Evidence-based practice and practice-based evidence: What does it all mean?

This policy brief outlines the complexities involved in selecting interventions for early childhood services. It advocates for a broader method of assessing outcomes of interventions through incorporating practice-based evidence into our understanding of evidence-based practice.

For services in the early childhood sector, choosing the most effective interventions for children and their families often involves a challenging examination and evaluation of the available evidence. Traditionally, researchers have looked to evidence stemming from trials that incorporate rigorous methodologies as a way of selecting the 'best' evidence for evaluation. However, this narrow approach is not the only way of identifying effective interventions, nor is it necessarily always the best way.

Why is this issue important?

Early childhood programs are designed and funded with the aim of achieving successful outcomes for clients. How 'success' is defined depends upon the desired outcomes and the interventions that are identified for achieving them. In addition to being able to demonstrate that the selected interventions are logically related to the desired outcomes, services also need to be able to show that the interventions are known to be effective in achieving these outcomes.

Research shows that effective programs are based on scientifically-validated theoretical frameworks and methodologies that articulate clearly how the services achieve the desired outcomes (Bond & Carmola Hauf, 2004; Halpern, 2000; Shonkoff & Phillips, 2000; Simeonsson, 2000; Weissbourd, 2000). Without this evidence, interventions will be based on what seems right or has always been done; this is less likely to achieve desirable outcomes (Moore, 2007).

In an ideal world, services in the early childhood field would have numerous high quality studies from which to draw solid conclusions about the appropriateness or otherwise of a particular intervention for a particular client group. However, this is usually not the case, for a variety of reasons (see more on this over the page). Consequently, there has been a move within some sectors – particularly the medical, psychological and early childhood fields – to redefine 'evidence-based practice'. This proposed broader definition incorporates traditional evidence-based practice, 'practice-based' evidence and client characteristics, values and context, as follows:

1. Best research evidence. This refers to the results of trials of intervention strategies, assessments and clinical problems, obtained via laboratory populations or from populations in field settings (APA, 2006).

2. Clinical expertise. This refers to the use of clinical skills and past experience to identify clients' unique health status and diagnosis as well as the individual risks and benefits of potential interventions.

3. Client characteristics, values and context. This refers to the unique preferences, culture, concerns and expectations each client or family brings to a clinical encounter and which should be integrated into clinical decisions (Buysse & Wesley, 2006; Sackett et al., 2000).

Integrating these three sources of information is complex. In selecting the most effective intervention to suit their needs and circumstances, services need a decision-making process that enables them to weigh up the different elements.

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What does the research tell us?

Evidence-based practice

The traditional concept of evidence-based practice involves an evaluation of evidence in accordance with a 'hierarchy'; where the more rigorous the research methodology of a trial, the stronger the resulting evidence and the greater certainty about choosing it as an intervention strategy.

In Australia, the National Health and Medical Research Council (NHMRC) (2000) has adopted the following levels of evidence ratings:

• Level I: evidence obtained from a systematic review of all randomised controlled trials.

• Level II: evidence obtained from at least one properly designed randomised controlled trial.

• Level III – 1: evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method).

• Level III – 2: evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies, case-control studies, or interrupted time series with a control group).

• Level III – 3: evidence obtained from comparative studies without concurrent controls (historical control study, two or more single arm studies, interrupted time series without a parallel control group).

• Level IV: evidence obtained from case series, either post-test, or pre-test and post-test.

However, ethical considerations, including the withholding of the intervention for the control group or the use of an untested intervention on children, can prohibit the development of an evidence base by preventing approval of trials. Trials can also be costly to run. For these reasons, there may be interventions that are effective but have not yet proven to be so.

Even when a sufficient number of studies have been identified under this hierarchy, it can be difficult to reach agreement on what the evidence says. For instance, two studies identified Applied Behaviour Analysis (ABA) as an intervention that had proven to be effective in the treatment of autism (Lee & Miller, 2009; National Autism Centre, 2009). However, a systematic review of the evidence came to the opposite conclusion (Spreckley & Boyd, 2009).

It can also be difficult to replicate the specific parameters used within an 'evaluated' program to implement a 'new' program. For example, a new program may seek to target a client group of a slightly different age range, socio-economic status or cultural background than the evaluated intervention (Moore, 2007).

Finally, randomised controlled trials are less likely to be able to adjust for the effect of family values or clinical expertise on outcomes (Moore, 2007).

Practice-based evidence

Practice-based evidence involves the use of clinical expertise, the synthesis of evidence obtained from programs with similar (but not necessarily the same) aims and outcomes, and the gathering of evidence during practice.

Individual clinical and collective practice wisdom

Service providers' individual clinical skills, in conjunction with the accumulated experience of colleagues, provide a valuable evidence base from which to be able to rapidly identify a client's unique health status, diagnosis, personal values and expectations. This is important evidence to consider in assessing the individual risks and benefits of potential interventions (Moore, 2010).

Practice-based syntheses

Developed by Carl Dunst and colleagues (Dunst et al., 2002; Dunst, 2009), 'practice-based syntheses' is a method of collating evidence gathered from different studies that have used the same intervention characteristics or consequences to deliver the same outcome.

As with the NHMRC's level of evidence ratings, Dunst and colleagues propose the use of a 'hierarchy' to inform the credibility and strength of evidence obtained from different studies. As more conditions in the hierarchy are met, the evidence becomes stronger and more credible.

However, unlike NHMRC's levels of evidence, the practice-based evidence hierarchy gives different research designs an equal footing. Therefore, the credibility of findings is determined not by research designs per se, but by the extent to which empirical relationships are established. Rather than identifying effective programs, practice-based syntheses identify universal features of effective practice, and do so in a rigorous fashion. Dunst and colleagues have conducted a number of practice-based syntheses (for a full list see http://researchtopractice.info/productBridges.php).

The Bernard van Leer Foundation's Effectiveness Initiative (1999) is another example of a type of practice-based synthesis. Using qualitative methods, the Effectiveness Initiative examined the patterns and individual differences within and across effective early childhood programs with the aim of obtaining information about successful content and process.

Gathering evidence during practice

This notion of practice-based evidence involves gathering evidence of the effectiveness of a service as it is delivered by:

- focusing on the outcomes desired by clients

- obtaining regular feedback from clients as to whether these outcomes are being achieved (Duncan et al., 2003; Miller, 2004; Miller et al., 2004).

According to Miller, Hubble and Duncan (2008), there is strong evidence that the provider of a service is a much more important determinant of success than the particular treatment approach provided. In this context, highly effective service providers who are observant, alert and attentive to client feedback can use this evidence to modify practice and achieve better results.

These components of practice-based evidence fit well with family-centred practice, an increasingly essential feature of effective service provision which requires that programs and practices be adapted to suit the particular needs and circumstances of the child and parent (Moore, 2010).

Client values

The third and final element of the broader definition of evidence-based practice is client values and preferences. Studies of various forms of support and intervention with families, particularly vulnerable families, have consistently shown that they are more effective when they acknowledge and build on family values and priorities and can be counterproductive or even harmful when they are not (Attride-Stirling et al., 2001; Watson 2005; Anning et al., 2007; Winkworth et al., 2009).

Combining evidence-based practice, practice-based evidence and client values

Pursuing a broader definition of evidence-based practice allows services to evaluate evidence that may traditionally have been excluded. However, this leaves services with a multi-method, multi-disciplinary evidence-base from which they must draw in order to piece together the more precise reasons for an intervention's success or otherwise.

Drawing together all of the outlined information, Buysse and Wesley (2006) designed a five-step process that allows both evidence-based practice and practice-based evidence to be incorporated into decision-making in the early childhood field:

1. Pose the question.

2. Find the best available research evidence.

3. Appraise the evidence quality and its relevance.

4. Integrate research with values and wisdom.

5. Evaluate.

Because these decisions are linked to the desired outcomes, it is important to consult various sources of evidence and also to take account of the practical issues involved in implementing an intervention. Moore (2010) has proposed an expansion of the model, as follows:

1. Decide on service outcomes, in conjunction with target families.

2. Identify how the service will know when outcomes have been achieved.

3. Identify the most effective known strategy/strategies for achieving outcomes:

   – review efficacy studies to establish what has (and has not) been tested and what has shown to be effective

   – where there are gaps in the evidence, review practice-based evidence for what has shown to be effective

   – review what is known about how particular interventions are understood to 'work'.

4. Select the strategy/strategies that have the best evidence and/or program logic.

5. Consult with families to identify which strategy/ strategies is/are most able to be implemented in the particular service context.

6. Support families as they implement the strategy/ strategies and monitor effects for further evaluation.

What are the implications of the research?

Selecting an effective intervention is not simply a matter of selecting from a list of proven strategies. While the use of the best available evidence in the evaluation and selection of an intervention is vital, restricting this to the 'best research evidence' will not always tell services all they need to know in order to choose an intervention.

By not drawing on other sources, services may unnecessarily rule out (or be unaware of) other interventions or the underlying mechanisms of other programs that are deemed successful.

There is an alternative model of decision-making that services can employ to help determine the success or otherwise of a particular intervention. When equally rigorous due consideration is given to the identification of outcomes, strategies to achieve outcomes, circumstances, values and preferences – in conjunction with the evidence-base of the intervention itself – resulting programs are likely to be more relevant within particular service contexts, and therefore more successful.

Considerations for policy and programs

Services should always strive to apply a rigorous approach to selection of interventions in their program design. However, policy makers and funding bodies should be aware of the move towards a broader definition of evidence-based practice, and that this broader definition can provide an equally rigorous basis from which to choose intervention strategies for program implementation.

Funding bodies should be looking for programs that address or incorporate the following understandings:

- **Evidence-based practice incorporates three key elements.**
  In addition to research evidence, it is also important to take into account clinical expertise and family values.

- **Evidence-based or evidence-informed practice is driven by values.**
  Outcomes should be informed by the service provider's knowledge, as well as shaped by the client and/or the family's personal values and preferences.

- **Selecting intervention strategies should be as rigorous and objective a process as possible.** The classical methods of identifying effective interventions (through randomised control trials) need to be supplemented with equally rigorous methods involving practice-based syntheses and incorporating client values.