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Evaluating the complex: Alternative models and measures for evaluating collaboration among substance use services with mental health, primary care and other services and sectors

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ABSTRACT

Many planners and administrators now look to "collaboration" or "integration" as a solution, or at least a partial solution, to challenges related to access and delivery of substance use and mental health services and health services in general. Among the major constraints in identifying best practices in this area and recommending optimal evaluation strategies are the plethora of terms and concepts used in the literature to describe collaboration or integration as well as the many alternative approaches and outcome expectations. It is helpful, therefore, to follow concrete steps to plan the evaluation, including the engagement of multiple stakeholders in the planning process and subsequent execution of the evaluation. The concrete evaluation strategies employed can follow a traditional, often linear model, of impact and are often categorized under the common typologies of process, outcome or economic evaluations. Each approach examines different domains of interest and can be at the individual/service level or at the level of the overall treatment system. Other less traditional evaluation models and methods based on systems theory, complex adaptive systems and developmental evaluation have much to offer the evaluation of interventions aimed at improving the collaboration and integration of substance use services with other health and social services and sectors. Realist evaluation is a particularly helpful approach that integrates many of the traditional approaches with these other models and methods.

KEYWORDS – treatment, alternative measures

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Introduction

It is now common practice in the planning, delivery and evaluation of substance use services and supports to look to "collaboration" or "integration" as a solution, or at least a partial solution, to challenges related to access and delivery of care for individuals with substance use problems. (Chalk, Dilonardo & GelberRinaldo, 2011; Ivbijaro, 2012; Hutchison, Levesque, Strumpf, & Coyle, 2011). On the one hand it can be argued that "working collaboratively" or with "better integration" have become buzz words to either rationalize failure of the system at multiple levels (i.e., there is apparently not enough working together) or a holy grail that holds promise for better health outcomes, more satisfied services users and cost savings (i.e., we would be more successful if we only worked better together).

Collaboration between substance use services and other services and sectors

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such as mental health and primary care is a particularly salient priority given the fact that only a minority of individuals with substance use challenges seek help from specialist services (Urbanoski, Rush, Wild, Bassani & Castel., 2007; Kohn, Saxena, Levav & Sacareno, 2004) and the majority of those who do seek help do so from other community services such as primary care physicians (Shapiro et al., 1984; Kessler et al., 1996). In addition, people with substance use challenges experience a higher than expected prevalence of mental and physical health problems as well as a range of family and social challenges. These co-occurring challenges have driven the call for closer integration of services in many countries (Rush & Nadeau, 2011; Sapag & Rush, 2012). Further, recent calls to broaden the base of substance use treatment via collaborative care strategies emphasize the importance of these efforts in achieving a population impact versus outcomes only among those seeking specialist help (Babor, Stenius, & Romelsjö, 2008). Inherent in the concept of "broadening the base" is multisectoral collaboration.

Despite this strong rationale it has been a major challenge to pinpoint the actual benefits of closer collaboration and integration as well as the evidence-based processes and practices to achieve such benefits. Many other challenges summarized below mitigate systematic evaluation and synthesis of findings.

What do we mean by "collaboration" and "integration"? One of the constraints in identifying best practices in this area and recommending optimal evaluation strategies is the plethora of terms and concepts used in the literature. "Collaboration" is a term sometimes used synonymously with, or embedded in the discourse about, "service/system integration," "partnerships," "shared care," "chronic disease management", "networks and network analysis," and "coalitions and community development", to name just a few. The terms "collaboration" and "integration" are most commonly conflated, sometimes being described as synonymous activities or outcomes, while at other times collaboration is seen as a less formal and less structured form or level of integration.

The Canadian Collaborative Working Group on Shared Mental Health Care (Kates et al., 2011) summarized several models of collaboration which can be useful for evaluation considerations:

- Effective communication – transmitting relevant information about individuals and programs in a timely, legible, relevant and understandable manner, including through electronic records.
- Consultation –mental health and addiction professionals provide advice, guidance and follow-up to other service providers to supplement the care and support of their clients and families while sharing ongoing responsibility of care. Alternatively, other service providers provide advice to specialist service providers on the management of medical, psychosocial and/or spiritual needs of individuals with mental health and/or addiction problems.
- Coordination – coordination of care plans (including discharge plans) and clinical activities (including screening, assessment and treatment/support planning) in order to avoid duplication, use resources efficiently and help transition people to the services they

require. Coordination can also include inter-professional educational activities such as joint presentations, site visits, cross-training or webinars.

- Co-location –mental health and addiction professionals working on location in other service delivery settings or, alternatively, the placement of other service providers within mental health and addiction services to help address physical, psychosocial and/or spiritual needs of people using those services.
- Integration – a single service or clinical team that brings together mental health, addiction, primary care and other relevant professionals for the purpose of shared care-planning and decision-making, documentation in a common or shared medical record, and collaborative intervention activities. This interdisciplinary clinical team may be tied together as a single administrative entity or be bound by service agreement and/or contracts.

Within these various groupings are a multitude of options for service delivery and treatment system supports.

Another often cited schema articulates a *continuum of engagement* ranging from segregation, linkage/communication, coordination in networks, cooperation and integration (Ahgren & Axelsson, 2005). Another example also subsumes collaboration along a scale that assesses the degree of integration (Konrad, 1996); the units on this scale being - information sharing and communication, co-operation and co-ordination, collaboration, consolidation and integration.

One common point across all these schema is that a given initiative can evolve through one or more of these stages in the course of time. This has important implications for evaluation since the goals of the collaborative initiative will not only be emergent and evolving. Further, a desired outcome at one stage (e.g. trust and reciprocity within a particular collaboration) becomes, over time, a process indicator of the achievement of more functional and/or structural integration and other outcomes.

In addition to the *degree* of collaboration or integration there are three distinct elements encompassed by the integration construct: (1) types of integration (e.g. functional, organizational, clinical); (2) breadth of integration (vertical versus horizontal); and the process of integration (i.e. structural, cultural, social). Cultural integration (sometimes referred to as *normative integration* (Contandriopoulos, Denis, Touati, & Rodriguez, 2003; Brousselle, Lamothe, Sylvain, Foro, & Perreault, 2010) is less commonly referenced in the collaboration or integration literature, but is particularly relevant for collaboration or integration across mental health and addictions services since it pertains to the convergence of values, norms, working methods, approaches and symbols of each of these historic disparate sectors (at least in most countries studied to date). Divergence of these aspects of care and organizational culture are recognized as deeply entrenched within mental health and addiction services and a significant barrier to professionals working more closely together (Health Canada, 2001; Substance Abuse and Mental Health Services Administration, 2002; Ridgely, Goldman, & Willenbring, 1990).

On the one hand, these many levels and types of collaboration and integration can

be confusing and detract from getting on with the task of developing and evaluating concrete collaborative options for substance use related treatment and support options. That said, these various typologies yield many options for collaborative activity and pinpointing the level and type of collaborative activity is an essential part of evaluating the benefits being accrued, and resources expended. Thus, although confused and conflated at times, the various typologies are critically important to the selection of evaluation criteria, models and methods as well as identifying the primary audience for using the results. For example, system administrators may be interested in accruing efficiencies whereas service managers and staff will be anticipating direct benefits for meeting the needs of clients and their families.

It is increasingly common to consider collaboration along a continuum in which case integration is one form of collaboration (Canadian Centre on Substance Use, in press). Thus collaboration can be defined broadly as:

> "any form of cooperative enterprise, whether it be shared or collaborative care, a partnership, a network, a community coalition or various forms of integration, to increase the chances of achieving some common objective compared to acting alone as an individual or organization".

It is also important to distinguish between system and service levels (Rush & Nadeau, 2011; Voyandoff, 1995; Minkoff, 2007) as they relate to collaboration – in part because at least some of the key considerations, strategies and ingredients may be different for these two levels. *Service-level collaboration* relates directly to the interface between service providers and their clients, families/supports (e.g. collaborative assessment; treatment planning; case consultation/conferences; transition/linkage management; cross-training, multidisciplinary clinical teams). S*ystems-level collaboration i*s more about administration or management activities or policies to improve planning, budgeting, and operations (e.g. common or joint clinical information systems and electronic records; structural or functional linkage in policy development, strategic planning; budget planning; co-location, organizational culture and leadership).

Another challenge is that collaboration is seen as important not only to increase the effectiveness of services at the *individual level* in order to address the full range of needs and treatment trajectories, but also at the *population level* in order to maximize societal impact. This yields a complex matrix of expectations and perceived benefits that further complicates evaluation and synthesis of findings. Some expected benefits include: enhanced system capacity to support people with complex conditions; enhanced capacity within in collaborating partners (e.g., manager and staff attitudes, values and competencies, improved programs and policies); improved access to services; earlier detection and intervention (e.g. via systematic screening, brief intervention and referral); improved interventions and continuity of care (e.g., through co-location; linkage management and system navigators); more satisfied service users and their families/other supporters; improved and more cost-effective client

outcomes; and reduced costs, including overall health care costs.

In sum, the plethora of terms used to capture the meaning of "integration" or "collaboration", the many ways in which it has been operationalized, and the wide range of anticipated benefits make it extremely difficult to offer decision-makers a concrete set of evidence-informed recommendations for improving collaborative activity with respect to substance use services, including recommendations for evaluating the achievement of various outcomes. These challenges notwithstanding the promise of more collaborative services and systems is so tantalizingly strong and rich that it demands that the best available information regarding collaboration and integration be put in the hands of decision-makers and that we employ a diverse evaluation toolkit to assess processes, outcomes and costs.

Theoretical considerations and models of collaboration to help guide evaluation

In addition to reflecting on the type or level of collaboration/integration it is also helpful to describe specific theories, models and approaches for collaboration that have had some traction in the research literature. For example, the principles of the Ottawa Charter give rise to a socio-ecological model that recognizes the complex relationships between the individual and various nested levels of community (see, for example, Health Council of Canada, 2010). Therefore, any adequate system designed to promote the health of individuals must have the capacity to intervene at multiple levels (e.g., individual, institutional setting, community). Even if we restrict ourselves to considering the services and supports offered to individuals who present for care, these complex interconnections must be kept in mind and a level of collaboration must be assured that meets client needs. No matter where the client presents for service, there are likely a variety of issues that impact on their health and well-being and, in theory at least, systems that can seamlessly address multiple aspects of the person's health offer greater opportunity for positive outcomes. However, this in turn presents challenges for evaluation approaches that rely on assumptions of linearity and causality (e.g. experimental or quasi-experimental designs).

The Chronic Care Model developed by Wagner (1998) and, more recently, the tiered model for mental health and substance services specifically, and reported by Rush (2010), have been instrumental in articulating a need for a range of health care services to work collaboratively to better meet client needs. Of critical importance to the Tiered Model is the fact that individuals and their families should be able to enter a comprehensive service and support system at multiple points (i.e., the concept of 'any door is the right door') and, upon entry, be linked to other services within or across tiers according to their needs. Thus, the system must be operationalized and coordinated in such a way as to facilitate transitions within and across the tiered services and functions as dictated by the individual's needs - no part of the system 'owns the person;' they are 'individuals' of the entire system. Integral to the Tiered Model are the core system-level supports required to create and sustain service-level collaborative processes and structures (e.g. shared information

systems, including electronic medical charts, policy, and leadership). Both the chronic care model and the tiered model have much in common that have implications for evaluation design and measurement. This includes the relevance to examine the veracity of the linkages between services and sectors, the level of trust and reciprocity between participants, a focus on defining the broad continuum of severity being addressed, multi-sectoral involvement and a distinction between service and system level initiatives.

Network theory can also play a key role. This theoretical approach to collaboration and integration is essentially about the number and degree of connections between various players or actors and the nature of these connections—between a few individuals, departments/units, organizations or larger systems. Generally, networks refer to either naturally or artificially developed relationships among organizations that operate as mechanisms for communication, cooperation, and collective problem solving (Singer & Kegler, 2004). The nature of these relationships depends on a variety of antecedents including, at the interpersonal level, actor similarity, personality, proximity, organizational structure, and environmental factors; at the inter-unit level, interpersonal ties, functional ties, organizational processes and control mechanisms; and at the inter-organizational level, motives, learning, trust, norms and monitoring, and equity and context (Brass, Galaskiewicz, Greve, & Tsai, 2004). Given the potential for the virtually endless combinations and degrees of influences on a network, it soon becomes readily apparent that networks of even modest proportions can be very complex, as will evaluation questions and processes.

Early applications of organizational network analysis focused on mental health service (Tausig, 1987) and played a major role in the evaluation of important mental health-related programs such as the ACCESS project for homelessness in the US (Morrissey et al., 2002). Provan and Sebastian (1998) used network analysis to show that outcomes are more influenced by linkages between *cliques* (i.e., linkages between sub-groups, members of which share common interests in a client group) than by linkages between all the agencies in a service network or system that are more removed from direct person-centred services (e.g., signing agreements on joint program delivery). There are important lessons and evaluation strategies to be drawn upon here for assessing collaboration and integration of substance use services with other services and sectors.

Given the logic and assumptions embedded in these planning models it is clear that community efforts to improve collaboration and integration of services and systems should be viewed as "complex interventions". Guidelines have been offered by the Medical Research Council in the UK for developing and evaluating interventions that are seen as sufficiently complex as to warrant consideration of special evaluation approaches (Craig et al., 2008). In these guidelines an intervention is deemed to be complex based on the number of interacting components in the experimental and control conditions; the number and difficulty of behaviours required by those delivering and receiving the intervention(s); the number of groups or organizational levels targeted by the

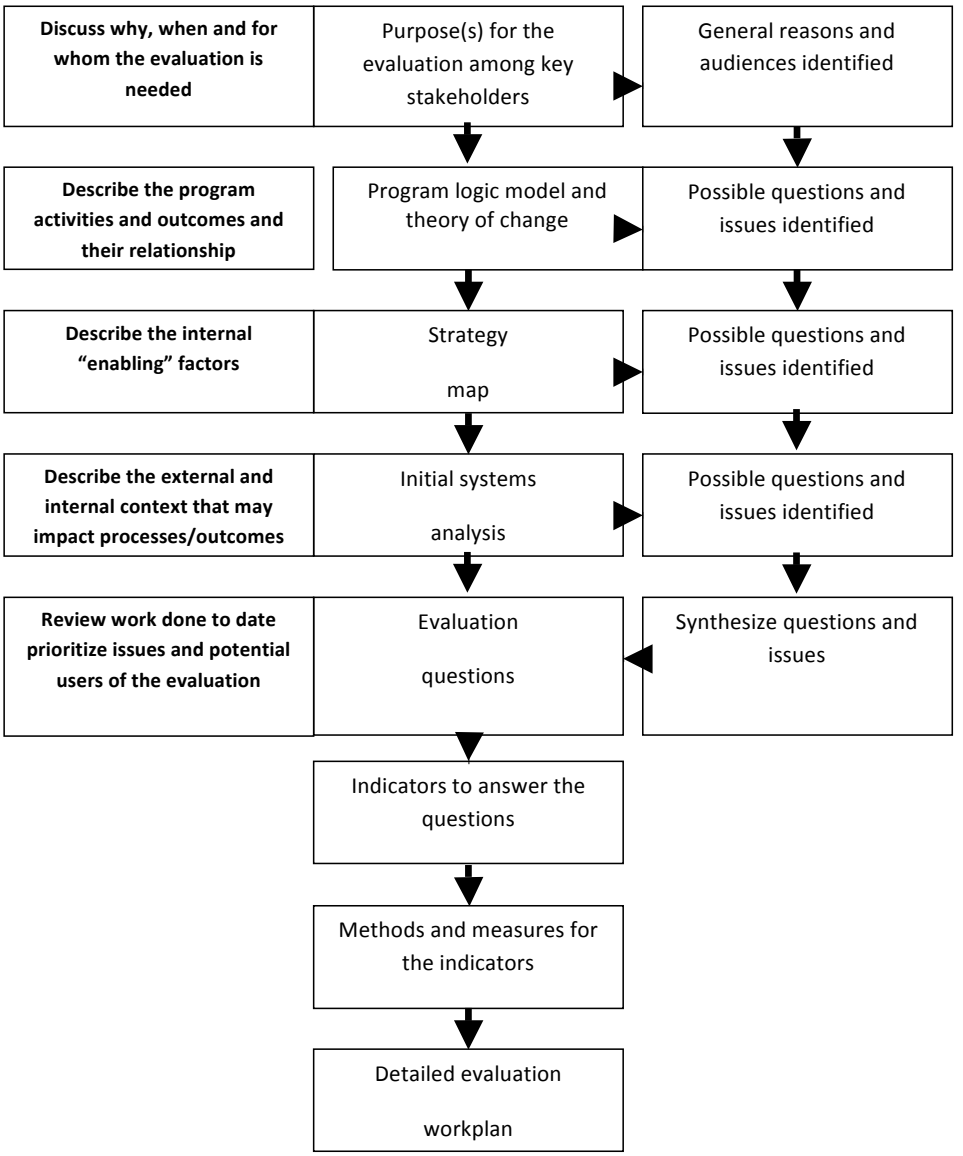
intervention(s); the number and variability of outcomes; and the degree of flexibility of the intervention(s) permitted. Clearly these criteria fit the large majority of collaboration of integration initiatives. The implications for evaluation as articulated by Craig and colleagues (2008) are profound, especially coming from such a respected medical body heavily invested in clinical trials. This includes, for example, the value to be placed on non-experimental methods when they required; the critical importance of understanding intervention processes and assessing intervention fidelity; and the need to recognize the constraints in the choice of interventions to be evaluated. Multiple outcomes need to be assessed as well as longer term outcomes since immediate achievements may not actually predict longer term success.

Planning the evaluation of collaboration and integration interventions

Given so many options for designing and implementing more integrated, collaborative systems of substance use services, and with so many potential outcomes to aim for, planners, administrators and evaluators of treatment systems are challenged to actually plan and execute an effective evaluation of collaborative activity. What aspects of the collaborative initiative should be evaluated? Should the focus be on fidelity assessment? Strength of partnerships? Or should outcomes be measured, and if so which ones, and at what level? Perhaps most importantly, who decides on all these questions and via what decision-making process?

An evaluation planning framework such as shown in Figure 1 is a useful tool for narrowing the evaluation questions, methods, measures and analytic/reporting strategies. Of critical importance in the evaluation of collaborative interventions is the need to involve multiple stakeholders in the evaluation planning process. As shown in the framework it is also important to develop a logic model or use other conceptual aids that show the relationship between the planned processes and activities designed to improve collaboration or integration and the immediate, intermediate and longer-term outcomes (Rush & Ogborne, 1991; Julian, 1997; Rush, 2004). A newer but related approach calls for the articulation of the "theory of change" underlying the collaborative intervention (Mayne, 2008) an approach closely aligned with realist evaluation (Pawson & Tilley, 1997; Pawson & Tilley, 2004). A theory of change strategy utilizes "contribution analysis' which is an iterative process that "*explores attribution through assessing the contribution a programme is making to observed results …[and] sets out to verify the theory of change behind a programme*" (Mayne, 2008, p.1). The contribution of the program or intervention to 'causing' the outcome is also assessed through consideration of a wide range of factors and identifying the degree to which they do or do not contribute to results. The theory of change also builds upon the logic model by articulating the risks and assumptions underlying the presumed linkages between activities and outcomes, an analytical process of high importance in the evaluation of networks or inter-organizational behavior since it is often unpredictable (i.e. emergent) and non-linear in nature. These are all important steps in the early stage of evaluation

Figure 1. Evaluation planning framework for collaborative initiatives



planning that are necessary to arrive at a consensus on the key evaluation questions at that particular point in the evolution of the collaborative venture.

Another tool for evaluation planning that has proven useful is the creation of "strategy maps". While logic models are helpful tools, they give little or no attention to the *organizational or inter-organizational capacity* that may impact the delivery of those activities and the achievement of outcomes. A strategy map is a diagram that, like the logic model, shows the relationship between the goals of the program

but then identifies the organizational or inter-organizational processes and infrastructure that support the achievement of these goals (Kaplan & Norton, 2000; Moore, 2007). This can include, for example, leadership, core competencies of managers and staff, resources required to deliver the intervention or participate in the collaboration, data sharing mechanisms, joint planning processes, and other related conditions that can mediate or moderate the effectiveness of a collaborative initiative such as support from critical community partners). Logic models, theory of change and strategy maps complement each other in increasing the scope and relevance of potential evaluation questions.

The evaluation planning framework in Figure 1 also highlights a step related to "systems analysis". Many interventions, and the environment in which they are implemented, are not adequately described in a logic model, theory of change or a strategy map since these tools often portray a very orderly and linear relationship between the delivery of certain activities or processes and the achievement of expected outcomes. This can be particularly misleading with respect to mapping of interventions aimed at collaboration and integration. More often than not such interventions are developed and implemented in an uncertain environment and can be impacted by broad trends, unexpected events and/or key individuals/organizations with a particular agenda and power base. A tenet of open-systems theory is that the fundamental goal of the system is to adapt and survive in the context of an evolving and often threatening environment. In systems analysis a given program or intervention is viewed as continuously evolving in response to the context in which it exists – the concept of "emergence" being highly relevant (see below for more details of this approach to evaluation (Midgely, 2007). In this step in the evaluation planning process the evaluator stands back and asks different kinds of questions than those derived from a logic model or strategy map; for example, "What questions are most relevant at this point in the evolution of the collaboration". "What values or "world views" are built into the design of the collaboration and is there agreement on these fundamental values among key stakeholders?". "What is the expected timeframe for the achievement of results and is it realistic given the context and resources available?" "What is the sustainability of the collaborative initiative?". "Is the initiative operating on a large enough scale to achieve the expected impacts?) "What is the role of the evaluation itself in possibly redesigning and/or sustaining the collaboration?" Sridharan & Nakaima (2011) offer a 10-step approach to evaluation planning that is aligned with a systems approach and that highlights the wide range of evaluation questions derived from complexity considerations and systems thinking, as well as several innovative methods to help answer these questions.

A critical step in the evaluation planning process is to articulate the specific evaluation questions that will be addressed. These questions serve as an official record of the focus of the evaluation and guard against "evaluation drift". This can be a challenge in the evaluation of collaborative initiatives with so many players often involved, including evolving leadership and process management that carries

significant risk of changing priorities for evaluation. Importantly, such changes in priorities are not necessarily unexpected or to be guarded against (especially when using a systems approach), but rather they should be carefully considered among all major stakeholders, rationalized via group process, and then well documented for evaluation purposes. Typically the development of the specific evaluation questions is an interactive process involving key stakeholders in the collaboration or integration initiative. The process must yield questions of sufficient specificity that they form a strong foundation for the development of key indicators, design and measurement options that culminate in a detailed evaluation work plan, including budget and roles and responsibilities. These are the last steps in the evaluation planning process and are considered in more detail below.

Evaluation design and outcome domains for collaborative interventions

Traditional evaluation designs

The most common starting point for the actual design and measurement processes within an evaluation are the program objectives. From this perspective, and in the context of interventions to increase collaboration or integration, one looks to the expected processes/activities and the outcomes to be achieved and then base the evaluation design, measures and analyses on these objectives. This is the traditional textbook approach to evaluation and is very consistent with the logic model, theory of change and strategy map approach to evaluation planning for both programs and policy. It is also essentially a linear evaluation model and consistent with the categorization of evaluation *vis a vis* process, outcome and economic evaluation (see for example the classic text of Posavac (2010). Table 1 maps this three-way conceptualization of evaluation approaches against the two levels of service and system collaboration/integration and, within this matrix, identifies examples of domains of interest for evaluation purposes. This is not meant to be a definitive list by any means, but rather to illustrate the different possibilities for measurement. This illustration builds upon a similar matrix for purposes of performance measurement and monitoring for substance use services and systems (Rush, Martin & Corea, 2008) but reduced in scope for illustrative purposes. The work also adapts a matrix measurement model originally reported by Tansella and Thornicroft (1998) for evaluation of mental health services broadly.

The World Health Organization (2000) has published a series of workbooks that can be used as guidelines for implementing each of these areas of process, outcome and economic evaluation – again at both the program and policy level. The different workbooks can be found under "*Evaluation of Psychoactive Substance Abuse Disorder Treatment Workbook Series, 2000*" at the following Web site: http://www.who.int/substance_abuse/publications/psychoactives/en/index.html.

Process evaluation

Process evaluation is concerned with monitoring and documenting specific aspects of implementation in order to be able to adequately describe the "intervention" and to assist in determining the relationships between key elements of the collaborative

Table 1. Evaluation matrix showing domains of interest for different evaluation approaches and levels

Type of evaluation	Individual/service level	System level
Process	- reduced wait time to treatment - improved continuity of care - increased detection of co-occurring challenges - multidisciplinary treatment plans - treatment participation and completion	- strength of partnerships (e.g., trust, reciprocity, inter-disciplinary respect and values orientation - organizational readiness for collaboration - fidelity of implementation for system interventions (e.g., to support transitions; screening and referral) - health equity indicators (e.g., representation on planning and decision-making groups) - community needs identified, priorized and actioned
Outcome	- increased motivation/readiness to participate in treatment - increased client and family satisfaction/ perceptions of care - reduced substance use and related risks and harms - improved mental and physical health status - improved quality of life - increased recovery capital (e.g., for relapse prevention)	- increased penetration into community in-need population - improved system coverage re: co-occurring challenges - reduced utilization and wait times in high cost medical services (e.g., emergency) - improved population level health outcomes (e.g., HIV/AIDS, morbidity and mortality related to substance use) - reduced stigma and discrimination in health and social services and community as a whole
Economic	- more cost-effective treatment due to better match of services received and client needs and strengths - reduced costs for client and family (e.g., work loss; child care)	- more efficient match of services to case-mix of total population - cost-offset of treatment vis a vis reductions in health care, welfare and justice involvement - cost-savings or better allocation of available resources due to better needs-based planning and reduced duplication

initiative and any outcomes produced. Table 1 shows several domains of potential interest from a process evaluation point of view at the service/client level and the system level. This can include a fidelity assessment to monitor the implementation and sustainability of collaborative activities/models (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005); partnership assessment (Mattessich, Murray-Close, & Monsey, 2001) including the assessment of organizational readiness for change (Weiner, Amick & Lee, 2008) and values orientation for inter-professional practice. Another important domain of interest is the assessment of continuity of care, (see for example, Durbin, Goering, Streiner & Pink, 2004). At the system level there may also be value in conducting a formal health equity assessment or another approach to assess power imbalances and representation of various populations often excluded from planning processes, including people with lived experience.

Outcome evaluation

Outcome evaluation is concerned with whether the model of collaborative activity has had an actual impact on targeted outcomes. These can include changes in

client access to services, including penetration rate into the in-need population; service flow through the system and case-mix, including assessment of impact on vulnerable populations; reduced health care utilization (e.g., emergency, and hospital use); changes in staff attitudes, skills and behavioural engagement in screening and assessment practices; and health-related outcomes specific to substance use or broader domains. There are many references and resource materials for measuring client-level outcomes, including but not limited to Thornicroft and Tansella (2010), Rush (2004), the aforementioned WHO workbooks (there is one specific to outcome evaluation), and a web site on program evaluation created by the UNODC (http://www.unodc.org/ddt-training/treatment/VOLUME%20D/Topic%203/1.VolD_Prog_Eval.pdf). For those interested in the important domain of recovery capital see White (2012) as well as a recovery capital measurement instrument noted in the UNODC web site resource materials.

The challenges linking changes in the scope and nature of a complex collaborative initiative to health outcomes at the client level need to be articulated and, to the extent possible, addressed in the evaluation design and clearly summarized for the end-user of the evaluation (Craig et al., 2008). In some instances implementation of one component of a collaborative initiative may not impact client outcomes without successful implementation of other components. For example, systematic screening for substance use concerns is not likely to have a major impact on client-level health outcomes without follow-up intervention (e.g., brief intervention or referral to treatment). Such expectations need to be established during the evaluation planning phase in the development of the initiative's theory-of-change. Contribution analysis can also be very helpful in this regard (Mayne, 2001) as well as adherence to the various steps built into a realist evaluation approach that explores outcome patterns, the hypothesized underlying mechanisms and internal and external context (Pawson & Tilley, 1997; Pawson & Tilley, 2004 www.communitymatters.com.au/RE_chapter.pdf).

Economic evaluation

Economic evaluations can include a cost analyses of services and various collaborative care arrangements (McCrone & Weich, 2010) which in and of itself can raise many additional questions about the eventual return on this investment. Other economic analyses can focus on changes in cost-efficiencies/productivity, cost-effectiveness of alternative collaborative care models and cost-benefit or cost-offset (e.g., reduced or more appropriate service utilization) (see for example Godfrey (1984), and the WHO workbook series (there is one on economic evaluation) (World Health Organization, 2000)).

Evaluation of complex systems

As noted above some comparatively new developments in the evaluation literature are of particular relevance to the evaluation of collaborative interventions and activities, specifically "systems evaluation" (Midgely, 2007) and related typologies known as "realist evaluation" (Pawson & Tilley, 1997 Pawson & Tilley, 2004), the evaluation of "complex adaptive systems" and "developmental evaluation" (Patton, 2010). Systems evaluation is more than

the assessment of the relationships among actors in a particular collaborative intervention, although network analysis is often one concern for systems evaluation. On the contrary, systems evaluation seeks to understand the emergent and complex features of a particular situation independent of the number of actors. It is a useful evaluation paradigm given the extent to which collaboration and partnerships address complex problems such as prevention and treatment of substance use and a wide range of co-occurring challenges. Systems evaluation is closely related to the concepts of complex adaptive systems and emergence (Olney, 2005; Wheatley & Frieze, 2006). Systems evaluations are also particularly sensitive to power issues within a partnership or collaborating group and the impact of these relationships on the values orientation underlying the choice of evaluation questions and virtually all aspects of evaluation planning, execution and reporting.

Developmental evaluation, pioneered by Patton (2010), places evaluation "inside" rather than "outside" the planning and execution of the collaborative intervention and emphasizes the role of evaluation in creating regular feedback loops for continuous system design and redesign. This acknowledges the evolving nature of collaborative interventions and the need for regular feedback throughout the process rather that at some predetermined and inherently artificial end-point. Developmental evaluation also emphasizes the role of the evaluation itself in the sustainability of the collaborative initiative, an acknowledged challenge for substance use and mental health integration activities and processes at the system level given the involvement of multiple players and power differentials across the medical-psychiatric model and the psychosocial model of treatment for substance use problems (Rush & Nadeau, 2011).

For several reasons realist evaluation is an approach that is particularly well-suited to the evaluation of collaboration or integration initiatives. Importantly, this approach posits that all interventions can only be understood in an environmental context (i.e. Intervention + Context = Outcome) and again points to the need in the evaluation of collaborative interventions to understand the multiplicity of interacting factors than can impact implementation and the achievement of outcomes. Realist evaluation requires the evaluator and relevant stakeholders to understand the different layers of social reality that make up and surround planned interventions. This approach instructs us the collaboration and integration are essentially just *ideas* that may or may come to fruition depending on the four I's: individual capacities, interpersonal relationships, institutional behavior and wider system-level infrastructure. All are fruitful and necessary areas to explore in the evaluation of collaboration and integration. The approach also is consistent with the fact that most initiatives to be evaluated are not "one-off" interventions but rather are intended more or less as a new way of doing business – a transformation if you will (Greenlaugh et al., 2009) and, therefore, needing sequential and ongoing evaluation activities that create and test hypotheses with a view to ongoing correction and quality improvement as well as sustainability. Finally, realist evaluation goes well beyond the very simplistic question:

"Does collaboration or integration work?" to address more complex and relevant questions about what works under what circumstances, with what actors, community context etc.

A feature in common with all these approaches - systems thinking and complexity, developmental evaluation, and realist evaluation – is that the ensuing evaluation plan can include many of the same design considerations as more traditional approaches. For example, experimental and quasi-experimental designs with emphasis on quantitative measures would be used when the evaluation questions call for it. They also share the view that feedback should be offered throughout the evaluation to inform program design and implementation on an ongoing basis. Sridharan & Nakaima (2011) also suggest evaluators consider a slate of innovation methods such as concept mapping, event structure analysis, network analysis, realist synthesis, respondent driven sampling, for example. Another useful tool is the Strengths Weaknesses Opportunities and Threats (SWOT) analysis (Helms & Nixon, 2010).

Summary and conclusions

The interpretation of the overall body of evidence on collaboration and integration with respect to substance use services is challenged by methodological issues and wide variation in the scope and nature of the collaborative or service integration initiatives being studied. As with planning and implementing collaborative initiatives, there is no standard recipe for evaluation due to the many levels and forms that collaborative activities can take. That said, we have presented some key principles and practices to help guide future evaluation efforts. In addition, it is critically important to make a commitment to evaluation and to use the resulting information for more than research or basic accountability purposes. Evaluation should contribute information to ongoing improvement and also to sustain cost-effective collaborative efforts. In this regard it may be helpful to think of the evaluation moving through stages consistent with the stages of development of the collaborative initiative itself. This would mean a regular refresh of the evaluation plan over the "lifespan" of a collaborative care initiative and multiple, sequential evaluation activities that build upon each other; a particular strength and focus of realist evaluation.

There is a notable absence in the literature on both systems theory and inter-organizational network theory as they relate to discussions of substance use service and systems integration. This is unfortunate from conceptual and methodological points of view as they have much to offer. Systems theory, especially that concerned with 'emergence' and 'complex adaptive systems, teaches us that the process of change inherent in moving toward improved integration at the services and systems-levels is inherently context dependent and most likely non-linear and difficult to control. It is also very difficult, if not impossible, to micro-manage centrally and rarely can collaboration or integration be effectively mandated without considerable follow up support for implementation. Realist evaluation holds considerable promise as an overarching evaluation paradigm that allows for integration of these valuable insights from systems-theory with a wide range of traditional and non-traditional methods and measures.

In addition to planning and implementing evaluations of collaborative initiatives the frameworks and other material described herein can be helpful for the development of performance measurement and monitoring purposes, which are distinct from but related to evaluation. Recently, Sapag and Rush (2013) reported on an evaluation framework for collaborative mental health, including substance use, and primary care. Other performance measurement frameworks may also be helpful for assessing the degree and effectiveness of enhanced collaboration or integration over time. It is important, however, that a monitoring process not be reduced to a simplistic set of performance "indicators" that ignore complexity and context and thereby do little if anything by way of suggestions for quality improvement and/or sustainability.

Evaluation is one important but very challenging, and often forgotten, component of efforts to improve collaboration among substance use services, mental health, primary care and other services and sectors. In many respects the "integration train" has left the station (Rush & Nadeau, 2011) but it is not without its risks and potential pitfalls. Indeed it is becoming more common, at least in Canada, to move toward functional and structural integration of mental health and substance use services without considering the potential cost-effectiveness of other types of collaborative arrangements. Rush and Nadeau (2011) refer to this as the "integration reflex". Careful evaluation planning and execution are required to learn how best to match the type and degree of collaboration and integration with the complexity of the situation at hand, including the complexity of the needs and strengths profile among people seeking help.

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