

EARLY CHILDHOOD INTERVENTION AUSTRALIA (VIC)
Seminar on *Evidence-based practice*
10th August 2010

IDENTIFYING EFFECTIVE
INTERVENTION STRATEGIES:
OUTCOMES, PROGRAM LOGIC AND
PRACTICE-BASED EVIDENCE

Tim Moore

Centre for Community Child Health
Royal Children's Hospital



OUTLINE

- Forms of truth
- Outcomes-based approach
- Evidence-based practice
- Practice-based evidence
- Program logic and realist syntheses
- Evidence-based decision making
- Conclusions



I would not give a fig for the simplicity
this side of complexity, but I would give
my life for the simplicity on the other
side of complexity.

Oliver Wendell Holmes
(US Supreme Court judge)

FORMS OF TRUTH

- Evidence-based practice – narrowly defined as randomised control studies etc - can be seen as lying at the extreme end of a continuum, and representing a particular non-generalisable form of 'truth'.
- At the other end of the continuum are broad simplified generalisations – motherhood statements – that can also be said to be 'true'.
- In between are statements that vary in the degree to which they are tied to evidence, simplified and generalised.
- Neither of these two extreme positions on the continuum of truth is useful in practice.

FORMS OF TRUTH (cont)

- Broad generalised statements are too vague to provide clear guidance on what services to provide or how to evaluate service efficacy.
- However, the other end of the continuum is also problematic – the more rigorous the evidence-based selection criteria, the more difficult it is to make any statements that have any value in the real world.
- This is because there are often only a few studies that meet the strictest criteria, and these are often conducted on quite different groups and under differing conditions so that generalisation becomes difficult and any conclusions have to be qualified by so many caveats that they become meaningless.

EVIDENCE FOR EFFECTIVENESS OF EARLY CHILDHOOD INTERVENTION SERVICES

Lee and Miller (2009) conducted a systematic review of the evidence of specific early intervention programs for children aged 0 to 3 with developmental disabilities

- They identified over 200 studies of early intervention programs, but judged only ten to have been sufficiently rigorously evaluated to meet the criteria for inclusion.
- Of these ten programs, only three showed evidence of the effectiveness of the intervention, and these were very small-scale studies.
- They concluded that there is very little evidence on the effectiveness of specific early intervention programs for infants and toddlers with developmental disabilities - not a very helpful conclusion.

EVIDENCE FOR EFFECTIVENESS OF EARLY CHILDHOOD INTERVENTION SERVICES (cont)

Another problem with this form of 'truth' is that it can be hard to reach agreement regarding what the evidence says.

- Lee and Miller (2009) identified Applied Behaviour Analysis as one intervention that had proven to be effective as judged by the highest standards.
- The US-based National Autism Centre (2009) also conducted a review of interventions for children with autism and identified applied behavioural analysis as one of the effective forms of treatment

EVIDENCE FOR EFFECTIVENESS OF EARLY CHILDHOOD INTERVENTION SERVICES (cont)

- But another recent systematic review of the evidence regarding this specific form of treatment for autism came to the opposite conclusion:

'Despite the barrage of requests for more comprehensive early intervention for children with ASD, only a small number of efficacy studies have been performed, enrolling only 76 children.

Current evidence does not support ABI as a superior intervention for children with ASD.'

Spreckley and Boyd (2008)

OUTCOMES-BASED APPROACH



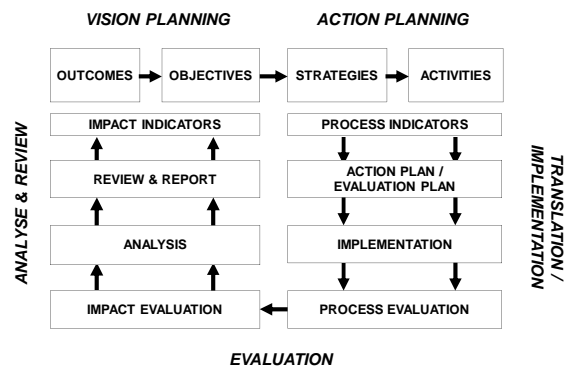
OUTCOMES-BASED PLANNING AND EVALUATION

- Outcomes-based approaches 'start with the end in mind', that is, they begin by identifying the outcomes to be achieved and work backwards from there
- Human service providers often focus more on the product (ie. service) than the outcome, that is, they think that the reason the service exists is to provide support and intervention programs to children and parents.
- But that is to confuse the means with the ends: all our technical expertise and various forms of service are only a means to an end - to make some kind of change in the child and family.
- The question is what kind of change are we seeking? And exactly how does the services we provide achieve that change?

CCCH OUTCOMES-BASED MODEL

- Based on earlier work done by ECIA (Vic), the Centre for Community Child Health has developed an outcomes-based model for child and family services
- This model involves five phases:
 1. Vision planning
 2. Action planning
 3. Translation and implementation
 4. Evaluation
 5. Analysis and review

CCCH OUTCOMES-BASED MODEL



CRITICAL FEATURES OF AN OUTCOMES-BASED APPROACH

- 'Keeping the end in mind': being clear about the desired *outcomes*
- Identifying *objectives* and *indicators* that will show when the outcome has been achieved
- Identifying effective *strategies* for achieving these outcomes
- This can be done in two complementary ways:
 - Evidence-based and practice-based evidence
 - Program logic and realist syntheses

EVIDENCE-BASED PRACTICE



REDEFINING EVIDENCE-BASED PRACTICE

Recently, there have been moves to redefine evidence-based practice in areas such as medicine, psychology and early childhood intervention

Evolving definitions of evidence-based medicine:

- 'Evidence-based practice is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients' (Sackett, Richardson, Rosenberg and Haynes, 1997)
- 'Evidence-based medicine is the integration of best research evidence with clinical expertise and patient values' (Sackett, Straus, Richardson, Rosenberg and Haynes, 2000)

REDEFINING EVIDENCE-BASED PRACTICE (cont)

- By *best research evidence* we mean clinically relevant research, often from the basic sciences of medicine, but especially from patient-centered clinical research into the accuracy and precision of diagnostic tests (including the clinical examination), the power of prognostic markers, and the efficacy and safety of therapeutic, rehabilitative, and preventive regimens.
- By *clinical expertise* we mean the ability to use clinical skills and past experience to rapidly identify each patient's unique health status and diagnosis, the individual risks and benefits of potential interventions, and their personal values and expectations.

REDEFINING EVIDENCE-BASED PRACTICE (cont)

- By *patient values* we mean the unique preferences, concerns and expectations each patient brings to a clinical encounter and which must be integrated into clinical decisions if they are to serve the patient.

When these three elements are integrated, clinicians and patients form of diagnostic and therapeutic alliance which optimises clinical outcomes and quality of life.

Sackett, Straus, Richardson, Rosenberg & Haynes (2000)

REDEFINING EVIDENCE-BASED PRACTICE (cont)

Evidence-based practice in psychology:

Evidence-based practice is 'the integration of the best available research with clinical expertise in the context of patient characteristics, culture, and preferences' (American Psychological Association, 2006).

- **Best research evidence.** Best research evidence refers to scientific results related to intervention strategies, assessment, clinical problems, and patient populations in laboratory and field settings as well as to clinically relevant results of basic research in psychology and related fields.

REDEFINING EVIDENCE-BASED PRACTICE (cont)

- **Clinical expertise.** Psychologists' clinical expertise encompasses a number of competencies that promote positive therapeutic outcomes.
- **Patients' characteristics, values, and context.** Psychological services are most effective when responsive to the patient's specific problems, strengths, personality, sociocultural context, and preferences.

REDEFINING EVIDENCE-BASED PRACTICE (cont)

Evidence-based practice in early childhood intervention:

- Evidence-based practice is 'a decision-making process that integrates the best available research evidence with family and professional wisdom and values' (Buisse and Wesley, 2006)
- In other words, a balance of scientific proof, family and professional wisdom, and family and professional values.
- Evidence-based practice is essentially a *process* – a way of empowering individuals to deliver the most effective interventions on behalf of children and families

REDEFINING EVIDENCE-BASED PRACTICE (cont)

- Previous attempts to influence practice knowledge have emphasised products such as written sets of the most effective interventions on behalf of children and families (eg. DEC *Recommended Practices for Early Intervention / Early Childhood Special Education*, 2000)
- In contrast, evidence-based practice represents a democratisation of knowledge in which knowledge is transparent and accessible to all, thus requiring that practitioners identify, evaluate, and interpret the evidence and apply it to solve practice problems.

Buisse & Wesley (2006)

PRACTICE-BASED EVIDENCE



PRACTICE-BASED EVIDENCE

There are several different forms of practice-based evidence:

- Individual clinical expertise
- Collective practice wisdom
- Practice-based syntheses
- Concurrent gathering of evidence during practice

PRACTICE-BASED SYNTHESSES

An alternative definition and way of assessing evidence-based practice has been developed by Carl Dunst and colleagues (Dunst, Trivett and Cutspec, 2002; Dunst, 2009)

- They define evidence-based practices as 'Practices that are informed by research, in which the characteristics and consequences of environmental variables are empirically established and the relationship directly informs what a practitioner can do to produce a desired outcome'.
- According to this perspective, a practice is evidence-based when the findings from different studies of the same practice replicate and show that the same practice characteristics are related to the same outcomes.

PRACTICE-BASED SYNTHESSES (cont)

Hierarchy of evidence (Dunst, Trivette & Cutspec, 2002)

- The consequences of a practice or intervention are measured to establish a change in a behaviour or outcome.
- The characteristics of a practice or intervention are measured to establish that the environmental event or experience was applied.
- Both the characteristics and consequences of an intervention or practice are measured, but are not related to one another in a way that establishes a statistical or functional relationship between the variables.
- Both the characteristics and consequences of an intervention or practice are measured and related to one another in a way that establishes a statistical or functional relationship between variables.

PRACTICE-BASED SYNTHESSES (cont)

Hierarchy of evidence (cont)

- Both the characteristics and consequences of an intervention or practice are measured and related to one another empirically, and alternative explanations for the relationship are systematically ruled out.
- The relationship between the characteristics and consequences of an intervention or practice is replicated across cases or studies, empirical dependencies are established, and alternative explanations for the relationship are ruled out.

These six types of relationships between the characteristics and consequences of an intervention or practice constitute a hierarchy, in which the credibility of the evidence becomes increasingly stronger when the highest conditions in the hierarchy are met.

PRACTICE-BASED SYNTHESSES (cont)

Examples of practices studied in this way:

- Response-contingent learning opportunities
- Influence of caregiver responsiveness
- Characteristics of interventions promoting parental sensitivity to child behaviour
- Influences of contingent touch on infant behaviour

PRACTICE -BASED EVIDENCE

Another distinction is between *evidence-based practice* and *practice-based evidence*:

- **Evidence-based practice** focuses on the **method** by which change is achieved, and only using those methods that have been empirically proven to be effective (National Health and Medical Research Council, 1999; Sackett, Straus, Richardson, Rosenberg and Haynes, 2000).
- **Practice-based evidence** focuses on the **outcomes** desired by clients, gets regular feedback from clients as to whether these are being achieved, and adjusts the method being used to achieve the outcomes that the clients want (Duncan, Miller & Sparks, 2004; Miller, 2004; Miller, Duncan & Hubble, 2004).

PRACTICE-BASED EVIDENCE (cont)

- According to Miller, Hubble and Duncan (2008), the evidence is incontrovertible that who provides the therapy is a much more important determinant of success than what treatment approach is provided.
- So what distinguishes the most effective therapists from those who are less effective? Is it a matter of temperament or training?
- They consulted the work of Ericsson (2006), an expert on experts and expertise, who has studied the world's best athletes, authors, chess players, dart throwers, mathematicians, pianists, teachers, pilots, physicians, and others.

PRACTICE-BASED EVIDENCE (cont)

- Ericsson concludes that the key to superior performance is that the best of the best *simply work harder at improving their performance* than others.
- Such deliberate practice is not the same as the number of hours spent on the job, but rather the amount of time devoted specifically to reaching for objectives just beyond one's level of proficiency.
- However, this level of practice is not enough: to reach the top level, *attentiveness to feedback* is crucial.

PRACTICE-BASED EVIDENCE (cont)

- The most effective *medical diagnosticians* do what all proficient physicians do – examine the patient, take careful notes, reflect on their assessment – but also take one additional critical step: they follow up.
- Unlike their ‘proficient’ peers, they need to know whether they were right, even though finding out is not required nor reimbursable – this them an advantage over their peers by letting them better understand how and when they are improving.

PRACTICE-BASED EVIDENCE (cont)

- This is also the case with *therapists*: those who do not seek feedback end up with unrealistic estimations of their performance skills.
- Highly effective therapists are more accurate in their appraisals: they are more likely to ask for and receive negative feedback about the quality of the work and their contribution to the therapeutic alliance.
- Most therapists report that they routinely seek feedback from their clients, but evidence suggests that they over-estimate or misrepresent how often they really do so.
- Highly effective therapists, on the other hand, consistently seek client feedback about how the client feels about them and their work together.

PRACTICE-BASED EVIDENCE (cont)

- This has also been defined as a characteristic of *effective teachers*: they constantly monitor the results of their own teaching.
- Based on a synthesis of over 800 meta-analyses on the influences on achievement in school-aged students, Hattie (2008) summarises his findings thus:

‘The remarkable feature of the evidence is that the biggest effects on student learning occur when teachers become learners of their own teaching, and when students become their own teachers. When students become their own teachers they exhibit the self-regulatory attributes that seem most desirable for learners (self-monitoring, self-evaluation, self-assessment, self-teaching).’

PROGRAM LOGIC AND REALIST SYNTHESSES



PROGRAM LOGIC

- *Program logic* or *theory of change* explains the process through which change occurs, and shows how the service or program that is delivered results in the outcomes that were intended.
- The most effective forms of intervention are based on well-articulated theories of change
- Having a clear program logic makes service delivery more focused and purposeful, and therefore more effective.
- Program logic is concerned with the links between the different elements of the outcomes-based model, and follow an ‘if... then...’ logic.

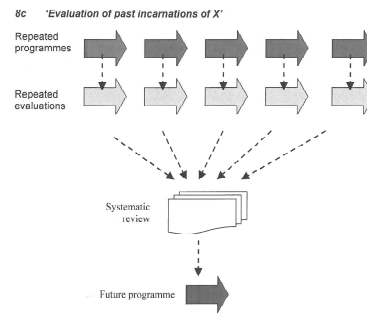
REALIST SYNTHESIS

- Realist synthesis is an approach to reviewing research evidence on complex social interventions, which provides an explanatory analysis of how and why they work (or don’t work) in particular contexts or settings.
- It complements more established approaches to systematic review, which have been developed and used mainly for simpler interventions like clinical treatments or therapies.
- In this approach, interventions are viewed as sequences of mechanisms that produce diverse effects according to context, so that any particular intervention will have its own particular signature of outputs and outcomes.

REALIST SYNTHESIS (cont)

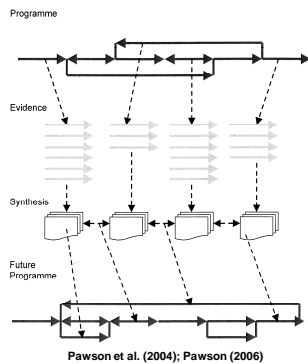
- The core principle is that we should make explicit the underlying assumptions about how an intervention is supposed to work (the program logic), and should then go about gathering evidence in a systematic way to test and refine this theory.
- Rather than seeking generalisable lessons or universal truths, it recognises and directly addresses the fact that the 'same' intervention never gets implemented identically and never has the same impact, because of differences in the context, setting, process, stakeholders and outcomes.
- Instead, the aim of realist review is explanatory - 'what works for whom, in what circumstances, in what respects, and how?'

BUILDING THE EVIDENCE BASE FOR POLICYMAKING: STANDARD APPROACHES



Pawson et al. (2004); Pawson (2006)

BUILDING THE EVIDENCE BASE FOR POLICYMAKING: REALIST APPROACH



Pawson et al. (2004); Pawson (2006)

TOWARDS A PROCESS OF EVIDENCE-BASED DECISION-MAKING

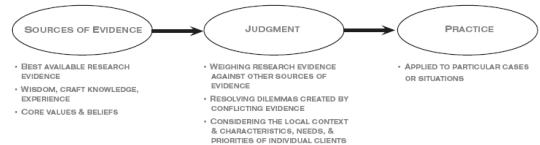


EVIDENCE-BASED DECISION-MAKING

Buyse and Wesley (2006) recommend a five-step process for evidence-based practice decision-making for the early childhood field.

- Pose the question.
- Find the best available research evidence.
- Appraise the evidence quality and relevance.
- Integrate research with values and wisdom.
- Evaluate.

A Proposed Model for Applying Evidence to Inform Practice Decisions



Virginia Buyse and Patricia W. Wesley (2006). **Evidence-Based Practice in the Early Childhood Field**. Washington, DC: Zero to Three.

EVIDENCE-INFORMED DECISION-MAKING

- Decide the outcome with the family
- Identify how you will know when the outcome has been achieved
- Identify the most effective known strategy for achieving the outcome:
 - review efficacy studies to establish what has and has not been tested and what has been shown to be effective
 - where there are gaps in the evidence, review practice-based evidence for what has been shown to be effective
 - review what is known about how particular interventions are understood to 'work'

.... cont

EVIDENCE-INFORMED DECISION-MAKING (cont)

- Select strategies with best evidence and/or program logic
- Consult with family to identify which strategy is most able to be implemented in their particular circumstances
- Monitor the effects of the strategy

CONCLUSIONS



CONCLUSIONS

- Notions of evidence-based practice have broadened to incorporate three key elements
- The decision-making process should start with the end in mind
- Evidence-based or evidence-informed practice is not a value-free exercise – on the contrary, it is necessarily driven by values
- However, selecting intervention strategies should be as rigorous and objective a process as possible
- Being an effective practitioner and using evidence-based practices are two different things
- Being an effective practitioner also involves constantly monitoring one's own practice

Dr. Tim Moore

Senior Research Fellow

Centre for Community Child Health,
Murdoch Childrens Research Institute,
The Royal Children's Hospital, Flemington Road,
Parkville, Victoria, Australia 3052

Phone: +61-3-9345 6150
Fax: +61-3-9345 5900
Email: tim.moore@mcri.edu.au
Websites: www.rch.org.au/ccch
www.econnections.com.au

