Seven Core Principles of Substance Use Treatment System Design to Aid in Identifying Strengths, Gaps, and Required Enhancements

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ABSTRACT. Objective: System planners and funders encounter many challenges in taking action toward evidence-informed enhancement of substance use treatment systems. Researchers are increasingly asked to contribute expertise to these processes through comprehensive system reviews. In this role, all parties can benefit from guiding frameworks to help organize key questions and data collection activities, and thereby set the stage for both high-level and on-the-ground strategic directions and recommendations. This article summarizes seven core principles of substance use treatment system design that are supported by a large international evidence base and that together have proven applicable as a framework for several systems review projects conducted predominantly in Canada. **Method:** The methodology was based on a narrative review approach. **Results:** The principles address a wide range of issues. Specifically, a broad systems approach is needed to address the full spectrum of issues; accessibility and effectiveness are improved through collaboration across stakeholders; a range of system supports are needed; need for services should be grounded in self-determination, holistic cultural practices, choice, and partnership; attention to diversity and social-structural disadvantages are crucial to equitable system design; systematic screening and assessment is needed to match people to appropriate treatment services in a stepped service framework; and, last, individualized treatment planning must include the right mix of evidence-informed interventions. **Conclusions:** By bringing researchers and stakeholders back to the high-level goals of substance use treatment systems, these principles provide a comprehensive, evidence-based, organizing framework that has the potential to improve the quality of system design and review internationally. (*J. Stud. Alcohol Drugs, Supplement 18,* 9–21, 2019)

RÉSUMÉ. Objectifs : Les fonctionnaires et les bailleurs de fonds font face à plusieurs défis lorsqu'ils tentent d'améliorer le système de traitement en toxicomanie à partir des données probantes. Les chercheurs sont de plus en plus sollicités pour mettre à contribution leur expertise afin de revoir en profondeur les systèmes de soin. À ce titre, tous peuvent bénéficier d'un cadre-directeur qui les aide à organiser les questions-clés et les activités de collectes de données afin de créer les conditions requises pour faire émerger des recommandations et des orientations stratégiques visant à la fois la haute direction et le terrain. Cet article résume sept principes fondamentaux liés à la conception de systèmes de traitement en toxicomanie, appuyés par de nombreuses données probantes internationales et qui, ensemble, se sont révélés être un cadre applicable pour plusieurs projets, menés principalement au Canada. **Méthode :** La méthodologie était basée sur l'approche dites de revue narrative. **Résultats :** Les principes abordent une large gamme d'enjeux. Plus spécifiquement, une approche générale des systèmes est nécessaire pour traiter l'ensemble des enjeux ; l'accessibilité et l'efficacité sont améliorées grâce à la collaboration entre les parties prenantes; une variété de soutiens des systèmes est nécessaire; l'estimation du besoin de services devrait s'appuyer sur l'autodétermination, des pratiques culturelles holistiques, la capacité de choix et le partenariat; une attention à la diversité et aux désavantages sociostructurels, éléments critiques à la conception d'un système équitable; un dépistage systématique et une évaluation sont nécessaires afin d'apparier les personnes aux services de traitements appropriés, selon un modèle de services par paliers ; finalement, la planification individualisée du traitement doit inclure le bon dosage d'interventions basées sur les données probantes. **Conclusion :** En ramenant les chercheurs et les décideurs aux finalités supérieures des systèmes de traitement, ces principes fournissent un cadre d'organisation qui est exhaustif et s'appuyant sur des données probantes. Ils ont ainsi le potentiel d'améliorer la qualité de la conception des systèmes et de leur révision, et ce, internationalement.

RESUMEN. Objetivos: Los planificadores del sistema y los financiadores enfrentan muchos desafíos al tomar medidas para mejorar los sistemas de tratamiento del uso de sustancias con base en la evidencia. Se solicita cada vez más a los investigadores que aporten su experiencia a estos procesos a través de revisiones integrales del sistema. En esta función, todas las partes pueden beneficiarse de los marcos de orientación para ayudar a organizar las preguntas clave y las actividades de recopilación de datos, y de ese modo preparar el escenario para las recomendaciones y direcciones estratégicas de alto nivel y sobre el terreno. Este documento resume siete principios básicos del diseño de sistemas de tratamiento del uso de sustancias que cuentan con el respaldo de una gran base de evidencia internacional y que, en conjunto, han demostrado ser aplicables como marco para varios proyectos realizados principalmente en Canadá. **Métodos:** La metodología se basó en un enfoque de revisión narrativa. **Resultados:** Los principios abordan una amplia gama de problemas. Específicamente, se necesita un enfoque de sistemas amplio para abordar todo el espectro de problemas; la accesibilidad y la efectividad se mejoran mediante la colaboración entre las partes interesadas; se necesita una gama de soportes de sistemas; la necesidad de servicios debe basarse en la autodeterminación, prácticas culturales holísticas, elección y asociación; la atención a la diversidad y las desventajas socio estructurales son fundamentales para el diseño equitativo del sistema; se necesitan evaluaciones y exámenes sistemáticos para unir a las personas con los servicios de tratamiento adecuado en un marco de servicios escalonados; y, finalmente, la planificación individualizada del tratamiento debe incluir la combinación correcta de intervenciones basadas en la evidencia. **Conclusiones:** Al reunir a investigadores y partes interesadas con los objetivos de alto nivel de los sistemas de tratamiento del uso de sustancias, estos principios proporcionan un marco organizativo integral y basado en la evidencia que tiene el potencial de mejorar la calidad del diseño y la revisión de sistemas a nivel internacional.

IN THE PAST FEW DECADES, the "business case" for the investment of public funds for substance use treatment has largely been addressed through evaluation of clinical and psychosocial interventions, and the settings and organizations that implement them (e.g., Raistrick et al., 2006). Separate from clinical research, significant contributions have been made by research that is systems-oriented and socio-ecological in nature; for example, research that seeks to estimate community needs, investigate help-seeking processes, map treatment trajectories, and develop models for multi-sectoral collaboration (Babor et al., 2008; Institute of Medicine, 1990; Room et al., 2005; Storbjörk et al., 2008; Weisner, 1987). As this literature has developed, so too has the organization and delivery of services around the world (United Nations Office on Drugs and Crime [UNODC], 2016), with the usual lag between the generation of evidence and its application (Fixsen et al., 2005). The field of substance use treatment appears to be particularly prone to this evidence gap (Miller et al., 2007), reflecting in part widespread diversity in views about the etiology and conceptualization of substance use problems and addiction, who is best positioned to provide treatment and support, and how to prioritize alternative interventions and service delivery models (Klingemann & Hunt, 1998; Klingemann et al., 1992; Room, 2010). Organizational theory also shows that factors such as institutional path dependence (Egidi & Narduzzo, 1997), more recently described as organizational imprinting (Marquis & Tilcsik, 2013), inhibit new responses to changing environmental context, including resistance to innovation and new research evidence.

The evidence gap, coupled with tensions that arise from the intersection of grassroots, community-based advocacy forces and top-down market perspectives of key decision-makers (Klingemann & Storbjörk, 2016), present significant challenges for system planners and funders in developing evidence-informed systems. In addition, health systems are best conceptualized as "complex adaptive systems," further challenging assumptions that an evidence-informed intervention can be translated to different environmental contexts (Kuziemsky, 2016). Researchers are increasingly drawn into this arena to support comprehensive treatment system reviews and make evidence-informed recommendations for system improvement. In this role, researchers and decision-makers can benefit from guiding frameworks to help organize key questions and data collection activities, and thereby set the stage for recommendations for system enhancement. In supporting or leading many treatment system reviews in Canada and elsewhere (e.g., Rush, 2016; Rush et al., 2016; VIRGO Planning and Evaluation Consultants, 2018), the authors have developed a set of guiding principles that articulate core features of system design and that also serve as a template for system analysis. Based on a narrative review approach, this article summarizes seven core principles of substance use treatment system design

that have proven to be applicable across many jurisdictional contexts (Table 1). We conclude with implications for the conduct of substance use treatment system reviews in other jurisdictions.

The seven core principles

1. A broad systems approach is needed to address the full spectrum of issues related to substance use, problems, and disorders in the community in order to achieve a population-level impact.

(A) THE POPULATION HEALTH APPROACH TO SYSTEM DESIGN: Health systems must be planned on the basis of population health, not solely on the basis of those seeking assistance at a given point in time. This approach demands consideration of the strengths and needs of the entire community, across the full spectrum of levels of use and harms associated with alcohol and other drugs. A correspondingly broad community response is required to respond effectively and efficiently to the full spectrum of risks, and acute, chronic, and complex needs (Babor et al., 2008).

The distribution of problem severity and service needs in a population is inverse to the proportion affected (Figure 1) (Room et al., 2005; Strang et al., 2012). That is, the highest levels of problem severity and complexity are associated with the fewest number of people. Those with lower levels of problem severity, and low to moderate risk patterns of consumption, are more numerous, and their needs can be met by less intensive or less specialized interventions, made available in a variety of nonspecialized service delivery contexts. The bottom of the "population pyramid" reflects people at no or low risk: the target population for primary and secondary prevention.

Only a small minority of people who experience harms related to their substance use will seek specialized services. Rather than reflecting a "treatment gap," however, this supports the case for a more comprehensive view of the treatment system, one that engages multiple sectors. Such an approach requires building service capacity and competencies in the settings in which people are likely to appear (e.g., primary care, emergency departments, schools, corrections, child protection services). There is also an important role for more informal supports such as through community groups, faith-based services, traditional healing, and mutual aid. A "whole-of-government," "whole-of-society" approach requires consideration of this range of services and settings in order to create a truly comprehensive and collaborative treatment system.

(B) PREVENTION AND HEALTH PROMOTION PLAYS A FUNDAMENTAL ROLE IN SYSTEM DESIGN: Building on the above, treatment systems cannot be designed and resourced separately from prevention and health promotion. Health promotion functions themselves need to be embedded within specialized services, recognizing that goals of recovery and wellness

TABLE 1.   Seven core principles of substance use treatment system design

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1. A broad systems approach is needed to address the full spectrum of issues related to substance use, problems, and disorders in the community to achieve a population-level impact.
2. Accessibility and effectiveness of services for people with substance use problems are improved through collaboration across stakeholders.
3. A range of systems supports are needed to support and facilitate the effective delivery of services.
4. Indigenous people have distinct strengths, cultures, and needs with respect to mental wellness, and benefit from access to a continuum of services and supports grounded in self-determination, holistic cultural practices, choice, and partnership.
5. Attention to diversity and social-structural disadvantages is crucial to ensuring effective and equitable system design and service delivery.
6. Systematic screening, assessment, and individualized treatment planning are necessary to improve detection and access, and to match people to evidence-based interventions across the continuum of care.
7. Individualized treatment plans must include the right mix and duration of evidence-informed psychosocial and clinical interventions.

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are relevant at all levels of ill health (e.g., Davidson & Roe, 2007; Jacobson & Greenley, 2001).

There is a strong theoretical and empirical basis to the connection between health promotion and treatment functions. Socio-ecological models of health recognize the complex relationships between individual biological and psychosocial factors and broader structural and environmental characteristics (Bronfenbrenner, 1994; Glass & McAtee, 2006; Krieger, 2001). Systems designed to promote the health of individuals need to have the capacity to intervene at multiple levels (e.g., individual, service settings, community). This applies even if we restrict ourselves to considering the services and supports offered to individuals who present for treatment. A person accessing service comes with a unique set of opportunities and constraints influenced by a complex interaction of biological, psychosocial, structural, and environmental processes that have played out over a life course. Systems that can seamlessly address multiple aspects of the person's health offer greater opportunity for positive outcomes (Reimer et al., 2013).

Health promotion in substance use service settings translates into person-centered care, which means working with the individual to make sense of the complexity of factors that influence health and supporting personal capacity to manage those factors to achieve personal aspirations. A person-centered approach to substance use treatment does not mean that interventions should focus only on the individual. Taken to system-design, there is a need for a multi-faceted continuum of collaborative, functionally integrated services, supported by strong health and social policies, in order to meet the needs of individuals and populations (Reimer et al., 2013; Room et al., 2005; Strang et al., 2012). Adequate housing, employment, access to food, and income supports are inextricably connected to treatment systems. In addition, these social determinants are powerful reflections of community recovery capital that supports positive treatment outcomes at the individual level (Laudet & White, 2008; White, 2012).

A Tiered Model for substance use system design (Figure 2: Rush, 2010) reflects this broader vision such that levels of problem severity and complexity are measured as a popula-

tion health pyramid and are aligned with service delivery functions that operate at each level. Many elements are empowering for system development, including (but not limited to) the importance of linking prevention, early intervention, and treatment.

2. Accessibility and effectiveness of services for people with substance use problems are improved through collaboration across stakeholders.

Consistent with the broad systems approach, it is commonplace to look to collaboration as a potential solution to challenges in providing timely access to services able to effectively address a complex array of needs. Although there is no single definition, it is helpful to think of collaboration as varying along a continuum from communication through to fully co-located and integrated services (Collins et al., 2010; Kates et al., 2011). Several types of integration have also been described in the literature: structural (co-location and/or arrangements for shared administrative and governance functions), functional (arrangements that support the delivery of integrated services, such as shared care, integrated care pathways, shared medical records), and normative or cultural (convergence of values, norms, and approaches to day-to-day business) (Brousselle et al., 2010; Contandriopoulos et al., 2004). Activities that support integration can take place at the level of individual services or the larger system.

Generally stated, the purpose of collaboration is to increase the chances of achieving some objective(s) compared with acting alone. In the substance use service sector, the drive toward greater collaboration with mental health and other health care, criminal justice, child protection, and other social services reflects recognition of common co-occurring health and social problems, such that no single service provider can effectively address the full array of complex and persistent challenges (Lesage et al., 2008). For these reasons, there is expansion of collaborative efforts and models of shared care, with prominent examples between services that primarily target substance use and mental disorders (Rush & Nadeau, 2011; Substance Abuse and Mental Health Services Administration, 2013); substance use/mental health
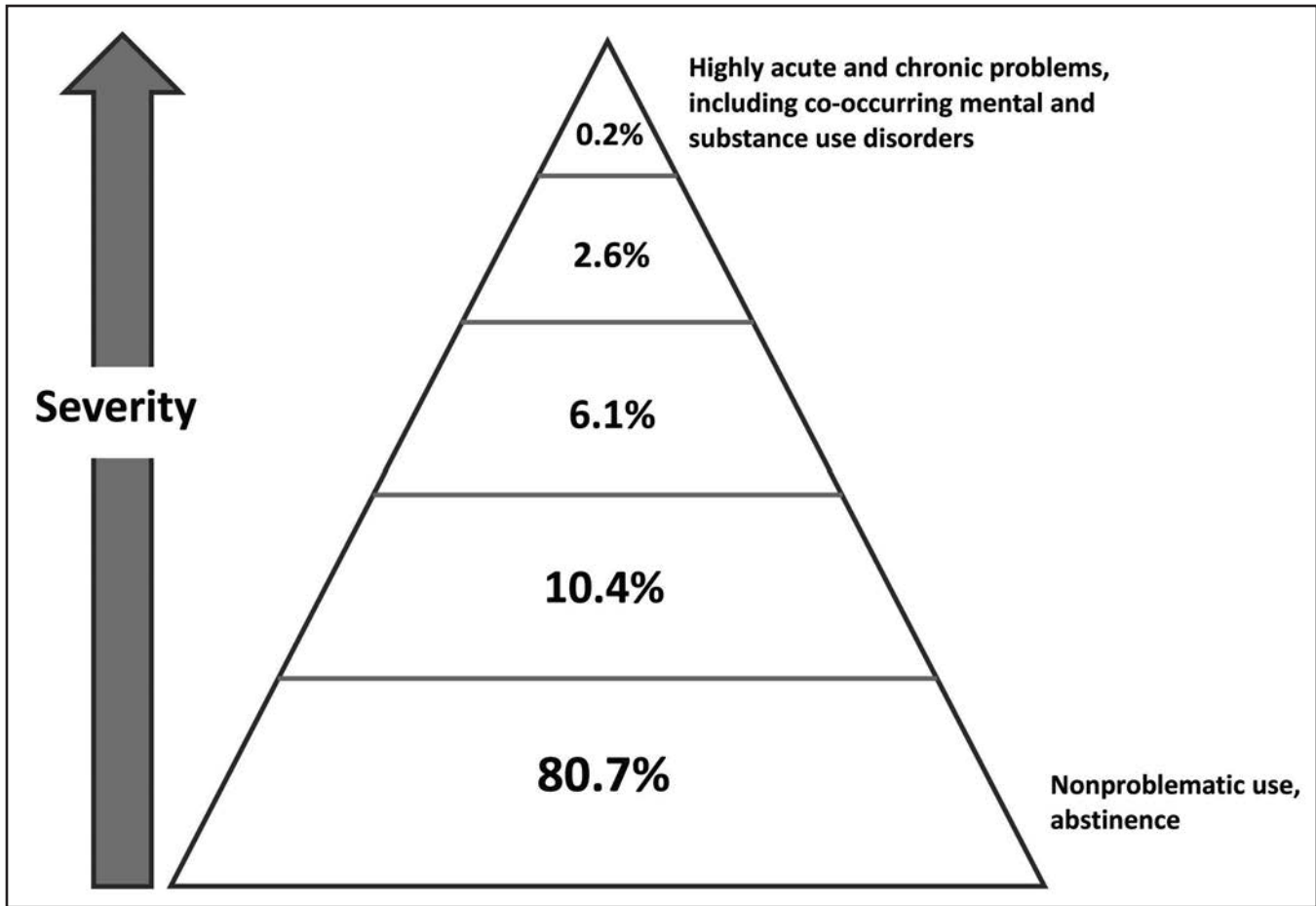
FIGURE 1. Population distribution of substance use and related harms in Canada, 2002. Population estimates derived using data from the 2002 Canadian Community Health Survey–Cycle 1.2 (methods described in Rush et al., 2014).

and primary care (Chalk et al., 2011; Druss & Mauer, 2010); and a growing array of therapeutic courts designed to divert people with substance use disorders from the criminal justice system (Mitchell et al., 2012).

Much has been written about barriers to effective collaboration and integration, among them competing priorities; lack of adequate or equal pay; conflicting values, goals, or intended outcomes across sectors; lack of provider training and knowledge; and persisting stigma around problematic substance use and addiction (Babor et al., 2005; Nilsen et al., 2008). Diverging aspects of care and organizational culture are deeply entrenched within substance use, mental health, and other health care services, further complicating the design and implementation of collaborative care (Rush & Nadeau, 2011).

Expected benefits from collaboration include improved access, earlier intervention, improved transitions and continuity of care, and better outcomes, particularly for those with more complex conditions. Definitive statements of the effectiveness of integration and collaboration are difficult given the vast array of potential strategies and activities that

are implemented at the service and system levels (Addiction and Mental Health Collaborative Project Steering Committee, 2015). It is also challenging to link changes made at the system level to client-level outcomes because benefits of system supports such as policies, standards, infrastructure for information management, or workforce core competencies must be translated through direct service delivery processes. There is, however, evidence that integration strategies are positively and consistently related to proximal outcomes associated with service delivery (e.g., continuity of care) (Durbin et al., 2004).

As an example of the work being conducted in this area, the literature evaluating integrated substance use treatment for pregnant and parenting women highlights the heterogeneity of arrangements that support partnerships and collaboration between substance use services and primary and prenatal care, mental health care, child protection, and housing (Meixner et al., 2016). Research into the critical features of system-level integration supports service co-location (Health Systems Research and Consulting Unit, 2009; Suter et al., 2007) and suggests that benefits to clients are greater

CORE SYSTEM PRINCIPLES FOR ACCESS AND INTEGRATION ACROSS FUNCTIONS

Any Door is the Right Door

Simultaneous/ Sequential Tier Involvement

Graduated Integration

Linkages across tiers & with other service systems

TIER 5
Highly specialized care functions targeted to individuals with complex problems

TIER 4
Specialized care functions targeted to people assessed/diagnosed as in need of more intensive or specialized care

TIER 3
Treatment planning, risk/crisis management, and support functions targeted to individuals with identified problems

TIER 2
Early intervention and self-management functions targeted to people at risk

TIER 1
Population-based health promotion and prevention functions targeted at the general population

CORE SERVICE SYSTEM PRINCIPLES

Consumer Involvement

Cultural Competence

Determinants of Health

Family Involvement

Harm Reduction

Psychosocial Supports

Self-Management

System Supports
- Policy
- Leadership
- Funding

- Performance Management & Accountability
- Information Management
- Research & Knowledge Exchange

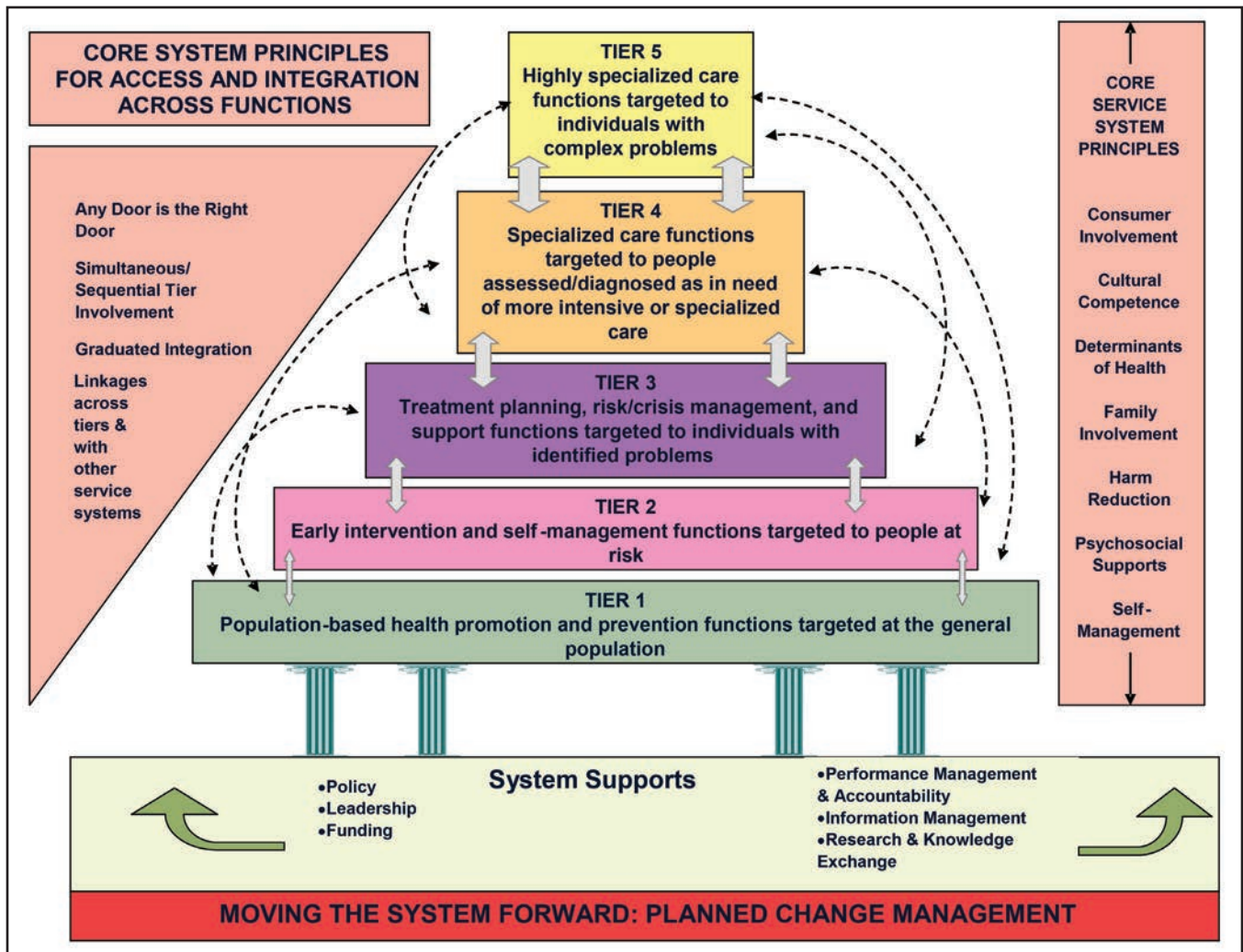**MOVING THE SYSTEM FORWARD: PLANNED CHANGE MANAGEMENT**

FIGURE 2. Tiered model (Rush, 2010)

in efforts that are targeted and relatively circumscribed (e.g., involving fewer service sectors), and focused on supporting access and navigation (e.g., involving intensive case management) (Addiction and Mental Health Collaborative Project Steering Committee, 2015; Rush & Nadeau, 2011).

3. A range of systems supports is needed to support and facilitate the effective delivery of services.

System supports refers to the resources and processes required to ensure adequate infrastructure and system functioning. They are presented as foundational elements in the Tiered Model (Figure 2). In this section, we consider three in detail: planning and funding; performance measurement and information management; and implementation and knowledge exchange.

(A) *PLANNING AND FUNDING:* Funding allocation is a fundamental process within health care administration. Funding models can be broadly categorized into two types: those that

are "user based" and those that are "population based" (Rachlis & Gardner, 2008). Historical, user-based estimates are derived entirely from past trends in service use. Accordingly, they underestimate needs in geographical areas or subgroups of the population that have been traditionally underserved (i.e., they presume that the status quo is appropriate) (Finlayson et al., 2007). In regions or populations with traditionally high levels of use, there is also the "perverse incentive" (Finlayson et al., 2007, p. 3) to maintain those levels without attention to actual service need. In contrast, population-based funding models take account of overall population needs and characteristics in determining absolute or relative resource allocations (McIntosh et al., 2010). See also Ritter et al. (2019b) for further discussion of these funding models and data-related challenges associated with accurately estimating population need and help-seeking for treatment.

Needs-based planning models for substance use services and supports have been developed and tested in a number of

jurisdictions, including Canada and Australia (Macdonald et al. 2014; Ritter et al., 2019a; Rush, 1990; Rush et al., 2014, 2019; Tremblay et al., 2019), and are noted as an evidence-based practice for planning substance use treatment systems in international guidelines (UNODC, 2016). Briefly, the methodology involves first estimating the proportion of the population that is potentially in need of services within a given period using, for instance, diagnostic algorithm modules embedded within population health surveys (Hasin et al., 2015; Rush et al., 2018, 2019) and/or findings from simulation studies (Patten et al., 2012). Service functions and settings are then defined, and the anticipated population distribution of cases across these functions and treatment settings is estimated. Last, a gap analysis is conducted to yield an estimate of unmet need based on service availability within individual jurisdictions. Such an approach offers a more accurate picture of a community's ability to meet the demand for services than do analyses of current service use patterns or waiting lists.

(b) *Performance measurement and information management:* Recent decades have witnessed a marked growth of performance measurement activities in health care systems, including substance use service systems (Urbanoski & Inglis, 2019). A vast literature supports an array of indicators and measures that can be used to monitor care quality, support quality improvement initiatives, and promote accountability (Urbanoski, 2017), with measures targeting treatment structure (Roeg et al., 2008), process (Garnick et al., 2009, 2011), and outcomes (Hilton, 2011; McLellan et al., 2007). Urbanoski (2017) recommends more emphasis be placed on measures of treatment structure, such as workforce competencies and use of evidence-based interventions.

Models for monitoring client outcomes have been developed that conceptualize treatment follow-up as an extension of the treatment and support process itself (Dennis et al., 2003; Scott & Dennis, 2009), as well as approaches that focus on within-treatment assessment of outcomes offering immediate feedback to both clinicians and clients (Carlier & van Eeden, 2017). Progress is also being made in the design of research and evaluation with respect to dissemination and implementation of evidence-based practice (Brown et al., 2017).

Performance measurement and outcome monitoring presuppose a robust data infrastructure—one that may be out of the reach of some community-based services and/or jurisdictions. Constraints related to the availability of, and/or access to, robust administrative data from across the continuum of care for substance use hamper efforts to establish performance measurement, as well as the implementation of needs-based planning, discussed above. It is difficult to envision an effective service system (i.e., one that achieves all of the principles outlined in this synthesis) in the absence of a robust data infrastructure.

(c) *Implementation of evidence-based practices (EBPs) and knowledge exchange/translation:* There is a gap between the evidence on interventions for substance use (what we know) and what is routinely delivered in practice (what we do) (Lamb et al., 1998; McGlynn et al., 2003). Specific areas that lag well behind the research literature include the implementation of continuing care (Lash et al., 2011) and screening, brief intervention, and referral to treatment (SBIRT) programs for at-risk drinking (Johnson et al., 2011; Nilsen et al., 2008; Roche & Freeman, 2004), among others.

There remains a heavy reliance on training as the core approach to building individual and organizational treatment competency, whereas the literature on implementation science emphasizes the importance of additional supports, including incentives and an analysis of system-wide, organizational and professional drivers (Fixsen et al., 2005; Powell et al., 2015). Models for implementation of EBPs argue for systematic approaches that recognize the complexity of the change process at the individual, organizational, and community/system levels (Morisano & McDonald, 2012). In addition to weighing the quality of the evidence behind a particular intervention or service delivery model, implementation requires information on scalability and supports to ensure fidelity and sustainability.

One challenge to the implementation and delivery of EBPs concerns the misalignment between policy directives and financing models (Preethy et al., 2008). To alleviate funding-related barriers to delivering EBPs, an analysis of funding regulations in collaboration with EBP developers is recommended to ensure that appropriate supports are in place and that funds are dedicated to nontraditional service supports (e.g., transportation, child care) that guarantee access; an integrated infrastructure of qualified practitioners and front-line staff to provide fidelity; and organizational support to reduce the administrative burden of adopting new EBPs.

Several current and recent initiatives have aimed to build capacity for the implementation of EBPs in substance use services and systems, including the Network for the Improvement of Addiction Treatment (NIATx) in the United States (http://www.niatx.net/) and the Drug Treatment Funding Program (DTFP) in Canada (http://eenet.ca/drug-treatment-funding-program-2).

4. Indigenous people have distinct strengths, cultures, and needs with respect to mental wellness, and benefit from access to a continuum of services and supports grounded in self-determination, holistic cultural practices, choice, and partnership.

Among Indigenous populations worldwide, the elevated prevalence of substance use disorders is well established and, as with other health inequities, rooted in sociopolitical and environmental determinants of health (Greenwood, 2015). These determinants stem from the many stages and facets of colonization, including (but not limited to) residential

schools in several jurisdictions and widespread displacement, which have resulted in intergenerational trauma (Linklater, 2014). These facts notwithstanding, there is huge variation in both the strengths and challenges experienced in Indigenous communities during and after colonization.

Although it is important to design treatment services and systems to be sensitive to cultural diversity of all forms (see Principle 5 below), the need to articulate a separate principle for Indigenous peoples is founded on the legislated and treaty-based rights of Indigenous peoples within colonized territory. Whereas in most jurisdictions the rights to land, water, fishing, hunting, and traditional cultural practices have eroded over time (White et al., 2004), they remain extremely relevant for substance use treatment systems in many countries. Important issues include, for example, the locus of responsibility and governance of health care, housing, and other community services, service provision in semi-remote or remote communities, and acceptance of culture-based healing practices.

The United Nations (2008) has reaffirmed the basic universal rights of Indigenous peoples globally, including their right to traditional medicine. This has also been affirmed explicitly by the World Health Organization (2013), and many traditional practices are now incorporated into substance use treatment programs, especially in Canada, the United States, Latin America, Australia, and New Zealand. Examples are sweat lodge, tobacco and pipe ceremony, smudging, animal totems, storytelling and humor, and the use of plant-based medicines (Baskin, 2016), including psychoactive plants such as peyote and ayahuasca (Tupper et al., 2015). Increasingly, these practices are offered alongside, or integrated with, Western-based approaches to psychotherapy and medication-assisted treatment, with bi-cultural competence encouraged among both practitioners and clients. Building capacity to offer choice is a crucial aspect of system design.

National frameworks, such as the one developed in Canada, support relevant policy and workforce development (Health Canada, 2011, 2015), and new governance models that give control over health care resources to Indigenous communities can provide crucial infrastructure (Government of British Columbia, 2013). Many clinical tools and protocols have been developed with a strong cultural base (e.g., Fiedeldey-Van Dijk et al., 2017; Katt et al., 2012; Mamakwa et al., 2017; Rowan et al., 2015), with research and evaluation methods adapted accordingly (Baskin, 2016; Kanate et al., 2015; LaFrance et al., 2012).

5. Attention to diversity and social-structural disadvantages is crucial to ensuring effective and equitable system design and service delivery.

The development of substance use disorders involves the complex interplay between individual biology and broader social structural factors, which over time deflect an individual's developmental trajectory toward or away from manifesting the disorder (Tarter et al., 2008). Socio-ecological models of disease causation offer valuable theoretical frameworks for conceptualizing the development of substance use disorders and the role of treatment in recovery processes, including the ways in which stress related to stigma, discrimination, and poverty is embodied to affect health (Krieger, 2001, 2016). People entering treatment bring with them the host of strengths and challenges that have amassed over their life course. In addition to experiencing poverty, criminalization, racism, and other forms of social marginalization, many (if not the majority) will have a history of trauma. These factors affect both health and access to health care. Treatment outcomes can be expected to be maximized to the extent that services are able to attend to these issues through the provision of culturally and developmentally appropriate care.

A host of sociodemographic characteristics are used to evaluate equity in treatment systems (e.g., sex, gender identity, sexual orientation, age and developmental stage, ethnocultural background, immigration status, socioeconomic status). Such factors affect the types of barriers that people encounter when trying to access services (e.g., for barriers experienced by women, particularly those who are pregnant or parenting young children, see Jessup et al., 2003; Tuchman, 2010), as well as their experiences of care (e.g., for negative experiences reported by people belonging to sexual minority groups, see Travers & Schneider, 1996). Rates of treatment completion have been shown to vary by ethnocultural background and socioeconomic status (Brown, 2010; Guerrero et al., 2013; Majumder et al., 2016; Saloner & Le Cook, 2013). Among other broad trends affecting treatment systems, we can expect increasing demand for services by older people in the coming years. This will affect the system in many ways; for instance, potentially increasing demand for services related to medications such as benzodiazepines and opioids (Jensen et al., 2012; Patterson & Jeste, 1999), and raising accessibility and clinical challenges related to physical health comorbidities and cognitive impairment (Blow, 1998; Centre for Addiction and Mental Health, 2008).

It is not within the scope of this article to do justice to the multitude of issues that impinge on equity in system design and delivery. In closing this section, it is worth noting that the existing body of work on disparities in treatment access and effectiveness has largely not paid attention to the intersections between people's identities, and how these determine experiences, opportunities, and outcomes (Bowleg, 2012; Cole, 2009; Hankivsky & Christoffersen, 2008). An intersectional perspective draws attention to groups that may otherwise be overlooked and better accounts for the diversity of experiences within a given group. Research is needed to develop and evaluate approaches to treatment engagement and intervention that better attend to diversity and intersectionality.

6. Systematic screening, assessment, and individualized treatment planning are necessary to improve detection and access, and to match people to evidence-based interventions across the continuum of care.

People with substance use problems and disorders encounter a wide range of health and social service professionals outside of the specialized treatment sector. Accordingly, effective case detection and informed decision making around treatment and referral requires capacity for systematic screening in a variety of health and social service settings, in conjunction with appropriate and effective supports to facilitate access to needed services. Improved case detection across settings and services fosters the capacity of the system to respond to people where they are.

Screening refers to the use of procedures and tools to identify people experiencing, or at risk of experiencing, problems. The goal is to detect problems and set the stage for subsequent in-depth assessment and linkage to services. People who are experiencing harms related to their substance use then require comprehensive assessment of strengths and needs in order to connect them to the right mix of services and supports. This staged approach to screening and assessment can happen in a variety of settings and is a process that can continue over time as therapeutic relationships strengthen. A variety of tools and models are available to support the process of staged screening and assessment for substance use and related conditions (American Association of Community Psychiatrists, 2009; Fonagy & Clark, 2015; Rush, 2015).

Decisions about treatment include assignment to specific service settings (placement matching; e.g., residential, outpatient) and to specific modalities (modality matching; specific clinical interventions) (Mee-Lee & Gastfriend, 2008). In addition to people's strengths and needs, their preferences are also key to this process, with prospective clients given opportunities to make informed decisions about their care in partnership with service professionals (National Collaborating Centre for Mental Health [Great Britain], 2011). Decisions affecting modality matching also include, for instance, the appropriateness of group versus individual treatment, level of integration of the treatment plan across other services and sectors, and engagement of family.

The continuum of care within the specialized substance use treatment sector includes hospital, community, and home-based withdrawal management services; community or outpatient services that range in intensity; and residential treatment and recovery supports (Rush et al., 2014). Ideally, these are organized according to a stepped-care systems model (Breslin et al., 1998; Sobell & Sobell, 2000) and include both peer support and web-based/mobile health. Effective use of this continuum requires supports for people to encourage self-reflection and help-seeking, as well as supports to promote smooth transitions between services and assist with system navigation to the most appropriate level of service. A system of outcome monitoring is also essential in a stepped-care system.

Residential treatment plays a key, but selective, role in the continuum of care. It may be a necessary component of a person's pathway through the treatment system but will rarely be sufficient as a stand-alone treatment. It must be used judiciously to ensure appropriate use of scarce resources (Raistrick et al., 2006), particularly given robust evidence of the relative effectiveness and cost-effectiveness of a variety of outpatient models (e.g., day or evening treatment, community treatment programs) (Martin et al., 1998; McCarty et al., 2014; Tanner-Smith et al., 2013). A subset of those accessing treatment will require ongoing support to assist with recovery management over the longer term (Dennis et al., 2003; McKay, 2005).

No matter the jurisdiction, a substance use treatment system should be able to perform the following key functions: provision of early intervention, access, and treatment planning; crisis management; linkage for health care, housing and other basic needs; withdrawal management and community and residential treatment of varying degrees of intensity and duration; and transition support, continuity of care, and recovery monitoring. The actual complement of service types in a given community and their operationalization will vary depending on population need and community context, including available resources and infrastructure. Importantly, the nature of the services required to meet population needs can legitimately vary across communities, provided that the key functions of the system are achieved.

7. Individualized treatment plans must include the right mix and duration of evidence-informed psychosocial and clinical interventions.

It is crucial that the design of treatment systems includes a strong focus on the evidence base for the psychosocial and clinical interventions offered to clients. Ideally, these interventions should be chosen on the basis of well-established clinical guidelines because they wisely incorporate information from three sources—published research, experience of professionals delivering the services, and the perspectives and preferences of clients and family (Brouwers et al., 2016). Clinical guidelines also include review of the epidemiological data on the target condition, important co-morbidities, help-seeking and availability of services; and information that provides important contextual data about likely effectiveness in the target jurisdiction. If well-developed guidelines are not available, the next best sources of information are meta-analyses and comprehensive narrative reviews. Such data exist for a range of psychotherapeutic approaches, including motivational interviewing, cognitive behavioral therapy, dialectical behavior therapy, and contingency management (Martin & Rehm, 2012; Raistrick et al., 2006); medications such as acamprosate for alcohol use disorders (Müller et al., 2014), and opioid substitution therapy (OST)

for people with opioid use disorders (Gowing et al., 2014; Vancouver Coastal Health Authority, 2015), as well as emergent approaches such as traditional medicine and the use of psychedelics (Tupper et al., 2015). A consistent finding across this evidence base is that no single intervention works for everyone, highlighting the need for comprehensive assessment and treatment planning to accommodate people's strengths, needs, and preferences. The importance of non-specific factors, such as therapeutic alliance (Meier et al., 2005), is also evident. Last, although there is no question that self-help groups such as Alcoholics Anonymous are effective for some, the most rigorous meta-analyses conducted to date suggest average effects that are approximately the same as other psychosocial interventions, with some caveats related to limitations of the evidence base (Ferri et al., 2006; Kownacki & Shadish, 1999).

Lessons learned and implications for system review and evaluation

These seven principles provide a conceptual and practical framework for planning and implementing a comprehensive treatment system review, as well as for organizing the information with the goal of identifying areas for system enhancement. The following are four key implications for conducting a robust system review.

In the early stages of performing a system review, it is crucial to establish the scope of the review. This can be challenging when the review is grounded in a broad population health perspective (Principle 1), as jurisdictional mandates, service goals, and data structures differ across sectors. Existing government structures typically set the stage for independent system reviews within separate policy arenas that may or may not align (in terms of timing, approach, or results). Despite the challenges, there is value in setting as comprehensive a scope as possible, within the available time, resources, and skill set of the review team. Whenever possible, it is advisable to consider both micro-level programmatic factors (i.e., which interventions are actually implemented in practice) and macro-level supports (i.e., the contexts and structures that are crucial to ensuring proper interpretation of findings pertaining to treatment processes and outcomes).

A second implication for conducting system reviews concerns the need to engage relevant stakeholders, including policy makers, service providers, affected communities, and people with lived experience, including family members. The involvement of service providers from multiple service sectors is required to ensure that the review leads to a "whole system response" (Principle 1) and is able to consider issues of collaborative care (Principle 2). The involvement of people with lived experience, community leaders, and Indigenous elders and communities needs to be done in a culturally safe way, with appropriate resources (time and funds). Any system review needs a well-developed engagement plan with multiple means and opportunities for participation. This is important so as to ensure input from a "bottom-up" versus "top-down" approach to system design and implementation.

Third, although time and resources will dictate the nature and scope of activities, a multi-method approach involving site visits and a mix of quantitative and qualitative data collection strategies is likely warranted. The seven principles provide a template for question development to focus information gathering, so that the data are able to provide a picture of the current state of the system (to be contrasted with the "ideal state," as articulated by evidence). A broad array of evidence, including cultural-based interventions (for which Western paradigms of evidence may be inadequate in isolation), is needed to fully understand the system. Methods like SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) (Helms & Nixon, 2010) can be practically useful for identifying and organizing the key issues relating to the seven principles in a given system review.

Last, a truly comprehensive system review will undoubtedly identify a host of items for system enhancement. To facilitate action, recommendations should be prioritized for immediate, intermediate, and longer-term enhancement, distinguishing between those directed at service enhancement versus systems supports. The latter are likely to involve significant new investment (e.g., in workforce development, information technology) rather than a realignment of existing resources. Enhancement activities should be guided by a formal implementation science approach (Fixsen et al., 2005) and evaluated as part of a performance measurement strategy. Here again, the seven principles can serve as a helpful template for identifying system goals and performance indicators.

Evidence in the field of substance use treatment is often contested and typically requires contextualization to make sense of seemingly conflicting research findings. The seven principles described in this article represent fairly high-level statements that are unlikely to encounter much opposition in the field. Beyond being an academic exercise, however, these principles have a practical use as a starting point for system reviews. By bringing researchers and stakeholders back to the high-level goals of the substance use treatment system, they provide a comprehensive, evidence-based, organizing framework with the potential to improve quality of system reviews internationally. In taking this evidence-based approach to system design and review, the implementation challenges in going from the evidence to system change must be acknowledged, and preparatory work also must be done to build a readiness for change.

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