). In the new Professional Standards for Occupational Therapy Practice, Conduct and Ethics published by the RCOT (2021b), eight outcomes are stated in Section 4.6 on Outcomes – Quality, Value, and Effectiveness (see Table 1). Outcome statements 1 – 4 are related to clinical outcomes, statements 5 and 6 are related to performance outcomes, and statement 7 is related to economic outcomes, while statement 8 is a composite of all the three outcomes. It is encouraging to see that the OT profession does not only focus on clinical outcomes but also emphasise the importance of performance and economic outcomes in service delivery.

Table 1: Eight RCOT Outcome Statements – Quality, Value and Effectiveness
(RCOT, 2021b, p.22 – 23)

No.	Statements
1.	You evaluate the value and benefit of your intervention for those who access the service in terms of their occupational performance, participation and wellbeing.
2.	You use outcome measures to monitor, review and demonstrate the ongoing effectiveness of your intervention.
3.	You include the views and experiences of individuals or communities when evaluating your practice.
4.	Your evaluation takes account of information gathered from other relevant sources, such as carers and/or family, or other professionals.
5.	You undertake audits against appropriate available standards to facilitate service improvement.
6.	You collect and collate outcome data to meet the requirements of commissioners/funders of services.
7.	Where possible, you collect and use data to demonstrate the value for money of the service/s you provide.
8.	You use the information you collect, with other national, local and professional guidance and research evidence, to improve the quality, value and effectiveness of the service/s you provide.

INTERDEPENDENT RELATIONSHIP BETWEEN PERFORMANCE, CLINICAL AND ECONOMIC OUTCOMES

When evaluating the outcomes of service, performance outcomes are related to service efficiency, clinical outcomes are related to service effectiveness, and economic outcomes are related to cost-effectiveness of the service. These three outcomes are interdependent with each other. It is important to examine this interdependent relationship and explore strategies that can be used to optimise these three outcomes in service delivery (see Figure 1).

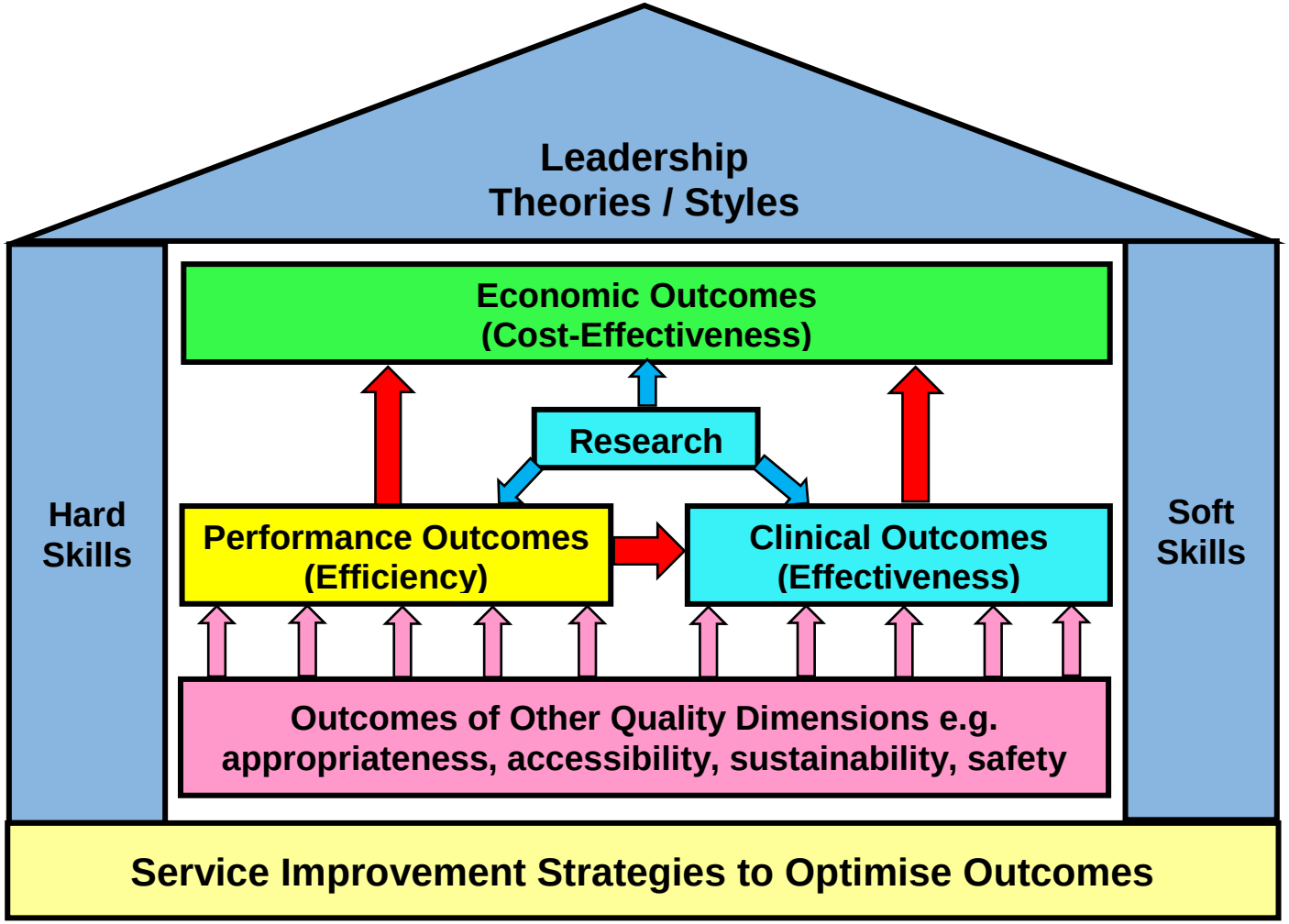
Performance Outcomes – Efficiency of the Service

Performance outcomes, sometimes called system outcomes, are related to the structure and process of the service as articulated in the Donabedian's Model. It demonstrates the efficiency of the service. Efficiency is "dependent on the optimal use of resources in OT to yield maximum benefits" (WFOT, 2020, page 12). It focuses on avoiding the wastage and maximising the use of resources, time, and effort in services delivery.

Clinical Outcomes – Effectiveness of the Service

Clinical outcomes are related to the client satisfaction and effectiveness of the treatment provided, and underpinned by the efficiency of the service. The WFOT defines effectiveness of treatment as "the degree of achieving desired outcomes that is reliant on the provision of evidence-informed OT services to those who could benefit" (WFOT, 2020, page 12).

Figure 1: Interdependent Relationship between Performance, Clinical and Economic Outcomes



Relationship between Efficiency (Performance Outcome) and Effectiveness (Clinical Outcomes)

Both efficiency and effectiveness are important components for measuring the quality of a service. Being efficient is about doing things right while being effective is about doing the right things. To achieve clinical outcomes, the established structure and processes of service delivery must run like a well-oiled machine. That means having research validated effective treatment is not enough if you do not have an efficient service to deliver the treatment, to measure the outcomes and to calculate the inputs and cost involved.

Economic Outcomes – Cost-Effectiveness of the Service

Cost-effectiveness is the degree to which something is effective or productive in relation to its cost. To achieve cost-effectiveness (economic outcome), a service needs to establish an efficient structure and operational processes (performance outcome) to deliver the identified effective interventions (clinical outcomes). That means the economic outcome is dependent on performance and clinical outcomes and validated by economic evaluations conducted by managers, clinicians, researchers and health economists collaboratively.

Outcomes of Other Quality Dimensions

Besides performance, clinical and economic outcomes, outcomes of other quality dimensions need to be considered, for example, appropriateness, sustainability, accessibility, person-centeredness, and safety (WFOT, 2020).

To optimise outcomes in service delivery, effective leadership, the application of various service improvement strategies and the production and dissemination of high quality research are important practice factors to be considered.

Multi-Dimensional Leadership

The concept of leadership is complex and multi-dimensional (Chu, 2020). There are various leadership styles used in the workplace e.g. coaching, visionary and transformational leadership. Most leaders adopt a variety of styles to achieve goals at different times in different situations. There are various soft skills to be a successful leader e.g. to be able to communicate effectively, organise information systematically, build relationships, inspire others, think strategically, lead change, navigate ambiguity, and be able to learn from experience, feedback, and reflection.

However, to be a successful leader, you also need the hard skills / technical knowledge in different areas of service development and delivery, e.g. excellence in clinical practice, research and evidence-based practice, staff development and mentorship, strategic development and service redesign, financial management, cost analysis, etc. Leading service improvement is a practical task. If you don't have the tools, you cannot lead the team effectively and improve the service efficiently.

Research

Central in the whole service improvement process is research. Hand et al (2022) advocated that it is timely to conduct health services research to identify the most effective ways to organise and deliver high-quality care to maximise health outcomes, and to demonstrate the value of OT. This message is consistent with the concepts of performance, clinical and economic outcomes discussed in this lecture.

de longh et al (2021) and Backman et al (2022) advocate the importance of having patient and public involvement in the whole research process Therefore, the collaboration between managers, clinicians, researchers, health economists, policymakers, and other stakeholders, with patient and public involvement, is important to highlight the needs, obtain funding and implement research to identify factors and mechanisms which contribute to the success in achieving these three outcomes in the real-world environment.

Service Improvement Strategies to Optimise Outcomes

Persistent calls for improving outcomes are considered drivers of process improvement strategies /methods such as Plan-Do-Study-Act Process (Deming, 1993), Turning the Curve (Friedman, 2005), Lean Thinking (Jones and Mitchell, 2006; NHS Improving Quality, 2014), Statistical Process Control (SPC) (Qiu, 2014), and the Vanguard Method (Seddon, 2008; O'Donovan, 2014).

As no improvement is ever achieved sitting at a desk, an effective manager will actively apply various service improvement strategies to optimise the performance, clinical and economic outcomes. I will share examples of strategies based on practice-based and research-based evidence to optimise these three outcomes in service delivery.

STRATEGIES TO OPTIMISE PERFORMANCE OUTCOMES – EFFICIENCY OF THE SERVICE

To improve the efficiency of the service which in turn serves as a foundation for achieving clinical effectiveness and reducing costs, all services should apply different service improvement strategies. I select these five areas for discussion.

Workforce Planning and Staff Development

Internationally, successful organisations have been those that consider their workforce as their most important asset to promote service quality and customer satisfaction (Anastasiou et al, 2015). I consider this area to be the most important strategy as you need a good team of staff to develop and deliver an efficient, effective and cost-effective service. For workforce planning, the most important factors are related to having a good skill mix of staff with an appropriate level of competency, opportunity for career progression, clearly defined roles and responsibilities of all staff, and defined workload and productivity, etc.

A visionary manager will put staff development as one of the top agenda and will create a structure of clinical supervision and staff support, systems of appraisal and personal development plan (PDP), a programme of continuing professional development (CPD), and empower all staff to be involved in various service improvement activities. The Career Development Framework published by the RCOT (2021c) is an excellent resource for staff development. It provides a structure with an overarching set of guiding principles to inform career, learning, and workforce development within the OT profession.

Managers should use management research evidence to enhance service efficiency and better client satisfaction. For example, West et al (2011) identified that one of the main factors that affect service efficiency and client satisfaction is the satisfaction of staff working in the NHS. Dawson (2018), in his analysis of NHS staff and patient surveys from 2014 and 2015, identified that high work pressure for staff, staff perceptions of unequal treatment, and discrimination against staff were all damaging for patient satisfaction.

Using data from the 2018 NHS Staff Survey, Sizmur et al (2019) identified the best predictors of job satisfaction were whether the employee felt that the organisation acts fairly in career progression, values their work, provides opportunities to use their skills, recognises good work and gave an appropriate amount of responsibility. In a systematic review carried out by Bimpong et al (2020), they suggested bespoke job satisfaction improvement strategies which include flexibility to accommodate the needs of a diverse workforce, CPD, discrimination prevention, effective communication and engagement, establishing/improving staff banks, valuing staff, and targeted wage increases. Managers should consider these job satisfaction factors in staff development.

The overall aim of staff development is to develop a workforce that is contented, devoted, and fit-for-purpose to deliver an efficient service, achieve better satisfaction and treatment outcomes for all the clients. If you don't have a good team of staff, you cannot deliver an efficient service even there are effective interventions available.

Lean Thinking

Lean thinking, developed from the Toyota Production System in 1928, has been increasingly applied to health services in the UK and overseas to improve the quality of patient care (Brandao de Souza, 2009). It is a way of streamlining the patient journey and making it safer, by helping staff to eliminate all kinds of waste and to treat more patients with existing resources (Jones and Mitchell, 2006).

I first encountered Lean Thinking through literature in early 2000. In 2007, I attended two workshops on Lean Thinking when I attended the International Conference on Health Service Management and Improvement at Barcelona. It started my journey to pursue Lean Thinking for service improvement.

A lean organisation realises that improving quality and safety results in more efficient and cost-effective care (NHS Institute for Innovation and Improvement, NHS III, 2007). Based on lean thinking, the NHS III published the Productive Community Hospital programme, aimed at releasing staff time to care for patients. The programme can result in staff having 20% extra time to spend with patients (NHS Confederation, 2009). It improves the efficiency and productivity of a service.

The Institute had also developed the Productive Community Services programme which was launched in December 2009 (NHS III, 2009). I implemented the Productive Community Services Programme with the whole staff team in 2010. The programme is a whole management system with tools and methods that have been effectively utilised to improve process flow. Tools that address workplace organisation, standardisation, visual control, and elimination of non-value-added steps are applied to improve the flow of patients' journey. To improve the efficiency of the service, OT managers and clinicians need to develop a "lean" eye for service improvement.

Inter-Agency Collaboration

Collaboration between different agencies is important to coordinate services, minimise the need for referral and avoid duplication. There are two aspects of inter-agency collaboration: 1) integration of OT services in different agencies e.g. health, education, and social care, 2) working collaboratively with other services/agencies e.g. housing department, voluntary agencies.

Armed with the knowledge in service development and improvement, I was able to inspire innovation within the service, to influence senior management and other key stakeholders through networking, and to get commitment to developing the service into a fully integrated and multi-agency funded service for children with special educational needs and disabilities (Chu, 2014).

The service has funding from multiple sources, with 40% of the budget from the NHS and 60% from education, social care, and other specialist services / projects. It covers all the OT inputs from health, education and social care in one single integrated service. It is different from the set up in many other areas whereas paediatric OTs are employed by different agencies with different way of working, waiting times, and priorities.

Many benefits are having an integrated service across health, education, social care, and other sectors. There is a single point of referral and all the children referred will be processed through unified and integrated clinical pathways. Each child referred to the service will only have one OT at one time versus two or three OTs from different agencies at different times if the child is living in a different area.

The therapist will be able to deliver a holistic care plan for children with different disability conditions and the work will not be artificially separated into different parts. Parents do not need to deal with different OTs at different times for different inputs. It facilitates continuity of care and provides a seamless service.

This structure of integrated service helps to reduce cost by removing time spent in making interagency referrals, duplication of assessment, and coordinating inputs if the child has inputs from two or three different OTs. A high level of client satisfaction is demonstrated by good feedback from parents through the annual service user survey.

Good outcome of treatment is recorded by using various outcome measures in the intervention processes. Staff can achieve a higher level of job satisfaction by treating the whole child. They also have opportunities to acquire and develop new skills to meet the child's health, education, and social care needs. The service was shortlisted as the finalist for the 2014 Health Service Journal Value in Healthcare Awards.

Stakeholders and Service User Involvement

To determine whether a service is comprehensive, coordinated, and effective, client's perception should be considered (Mosadeghrad, 2012). Therefore, the involvement of service users and stakeholders to shape the service is essential to develop a person-/family-centred, outcome-focused and integrated service.

It is especially important when developing a new service or reviewing an existing service by involving service users and stakeholders at an early stage and throughout the process. The involvement can be facilitated by setting up service users group and stakeholders' forum, networking with voluntary services representing service users, and obtaining feedback by carrying out regular surveys.

Structure and Model of Service Delivery

The manager needs to create an efficient structure and model of service delivery to maximise the ratio of time spent on direct client contacts versus time spent on other supporting activities e.g. documentation, team meeting, traveling time, etc. (Chu, 2012). There are many components to be considered in developing a good structure of the service, e.g. having a set of policies and procedures to guide practice, a weekly work plan for all staff, conceptual model of practice, and clinical pathways with clearly defined referral procedures and packages of care for different care groups of clients. It has been proven that the implementation of a clinical pathway reduces the variability in clinical practice and improves outcomes (NHS Modernisation Agency, 2002).

In the UK, different models of OT service delivery have been developed and evolved from direct service delivery focused on individual client, to multi-tiered model of integrated services focused on capacity building of people around the client and empowerment of family members in order to provide cost-effective interventions to children and adult with different health conditions in different settings.

In 2010, I adopted a 3-tiered model to deliver school-based occupational therapy service to special and mainstream schools through universal (whole school-based), targeted (classroom-based) and intensive (individual-based) interventions (Chu, 2013, 2015 & 2017). This model emphasises early intervention and addresses student learning needs before a student gets too far behind or is referred to specialist service. Through the implementation of this 3-tiered model, I was able to gain funding from the education department, special and mainstream schools for over 10 full-time posts to deliver school-based OT service to all school-aged children referred to the service.

STRATEGIES TO OPTIMISE CLINICAL OUTCOMES – EFFECTIVENESS OF THE SERVICE

The need to measure clinical effectiveness is increasingly recognised in the context of rising healthcare costs and limited healthcare resources. To optimise the clinical outcomes, it is important to consider different processes in service delivery. I select the following four areas for discussion.

Evidence-Based Practice

Evidence-based practice (EBP) provides a critical framework to guide clinical reasoning and decision-making in OT practice (Garcia et al, 2021). The current concept of EBP consists of different components. To optimise the clinical outcome, it is essential to apply and integrate 1) the best research-derived evidence, 2) opinions from clinical experts and clinician's own knowledge, 3) take into account of the client's values, preferences and circumstances of treatment provided, and 4) consider the practice context, various political, economic, socio-cultural, technological, legal and environmental factors (Hoffmann et al, 2017 and WFOT, 2021b).

Clinicians need to be able to critically appraise published research studies, assimilate valid observation from clinical experience, collaborate with clients and other professionals involved to apply practice-based and research-based evidence to optimise clinical outcomes. Clinical knowledge and expertise in different areas of practice remain crucial as clinicians need to maintain a fine balance between clinical experience acquired through everyday practice and external clinical evidence if it is available (Dougherty et al, 2016). Ensuring practice is evidence-based will help service users, commissioners, and other stakeholders to understand the value of occupational therapy in light of the current health care climate.

Person-Centred and Family-Centred Care Practice

To optimise clinical outcomes, service delivery should be underpinned by the philosophy of person-centred and family-centred care practice. Person-centred care supports people to develop the knowledge, skills, and confidence they need to more effectively manage and make informed decisions about their health and health care (Health Education England, 2017). There is growing evidence that person-centred care can improve a range of factors, including patient experience, care quality, and health outcomes (The Health Foundation, 2014).

It has long been recognised in family-centred care practice that the outcome of a child's development is highly influenced by the caregiving environment (Bartlett et al, 2016). To improve clinical outcomes, therapists need to enable and empower parent/carer to become an equal team member and involve in the whole intervention processes (Fingerhut et al, 2013). Person-centred and family-centred care practice can be facilitated by using service delivery approaches like the Occupational Performance Coaching (Graham and Rodger, 2010; Graham et al, 2013).

Setting Goals for Measuring Treatment Outcomes

It is important to set SMART (**S**pecific, **M**easurable, **A**ttainable, **R**elevant, and **T**ime-bound) goals as a means to measure the outcomes of treatment. In occupation-based practice, there are several best practice factors needed to be considered when setting treatment goals.

Participation Goals. Participation is one of the most significant outcomes of medical, rehabilitation, social, and educational inputs (Weintraub & Bar-Haim Erez, 2009; Dijkers, 2010; Rosenberg et al, 2010). The identification of personally meaningful participation goals provides powerful motivation, which can promote an individual's action and persistence towards goal pursuit (Pritchard-Wiart et al., 2019). It is consistent with the concept of participation articulated in the International Classification of Functioning, Disability, and Health Model (ICF & ICF-CY) (WHO, 2001 & 2007).

ICF Model and Participated Goals. The ICF model provides a framework to explain practice which fits well with OT philosophy and conceptual model of OT practice in different clinical areas (RCOT, 2004; Darzins et al, 2006; Cramm et al, 2012; Prodinger et al, 2015; Maritz et al, 2018; Belarmino and Jewell, 2019; Nuño et al, 2021). It provides a conceptual orientation for setting participation goals (the ends) and applying various treatment methods (the means) to address impairments in body function and structure, reduce limitations in activities, and promote participation in functional activities, with consideration of the health conditions, environmental factors and personal factors. Figure 2 illustrates components of the ICF and its relationship between treatment methods/strategies (the means) and treatment goals (the ends).

Teamwork and Collaborative Goal Setting Processes. Teamwork is critical to achieving the clinical outcomes because of the interrelated nature of the problems of the client and the need for skills and resources from many professionals to meet the needs of the client and family. Goals must be established in conjunction with the client, parents/carers, and all professionals involved. Goal-setting that is truly collaborative will drive motivation, engagement, self-efficacy, meaningful involvement, and enhanced outcomes (Brewer et al, 2014; McBryde and Ziviani, 2020).

The benefits of using a defined collaborative goal-setting and treatment process in service delivery include greater clarity of focus, shared understanding of issues, the potential for enhanced interdisciplinary teamwork, increased opportunities for communication and collaboration among team members, enhancement of client's feelings of competency, partnership with the clinical team and help to achieve better clinical outcome (Johnson, 2017; An et al, 2018).

Selection and Use of Outcome Measures

To ascertain the defined treatment goals have been achieved, it is important to select and apply appropriate quantitative and qualitative outcome measures which are ecologically valid, contextually relevant, meaningful to the clients, responsive to small changes, encourage collaborative goal setting, and facilitate family-, child- and person-centred approach in service delivery.

Quantitative (hard) outcome measures provide information on "how much" the defined outcomes have been achieved in form of numerical data e.g. norm-referenced standardised measures. Qualitative (soft) outcome measures provide information on "how well" the outcomes have been achieved in form of narrative / descriptive information e.g. self-evaluation by client, client satisfaction survey. Figure 3 illustrates a continuum of quantitative and qualitative outcome measures/methods for children and adults (Chu, 2019). It is good practice to use a combination of hard and soft outcome measures to capture all aspects of the client's problems/functions from multiple perspectives and in multiple environments (Palisano, 2014).

Figure 2: ICF Model and Participation Goals

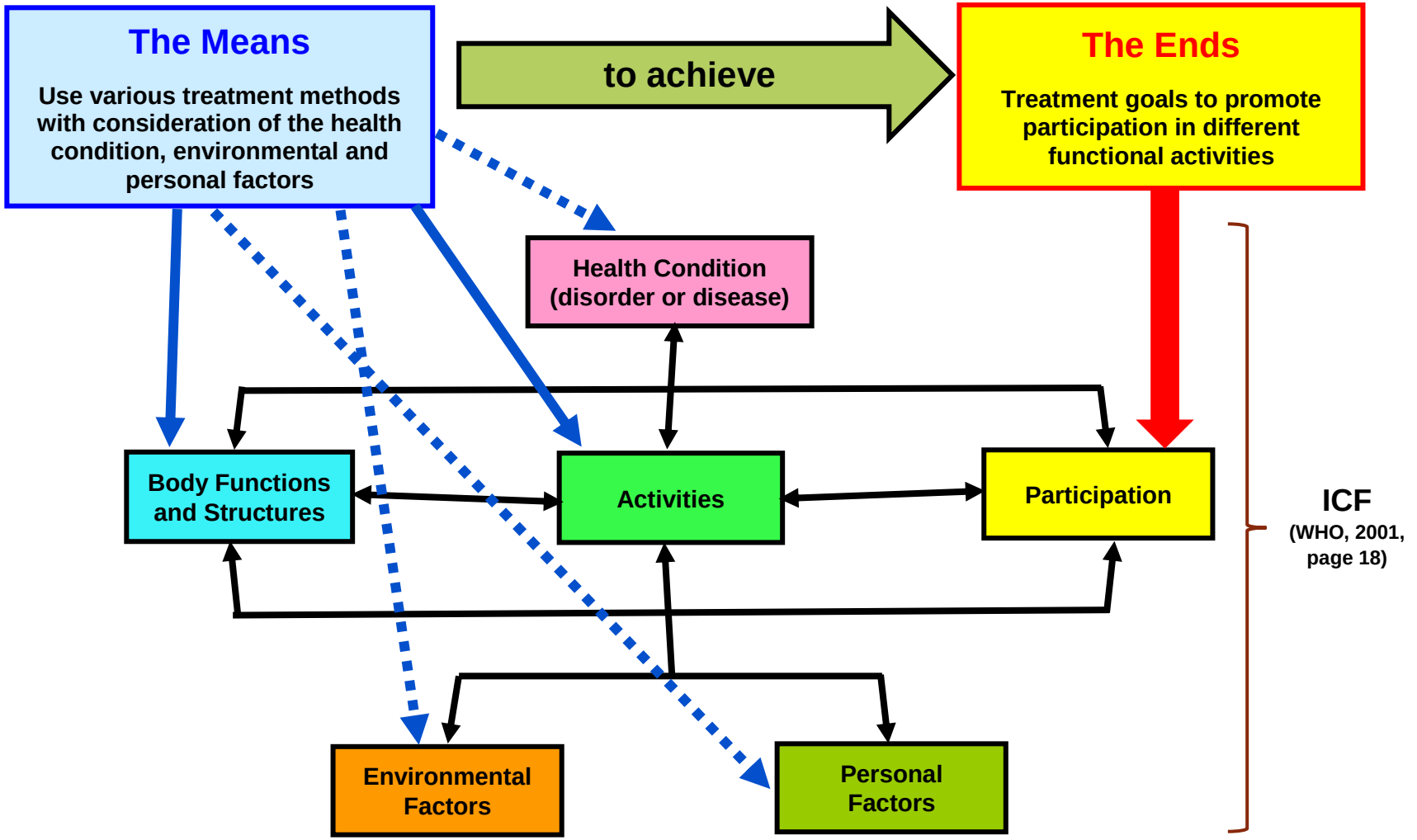
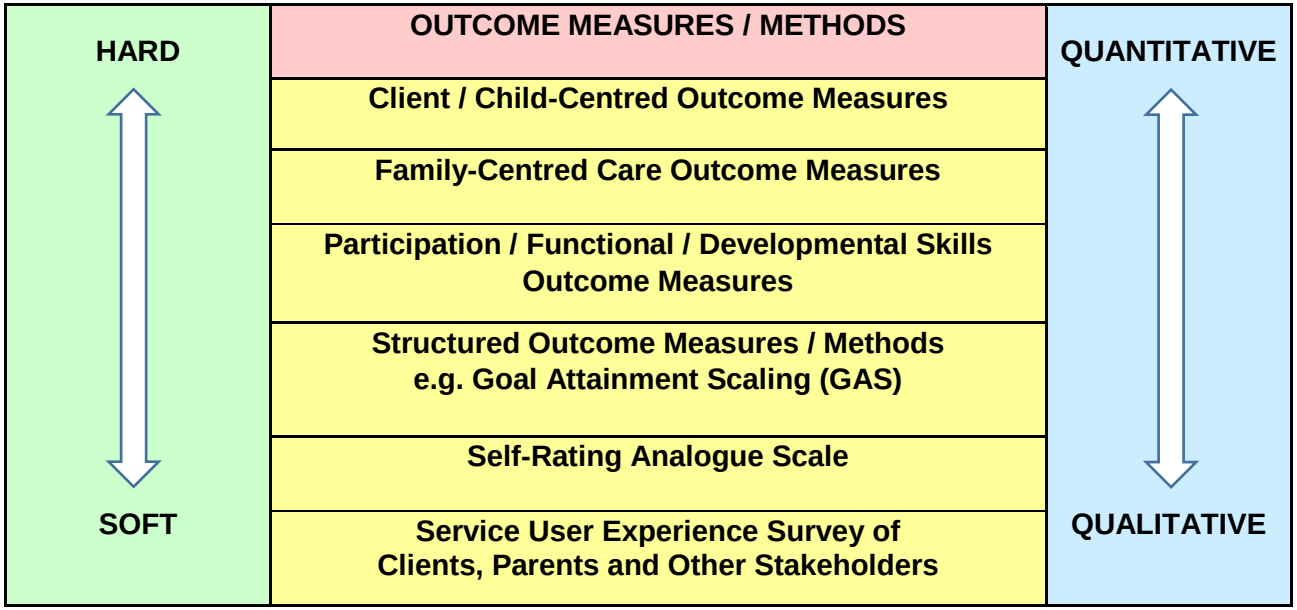


Figure 3: Continuum of Outcome Measures



STRATEGIES TO OPTIMISE ECONOMIC OUTCOMES – COST-EFFECTIVENESS OF THE SERVICE

With the current financial climate, occupational therapists need urgently to demonstrate cost-effectiveness of the services in comparison to other interventions. Therefore, simply demonstrating the effectiveness of an intervention is no longer sufficient (Sampson et al, 2014). It is important to measure the economic outcome of the OT service by using different health economic evaluation methods (Lambert et al, 2014; Drummond et al. 2015; Green and Lambert, 2016; Hand et al, 2022).

Matrix of Cost and Effectiveness

The term cost in the context of economic outcome refers to the amount or volume of resource contributions that are used for the delivery of a clinically effective intervention. Everyone would like to spend less on health care but only if the clinical outcome remains satisfactory. Figure 4 illustrates a matrix of the cost and effectiveness. The ideal option is number 4 that an intervention which is highly effective but at the lowest cost. As strategies to optimise clinical effectiveness have already been discussed, I will focus on discussing the cost involved.

Costing Information in Health and Social Care

Historically, Reference Cost was used to examine the average unit cost of different NHS services since 1997 (NHS Improvement, 2019). It is calculated by dividing the total cost of running a service by the total number of contacts made per year. However, significant variation exists in how reference costs are calculated in different NHS providers due to inconsistent data collection procedures and definitions of contacts.

In 2015, a single National Cost Collection was established to replace the Reference Cost through the Costing Transformation Programme (Monitor, 2014; NHS England and NHS Improvement, March 2021). The aim was to drive the transition to patient-level costing, which means that the NHS will be able to use cost data to drive continuous improvement in all its functions, and this, in turn, will mean better outcomes for the people using the services (NHS England and NHS Improvement, June 2021).

The Personal Social Services Research Unit (PSSRU) of the University of Kent has published an annual report on the Unit Costs of Health and Social Care since 1992 (Curtis and Burns, 2020). Unit costs represent the total expenditure incurred to produce one unit of output. Unfortunately, unit costs published in this report are not always applicable to a particular OT service as specific context, staffing and unique way of using resources needed to be considered when calculating the unit cost.

Calculating Unit Cost and Productivity of a Clinical Service

In preparing for the World Class Commissioning introduced in the NHS (Department of Health, 2007), I was asked by the Senior Management of the Ealing Primary Care Trust to develop a tool, based on a training course I developed, to be used by all community services to calculate the unit cost and productivity. I adopted a caseload-based approach to examine the capacity of the service and used it to calculate the unit cost and productivity of the service (Chu, 2011, 2012, and 2015). Figure 5 illustrates a schematic structure of steps for calculating the unit cost, caseload, and productivity of a clinical service.

Figure 4: Matrix of Cost and Effectiveness

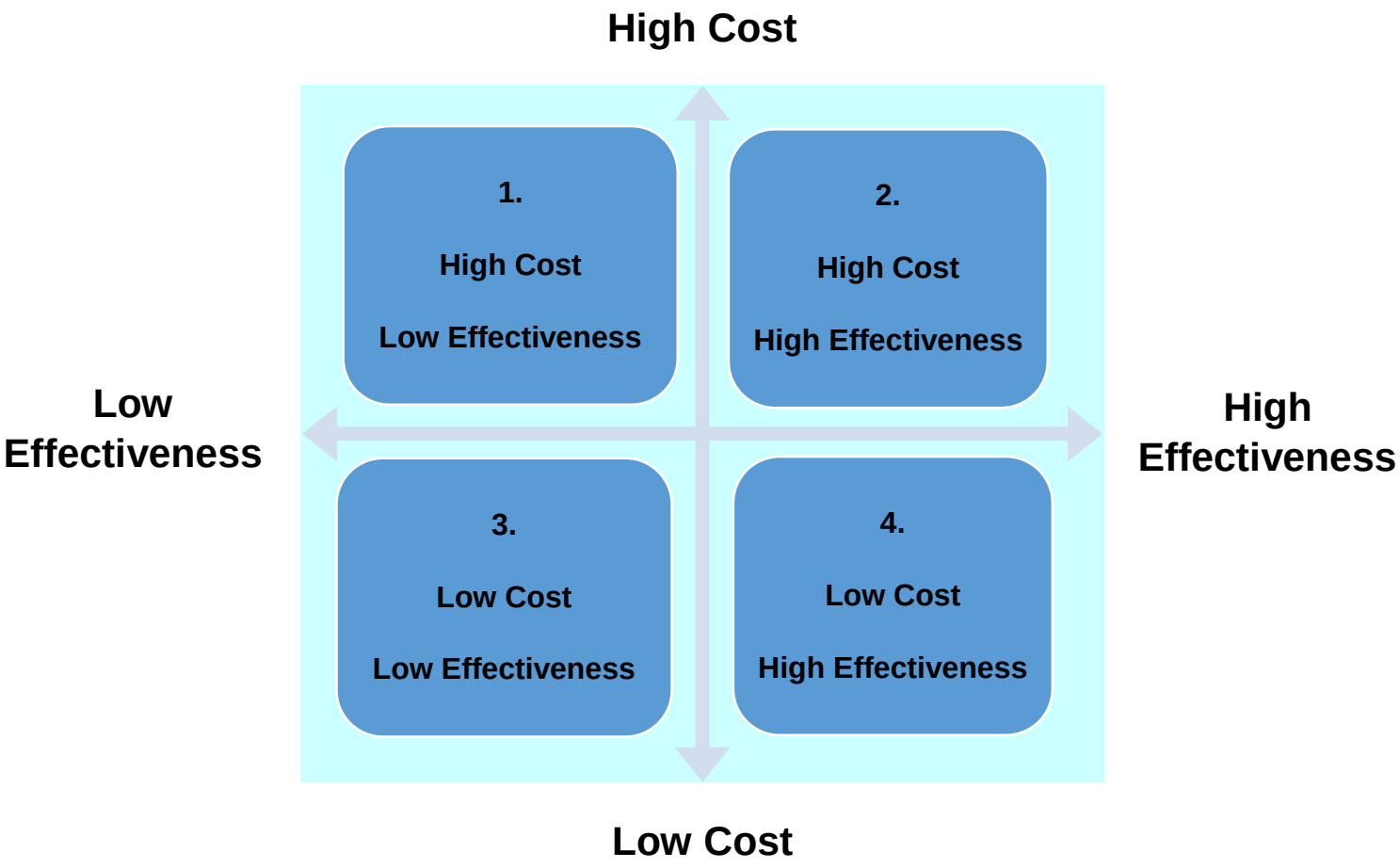
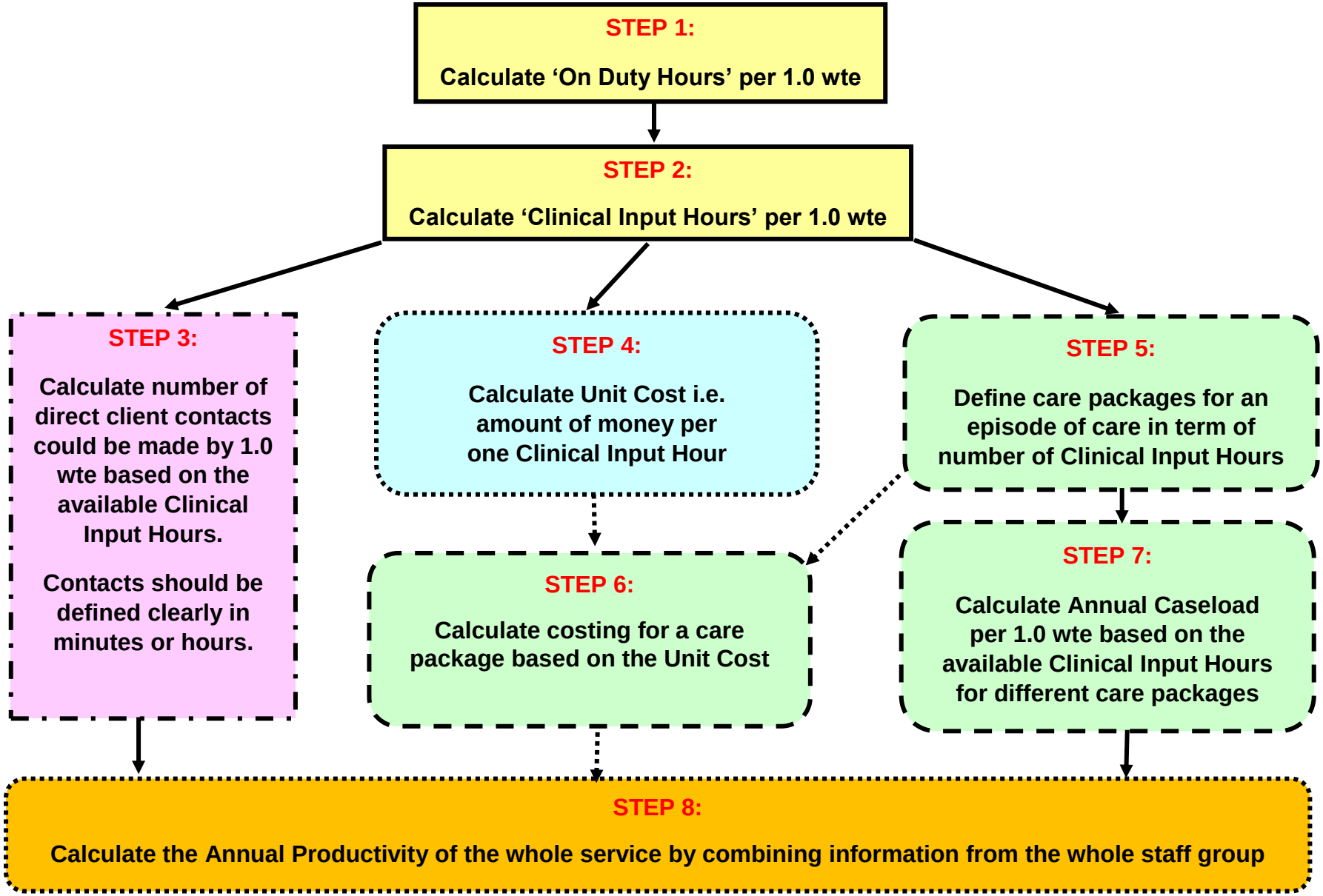


Figure 5: Steps for Calculating the Unit Cost, Caseload and Productivity of a Clinical Service
(Chu, 2011, 2012 and 2015)



As there is not enough time to cover all the calculation steps in this lecture, I will use the calculation of "On Duty Hours" (Step 1) and "Clinical Input Hours" (Step 2) to demonstrate the importance of optimising service efficiency to reduce unit cost for clinical outputs (see Table 2). Unit cost is the cost incurred to deliver one clinical input hour. It includes all fixed costs and all variable costs associated with the delivery of a service.

Table 2: Calculating On Duty Hours (Step 1) and Clinical Input Hours (Step 2)

Steps	Factors	Definitions	Examples of Calculation (based on one full-time staff)
1a.	Contracted Hours	Number of working hours per week multiplied by 52 weeks	37.5 hours x 52 weeks = 1950 hours
1b.	Less Fixed Leave	Annual Leave (Minimum 27 days) + 8 Bank Holidays = 35 days = 7 weeks per year	37.5 hours x 7 weeks = - 262.5 hours
1c.	Less Study Leave	For both statutory and external training courses. Minimum 2 weeks.	37.5 hours x 2 weeks = - 75 hours
1d.	Less Variable Leave	Includes sick leave and other leaves (excluding long sick and maternity leave). Minimum 2 weeks.	37.5 hours x 2 weeks = - 75 hours
1e.	Maximum available 'On Duty Hours'	These are the hours per year a staff member is available for work.	Max. On Duty Hours = 1537.5 hours (i.e. about 41 weeks per year)
2a.	Clinical Input Hours	Percentage of On Duty Hours for direct client contacts after deducting time spends on other supporting activities e.g. documentation, traveling, team meeting, supervision, etc.	If the ratio of time spends on direct client contacts and other supporting activities is 40% : 60%, then time available for a full-time Occupational Therapist to do direct client contacts per year is:- 40% of 1537.5 hours = 615 hours
2b.	**How to reduce cost per contact?** Use various service improvement strategies (e.g. Lean Thinking) to optimise the efficiency of the service, to increase the ratio of time spent on direct client contacts, to produce more clinical input hours, and reduce cost per contact.		For examples: For ratio 50% : 50% = 768.8 hours For ratio 60% : 40% = 922.5 hours With more clinical input hours available to produce more contacts, the cost per contact will be reduced.

On Duty Hours are the hours in a year a staff member is expected to be available for work after deducting the annual leave and other variable leaves (e.g. sickness, study leave) from the contracted hours (see Table 2 – Step 1a to 1e). For the available 'On Duty Hours', staff will spend time on direct client contacts (i.e. Clinical Input Hours) and other supporting activities, e.g. team meeting, documentation, liaison, supervision, etc.

Clinical Input Hours are the hours in a year a staff member is expected to be available for doing direct client contacts both face-to-face and non-face-to-face, e.g. phone consultation. The calculation of Clinical Input Hours is based on the percentage of On Duty Hours used by a therapist for direct client contacts as distinct from other supporting activities (see Table 2 – Step 2a). To do the calculation, each service needs to have information on the ratio of time spent on direct client contacts and other supporting activities. A time-and-motion study (Taylor, 2010) could be carried out if the information is not available.

Then, how can we reduce the cost per contact? As demonstrated in Table 2 Step 2b, by improving the efficiency of the service (through the use of various service improvement strategies discussed e.g. Lean Thinking), the ratio of time spent on direct client contacts can be increased to produce more clinical input hours. With more clinical input hours available to produce more contacts, the cost per contact will be reduced.

Once the number of 'Clinical Input Hours' is calculated, it can be used to calculate the number of client contacts that can be made by a full-time (or pro-rata) staff per year by defining the duration of a contact (Step 3 in Figure 5), the unit cost (Step 4), cost per care package by defining the number of clinical input hours required (Steps 5 & 6) and also caseload for individual staff and the whole service (Steps 7 & 8).

Economic Evaluations

Economic evaluations offer occupational therapists a systematic method to examine the impact of OT in relation to the financial costs of providing a service (WFOT, 2021a). It involves a comparative analysis, for example, the costs of interventions A and B with the clinical outcomes of interventions A and B (Drummond et al. 2015). There are multiple forms of economic evaluation with cost-effectiveness analysis the most common one.

Watson (2000 & 2002) and (Drummond et al, 2015) suggested that it is important to establish the clinical effectiveness of an intervention before any assessment of costs, as it would be inappropriate and wasteful to calculate the cost of providing an ineffective service. However, Morrow & Simpson (2022) argued that cost-effectiveness analysis should be added to clinical trials to evaluate the treatment effectiveness, cost, and cost-effectiveness at the same time. No matter which order of evaluation to follow, cost represents an integral part of the whole evaluation process (Franklin et al, 2019).

Unfortunately, the current low number and variable quality of health economic evaluations in OT are largely insufficient to inform resource allocation decisions (Green and Lambert, 2016). As there is still not much progress in this area of research, Weatherly and Davies (2021, p.330) advocated greater emphasis to be placed on "being research active and incorporating information on cost and clinical effectiveness as well as other wider societal care outcomes".

CONCLUSIONS

To conclude this lecture, occupational therapists must rise to a new level of sophistication in demonstrating that the services we provide are efficient, effective, and cost-effective. To achieve this, the interdependent relationship between performance, clinical and economic outcomes in service delivery, which is underpinned by strong leadership, the use of various service improvement strategies and collaborative research between managers, clinicians, researchers and health economists, is an important practice factor to be considered by all occupational therapists pursuing service improvement. There are three take-home messages.

In service development, managers should involve all clinical, support, and administrative staff in various service improvement activities to improve the efficiency of the service (performance outcomes) as a basis to achieve better clinical outcomes and economic outcomes by examining and applying practice-based and research-based evidence.

In clinical practice, OT clinicians and researchers should collaborate to conduct research, with patient and public involvement, to develop and validate interventions that are effective, affordable, deliverable, sustainable, person- / family-centred, and with measurable outcomes that focus on promoting the client's participation in different functional activities within real-life environments.

Managers, clinicians, researchers, and health economists should collaborate to conduct economic evaluations of interventions provided by occupational therapists to demonstrate the cost-effectiveness of the service.

To end this lecture, I would like to use the Eight Quality Rights proposed by Mosadeghrad (2012, p.258) as the benchmark statement for our service improvement: "*Providing the right healthcare services in a right way in the right place at the right time by the right provider to the right individual for the right price to get the right results"*. It helps to achieve the RCOT vision that "*people everywhere value the life-changing power of occupational therapy*" (Ford, 2022, p.16).

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