The Economics of Evidence-based Practice in Disorders of Childhood and Adolescence

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Economics has much to offer in understanding whether and how clients receive evidence-based treatment. Many steps are required between first determining efficacy then effectiveness then making a service or treatment widely available. At each step, economic incentives and effects likely inform decisions and/or can facilitate or block a policy maker’s efforts to have those treatments delivered. Efficacy represents the first step and refers to the ability of the treatment to produce desired patient outcomes, generally under ideal circumstances. Multiple studies corroborating positive outcomes are necessary for establishing that a treatment is an evidence based practice (EBP). This chapter starts at the point that an EBP has been established as efficacious.

The first half of the chapter provides an overview of the tools of economic analysis. These tools could be used to determine whether an efficacious intervention is cost-efficacious or subsequently that an effective one is cost-effective. We outline the forms of economic analysis and the principles that shape their conduct. Policy makers would use this information during the process to determine whether an efficacious intervention or treatment should be disseminated broadly.

In the second half of the chapter, we turn to the economics of dissemination. The contribution of economics at this stage reflects the broader field of health economics. That literature considers whether and how incentives can be used to induce economic agents to change their behavior. Little of the literature on incentives focuses on children’s mental health or even mental health more generally. That literature, however, can inform thinking about EBP for children with emotional and behavioral problems because about effective implementation.

The chapter discusses the role of economics from the perspectives of three important stakeholders: the payers, the providers, and the consumers. We will illustrate our discussion by referring to our experience with the Incredible Years Series, an EBP targeting young children with emotional and behavioral problems.
1. Background: The Incredible Years Series

The Incredible Years Parents, Teachers, and Children Training Series (IYS)—developed by Carolyn Webster-Stratton, Ph.D., and evaluated by colleagues at the University of Washington’s Parenting Clinic—is a multi-component program designed to treat young children with or at risk of early-onset conduct problems. The program has been adapted to serve as a cost-effective, community-based prevention program for children at risk for the development of CD (conduct disorder). Over the past 20 years, this intervention repeatedly has been implemented in both clinic and natural environment contexts such as mental health settings and schools.

Ultimately, the IY Series strives to prevent delinquency, drug abuse, and violent acts among high-risk children. However, immediate goals of the program include the reduction of conduct problems in children; the enhancement of social, emotional, and academic capabilities of children; the promotion of parental competence and positive discipline strategies; the strengthening of families as well as the school-home connection; and the enhancement of teacher classroom management skills (Webster-Stratton, 2000).

The IY Series comprises three components each focusing on different contexts for and types of children’s social interactions. The three treatment components include (1) a child-based program (referred to as Child Training or CT); (2) a parent-based program (referred to as Parent Training or PT); and (3) a teacher-based program (referred to as Teacher Training or TT). (Since our focus is on the medical sector, this chapter does not discuss the last of these in any detail.) CT and PT leaders initially learn program curricula from certified IY trainers; following training, CT and PT leaders deliver program curricula to child and parent participants, respectively, during weekly small group sessions. For a detailed description of treatment component goals, curriculum, and implementation methods, please see Webster-Stratton (2000).
Webster-Stratton and colleagues have implemented the IY Series using the three single treatment components either alone (i.e., CT program alone) or stacked in various combinations (i.e., CT plus TT and/or PT). Different combinations of the IY components are recommended depending on the targeted child population.

The IY Series has been effective in reducing the frequency of children’s conduct problems regardless of treatment locale. Service agencies (mental health agencies, child welfare systems, and schools) continue to implement the IY Series; large-scale diffusion of the program has occurred across the United States, Canada, UK, and Norway. Agencies adopting the IY Series are responsible for budgeting for initial training from certified IY trainers, program materials (videotapes, group leader manuals, parent and child materials, and handouts), program implementation, and ongoing consultation with IY trained staff. Following the initial materials and training fees, the IY Series may be offered to participants from successive cohorts at minimal cost to the service agency.

Past literature has assessed the impact of participant characteristics, individual component intensity, and multi-component delivery methods on the effectiveness of the IY Series. Numerous randomized control group studies by the developer (e.g., Webster-Stratton, 1990; Webster-Stratton & Hammond, 1997; Webster-Stratton & Reid, 1999a; Webster-Stratton & Reid, 1999b; Webster-Stratton, Reid & Hammond, 2001) and by independent investigators (e.g., Taylor, Schmidt, Pepler, & Hodgins, 1998; Miller & Rojas-Flores, 1999; Scott, Spender, Doolan, Jacobs, & Aspland, 2001; Barrera, Biglan, Taylor, Gunn, Smolkowski, Black, et al., 2002) strongly support the assertion that the IY Series consistently improves child behavior across a range of outcome indicators.

The Incredible Years Series has been identified as an effective CD/ODD treatment and prevention program for young children by the Office of Juvenile Justice and Delinquency Prevention(Webster-Stratton, 2000). Additionally, when an independent review committee of the American Psychological Association reviewed findings from over 82 studies of CD interventions,
the Incredible Years Series was identified as only one of two behavioral intervention strategies that met the criteria for well-established efficacious CD treatments (Brestan & Eyberg, 1998).

With strong client outcomes, the IYS was a prime candidate for economic evaluation to determine the actual costs of the benefits. The first author led a team in conducting such an analysis. This chapter will discuss the process of conducting this economic evaluation and subsequent results.

II. Economic Evaluation: Is the EBP a Good Use of Society’s Resources?

The formal tools of economic evaluation may take one of several forms: benefit–cost analysis, cost-effectiveness analysis, and cost-utility analysis. Perhaps best known is benefit–cost analysis. A benefit–cost analysis (BCA) provides a full accounting of the resource implications of an intervention, policy, or program. One measures both the costs and benefits of the intervention and then calculates net benefits—that is, the benefits of the intervention less its costs. If the net benefits are positive, then the intervention or treatment is desirable. A key feature of benefit-cost analysis is that the benefits should reflect societal willingness to pay for the resource or outcome involved. Economists use this societal perspective to gauge whether a program or service is a good investment. As discussed below, however, one can assess net benefits from other perspectives, and these supplemental analyses can be informative. As we discuss these additional perspectives can inform our efforts to understand provider and participant incentives.

A second form of economic evaluation is cost-effectiveness analysis (CEA). Although the term cost-effectiveness is often used as a synonym for economic evaluation, CEA actually refers to a specific form of such an evaluation. Unlike benefit–cost analysis, cost-effectiveness analysis does not require one to measure outcomes in dollar terms. Rather, the outcome measures remain in their natural metric (e.g., a 1-point difference on a symptom checklist or a percentage point reduction in the number of teenagers giving birth). The analyst then compares
interventions or programs in terms of their added (or incremental) costs per added unit of the outcome measure (Zerbe & Dively, 1994). One could calculate such ratios for a variety of outcome measures.

A third form of economic evaluation, cost-utility analysis, is actually a specific form of cost-effectiveness analysis. The outcome or measure of effectiveness is a measure of overall well-being based on respondent ratings of several dimensions of well-being. The scores on the different dimensions are then combined using weights that reflect the relative desirability of different combinations of the attributes. Those weights capture caregiver or other stake holder preferences for the attributes involved. A familiar measure of this sort is the quality-adjusted life year (Drummond, O’Brien, Stoddart, & Torrance, 1997). QALY’s play an especially important role in the British National Health System (NHS) as discussed below.

Finally, a related form of economic analysis involves costs of illness studies. Those studies involve estimating the broader societal costs of illness, such as alcoholism or cigarette smoking and many others (Rice, Hodgson, & Kopstein, 1985; Rice, Kelman, & Miller, 1991; Sobocki, Lekander, Borgstrom, Strom, & Runeson, 2007). A cost of illness study generally includes the costs of treatment as well as effects on employment (Gold, Russell, Siegel, & Weinstein, 1996). Because willingness to pay is difficult to measure, economists may use the reduction in costs of illness as the measure of the benefits of an intervention. This measure understates the full benefits of the intervention. Costs of illness, for example, generally do not capture pain and suffering. (Kenkel, 1994).1

Regardless of the form of economic evaluation chosen, the foundation for each is a good estimate of a program’s costs. The next sub-section outlines economist’s view of costs and their

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1 Indeed, the possibility that benefit-cost analysis may routinely understate the benefits of programs is one of the major criticisms of the method. It is worth noting that other areas of economic evaluation attempt to measure willingness to pay directly. These areas include environmental economics. In that field, the benefits of a program may be no less intangible than health; for example, environmental economists attempt to measure the value of a scenic lake (even to those who do not use the lake!). These methods include contingent valuation methodology. By comparison, health economists have made substantially less use of this method to measure the value of health improvements (Kenkel, Berger, & Blomquist, 1994).
measurement.

**Measuring the Costs of an EBP**

In this sub-section we begin by discussing the broad principles of cost estimation and then turn to the direct costs of the program. We then consider the morbidity-related costs and the impact of the intervention on those costs. Finally, we examine the direct costs of the IYS.

*How Do Economists Think About Costs? Broad Principles*

Economists’ efforts to define and measure costs are guided by four principles. As mentioned above, the first is that the costs of a program or intervention vary depending on the perspective from which they are assessed. Economists emphasize the societal perspective, which encompasses impact of the program on all groups, such as intervention participants and taxpayers. By that standard, they assess whether a program is ‘efficient.’ By efficient, economists mean an allocation of resources such that further reallocation could not improve societal well-being.

As noted, the societal perspective includes other relevant perspectives, such as those of patients, the insurer or other payer, the provider and other citizens. As discussed below, all of these parties have to determine whether and how to do their part in delivering and receiving evidence-based care. Some costs may drive the decision-making of one party but be completely irrelevant for another. For example, the travel or time costs for participants may be quite high. Unless an agency is reimbursing families, it may ignore those costs. The agency would consider them only indirectly and to the extent the costs manifest themselves on their budget sheet—for example, large travel costs might mean high rates of no-shows, which create costs for the agency.

In some instances, the effects of a program on different groups offset each other. In the case of reduced use of cash transfers (such as the Temporary Assistance to Needy Families program), the only (net) societal cost involves program administration: The gain to taxpayers offsets the losses born by the former recipients. There are other instances where the societal
perspective diverges from that of other perspectives. For example, payments made for mental health service may not equal the costs of producing that service (Hargreaves, Shumway, Hu, & Cuffel, 1998). Those charges are the ‘costs’ for the agency or program that pays for the services. These payments, however, may be a poor proxy for societal costs. This divergence exists for several reasons. As a result of market imperfections, payments made by some clients may implicitly subsidize other clients. The privately insured, for example, may subsidize the uninsured. As a result, payments made on behalf of the latter may understate the costs of society for the services involved. The societal perspective represents the bottom line for economists—it is used to gauge the “efficiency” or overall desirability of a societal allocation of resources.

The second through fourth principles involve this broader, societal perspective. A second principle is that economists measure costs in terms of opportunity costs, the value of a resource in its next best use (Gold et al., 1996). In many ways, this emphasis on foregone uses is what distinguishes an economist’s approach from that of an accountant. This difference is most apparent in instances where a cost (or resource use) generates no bookkeeping entry. As an example, volunteer time requires no payment by the agency sponsoring an intervention. The time involved, however, has a value in alternative uses—the volunteer could spend that time at work or in leisure activities (or even volunteering at another program). These implicit time costs also might involve the time of program participants. Although economists may disagree somewhat as to how that time should be valued, they generally agree that such costs should be included.

A third principle shaping economists’ reckoning of costs is that some costs are morbidity related. In a prevention program targeted to the mental health of children, these costs are particularly important. Children with emotional and behavioral problems are frequently involved in many child-serving sectors, and the costs of the services involved are potentially enormous. In many cases, these costs are actually reduced by a prevention program and so represent
areas of so-called cost offset. For example, improvements in a child’s mental health may reduce his or her use of health services or the use of mental health services by his or her parents (Foster & Bickman, 2000) or expenditures in the child-welfare sector (Foster & Connor, 2005). On the other hand, a preventive program may link families to these services and so increase their use (and related expenditures) as a result (e.g., the Starting Early, Starting Smart program; (Karoly, Kilburn, Bigelow, Caulkins, & Cannon, 2001). In some cases, these indirect costs may not be immediately apparent. For example, an intervention may reduce school dropout. Although this effect has obvious benefits, it also creates costs related to resources used while the individuals remain in school.

A fourth feature of an economist’s view of costs is that marginal costs are the costs that matter (Warner & Luce, 1982). By “marginal” an economist means costs that change as a result of the activity involved. Consider, for example, an intervention that affects the use of special education. The relevant costs are those above and beyond the costs of education in a regular classroom—after all, the latter would be incurred even if the child were not in special education (unless the intervention affects the likelihood that a child leaves school altogether).

Costs seem rather concrete to the non-economist, but the attentive reader will note the hypothetical nature of some of these costs—e.g., the value of resources in alternative (i.e., hypothetical) uses. For that reason, even in estimating costs, economists often have to make assumptions about markets or the behavior of economic agents. It is important that the resulting estimates be subject to sensitivity analyses—i.e., calculations based on alternative assumptions.

Before turning to the details of cost estimation, a key point about efficacy studies is worth making. In those studies, the delivery of services may differ from that anticipated in the real world. An interventionist, for example, may receive more supervision than is possible in an actual clinical setting. No doubt that researchers should consider this possibility in advance of the study (whether it involves a cost analysis or not), but the relevant point here is that the cost
estimate must describe the use of resources used to generate the outcomes observed. High levels of supervision may be responsible for the improved outcomes; in that case, that supervision must be included in the corresponding cost estimates. Alternative costs estimates (such as those for lower levels of supervision) can be calculated when the corresponding outcomes become available through future studies.

In the next sub-section, we consider how these principles would be applied to estimating the direct costs of EBP in an efficacy trial. We illustrate this discussion with our work evaluating the Incredible Years Series in a clinical setting.

Measuring and Valuing the Direct Costs of EBP

With the broad principles outlined above, estimating costs involves a set of practical steps required to collect the necessary information and to perform the necessary calculations. Gold (1996) identified three steps in measuring the costs of an intervention or service: identifying the resources involved, measuring their use, and valuing the resources used in dollar terms. We examine each of these for the direct costs of the CT and PT components of the IYS. Note that the following discussion presumes that evaluation and service delivery are conducted by the same unit. As a result, the two activities share space and administration; furthermore, some individuals work on both tasks. Although common, this sharing of tasks not only raises issues about blinding the individuals involved to the intervention status of participants but also complicates estimating the costs of the intervention. These personnel must track their allocation of time to intervention and research. This task might involve time sheets that relevant personnel complete weekly. Ideally, because retrospective reports may be unreliable, these sheets would be completed prospectively. For other shared resources, such as the costs of space, one can either track the use of space or divide the costs between the two activities based on other information (as discussed later).

Identifying Resources Involved. Consistent with the economic principles identified
previously, we want to capture all of the resources involved in delivering an intervention. Such accounting includes implicit costs (those resources for which no explicit payments are made), such as parental time and donated space. Time contributed by volunteers also would be included.

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Table 1 enumerates different resources used in delivering the Incredible Years CT and PT Programs. Explicit costs of the intervention involve both fixed and variable costs. Fixed costs are those costs that do not change as the number of participants expands. In this case, fixed costs include the costs of facilities. Variable costs, on the other hand, depend on number of participants.

Some costs are quasi-fixed, such as staff training. For a given child, those costs are fixed—the training has occurred and will not increase as an additional child is treated. However, over time, one can anticipate that trained staff (e.g., a nurse) will turnover, and new training will be required. For that reason, to maintain the services over time, one would have to spread the costs of training over the anticipated tenure of the provider. In that case, the training is best viewed like a piece of equipment that will depreciate over time. From that perspective, a sensible practice would be to spread the costs of training over the expected number of children the provider could be expected to treat. An interventionist’s tenure is not likely to be observed during the course of the study or in fact the study’s funding may end, truncating tenure below that level that would be observed in the real world. For that reason, the analyst may perform calculations using a reasonable estimate.

*Measuring Resource Use.* Information on the resources involved could be determined from several sources. Principal among these are project budgets, which identify the resources used as well as costs to the project of those resources. In the case of some resources (particularly implicit costs), additional information would be needed from other sources, such as parental reports of time use.
Valuing the Resources Used in Dollar Terms. In the case of explicit costs, these costs are naturally expressed in dollar terms. The challenge here is to allocate these costs between intervention delivery and other activities, such as research. In the case of implicit costs, measuring the resources involved in dollar terms often requires additional information.

For many interventions, labor costs are a primary component of explicit costs. These costs can be calculated by using budget information on wages and salaries and on fringe benefits. Total labor costs would be allocated to the intervention based on the division of time use reported on the time sheets (discussed previously). Individuals devoting their time exclusively to research could be ignored or, if one were interested in the total costs of research, included in a separate tabulation. Note that administrative labor costs are included in the fixed costs allocated subsequently.

Next, one would estimate other variable costs, such as supplies and materials. To the extent these resources could be related directly to intervention delivery, expenditures would be included in the costs of the intervention. Expenditures on items that could not be linked to either the intervention or research (e.g., photocopying costs that were not tracked) could be included in (joint) fixed costs that are allocated as described later. Next, one would allocate fixed costs, including those costs that could not be divided between the intervention and research. Principal among these are space costs, including utilities and telecommunication costs. One could potentially include the costs of space used by specific personnel in the same proportion as they use their time. However, this would leave other space used by intervention and project personnel (such as conference rooms and meeting space) unallocated.

For that reason, following Hargreaves et al. (1998), we recommend that all space and similar shared costs be allocated based on the overall distribution of personnel time (and resulting costs) between the intervention and evaluation. Note that some costs involve

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2 These same principles could be used to allocate costs in situations where multiple interventions share resources. Such situations seem quite likely in real-world implementations.
resources that are purchased in a given year but that are used by project staff over several years. These costs include equipment costs, such as computers. These costs can be amortized over time by using standard accounting principles. Also included in this category are training costs. Project staff may be trained in a given year but work with program participants over time. As a result, some portion of their training should be attributed to future years. Using an estimate of the average amount of time personnel remain with a project, one could amortize those costs as well.

As discussed previously, not all explicit costs can be tracked on project budgets. These costs include out-of-pocket costs of participation borne by families. Included here are transportation costs as well as baby-sitting costs for a participant’s siblings. One could estimate those costs by having parents complete a short questionnaire at a few intervention sessions. These explicit costs represent the costs of the intervention to taxpayers (or other funding source) and participants. They also are part of the costs of the intervention to society.

Implicit costs are primarily of two types—time and space. The latter involves space used by an intervention for which no payments are made, such as classrooms used for evening parent training. One could argue that the opportunity cost for this space is often zero as well: These groups are conducted after the normal business day or at a time when the space would not otherwise be used. This point is debatable, however, and one might consider the sensitivity of one’s conclusions to this assumption. Estimates of the opportunity cost include the costs of similar space one might rent in the community.

Time costs represent a second type of implicit costs. A treatment may require substantial amounts of a parents’ time. Parents receive incentive payments in a research study, but those payments may not fully compensate them for their time. Although family groups were scheduled at convenient times, parental participation reduces leisure time. Such time, however,

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3 One also could argue that those payments are for the research component (especially if the comparison or control group receives the same amount) and so should not offset any of the intervention time costs.
is not without value. Because they conceivably could work during those hours, parents pay an implicit price for their leisure (in terms of reduced wages). This suggests that their leisure time is worth at least as much as their wage rate. For that reason, following Gorsky, Haddix, and Shaffer (1996), we recommend that one value parental time using parents’ wage rate (Gorsky, Haddix, & Schaffer, 1996). One could calculate these costs using the results of a brief survey of parents concerning time spent on intervention-related activities and their wage rate. (To avoid double-counting costs, one would only include the amount by which these costs exceed any incentive payments made.)

Measuring and Valuing Morbidity-related Costs

As discussed previously, a second type of cost involves morbidity-related costs—namely, the costs of alternative services used. The first step in measuring these costs is identifying the resources (or services) involved. Having done that, we consider the means for measuring and valuing each service.

**Identifying Resources Involved.** The list of potential services and resources one might include is nearly endless. Children use many types of resources, and changes in their mental health likely will stimulate ripple effects through a range of child-serving sectors. Because research resources are not limitless, one has to prioritize based on what one knows about the prevention program and the population it targets. Possible criteria include the potential magnitude of costs involved as well as whether one would expect any relation between them and the intervention. In the case of the Incredible Years, one system likely affected includes the educational system.

**Measuring Resource Use.** Increased use of school services likely include disciplinary referrals as well as special education. Potential sources of information include each parental report or, for older children, self reports. Because of concerns about the accuracy of such reports, school records may prove more reliable if available. School records can report a level of detail of service use of which parents are unaware or unreliable, such as the percentage of time
spent in a special classroom.

*Valuing the Resources Used in Dollar Terms.* For each type of service, one can convert measures of service use into dollar values using per-unit costs. A full discussion of the methods for valuing special education is beyond the scope of this chapter. However, at least in the United States, schools do not determine special education costs at the child level. Rather, schools know what they spend on the “inputs”—teachers and other resources—but generally do not translate this figure into a per-child estimate. Even under the best of circumstances, therefore, obtaining per-unit costs for special education is challenging. As an alternative, one might turn to special studies of the costs of special education (Chambers, Parrish, & Harr, 2002; Chambers, Parrish, Lieberman, & Wolman, 1998). Those studies generally involve a district or a state, and whether and how well they would apply in another location is unknown.

Placing a dollar value on other uses of school services is difficult. For example, the marginal cost of one trip to the principal’s office is likely small or zero for an individual child. The school will not have a principal devoted to just that child, no matter how poorly behaved. (Issues of additional costs arise if one were to think of large groups of children being treated or a universal program. In that situation, one might divert an assistant principal from disciplinary issues to other functions.)

*The Costs of the Incredible Years Series*

To estimate per-child costs of the IY treatment combinations (excluding the control condition), total per-child costs were first estimated for the Child Training and Parent Training components. Costs were derived using a series of detailed financial estimates provided by the developer of the IY Series. The payer perspective was used to determine costs; that is, these financial estimates included all fees for which the agency implementing the IY Series is responsible. Estimates included fees associated with training and ongoing supervision of CT and PT group leaders; group leader salary including time for peer review, self-study and preparation; costs of providing materials for participants; and additional fees – both on- and off-
site – necessary for actual program implementation (i.e., on-site childcare, participant meals, cab vouchers, and off-site childcare compensation).

As reported in Foster and colleagues (2007), the costs of CT in 2003 dollars was $1,164 per child for the child training program; PT, $1,579. And when combined, the costs were $2,713, after discounting for duplicated resource materials.

The costs estimate depended on key assumptions. Total per-child cost estimates did not include costs associated with the space required for initial leader and teacher training and weekly small group sessions. It is assumed that agencies and schools implementing IY will provide on-site space in which group leader training and group sessions may be conducted. (If an agency does not have space available for training and small group sessions, the cost of space rental should be included when calculating total per-child cost estimates). It should also be noted that the combined condition required the purchase of only one set of parent manuals at the cost of $179.40 per 12 parents; therefore, this fee was not duplicated when summing total per-child costs for CT and PT to form the costs of the combined treatment combination.

Another assumption involved one-time program initiation costs. For example, estimates presented in the calculations above assumed that each group leader, PT group leader, and trained teacher complete just one sequence of the IY Series following certification. However, in real-world implementation, newly trained group and classroom facilitators who have completed training in CT, PT, and TT will likely lead more than one sequence of the IY Series. Because group leaders and teachers complete training only prior to the first IY sequence, training costs depreciate as the number of children participating in IY increases. Similarly, after the first sequence of IY, costs associated with one-time purchases of materials are not included in additional sequences of IY. Therefore, with each additional cohort of participants treated, total per-child costs decrease for each treatment category. For these reasons, total per-child the estimates presented can be considered conservative.
Assessing Outcomes and Costs

A full economic assessment will incorporate outcomes in one of several forms. A cost of illness study would incorporate the direct costs of treatment as well as the broader societal costs (such as special education). One could consider whether evidence-based treatment reduces the broader costs of illness. Foster and colleagues, for example, consider whether spending on improved mental health services for adolescents reduces the costs of juvenile justice (Foster & Connor, 2005). Such studies are often labeled “benefit-cost analyses” but technically are not and are best described as costs of illness (COI) impact study. They do provide an estimate of the net benefits of the program by subtracting any cost savings from the direct costs of treatment.

A benefit-cost analysis would compare program costs with the benefits measured in terms of societal willingness to pay. The results would represent the net societal benefits of the program. A comparison of program costs and the willingness of society to pay for the program’s benefits would definitely include the direct costs of the EBP. An issue of some fuzziness is whether to include reductions in the costs of other services, such as special education. Whether to do so would depend on how societal willingness to pay was assessed. Contingent valuation methodology would involve asking informants directly as to what they would be willing to pay to reduce mental disorder. In that case, whether and how the implications about schooling are included would determine whether the school costs were included in the costs calculation. Needless to say, obtaining such information is daunting, and it

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4 Many prominent economic evaluations are mislabeled. The economic evaluation of the Perry Preschool, for example, is not a benefit-cost analysis but rather a “cost of illness impact” study (Barnett, 1985, 1996; Belfield, Nores, Barnett, & Schweinhart, 2006; Schweinhart, Barnes, & Weikart, 1993). The authors of the study mislabel their findings as well.

5 Many non-economists like to present the findings of such studies using benefit-cost ratios. Such ratios are misleading and considered “bad practice”. The reason is that it is fairly easy to show that a program that produces net benefits of $1,000 (program costs=$2,000; program benefits=$3,000) is superior to one producing net benefits $500 (program costs=$250; program benefits=$1,000) even though the latter might have a higher ratio of benefits to costs. (The benefit-cost ratios are 1.5 and 4.0, respectively.)
is not surprising that there are not many analyses of this type (Gunther et al., 2007; Healey & Chisholm, 1999; Konig, 2004; Konig, Bernert, & Angermeyer, 2005; O'Shea, Gannon, & Kennelly, 2008; Smith, 2007).

A third way of combining costs and benefits involves cost-effectiveness analysis (CEA). A CEA generates the "ICER," the incremental cost-effectiveness ratio. This ratio is the net costs of the program over its net benefits. The denominator (benefits) remains in its actual metric—problem cases of mental disorder avoided or improvement in a functioning scale.

One can see that the CEA takes considerably less effort than a benefit-cost analysis or even the COI assessment. Expressing program benefits in dollars or pounds is difficult and may require considerable effort. CEA, therefore, require many fewer resources, and as a result, the vast majority of economic evaluations in health are CEA. The difficulty, however, is that one cannot easily compare interventions with disparate effects. For example, it is difficult to compare dollars spent per heart attack avoided with dollars spent per case of conduct disorder avoided. One would need a measure of the societal impact of the two disorders. CEA, however, can be quite informative for comparing interventions with outcomes measured in the same way. In that case, the intervention with the lower ICER is clearly preferred. Even in those instances, however, problems arise when there are multiple outcome measures. ICERs for different measures may not be consistent with different measures identifying different treatments as cost-effective.

Policy makers constantly have to compare disparate uses of resources, and for that reason, they often want to compare programs that involve disparate outcomes. As noted, benefit-cost analysis represents one solution but a difficult one. As a result, health economists have created another outcome measure that they consider appropriate for disparate treatments and disorders—the quality-adjusted life year (QALY). The QALY is a measure of overall well-being ranging from 0 (death) to 1 (perfect health). By summing individual QALY scores over time, economists can capture the effect of a health intervention on longevity and quality of life.
Scores are derived for various illnesses by asking consumers to rank alternative health states (as described in detail in terms of their level of impairment and discomfort). Economists believe that like willingness to pay estimates, QALY scores reflect patient preferences for alternative health states. QALY’s are surrounded by a range of controversies—e.g., some would argue that consumers are unable to perform the cognitive tasks required to weight alternative health states. Other controversies include whether they measure disadvantages of the elderly relative to the young (Nord, 1999). Nonetheless, cost-utility analysis—cost-effectiveness with the QALY as the outcome—is the standard in health economics. The National Health Service makes key decisions about health care delivery based on costs per QALY.

*The Role of Morbidity-Related Costs*

Morbidity-related costs (e.g., the use of special education) enter the analysis of costs and benefits in different ways depending on the type of analysis. For a true benefit-cost analysis, these costs would not enter at all—they would be reflected in the societal willingness to pay. In instances where we approximate willingness to pay with impact on the costs of illness, any reductions in these costs would count as program benefits.

For cost-effectiveness analyses, these morbidity-related costs would count in the numerator for the cost-effectiveness ratio depending on the perspective of the analysis. For example, if cost-effectiveness were assessed from the perspective of a health payer (e.g., a state Medicaid program), reductions in special education expenditures would be excluded. (Of course, this divergence in costs would influence payer behavior. The state education authority surely would have an incentive to shift costs onto the Medicaid program.) When calculated from a public taxpayer perspective, however, these costs would be included.

However, in the case of cost-effectiveness ratios where the denominator is a QALY, the morbidity-related costs would not be included. The effect on involvement in other public systems and other morbidity-related costs would be captured by quality of life. To count these costs both in the numerator and denominator would represent a form of double-counting (Gold...
et al., 1996).

The Cost-Effectiveness of the IYS

Using data from a series of clinical trials (described in more detail in Foster (2007)), we calculated the ICER for CT, PT and CT+PT for a range of outcomes. The ICER combines the incremental cost of each treatment relevant to no treatment with the incremental benefits. The latter is scaled in terms of standard deviations of an observer rating of children’s problem behavior. The CT and PT programs are indistinguishable—ICERs were $808 and $849, respectively. While the children who received both showed somewhat greater improvement, these gains were offset by higher costs—the ICER for the combined treatments was $1,028 (2007). A better investment of society’s resources would be to treat more children with one of the less expensive, single treatments.

Note that we have not included morbidity-related costs here. As a result, the incremental cost-effectiveness ratio should be interpreted here as the incremental costs and benefits from a health payer perspective. This role of morbidity related costs related to the IYS is an area for future research.

III. Economics of Implementing EBP: Payers, Providers, and Consumers

Economic analysis is essential for determining the cost effectiveness of an established evidence-based practice. Several steps, however, must be accomplished for the treatments to be actually delivered. The remainder of the chapter discusses how economic analyses may be applied to understanding the delivery and receipt of an EBP.

As noted, insurers or other possible payers must take the first step. After establishing effectiveness, the next step is to determine whether a treatment is likely cost-effective in real-world settings. In many instances, cost-effectiveness (or rather, cost efficacy) may be established based on efficacy studies alone. Researchers and policy makers may make the leap to assuming cost-effectiveness. The decision likely will reflect other considerations as well.
The decision may be inherently emotional and political, reflecting how rational actors are influenced by their values and personal experiences. On a large scale, such decision might take the form of social movements such as Ryan White’s family championing government support for pediatric AIDS treatment and psychosocial support services.

Second, the payer must assess cost-effectiveness from its perspective. This decision involves a more objective benefit-cost analysis, comparing costs and outcomes of the newly established evidence based practice (EBP) to those of preexisting treatments. This situation might involve, for instance, a state Medicaid program or other insurer determining whether or not to cover inpatient mental health services. When the payer is acting on behalf of taxpayers, this decision should be made with an eye toward societal well-being. Private insurers, of course, will consider their own bottom line. In the case of public systems (e.g., the National Health Service in the United Kingdom or the Medicaid program in the United States), the payer and societal perspective are identical. These programs are designed to accomplish social aims. Of course, public systems inevitably face budget limitations or at least budgetary implications, and so additional cost considerations enter as well.

When these two perspectives diverge, policy makers face a key challenge. A program may be advantageous for society yet not for the health care payer. In that case, the policy maker must find a way to bring the payer’s incentives into line with the social good. For example, better mental health services for troubled youth may increase spending on mental health services. However, those expenditures may reduce costs in the juvenile justice system. The key issue, therefore, for the policy maker is to find a way to transfer funds from the juvenile justice to the mental health system.

The contribution of economics is not limited to whether a payer should or will cover an EBP. That consumers have access to a service depends on several subsequent steps. Providers, for example, have to develop the capacity and be willing to deliver that service. Economic theory suggests that incentives can alter the provider’s willingness to provide the
EBP. The role of incentives and their potential to influence providers’ behavior will be discussed throughout the chapter. For example, a community mental health center may be in the process of deciding whether or not to implement the IYS. Of course, this decision depends to a degree on the level at which reimbursement is set and/or other contractual arrangements, in addition to possible incentives. Driving this decision also will be an initial investment in the training required to provide the service and the potential return on that investment.

Finally, consumers have to be willing to engage in such treatment. Parents are a key player in compliance with prescribed treatment and EBP for children with mental health problems. Travel costs and costs of their time must be considered when encouraging their participation as active partners in their child’s treatment. While physicians must prescribe the EBP, the patient will carry out part of the procedure. Incentives can also play a role with consumers and their families.

One can see that the delivery of evidence-based treatment involves several steps and players, and economic analyses improve our understanding of each

Step 1: Payers Need to Pay

Economics plays a critical role in payers’ decisions to include a given treatment in its benefits package. The nature of that decision, however, depends on the health care system. The United States and the United Kingdom offer contrasts in how economic analysis might be used in coverage decisions about EBP. Before turning to a discussion of the basic tools of economic analysis, we discuss these two countries briefly.

Health Insurance in the United States

In the United States, decisions about what services to cover are made administratively by payers. Those decisions are made within a regulatory framework dictated by state or federal laws depending on the nature of the insurer and population covered. Private insurers are generally regulated by the laws of the states in which they practice. Those regulations are
generally fairly broad in nature. For example, the state of New Jersey requires that insurers operating in that state cover all services for “biologically based mental illness” prescribed by physicians. This law is among the broader addressing the coverage of mental health services. A variety of other states have laws that require that co-payments and deductibles for mental health be equal to those for services for physical disorders and illnesses.

Many private employers offer "self-funded" health insurance plans. These firms essentially fund their own insurance plan, spreading the risk across its employees. (Generally, they contract with a specialized firm to handle administrative details, such as enrollment.) Within the relevant laws, these plans have a wide flexibility in determining what services to offer.

These state laws generally do not apply to federally funded public programs such as Medicaid, Medicare, and the Veterans Administration. In the case of children, the Medicaid program is most relevant. Children become eligible through the program through a variety of means but most are poor or near-poor. The related State Children’s Health Program (SCHIP) operates in a similar manner. Both states are funded with state funds and federal matching funds. The percentage mix varies from state to state depending on the state’s level of poverty. States have considerable flexibility in determining what services they can or cannot cover but are required to offer services in several broad categories (e.g., inpatient hospitalization). Other categories of services are optional but are eligible for federal matching funds (e.g., rehabilitation and physical therapy services). State can obtain additional flexibility by applying for waivers from federal requirements. These can involve statewide demonstration projects or small experimental programs. Under these waivers, states maintain the federal matching funds to offer services that might otherwise not be eligible.

State Medicaid programs are only just beginning to explore linking service coverage to evidence. Currently twelve states have pay for performance initiatives (Center for Medicare and Medicaid Services, 2008b). For example, the state of Washington has implemented what it calls “Evidence Based Medicaid.” The heart of the program is the “A-B-C-D Model” (Center for
Medicare and Medicaid Services, 2008a). That program assigns letter-grade values to services for which reimbursement is required. The state considers both the quality and strength of evidence in decision making. The grades range from “A” (indicating “proven benefit”) through “D” (“investigational, experimental, ineffective, or unsafe”). At this time, cost or cost-effectiveness is not considered. Such programs as the Washington program are the exception rather than the rule, and most Medicaid programs make coverage decisions rather haphazardly.

The Incredible Years Series (IYS) illustrates the unmet potential of tapping health payer funding. The national IYS is housed at the University of Washington and used throughout the state. There is also a great deal of evidence corroborating its effectiveness, therefore likely classifying it as an EBP based on common criteria. Yet, despite the Evidence Based Medicaid program in Washington, administrators of the IYS there are not aware if their program has a grade from Medicaid. Instead, IYS is generally funded through grants from the Washington State Department of Health and Human Services. Tapping into Medicaid resources, allowing providers to bill on a fee for service basis, is unexplored territory for IYS as well as other less traditional forms of children’s mental health care.

Health Insurance in the United Kingdom

The National Health Service is the single-payer insurer for the United Kingdom. To some degree, the British system stands at the other end of the spectrum of decision-making: decisions about whether a service is funded by the National Health Service depend heavily on strictly regulated technological assessments. Those assessments are funded and regulated by the National Institute for Health and Clinical Excellence (NICE). NICE produces ‘appraisals’ (national guidance on individual technologies), ‘clinical guidelines’ (the management of specific conditions) and clinical audits. The appraisals of new technologies are intended to encompass clinical effectiveness, cost effectiveness and wider implications of the technologies selected. The assessment guidelines recommend that a cost-effectiveness or cost-utility analysis be
included (see below) (Gafni & Birch, 2003). The NHS is legally obligated to fund medicines and treatments recommended by technology appraisals (National Institute for Health and Clinical Excellence, 2007). These appraisals have stimulated many of the advances in cost-effectiveness and economic evaluation developed by the researchers who prepare the appraisals.

**Step 2: Providers Need to Deliver EBP**

A budding literature examines incentives providers face when deciding whether to adopt and deliver evidence-based practice. A range of factors govern these processes, such as perceived professional standards and inertia in provider behavior. However, economists have explored whether and how financial and other incentives might shape providers’ adoption of EBP. That literature grows out of the economists’ approach to all human behavior—that people are rational actors. As such, economic agents make decisions that maximize their utility or well-being. Utility represents the goods, services, and state of being that an individual desires. These combine to make up one’s “utility basket.” The rational actor model posits that people respond to their environment in ways to increase items in their utility basket such as wealth, happiness, security, benefits for loved ones, and so on. They also act in ways to minimize negative consequences such as pay, pain, and extra workload—these outcomes decrease utility. For a health care provider, utility is derived from patient outcomes but not exclusively. (The issue of provider incentives and potential conflict with patient well-being is the focus of much research in health economics. The problem is known as the “principal agent problem”.)

While economists are rarely mistaken for psychologists, the rational actor model describes human behavior. It also offers insight into how to influence that behavior. For instance, the rational actor model suggests that individuals are constantly performing rudimentary benefit-cost analysis. When perceived utility or benefits from an activity are thought to outweigh costs, a person decides to engage in the activity. This framework indicates that people can be influenced to change their decision based on altering the net benefits to them.
One common tool for changing the cost-effectiveness of a program or treatment is incentives. Incentives are designed to encourage behavior that achieves desired outcomes. To understand the potential case for incentives, it is important to first ask why people are not already acting in the ways that maximize these positive outcomes. From an economist’s view, the short answer is that they perceive the costs to be greater than the benefits. Incentives seek to increase the benefit side of the equation so it outweighs the costs. Likewise, disincentives seek to influence behavior by increasing the costs of noncompliance.

Evidence-based practices (EBP) are intended to maximize patient outcomes. Quality management literature also suggests that EBP can be cost-effective, minimizing unnecessary practices (Shortell et al., 2001). Incentives potentially increase the use of and adherence to evidence-based practices in children’s mental health care. The following discusses the use of incentives for evidence-based practices.

While little research is available on incentives in children’s mental health care, the discussion highlights the small body of research in adolescent substance abuse. It also draws on literature from a wide range of other health conditions, pulling out lessons that could be applicable to children’s mental health. The literature on other areas of health services can offer some guidance to research on EBP in mental health. That literature identifies key features of the link between incentives and provider behavior. These features involve the target of the incentives (either physicians or organizations) and the form (e.g., monetary or non-monetary).

**Target Audience: Physicians vs. Organizations**

The rational actor model shows that to influence behavior, we must first determine whose behavior we want to shape. Using a simple economic framework, incentives could be used to influence those on the supply side (providers) or the demand side (users) of health services. The supply side includes physicians and the organizations for which they work. Health care payers such as the government and insurance companies may offer incentives to
providers for practicing evidence-based care. With EBP, the responsibility rests with the health care provider to gain knowledge about these practices and prescribe them. As such, incentives for the supply side are central to our discussion.

Incentive programs have been targeted to both individual physicians and the health care organizations for which they work. Some literature describes interventions at the individual physician level, offering direct payments to physicians for meeting criteria associated with EBP (Gilmore et al., 2007). Other research examines incentives at the organizational level, where the employers of the physicians actually receive the incentive (Grossbart, 2006; Roski et al., 2003; Shortell et al., 2001). For example, a community mental health center might receive additional payments by documenting that all of their psychologists have been trained to provide Incredible Years as an EBP.

Debate persists about whether to offer incentives to individual doctors or their employers. On the one hand, direct compensation to providers will have the most direct effect on their perceived benefits, and therefore, on their personal benefit-cost analysis. Managing this from the payer perspective, however, would be challenging. The data required for such monitoring is substantial. A payer would have to review cases for each doctor to determine compliance. Moreover, EBP focus on certain conditions. When a condition is relatively rare, a single physician may see few patients with those presenting symptoms. This will make it inefficient to measure improvement in care at the individual physician level (Christianson, Knutson, & Mazze, 2006).

Offering incentives to organizations that employ individual providers may be much more efficient for the payers. Patients across individual doctors in an organization can be pooled, providing many more patients with the targeted condition. However, providing incentives at the organizational level may not provide the same leverage for changing physician behavior. In some cases, the organization has discretion in deciding how to use the bonus or reward (Roski et al., 2003). It is possible that when the organization does not choose to pass it directly to the
providers who use the EBP, the physicians are less motivated to change their behavior. Whether and how to pass long incentives to providers will reflect other economic considerations. Organizations may want to pass along the incentives in instances where monitoring specific providers is difficult. They may chose to keep the incentives in cases where they can guarantee provider compliance.

In extreme cases, it may also create a free-rider problem. Some physicians may ignore management’s call for the use of EBP to save their time and resources needed for additional training or other costs. Yet, they may benefit from increased remuneration or other perks if incentives are not shared exclusively with those who comply but rather spread across the organization. Another unintended consequence is that incentives to organizations could foster unhealthy competition among physicians (Ferguson & Lim, 2001). If the incentive is viewed as a finite sum that is divided among physicians based on performance, then perverse incentives could influence providers to forego collaboration and avoid peer consultation, a cornerstone of medical practice. In the end, hospitals and medical groups need participating physicians to share the same quality goals if the organization is to succeed in earning the financial incentive (Shaman, 2008).

Much of the current practice generally describes health payers giving incentives to organizations, with the assumption that the employers pass the money to individual physicians based on performance (Shaman, 2008). As such, the scenarios described above may be unfounded. However, this economic approach suggests that more research is needed on potential latent the effects of how the organization uses its incentives.
Type of Incentives

Incentives generally fall into two categories: monetary and nonmonetary, such as prestige. The type selected typically depends on the target group. For health care providers, the literature largely focuses on monetary incentives. Pay for performance, often abbreviated as P4P, is an emerging tool in quality management practice. The Institute of Medicine Crossing the Quality Chasm report of 2001 precipitated this movement (Christianson et al., 2006; Gilmore et al., 2007; Grossbart, 2006; Shaman, 2008; Shortell et al., 2001). The report stated that physician incentives needed to be more closely linked with their performance (Grossbart, 2006). Some even dub pay for performance as a “quality incentive program,” actively linking the financial incentive to quality management practices (Gilmore et al., 2007). Financial disincentives for providers, such as docked pay for not meeting performance standards are also described (Ferguson & Lim, 2001). However, the majority of the attention is on positive reinforcement or rewards rather than penalties (Shaman, 2008).

The Centers for Medicare and Medicaid Services (CMS) led the way with pay for performance. In the mid 2000’s, CMS issued a new reimbursement policy for hospitals and physicians. Future increases in payment would depend on improvements in clinical care. Private sector health insurers followed suit. They have begun to implement pay for performance as well. Some even issue scorecards for hospitals and physicians that consumers may use in selecting a provider (Shaman, 2008). Now over half of the private sector HMO’s have a P4P program, covering over 80% of consumers enrolled in HMO’s (Epstein, 2007).

To a lesser degree, health care payers also use non-monetary incentives for physicians and provider organizations. Those who meet quality targets may receive the designation as a preferred provider or other public recognition of their high quality practices (Shaman, 2008). National accreditation and state licensure may also bestow prestige on an organization. Shortell invokes institutional theory, stating that providers will act in ways that either maintains or increases their credibility with key constituents (Shortell, 2004). Moreover, hospitals may
also benefit from improved efficiencies. Use of the most appropriate care for patients would lead to saving money and time on unnecessary procedures. This would conceivably free up hospital beds earlier, allowing them to be filled by other patients (Shaman, 2008). Generally, however, financial incentives for health care providers are most commonly described and studied in the research literature.

Evidence on Effectiveness of Incentives

While some studies find that physicians can be influenced by incentives (Gilmore et al., 2007; Shortell et al., 2001), research on the effectiveness of provider incentives is rather limited (Grossbart, 2006; Shortell, 2004) (Epstein, 2007) (Lindenauer et al., 2007). Little research is published on the use and effectiveness of financial incentives in mental health care, particularly for children. A few studies have considered incentives for other types of patient care. Although these studies vary in methodology, most find a surprising small effect size for incentives.

A number of studies has used observational data to assess the effectiveness of pay for performance. In an often-cited study, Lindenauer et al assessed reported quality milestones of 613 hospitals over a two-year period. A third of the sample participated in the CMS pay for performance program. The other two thirds voluntarily reported their progress through a national initiative, but did not receive incentives. They found that the pay for performance hospitals improved across all areas of quality, significantly more so than the comparison hospitals. Hospitals that were performing the lowest at baseline made the greatest improvements. However, after controlling for baseline differences, the researchers found that pay for performance fostered more modest gains, ranging from 2.6% to 4.1% over the two years compared to the hospitals with no incentives (Lindenauer et al., 2007).

Another large-scale observational study assessed change over time in mortality rates for patients diagnosed with key conditions. Werner and Barlow assessed results from 3657 hospitals using data from the Center for Medicaid and Medicare Services website. They
focused on myocardial infarction, pneumonia, heart failure, and pneumonia. For each of these conditions, there were only very small differences in risk-adjusted mortality rates between hospitals scoring in the top 25% in quality compared to those in the bottom quartile. Myocardial infarction had the largest, with only a .005 decrease in risk-adjusted mortality rates between the highest and the lowest performing hospitals. They suggest that quality performance measures should be reassessed to be more closely related to patient outcomes (Werner & Bradlow, 2006).

Smaller reviews also find preliminary evidence supporting the effectiveness of incentives. In a review of ten hospitals located within one health system, Grossbart found that the hospitals that were provided incentives earned higher quality scores than those without incentives (Grossbart, 2006). However, hospitals chose whether or not to participate in the incentive process, suggesting the possibility of selection bias. Collier’s study offered a financial incentive contract to a group representing 12 hospitalists working in a health system with two hospitals. The hospitalists improved in timely completion of medical records, maintaining 24 hour coverage and a lower target patient-physician ratio, as well as in many quality standards of the Joint Commission on Accreditation of Health Care Organizations (JCAHO) (Collier, 2007). This hospitalist group was favorably compared to another group that did not receive a contract for the incentive program. The comparison group, however, was not initially awarded a contract due to its insufficient number of physicians. Number of physicians is a key factor in being able to provide 24/7 coverage and a lower patient-physician ratio. Comparing the unequal groups may confound the role of incentives in motivating physician behavior.

Most randomized studies have been small in scope. They do provide examples of a topic more closely related to mental health and psychosocial factors – smoking cessation. An et al. (2008) conducted a randomized experiment with clinics referring smokers to a hotline for tobacco cessation. These “quitlines” are considered to be a method to link smokers with evidence-based practices for quitting smoking. The study involved 49 clinics, half randomly
assigned to receive incentives for making referrals to the quitline. Clinics receiving the incentive referred 11% of patients who smoked to the quitline, compared to 4% of the control clinics (An et al., 2008). While this difference is statistically significant, it still represents a small percentage of smokers referred for assistance.

Similarly, in a randomized study of smoking screening in adults, a medical group offered incentives to a portion of its clinics for identifying smokers and providing advice on quitting to a target number of patients. Clinics in the incentives group were significantly more likely to identify tobacco users than the control clinics. The researchers conclude, though, that the incentives did not produce an effect that could significantly sustain the change in the physicians’ behavior compared to the control group (Roski et al., 2003). This suggests that incentives may play a role in modifying physician and organizational behavior, but it should be viewed as one among several responses needed to change how clinical work is performed to better illicit quality results.

**Challenges**

As we discussed, evidence of effectiveness in the literature is mixed at best. Do these modest findings suggest that the rational actor model does not apply to health care providers? On the contrary, the model would suggest that it is likely the physicians are responding quite appropriately to the incentive. Perhaps the incentives themselves are not large enough to alter the provider’s internal benefit-cost analysis. In a review of ten large pay for performance programs, Price Waterhouse found that incentives accounted for a range of 1% to 8% of physician pay. Health care payers such as the participating insurance companies agreed that the amount should be at least 10% of salary to motivate physicians (Shaman, 2008). Other studies find that the current incentives are even lower, ranging from 1% to 2% of physician pay (Shortell, 2004).
Similarly, it may also be rational for providers to opt out of the financial incentive program. Each health payer determines its own set of quality criteria. One review of ten major health payers found that together they had 60 quality indicators. None of the measures, however, were shared by all ten plans (Shaman, 2008). Participating physicians and organizations must track all of these indicators. Resources are needed to collect the data, enter it into a tracking system, and report the results. Some progressive institutions may already engage in data tracking for program monitoring and internal continuous quality improvement purposes. Many others, though, will note the burden required to meet the requirements of each payer. Finite resources may mean that the hospital takes money out of the direct care line item to cover increased administrative costs. Organizations as well as individuals must decide if the expected benefits outweigh the costs.

In addition to the provider’s perspective, the payer must consider other challenges before embarking on a pay for performance program. Certain conditions must be evident before incentives are warranted, including:

**Costs.** Offering incentives could affect positive consumer outcomes. Managing the programs, however, can create significant costs. In most cases, payers must provide new funding to pay for the incentives themselves (Christianson et al., 2006). Additional costs include resources for monitoring quality compliance including data collection and even computerized tracking systems. Costs are to be expected, but so are increased benefits. Incentives make sense when expected benefits related to improved patient outcomes, productivity, cost savings, and so on outweigh the anticipated costs.

**Ample Resources.** On both the supply side and the demand side, desired behaviors may involve referrals to resources. When the targeted service is scarce, it is not reasonable to offer incentives for using these resources. For instance, encouraging child protective services to place youth in therapeutic foster care would be misguided if the care was not widely available in the community. In this case, resources would be better spent trying to increase the
availability of the service.

**Ethical Considerations.** The use of incentives may be inappropriate for people in certain positions. This could be especially true of public officials. Incentives clearly should not be used if there is a possibility they could be construed as a bribe. In these cases, education focused interventions that appeal to common interests may be more appropriate.

**Latent Consequences.** Incentives inherently elevate the importance of the behaviors for which they are awarded. When people shift their priorities toward these activities, they may decrease the amount of time they spend doing other necessary practices that do not have an incentive (Christianson et al., 2006). Before instituting incentives, it is imperative to consider how they may affect people’s other behaviors. Anticipated latent consequences may indicate that incentives may cause more harm than good.

**Measurement Error.** Ultimately, the quality indicators linked to incentives must be measured. Sometimes the best measures of key behaviors are not necessarily the easiest to collect. Pay for performance indicators typically include those that are easiest and cheapest to monitor. As a result, behavior indicators related to incentives may not necessarily be closely related to the longer term patient outcomes of true importance (Christianson et al., 2006). Incentives would be appropriate when measures are most closely linked to the targeted health outcomes.

**Applications to Mental Health EBP**

At some point, the trend toward use of provider incentives, even with relatively little supporting evidence, will likely come to mental health. While there is little research on provider incentives in the mental health system, we can anticipate issues with incentives unique to mental health.

For instance, most EBPs are related to specific conditions. Mental health providers can spend much time determining a diagnosis. Conditions are often based on symptomology, which
may vary naturally over time. For example, most depression scales have cut off points representing clinical depression. At the same time, the latent condition of depression is continuous, ebbing and flowing. Time of measurement and assessment tools will become very important in determining whether or not the child meets the condition and therefore warrants an EBP. Moreover, incentives are only appropriate for conditions that have an established EBP. EBPs do not exist for some children’s mental health issues. Acting rationally, it is possible that providers may (even subconsciously) give a diagnosis for borderline conditions that have an incentive tied to them. Clearly, much thought will need to be given to the range of conditions with EBPs before incentives are introduced to mental health.

Another issue to consider is the tracking of patient progress. Often the person who diagnoses the condition is the same one who implements the EBP and tracks changes over time in the client. Many organizations provide clinical supervision. The enhanced role of the supervisor, offering an objective view on the work done, will need to be explored within each agency. Review mechanisms will also need to be developed for solo practitioners if health payers decide to offer direct incentives to them as well.

**Step 3. Consumers need to consume**

Incentives for the demand side also have a place in the discussion of evidence-based practice. While physicians must prescribe the EBP, it is often up to the patient to carry out part of the procedure. This may involve making an appointment for ordered tests, purchasing and using medications as prescribed, following dietary and exercise regimens, and so on. The literature contains examples of programs that offer incentives for patients, typically related to treatment for specific conditions. These conditions often include traditional health problems such as diabetes (Taggart, Wan, Harris, & Powell Davies, 2008), but some are also related to mental health and substance use issues like adolescent substance abuse (Godley, Godley, Wright, Funk, & Petry, 2008) and smoking during pregnancy (Heil et al., 2008) among others.
Types of Incentives

Improving consumer health behaviors and outcomes is the ultimate goal of evidence-based practice. Physicians and other health care providers play an important role in educating patients and prescribing clinical recommendations. Incentives for providers, however, are not necessarily closely aligned with patient outcomes (Long, Helweg-Larsen, & Volpp, 2008; Werner & Bradlow, 2006). Patient adherence to their physician’s recommendations is a central component of achieving optimal results. The consumer side of the supply and demand model also must be considered.

What motivates patients and consumers to comply with physician recommendations? Researchers have developed health and behavioral change theories to understand patient motivation. Interventions to improve patient adherence often involve education. More recently, tools such as motivational interviewing are receiving much attention. This approach involves exploring with the patient reasons for their resistance to compliance and facilitating their own discovery of mechanisms that can help them adhere to physician recommendations (Butterworth, 2008; Joy, 2008). Given the economic perspective that patients are rational actors, incentives may have a role in affecting patient adherence. Thus far, incentives are only a small piece of the patient motivation and compliance literature.

Incentives that have been described in the literature for patients and consumers include both monetary and nonmonetary rewards. Employers, insurance payers, and other health supporting programs are beginning to use consumer incentives. Employers, for instance, are increasingly realizing the cost factors in having workers with a variety of taxing health conditions. Some have developed programs to encourage their employees to lose weight, exercise, and stop smoking among other behaviors (Long et al., 2008). Others have offered payment to workers for completing programs in disease management (Wilhide, Hayes, & Farah, 2008). Disincentives also exist to encourage employee compliance with clinical recommendations,
such as higher health care premiums for persistent smokers or even the threat of termination (Long et al., 2008). National survey results indicate that 9 out of 10 employers with 50 or more workers offer some type of health promotion program. However, these tend to be small in scope, with only an estimated 7% offering comprehensive programs (Taitel, Haufle, Heck, Loepke, & Fetterolf, 2008). Nonetheless, most organizations perceive that having a healthier workforce actually lowers their own costs of missed days of work and health care premiums while ultimately increasing general productivity.

Some health payers are also beginning to explore patient incentives. One private company has implemented medical savings accounts for certain plan beneficiaries with chronic conditions. The payer deposits money into the client account for those who adhere to prescribed treatment. Disincentives are also being utilized. Most notable is the West Virginia Medicaid program’s recent movement to reduce coverage for those who do not follow clinical recommendations (Long et al., 2008).

A small number of community-based health promotion programs has also begun to use incentives. For example, an adolescent substance abuse recovery program notes the use of drawings for prizes (ranging from candy to televisions) (Godley et al., 2008). Retail store vouchers also have been employed in a university hospital setting to encourage pregnant women to stop smoking (Heil et al., 2008).

Evidence

As use of incentives for consumers is evolving, so is the research on its effectiveness. Evidence generally falls into two groups. Employer-based incentives are relatively new and as such, limited evidence exists on their effectiveness. Much more research is available on contingency management, a common incentive based system for treating substance abuse. Both will be discussed below.

Preliminary evidence suggests that work-based incentives have positive effects on
patient/employer health outcomes. Wilhide and colleagues used data from 87 employers whom each had at least 75 employees with a qualifying condition requiring disease management. Each employer decided whether or not to offer incentives to individuals for participating in a disease management program. Just over half provided incentives, most commonly gift cards and cash. The researchers found that incentives valued at least $50 at intake and again at completion of the disease management program were most effective in affecting employee participation (Wilhide et al., 2008). Taitel et al. (2008) studied the effect of incentives on employee participation on health risk assessments. Using data on 124 employers, they found that incentives did encourage participation. The necessary size of the incentive, however, depended on organizational characteristics. Those featuring high organizational support for employees could actually offer smaller incentives to inspire participation in the health assessment (Taitel et al., 2008). While preliminary studies such as these are promising, some in the field suggest that more evidence is needed before companies continue the move toward work place incentives (Draper, Tynan, & Christianson, 2008).

Much more of the literature on demand-side incentives involves contingency management. This approach operationalizes the psychological theory of operant conditioning in which environmental factors can shape behavior through reinforcing rewards or negative consequences. Contingency management was developed specifically to address substance abuse. It uses incentives to induce behavior modification (Godley et al., 2008). The approach was first used with cocaine users. Using random assignment, Silverman et al found that cocaine users were more likely to comply with treatment and submit clean urine tests when vouchers were offered as incentives (Silverman et al., 1998). While this study was small (n=59), it inspired others to test contingency management for other substances including marijuana and alcohol dependence. Positive effects were found for these groups as well (Godley et al., 2008).

Since the earlier studies, contingency management has taken on the name voucher-
based reinforcement therapy (Heil et al., 2008). Vouchers are offered to people for compliance with treatment including maintaining sobriety. A meta-analysis of 30 studies using experimental designs found an average effect size of .32 when vouchers were used as incentives. Studies which offered incentives earlier on and which provided larger voucher amounts yielded the greatest results (Lussier, Heil, Mongeon, Badger, & Higgins, 2006). More recently, Heil and colleagues implemented a randomized control trial of 82 pregnant smokers. Both groups were encouraged to quit smoking. The treatment group was offered a voucher to use for retail items if they abstained from smoking. The comparison group was provided a voucher of similar amount for study participation. The study found that those in the treatment group were significantly more likely to have stopped smoking by the end of pregnancy (41% vs. 10%) and 12 weeks post partum (24% vs. 3%) (Heil, Higgins, Bernstein, Solomon, Rogers, Thomas, et al., 2008).

Evidence also suggests that contingency management can be effective for adolescent substance abusers. Most involves very small sample sizes. Corby and colleagues were among the first to assess the effects of contingency management for youth. They found that voucher interventions yielded positive results for young smokers. However, the study was framed as a feasibility study, likely due to the small sample size (n=8) (Corby, Roll, Ledgerwood, & Schuster, 2000).

Kamon et al. (2005) studied the use of vouchers in decreasing marijuana use among 19 adolescents. Teens with a history of marijuana use earned vouchers for clean drug tests. Vouchers were for socially acceptable services such as restaurants, clothing stores, and movie theaters. Values of the incentives increased with each clean screen and reverted to the initial amount when marijuana use was detected. Parents earned chances for prize drawings by supporting their children in the program as well. By the end of the 14 week intervention, 74% of youth tested free of marijuana, compared to only 37% at baseline. Just over half were clean one month following the program (Kamon, Budney, & Stanger, 2005).
More recently, Godley et al. (2008) conducted a descriptive contingency management study of 86 adolescents. They assessed the impact of prize drawing incentives on program compliance. Youth coming out of substance abuse residential treatment were encouraged to set goals related to developing socially acceptable activities. Participants set an average of 20 goals related to areas such as education, family, recreational activities, etc. The more steps a youth took to participate in activities that supported their chosen goals, the more opportunities they earned for participating in drawings. Youth completed 13 goals on average. Godley and colleagues suggest that prize drawing is a viable alternative to vouchers (Godley, Godley, Wright, Funk, & Petry et al., 2008).

**Barriers**

Most of the barriers related to measuring the effects of incentives in children’s mental health involve observational data and small sample sizes. It is possible that additional research using larger scale randomized experiments will substantiate the current findings from smaller studies.

Most studies to date have not viewed incentives from the perspective of health behavior theory. This may elucidate additional approaches to incentives for consumers that have not been tested. Health behavior theory suggests that it is necessary to understand reasons why people have not already complied with the desired behavior before offering incentives. The PRECEDE–PROCEED model holds that interventions should address the target group’s knowledge and attitudes, available resources for implementing the activity, and the opinions of others around them (Grol & Wensing, 2004). These can all serve as facilitators or barriers to implementing EBP. Incentives will be most effective when they help people overcome the barriers to participation. This may include being linked to activities that increase their knowledge (such as incentives for attending training), or perhaps provide increased resources that lower the costs of their participation such as patient transportation assistance.
Applications to Mental Health EBP

The possibility of offering incentives to children with mental health conditions and/or their families requires significant discussion. One consideration is whether or not people will respond as predicted to incentives. Are children considered to be rational actors? Similarly, can we expect people with mental health conditions to respond rationally to an incentive? Depression itself can have great effects on a person’s utility basket, perhaps driving it to zero. The answer to this may depend on the condition itself. Another possibility is to offer the incentive to the parents. Parents play a key role in assuring their children comply with provider recommendations. For instance, parents provide the transportation to appointments, administer medications and so on. They essentially manage the illness on a daily basis.

Conclusion

Economics has an informative role to play in the field of children’s mental health services. Cost effectiveness techniques are necessary to fully understand the costs of the outcomes payers are “buying.” This is an effective tool aiding in the selection among a variety of evidence-based programs. In addition to cost analysis, economics provides a framework for predicting human behavior. Incentives can play a role, albeit limited in some cases, in eliciting desired behavior among mental health providers and consumers including children and their parents or caregivers.
References


Table 1. Intervention Ingredients

**Training Fees**
- CT Leader Training by Cert. IY Trainer (24 hrs total)
- PT Leader Training by Cert. IY Trainer (24 hrs total)
- CT Leader-in-Training’s Time (24 hrs total)
- PT Leader-in-Training’s Time (24 hrs total)

**Material Fees**
- CT Dina Series Session Materials
- CT Dina Series Lesson Plans and Handouts
- PT Training Materials
- PT Session Materials
- PT Leader Manual
- CT and PT Parent Manuals (12)

**Additional Fees - Staff Time**
- CT Leader’s Time in Sessions
- CT Weekly Supervision
- PT Leader’s Time in Sessions
- PT Leader Additional Time

**Additional Fees - IY Implementation**
- PT Small Group Session Meals
- PT Small Group Session On-Site Babysitting Fees
- PT Small Group Session Cab Vouchers
- PT Small Group Session Off-Site Day Care Costs