

DRAFT SUBJECT TO EDITING

Comparative Effectiveness Research: Designs and Methods

Edward J Mullen, PhD

Willma and Albert Musher Professor Emeritus

Columbia University

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Abstract

This presentation will discuss evaluation of social Interventions using comparative effectiveness research designs & methods (CER). While comparative designs and methods have been used for some time to evaluate social interventions, CER is a recent development because of the set of characteristics which are now used to define this form of research. CER has taken on new importance because of the resources allocated to CER, as well as its centrality in policy. CER is presented as an outgrowth of earlier research emphases on technology assessment, evaluation research, outcomes research, and evidence-based policy and practice. After defining CER, this presentation will discuss design and methodological requirements and alternatives. Key among these requirements are: the use of comparison research designs contrasting credible, active interventions (not placebo controls); focus on effectiveness rather than efficacy questions; development, expansion, and use of a variety of data sources and methods to conduct timely and relevant research; disseminate of results in a form that is quickly usable by practitioners, clients, policymakers, and payers; conducted in “real-world’ settings”; client involvement in all research phases. With the advent of evidence-based policy and practice, evidence quality came to be viewed through the lens of linear, research design hierarchies. CER has displaced that view with a non-hierarchical view of evidence judged against criteria of relevance and responsiveness to CER requirements. While CER is now prominent in European and American healthcare, it is only beginning to be discussed in the wider human services. How the CER framework can be adapted to social intervention research is a pressing question.

When I was invited to make this presentation I initially thought that I would comment on the nature and function of evidence in evidence-based policy and practice since this has become a hot topic drawing much debate. I had considered commenting on the topic of evidence, drawing from both philosophical and scientific views. However, as is so often true with abstract discussions, the reality hit me that the nature and function of evidence in evidence-based policy and practice is being shaped by many new developments, including the rapid emergence of comparative effectiveness research, which itself is a response to evidence-demands coming from evidence-based policy and practice. So, I thought it would be of interest to examine CER and the types and function of evidence required by CER. I believe this is a timely and relevant topic for those of us concerned with methodological development in the evaluation of practice, which I assume includes all of us here this morning.

My objectives in this paper are: introduce a “new” research strategy becoming popular in the U.S. healthcare called Comparative Effectiveness Research (CER); highlight design requirements for CER; outline recommended CER research designs and analytic methods; identify issues and limitations to consider as CER is adapted in the human services.

Figure 1

- ### CER Now at Forefront of U.S. Health Policy Discussions
- American Recovery & Reinvestment Act (2009) moved CER forward
 - Allocated \$1.1 billion to CER
 - Allocated within 2 yrs. with results in 3-4 yrs.
 - Patient-Centered Outcomes Research Institute (PCORI) created in Patient Protection & Affordable Care Act of 2010
 - Estimated annual revenue = ~ \$500 million
 - CER has captured attention practitioners, researchers, public, policy makers, funding agencies & insurers
 - Hope is CER:
 - will provide information to help practitioners make evidence-based decisions
 - will incorporate service users' preferences & perspectives
 - will improve care quality
 - Will help control costs
 - Human service professions beginning to pay attention to CER
 - Social Work Policy Institute symposium examined use of CER in social work (2009)
 - Social workers, public health professionals, nurses, educators & other allied health professionals affected by CER

In the United States CER has taken on new importance since passage of American Recovery and Reinvestment Act of 2009 and the Patient Protection and Affordable Care Act of 2010 (PPACA).

In their introductory editorial to the April, 2012 special *JAMA* issue on comparative effectiveness research Golub and Fontanarosa provide a succinct description of the recent invigoration of CER in the United States:

“Comparative effectiveness research (CER) has captured the attention of the biomedical community, including physicians, other health care professionals, and clinical researchers; the public, including patients and their advocates; and policy makers, including funding agencies and health care insurers. This keen interest is based, at least in part, on the hope that the findings from CER will provide useful information to help

clinicians make evidence-based decisions, will incorporate patient preferences and patient-centered perspectives, and, ultimately, will improve the quality of care and help control health care costs. Although the basic concept of comparing available therapies certainly is not new, until recently only a small fraction of US health-related expenditures had been devoted to CER. However, CER achieved prominence when the American Recovery and Reinvestment Act of 2009 allocated \$1.1 billion to CER: \$300 million in CER funding for the Agency for Healthcare Research and Quality, \$400 million for the National Institutes of Health, and \$400 million for the Office of the Secretary of Health and Human Services.”

They go on:

“Other developments, such as the creation of the Patient-Centered Outcomes Research Institute (PCORI) as part of the Patient Protection and Affordable Care Act of 2010, also have contributed to highlighting the importance of patient involvement in clinical research and in the generation of evidence, thereby bringing CER to the forefront of health policy discussions.” (pages 1643-1644)

While the strongest impetus for CER in the United States has come from the health sector, human service professions in other sectors have turned attention to CER since the passage of the Patient Protection and Affordable Care Act of 2009.

For example, the National Association of Social Workers, Social Work Policy Institute convened a symposium in the fall of 2009 in Washington, DC for the purpose of strengthening the connection between social work research and CER (Social Work Policy Institute, 2010).

CER is now being included in discussions within public health, social work, and other social intervention disciplines in the context of dissemination and implementation research and translational science (Glasgow and Steiner, 2012).

Since CER is most highly developed in medicine and health I will be describing CER in the context of health. However, with relevant adaptations, I believe that CER has significant potential for applications in a wide range of human service disciplines and professions. I am reminded of how evidence-based policy and practice first developed in medicine and health, and then quickly finding applications in all of the allied health professions and beyond. I believe CER has a similar potential. Indeed some have referred to CER as EBM-version 2!

I begin by defining what is meant by CER.

Figure 2

What is Comparative Effectiveness Research (CER)?

- **Conduct & synthesis** of research
 - **Comparing benefits & harms**
 - **Of different interventions & strategies**
 - **To prevent, diagnose, treat & monitor**
 - **Health conditions**
 - **In 'real-world' settings**
 - Federal Coordinating Council for Comparative Effectiveness Research. Report to President & Congress. US Department of Health & Human Services; June 30, 2009

The U.S. Federal Coordinating Council for Comparative Effectiveness Research was established by the U.S. Congress in 2009 charged with defining CER as well as coordinating CER efforts across federal agencies. In the Council's report to the President and to Congress, CER was described as: "the conduct and synthesis of research comparing benefits and harms of different interventions and strategies to prevent, diagnose, treat and monitor health conditions in real-world settings." It is noteworthy that the Council defined CER as research conducted in real-world settings" as contrasted with highly controlled environments wherein efficacy research is conducted. This has important implications which I will return to later. Also, this definition refers to the target of interventions and strategies as "health conditions" which is quite general and very inclusive (Federal Coordinating Council for Comparative Effectiveness Research, 2009).

Figure 3

What is Comparative Effectiveness Research (CER)?

- Generation & synthesis of evidence
 - Comparing benefits & harms
 - Of alternative methods to prevent, diagnose, treat, & monitor
 - **Clinical condition or to improve delivery of care**
 - **Purpose to assist consumers, clinicians, purchasers, & policy makers to make informed decisions**
 - **That will improve health care**
 - **At individual & population levels**

– U.S. Institute of Medicine 2009

At the time the Federal Coordinating Council was established, the establishing legislation also charged the U.S. Department of Health and Human Services to contract with the U.S. Institute of Medicine both to define and to recommend priorities for CER. The Institute defined comparative effectiveness research as: “the generation and synthesis of evidence that compares the benefits and harms of alternative methods to prevent, diagnose, treat, and monitor a clinical condition or to improve the delivery of care. The purpose of CER is to assist consumers, clinicians, purchasers, and policy makers to make informed decisions that will improve health care at both the individual and population levels.” This definition expands the target of intervention in an important way, namely, rather than using the general term of “health conditions” as the outcome this definition explicitly states that the outcomes or targets of intervention can be either a “specific clinical condition” or strategies for “delivery of care”. This means that the outcomes can focus on specific individual health problems or aspects of population level service systems. The intent of CER is to improve care at both individual and population levels. Also, the Institute definition importantly adds a statement about the purpose of CER which is not only to “generate and synthesis” (research) evidence, but the definition states that this should be done so as “to assist consumers, clinicians, purchasers, and policy makers to make informed decisions that will improve health care at both the individual and population levels” (Sox and Greenfield, 2009).

The U.S. Agency for Health Care Research and Quality (AHRQ) has conducted a form of CER for many years. As part of the 2009 legislation it was awarded additional funding to expand its work in CER and it joined with the Federal Coordinating Council and with the IOM to define CER in the new context established by the 2009 legislation.

Figure 4

- What is Comparative Effectiveness Research (CER)?**
- Designed to **inform health-care decisions**
 - By providing evidence on **effectiveness**, benefits, & harms
 - Of different treatment options
 - Evidence is **generated from research studies that compare drugs, medical devices, tests, surgeries, or ways to deliver health care**
 - **Requires development, expansion, & use of a variety of data sources & methods**
 - To conduct **timely & relevant research**
 - **Disseminate results in a form that is quickly usable by clinicians, patients, policymakers, & health plans & or payers**
 - U.S. Agency for Health Research & Quality (AHRQ)

The AHRQ defines CER as: “--- research --- designed to inform health-care decisions by providing evidence on the effectiveness, benefits, and harms of different treatment options. The evidence is generated from research studies that compare drugs, medical devices, tests, surgeries, or ways to deliver health care. . . . Comparative effectiveness research requires the development, expansion, and use of a variety of data sources and methods to conduct timely and relevant research and disseminate the results in a form that is quickly usable by clinicians, patients, policymakers, and health plans and or payers.” As did the IOM definition the AHRQ explicitly states that the purpose of CER is to “inform health-care decisions”, but AHRQ stresses this purpose even more by placing it up-front rather than leaving it to be stated at the end of the definition. A most important addition to the statement of what effects are to be addressed beyond “benefits and harms” is the statement that evidence is to be provided on the

“effectiveness” (not efficacy) of interventions. Also, rather than simply referring to the interventions to be compared as “alternate interventions and strategies” or “methods” AHRQ specifies that CER is to examine outcomes of a range of intervention types including “drugs, medical devices, tests, surgeries or ways to deliver health care”. Two more important requirements are included in the AHRQ definition which are not in the other two definitions. First, there is a requirement that the research be designed so that the questions addressed are “timely and relevant” and able to be disseminated in a form that is “quickly usable” by the range of stakeholders. Lastly, and especially important for what I have to say in the rest of my presentation, the AHRQ definition adds that CER “requires the development, expansion, and use of a variety of data sources and methods”. This is a challenging requirement. Indeed, all of these requirements taken together present a major challenge to those who would conduct CER (Agency for Healthcare Research and Quality, accessed March 26, 2012).

Figure 5

PCORI

- **Patient Protection & Affordable Care Act signed into law in 2010**
 - **Created Patient-Centered Outcomes Research Institute (PCORI)**
 - **Patient-centeredness:**
 - **extent to which preferences, decision-making needs, & characteristics of patients are addressed**

I mentioned that while CER was initially established by the Recovery Act legislation of 2009, that funding was intended to be quickly spent as an economic stimulus. Consequently, the 2009 legislation did not set up a permanent structure or funding for CER. However, that shortcoming was addressed as part of the health care reform legislation which included provision for establishing an ongoing CER funding and structure, namely PCORI. PCORI added an important requirement for CER that is implicit in the other definitions, namely a requirement that CER be “patient-centered”. PCORI states that patient-centeredness refers to the extent to which the preferences, the decision-making needs, and the characteristics of patients are addressed. PCORI requires that patients and caregivers, or their representatives be included in all aspects of CER from setting initial priorities through dissemination.

Notably, none of these three definitions make any reference to including a cost analysis in CER. This is because the 2009 legislation explicitly excluded cost analysis as within the purview of CER. There are interesting political and, perhaps, ethical reasons for this exclusion. In the U.S. there have been strong arguments pro and con about including cost analyses within CER (e.g., Wilensky, 2006; American College of Physicians, 2008). Without going into this issue I will simply say that there are strong arguments for including cost analysis within the purview of CER, and I will include cost-effectiveness as part of CER in my remaining comments.

Figure 6



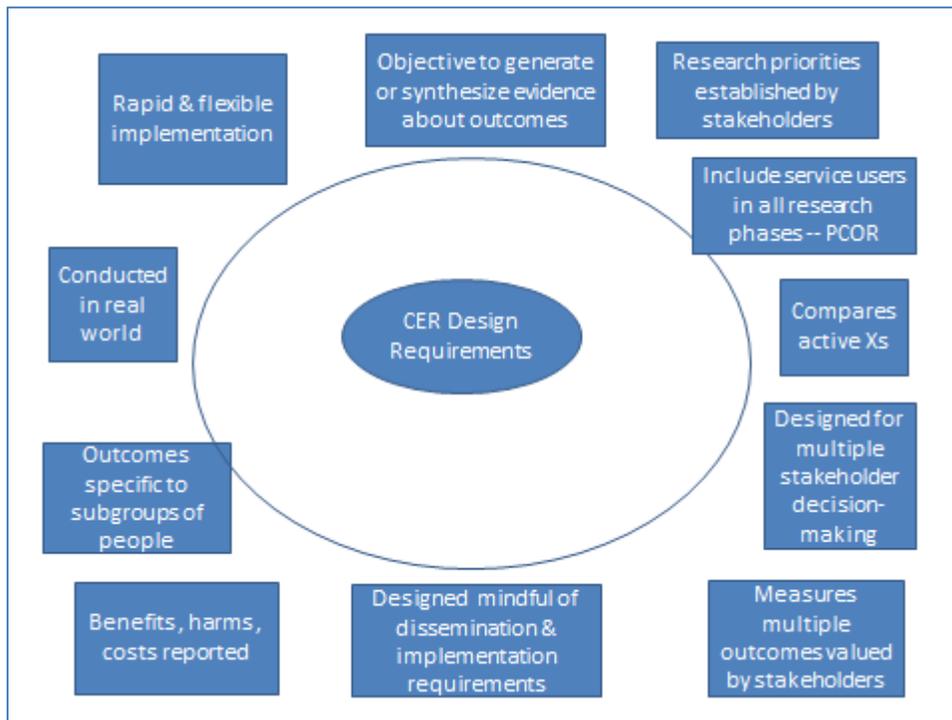
What is Comparative Effectiveness Research (CER)?

- CER can include **cost effectiveness**
 - Fear of rationing led to exclusion of cost analysis in federal legislation
 - Others take position that cost effectiveness is essential information needed to make informed decisions among alternatives
 - American College of Physicians. 2008. Information on Cost Effectiveness: An Essential Product of a National Comparative Effectiveness Program. *Annals of Internal Medicine* 148:956–61.

Perhaps I have belabored the definitions of CER too much. However, I think the composite definition resulting from bringing these three set of requirements together sets an important foundation, making explicit what is expected from this form of research, and

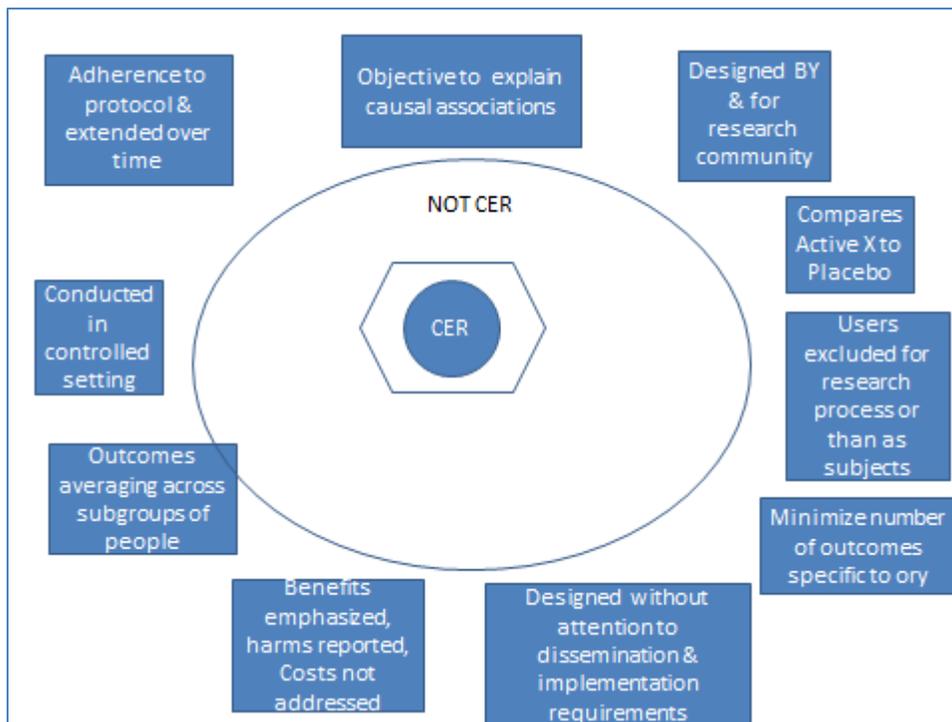
resulting in what I will call design requirements for CER research which are shown in the following figure.

Figure 7



These design requirements can be sharpened by stating characteristics of research design that would not qualify as CER, which are shown in the following figure.

Figure 8



I have shown a circle for CER at the center of this diagram to suggest that CER design requirements would be at the furthest point away from these 10 characteristics. The outer circle is closest to these qualities and would therefore not be CER. In both of these slides my intent is to suggest that there will always be gradations in which a given study would be more or less satisfying or not satisfying CER design requirements on one or more dimension. Non-CER design qualities would be:

- Objective to explain causal associations
- Designed by and for research community
- Compares active X to placebo
- Users excluded from research process other than as subjects
- Minimize number of outcomes specific to theory

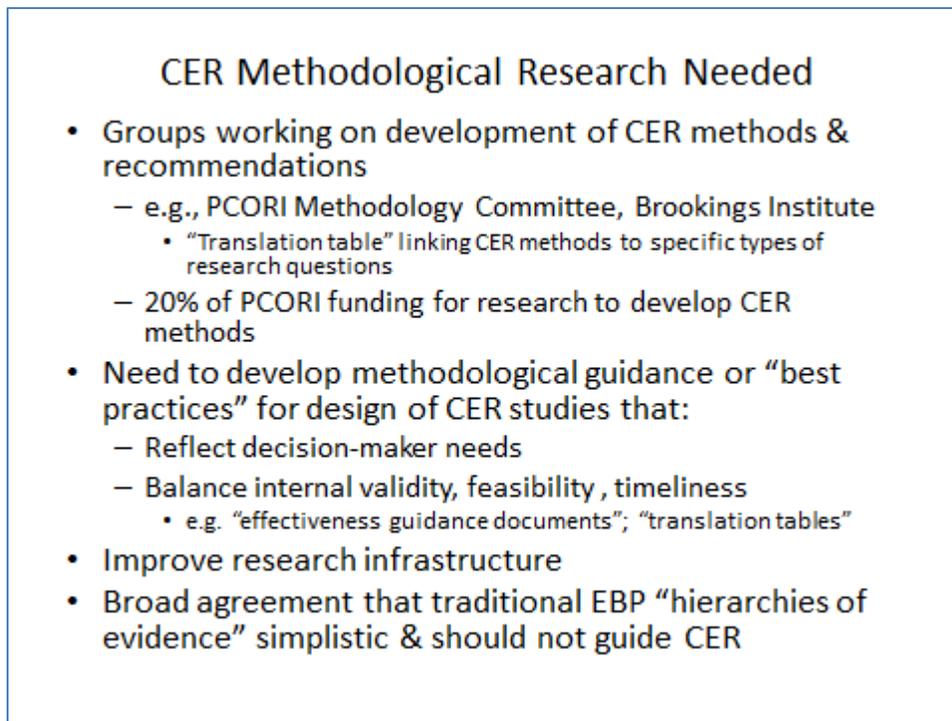
- Designed without attention to dissemination and implementation requirements
- Benefits emphasized, harms reported, costs not addressed
- Outcomes averaged across subgroups of people
- Conducted in controlled setting
- Adherence to protocol and extended over time

I now turn to a brief outline of recommended research methods thought to be appropriate for CER by expert groups.

Before discussing recommended research methods I want to stress first that there is broad recognition that traditional research methods are not well suited for CER. Accordingly, there is a great need for methodological research to develop methods responsive to CER requirements. Importantly, PCORI has set methodological research as one of its five immediate priorities and will shortly issue a call for applications. 20% of PCORI funds will be allocated to the methodological priority area. Following enactment of the 2009 Recovery Act, the Brookings Institute hosted a CER forum to consider, among other CER topics, strategies to improve CER research methods and data infrastructure. In his paper prepared for that forum Sean R. Tunis noted that “CER will require new research methods for reaching conclusions about the benefits, risks, and costs of actual medical practices, and a much better data infrastructure to provide the foundation for this evidence” (Tunis, 2009). Tunis called for: Develop methodological guidance or “best practices” for the design of CER studies that reflects decision maker needs and balance internal validity with feasibility and timeliness; and, improve research

infrastructure to enhance the validity and efficiency of CER studies (Tunis, 2009). The Tunis call for “best practices” is echoed in the legislation establishing PCORI, which requires PCORI to develop a translation table linking CER methods to specific types of research questions.

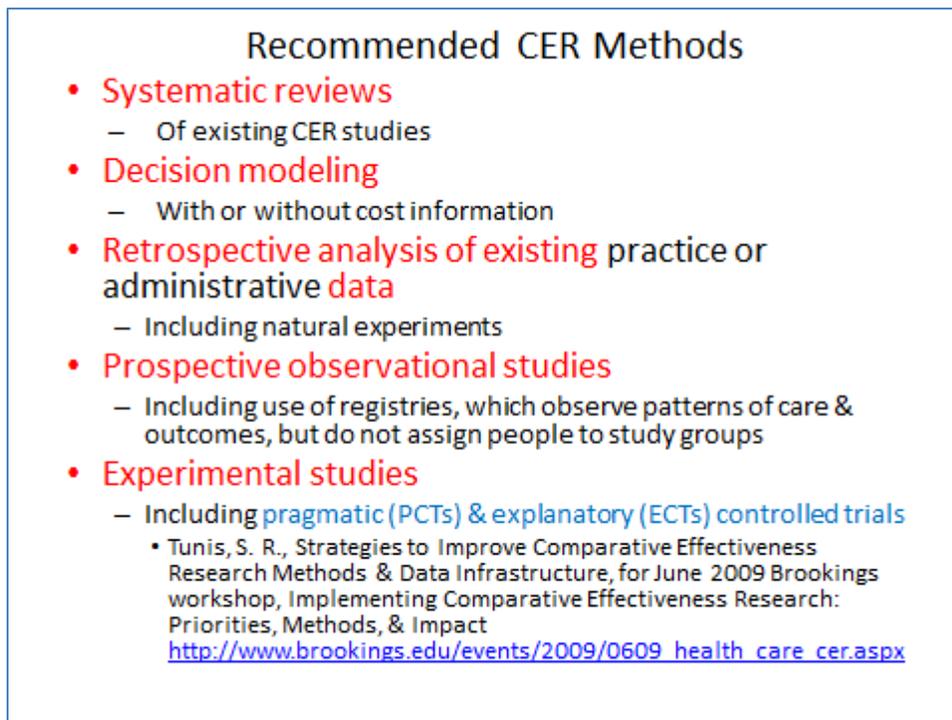
Figure 9



The Tunis paper outlines five major categories of research methods that can contribute to comparative effectiveness research.

- Systematic reviews of existing research, including meta-analysis
- Decision modeling, with or without cost information
- Retrospective analysis of existing clinical or administrative data, including natural experiments
- Prospective non-experimental studies, including registries, which observe patterns of care and outcomes, but do not assign patients to specific study groups
- Experimental studies, including randomized clinical trials (RCTs), in which patients or groups of patients are assigned to alternative treatments, practices, or policies

Figure 10



While a wide range of designs and methods are available for use in CER, as noted in the Brookings Institute report, as well as in a recent report by Velengtas, Mohr, and Messner (2012), work is needed linking study designs and methods to various contextualized CER questions. For example, the Velengtas, Mohr, and Messner report presents a classification of potentially useful CER designs and methods with comments on each regarding recommended uses, potential issues, strengths and limitations. Their recommended study types and methods are typical of what is now recommended in the CER literature. Their classification of recommended study types and methods is shown in the following figure.

Figure 11

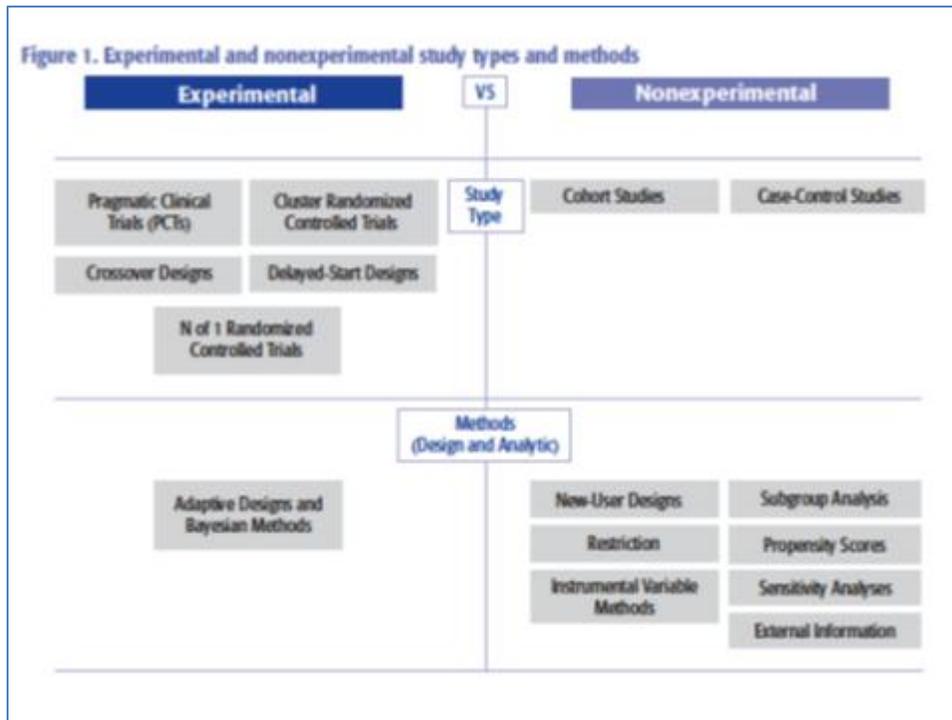


Figure 11 reproduced with permission for use in conference presentation from Velengtas, Mohr, and Messner (2012).

Both experimental (randomized) and non-experimental (observational) approaches are recommended for consideration, as appropriate. Among experimental study types pragmatic controlled (clinical) trials (PCTs) are listed, as are cluster randomized trials, crossover designs, delayed start designs and N of 1 controlled trials. Non-experimental, observational study types recommended for consideration are cohort and case-control studies.

The bottom half of figure 11 lists design and analytic methods which can be considered for CER applications. Under experimental approaches, adaptive designs and Bayesian methods are recommended; under non-experimental approaches new-user designs, restriction, instrumental variable methods, subgroup analysis, propensity scores, sensitivity analyses, and use of external information are recommended. Each of these methods has strengths and

limitations and may be more or less appropriate given study contexts. See Velengtas, Mohr, and Messner (2012) for definitions, discussion of strengths and weaknesses, methodological references, and examples from the medical literature.

Sox and Goodman recommend essentially the same study types and methods, linking findings to decision models (Sox and Goodman, 2012).

Luce, and associates (which examines the distinctions among evidence-based medicine, health technology assessment, and CER) recommend pragmatic trials, observational studies, and systematic review of evidence for CER; RCTs and systematic reviews of trials for efficacy studies; and, economic evaluation, budget impact analyses, and “coverage with evidence development for HTA activities. They see the information from these activities as flowing into product approval (efficacy studies), clinician-patient decision-making (EBM), and, coverage and reimbursement decisions, respectively (Luce, Jonsson,, Neumann, Schwartz, Siebert, and Sullivan, 2010).

Note that traditional placebo controlled, double-blinded RCTs, which typically are used when possible in efficacy trials, are not recommended for CER. Pragmatic trials (PCTs) are favored. These are experiments using random assignment that are designed to determine risks, benefits, and costs of an intervention as would occur in routine practice in contrast with explanatory studies, which aim to determine intervention effects under optimal circumstances. Such PCTs generally include a broader range of subjects, a broad range of study sites, and outcomes that are aligned with the evidence needs of decision-makers. In practice specific trials are typically not “either/or” but rather are at the pragmatic end of the continuum on some

dimensions and at the explanatory end of the continuum on others. The *PRECIS* tool was developed to guide those designing trials, which permits a 10 dimensional space mapping of the degree of pragmatic and explanatory quality desired (Thorpe, Zwarenstein, Oxman, Treweek, Furberg, Altman, . . . Chalkidou, 2009).

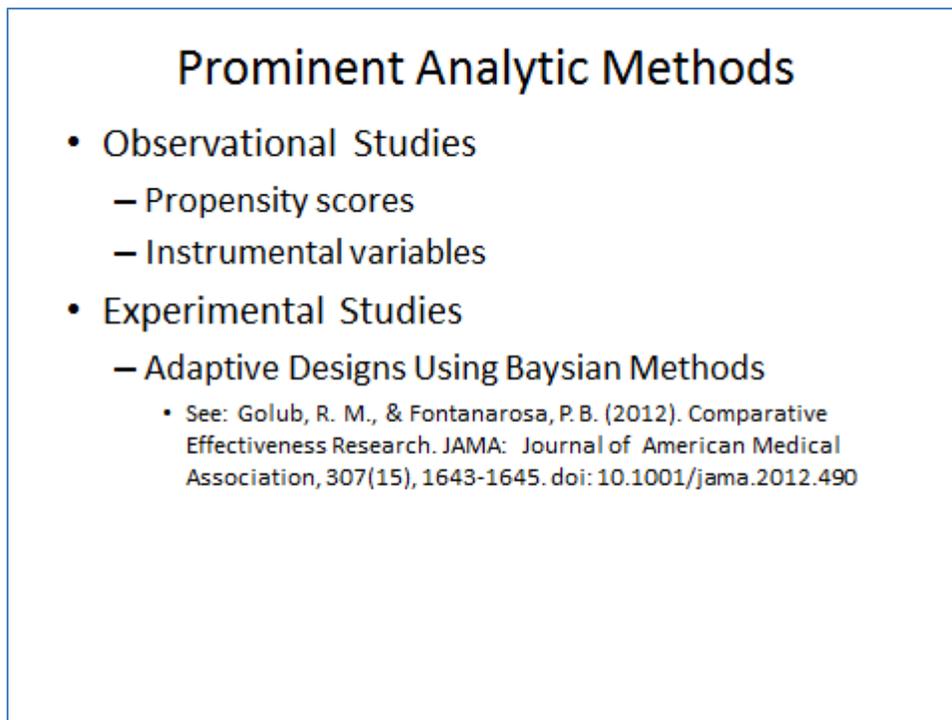
Figure 12

Pragmatic Clinical Trials (PCTs)

- RCTs designed to determine risks, benefits, & costs of interventions as occurring in routine practice
 - Contrasted with explanatory studies
 - examine intervention effects under optimal circumstances
 - PCTs can include broader range of:
 - subjects
 - study sites,
 - outcomes that are aligned with evidence needs of decision-makers
 - PRECISE tool
 - 10 dimensional space mapping degree of pragmatic & explanatory qualities desired

Among analytic methods recommended for CER it is my impression that for observational studies the use of propensity scores is among the most promising strategies for dealing with confounders (when appropriate). In the recent *JAMA* special issue on CER (*JAMA: Journal of American Medical Association*, 307(15)), five studies were featured and propensity scores as well as instrumental variable analysis were prominent methods used in those observational studies. For experimental studies, adaptive designs, at times using Bayesian methods, are often recommended (Golub and Fontanarosa, 2012).

Figure 13



Another recommended research strategy is the use of PCTs that rely on existing high quality administrative data, thus reducing costs and time. In such studies, following random assignment to conditions, existing high quality administrative data is used, rather than collecting new, study specific data on subject characteristics and outcomes. The Coalition for Evidence-Based Policy (2012) suggests that such a strategy increases the ability of social policy researchers to conduct RCTs at low cost and thus increase the influence of high quality evidence on performance-based government. The Coalition suggests that costs are reduced by measuring study outcomes with administrative data already collected for other purposes (e.g., student test scores, criminal arrests, health care expenditures). These developments make it possible now, more than ever before, for policy officials to use scientific evidence about “what

works” to increase government effectiveness. The Coalition gives five examples of low-cost, high quality evaluations.

- Criminal Justice Example: Hawaii’s Opportunity Probation with Enforcement (HOPE) Program
 - HOPE is a supervision program for drug-involved probationers that provides swift and certain sanctions for a probation violation
- Child Welfare Example: Recovery Coaches for Substance-Abusing Parents
 - This program provides case management services of a Recovery Coach to substance-abusing parents who have temporarily lost custody of their children to the state
- Example of a Community-Wide Intervention: Triple P (Positive Parenting Program) System
 - A system of parenting interventions for families with children ages 0-8, which seeks to strengthen parenting skills and prevent child maltreatment
- K-12 Education Example: New York City Teacher Incentive Program
 - This program provided low-performing schools that increased student achievement and or key outcomes with an annual bonus, to be distributed to teachers
- Criminal Justice Example: Philadelphia Low-Intensity Community Supervision Experiment

- Low-Intensity Community Supervision for probationers or parolees at low risk of committing a serious crime (compared to usual, more intensive/costly supervision)

Figure 14

PCTs & Using Existing Administrative Data

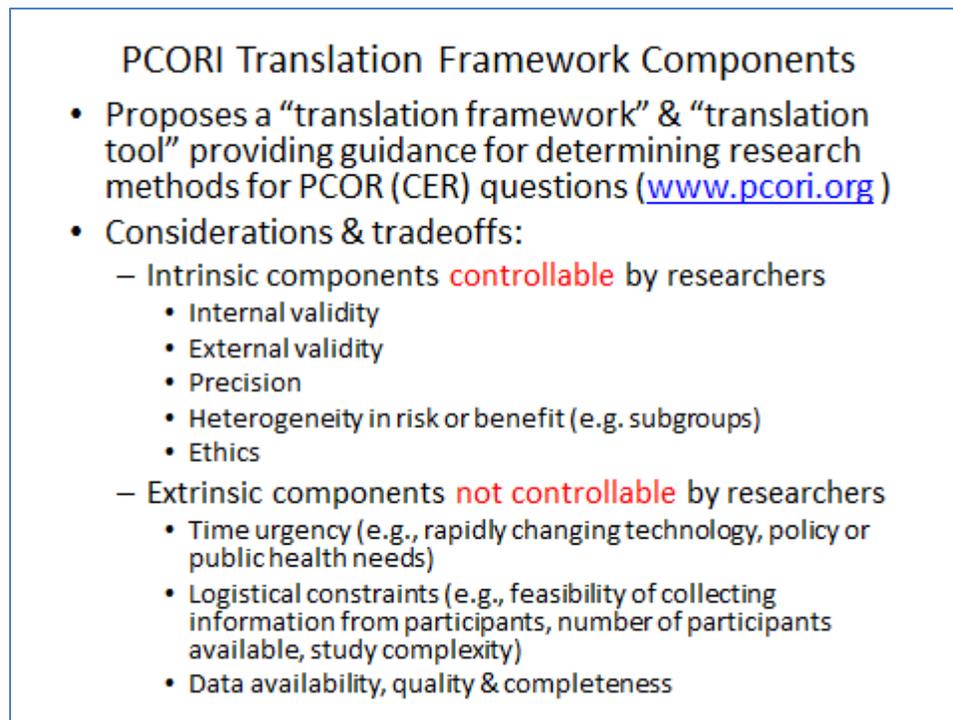
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While there is considerable agreement about recommended CER designs and analytic methods, guidelines do not yet exist that would help those designing CER studies to choose among these alternate designs and methods. Some believe that “best practice” guidelines or “translation tables” can be developed which will match study designs and analytic methods with various research question categories such as has been done in evidence-based medicine (e.g., for treatment/therapy; prevention; diagnosis; prognosis – natural history; etiology and

harm – causation). The most promising effort is the very recent work of the PCORI methodological committee.

As I noted earlier the U.S. congressional legislation authorizing establishment of PCORI requires PCORI to develop a “translation table” linking CER methods to types of questions. Two weeks ago PCORI published the draft translation table document inviting public comment (Pre-public comment draft report of the Patient-Centered Outcomes Research Institute (PCORI) Methodology Committee, 2012). This report will have significant impact on the shape of CER in the U.S. since investigators will be required to follow recommendations in the design of PCORI funded studies. Rather than presenting a “cookbook” formula for recommending research designs and methods the translation framework sees methodological decisions as resulting from tradeoffs and judgment about intrinsic and extrinsic components of what is important for a specific study, as shown on this slide.

Figure 15



The committee recommends a translation “framework” rather than a “table”. Four research phases are envisioned in this framework: 1) forming the research questions; 2) making decisions about the research methods (steps 1 through 3 suggesting that study characteristics are decided by considering the intrinsic and extrinsic components; research category be specified; and, in step 3 study design, data source, and analytic strategy be decided guided by the translation table); 3) study execution; and, 4) report, dissemination, and application. The report describes a translation tool for guiding decision-making regarding design, data, and analytic methods which takes the form of a decision-tree. I refer you to their web site for the full report which describes the framework and the tool as well as presentation of a set of standards for the conduct of CER (<http://www.pcori.org/assets/Preliminary-Draft-Methodology-Report.pdf>).

Summary and Conclusion

By way of summary, I have described CER, some of the key reasons why CER has taken on such prominence in policy and research circles, the research requirements flowing from the definitions of CER, and recommended research designs and methods. In conclusion I list a number of issues, limitations, and questions for consideration and debate.

I list nine methodological issues that I think require attention as CER develops its research methods.

- “Translation tables”/”Best Practice” remain to be developed
 - Will “translation tables” replace “evidence hierarchies”?
- Role of “efficacy” trials (explanatory) not well articulated in CER
- Place of qualitative studies in CER not yet developed
- “Causal inference methods” for observational studies can be difficult to construct, interpret, verify, communicate especially with unmeasured variables
 - Need development for effective use in CER (e.g. instrumental variable analysis, propensity scores)
- CER assumes heterogeneity of intervention effects - interventions have differing effects for subgroups
 - Assessing heterogeneity can present challenges (e.g., subgroup and interaction tests)
- Missing data presents methodological challenges

- Problematic in pragmatic studies, observational studies, use of administrative/trial registries (e.g., multiple imputation methods, sensitivity analysis)
- Adaptive and Bayesian designs present special challenges
 - Require complex planning and advanced statistical skills
- Few examples of adaptive designs available to serve as models in the area of social intervention and the human services
- Ethical issues need careful consideration
- Few high quality data registries exist outside of health care
 - Can these be developed for use in CER in non-healthcare fields of practice?

Figure 16

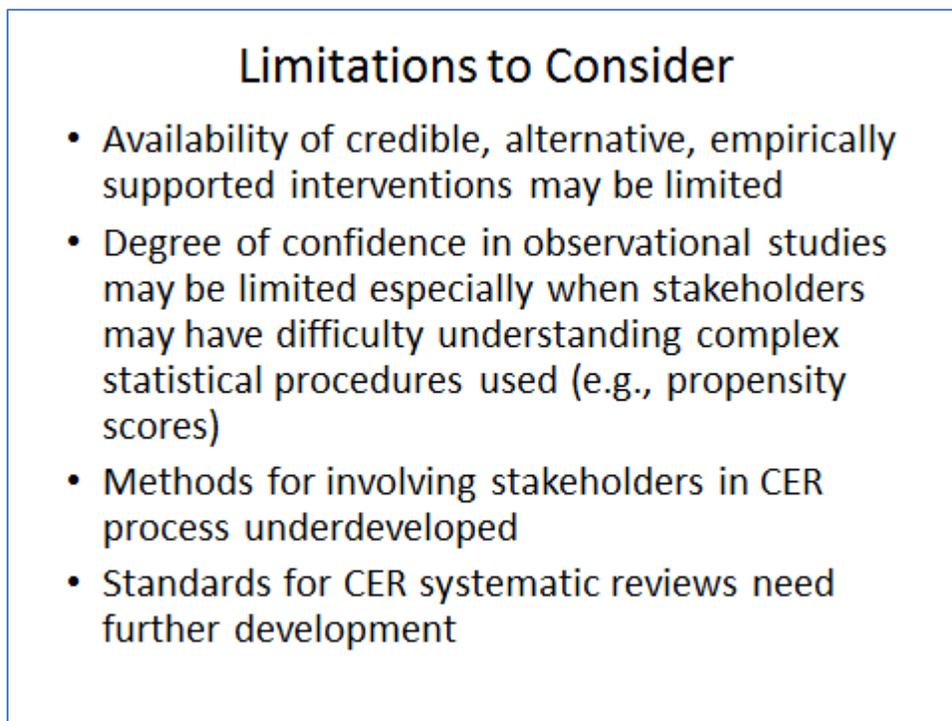
Some Methodological Issues

- “Translation tables”/“Best Practice” remain to be developed
- Will “translation tables” replace “evidence hierarchies”?
- Role of “efficacy” trials (explanatory) not well articulated in CER?
- Place of qualitative studies in CER not yet developed
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 - Require complex planning & advanced statistical skills
 - Few examples of adaptive designs available to serve as models
 - Ethical issues
- Few high quality data registries exist outside of health care. Can these be developed for use in CER in non-healthcare fields of practice?

These four limitations need to be considered as well.

- Availability of credible, alternative, empirically supported interventions may be limited
- Degree of confidence in observational studies may be limited especially when stakeholders may have difficulty understanding complex statistical procedures used (e.g., propensity scores)
- Methods for involving stakeholders in CER process is underdeveloped
- Standards for CER systematic reviews need further development

Figure 17



Three key questions remain to be addressed.

1. What if any relevance does CER have for those of you in research disciplines and professions other than medicine or health care?
2. How can CER be adapted to the contexts of non-medical, non-health-care disciplines and professions?
3. What are the implications of CER methodology for evaluation of practice methods?

Figure 18

Some Questions for Discussion

1. What if any **relevance** does CER have for those of you in research disciplines & professions other than medicine or health care?
2. How can CER be **adapted** to contexts of non-medical, non-health-care disciplines & professions (e.g., human services, education)?
3. What are **implications** of CER methodology **for evaluation of practice methods**?

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