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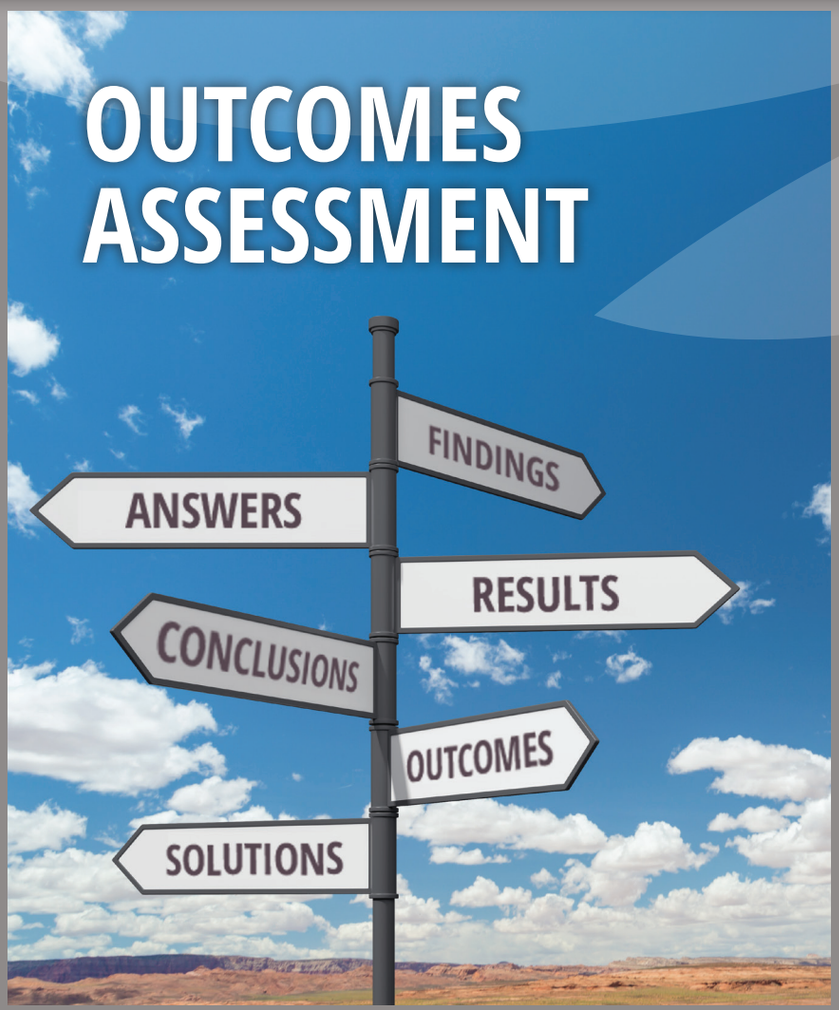

Featured Articles

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Prototypes of Outcome Research in Canadian Programs

Most of us in our practices hope, at some time or another, to be able to demonstrate the impact of our professional efforts intuitively felt to be effective. We then soon realise that to conduct meaningful evaluations is challenging. So when Brian Rush contacted me more than a year ago to coordinate a Special Issue on Outcome Projects in our Journal, I readily welcomed the opportunity. Few in the world have the national and international experience of Dr. Rush, who had just retired as Senior Scientist and Head of the Health Systems and Health Equity Research Group at CAMH as well as frequent consultant to the WHO.

The first paper by Rush, B and team assesses the feasibility of an outcome monitoring system (OMS), based on the ability of a comprehensive tracking system and measures to determine change over time in two community non-residential programs in Ontario. Of particular interest, the GAIN-Q3 assessment and outcome instruments allow for an estimate of utilized services translated into a preliminary "cost-to-society".

The second paper by Costello, MJ and team describes the OMS established at the Homewood Health Centre, Guelph, in an inpatient addiction treatment program. The model focusses on recovery outcomes classified into eleven domains with self-reports collected at admission, discharge and up to 12 months follow up via telephone or email. Lessons learned so far are candidly described.

The third paper, from McMaster University, by Raymond, H and team undertakes to establish an OMS addressing the complexities of a concurrent disorder inpatient unit with heterogeneous diagnostic profiles and high levels of psychiatric severity. The model of integrated care emphasizes principles of patient-centered, recovery-oriented and trauma-informed services within a biopsychosocial framework. Lessons learned are again candidly shared.

The next two papers describe two pilot projects attached to emergency departments. The first report by Blanchette-Martin, N and team describes the experience of locating addiction liaison nurses (ALN) in the emergencies of the three Quebec City hospitals. The impact of the presence of ALNs is described in terms of patient trajectories from initial assessment to referrals to an addiction program to actual attendance at the program and finally participation in one or more further specialized treatment activities. Inter-hospital differences in experiences are also of interest.

The second project is a study protocol from Salvalaggio, G and team originating from the University of Alberta. The goal is to assess the impact of enhanced multidisciplinary care implementing harm reduction for an inner city population accessing emergency acute care compared to a treatment as usual (TAU) control group. The primary outcome is decreased emergency department use along with other indicators of substance use and social stabilization.

The sixth paper from Eibl, JK, and team from Northern Ontario addresses the geographic similarities and differences in polysubstance use factors between patients from Northern and Southern Ontario Addiction Treatment Centres. Three groups are compared: active injection users, active injection users who previously attempted methadone maintenance and individuals actively enrolled in methadone maintenance programming. Not surprisingly, geography impacts the types of substances used and has harm reduction implications. Of interest once in opioid agonist therapy, there seems to be a common journey to opioid substitution stabilisation as monitored by urine screens.

The last paper, by Meixner, T and team from Ryerson University describes an innovative concept mapping methodology to gather the perceptions of 30 stakeholders for the delivery of integrated services for pregnant or parenting women with addictions. Clusters for the treatment of mother and child as well as supportive processes that are agency, ministry and partner-related are identified. Relating to the developing societal mantra, "nothing about us, without us", this concept mapping approach may further insightful care strategies.

The above contributions are valiant efforts to further the field of outcome measurement. They are "real world" investigations who do not shy away from the complexities involved in this type of research. Some are still at the conceptual stage but taken together the body of work contained in this Special Issue should hopefully become a must read for the many of us fine tuning our own outcome measures, as well as government and community decision-makers searching for program effectiveness. Many thanks to the network of contributors to this Issue.

Nady el-Guebaly, *MD*
Editor-in-Chief, CJA-JCA

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Recovery Monitoring for Substance Use Treatment in Ontario: Outcome Results from a Feasibility Assessment

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ABSTRACT

Objectives: The assessment of health outcomes of people participating in substance abuse treatment is considered an important element of performance measurement to complement controlled trials of clinical efficacy. We aimed to assess the feasibility of an outcome monitoring system for substance use treatment services in Ontario with a particular focus on the ability of a comprehensive tracking system and measures to determine change over time on relevant outcomes.

Method: A total of 148 clients aged 16 and over were prospectively recruited at two treatment programs for baseline interview and a detailed follow-up tracking protocol. A group of 117 were located to determine 3 and 6 month-status. Outcomes were measured across multiple health and social domains as well as utilization and cost of health care and justice-related services.

Results: There was a significant improvement in several indicators of substance use, including abstinence. Results also showed a significant decrease in severity over time in the areas of risk behaviour, crime and violence, and stress as well as overall indices of Life Problem Prevalence, and environmental risks to recovery. Overall quality of life improved. There was a reduction in health care utilization and justice involvement and an overall reduction in costs associated with these services.

Conclusions: Study findings confirmed the success of the client tracking process and the diverse set of measures in a sub-set of programs where full implementation was possible, thus illustrating the value of scaling up routine outcome monitoring in other substance abuse treatment organizations or treatment systems

Objectif : L'évaluation des résultats de santé des personnes participant au traitement de la toxicomanie est considérée comme un élément important dans la mesure de résultats en complément des essaies cliniques contrôlés. Nous avons cherché à évaluer la faisabilité d'un système de suivi des résultats dans les services de traitement de la toxicomanie en Ontario, en mettant un accent particulier sur la capacité d'un système de suivi complet pour retracer et mesurer les changements au fil du temps sur les résultats pertinents.

Méthode : Un total de 148 clients âgés de 16 ans et plus ont été recrutés de manière prospective dans deux programmes de traitement pour une entrevue de référence et un protocole de suivi détaillé. Un groupe de 117 ont été localisés pour déterminer des statuts de 3 et 6 mois. Les résultats ont été mesurés par rapport aux coûts et leur utilisation dans de multiples domaines de santés, de services sociaux, ainsi que des services liés à la justice.

Résultats : Il y a eu une amélioration significative dans plusieurs indicateurs de la consommation de substances, y compris l'abstinence. Les résultats ont également démontré une diminution significative de la gravité au fil du temps dans des domaines connexes, tels la criminalité, la violence, le stress, de meilleurs indices de vie globale et moins de risques environnementaux menant au rétablissement. En général, il y a eu une nette amélioration de la qualité de vie. Il y a eu une réduction de l'utilisation des soins de santé et des démêlés avec la justice ainsi qu'une réduction globale des coûts associés à ces services.

Conclusions : Les résultats des études ont confirmé le succès du processus de suivi des clients et l'ensemble des diverses mesures dans un sous-ensemble de programmes où la mise en œuvre complète était possible, illustrant ainsi la valeur de l'élargissement de suivi des résultats de routine dans d'autres organismes de traitement de la toxicomanie ainsi que les systèmes de traitement des abus.

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INTRODUCTION

An important element of health services research is the assessment of the effectiveness of health care interventions in the "real life" settings in which they are offered[1,2].

This contrasts with, and complements, traditional clinical trials which aim to assess treatment efficacy in tightly controlled conditions thereby isolating the potential influence of the intervention from other sources of variance in outcome. In the addiction field, strategies for outcome monitoring have been influenced by the important conceptual shift towards a chronic illness paradigm for severe addiction and its treatment[3] and concomitant shifts in conceptual models of treatment process and outcome[4] as well as specific evaluation models and measures[5]. The assessment of client outcomes, either during or post-treatment, is now considered an important element of wider performance measurement frameworks[6], similar to the situation in the broader mental health field[7].

Large scale outcome monitoring studies have been undertaken in the US and elsewhere through well-funded research projects[8]. In the US, researchers have led the way in developing processes for more routine post-discharge recovery monitoring check-ups (RMC) [9-11]. Their work has highlighted the need to incorporate RMC instruments into baseline clinical assessment and the importance of intensive, systematic procedures to maintain contact and follow-up clients in order to maximize response rates[12]. Their work has also produced important research findings regarding treatment and impact on health outcomes, including mortality[13]. Going beyond these important but well-funded research and development projects, only a small number of routinized, self-funded, post-discharge outcome monitoring systems exist among US treatment centres, for example, Hazeldon Addiction Treatment Centre[14-15].

In the UK, outcome monitoring has been operationalized in the national treatment system for some time[16-18]; various efforts have been initiated from time to time in Australia[19,20]; and nascent efforts are evident in other countries (e.g.,Chile[21]). The main lesson learned to date is that, to be both feasible and sustainable, the output of an outcome monitoring system must return information of value at multiple levels, including treatment system administrators and funders, treatment program managers and individual clinicians.

In Canada, an opportunity to build capacity for outcome monitoring emerged between 2009-2014 through Health Canada's Drug Treatment Funding Program[22], a strategic national initiative that directed funding to the provinces and territories to enhance treatment systems and services for individuals with substance use problems. The Ontario DTFP portfolio (www.eenet.ca) included a project to assess the feasibility of implementing a dedicated outcome monitoring service for addiction treatment programs and the utility of a range of tools and processes for locating and following clients and measuring change over time. Project reports have focused on the implementation challenges and lessons learned from a process point of view[23-24]. In this paper, we briefly describe the outcome monitoring project but with a particular focus on the ability to measure change over time on relevant client outcomes.

METHOD

Study Sites: Five study sites were involved in the overall recruitment and follow-up process. Three of the sites offered similar community-based, non-residential assessment and treatment services to adults, while the other two sites were a community withdrawal management program and a school-based adolescent treatment program. We experienced significant challenges recruiting clients in one of the community non-residential assessment and treatment services as a result of a high percentage of clients mandated to treatment. Both the youth program and the withdrawal management program also presented unique challenges which severely limited the number of clients available for follow-up. Therefore, our focus here is on the other two community non-residential programs both of which were located in mid-sized cities in predominantly rural parts of the province.

Participants and Recruitment Processes: Project participants were registered clients aged 16 or older, presenting for screening/assessment/treatment. Only clients who were in the intake stages of treatment and not currently receiving treatment services were eligible to participate. Clients included in the study were presenting for a substance use problem, had consented to participate, were able to speak or understand English and showed no evidence of cognitive impairment based on a structured, validated scale assessing this domain[25].

Recruitment was initiated in June 2012 and continued through the fall of that year. We aimed for consecutive quarterly follow-up interviews, and we obtained a prospective sample with baseline and both 3- and 6-month interviews, and a larger sample with baseline and at least one of the 3- and 6-month interviews.

Potential participants were approached by trained staff involved in their agency's intake and assessment function once some or all of their routine assessment processes were completed. The recruitment process typically began on the client's second visit with a description of the project via a Letter of Information and form requesting Consent to Participate followed by the cognitive impairment screener. All screened and consenting clients were then asked to complete a form which gathered detailed information to locate clients for follow-up interviews. Upon completion of this form, clients were connected by telephone to a member of the central follow-up team by the agency staff. Ethics approval was obtained from the Centre for Addiction and Mental Health, the project sponsoring organization.

Post-intake Follow-up: The central follow-up team was a group of four staff assembled to locate clients quarterly on the telephone and conduct the follow-up interviews. The follow-up system was an adaptation of the model developed by Scott[12] and incorporated into the overall recovery management strategy developed by Mike Dennis and colleagues at Chestnut Health Systems[9-11]. This system of managing follow-up has proven to be successful with over 90% follow-up rates in studies involving addiction treatment populations across various cities of the U.S. and in various settings (e.g. residential and outpatient treatment, justice). While it is a comprehensive system some elements had to be omitted, including the use of paid community trackers to locate hard-to-reach clients (with photograph ID); payment for participation; and securing pre-approval from various community institutions to contact them during the follow-up to ask if clients have accessed their services. The implementation of the Ontario adaptation of the follow-up protocol and lessons learned are documented in a separate report[24].

Measures: Building upon a commissioned review of outcome models[6] and extensive consultation with experts in the field and Ontario treatment system stakeholders, a set of criteria were developed to guide selection of the outcome measurement tool(s). This work was also synchronized with a parallel review of screening and assessment measures with a view to eventual provincial implementation[26]. Also, following McClellan and colleagues[5], these criteria included the ability to measure multiple domains of substance use, physical and mental health, social functioning, and public health and safety. In addition, it was expected that the instrumentation could also be used for clinical purposes for baseline assessment and treatment planning; be relevant for a variety of types of addiction services; and have good psychometric properties including reliability and validity across a wide age range and by gender.

The Global Assessment of Individual Needs Quick 3 Motivational Interviewing (GAIN-Q3 MI) was selected to establish baseline status; a parallel tool (GAIN-Q3 Standard) was used for follow-up purposes[27]. The follow-up tool, implemented at three and six-months post intake, covers client demographics and nine screener sub-sections covering: substance use, mental health, physical health, school, employment, sources of stress, risk behaviours and trauma, crime and violence, and life satisfaction. The total number of items, including all items in many brief sub-scales, was 202. The baseline assessment (GAIN Q3-MI) included an additional 25 items tapping into motivation and readiness for change in each domain. The GAIN-Q3 instruments used for this project had undergone minor adaptations to the specific Ontario context[26]. The in-person baseline interviews took approximately 60 minutes and the follow-up telephone interview 40 minutes. Scores of the screener sub-sections reflect the number of items endorsed in that domain - the higher the score, the higher problem severity. In accordance with the recommended data collection window of the GAIN-Q3 tools, the three and six-month follow-up interviews were scheduled up to one month before or after 90 and 180 days from the baseline interview.

The GAIN Q3 assessment and outcome instruments allow for conversion of the client's self-reported utilization of services to a "cost-to-society" by multiplying service events with cost-per-unit of service. We were able to obtain service unit costs for various Ontario-based health care service and justice services and applied the costs to the self-reported utilization data at baseline and follow-up. Some events captured in the GAIN instruments could not be costed including, days bothered by any health problem, days bothered by psychological problems, days in intensive outpatient programs for substance abuse, and days of missed school or training for any reason. Health care costs were obtained from the National Ambulatory Care Reporting System, Ontario Ministry of Health and Long-Term Care Health Data Branch's Health Indicators Tool (HIT); or for OHIP data for outpatient clinic visits, provided by personal communication from the Institute of Clinical Evaluative Sciences (ICES). Costs for jail/prison were obtained from www.prisonjustice.ca/politics/facts_stats.html and costs for probation/parole from www.prisonjustice.ca/downloads/behind_bars_leaflet.2011.pdf.

Analysis: Frequency tables (n and %) are provided for all categorical variables and outcomes of interest. In analyzing continuous variables, descriptive statistics including means, standard deviations, medians and quartiles were reported. Change over time in these variables was tested using the Generalized Estimating Equations (GEE) approach a flexible statistical approach for modeling correlated data such as repeated measures. Results of the analyses using GEE for continuous variables show the average rate of change in outcome for every additional follow-up period and, for categorical variables, the change in likelihood of outcomes. It allows more complete use of data by accommodating uneven number of repeated observations across individuals in a sample. The current analyses were conducted using SPSS v22.

RESULTS

Sample characteristics: The current sample consists of 148 clients who completed the baseline assessment at the two participating community assessment and treatment agencies in the recovery monitoring project. These clients were followed up quarterly for 6 months with 117 interviewed in at least one of the 3 or 6 month follow-ups. Descriptive analyses were performed on all available data in each of the three time periods. Rates of change over time were assessed based on the group of 117 who provided data in the follow-up period.

Table 1 shows the demographic and selected substance use characteristics of the sample of 148 participants. About 62% of the sample was male; about 75% were between 25 and 55 years of age and about 39% were married. Approximately 80% of the participants completed high school and about 42% had some employment. Almost all participants had a fixed address and the majority did not have any legal problems. Analyses reported in project reports (23,24,26) illustrated that, the study sample is reasonably representative of the demographics of clients at the participating sites and the overall Ontario substance use treatment system. There is a general trend, however, for the clients engaged in the project to be somewhat more stable. For example, compared to other clients in the participating agencies, those consenting were older and somewhat less likely to have legal problems. Compared to the overall treatment population in provincial community treatment services, project participants tended to: be married/partnered, have at least a high school degree, and present only with an alcohol use problem (i.e., less involvement of other drugs). Clients in our sample were also less likely to use substances on a daily basis.

Change in Substance Use: From baseline assessment there was a significant increase in the percentage of clients who reported total abstinence in the past 90 days, after taking into account days in controlled environment, such as a stay in hospital. At baseline, the percentage abstinent from any substance in the past 90 days was 9.4%; the sample at 3-months 25.8%, and at 6-months, 28.0%. In terms of the number and percentage of days abstinent from any substance during the 90 day reporting period (Table 2), a pattern of improvement was evident over both three and six months. Among participants, days with total abstinence on average increased by 11 days for every additional 3 months in the follow-up period ($B=11.04, \chi^2(1)=38.65, p<0.001$).

A similar pattern of improvement was observed for the percentage of days with alcohol use and being drunk or drinking 5+ drinks. The percentage of days with alcohol use was estimated to decrease by about 7% every additional 3-month follow-up period ($B=-7.40, \chi^2(1)=16.17$, $p<0.001$). The percentage of days being drunk or drinking 5+ drinks was also estimated to be decreasing around 7% every follow-up period ($B=-7.40, \chi^2(1)=22.80, p<0.001$).

For other substance use indicators, however, there was an improvement at the three-month mark, and then levelling off at six months. This pattern was evident for the proportion of clients reporting marijuana use, and proportion reporting any other drug or cocaine use. It was estimated that on average, participants were 30% less likely to use marijuana ($Exp(B)=0.70$, $\chi^2(1)=12.24, p<0.001$) and 40% less likely to use other drugs ($Exp(B)=0.60, \chi^2(1)=16.66$) and cocaine ($Exp(B)=0.57, \chi^2(1)=16.66, p<0.001$) respectively every additional 3-month follow-up period. The percentage of days in the 90 day reporting period with some opiate use declined through the study period.

Change in Screener Scores of Various Life Domains: Table 3 presents the distribution of the number of items endorsed in each of the screener sub-scales in the GAIN-Q3. In general, the distributions showed a decreasing trend in severity over time in all problem areas except work and school. Further analyses showed a significant decrease in the severity level in the screeners for additional follow-up periods for all problem areas except school, work and stress. It was estimated that with each additional follow up period, participants were about 60% less likely to increase their severity level on the substance abuse screener ($Exp(B)=0.43, \chi^2(1)=39.25, p<0.001$).

A Problem Prevalence Index is also routinely calculated with the GAIN-Q3, which reflects the prevalence of problems across sections in the instrument and measured as the average of the proportion of problem days in the past 90 days. Scores in this index take on values in the range of 0 and 100, with higher scores representing higher prevalence of problems. At baseline, participants had on average 22% of the past 90 days as problem days across various problem areas, and a significant decrease was observed over time to 16.1% at 3 months and then 13.1% at 6-months. Analyses showed that the prevalence of problems decreased by 4% among participants for every additional follow-up period ($B=-4.20, \chi^2(1)=75.89, p<0.001$).

A Quality of Life – past 90 Days Index (QOL) is also obtained from the individual screeners. The QOL scores represent the reverse of the total of the screener scores; thus, the higher the QOL Index, ranging from 0-100, the better the quality of life the person is experiencing. The mean QOL Index increased from 49.6 to 56.2 at 3 months to 61.7 at 6 months. On average, participants reported a 6-point increase in the QOL Index in each additional follow-up period ($B = 6.06, \chi^2(1)=36.76, p<0.001$).

Environmental Risks to Recovery: The GAIN-Q3 measures risks to recovery faced by clients in their immediate environment. The sub-scales shown in Table 4 indicate how many people the client lives with, or interacts with

vocationally or socially, who are involved in illegal activities, arguing or fighting, using substances or treatment, or are in recovery. Higher scores indicate more time spent with more people in high risk situations. The Overall Scale score as well as Living and Social scale scores decreased significantly in the 6-month follow-up period.

Service Utilization and Costs: The GAIN-Q3 collects self-reported service use of clients for physical health (PH), mental health (MH) and substance use (SU) problems. Table 5 reports the proportion of participants using each type of service during each of the three reporting periods. The data show a significant increase in the proportion of participants using outpatient services for physical health and substance use problems in the 6-month follow-up period. Analyses showed that participants were 44% more likely to use outpatient services for physical health ($Exp(B)=1.44, \chi^2(1)=8.11, p<0.01$) and twice as likely to use outpatient services for substance use problems ($Exp(B)=2.26, \chi^2(1)=30.91, p<0.001$) every additional follow-up period. On the other hand, a decrease was observed over the 6 months in the proportion of participants using hospitals for physical or mental health reasons as well as a reduction in use of residential substance use treatment services.

Based on unit costs in the Ontario health care and justice systems, the results showed that the overall cost to society for health care utilization and time in jail/prison or on probation or parole in the previous 90 days was, on average, about $2,940 per participant at baseline. This declined over the study period to about $2,200 per participant.

Looking more closely at the use of hospital and emergency services, a decline in use and a large cost saving was observed among a sub-sample of 22 participants that we selected based on any reported use of emergency rooms or hospitals at baseline and who provided data for both follow-up periods. The total number of days of ER use across these 22 participants decreased from 51 days to 37 days in three months, and further decreased to 20 days in six months. The total costs associated with ER use for this group decreased from $12,593 at baseline to $4,939 at 6-months follow-up.

The total number of days of inpatient hospital use across these same 22 participants decreased from 160 days to 77 days in three months, and further decreased to 30 days in 6 months. The total costs associated with hospital use for this group decreased from $82,080 at baseline to $15,390 at the six-month follow-up. When both ER and other inpatient hospital use are combined, the per participant cost-to-society for this group dropped from $5,510 per participant at baseline to $2,451 per participant at six months.

DISCUSSION

The focus of this paper was on describing a client-level outcome monitoring system developed and pilot tested in a small number of community-based addiction treatment services with a view towards potential scale-up and sustained infrastructure. The work described here fits into a long-term process of building capacity for evaluation and performance measurement within a large provincial addiction treatment system[28-30].

Implementation evaluation suggested the outcome monitoring system was not ready for provincial scale-up, needing more work specifically on client tracking procedures to reach more marginalized clients and those with a more complex substance use profile. That being said, the follow-up protocol was able to achieve a follow-up rate of 69% at 6 months and 79% for either 3 or 6 month interviews for all study sites combined. These are respectable follow-up rates given the resource constraints, short-term funding and privacy concerns that impacted achievement of the targeted 90% follow up found with full implementation of the follow-up protocol[12,23,24].

Following a careful process of review and consultation, the GAIN-Q3 was chosen as the outcome measure for pilot testing and the results shown here highlight the veracity of this tool. In short, the tool "worked" in providing a sweeping picture of outcomes across several domains and the ease with which it yielded useful outcome indices and individual indicators. For example, from a clinical point of view, it is important to note the improvements that occurred in many life areas while achieving complete abstinence from alcohol and other drugs in about 30% of clients at 3 and 6 months. This is consistent with a broad harm reduction approach to service delivery and reasonable expectations regarding treatment outcome. It is also consistent with the now prevailing view that achieving complete abstinence, an important goal for many clients, may require multiple treatment attempts as in other chronic disease treatment and management paradigms. Our results also showed that this diversity of outcome indicators needs to be tracked for at least a 6-month follow up period to gain a sense of sustainability and no doubt longer if resources permit. In the present case, project funding was cut short unexpectedly and we had to truncate a planned one-year follow up.

From an attribution point of view such data are, of course, limited in terms of linking the changes observed to the specific assessment or treatment provided by the participating addiction agencies. Strong statements of causal attribution are usually beyond the scope of such recovery monitoring systems and for this reason they are considered complementary to randomized controlled trials and recommendations based on the results are more focused on program accountability and ongoing quality improvement. As this was a feasibility and pilot testing project, one must project the potential of results such as obtained here if the outcome monitoring program were to be implemented on a larger scale. With sufficient sample size and appropriate linkage to the specific treatment interventions received, it would be possible to use multivariate statistical methods to deal with many of the challenges of attribution. There would also be high value for benchmarking expected outcomes across different levels of care and implementing case-costing protocols with case-mix adjustment, as in other areas of health care. All these routine aspects of decision support are available in many other areas of health but sadly lacking in the addiction field.

In addition to the results of value to clinicians and program managers, the GAIN-Q3 MI and Standard yield estimates of health care and other service utilization on a routine basis with built-in cost data customized to the specific jurisdiction. We showed a significant decline in service utilization and cost, results consistent with extant research on the cost-offset of addictions treatment[31]. We note, however, that consistent with other studies of the cost-offset of substance use treatment, neither the cost of the treatment intervention or the implementation of the outcome monitoring protocol are included in the calculation of the cost offset. A more detailed tracking of resource utilization was beyond the scope of this feasibility assessment. This potential limitation notwithstanding we highlight the capacity of a scaled-up outcome monitoring system to show these results routinely for health planning districts; results that are clearly of value in making the business case for increased investment in substance use treatment in a given jurisdiction.

The outcome monitoring protocol was implemented and evaluated in concert with the implementation of the new screening and assessment protocol which was used for baseline assessment. Therefore, participating clients consented to complete the standard assessment package AND the new assessment package AND agree to be followed up for outcome determination. This resulted in unique challenges in study recruitment in three of the five study sites (e.g., a high percentage of mandated clients; assessments of high risk youth in school settings conducted over multiple sessions; access to service in a remote area) and we elected to omit three programs in the present study in large part because the outcome component itself never got a fair chance to be implemented and their program context was unique. We suggest additional work on outcome monitoring for mandated clients, high risk youth in school settings and community withdrawal management services in rural/remote areas.

In the context of our "real world" implementation of an outcome monitoring protocol it should also be noted that the substance-related and other outcomes were exclusively based on self-report, without verification. Further, although the study attrition is not unusual for this population, retention bias should also be acknowledged (i.e., patients who could be contacted and who agreed to continue with the project probably represent a subsample with the most favorable outcome). An intent-to-treat analysis, carrying forward the last observation would be a more conservative analytic approach.

Overall, this provincial pilot test of an outcome monitoring system for addiction services was a successful step in a longer term process of enhancing capacity for performance measurement and evaluation for the Ontario treatment system. We encourage Canada's provincial and territorial governments, and their respective regional health authorities to continue to build upon our work. Individual addiction service providers can also adopt and adapt the practices employed here and continue to shine the light on the importance of client-level outcome monitoring for addiction services (see Costello et al., in this issue[32]). More work is also needed to monitor outcomes of services people with substance use challenges receive outside the specialized addiction sector, work that can be achieved through appropriate data linkage and administrative data sets as well as prospective system-level monitoring studies[33,34].

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TABLE 1: DEMOGRAPHIC AND SUBSTANCE USE CHARACTERISTICS OF CLIENTS (N = 148)

	n	%
Gender		
Female	55	37.2
Male	93	62.8
Age		
<= 24 years	14	9.5
25 - 34 years	45	30.4
35 - 44 years	36	24.3
45 - 54 years	33	22.3
55 + years	20	13.5
Relationship status		
Married/partnered/common law	56	38.6
Single (never married)	60	41.4
Separated or divorced	29	20.0
Employment status		
Employed full time	47	31.8
Employed part time	15	10.1
Unemployed	43	29.1
Other	43	29.1
Education		
< High School	34	23.0
Completed secondary or High School	46	31.1
Some post-secondary	25	16.9
Completed College or University	43	29.1
Legal status		
No problem	101	68.2
Awaiting trial or Sentencing	25	16.9
Probation	19	12.8
Fixed address (postal code)		
No fixed address	5	3.4
Unknown	2	1.4
Fixed address	141	95.3
Presenting Problem Substance		
Alcohol only	71	49.0
Other substance(s) only + no alcohol	41	28.3
Alcohol and other substance(s)	33	22.7
Frequency of Substance Use		
1-3 times monthly	7	6.0
1-2 times weekly	19	16.2
3-6 times weekly	27	23.0
Daily	49	41.9

TABLE 2. SUMMARY OF SUBSTANCE USE IN PAST 90 DAYS BY BASELINE AND FOLLOW-UP PERIODS

Indicators of Alcohol or Other Drug Use	Baseline Mean (std) [25th, 50th, 75th] (n=148)	3-Months Mean (std) [25th, 50th, 75th] (n=99)	6-Months Mean (std) [25th, 50th, 75th] (n=89)	B [95% C.I.]	Statistical Significance
Days with total abstinence[1]	38.0 (30.3) [7.0, 35.0, 66.0]	48.8 (35.1) [10.0, 51.0, 87.0]	59.2 (31.0) [30.75, 69.5, 90.0]	11.04 [7.56, 14.52]	X2(1) = 38.65 ***
Days with any substance use	48.4 (31.7) [17.5, 50.0, 80.0]	38.3 (35.1) [0.0, 30.0, 78.0]	29.4 (30.7) [0.0, 20.0, 56.0]	-9.82 [-13.29, -6.35]	X2(1) = 30.77 ***
% of days with total abstinence[1]	44.8 (35.8) [8.3, 41.7, 79.0]	55.7 (39.8) [11.1, 58.9, 100.0]	66.8 (34.7) [37.8, 77.8, 100.0]	11.50 [7.60, 15.40]	X2(1) = 33.38 ***
Alcohol use					
Days with alcohol use	30.1 (29.7) [2.0, 20.0, 50.0]	23.6 (30.4) [0.0, 5.5, 45.0]	20.6 (26.7) [0.0, 5.0, 41.25]	-6.42 [-9.56, -3.27]	X2(1) = 15.97 ***
% of days with alcohol use[1]	34.9 (33.7) [4.2, 22.9, 58.9]	28.6 (37.5) [0.0, 6.7, 50.0]	23.4 (30.4) [0.0, 5.6, 50.0]	-7.40 [-11.10, -3.80]	X2(1) = 16.17 ***
Days being drunk or 5+ drinks	21.1 (25.9) [1.0, 10.0, 30.0]	12.5 (20.4) [0.0, 3.0, 17.5]	10.1 (19.0) [0.0, 0.0, 10.0]	-6.46 [-9.06, -3.86]	X2(1) = 23.80 ***

% of days being drunk or 5+ drinks[1]	24.5 (29.5) [1.1, 11.1, 37.4]	14.8 (24.3) [0.0, 3.3, 22.2]	11.7 (22.4) [0.0, 0.0, 11.1]	-7.40 [-10.50, -4.40]	X2(1) = 22.80 ***
Drug use	Baseline % (n)	3-Months % (n)	6-Months % (n)	Exp(B) [95% C.I.]	
% reported use of marijuana	44.0 (62)	30.9 (29)	28.0 (23)	0.70 [0.57, 0.85]	X2(1) = 12.24 ***
% reported use of any other drug (not alcohol or marijuana)	39.0 (55)	22.6 (21)	19.5 (16)	0.60 [0.47, 0.77]	X2(1) = 16.66 ***
% reported use of cocaine or crack	25.0 (34)	8.6 (8)	9.8 (8)	0.57 [0.42, 0.77]	X2(1) = 13.44 ***
% reported use of heroin / methadone/ opioid	19.9 (27)	11.8 (11)	7.3 (6)	0.56 [0.39, 0.80]	X2(1) = 10.15 **

*[1]Taking into account days in controlled environment. * p<0.05, **p<0.01, ***p<0.001*

TABLE 3. SCREENER SCORES IN PROBLEM AREAS BY BASELINE AND FOLLOW-UP PERIODS

Screener Sub-Scales	Baseline (n=148)		3-Month (n=99)		6-Month (n=89)		Exp(B)[1] [95% C.I.]	Statistical Significance
	n	%	n	%	n	%		
Substance Use								
0 events[2]	14	9.8	28	29.8	31	37.8	0.43 [0.33, 0.56]	$X^2(1) = 39.25$ ***
1-2 events	27	18.9	25	26.6	23	28.0		
>2 events	102	71.3	41	43.6	28	34.1		
Mental Health Internalizing								
0 events	14	9.7	7	7.2	13	15.7	0.70 [0.56, 0.88]	$X^2(1) = 9.73$ **
1-2 events	23	16.0	30	30.9	23	27.7		
>2 events	107	74.3	60	61.9	47	56.6		
Mental Health Externalizing								
0 events	27	18.8	34	35.1	27	32.9	0.66 [0.54, 0.81]	$X^2(1) = 16.68$ ***
1-2 events	52	36.1	30	30.9	34	41.5		
>2 events	65	45.1	33	34.0	21	25.6		
Risk Behaviour								
0 events	43	30.1	33	34.0	32	38.1	0.77 [0.64, 0.93]	$X^2(1) = 7.24$ **
1-2 events	59	41.3	47	48.5	40	47.6		
>2 events	41	28.7	17	17.5	12	14.3		
Crime and Violence								
0 events	72	52.2	74	78.7	72	87.1	0.36 [0.25, 0.50][3]	$X^2(1) = 31.42$***
1-2 events	60	43.5	20	21.3	10	12.2		
>2 events	6	4.3	0	0.0	0	0.0		
Physical Health								
0 events	25	17.1	18	18.6	19	22.4	0.81 [0.66, 0.99]	$X^2(1) = 4.32$ *
1-2 events	58	39.7	39	40.2	38	44.7		
>2 events	63	43.2	40	41.2	28	32.9		
Work								
0 events	107	72.8	72	74.2	60	70.6	1.01 [0.80, 1.29]	$X^2(1) = 0.01$
1-2 events	24	16.3	15	15.5	18	21.2		
>2 events	16	10.9	10	10.3	7	8.2		
School								
0 events	142	96.6	86	90.5	77	91.7	1.57 [1.01, 2.45][3]	$X^2(1) = 4.00$
1-2 events	4	2.7	7	7.4	6	7.1		
>2 events	1	0.7	2	2.1	1	1.2		
Stress								
0 events	29	19.9	14	14.4	14	16.7	0.81 [0.66, 1.00]	$X^2(1) = 3.78$
1-2 events	47	32.2	36	37.1	46	54.8		
>2 events	70	47.9	47	48.5	24	28.6		

*[1] Reference category: 0 events [2]"Events" represent the frequency in which a problem/symptom was endorsed within a screener subscale. [3]Statistical test was performed on combined categories 0 events vs >0 events due to low cell counts in the original categories. * p<0.05, **p<0.01, ***p<0.001*

TABLE 4. ENVIRONMENTAL RISKS SCALE SCORES BY BASELINE AND FOLLOW-UP PERIODS

Environment Risk Scale	Baseline Mean (std) [25th, 50th, 75th] (n=117)	3-Months Mean (std) [25th, 50th, 75th] (n=99)	6-Months Mean (std) [25th, 50th, 75th] (n=89)	B [95% C.I.]	Statistical Significance
Overall (out of 84)	36.3 (11.0) [27.5, 35.0, 43.5]	33.6 (8.7) [28.0, 32.0, 37.0]	32.1 (7.7) [26.75, 32.0, 36.0]	-2.01 [-2.95, -1.06]	$X^2(1) = 17.27^{***}$
Living (out of 28)	12.2 (4.4) [9.0, 12.0, 15.0]	11.3 (3.4) [8.0, 11.0, 12.0]	10.9 (3.1) [8.0, 10.0, 12.0]	-0.64 [-1.06, -0.21]	$X^2(1) = 8.48^{**}$
Vocational (out of 28)	10.9 (3.8) [8.0, 10.0, 12.0]	11.1 (3.8) [8.0, 11.5, 12.25]	9.6 (3.1) [8.0, 9.0, 11.0]	-0.60 [-1.21, 0.00]	$X^2(1) = 3.80$
Social (out of 28)	12.6 (3.8) [9.0, 12.0, 16.0]	11.0 (2.5) [9.0, 11.0, 12.0]	10.8 (2.6) [8.25, 11.0, 12.0]	-0.95 [-1.35, -0.56]	$X^2(1) = 22.36^{***}$

** p<0.05, **p<0.01, ***p<0.001*

TABLE 5. PERCENTAGE OF RESPONDENTS USING VARIOUS SERVICES BY BASELINE AND FOLLOW-UP

Services		Baseline (n=148)		3-Months (n=99)		6-Months (n=89)	Exp(B) [95% C.I.]	Statistical Significance
	n	%	n	%	n	%		
PH – ER	41	28.1	20	20.6	16	18.6	0.75 [0.54, 1.05]	$X^2(1) = 2.87$
PH - Hospital	18	12.3	5	5.2	4	4.7	NA[2]	NA[2]
PH - Outpatient	63	43.2	57	58.8	52	50.5	1.44 [1.12, 1.85]	$X^2(1) = 8.11$ **
MH - ER	17	11.8	6	6.3	5	6.1	NA[2]	NA[2]
MH - Hospital	16	11.1	5	5.3	5	6.1	NA[2]	NA[2]
MH - Outpatient	40	27.8	30	31.6	27	32.9	1.06 [0.83, 1.35]	$X^2(1) = 0.20$
SU - Residential	14	9.9	5	5.3	6	7.3	NA[1]	NA[1]
SU - Outpatient	43	30.1	57	60.6	55	67.1	2.26 [1.70, 3.01]	$X^2(1) = 30.91$ ***
SU - Detox	10	7.0	5	5.3	4	4.9	NA[1]	NA[1]
SU - ER	21	14.7	7	7.4	3	3.7	NA[2]	NA[2]
ER (PH, MH & SU)	51	34.9	23	23.7	19	22.1	0.70 [0.53, 0.94]	$X^2(1) = 5.52$ *
Hospital (PH, MH)	24	16.4	6	6.2	7	8.1	0.54 [0.36, 0.83]	$X^2(1) = 8.13$**
CV - Probation / Parole	21	14.4	13	13.8	8	9.8	0.88 [0.65, 1.19]	$X^2(1) = 0.69$
CV - Jail/Prison	17	12.4	5	5.3	2	2.4	NA[1]	NA[1]

Acronyms: PH= Physical Health, ER= Emergency Room, MH= Mental Health, SU= Substance Use; CV= Crime and Violence

1. *Statistical tests were not performed due to low cell counts.*
2. *Statistical tests were not performed due to low cell counts, but were performed for combined days of ER and hospital use.*

** p<0.05, **p<0.01, ***p<0.001*

CJA–JCA

The Development and Implementation of an Outcome Monitoring System for Addiction Treatment

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ABSTRACT

Objectives: Routine outcome monitoring is critical for evaluating quality and effectiveness of mental health and addiction (MHA) services. This paper describes the development, design and implementation of an outcome monitoring system (OMS) within an inpatient addiction treatment program, presents feasibility findings from pilot testing and early implementation, and shares lessons learned.

Methods: A logic model, as well as data collection tools and protocols, were developed collaboratively with stakeholders including staff, former patients, and external experts. Pilot testing assessed the reliability of the tool's items. Following implementation, preliminary participation rates were evaluated and early lessons were documented.

Results: The logic model classified recovery outcomes into eleven domains. The OMS was designed to routinely collect self-reported data on each recovery domain from patients (19+ years) at admission and discharge (self-administered tool using electronic software), and post-discharge at 1-, 3-, 6-, and 12-month intervals (via telephone or email). The average time for tool completion via tablet was 20.5 minutes, while telephone was 18.1 minutes. Test-retest analysis of key outcome measures ranged from 0.36 to 0.94 (poor to excellent agreement) for categorical items and 0.55 to 0.82 (good to excellent agreement) for dichotomous items. At admission, 41.8% of patients consented to participate and 98% completed the tool. Lessons learned relating to stakeholder commitment; system and tool development; standardized baseline measurement; and use of electronic questionnaires are shared.

Conclusions: Sharing approaches used and lessons learned may inform the development and implementation of similar systems that can be used to evaluate MHA services within other settings.

Objectifs : Le suivi systématique des résultats est essentiel dans l'évaluation de la qualité et l'efficacité des services de toxicomanie en santé mentale (MHA). Cet article décrit le développement, la conception et la mise en œuvre d'un système de suivi des résultats (OMS) dans un programme de traitement de la toxicomanie en milieu hospitalier. Il présente les résultats de faisabilité de tests pilotes et leur mise en œuvre préliminaire, en plus de partager les leçons apprises.

Méthodes : Un modèle logique, ainsi que des outils et des protocoles de collectes de données, ont été élaborés en collaboration avec les parties prenantes, comprenant le personnel, des anciens patients et des experts externes. L'essai pilote a évalué la fiabilité des éléments de l'outil. Suite à sa mise en œuvre, des taux préliminaires de participation ont été évalués et les premiers apprentissages ont été documentés.

Résultats : Le modèle logique a classifié les résultats de rétablissement dans onze domaines. L'OMS a été conçu pour recueillir régulièrement des données auto-déclarées des patients (19 ans et plus) dans chaque domaine de rétablissement, à l'admission et au congé (en utilisant un logiciel électronique autogéré), et après congé à des intervalles de 1, 3, 6, et 12 mois (par téléphone ou par courriel). Le temps moyen pour l'achèvement du logiciel par l'intermédiaire de la tablette était de 20,5 minutes, alors que par téléphone, il était de 18,1 minutes. L'analyse des principales mesures des résultats variait 0,36 à 0,94 (médiocre à excellent) pour les articles catégoriques et 0,55 à 0,82 (bon à excellent) pour les articles dichotomiques. À l'admission, 41,8% des patients ont accepté de participer et 98% ont terminé l'outil. Les enseignements tirés avaient trait à l'engagement des parties prenantes; le système et le développement du logiciel; la mesure normalisée de référence; et l'utilisation de questionnaires électroniques qui ont été partagés.

Conclusions : Le partage des approches utilisées et des leçons apprises peuvent aider à l'élaboration et la mise en

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œuvre des systèmes similaires qui pourront être utilisés pour évaluer les services de MHA dans d'autres contextes.

Mots clés : Dépendance, traitement de l'alcoolisme, le traitement médicamenteux, résidentiel ou en milieu hospitalier, le suivi des résultats

INTRODUCTION

There is increasing interest in routinely monitoring outcomes within the mental health and addiction (MHA) field, both in Canada and internationally.[1-4] Benefits include: the ability to continually evaluate treatment effectiveness, consistency and cost-effectiveness; inform and monitor quality improvement efforts; and provide accountability information to consumers, administrators, funders and overarching systems.[4,5] An effective outcome monitoring system (OMS) can also contribute to MHA service research by illuminating what type or intensity of treatment works for whom, and how long positive effects are sustained.[5,6] Ideally, such systems also include processes that provide information back to clinicians to inform treatment decisions, as well as encourage persons to return-to-treatment if a need is identified.[5-8]

Outcome monitoring within an inpatient treatment setting ideally includes routine follow up with individuals, post-treatment.[4] This involves measuring outcomes that are expected to change as a result of participation in treatment, including symptoms, behaviours and functioning. The most effective OMSs collect standardized patient-level data at admission, followed by repeated measurement at subsequent time points post-discharge.[6] However, only a small number of inpatient treatment programs conduct routine follow up with patients for evaluation purposes (e.g., Hazelden Betty Ford Foundation).[9]

Current outcome measurement practices embedded within the Ontario MHA system are limited insofar as they reflect only the short period of time individuals are in treatment and tend to measure symptom reduction rather than more functional domains of recovery. There is a need to develop OMSs that reflect the current shift in perspective that MHA are chronic conditions requiring ongoing management—much like diabetes or heart disease—rather than the historical view that sees MHA as acute conditions.[7,10] Routine outcome monitoring (OM) that extends beyond the end of a single treatment episode and measures recovery based on a number of life domains is critical for evaluating the effectiveness of MHA treatment, as well as advancing knowledge of the recovery process in general.

However, defining recovery for the purpose of measurement is challenging. Within the addiction field the measurement of recovery has almost always been limited to abstinence-centred outcomes.[4,11] More recently, recovery from addiction has been conceptualized as a person achieving or maintaining outcomes in a number of life domains, including symptom reduction, behaviour change and improved life functioning (e.g., social relationships, occupation, quality of life, etc.).[10,12,13] Moreover, recovery is increasingly being described as a process where one is actively involved in managing his/her addiction or risk having the problem(s) resurface.[10] This view is more reflective of how the mental health field conceives recovery, where the goal of treatment is not solely symptom reduction but rather equipping individuals with skills and tools to manage symptoms and improve quality of life.[14] Although some experts have suggested which recovery domains may be important to measure,[10,12,15-18] there is currently no set of standard outcome measures. Measurement tools that focus on multiple life domains are needed to reflect the shift toward a more holistic definition of recovery within a recovery management paradigm.[18]

Other challenges with implementing OMSs include extensive costs and resource allocation associated with system development and maintenance, as well as problems contacting patients post-treatment.[4,5] Some promising practices have been identified including embedding baseline measures into routine assessment practice,[19] integrating follow up data collection as part of recovery management check-ups or continuing care services,[4,6,7] and rigorous methods for increasing follow up rates with hard to reach populations.[3,20] However, only one published study in Canada has examined the feasibility of implementing an OMS within addiction treatment agencies.[5,21] Given the paucity of research that examines the feasibility of such OMSs, there remains a need to share approaches used and lessons learned when developing and implementing OMSs within various MHA treatment settings.

This paper describes the development, design, and early implementation of an OMS project within an inpatient addiction treatment program in Ontario; presents feasibility findings from pilot testing and early implementation; and, shares early lessons learned.

CONTEXT

This project is part of a multi-phase endeavor to develop and implement an OMS across a MHA treatment centre in Southwestern Ontario. The goal of the OMS is to collect information that enables rigorous evaluation of the quality and effectiveness of MHA treatment. The initiative also aims to establish a sustainable infrastructure to collect data that can be used to: (1) improve clinical care, (2) provide accountability, and (3) answer research and evaluation questions.

The project setting is a 105 bed, inpatient addiction medicine service (AMS). The program offers residential, group-based treatment to adults (19+) addicted to alcohol

and/or other substances (length of stay of 35 days) and specialized programing for treating co-occurring Post-Traumatic Stress Disorder (PTSD; up to 56 days of stay). Treatment is abstinence-based, with 12-step facilitation, provided by a multidisciplinary team of health professionals including Addiction Medicine Certified physicians. The program focuses on medical stabilization, assessment, and recovery-oriented education and skills training. About 1,050 patients are admitted to the program annually. Treatment cost is covered by an array of funding structures, including provincial, semi-private (e.g., co-payments through private health insurance), and private expenditures (e.g., out-of-pocket payments). More detail on the program and its admission criteria can be found at: http://www.homewoodhealth.com/health-centre/addiction-medicine-service/overview.

METHODS

IDENTIFICATION OF OUTCOMES

In collaboration with program staff, a logic model was developed to clarify and articulate the program's theory of change (i.e., the underlying assumptions that guide program delivery and are believed to contribute to changes and improvements in patients).[22,23] Main program activities were linked with anticipated short-, intermediate-, and longer-term changes expected of patients completing the program.[24] Focus groups with former patients were held to verify that the outcomes identified were realistic and reflective of the patient experience.[25] Content experts were consulted to review and validate the outcomes identified.

QUESTIONNAIRE CONTENT

A review of previously published instruments was conducted and an inventory of candidate measures that addressed each of the main outcomes was created. Where possible, validated tools, sub-scales or individual measures were selected to make up a final set. Primary sources included: Global Assessment of Individual Needs-Q3 (GAIN-Q3);[26] Addiction Severity Index Version 6;[27,28] Penn Alcohol Craving Scale;[29] Alcoholics Anonymous Affiliation Scale;[30] International Physical Activity Questionnaire;[31] World Health Organization Quality of Life Instruments;[32] and Canadian Community Health Survey – Mental Health.[33] In several cases, modifications to the wording or response format was necessary to improve clarity and appropriateness of the measure. New measures were created when necessary. Program leaders and content experts reviewed the set of measures for comprehensiveness, appropriateness, redundancies, and face-validity. Together, this final set of measures comprised the Recovery Questionnaire (RQ).

PILOT TESTING

The RQ was pilot-tested with 46 participants who were former inpatients, 19 years of age or older. The purpose was to evaluate the feasibility of administering the instrument (both in-person and over the phone) and assess the test-retest reliability of key items. At Time 1, participants either self-completed the questionnaire using a tablet in a group setting (n=21) or completed the questionnaire over the phone with project staff (n=25). At Time 2, the questionnaire was re-administered over the phone to 38 participants after 3-7 days

EARLY IMPLEMENTATION

This project received clearance from the Research Ethics Board at Homewood Health Centre in Guelph, Ontario. Eligible participants were registered patients of AMS admitted after April 1, 2015. Patients attended a mandatory group during the first week of admission to the program, facilitated by project staff, where they were informed of the project, invited to provide consent to participate and self-completed the RQ. Follow up locator information was also collected from participants, including phone number(s), email address, and phone number(s) for an alternative contact person. Upon discharge (i.e., during the final week of the program; planned length of stay 35-56 days), patients attended a second mandatory group, facilitated by project staff, where they were re-informed of the project, re-invited to provide consent and self-completed the RQ. In both cases, the RQ was administered via tablets using electronic data capture software. Those who declined participation at admission were still eligible to participate at discharge.

Participants were re-contacted either by phone or email at 1-, 3-, 6- and 12-month intervals, post-discharge and asked to complete the RQ again. To test the feasibility of the two follow up methods, participants who provided both an email address and a phone number were randomized to either the email or phone follow up condition. Those who provided only one method of contact were followed up accordingly. All participants were provided with the phone number of a local support service at the end of each questionnaire. Those who disclosed having had suicidal thoughts during the past 30 days were immediately prompted to call a local support service and

provided with the telephone number; those in immediate distress were prompted to call #911. If via phone, project staff also offered to directly connect participants to the support service or directly contacted #911 if a participant was in immediate risk of harming him/herself or others.

LESSONS LEARNED

During development and implementation, project staff met regularly to reflect, discuss, and document successes and challenges encountered as the project unfolded. Lessons learned were then derived and are shared below.

RESULTS

IDENTIFICATION OF OUTCOMES

Outcomes identified by program staff and former patients were classified into nine domains: substance use; mental health; psychological-, physical-, social-, and occupational-wellness; daily life functioning; engagement in continuing care programs/services; and, overall quality of life or life satisfaction. In addition, two system-level outcome domains (i.e., use of health services and engagement in criminal activity) were identified by content experts.

QUESTIONNAIRE CONTENT

The RQ was designed to be administered at six time points: at admission to gather baseline data against which to assess change overtime, as well as collect participant characteristics to describe the sample (e.g., gender, age, ethno-cultural group, education, employment, etc.); at discharge to assess within-program change for select outcomes, as well as collect treatment process measures which may help explain recovery outcomes; and, at 1-, 3-, 6- and 12-months post-discharge to monitor outcomes and assess changes over time. The admission and post-discharge versions consisted of approximately 150 measures each (Table 1).

The discharge version, comprised of 129 measures, assessed only a sub-set of the pre-identified outcomes: substance use, mental health, psychological- and physical-wellness, and overall quality of life or life satisfaction. Unique to the RQ at discharge were items measuring therapeutic alliance (based on the 6-item Session Alliance Inventory),[34] perception of care (using the 38-item Ontario Perception of Care Tool for Mental Health and Addiction),[35] and characteristics of the treatment received, including program stream and participation in specialized groups.

PILOT TESTING

The average time for self-completion via tablet was 20.5 minutes (SD = 5.6; 95% confidence interval [CI] = 18.1 – 22.9; range = 11.7 – 34.0), while phone was 18.1 minutes (SD = 5.6; 95% CI = 15.9 – 20.2; range = 10.1 – 31.9). Retest reliability interclass correlation coefficients (ICCs) for primary patient-level outcome measures ranged from 0.36 to 0.94 indicating poor to excellent agreement for categorical items.[36] Some of the weakest items were within the social wellness, occupational wellness, and overall quality of life and life satisfaction domains (ICC < 0.60, poor; ICC = 0.60 to 7.0, poor but acceptable). Cohen's kappa coefficients for dichotomous items ranged from 0.55 to 0.82 indicating good to excellent agreement (Table 2).[37] Modifications to the data collection protocol and some items were made following pilot testing.

EARLY IMPLEMENTATION

By September 30 2015, 41.8% of individuals admitted to the program over the previous six months provided consent to participate in the project at admission (n=203), the majority (98.0%) of whom completed the RQ at that time (Figure 1). Of those who were discharged over this same time period (n=151), 145 re-consented representing a 96.0% retention rate from admission to discharge. Just over half of these participants completed the RQ at discharge (55.9%). In addition, 23 new participants provided consent at discharge representing a 10.0% participation rate among previous non-consenters; 91.3% of whom completed the RQ. Reasons for refusal of consent were not systematically documented, however, anecdotal evidence recorded by the project team suggested patients chose not to participate because they felt unfit or too unwell to participate, had not yet "bought into" or committed to treatment and therefore felt apprehensive about participating in the project, while others merely appeared disinterested or disengaged. To assess the potential for non-response bias, preliminary analyses were conducted comparing characteristics of those who consented at admission (n=203) to those who did not (n=283). There were no significant differences between groups on gender, age, education, marital status, substance use, treatment stream or presenting diagnoses (Table 3). Participants continue to be recruited into the project and followed up accordingly.

LESSONS LEARNED

Stakeholder commitment

The most important factor in the successful implementation for the project thus far has been the commitment and investments made by the treatment centre in building an OMS, particularly at the ownership, executive, and program levels. This includes a commitment to accountability, transparency and the rigorous collection of data. Understanding the needs and expectations of stakeholders has been critical during development and implementation and continues to be as data analysis begins and reports are prepared. Building confidence in the integrity

of a system is critical to ensure meaningful data is generated and used by stakeholders.

System and tool development

Development and implementation of an OMS requires significant time and human resources. A dedicated team that can work with the various levels of stakeholders and has expertise in evaluation design, methodology, survey development and data analysis is critical. Collaborating with external leaders in OM to learn from and build on previous work has strengthened the team's capacity to develop and implement a rigorous system. For example, developing a data collection tool to measure recovery-oriented outcomes is time consuming and complicated. Although previously validated tools exist that can be used to measure various aspects of recovery as demonstrated by Rush and colleagues,[5,21] no one tool was identified that measured all aspects of recovery as defined here. However, building in several validated tools and sub-scales facilitated the development of the current RQ enabling measurement of each outcome of interest.

Baseline measurement

The current project was initially framed as research, designed and implemented by an external evaluation team. Its purpose was to systematically test data collection tools and methods prior to the organization making a full commitment to implement the system as part of routine practice. However, framing the project as research has meant the need to obtain informed consent to participate. It has also required deliberate efforts to build trust and establish rapport with patients especially during recruitment, as well as address participant concerns about data confidentiality and use. Embedding baseline measures into routine assessment practices would streamline the collection of data at the inpatient time points, increasing the availability of baseline data on all patients, and facilitating its use to inform clinical care, research and evaluation.

Electronic questionnaires

Self-administration via tablets and use of electronic data capture software has facilitated data collection at admission and discharge by reducing the associated time and costs; however, it has required some technical support. Choosing data collection software can be difficult given the variety of features and capabilities each product has to offer. In this case, it was critical the product adhere to the data storage and security standards within Canada, be able to handle complex skip patterns and a variety of question formats, offer multiple deployment functionalities, including the ability to function offline (i.e., no internet connection) and via email invitation. The software also needed to be user friendly both from the perspective of the survey developer and end-user, and offer ongoing software support as needed. Annual costs of the software and internal staff capacity to work with the software also needed to be considered and weighed against the cost of hiring an external developer to build a custom data collection platform. However, as the OMS eventually moves into routine practice the need for building a permanent data collection platform and infrastructure must be considered.

DISCUSSION

The RQ presented here as part of an OMS for addiction treatment covers a broad range of recovery domains. Measuring recovery beyond abstinence is important for gaining a better understanding of the recovery process and its multiple dimensions. Much effort went into defining recovery within in this context and developing a tool that could reliably measure each dimension. In most cases, the test retest reliability of key outcome measures was good; however, agreement for some items was less stable over time. One explanation may be that these less stable items measure phenomena that naturally tend to fluctuate over time (e.g. general level of happiness). Future work will continue to refine the definition of recovery and its measurement so to reduce such error.

Almost half of the patient population at the time participated in the project. Preliminary analyses found no significant differences between participants and non-participants on basic demographic and clinical characteristics providing some evidence that the baseline data collected may be generalizable to the broader patient population. Although retention at discharge was high, not all participants completed the RQ at that time point. The poor completion rate was primarily due to restricted access to the unit during periods of infectious disease outbreak which prevented face-to-face data collection. Employing alternative methods to face-to-face data collection during periods of outbreak would likely improve completion rates at discharge.

The importance of baseline measurement is evident and lessons learned to enhance baseline data collection are worthy of discussion. In this case, the initial contact with patients was crucial for recruitment and required significant investments in the project team's time to communicate the project's purpose, its importance, and address participant concerns. Presumably this investment has contributed to the relatively high participation rate and may motivate participants to remain engaged.

LIMITATIONS

Although the RQ collects data on several important covariates including participant characteristics, it does not extensively measure treatment characteristics. Currently, such data is limited to the program stream and which specialized treatment groups the participant may have attended. Collecting more information of the type and duration of specific treatment components (e.g., physician and psychiatrist visits) would assist in evaluating what treatment components and combination may work best.

Data collected during pilot testing was use to assess test retest reliability. Although adequate, the sample size was relatively small. Furthermore, at Time 1, data was purposely collected by two different methods (phone and electronic), whereas at Time 2 data was collect by phone only. The inconsistency in data collection methods from Time 1 to Time 2 may have contributed to poorer agreement between responses across the two time points.

Although anecdotal evidence was recorded, reasons for refusal of consent or for declining to complete the RQ were not systematically documented. Systematic documentation may have helped to uncover trends or common reasons for why patients chose not to participate in the project or complete the RQ.

NEXT STEPS

Data analysis

The pre-/post-test design permits the analysis of change in participant outcomes from admission to post-treatment. The degree these changes can be attributed directly to participation in the program, however, is limited by the extent to which no other variable or intervention is responsible for the observed change. This, of course, is a major limitation of the design and has implications for how results can be interpreted. Future analyses will control for known predictors of change and investigate how other possibly important factors may mediate treatment effects, including engagement in other MHA programs, services and supports. Both multiple regression[38] and multilevel linear modeling techniques for repeated measurement[38] will be employed. To account for possible bias in responses due to attrition at follow up, intention-to-treat analysis will also be explored.[39] Efforts to measure and evaluate the effects of treatment dosage may be another area of focus for future analyses.

Enhancing the sustainability of the system

As part of efforts to examine the feasibility of implementing an OMS and inform its sustainability, the actual cost of following up with participants post-discharge via phone or email will be assessed. Both methods have advantages and disadvantages; however, evidence generated by directly comparing the feasibility, costs, response rates, quality of data, and other important indicators will help inform which method may be most cost-effective to build into a permanent OMS. Efforts to embed some baseline measures into routine assessment practices are currently being explored, as is the possibility of coupling post-discharge OM with future continuing care services. Both efforts would greatly enhance the sustainability of the system.

CONCLUSIONS

There is growing need for the ongoing, systematic collection of data that can be used to evaluate the quality and effectiveness of MHA services, not only at the program-level but also at the organization- and system-levels. Such data are also needed to inform clinical care; providing evidence to support best practices and quality improvement efforts. The OMS described in this paper provides the foundation for a much larger initiative aimed at transforming how one organization collects and uses data to continually monitor, evaluate and inform clinical practice. It also has the potential to help inform and shape how similar systems can be developed and implemented within other programs, organizations or even across the MHA system has a whole.

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CONFLICT OF INTEREST

Homewood Research Institute is a free-standing, non-for-profit organization that receives private donations, including philanthropic support from the Schlegel family to cover foundational expenses. The Schlegel family owns Homewood Health.

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TABLE 1. OUTCOMES DOMAINS AND PRIMARY MEASURES

Outcome Domains	Primary Measures	Other Measures
Substance use	Any use and frequency of use: tobacco, alcohol, and drugs (i.e., marijuana, hallucinogens, cocaine, other stimulants, sedatives, heroin or heroin mix, methadone, other opioids, steroids, inhalants, and any other drug used for the purpose of getting high);[26-28] Degree of alcohol/drug cravings during past 7-days[29]	Drug(s) of choice
Mental health	Perceived mental health status;[33] Presence and perceived severity of problems related to depression; sleep disturbance; anxiety; distress; suicidality; delusional thinking[26-28]	Presence and perceived severity of problems related to preoccupation with weight; maladaptive behaviours to control weight
Psychological wellness	Degree of motivation; confidence to engage in/maintain a recovery program;[32] Degree of hopefulness; meaningfulness of life[32]	Degree of readiness to engage in a recovery program;[32]
Physical wellness	Perceived physical health status;[33] Presence and perceived severity of physical or medical problems[26-28]	Engagement in physical activity during past 7 days[31]
Social wellness	Degree to which one is able to fulfil social roles and responsibilities; Number of people with whom one regularly socializes and number of those people who weekly get drunk or use drugs[26]	
Daily life functioning	Ability to perform everyday living activities[32]	Degree of financial problems;[26,32] Engagement in leisure activities during the past 7 days
Occupational wellness	Degree to which one is able to meet regular responsibilities at work/school; Attendance at work/school;[26] Receipt of work/school disciplinary measures	
Engagement in continuing care programs/services	Receipt and type of psychotherapy or counseling for emotional or mental health problems;[26] Receipt and type of treatment or services for drug or alcohol use;[26] Engagement in 12-step program and activities[30]	
Overall quality of life and life satisfaction	Perceived overall quality of life;[33] Degree of life satisfaction[26] (i.e., intimate relationships, family relationships, level of happiness, living situation, how life is going, work/school situation, and friends, recreation and social activities)	
Use of health services	Number of visits to a medical doctor or nurse;[26] Number of visits to an emergency room;[26] Admissions to hospital[26]	
Criminal engagement	Involvement in criminal behavior; [26] Number of times arrested and charged with breaking the law[26]	

TABLE 2. TEST RETEST RELIABILITY OF PRIMARY PATIENT-LEVEL OUTCOME MEASURES

	N	Intraclass correlation ICC	Kappa/Weighted Kappa (95% CI†) μ
Substance use			
Any substance use	38	-	0.82 (0.50-1.00)
Psychological wellness			
Perceived mental health status (scale 0-4)	38	0.76	-
Reported significant problems with…			
Depression	38	-	0.78 (0.57-0.98)
Sleep disturbance	38	-	0.61 (0.30-0.80)
Anxiety	38	-	0.57 (0.30-0.80)
Distress	38	-	0.72 (0.40-0.90)
Suicidal thoughts	38	-	0.72 (0.30-1.00)
Delusional thinking	38	-	0.65 (0.20-1.00)
Perceived hopefulness (scale 0-6)	36	0.74	-
Perceived meaning in life (scale 0-6)	36	0.73	-
Physical wellness			
Perceived physical health status (scale 0-4)	37	0.81	-
Reported physical or medical problem	38	-	0.72 (0.42-1.00)
Social wellness			
Meet responsibilities at home (scale 0-4)	36	0.46	-
Fulfil role as partner/spouse (scale 0-4)	36	0.89	-
Fulfil role as parent (scale 0-4)	36	0.94	-
Engage in healthy social activities (scale 0-4)	36	0.64	-
Daily life functioning			
Perform daily living activities (scale 0-4)	38	0.61	-
Occupational wellness			
Meet regular responsibilities at work/school (scale 0-4)	37	0.57	-
Reported arriving late to work/school	36	-	0.55 (0.13-0.27)
Reported absence from work/school	36	-	0.60 (0.34-0.86)
Engagement in continuing care programs/ services			
Received mental health services	38	-	0.67 (0.43-0.90)
Received addiction services	36	-	0.55 (0.28-0.82)
Engagement in 12-step program (home group)	37	-	0.65 (0.30-0.90)
Overall quality of life and life satisfaction			
Perceived quality of life (scale 0-4)	37	0.49	-
Satisfaction with…			
Intimate relationships (scale 0-4)	37	0.59	-
Family relationship (scale 0-4)	37	0.64	-
General level of happiness (scale 0-4)	37	0.36	-
Living situation (scale 0-4)	37	0.60	-
How life is going (scale 0-4)	37	0.47	-
Work/school situation (scale 0-4)	37	0.58	-

†*Confidence interval*

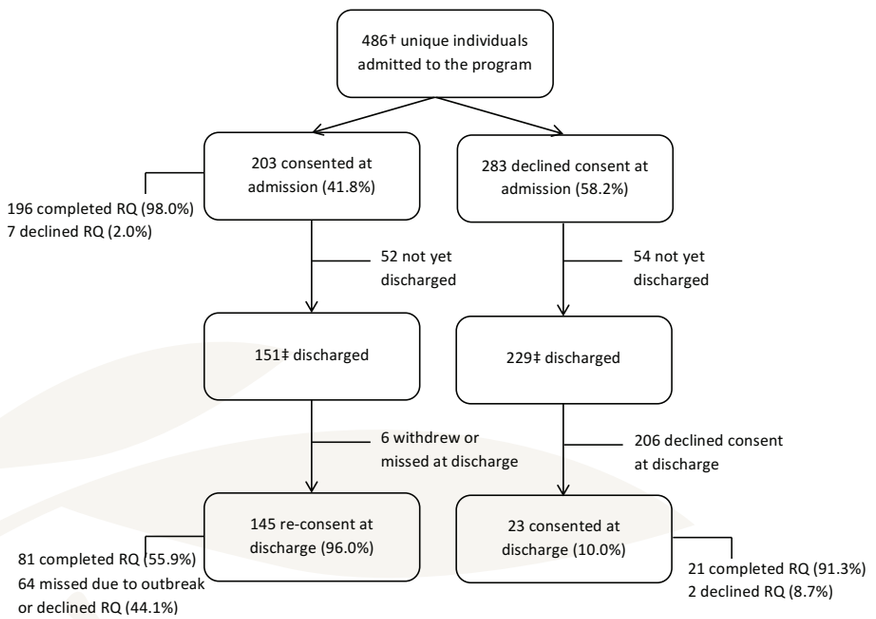
TABLE 3. CHARACTERISTICS OF CONSENTERS AT ADMISSION AND NON-CONSENTERS

Patient Characteristics	Total Patients (n=486)	Consenters (n=203)	Non-consenters (n=283)	*P* value*
Gender, % male	66.0% (320)	67.3% (136)	65.0% (184)	0.60
Age, years (range)	41.7, (19-73)	41.4 , (19-65)	41.9, (19-73)	0.63†
Education				

8th grade/ less	1.2% (6)	0.50 (1)	1.7% (5)	0.11
9-11 grades	7.6% (37)	4.5% (9)	9.9% (28)	
High school	20.2% (98)	21.8% (44)	19.1% (54)	
Some College/ University	25.4% (123)	25.7% (52)	25.1% (71)	
Technical/ trade school	7.4% (36)	6.4% (13)	8.1% (23)	
Diploma/ bachelor's degree	25.8% (125)	25.3% (51)	26.2% (74)	
Graduate degree	12.4% (60)	15.8% (32)	9.9% (28)	
Marital Status				
Never Married	30.7% (149)	32.2% (65)	29.7% (84)	0.76
Married	32.8% (159)	30.2% (61)	34.6% (98)	
Partnered/ Significant Other	13.8% (67)	13.9% (28)	13.8% (39)	
Separated	13.8% (67)	15.8% (32)	12.4% (35)	
Divorced	8.0% (39)	7.4% (15)	8.5% (24)	
Widowed	0.8% (4)	0.5% (1)	1.1% (3)	
Substance use				
Alcohol Use	68.9% (334)	65.4% (132)	71.4% (202)	0.16
Drug Use	31.1% (151)	28.7% (58)	32.9% (93)	0.33
Both alcohol and drugs	21.7% (105)	20.3% (41)	22.6% (64)	0.54
Presenting Diagnoses				
Substance Use Disorder	99.8% (484)	99.5% (201)	100% (283)	0.42‡
Mood Disorders	33.4% (162)	38.1% (77)	30.0% (85)	0.06
Anxiety Disorders	34.2% (166)	34.2% (69)	34.3% (97)	0.98
Treatment Stream				
AMS	80.4% (390)	83.7% (169)	78.1% (221)	0.25
AMS partial PTSD stream	18.6% (90)	15.8% (32)	20.5% (58)	
AMS-PTSD Stream	1.0% (5)	0.5% (1)	1.4% (4)	

**Represents the significance value associated with chi-square statistic testing the difference between consenter vs. non-consenter*
†Represents the significance value associated with pooled sample T-test testing the difference between consenters vs. non-consenters
‡Represents the significance value associated with the Fisher's Exact Test testing the difference between consenters vs. non-consenters
Abbreviations: AMS = Addiction Medicine Service; PTSD = Post-traumatic Stress Disorder

FIGURE 1. ***Preliminary Participation Rates (April 1, 2015 - September 30, 2015)***



RQ = Recovery Questionnaire, †Estimate based on hospital administrative data reflecting the number of unique individuals admitted directly into the program from April 1 – September 30, 2015, ‡Estimate based on hospital administrative data reflecting the number of unique individuals who were admitted to the program from April 1 – September 30, 2015 and discharged over the same time period.

CJA–JCA

Adaptation of an Acute Psychiatric Unit to a Concurrent Disorders Unit to Increase Capacity and Improve Patient Care

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ABSTRACT

Objectives: Epidemiological studies consistently reveal high rates of comorbidity between addictive disorders and other psychiatric disorders, but few Canadian treatment facilities explicitly focus on concurrent mental health and addiction problems (i.e., concurrent disorders). This manuscript outlines the development of a multicomponent Concurrent Disorders Program (CDP) at St Joseph's Healthcare Hamilton, with particular emphasis on a concurrent disorders inpatient unit.

Methods: Prior to implementation, patient demographic and psychiatric diagnostic profiles were assessed via chart review of four acute units (95 beds) over two months. Diagnostic status, overall psychiatric impairment, and self-confidence ratings were collected in individuals with concurrent disorders who were admitted to the CDP inpatient unit from February, 2014 to September, 2015 (N=353).

Results: In the four acute units, high rates of concurrent disorders (49%) and low rates of addiction treatment planning (6%) were present. Following the development of the inpatient unit, clinical data indicated heterogeneous diagnostic profiles and high levels of psychiatric severity. Following treatment, patient outcome data indicated significant decreases in overall psychiatric impairment based on staff ratings and significant increases in perceived self-confidence in resisting substance use.

Conclusions: Initial patient outcomes show promise for increasing capacity and improving care for those diagnosed with concurrent disorders in an acute psychiatry context. This program may offer useful models and strategies for other psychiatric tertiary care facilities that seek to address concurrent disorders using existing resources.

Objectifs : Les études épidémiologiques révèlent constamment des taux élevés de pathologie morbide entre les troubles d'addiction et autres troubles psychiatriques, mais très peu de centres de traitement canadiens se concentrent explicitement sur les problèmes concomitants de santé mentale et de toxicomanie (à savoir, les troubles concomitants). Ce manuscrit décrit le développement d'un multi-composant Concurrent Disorders Program (CDP) à St Joseph de Hamilton, avec une emphase particulière sur les troubles concomitants dans l'unité des patients hospitalisés.

Méthodes : Avant sa mise en œuvre, les profils de diagnostic démographiques et psychiatriques des patients étaient évalués par l'examen des dossiers de quatre unités aiguës (95 lits) sur une période de deux mois. Le diagnostic, la déficience psychiatrique globale, et le niveau de confiance en soi étaient recueillis et évalués chez les personnes souffrant de troubles concomitants qui avaient été admis à l'unité d'hospitalisation CDP de Février 2014 à Septembre 2015 (N = 353).

Résultats : Dans les quatre unités aiguës, alors que des taux élevés de troubles concomitants (49%) étaient présents, les taux de la planification du traitement de la toxicomanie (6%) étaient très faibles. Suite au développement de l'unité d'hospitalisation, les données cliniques ont indiqué des profils de diagnostic hétérogènes et des niveaux élevés de gravité psychiatrique. Après le traitement, les données sur les résultats des patients ont indiqué une diminution significative de troubles psychiatriques basés sur les notes du personnel et des augmentations significatives de perception dde confiance en soi dans la résistance à l'usage de substances.

Conclusions : Les résultats initiaux des patients semblent prometteurs en vue d'augmenter la capacité

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Key Words: Concurrent Disorders, Acute Psychiatry, Organizational Change, Program Evaluation

et l'amélioration des soins pour les personnes diagnostiquées avec des troubles concomitants dans un contexte de psychiatrie aiguë. Ce programme peut offrir des modèles et des stratégies utiles pour d'autres établissements de soins tertiaires psychiatriques qui cherchent à traiter les troubles concomitants en utilisant les ressources existantes.

Mots-clés : Troubles concomitants, Psychiatrie aiguë, Changement organisationnel, Évaluation de programme

INTRODUCTION

Concurrent disorders, defined as a simultaneous diagnosis of a substance use disorder (SUD) and at least one other psychiatric disorder, pose a major challenge to the Canadian mental health system. Epidemiological studies have consistently reported high prevalence of concurrent disorders.[1–5] For example, in a nationally-representative sample of Canadian adults, the 12-month prevalence of comorbid psychiatric disorders was 2-4 times greater among those with SUDs than among those without comorbid substance use.[3] Similarly, in a study of a comprehensive mental health system in Ontario, Rush & Koegl2 found that the prevalence of concurrent disorders was 18.5%, with the highest prevalence for inpatient programs (27.4%). These findings are comparable to epidemiological studies in the United States and other countries.[1,4,5]

In addition to being epidemiologically widespread, concurrent disorders are associated with a more severe presentation, including high psychiatric severity, poor medication compliance, diminished social relationships, greater difficulty maintaining employment, and unstable housing.[6–8] The association between concurrent disorders and poor treatment outcomes as well as increased burden on mental health system is also well-documented.[9,10] For instance, the rate of hospitalization for patients with concurrent disorders is more than 20 times the rate for patients with SUDs alone and 5 times the rate for mental health disorders alone.[11] Post-treatment relapse rates are also considerably higher in individuals with concurrent disorders.[10]

An enduring challenge in the treatment of concurrent disorders is that treatment services for addiction and other psychiatric disorders are commonly delivered separately.[12,13] Furthermore, mental health-specific treatment programs often contain little addiction-related content or staff training and vice versa. Canadian federal mental health advisory organizations (e.g., Canadian Centre for Substance Abuse (CCSA), Health Canada) and provincial governments have responded to this need by disseminating guidelines for diagnosing and treating concurrent disorders.[14–17] Despite these focused efforts, major gaps remain in the availability of services specifically designed for this population.[12,13,18,19]

Given the need for integrated treatment for concurrent disorders, this manuscript reviews the development of a Concurrent Disorder Program (CDP) at St. Joseph's Healthcare Hamilton (SJHH) in Hamilton, Ontario. Over the past four years, SJHH identified treatment of concurrent disorders as a priority within its Mental Health and Addiction Program and developed a multicomponent CDP, including an inpatient program, an outpatient program, and a capacity building team. The focus here is a realistic view of the process by which existing services were re-aligned to better meet the needs of the population. In addition, the focus in this paper is the inpatient program: the impetus for its development, characteristics of the patient population since its inception, and initial patient outcomes. The goal is to present the process by which this took place, findings from the initial cohort, and 'lessons learned' to aid other mental health systems that want to increase capacity for treating concurrent disorders. Finally, a number of ongoing challenges are presented along with directions for ongoing research and refinement of the program.

SJHH CONCURRENT DISORDERS PROGRAM

Strategic Vision and Initial Priorities

Over the last ten years, the need for evidence-based integrated mental health and addiction care for individuals diagnosed with concurrent disorders has been identified as a priority nationally,[14,15,20] provincially,[16,17] and regionally.[21] This need was recognized locally within SJHH based on a number of factors. These included recommendations stemming from internal quality of care reviews following adverse events, feedback from community partners, high recidivism within emergency services and inpatient admissions, and feedback from staff across the organization regarding the need for enhanced skills for concurrent disorders. In addition, a 'snapshot' of current prevalence of patients with documented substance use and any follow-up in the acute inpatient units was obtained via a scan of patient charts on four units, totaling 95 beds, was conducted on two occasions in July and August of 2013 The chart review was conducted by examining mental health diagnoses and any alcohol/substance abuse in the current admission notes as well as any historical notes and collateral (e.g., psychiatric emergency discharge documents). This yielded 177 unique cases (out of 190) (45% female). The most common primary psychiatric diagnoses were mood disorders (46%) and psychotic disorders (31%), with lower rates of other diagnoses (e.g., personality disorders, 12%, generalized anxiety disorder, 2%; post-traumatic stress disorder, 1%). Alcohol (42%) and cannabis (32%) were the most frequently abused substances, followed by cocaine/crack (14%) and opiates (9%). Polysubstance use was also common (38%). The overall prevalence of individuals with concurrent disorders (i.e., at least one SUD and

at least one other psychiatric disorder) among this sample was 49% for both months. Perhaps most salient was that, despite approximately half having concurrent disorders, only 6% of patients had any indication of addiction treatment planning documented in their charts. These data, in conjunction with the existing best-practice recommendations, internal reviews, and feedback from community partners, made increasing concurrent disorders capacity a high strategic priority for SJHH and served as a catalyst for establishing the CDP.

This development was not driven by new funding, but via a purposeful budget-neutral re-alignment of existing acute mental health beds and existing resources to create a dedicated inpatient unit. In terms of a specific framework, the hospital embraced the mental health × addiction quadrant model (Figure 1).[13,22] From this perspective, individuals who are relatively low in mental health or addiction problems are best suited for non-specialist contexts, individuals who are high in mental health or addiction, but not both, are most appropriate for specialist clinics; and individuals who are 'high-high' (i.e., 'high' or acute psychiatric severity and 'high' addiction severity or great addiction impact) are optimally served via integrated care from programs that have expertise in both addiction and mental health treatment. This latter group of 'high-high' individuals is the primary target of the CDP inpatient program. It should be noted that the identification of what defines high-high in itself can be a challenge; however, this framework provided some structure in the decision where to admit individuals (e.g., acute psychiatry vs. concurrent disorders). Finally, there is ongoing work to improve the definition of the target population through a standardized assessment battery conducted on current admitted patients and through the work of the capacity building team working with patients in general acute beds. For the most part, 'high-high' has defined individuals who are certified under the mental health act and who also have complex and/or long-standing substance use issues.

To develop the program itself, similar initiatives across Canada were evaluated. In British Columbia, West One at Vancouver General Hospital, provided a model for a concurrent-specific acute care unit. In addition, the Burnaby Centre, 23 a residential program for concurrent disorders, provided a model of a daily programming schedule, screening and assessment tools, and the use of a token economy system to promote group attendance. In Ontario, the Georgianwood Program for Concurrent Disorders at the Waypoint Centre for Mental Health Care provided a staffing model that fully integrated addiction workers into the treatment team and a modified cognitive behavioural therapy (CBT) model to inform group programming. Finally, the Centre for Addiction and Mental Health provided information outlining the development of a concurrent disorder unit for youth, which was integral for inspiring efforts directed at the integration of outpatient programming in addition to inpatient services.

Based on these programs and the broader literature on treatment for concurrent disorders,[24,25] the mandate of the CDP was defined as providing comprehensive care to individuals with SUDs and concurrent mental health problems, including psychiatric care, psychosocial interventions, withdrawal management, as well as emergency and other acute medical care services. To do so, the CDP has three core components: 1) intensive, integrated, treatment within an inpatient setting; 2) concurrent-informed outpatient programming; and 3) an inter-professional capacity building team charged with enhancing knowledge and providing training related to concurrent disorders across the hospital (Table 1). The focus of this manuscript is the inpatient component.

CORE PROGRAM ELEMENTS

During the start-up phase of the new program, a number of initiatives focused on standardizing the staff's knowledge and skills, as well as program development. While all staff members were purpose-hired to have education in both mental health and addiction, experts from local facilities such as the Center for Addiction and Mental Health (CAMH), Waypoint Center for Mental Health, and Homewood Health Centre assisted in staff and program development.

The newly developed model of care incorporated principles related to integrated treatment for concurrent disorders with particular emphasis on patient-centered, recovery-oriented, and trauma-informed services within a biopsychosocial framework.[24–26] This framework focuses on comprehensive programs and services that are available over time, including assertive outreach, motivation based-treatment, staged interventions, social support interventions, individualized treatment planning, and expressed optimism about recovery.[24,25,27] Recovery-oriented services hold a set of values that direct the care provided to individuals and families experiencing mental illness and addictions.[28] These key values include person orientation, person involvement, self-determination, and growth potential.[29] A recovery-oriented service recognizes many pathways to recovery; it focuses on the person and the environment, as well as the importance of

families, peers and spirituality.[30] Individuals with concurrent disorders often present with multiple health issues that may influence one another, thus requiring interventions that encompass complex co-occurring problems.[31,32] An approach that takes into account the individual's biological, psychological, social, cultural and spiritual dimensions provides an integrative understanding of the individual's addictive behaviours.[33]

The CDP inpatient service offers programming that explicitly focuses on recovery and insight, motivation and change processes, skill development, values-based action and patient engagement, as well as exposure to diverse wellness approaches (e.g., mindfulness, recreational health and fitness). The key elements of the inpatient group program are presented in Table 2. Self-help groups such as Dual Recovery Anonymous, Alcoholics Anonymous (AA) and Narcotics Anonymous (NA) are also offered on-site for all patients hospital-wide as well as community members and the program actively facilitates connecting patients to these groups. Finally, an open family support group is offered monthly and is geared at providing psychoeducation as well as enhancing social supports for patients, their families, and the community more broadly.

INITIAL PATIENT PROFILES AND OUTCOMES

The inception of the inpatient CDP was February, 2014. Referrals are from SJHH psychiatric emergency service (PES) within the general emergency department. Admission to the CDP involved patients are initially screened in PES, who already had identified mental health issues, using a standardized validated alcohol and substance problem screening assessment. The screening utilizes the CAGE-AID[34] to flag individuals who might be appropriate for the CDP. Final admission decisions for flagged individuals are made following a full mental health and addiction evaluation based on assessment standards from the Registered Nursing Association of Ontario. Those identified with a concurrent disorder are referred to the CDP Inpatient Unit (if the individual meets the threshold for psychiatric admission based on complexity and/or severity), Outpatient Clinic, or to other inpatient services but flagged for consultation services offered by the Capacity Building Team (Table 1). The latter helps determine the appropriateness of the referral as well as provide assistance to existing providers on other units in developing a plan of care that is "concurrent informed." To build capacity within PES for accurate screening, an addiction counsellor was assigned to work side-by-side with existing staff for the first six months.

From February 2014 to September 2015, a total of 353 patients were admitted for treatment. Of these, 53 patients were re-admitted at least one additional time after their initial discharge (modal number of admits = 2), for a total of 418 cases on the unit. The duration of treatment varied widely, with an average length of treatment of 22.5 days (SD = 18.1, range 1-170). For patients with multiple admits, the average total treatment duration was 55.3 days (SD = 35.4), with a number of patients receiving treatment for more than four months. Patients were on average 36.4 years old (SD = 13.4, range 18-75) at their first admit, and 33% were female. Diagnostic categories are provided in Table 3. Mood disorders and psychotic disorders were most common, followed by personality and anxiety disorders. The most common substance use disorder was alcohol, followed by cannabis, stimulants (i.e., cocaine, methamphetamine), and opiates. Of note, 14% of the patients had multiple mental health diagnoses and 43% reported polysubstance use.

Two measures of patient outcomes were administered in order to provide initial internal evaluation of the impact of the CDP inpatient unit, the Health of the Nations Outcome Scale (HoNOS)[35] and the Brief Situational Confidence Questionnaire.[36] The HoNOS is a clinician-rated measure of impairment across 12 domains, with individual rated from 0 (no problems) to 4 (severe). The BSCQ is an 8-item self-report measure assessing patients' confidence (from 0 to 100%) that they would be able to resist drinking or using drugs in a variety of situations. Data were available for subsamples of patients based on patient refusal and departure against medical advice (HoNOS = 67%, BSCQ = 48%) Retrospective review of these data was approved by the Hamilton Integrated Research Ethics Board.

As shown in Table 4, there was a significant reduction in HoNOS total score, $t(235) = 26.01$, $p < .001$, $d = 1.44$, corresponding to approximately a 40% reduction in overall impairment. With regard to individual domains, the largest improvements were observed for substance use, depressed mood, and aggressive behavior (ds .81-1.50). We observed a significant increase in BSCQ confidence ratings from admission to discharge, $t(170) = 13.2$, $p < .001$, Cohen's $d = 1.02$ (Table 4). These data suggest that the patients exhibited substantial improvement in overall psychiatric impairment and in perceived self-efficacy in resisting alcohol and other drugs following treatment. However, caution is warranted given that the assessment was by no means comprehensive, is exclusively from individuals who completed the program, and reflects within-subjects changes, without a control in a non-integrated environment.

LESSONS LEARNED

Over the course of implementing the new CDP framework, we sought regular feedback from program staff and also reviewed patient/staff feedback from groups and other program activities. Through this process, a number of 'lessons learned' were identified as targets for continued refinement and development of new approaches.

One of the greatest challenges identified is the management of illicit substances within the CDP inpatient service. Although not a new issue, incidents involving illicit substances on the unit was higher than other units at SJHH, resulting in increased levels of perceived risk and frustration among staff. A related significant concern was anecdotal reports of patients trying substances they had not used before due to the availability on the unit. A standardized approach to daily staff assessment and mitigation of this risk was implemented using a "Red, Yellow, Green" communication protocol which captures the perceived level of substance use on the unit based on observed materials, patient report and patterns of substance use among clients. For each increasing risk level, a protocol of standard procedures was developed with feedback from clinical and security staff. For example, in "Red," all patient visits are restricted to the dining room and the courtyard can only be accessed with staff accompaniment (as opposed to open access when in "green" status). In "Yellow" status, there are increased discussions at community meetings to review communal responsibility for maintaining a safe unit. The status is reviewed, at minimum, at the daily morning safety briefing and the protocol itself is revised accordingly. A key to the success of this protocol has been the engagement of all staff, including support staff (i.e., housekeeping, nutritional services) to increase awareness with respect to risk factors and instilling a basic understanding of substances and specific strategies for working with individuals who have concurrent disorders.

A second significant learning experience pertained to the presence of alcohol-based hand sanitizer on the unit. There had always been local awareness about the potential risk of patients consuming hand sanitizer because of its alcohol content, but higher rates of patients than expected were found to consume hand sanitizer. Safely managing this risk, while also maintaining hospital hand hygiene standards, was challenging. Nonetheless, the team worked with infection control staff to find an acceptable non-alcohol alternative for use on the unit.

Consistent with the overall program philosophy on harm reduction, it has also become clear that rapid access to drug and alcohol lab screening is essential to decrease risk and aid in assessment. One example of how this harm reduction philosophy has been implemented is the use of a voluntary breathalyzer test to verify abstinence from alcohol. There were some initial concerns about refusals to consent to the use of the breathalyzer and that it might be used punitively. However, very few patients have refused to participate. Surprisingly, many clients regarded the breathalyzer readings as a supportive tool, and requested to use the breathalyzer before off-campus passes and upon return to the unit. Another common challenge is the normal acceptable turn-around time for urine screens for inpatient units (i.e., 48-72 hours), but point of care testing can be cost prohibitive and require specialized training under lab accreditation requirements. Instead, a protocol was developed with the hospital lab in which flagged samples can be prioritized and processed within an hour, akin to emergency department laboratory testing turnaround times.

A challenge that is particularly pertinent to successful conversion of existing inpatient units is integrating addiction clinicians with other team members who came from predominately a mental health background. Although addiction workers are embedded in other ambulatory SJHH mental health programs and, of course addiction services, the discipline was a new addition to the inpatient mental health environment. In order to recognize the unique skill set and provide consistent competencies for addiction workers across sites, a professional practice group was formed and representation was added to the SJHH Professional Advisory Committee.

In terms of education, although significant resources were initially invested in staff education, the need for on-going best-practice education[14–17] for staff has emerged as a priority to ensure skills are maintained and to address staff turnover. Staff members are also encouraged to further their learning with other available training (e.g., Concurrent Disorders Certificate Program at CAMH or the Addiction Education Program at McMaster University).

Finally, as a result of 'high-high' patient complexity, it is worth noting that the acuity, agitation and even aggression levels on the unit are persistently quite high. In a non-integrated treatment environment, high severity individuals with concurrent disorders are distributed across units, having a diluting effect. In addition, the unit inherently reflects the crucible of involuntary admission, unstable psychiatric symptoms, and acute withdrawal. Despite the acuity, there remains a high level of staff commitment and a relatively low level of turnover. Nonetheless, the need for staff that are able to manage high levels of severity and volatility is an important consideration for similar organizational adaptations.

LIMITATIONS AND OTHER CHALLENGES

There are limits to the generalizability of the process described here and reasons for caution. The data were

collected in the context of organizational change and clinical practice. As such, they are lower resolution and less comprehensive than from experimental designs. Nonetheless, we believe they are an important window into the program and reflect a data-driven perspective on treatment impact. There are institutional elements that are hard to quantify and may not apply universally. For example, the development of this program would have not occurred without the support of leadership on all levels. This support was critical in ensuring that the initiative continued despite growing pains. For these reasons, rather than being a blueprint for developing integrated concurrent disorders programming, we consider this review as an illustrative example of how this took place in one healthcare setting. Ultimately, our experiences and lessons learned may be applicable in some cases, but not others.

CONCLUSIONS AND FUTURE DIRECTIONS

Since 2013 there has been a sea change in the focus on concurrent disorders at SJHH, reflecting the federal and provincial emphasis on integrated services for this population.[14–17] The development of the CDP at SJHH reflects a systematic process of internal discussions, investigation of external programs and practice recommendations, and program development. This evolution has vastly increased the capacity of the system for providing integrated mental health and addiction treatment and has substantially raised awareness about the high rates of concurrent disorders in a variety of hospital and clinical settings. The clinical data collected over the course of this process suggest that the inpatient unit is indeed providing treatment to the 'high-high' patients it is intended to serve and the preliminary results suggest that the program is having a robust positive clinical impact.

Furthermore, it is important to note that this represents the end of the first implementation phase at SJHH, but not a termination point. Recently, the CDP has developed a strategic partnership with McMaster University's Peter Boris Centre for Addictions Research to increase the rigor of internal research efforts. Future priorities include improving the operationalization of 'high-high' patients for efficient triage, implementing standardized batteries of psychometrically validated assessments using electronic data capture to better characterize patient presentation and treatment response, and evaluating putatively active ingredients within the inpatient group programming. These represent the next steps for optimizing integrated treatment of concurrent disorders at SJHH.

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TABLE 1. CONCURRENT DISORDERS PROGRAM STRUCTURE & OVERVIEW

Concurrent Program	Overview
CD Inpatient Unit	20 acute bed inpatient unit that works alongside and provides treatment for clients with high mental health and high addictions needs.
	Staff mix: psychiatrists, psychologist, nursing (RN/RPN), addictions counselors, social workers, occupational therapist, and recreation therapist.
	Intake requirements: medically stable, acute mental health and addictions needs, requirements are subject to bed flow needs of the hospital.
	Features: programming token economy pathways, emphasizing staged interventions designed to raise insight and engagement in change process, skill development and recovery oriented actions, as well as holistic wellness; standardized screening and assessment tools.
CD Outpatient Clinic	Aims to improve client awareness of the impact of CD by developing and implementing a client-centered treatment plan.
	Staff mix: psychiatrist, psychologist, nursing (RN), addictions counselors, support staff.
	Intake requirements: 18-65 within Hamilton-Wentworth catchment; IQ level > 70; clients with high mental health and addictions needs who have been unsuccessful in previous treatment programs; current substance use or use within the last 6 months.

	Features: Clients are triaged in to an intervention stream based on referral sources, team consultation and assessment needs; inpatient & community clients: psychiatrist stream with transition to GP, addictions counselor 1:1 + GP support, group treatment only + GP support. Groups focus on motivational enhancement, acceptance & commitment, mindfulness, and relapse prevention strategies. Standardized screening and assessment tools and comprehensive psychosocial battery.
CD Capacity Building Team	Aims to provide treatment recommendations for clients with CD within the Mental Health and Addictions Program inpatient units at St. Joseph's Healthcare, as well as provide ongoing support and education to interprofessional teams through capacity building initiatives.
	Staff mix: psychologist, nursing, addictions counselors, and an occupational therapist.
	Intake requirements: currently registered as an inpatient within SJHH's MHAP with high addictions and mental health needs. Client can be at any stage of change with interventions emphasizing patient-centered care and enhancing concurrent capabilities through ongoing capacity building consultations.
	Features: consultation to unit team leaders, intranet resources promoting best practice for CD, community of practice, development and implementation of screening and assessment tools for CD, educational workshops, and group facilitation mentorship process.

Notes: CD = concurrent disorders; GP = general practitioner; SJHH = St. Joseph's Healthcare Hamilton; MHAP = Mental Health and Addictions Program; RN = registered nurse; RPN = registered psychiatric nurse

TABLE 2. PROGRAMMING MODULES IN THE CONCURRENT DISORDERS PROGRAM INPATIENT UNIT.

Domain	Function	Select Group Programming
Recovery/Insight-Focused	Recovery/insight-focused groups offer patients important information about the CDP inpatient unit, their treatment team, and available resources at the hospital and in the community. Groups occur daily, providing an opportunity for patients to check in and participate in daily goals planning as well as receive relevant psychoeducation related to concurrent disorders.	What am I feeling?, High risk situations.
Change-Focused	Change-focused groups assist patients with preparing to make changes in important areas of their life. Groups focus on identify mental health and addictions concerns, addressing mixed feelings related to making changes, and preparing to take steps geared at improving their quality of life.	Group Motivational Interviewing (GMI) for Concurrent Disorders
Skills-Focused	Skills-focused groups offer patients education and practice developing effective coping skills that can help manage physical/psychological distress. Groups focus on proactively managing and coping with challenging feelings and triggers as well as assisting participants in developing the necessary skills to enhance self-efficacy in their everyday life.	Damage Control (Part 1 and 2), Habits & Cravings, Refusal Skills.
Action-Focused	Action-focused groups help reinforce value-based recovery efforts through increased non-substance related activities. Groups emphasize taking action in important life areas that will enhance social supports and help personal recovery efforts. This involves planning and committing to personal and recovery oriented goals as well as putting in to action strategies that will broaden exposure to positive rewards.	Value-based Behavioural Activation for Concurrent Disorders, Harm Reduction: Playing Safe, Setting Boundaries, Life Choices, Post-Acute Withdrawal.
Wellness-Focused	Wellness-focused groups provide patients with information on nutrition, exercise, leisure, medications, and other resources that support healthy lifestyles. Patients are encouraged to engage in various forms of physical activity and practices that will broaden behavioural repertoires using novel approaches that reinforce self-exploration and psychological well-being.	Mindfulness, Journaling, Collaging, Nutrition Group, Understanding Medication, Physical Health Group, Open fitness centre, Walks, Yoga.

TABLE 3. DIAGNOSTIC CHARACTERISTICS OF THE CONCURRENT DISORDERS PROGRAM INPATIENT UNIT

	N/%
Number of Patients	353
Male	67%
Female	33%
Non-Substance Use Psychiatric Disorders	
Mood Disorders	54%
Psychotic Disorders	29%
Personality Disorders	17%
Anxiety Disorders	10%
Adjustment Disorders	5%
Impulse Control Disorders	1%
Multiple Diagnoses	14%

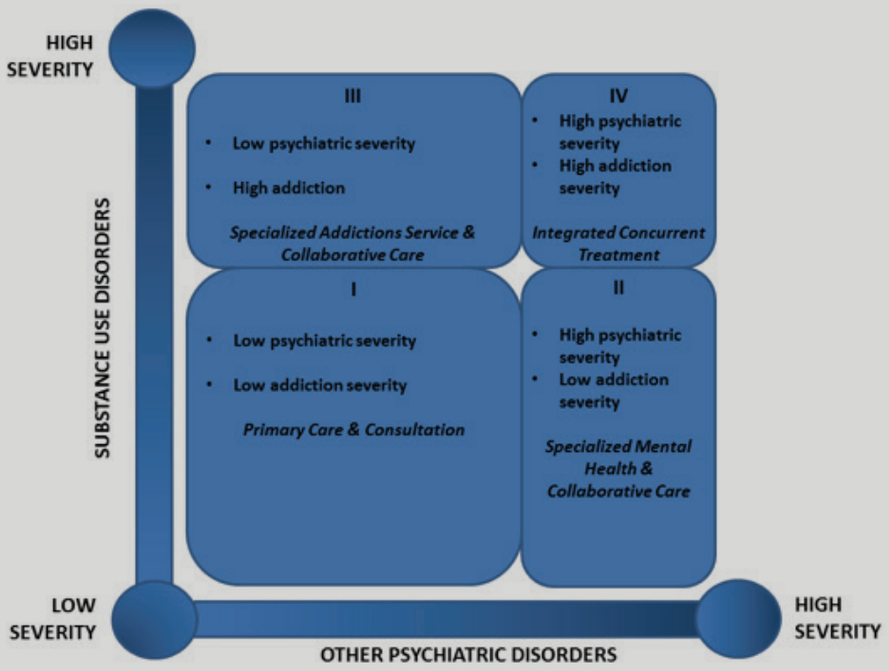
TABLE 3. DIAGNOSTIC CHARACTERISTICS OF THE CONCURRENT DISORDERS PROGRAM INPATIENT UNIT (CONT)

	N/%
Substance Use Disorders	
Alcohol	44%
Cannabis	30%
Cocaine / Crack	12%
Opiates	10%
Methamphetamine	7%
Prescription Drugs	2%
Sedatives	1%
Hallucinogens	<1%
Multiple Substance Use Disorders	43%

TABLE 4. PATIENT OUTCOME MEASURES			
Domain	**Admit**		
Mean (SD)	Discharge		
Mean (SD)	d		
Health of the Nation Outcome Scale (HoNOS)			
Overactive, aggressive, disruptive or agitated behavior	1.57 (1.56)	0.54 (1.00)***	0.81
Non-accidental self-injury	1.01 (1.63)	0.20 (0.67)***	0.70
Problem drinking or drug-taking	3.26 (1.04)	1.45 (1.37)***	1.50
Cognitive problems	0.69 (1.11)	0.36 (0.78)***	0.35
Physical illness or disability	0.82 (1.18)	0.60 (1.02)***	0.20
Hallucinations and delusions	1.37 (1.58)	0.50 (0.88)***	0.71
Depressed mood	1.95 (1.60)	0.83 (0.91)***	0.90
Other mental or behavioural problems	0.61 (1.18)	0.32 (0.76)***	0.30
Relationships	2.94 (1.34)	2.47 (1.42)***	0.34
Activities of daily living	2.57 (1.52)	1.89 (1.47)***	0.45
Living conditions	2.13 (1.71)	1.59 (1.59)***	0.32
Occupation or other activities	2.90 (1.42)	2.48 (1.45)***	0.29
Total impairment score	22.23 (6.04)	13.39 (6.20)***	1.44
Brief Situational Confidence Questionnaire (BSCQ)			
Average confidence rating	47.35 (31.79)	72.91 (23.12)***	1.02

Note: Individual HoNOS domain ratings ranged from 0 to 4, with higher values reflecting greater impairment. HoNOS total impairment score ranged from 0 to 48. BSCQ average ratings ranged from 0 to 100, with higher values reflecting greater confidence in ability to resist drug and alcohol use. SD = standard deviation.
****p < .001.*

FIGURE 1 ***Conceptual framework for addressing co-occurring substance use disorders and other psychiatric disorders (i.e., concurrent disorders).***
Adapted from Treating Concurrent Disorders: A Guide for Counsellors (W. Skinner, Editor).[22]



Co-location of Addiction Liaison Nurses in Three Quebec City Emergency Departments: Portrait of Services, Patients, and Treatment Trajectories

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ABSTRACT

Many people coming to emergency departments (EDs) or receiving other hospital services arrive with an unidentified substance use disorder (SUD). A well-supported approach to reach these patients is the co-location of an addiction liaison nurse (ALN) in the ED or other hospital departments in order to facilitate case identification and linkage to treatment. **Objectives.** The aim is to describe the patients identified by ALNs and their subsequent treatment trajectories. **Method.** Monitoring of 1,482 patients who represented 2,082 service requests addressed to the ALNs by other hospital professionals, and who were assessed by the ALNs in three Quebec City hospitals (monitoring period varying between 6 to 24 months). **Results.** Based on the total service requests, the trajectories can be summarized as follows: going forward from the initial request to: 1) an ALN assessment (89.7% of initial requests), 2) a referral to an addiction program (78.0% of initial requests), 3) attendance at a specialized addiction assessment (50.0% of initial requests), and 4) participation in one or more treatment activities after specialized assessment (41.1% of initial requests). Of those who participated in the specialized addiction program, 88.4% had no active file in the centre, representing 44.2% of the initial ALN requests. **Conclusions.** ALN practice in an ED successfully meets the objective to redirect known clients and attract new clients to addiction treatment programs. Interesting differences were observed between hospitals that indicate efficacy variations based on the particular organization of hospital services and the type of patients coming from the local neighbourhood.

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Keywords: emergency room, liaison nurse, brief intervention

Beaucoup de gens qui viennent aux services d'urgence (SU) ou recevant d'autres services hospitaliers arrivent avec un trouble non identifié d'utilisation de substances (TUS). Une approche très reconnue pour atteindre ces patients est la localisation d'une infirmière de liaison en soin de dépendance (ILD) aux SU ou autres services de l'hôpital, afin de faciliter l'identification des cas et la liaison pour le traitement. **Objectifs.** Le but est de décrire les patients identifiés par les ILDs et leurs parcours de traitement subséquent. **Méthode.** Suivi de 1 482 patients qui ont présenté 2 082 demandes de service adressées aux ILDs par d'autres professionnels de l'hôpital, et qui ont été évalués par les ILDs dans trois hôpitaux de la ville de Québec (période de surveillance variant entre 6 à 24 mois). **Résultats.** Basé sur le total des demandes de service, les parcours peuvent être résumées comme suit: aller de l'avant à partir de la demande initiale à: 1) une évaluation de l'ILD (89,7% des demandes initiales), 2) une recommandation à un programme de la toxicomanie (78,0% des demandes initiales), 3) la participation à une évaluation de la toxicomanie spécialisée (50,0% des demandes initiales), et 4) la participation à une ou plusieurs activités de traitement après une évaluation spécialisée (41,1% des demandes initiales). Parmi ceux qui ont participé au programme spécialisé en toxicomanie, 88,4% n'avaient pas de fichier actif au centre, ce qui représente 44,2% des demandes d'ILDs initiales. **Conclusions.** La pratique de l'ILD dans un SU répond avec succès à l'objectif de rediriger les clients connus et attirer à des programmes de traitement de nouveaux clients souffrant de dépendance. Des différences intéressantes ont été observées entre les hôpitaux qui indiquent des variations d'efficacité en fonction de l'organisation particulière des services hospitaliers et le type de patients provenant du quartier environnant.

INTRODUCTION

Considerable progress has been made in the last two decades towards a strong evidence-base for substance use treatment based on a psychosocial approach[1] and promising results have been reported on pharmacological treatment.[2] However, many challenges remain in terms of the financing, organization, delivery, and performance measurement of the overall network of services that provides these interventions to the in-need population.[3] Two themes dominate the treatment system research literature: (1) the need to broaden the treatment base

beyond the specialized programs specifically mandated to support this population[4] in order to reach a higher percentage of people in need and achieve a better population-level impact;[5] and (2) increased use of evidence-based screening, assessment and treatment protocols, and interventions in order to successfully draw in and involve prospective clients and deliver interventions of sufficient intensity and duration to achieve a positive, sustainable outcome.[6] Protocols within generic health care services that are designed to identify people with substance use problems and either provide them brief interventions or refer them to specialized services hold considerable promise to address both these system-level challenges.

It is well established that many people coming to emergency departments (EDs) or receiving other hospital services arrive with a wide spectrum of unidentified substance use issues ranging from at-risk/ harmful/ hazardous use of alcohol and drugs to substance use disorder (SUD).[7,8] This offers an opportunity to address a SUD when it is highly relevant, especially in situations that are clearly substance use related such as accidents and other injuries, mental health crises, or internal medical conditions. The World Health Organization (WHO) has recommended widespread implementation of screening, brief intervention, and referral to treatment (SBIRT) as an evidence-based practice.[9-13]. The potential of SBIRT is clearly shown in the results of the largest SBIRT trial across multiple health care settings, which proactively screened approximately 460,000 people.[14] This study showed that 22% of those screened had significant substance use problems, with 15.9%, 3.2%, and 3.7% of those who were screened subsequently receiving brief intervention (BI), brief treatment (BT), and referral to treatment (RT), respectively. For those recommended to brief treatment or referral to treatment, self-reported improvements in several domains were significant (general health, mental health, employment, housing, and criminal behaviour). In fact, 104,505 people participated in an effective triaged intervention in this study, including 17,503 who specifically participated in specialized treatment. Implemented on a wide scale, the impact of SBIRT is clear.

Another related approach to broadening the treatment base that is also well-supported in the literature is the co-location of an addiction liaison professional in the ED[15-17] or other hospital departments,[18] in order to facilitate case identification and linkage to treatment. Krupski and her colleagues (2010) found that, among patients showing similar indications of the presence of alcohol and other drugs (AOD) based on file information, clients who were screened and received a brief intervention were more likely than those not screened to enter specialized alcohol and drug treatment (33.8% versus 22.5%, respectively).

Bernstein and colleagues (1997) developed and tested the ASSERT program model (Alcohol and Substance Abuse Services, Education, and Referral to Treatment) to increase access to primary care, preventive services, and the substance abuse treatment system. Workers were trained to screen patients, assess motivation and readiness-to-change, and activate the referral process in the local substance abuse treatment system. Over a one-year period, they screened 7,118 adult patients and 41% were identified as having a SUD. Of those identified as having a SUD, 37% (n=1,096) were enrolled in the ASSERT program and 8,848 referrals were made to a wide range of services: primary care (36%); substance abuse treatment (23%); smoking cessation (25%); other support services (8%). Those keeping a follow-up appointment demonstrated reduced alcohol use and other drinking-related problems.[16]

Using an adapted version of ASSERT, D'Onofrio and Degutis (2010) screened 22,534 adult patients over 5 years. Of these, 24.5% reported drinking over and above the NIAAA (National Institute on Alcohol Abuse and Alcoholism) low-risk guidelines, 15.7% used at least one illicit drug, and 27% received a brief intervention (including 63% who were referred to treatment). Of the 83% who were followed up at one month, 65% had enrolled in the program. The ASSERT program was deemed a major success and is now fully funded by the hospital.[17]

In addition, Dunn and Ries (1997) implemented an on-site, integrated, brief intervention for alcohol and drug use that included assessment, feedback, referral, and recommendations. Ninety-five percent of 363 patients were referred by hospital staff and 95% received a SUD diagnosis. Of those accessing services, 79% had no treatment history, even though 20% were fully motivated and 54% were partly motivated to attend treatment. When contacted at 1-2 weeks follow-up, 35% reported involvement in some substance abuse treatment or 12-step meetings.[18]

Addiction liaison nurses (ALNs) have been placed since 2007 in three hospitals in the Quebec City region in the Province of Quebec, Canada. This paper reports on the profile of the ALN services, the people who were identified and encouraged to seek help, and the subsequent treatment trajectories.[19]

METHOD

THE ALN PROGRAM

Quebec's provincial health ministry has been concerned for some time about the overuse of emergency departments.[20] In the Quebec City region, one hospital (Hospital A) received considerable attention regarding high levels

of emergency service utilization, with a significant proportion of ED visitors having substance use disorders (SUD). In 2007, the treatment centre in the same jurisdiction – the Centre de Réadaptation en dépendence de Québec (CRDQ) – was invited to participate in an ALN pilot project to deal with this situation, with the objective being to put ALNs from the treatment centre directly into the hospital. Based on its success, the ALN staff at the CRDQ expanded the project by placing new teams at two additional hospitals in the Quebec City region in 2008 and 2009. This paper includes patients assessed for a two-year period at Hospital A (July 2007 to July 2009), 15 months at Hospital B (April 2008 to July 2009), and 6 months at Hospital C (January to July 2009). The study was reviewed and approved by the specialized treatment centre ethics board (CÉRT 2009-101).

In addition to responding to the pressures of high ED use, the co-location of ALNs was a strategic initiative of the treatment centre to get more people to turn to their services by reaching out to those with substance use problems who were accessing health care services and who were receptive to information and advice to seek help. It was an explicit objective of the ALN program to draw in new clients with no previous history of alcohol or drug treatment and to re-connect with previous clients who had left services prematurely or were in a relapse phase.

The CRDQ facility provides a broad continuum of services including: assessment and treatment planning, withdrawal management, two levels of outpatient care of varying duration and intensity, and residential care, the latter typically lasting up to 21 days. The initial ALN team comprised two nurses and a psychologist; at the end of data collection, the final ALN team, in the three combined hospitals, comprised six nurses, two psychologists, a social worker, and a psychoeducator.

The ALNs have expertise in substance use disorders, including withdrawal assessment, and an excellent knowledge of intervention services in the area. Although employed by the treatment facility, they worked the majority of their time at their respective ED. They must be socially adept and constantly visit the different departments (not only the ED) to assist hospital staff (nurses, social workers, physicians, etc.) in their efforts to recognize SUD and to refer cases to the ALNs. Specifically, the role of the ALNs is to receive service requests from hospital staff, connect with the medical team, complete patient assessments, conduct brief motivational interventions, and make referrals to the appropriate SUD service (as determined by client needs). A specific written service request is initiated by hospital physicians, psychiatrists, nurses, and social workers for an ALN visit and assessment. Following completion of an assessment by an ALN, patients may be referred to the treatment centre where they receive treatment. Patients are free to accept or refuse to meet with the ALN and can exit the process at any step along the way.

DATA SOURCES

The study is based on two sources: a specific database developed to monitor this project (sociodemographics, assessment scores, referral sources, patient orientation decisions) and the database concerning the trajectories of services received by clients following their referral to the specialized treatment centre by an ALN. The research team asked for access to the mean length of stay in ED before and after implementation of the ALN service but this was not possible for administrative reasons.

SAMPLE

The total sample size was 2,082 (by hospital: A = 1,093, B = 668, C = 321), which was the total number of ALN service requests, representing 1,482 individual adults with a SUD (by hospital: A=774, B=550, C=271). There were proportionately more service requests for men than women (68.6% versus 31.4%) across the three sites, with small differences observed between hospitals (χ^2 (2, 1,595) = 12.24, p = 0.002). The average age was 39.2 years (SD=13.3 years) but a significant difference was observed among hospitals (ANOVA, F(2, 1,594) = 8,186.59, p < .001; see Table 1). The sources of referral to the ALNs were primarily from a psychiatrist or an emergency room physician though there were quite sizeable variations between the three hospitals' practices. For example, in Hospital C, nearly two thirds of referrals came from the emergency nurse versus nearly zero percent for Hospital A; in Hospital A, psychiatrists were frequent referrers; in Hospital C however, ALNs never received referrals from psychiatrists. The same discrepancies were observed concerning the reasons for hospital consultation which followed the hospitals' service offer (strong psychiatric service or not, detoxification department or not, etc.). Requests to ALNs concerning problem gambling in adults (n=33) and youths with AOD use (n=57) were omitted due to the small sample size.

RESULTS

PROFILE OF THE ALN SERVICE REQUESTS

Based on the longest follow-up in the study (Hospital A, n=774) which lasted two years, 78.4% of individuals had one service request, 13.5% had two, and 8.1% had three or more during this period. Table 2 illustrates, for the total number of service requests, the trajectories of the adult SUD cases for whom initial demands were oriented to an ALN at each of the three sites, and for all sites combined. The trajectories can be summarized as follows: going forward from the initial request to: 1) an ALN assessment (89.7% of initial requests); 2) a referral to the CRDQ

addiction program (78.0% of initial requests; 86.9% of ALN assessments); 3) attendance at the admission assessment at the CRDQ (50.0% of initial requests; 64.1% of those referred); and 4) participation in one or more treatment activities after specialized assessment (41.1% of initial requests; 82.1% of those attending the CRDQ). Of those who began the CRDQ program, 88.4% had no active CRDQ file, representing 44.2% of the initial ALN requests. Differences can be observed between hospitals at each step. For example, patients coming from Hospital B attended specialized assessment and services in a higher proportion than other hospitals.

Table 3 shows the client placement decision at the CRDQ. Among patients attending a specialized admission assessment at the CRDQ, 17.9% received no other service, one out of two received outpatient treatment, one out of ten intensive outpatient or inpatient treatment, and one third received other services. This distribution pattern varied substantially across sites. For example, only 7.8% of patients coming from Hospital B received no other services upon assessment, as compared to 25.2% of patients coming from Hospital A.

DISCUSSION

A significant part of ED users had difficulties with AOD[21] and used different substances on an almost daily basis[22] without being identified or referred to adequate SUD services.[23] At a first glance, the EDs seem to be a counterproductive milieu in which to implement SUD intervention due to a lack of time and knowledge among practitioners, a chaotic environment, and unmotivated patients[24] who sometimes showed aggressive behaviour.[25]

Nonetheless, the monitoring of ALN practice in EDs illustrates how it successfully met the goal of identifying patients in EDs and redirecting them to treatment: half of the patients seen by an ALN went to specialized services and, among these, nearly nine out of ten were not receiving services at the centre at that time. Similar results were observed elsewhere: approximately half of the patients met for SUDs at EDs went to a post-ED specialized addiction treatment.[26] Posting ALNs in EDs seems to be an effective means of reaching patients who are otherwise not seen by addiction services.

Interestingly, significant differences are observed among hospitals concerning efficacy indicators for rates of people participating in specialized addiction assessment and partaking in specialized services. These differences across sites are potentially explained by disparities in the organization of services, type of patients coming from the local neighbourhood, type of department specialization in each hospital (e.g., one hospital had a large psychiatric emergency unit, another had a specialized detoxification department, the third had a geriatric unit). For example, patients referred to the ALN at Hospital C were older (this hospital had a geriatric department) and had a well-known history of consulting solely for detoxification. In the latter case, the patients may have wanted no other services once they were detoxed (this hospital had the lowest rate of patients participating in specialized addiction services). Attendance at post-ED intervention can be predicted by such patient variables as being older, unmarried, unemployed, and in the "action" stage of change.[26] Other researchers have observed interactions between patients' aspects (e.g., severity of AOD use, readiness to change) and type of intervention.[27] These observations call for a tuning of ALN services based on the organization of services and patient characteristics to assure a good pairing between patient needs, services, and hospital professionals.

The proportion of patients showing up at EDs in need of treatment for AOD difficulties is estimated at 27%.[28] As an illustrative example, patients in our study referred to the ALN represented less than 1% of all cases consulting EDs in the same period. This observation obviously raises questions about the reasons why many patients arriving with AOD problems were not referred to an ALN. Is it a question of EDs and hospital staff attitudes or a lack of information and knowledge?[24] It seems that professional education is useful, since training strategies can improve the use of SBIRT techniques,[29] but task support also plays an important role.[30]

The gap between patients referred to the ALN and the "in-need" patients begs the question concerning the value of a more systematic screening: should we gradually increase the systematic nature of case finding toward a universal screen? In the approach tested here, there was no trouble finding new cases. However, the capacity of the specialized services to offer treatment to these "new" clients must be weighed before implementing any systematic screening strategies.

Few adolescents were detected through this non-systematic identification process by the ALN and hospital staff. This is coherent with reports of under-identification of substance abusing youth in EDs.[31] An effort must be made to better reach this population. Conversely, informal reports by addiction centre staff revealed frequent establishment of addiction youth services around schools and

centres for neglected and delinquent persons.

The present study had certain limitations. The first concerned the difficulty in estimating the impact of ALN service on ED congestion (e.g., the estimation of mean length of stay and ED use rates for patients seen by an ALN, before and after ALN implementation). The second was the lack of follow-up on treatment persistence for patients referred to addiction services. There was likewise the lack of systematic screening at ED admission which kept us from evaluating the proportion of "in-need" patients who did not receive ALN services. In-depth comprehension of the functioning of each hospital through qualitative research would help to identify facilitators and impediments in the SBIRT process. Finally, the ALNs were full-time, addiction centre employees dedicated to substance abusing patients. How would an ALN perform if she had many other tasks beside the SBIRT process to take care of? Further studies will need to respond to these questions.

Following this first experimentation, the Quebec Ministry of Health promoted the development of ALN services all around the province, providing an implementation guide.[20] This practice is also spreading around the world. Research agendas are being developed to better understand how to screen, what the best brief interventions are, and what variables best predict post-ED access to treatment.[32]

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TABLE 1: DEMOGRAPHICS, SOURCE OF REFERRAL, AND REASONS FOR HOSPITAL CONSULTATION

	Hospital A **2 years** (*n* = 1093)	**Hospital B** **15 months** (*n* = 668)	**Hospital C** **6 months** (*n* = 321)	**Total** (*N* = 2082)
Demographics[1]				
Men	65.0% (*n* = 503)	73.8% (*n* = 406)	70.8% (*n* = 192)	68.6%** (*n* = 1017)
Age (mean (SD))	37.3_a (*SD* = 13.4)	40.0_a (*SD* = 12.2)	43.6_a (*SD* = 13.6)	39.2*** (*SD*= 13.3)
Source of referral				
Psychiatrist	46.8% (*n* = 511)	38.2% (*n* = 255)	0.0% (*n* = 0)	36.8% (*n* = 766)
Emergency physician	36%* (*n* = 381)	23.1%* (*n* = 154)	30.8% (*n* = 99)	30.5%*** (*n* = 634)
Emergency nurse	0.4%* (*n* = 4)	13.5% (*n* = 90)	59.5%* (*n* = 191)	13.7%*** (*n* = 285)
Care units	10.6%* (*n* = 116)	2.7%* (*n* = 18)	3.4%* (*n* = 11)	7.0%*** (*n* = 145)
Social work	4.3%* (*n* = 47)	15.3%* (*n* = 102)	3.7%* (*n* = 12)	7.7%*** (*n* = 161)
Other[2] and Don't know	3.1%* (*n* = 34)	7.3%* (*n* = 49)	2.5% (n = 8)	4.4%*** (*n* = 91)
Reason for hospital consultation				
Intoxication/Withdrawal/Toxic Psychosis/SUD	37.8% (*n* = 413)	33.1%* (n = 221)	59.2%* (n = 190)	39.6%*** (n = 824)
Suicidal crisis or Other problems related to mental health	39.6% (*n* = 433)	46.4%* (n = 310)	11.5%* (n = 37)	37.5%*** (n = 780)
Other[3]	22.6% (*n* = 247)	20.5% (*n* = 137)	29.3%* (*n* = 94)	23.0%** (*n* =478)

***P < .05; **P < .01; ***P < .001 (X^2)**

[1] Male and Age are presented using only unique patients (n=774, 550, 271, and 1482, respectively)
[2] Other referral sources include Child Emergency and Other
[3] Other reasons for hospital consultation includes Psychosocial crisis, Physical health problems, Physical problems related to substance use, Other reasons, and Don't know

Note. χ^2 comparisons are done for each row. When a significant difference is observed in a row, the Standardised Residual of Pearson is used to identify the cells presenting a proportion different from the expected one. A Standardised Residual of 2 or more is significant at p < .05, and is noted with an asterisk in these cells. For the 'Age' variable, means in the row sharing subscripts are significantly different from each other (ANOVA and Post Hoc Bonferroni test).

TABLE 2: TRAJECTORIES OF SUD CASES FROM THE INITIAL SERVICE REQUEST THROUGH EACH STEP

			Hospital A 2 years	Hospital B 15 months	Hospital C 6 months	Total
Step 1	CRDQ's LNA initial service request	*n*	1093	668	321	2082
Step 2	Complete LNA	*n*	1015	*n* = 584	*n* = 269	1868
	assessment at the hospital	% of step 1	92.9%	87.4%	83.8%	89.7%***
Step 3	Referred to the CRDQ	*n*	861	525	237	1623
	following LNA	% of step 1	78.8%	78.6%	73.8%	78.0%*
	assessment at the hospital	% of previous step	84.8%	89.9%	88.1%	86.9%*
Step 4	Participate in admission specialized assessment at	*n*	523	386	132	1041
	the CRDQ following ALN referral from the	% of step 1	47.8%	57.8%*	41.1%*	50.0%***
	hospital	% of previous step	60.7%	73.5%*	55.7%	64.1%***
Step 5	Receive other services	*N*	391	356	108	855
	from the CRDQ	% of step 1	35.8%*	53.3%*	33.6%*	41.1%***
	following specialized assessment	% of previous step	74.8%	92.2%*	81.8%	82.1%***

*$p < .05$; **$p < .01$; ***$p < .001$ (χ^2)
Note. χ^2 comparisons are done for each row. When a significant difference is observed in a row, the Standardised Residual of Pearson is used to identify the cells presenting a proportion different from the expected one. A Standardised Residual of 2 or more is significant at $p < .05$, and is noted with an asterisk.

TABLE 3: TYPES OF SPECIALIZED SERVICES ATTENDED

	Hospital A 2 years	Hospital B 15 months	Hospital C 6 months	Total
Step 4 : Participate in admission specialized assessment at the CRDQ following ALN referral from the hospital	523	386	132	1041
No active file for SUD treatment at the CRDQ when attending specialized assessment	92.2% (*n* = 482)	88.6%* (*n* = 342)	72.7% (*n* = 96)	88.4%*** (*n* = 920)
Type of specialized services received at CRDQ after specialized admission assessment				
- No services	25.2%* (*n* = 132)	7.8%* (*n* = 30)	18.2% (*n* = 24)	17.9%*** (*n* = 186)
- Outpatient treatment (less than 9 hours / week)	43.8% (*n* = 229)	60.4% (*n* = 233)	43.2% (*n* = 57)	49.9%*** (*n* = 519)
- Intensive outpatient treatment (9 or more hours / week)	11.3% (*n* = 59)	13.2% (*n* = 51)	5.3%* (*n* = 7)	11.2%* (*n* = 117)
- Inpatient treatment	11.9% (*n* = 62)	6.7%* (*n* = 26)	15.2% (*n* = 20)	10.4%** (*n* = 108)
- Other services	36.3% (*n* = 190)	32.6% (*n* = 126)	32.6% (*n* = 43)	34.5%* (*n* = 359)

*$p < .05$; **$p < .01$; ***$p < .001$ (x^2)
Note. χ^2 comparisons are done for each row. When a significant difference is observed in a row, the Standardised Residual of Pearson is used to identify the cells presenting a proportion different from the expected one. A Standardised Residual of 2 or more is significant at $p < .05$, and is noted with an asterisk.

CJA – JCA

Characterizing Substance Use Profiles of Patients In and Out of Opioid Agonist Therapy across the Province of Ontario, Canada

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ABSTRACT

Introduction: Geography is a determinant of health. For persons residing in northern and rural regions in Ontario, evidence shows that they are more likely to be retained in opioid agonist therapy compared to their southern counterparts. The contextual factors associated with this observation, however, are not well known. Polysubstance use is a factor which can influence an indivdual's trajectory during their transition from active injection use to stabilization through opioid agonist therapy. In addition, the role of other characteristics such as age, sex, and substance use history may also differ by geography. Appreciating differences in patient populations can inform clinicans who are designing clinically and culturally appropriate treatment strategies. **Objective:** This study examines the geographic similarities and differences in polysubstance use factors between distinctly different populations including: active injection drug users, active injection drug users who have previously attempted methadone maintenance therapy, and individuals who are actively enrolled in methadone maintenance programing. **Methods:** Using a comparative correlation approach, two provincial-level anonymized data sets were used to characterize polysubstance use across the spectrum of care for Ontario's opioid-dependent population to assess the impact on treatment trajectories of opioid agonist therapy. **Results:** Substance use patterns vary by geography; yet, when in treatment substance use as measured by macro-level urine screening demonstrate similar trends for both Northern and Southern OAT patients. **Discussion:** We show that patient's geography impacts the types of substances which are used. Once in opioid agonist therapy, patient use profiles as well as the impact these factors have on the treatment journey to opioid substitution stabilization appear to be common.

Objectifs: Les personnes défavorisées sur le plan socioéconomique vivant avec la dépendance sont mal desservis par les modèles traditionnels de soins de courte durée, malgré des taux élevés d'utilisation des services. En réponse à ce manque, l'Hôpital Royal Alexandra d'Edmonton a lancé une équipe multidisciplinaire de consultation offrant les meilleures pratiques en matière de stabilisation de la toxicomanie, de promotion de la santé, de réduction des méfaits, de stabilisation sociale, et de connexion en support communautaire. Nous émettons l'hypothèse que l'exposition à cette intervention multi-composante conduira à une meilleure utilisation des ressources en soins de santé par rapport aux soins habituels. **Méthodes:** Un groupe parallèle, pré/post-longitudinal de conception quasi expérimentale, permettra de comparer les patients exposés à l'intervention du site d'Edmonton à des patients exposés aux soins habituels de courte durée de deux établissements de Calgary. Les patients éligibles sont recrutés pour participer à l'étude si elles ont un logement instable, aucun revenu stable, et / ou sont activement en dépendance d'alcool ou d'autres drogues, et sont âgés de 18 ans ou plus. Les données des départements d'administration en services de santé, ainsi que ceux des services sociaux seront compilées pour la période de six mois avant et 12 mois après l'étude. Les inscriptions seront liées à un ensemble de données d'enquête longitudinale à partir des donnés de référence et le suivi des données d'enquête recueillies au cours de la même période. **Résultats attendus:** Le principal résultat attendu est une diminution de l'utilisation des services d'urgence après une période de 12 mois suivant l'inscription. Les résultats secondaires devraient comprendre une stabilisation / réduction de

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Keywords: Harm reduction, opioid agonist therapy, addiction, substance use, methadone

l'utilisation de substance, un début de traitement de la toxicomanie, et des accès aux soins primaires, au logement et au soutien du revenu. **Implications:** Les résultats futurs de cette étude ont le potentiel d'influencer le développement systématique et la mise en œuvre des interventions de soins de courte durée afin de répondre aux besoins des patients du centre-ville avec une dépendance et / ou instabilité sociale.

INTRODUCTION

Opioid-dependence has become a critical public health care issue in Canada. In 2014, Gomes and colleagues (2014a) found that opioid-related death is now the primary cause of death in adults, aged 18 to 35, in the province of Ontario. While opioid-dependence has been a major health issue for over a century, the prolific use of non-prescribed opioids in the general population has become an epidemic [1, 2].

The recognized standard of care for persons with opioid-dependence is Opioid Agonist Therapy (OAT). The OAT approach is a harm reduction strategy which uses methadone or buprenorphine/naloxone to replace a person's physiological dependence on opioids [3-5].

The number of Ontarians registered in OAT has increased during the past two decades. In 2000, there were approximately 6,000 OAT patients, and in 2014, there were over 40,000 patients on the Ontario methadone registry prior to its cancellation in 2015 (College of Physicians and Surgeons of Ontario, 2015).

A long-term goal of OAT is improved patient function through retention in treatment rather than cessation of treatment [3, 6]. An accepted metric for positive OAT treatment outcome is uninterrupted treatment for one year [5, 7, 8]. There is considerable evidence to support that one year treatment retention is strongly correlated to positive outcomes such as reduced drug usage, relapse prevention, reduced hospitalization, reduced mortality, and reduced illegal activity [8-10].

Achieving such service goals is particularly challenging given that the administration routes of opiods may be oral, intra-nasal, inhalation, or injection. Often, transition from oral-use to injection is associated with risky lifestyles, food and housing insecurity, social exclusion, violence, and poor overall health [4, 11]. In addition, persons with opioid dependence often use other substances such as cocaine or other stimulants (64%), anxiolitics (30-50%), or a combination of these substances [12]. Each person's opioid-dependence is individualized, contextualized within a multitude of intersecting socioeconomic, cultural, geographic, and health service factors. In a recent study, Eibl (2015) found that the OAT outcomes for northern residents was significantly better than those of their Southern counterparts.

During the past decade, Public Health Agency of Canada launched a surveillance system to understand the service use patterns of persons with opioid dependence by injection. In 2002, four pilot sites were identified, Victoria, Regina, Sudbury, and Toronto. During Phase I (2003-2005) of the surveillance, three additional Canadian sities (Edmonton, Regina, and Winnipeg) were included. Phase II (2005-2008) expanded to 10 sites adding Central and North Vancouver Island, Prince George, Kingston, Thunder Bay, and the SurvUDI Network. Phase III (2010-2012) added Whitehorse, London, and Halifax [12]. The resultant data, known as ITRACK, offers a national perspective on self-reported injection drug use, dependence, and health- and service-related outcomes. A combination of ITRACK and OAT datasets has the potential for a more complete profile of Ontarians with opioid dependence.

The purpose of this study is to describe Ontarians' distinct patient populations from active injection drug use through stabilized opioid agonist therapy. More specifically, the aim is to compare patient characteristics of active opioid-injection users residing in Northern and Southern Ontario using data from I-TRACK Phase 3 (2010-2012) cohort to new-start patients engaging in OAT. Such findings have the potential to conceptualize OAT service nuances relative to geography.

METHODS

RESEARCH ETHICS

All work proposed in this grant application adheres to the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2). The study has received institutional research ethics board approval from Laurentian University and the Sudbury & District Health Unit Research and Ethics Review Committee.

POPULATION AND DATA COLLECTION

Two separate anonymized patient cohorts were analyzed in this study: i) The Active Use and the Out-of-Treatment patient cohort were derived from the Ontario subset of the Phase 3 (2010-2012) ITRACK Study; this cohort was further stratified into North (Sudbury and Thunder Bay sites) / South (Greater Toronto Area)12. The data were collected from anonymized surveys generally collected at health units, outreach centers, and needle-exchange clinics. ii) The In-Treatment cohort was derived from addiction treatment clinic sites within the same geographic region as the ITRACK population over the same time period (2010 - 2012). For these patients, only first-time treatment episodes were considered. Similarly, In-Treatment patients were stratified into Northern (Sudbury and Thunder Bay) or Southern Ontario (Greater Toronto Area) geographical status. The In-treatment datasets were

derived from anonymized electronic medical records from the Ontario Addiction Treatment Centers (OATC) locations in Northern (Sudbury and Thunder Bay) or Southern Ontario (Greater Toronto Area). Anonymized patient records were captured for new patients (2010 – 2012) with no prior history of treatment in the OATC database. Only records from clinics in similar geographic areas as to those where ITRACK sampling were included in the analysis (Sudbury, Thunder Bay, and Greater Toronto Area), including treatment retention and urine toxicology screening for non-prescribed opioids, cocaine, and benzodiazepines. Because all clinic sites belong to a single clinic network, there is a reasonable uniformity in treatment due to the standardized clinical practice and urine screening policies which adhere to the College of Physicians and Surgeons of Ontario - Methadone Guidelines. A limitation of the dataset is that we are not able to distinguish between injection and non-injection drug users once enrolled in treatment. We only followed the first treatment episode of 'new-start' patients. If a patient discontinued treatment, we did not perform follow up.

COHORT ANALYSIS:

All In-Treatment patients were followed for up-to one year, to a maximum follow-up date of June 30, 2013. Continuous OAT was assessed on the basis of a prescription refill within thirty days of the previous prescription. We defined a patient as having been retained in treatment if they completed at least one year of continuous and uninterrupted OAT. Censoring during study period could potentially occur if a patient left therapy, was transferred to the correctional system, sought care outside of the clinic network, was hospitalized for more than one month, or if the patient died while in treatment.

STATISTICAL ANALYSIS:

Descriptive statistics were summarized for baseline characteristics for each patient group using Prism Graphpad (Version 6). Due to the differing nature of each data source (ITRACK data is self-reported; OATD data are the results of laboratory testing), we do not intend to perform statistical comparisons across groups.

RESULTS:

Two independent datasets were accessed to build a model to understand the continuum of substance use through stabilization in OAT in Ontario. We used the Ontario ITRACK Phase 3 data to define the out-of-treatment drug use profiles, and treatment records from the Ontario Treatment Database for first-time methadone and Suboxone patients during the same time period (2010-2012).

We identified 984 patients who had reported opioid-use (2010-2012) in Ontario as part of the ITRACK Phase III Cohort. From this population, we defined an active use population who had not had interaction with methadone programming within the past six months (N = 665) and the Out-of-Treatment population who had been enrolled in methadone therapy within the last six months (N = 319). The In-Treatment group was derived from a network of treatment clinics (N = 16) in the same geographic regions surveyed for the ITRACK study. From this dataset, we identified first-time patients engaged in opioid agonist therapy (N=1903). Table 1 provides the descriptive statistics for each group and distribution by geographic classification as Northern or Southern Ontario.

The Active-Use group was comprised exclusively of injection drug users as surveys were collected at needle exchange and community outreach clinics in Northern (N= 198) and Southern (N = 467) regions and injection drug use was an inclusion criterion for ITRACK. Survey results indicate that substance use profiles differ between Northern and Southern users. Figure 1 illustrates that the Active Use and Out-of-Treatment group in Northern Ontario had the highest proportion of prescription opioid and specifically OxyContin injection at 76.3% and 68.2%, respectively. Southern participants from both the Active Use and Out-of-Treatment group also reported injecting prescription opioids, albeit at lower rates. However, a notable difference can be observed in the proportion of heroin use between Southern (45.9%) and Northern (17%) participants in the Out-of-Treatment group ($p>0.05$).

With respect to non-opioid substances, cocaine was the most commonly injected non-opioid for both Active Use (North = 79.3%; South =32.5%) and Out-of-Treatment (North = 76.1%; South = 39.4%) groups. However, out-of-treatment patients from Southern Ontario also reported injecting crack and other stimulants at higher rates than the Northern patient group ($p<0.05$). The most common injected non-opioid substance was reported to be cocaine for both the North and South; however, Northern patients reported injecting other simulants including Ritalin, whereas crack and methamphetamine were common in the south (data not shown). Injection of benzodiazepines were reported at higher rates for Northern patients in the Active Use (13.1%) and the Out-of-Treatment (28.4%)

group, while southern patients reported lower rates of benzodiazepine injection (3%) for both groups (p>0.05).

The In-Treatment group were derived from patients receiving care for opioid-dependence from an opioid treatment network across Ontario. Clinics were located in similar geographic regions to the ITRACK derived cohort from 2010-2012. The dataset captured 1274 patients in the Northern region and 629 in the Southern region. For the In-Treatment group, we retrospectively analyzed the cohort of patients who initiated OAT and collected descriptive statistics for the entire group, the patients remaining at six months, and one year. Table 2 summarizes the patient characteristics as the cohort of in-treatment patients stabilize in care over the course of one year.

Macro-level urine analysis for the first six months of treatment for both Northern and Southern regions demonstrates an obvious decrease in the number of opioid-positive urines screens. Figure 2 represents the proportion of all urine screens which test positive for the cohort of patients who were retained in therapy for one year. At treatment outset, over 60% of urine screens tested positive during the first week of treament. The number of positive urines decreased to 40% within the first month, and settled at approximately 25% for both the Northern and Southern groups (Figure 2a). Urine screens for non-opioid substances included cocaine and benzodiazepines. The number of positive urine screens which tested positive for both cocaine and benzodizepines were similar for patients in both Northern and Southern groups (Figure 2 b,c); however the retained group appeared to have fewer cocaine positive urine screens as compared to paitents who were not retained for one year. Benzodiazepine urine screens were similar between groups.

DISCUSSION

In this study, we characterise the substance use profile for opioid-dependent people in Northern and Southern Ontario with the objective of describing three distinct groups: people who are actively injecting drugs and have not engaged in OAT, patients who are actively injecting drugs and have engaged in OAT, and patients in OAT. The polysubstance-use profiles reported in this study demonstrate that substance use patterns vary by geography; yet, treatment as measured by macro-level urine screening demonstrate treatment outcomes once enrolled in OAT are generalizably result in a decrease of exhogenous opioid use for both Northern and Southern OAT patients.

From the ITRACK Phase 3 data described in the present study, we found that users reported different drug use profiles between the North and South. People who inject durgs in the North reported almost exlcusive use of prescription opioids, wherease both heroin and prescription opioids were commonly used for Southern patients. Cocaine was also common to both patients in the North and South; however, crack and crystal meth were more commonly reported among the Southern patients. The trends reported in this study inform the differing substance use profiles between Northern and Southern patients.

The type of opioid a person uses may have differing impacts on various psychological functions. For example, Baldaccino et al., (2015) reported that heroin using patients have deficits relating to impulsivity and strategic planning when compared to those who use prescription opioids [13]. Conversely, a retrospective cohort analysis of methadone patients who either injected prescription opioids or heroin demonstrated no significant difference between outcomes once enrolled in methadone maintenance therapy [14]. Thus, we interpret our results to suggest that differing drug use profiles likely do not account for the favorable retention rates in OAT in Northern patients as compared to Southern patients observed in Eibl et al., (2015) [13, 14].

Once enrolled in the OAT, it is common for an opioid user to cycle in and out of therapy [5]. A recent study reported methadone retention rates in Ontario are approximately 40% at one year [15]. Interestingly, these rates are lower than the treatment retention rate reported from the late 1990's of 60% or more [16]. This phenomena is consistent with observations in other jurisdictions that retention rates have been reported to decrease as access to programming increases. Bell et al., described this phenomena in the Australian context [17]; we believe a possible explanation for this phenomenon is that patients are likely more motivated to stay in treatment when care is more difficult to access. It is worthwhile noting that OAT expanded from approximately 1500 patients in the 1990s to more than 40,000 in the most recent numbers reported by the College of Physicians and Surgeons of Ontariod (CPSO 2015 Methadone Conference). From the ITRACK Phase 3 data, we found that the substance use profile for patients who had engaged in methadone within the last six months was different than the patients who had not yet engaged in the treatment system. For example, the proportion of patients reporting the use of heroin following methadone therapy was notably higher in the South and to a lesser extent also increased in the North. We interpret these data to suggest that patients leaving methadone therapy are more likely to turn to non-prescription opioids in Southern Ontario post-methadone therapy.

With respect to geography, it is interesting to note the higher prevalence of prescription opioids and more reported cocaine use in Northern Ontario as compared to Southern Ontario. These findings point to the

importance of understanding which substances are available to patients in the a given region, especially as more physicians begin to deliver OAT remotely through telemedicine[18]. Our group recently demonstrated that patients in Northern Ontario are retained at higher rates than patients in the South [15]. The findings in this study highlights that availability or use profile of different substances can vary by region. Because different types of opioid may differentially impact psycosocial function, future work to assess the impact of each or multiple substance on treatment retention (and other outcomes) should be a priority area for further study.

In Ontario, when a patient enrolls in methadone therapy, the guidelines set out by the CSPO require frequent urine toxicology screening in order to inform the prescribing physician of the substances which may be in the patient's system prior to prescribing methadone dosing. We used this urine toxicology data to provide a macro view for the patients who were retained in care over one year versus those who were not retained. The data obtained for the In-Treatment cohort demonstrate that OAT is effective at reducing the use of opioids over the course of a year. The data suggest that 90 days could serve as an approximate time frame for the majority of patients to be stabilized on a dose of methadone or buprenorphine which eliminates the use of other opioids. It should also be noted that our data suggest that there may be a patient subpopulation who remain in therapy for one year but are unable to eliminate other opioid use. This patient cohort was observed in both North and South patient groups. There are multiple potential explanations for this observation. Some OAT patients may require other opioids for management of chronic pain. Some OAT patients may take longer to reach a stable dose of methadone which eliminates other opioid use (either because of pharmacokinetic factors requiring a much higher dose or due to multiple missed doses preventing the safe titration upwards of the prescribed dose). We hypothesize that some of these patients in OAT with on-going opioid use are unstable, yet retained patients who are not-responsive to methadone treatment as it is currently offered in Ontario. Work from the NAOMI trial demonstrated that some patients who are non-responsive to methadone could benefit from heroin-assisted therapy [19].

This study employed an unconventional strategy to characterize three distinct opioid-dependent populations and their corresponding substance use profiles on treatment retention in the context of the Ontario setting. We utilized two different data sets, one from an unidentifiable self-report survey (ITRACK Phase 3) and the other via anonymized treatment records from several opioid addiction treatment centers located in the same geographic regions. We believe these data-sets to be representative of the substance users in these areas, but the data is almost exclusively from the outpatient settings, and thus, people being treated in hospitals or correctional facilities would not be represented. Moreover, there are structural differences (self-reported vs quantitative laboratory testing) in the data which prevent statistical comparisons across patient groups. A strength of the ITRACK data is that it provides 'high-resolution' data which is not generally captured at community health units or outreach centers. Similarly, urine drug screen data from the OATC data provides unbiased data relating to macro-level substance use in the in-treatment opioid dependent population. However, we cannot distinguish patients who are injection drug users from non-injection drug users.

CONCLUSION

Taken together, the nature of the data lends itself to informing which substance use factors are at play for different patient populations as a function of northen and souther geography in the province of Ontario. Further study is required to understand which specific substance(s) can act as a barrier to accessing care for people who inject drugs in differing geographic contexts, including Northern and Southern regions of Ontario.

By describing discting groups of opioid-dependent population in different geographies, we found that substance use patterns vary by geography; yet, treatment as measured by macro-level urine screening demonstrated similar substance use trends for both Northern and Southern OAT patients. Understanding the substance use factors which contribute and impede positive treatment outcomes may help those planning and implementing programming directed towards this important patient population, especially in community-based programming. Once engaged in therapy, educating patients on treatment trajectories supported by this study and others may also help increase motivation, limit substance use, and help patients commit to opioid agonist therapy. We recommend the early identification (at 90 days post treatment initiation) for patients who are non-responsive to methadone because alternate harm reduction strategies may be necessary for these individuals to more fully benefit from OAT. We recommend, where possible, that treatment strategies reflect the regional differences. For example, patients where a high prevalence of

benzodiazepine use is detected may benefit from ancillary psychiatric services to assess if post-traumatic stress disorder or another mental health disorder is contributing to continued use. Similarly, if patients are identified as recently leaving methadone therapy, harm reduction strategies including needle exchange and naloxone distribution may be prudent due to the likelihood of these patients relapsing to injecting opioids.

TABLE 1: PATIENT COHORT CHARACTERISTICS BY REGION

			Active Use (ITRACK)			Out-of-Treatment (ITRACK)			In- Treatment (OATD)		
Age			North	South	Total	North	South	Total	North	South	Total
	<25	N	40	26	66	11	10	21	381	121	502
		%	20%	6%	10%	13%	4%	7%	29%	16%	24%
	25-34	N	58	69	127	32	59	91	469	278	747
		%	29%	15%	19%	36%	26%	29%	36%	38%	37%
	35-44	N	59	162	221	27	79	106	277	165	442
		%	30%	35%	34%	31%	34%	33%	21%	23%	21%
	45-54	N	35	166	201	13	72	85	138	123	261
		%	18%	36%	31%	15%	31%	27%	10%	17%	12%
	≥55	N	5	38	43	5	10	15	36	29	65
		%	3%	8%	7%	6%	4%	5%	2%	4%	3%
	Total	N	197	461	658	88	230	318	1301	716	2017
		%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Sex											
	Male	N	132	342	474	40	139	179	640	482	1122
		%	67%	73%	71%	45%	60%	56%	49%	67%	55%
	Female	N	65	123	188	48	92	140	661	234	895
		%	33%	26%	28%	55%	40%	44%	50%	32%	44%
	Other	N	1	2	3	-	-	-	-	-	-
		%	1%	0%	0%	-	-	-	-	-	-
	Total	N	198	467	665	88	231	319	1301	716	2017
		%	100%	100%	100%	100%	100%	100%	100%	100%	100%

TABLE 2: DESCRIPTIVE STATISTICS FOR IN-TREATMENT GROUP

	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH
	All Patients (N=1274)	(N=629)	Patients Retained for 6 months (N=932)	(N=323)	Patients Retained for 1 year (N=730)	(N=225)
AGE (MEDIAN)	30	33	30	34	30	34
SEX (M)	49.5%	67.2%	48.1%	64.6%	46.7%	66.2%
BENZODIAZEPINE USE	37.4%	37.4%	31.4%	33.4%	34.4%	28.9%
OXYCODONE USE	45.5%	46.9%	20.5%	26.3%	16.0%	18.7%
OPIOID USE	48.4%	42.3%	17.3%	19.2%	14.8%	12.9%
COCAINE USE	27.0%	24.2%	18.1%	18.9%	20.5%	18.7%
AVG PEAK METHADONE DOSE	76 mg	69 mg	75 mg	71 mg	76 mg	72 mg

FIGURE 1 (A & B) :

Opioid and non-opioid substance use profile of Active Use (no history of methadone) and Out-of-treatment (enrolled in methadone with the last six months) for Northern and Southern Ontario.

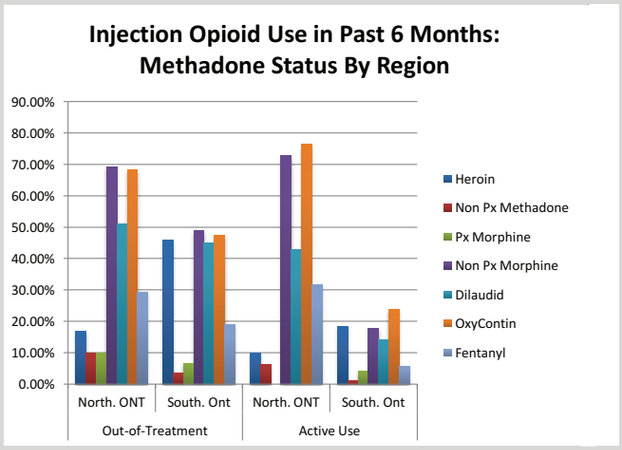
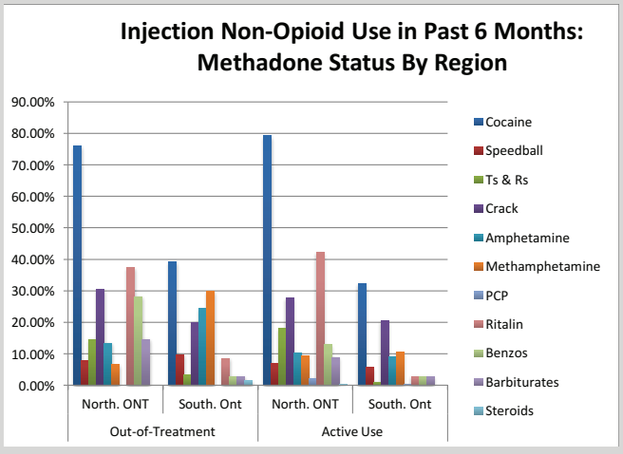


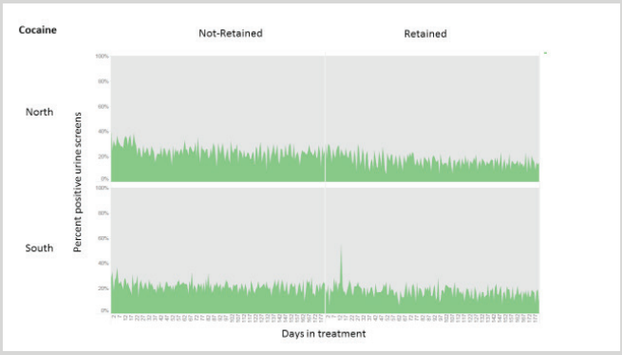
FIGURE 2 (A & B & C)

Macro view of urine drug screening for opioids, cocaine, and benzodiazepines over the course of one year treatment retention by region.

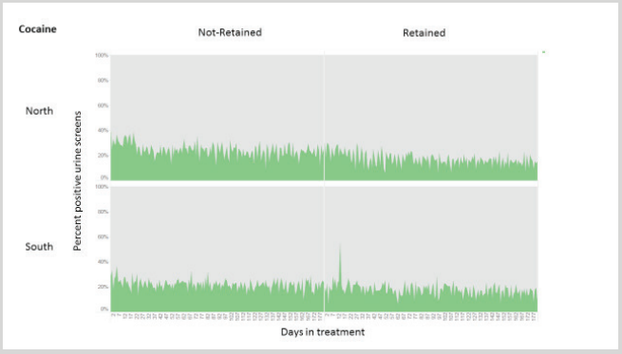


a)

b)



c)



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CJA–JCA

Conceptualizing integrated service delivery for pregnant and parenting women with addictions: Defining key factors and processes

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ABSTRACT

Objectives. Motherhood is a time of increased motivation for entering addictions treatment and changing maladaptive patterns of substance use. However, treatment engagement is limited by challenges in navigating traditionally distinct health and social services to meet complex needs, as well as by unique barriers related to pregnancy and parenting. Integrated approaches to treatment combining services related to substance use, parenting, and maternal and child well-being are associated with improved engagement and outcomes for mother and child. A conceptual model outlining processes involved in effective integrated service delivery is currently lacking.

Methods. Concept mapping methodology was employed with thirty stakeholders involved in service provision, research, and policy to examine their perceptions of processes supporting effective integrated service delivery for this population.

Results. We identified seven thematic clusters comprising statements defining effective integration. Stakeholders described three central client-related clusters, defined as both mother and child. These clusters included processes reflecting accessible, holistic and coordinated care, tailored to specific and changing needs. Four inter-related clusters described a reliance on the dynamic coordination of several key 'players' (e.g., partners, agencies, ministry) at multiple levels (e.g., service delivery, policy). All clusters were characterized as rooted in a set of core values, including non-stigma, non-judgment, and empowerment.

Conclusions. Comprehensive, continuum-based, and client-centered care for mother and child are paramount for effective integrated treatment. Our model extends this view by identifying the agency-, ministry- and partner-related processes that interact to support this type of treatment, and their relative importance. Future directions, including examination of the model in the real world are discussed.

Objectifs. La maternité est un moment privilégié pour trouver la motivation de suivre un traitement contre la toxicomanie et changer les modèles mésadaptés d'utilisation de substances. Cependant, l'engagement au niveau du traitement est limité par les défis de manœuvrer entre les services traditionnellement distincts de la santé et des services sociaux pour répondre aux besoins complexes, ainsi que par des obstacles uniques liés à la grossesse et la parentalité. Des approches intégrées de traitement combinant des services liés à l'utilisation de substances, aux rôles parentaux, ainsi que le bien-être maternel et infantile sont associés à l'amélioration de l'engagement au niveau du traitement et des résultats pour la mère et l'enfant. La description d'un modèle conceptuel soulignant les processus impliqués dans une prestation intégrée efficace des services fait actuellement défaut.

Méthodes. La méthodologie de schématisation conceptuelle a été employé avec trente parties prenantes impliqués dans l'approvisionnement de services, la recherche et la politique dans le but d'examiner leur perception des processus de soutien dans une prestation intégrée et l'efficacité de ces processus pour cette population.

Résultats. Nous avons identifié sept groupes thématiques comportant des déclarations définissant une intégration efficace. Les intervenants ont décrit trois groupes reliés essentiellement à la clientèle mère-enfant. À ces groupes thématiques ont été incorporés des processus incluant des soins accessibles, holistiques et coordonnés, adaptés aux besoins spécifiques et changeants. Quatre groupes interdépendants ont décrit unsoin de s'appuyer sur la

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coordination dynamique de plusieurs 'joueurs-clé' (par exemple les partenaires, les organismes, le ministère) à plusieurs niveaux (par exemple la prestation de services, les politiques de ces services). Tous les groupes étaient caractérisés comme encrés dans un ensemble de valeurs fondamentales, y compris la non-stigmatisation, le non-jugement, et l'autonomisation.

Conclusions. Un traitement global, basé sur un continuum, ainsi que des soins axés sur les besoins du client, dans ce cas la mère et l'enfant, sont primordiaux pour un suivi efficace et intégré. Notre modèle prône ce point de vue en identifiant les processus reliés entre eux, tant au ministère qu'aux agences ou autres partenaires, qui interagissent pour soutenir ce type de traitement, et leur importance dans ce processus. Les orientations futures, y compris l'examen du modèle dans la pratique sont examinés.

Mots-clés: grossesse et rôle de parent, traitement de la toxicomanie, le service et l'intégration de systèmes, la cartographie conceptuelle.

INTRODUCTION

Pregnancy and parenthood are paramount for women's addictions treatment, as this life stage is viewed as a period in which motivation to engage in treatment heightens[1]. Substantial research supports that prenatal substance use confers risk for children's development and mental health[2, 3]. Women with addictions experience parenting challenges, including the ability to sensitively and consistently respond to their children. Myriad, inter-related factors underlie challenges including maternal poverty, mental health disorders, trauma, and limited exposure to effective parenting models[4, 5, 6], as well as physical and emotional consequences of addiction. The relation between addiction and parenting is circular: addiction leads to parenting challenges, which in turn promote painful feelings of inadequacy, guilt, and shame[7]and perpetuate the use of substances[8].

Addressing complex underlying factors necessitates intervention in multiple areas of functioning (social, mental health, addictions) across multiple clients (mother, child). Accordingly, addressing the multifaceted needs of women requires services that traverse traditional divisions of government (e.g., community and social services, health, child welfare)[9]. Siloed approaches to service provision pose numerous barriers for pregnant and parenting women with addictions, and result in low rates of follow through[10]. Women articulate a lack of direct and ancillary services specifically geared toward pregnancy and parenting (e.g., child care, transportation) and fear being reported to child protection services or losing custody of their child [11, 12, 13, 14]. The perceived stigma and judgment that accompany being a pregnant or parenting woman with addiction[12, 13] are cited as key deterrents for help-seeking and treatment engagement.

One response to these issues has been the development of integrated treatment programs (herein, integrated treatment) that provide wrap-around, coordinated services for pregnant and parenting women with addictions. Integrated treatments are available in a number of countries, including Canada, the US, and Australia. While all share the aim of comprehensiveness, individual programs tend to be locally developed to match community needs and resources, resulting in heterogeneity in types and location of services, mandates, and partnerships[15, 16, 17, 18]. Program evaluation, expansion, and the development of best practice guidelines are hindered by limited reporting on treatment components and factors supporting feasibility[19]. Locally developed programs have the advantage of matching services with population needs, but the absence of a common conceptual model of integrated program delivery limits the evolution of this, likely critical, component of the addictions treatment system.

To date, definitions of integrated service for this population have largely reflected a focus on service *types* (i.e., programs that offer on-site pregnancy-, parenting-, or child-related services with addiction services)[15, 16, 18]. Less is known about the *processes* that underlie effective integrated service delivery, such as linkages, cooperation, coordination, and partnerships that may be essential for supporting and effectuating change[17, 20, 21].

A few studies have examined processes of integrated treatment for this population, including models of collaboration between addictions treatment and child welfare services[22] and indicators of success for co-located wrap-around services (e.g., one-stop shop)[23]. These have identified a range of thematic factors thought to support service delivery. The former divided these into contextual factors (e.g., changes in child welfare policy, regional variation in resources); enabling factors (e.g., shared purpose); processes and protocols (e.g., mechanisms for conflict resolution, communication protocols); principles and values (e.g., translating principles and values into practical guidelines); program and practice innovation (e.g., proactive support for safety and relapse prevention); and, shared outcomes capable of accounting for mother and child. The latter conceptualized processes of effective integrated service delivery at the client level (e.g., nurturing relationships with women, meeting women where they are at without judgement, promoting safety), the staff level (e.g., investing in staff development and self-care), and the system level (e.g., building a strong team and increasing access to care). While, together, these studies offer insight into within agency processes and those existing between agency and child welfare, as well as contextual factors, these processes have not yet been examined in concert within a single study. Further, methodology

employed has not afforded examination of the relative importance of processes and factors within the greater gestalt of integration. Research specifying the processes of effective integrated treatment for this population that encompasses multiple models (e.g., home visiting model) and extends beyond single partnerships is needed.

This study addressed these limitations though a mixed methods investigation of expert definitions of effective integrated service delivery for pregnant and parenting women with addictions. We used concept mapping with a diverse group of professionals involved in administration, policy development, service provision, and research to generate, sort, and rank the relative importance of processes of integrated services for this population.

METHOD

CONCEPT MAPPING

Concept mapping is a structured multi-step method that combines qualitative and quantitative analysis to allow for the rich exploration and articulation of a complex construct[24]. Adhering to Kane and Trochim's[24] guidelines, the procedure involved three phases: 1) project planning, 2) idea generation and structuring, and 3) analysis and group interpretation of the resulting map. Feedback from the research team and stakeholders was sought throughout to ensure the understanding, feasibility and relevance of concept mapping activities.

Project planning phase. This study was undertaken as part of a larger provincial evaluation of integrated programs in Ontario, Canada. Phase one involved development of the focal prompt and recruitment of stakeholders. The focal prompt, *Based on your knowledge and experience, effective integrated service delivery means _____* , was developed in collaboration with the core research team for the larger study. It was intended to capture essential ingredients of effective integrated service delivery (services and processes) for this population, and was accompanied by instructions to disregard practical or resource-related limitations and focus on the ideal.

Stakeholders (N=30) were recruited from the advisory committee for the larger evaluation. The final sample included 86% of advisory committee members (30 of 35). Stakeholders brought expertise in research, service provision, management of integrated treatment programs, and related policy development. Years of experience ranged from 6 months to 37 years (M = 10.5 years), and representation was obtained from differing geographical locations of Ontario (i.e., rural, urban, North, South, East and West regions). Participation was voluntary, and some individuals opted not to participate in all tasks (see Table 1).

TABLE 1: NUMBER OF STAKEHOLDERS WHO COMPLETED EACH CONCEPT MAPPING ACTIVITY (N=30)

Concept Mapping Activity	n
Brainstorm Session	17
Sort	20
Rate 1	19
Interpretation Session	
In person	7
Teleconference	11
Rate 2	19

Note. Numbers do not total to 30 as stakeholders did not necessarily partake in all activities

Idea generation and structuring phase. Phase two involved two tasks: a group brainstorming session to generate statements and an online sorting task completed individually by stakeholders. A total of 17 stakeholders convened for a two-hour face-to-face group brainstorming session. Stakeholders were asked to generate as many statements as possible to complete the focus prompt. Stakeholders were also invited to submit additional items anonymously through writing in the goal of increasing participation. In line with Kane and Trochim's[24] statement reduction guidelines, statements that duplicated ideas were combined and statements outside of the project scope were removed resulting in the stimulus set of statements to be sorted.

Using Concept Systems Software[25], 20 stakeholders individually placed the randomly ordered statements from the brainstorming sessions into piles that "made sense to them" or that they felt "belonged together" allowing for the generation of sorts that represented each participant's unique perspective. Stakeholders were instructed to take as much time as they needed to complete the task and that there was no right or wrong way to approach the sort. The only restrictions were that (a) all statements could not form a single pile and (b) there could not be as many piles as there were statements. In addition, stakeholders were asked to avoid creating piles according to priority or value, such as 'important' or 'hard to do' or 'other/miscellaneous' to ensure that items were being placed together based on conceptual or thematic similarity. Finally, stakeholders were asked to develop a conceptual label for each created pile that they felt "best captured its contents."

Analysis and interpretation phase. Phase three consisted of statistical analysis of the sorting data, generation of the concept map and a second group session (1.5 hours) during which 18 stakeholders interpreted the resulting concept map and reached agreement on a label for each cluster. After this session 19 stakeholders completed an online survey in which they were asked to rank-order the clusters from most to least important for integrated service delivery.

RESULTS

A total of 200 statements were generated during the brainstorming task, which when reduced produced a stimulus set of 62 unique statements (see Table 2). Stakeholders sorted statements into 5 to 8 piles (M = 7.4, SD = 2.02).

Analyses on the sorting data were carried out using Concept Systems Software[25]. Three primary data analysis steps contributed to the resulting concept map[24]. First, matrices representing each participant's sorting data were aggregated to create a group similarity matrix with values representing the number of stakeholders who grouped each pair of statements together (regardless of which other statements they included in that pile); higher values indicate greater conceptual similarity. Next, nonmetric multidimensional scaling (MDS)[26, 27] was used to iteratively place each statement as a point on a two dimensional map. The final step involved using Hierarchical Cluster Analysis to partition MDS coordinates (i.e., statements) into non-overlapping clusters reflecting similar underlying concepts according to Ward's algorithm[28]. The statements in Table 2 can be linked using the item number (left-hand column) to the statement (i.e., points) on the map presented. The relative distance between points denotes the stakeholders' perceptions of the degree of similarity between statements. The model generated a goodness-of-fit value of .27, after 10 iterations, falling within the recommended reliability range of .10 to .35[24]. This suggests that the map is a good representation of the data with little discrepancy between the input data matrix (i.e., sort data aggregated across stakeholders) and the representation of these data as points in the two-dimensional space.

Since most stakeholders sorted statements into five to eight piles, cluster solutions were reviewed iteratively, beginning with the largest cluster solution (eight clusters) down to the fewest clusters in the solution (five clusters). Statements comprising each cluster were reviewed to note where discrepancies lay between the various cluster solutions and to determine which solution was most parsimonious and conceptually sensible. The selected solution of 6 clusters was the one that authors felt best struck a balance between detail and interpretability (see Figure 1). The labels and cluster descriptions developed by stakeholders during the interpretation group session were as follows:

Cluster 1. Holistic and Empowering Care for Mom, Baby, and Dyad. This cluster was conceptualized as two distinct but related concentric circles, representing the delivery of service to multiple target groups (i.e., mom, baby, and dyad) and the vision or values that imbue integration (e.g., empowerment, lack of judgment or stigma), respectively.

Cluster 2. Tailored and Continuum-Based Service Components. This cluster reflected the need for what stakeholders described as the "right mix" of services across life stages (i.e., for women and child development), as well as processes that support this type of service delivery. It was acknowledged that a key supportive process was the development of meaningful and mutually beneficial partnerships.

Cluster 3a. Sustainability and Organizational Health and 3b. Investing in Staff. This cluster was seen as 2 distinct subclusters closely related through their reliance on supportive leadership and staff management. Sustainability and health reflected an orientation toward outcomes and cost-effectiveness, "reflecting on what is working and what is needed," as well as remaining up-to-date with research and clinical evidence and ensuring appropriate expertise in program evaluation. Investing in staff reflected the related abilities of programs to identify, attract, retain, and support the continued development and well-being of staff. Stakeholders highlighted that effective service integration requires long-term investment in expertise, training, and mentorship, which includes identifying training priorities and opportunities to access this knowledge. Stakeholders indicated that all staff members ought to be welcoming and knowledgeable about all parts of the system (e.g., "no wrong door").

Cluster 4. Innovative and Coordinated Partnerships. This cluster, which focused on what stakeholders termed "best practices from a between-agency lens," had the smallest inter-item distances on the map indicating a high degree of similarity between statements. This cluster reflected the idea that service providers can together achieve more than what is possible by each in isolation. Stakeholders highlighted the importance of bringing together unlikely partners in a meaningful way such that "each player gets something out of it." Stakeholders stated that partnerships ought to exist to bring identified and shared goals to fruition and should be developed with the client in mind. The primary benefit of forging partnerships was enhancing feasibility for meeting the diverse needs of clients. Cluster 4 also included statements pertaining to the infrastructure (e.g., collocation, shared use of resources) and processes (e.g., finding the intersection of vision, mission, and values of various partners, delineating roles, responsibilities and boundaries) needed to build and sustain effective partnerships.

Cluster 5. Cross Ministry Coordination. This cluster

reflected broader systemic processes that support integration, such as managing risk, integrated funding, increasing capacity, innovation, and knowledge building, exchange, and dissemination.

Cluster 6: Accessible and Coordinated Care for Clients. Whereas Cluster 4 was considered to represent best practices from an agency lens, Cluster 6 did so from a client lens. Each was seen as informing and reinforcing the other, in what stakeholders described as an "infinity loop." Some of the necessary components of this cluster included "enhancing access to care" (e.g., transportation, childcare, waitlists), allowing for evolution in partnerships to meet changing needs, strong communication, and shared goals. Stakeholders emphasized the notion of no wrong door and a streamlined process that minimized client burden and facilitated transitions and information sharing.

Cluster Ranking. Results indicated that Holistic and Empowering Care for Mom, Baby, and Dyad was considered most important, which is consistent with the group's interpretation of this cluster as forming the "foundation that informs the rest of the [map]." This cluster was followed by 2) Accessible and Coordinated Care for Clients, 3) Cross Ministry Coordination, 4) Tailored and Continuum-Based Service Components, 5) Innovative and Coordinated Partnerships, 6a) Sustainability and Organizational Health, and 6b) Investing in Staff in terms of perceived relative importance.

DISCUSSION

Using concept mapping methodology with a diverse stakeholder group of professionals, this study explored the ideal definition of integrated service delivery for pregnant and parenting women with addictions. The resulting framework identified key processes, and illustrated their inter-relations and relative importance. At the top of the map were three clusters focusing on client-centered care, including processes that reflected accessible, holistic, and coordinated care, tailored to specific and changing needs of women, their children and the mother-child dyad. The remaining three interrelated clusters described the reliance of integration on the dynamic coordination of a number of key 'players' (e.g., partners, agencies, ministry) at multiple levels (e.g., service delivery, policy). All clusters were described as rooted in a set of core values, including non-stigma, non-judgment, and empowerment.

While the individual sorted statements more specifically apply to the population under investigation, the higher-level concepts to which they were assigned, or the clusters themselves, reflect themes that have been identified in the literature on integrated addictions programs[22, 23] and collaboration more generally.[29, 30, 31, 32] These findings move the field forward by distilling the inter-relations between clusters, as well as their relative importance.

Holistic and Empowering Care for Mom, Baby and Dyad and Accessible and Coordinated Care for Clients reflect the well-established value of client-centered care[33]. These clusters inform who the client is (mother, child, dyad) and the needs to be addressed in treatment, including potential barriers to supporting engagement (e.g., stigma, judgement, transportation, childcare), and suggest that treatment frequency and duration ought to be commensurate with client articulated goals and experiences. Our concept map and ratings highlight these clusters as being most important for effective integrated service delivery, with the notion of simultaneously balancing care for three clients representing a need unique to treating this population.

While client centered care was at the forefront of the map, clusters relating to the agency, partners, and ministry formed a foundation at the bottom of the map reflecting their role in supporting the enactment of the client-centered care clusters. The most important of these was Cross-Ministry Coordination, which was ranked as being more important than agency clusters: Sustainability and Organizational Health and Investing in Staff, and the partnership cluster: Innovative and Coordinated Partnerships. Cross-Ministry Collaboration is consistent with the contextual challenges to collaboration described by Drabble & Poole[22], including changes in policy and authority for service provision. For example, our stakeholders indicated that when the wellbeing of women and children falls under the purview of separate ministries it poses challenges with respect to caring for multiple clients simultaneously. In turn, this can limit service provision, both in terms of type of service and the recipient[22]. As can be visualized on the concept map, ministry sits between clusters relating to agency and partnerships, suggesting that cross-ministry co-ordination may be a crucial bridge for agency and partner collaboration. The visual distance between agency and partner clusters and the stated importance of partnerships for meeting complex and diverse needs of clients underscores the importance of this bridge. Cross-ministry coordination may be critical for effectuating activities between agency and partner(s) that support collaboration. For instance, ministries may play a role in ensuring sufficient and flexible program funding, supporting the development of conflict navigation and knowledge translation mechanisms, disseminating information to professionals about

the implementation of policies and best practices, funding joint training initiatives, and advancing a vision for collaborative practice[22, 23]. Examining the inter-relations between cross-ministry functioning and other clusters, as well as their relative impact on outcomes, is an important avenue for future investigation and policy-related work.

The final clusters, rated as least important for effective integration, pertained to the agency. These encompassed themes related to outcomes, ongoing evaluation, and staff recruitment, training and professional development. This finding is surprising in light of research highlighting the therapist-client relationship as instrumental for recovery. Covington[34], for instance, suggested that staff facilitate the acquisition of relational skills among women – the foundation for developing healthy relationships – through modeling. Others view these relationships as supporting the formation of a "non-addict identity" and contributing to the development of a positive sense of self and a therapeutic support network[35]. Motz and colleagues[2] and Wong[8] attribute the transformative ability of these relationships to their ability to foster growth and empowerment. Relatively lower ratings ascribed to agency-related clusters may reflect stakeholder impressions that full realization of these "in-house" functions depends upon explicit recognition of client-related clusters in concert with effective partnerships and higher order (i.e., system-level) support. In other words, other clusters may have been viewed as relatively more important for effective integration because they promote agency and staff health.

While we examined service integration in the context of programs designed specifically for pregnant and parenting women with addictions, it is possible that findings offer insight into the processes of service integration more generally. Increased recognition of the prevalence of co-occurring mental and substance use disorders in addictions treatment settings, and the wide range of legal, social, and health problems that commonly accompany addictions has led to calls for greater integration of addictions services with other health and social services[36]. With growth of the integration agenda, clear articulation and evaluation of the processes by which effective integration is achieved is critical.

Strengths of our study include the wide range of expertise that was accessed in generating the concept map, the exploration of relative importance of processes of integration, and the relevance of the model of integration for a range of programs. Although the sample size was in line with recommendations for concept mapping, the relatively small number of stakeholders meant that we were unable to explore moderating factors, such as position (e.g., researcher, clinician, policy-maker) or geographical location. Another limitation was that we were unable to incorporate the perceptions of women who have accessed and participated in these treatment programs. This decision reflects sensitivity to power differentials that exist between client and professional stakeholders, and a commitment to engaging women in research through mediums that are most likely to maximize their participation. To this end, women's perspectives and experiences are currently being sought through focus groups occurring in the larger evaluation of integrated programs. Further research should investigate the extent to which our visual representation of integration aligns with the perspectives of clients, as well as with those of stakeholders in other jurisdictions. Finally, our study is inherently conceptual. While the exercise is helpful in terms of clarifying the concept of service integration for our larger evaluation, studies are needed that assess how this visual representation maps onto practice in the real world, and to explicitly examine the relations between these integration processes and outcomes.

The complex and diverse needs of pregnant and parenting women, and their children, have implications for policy and service provision. The present study supports the notion that effective integration is more than just the co-location of services, and highlights a number of processes that are seen to play a key role in whether services are ultimately effective. These processes traverse multiple levels, pointing toward the importance of integrated policy, administration, and programming across agencies, their partners, and relevant areas of government. Values of client-centeredness, empowerment, non-judgment and holistic care serve as the foundation that guides work in this area and reminds stakeholders of their shared purpose. These insights provide some needed clarity into the concept of service integration that is critical for informing the ongoing development and evaluation of programs and policies.

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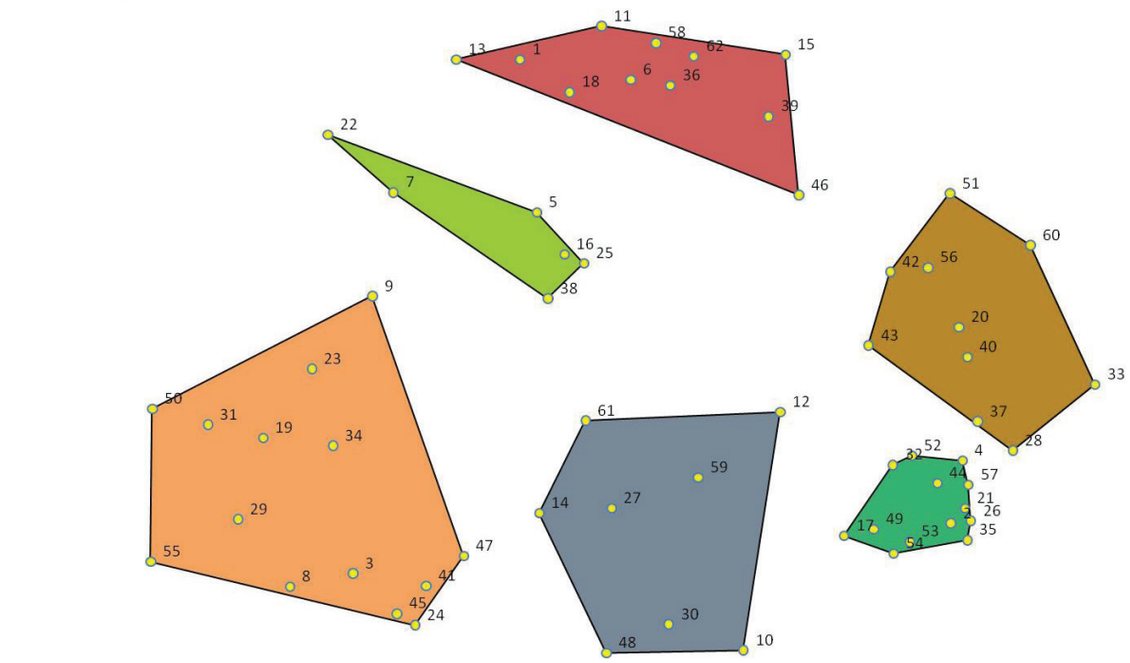
TABLE 2: LIST OF STATEMENTS GENERATED BY PARTICIPANT GROUP ACCORDING TO CLUSTER	
Statement #	**Statement**
	Cluster 1: Holistic and Empowering Care for Mom, Baby, and Dyad
6	recognizing three clients – mom, baby, mom-baby dyad
62	non-judgment
1	making information readily available to mothers
58	empowerment
36	including the client's voice (e.g., in determining treatment focus, partnerships, timelines)
46	wrap around services for women and children
15	coming in and out of the system without judgment
11	looking at needs of whole person - all ages and stages
13	addressing potentially conflicting goals/needs/interests of mom, baby, and mom-baby dyad
18	stigma reduction
39	valuing lived experience
	Cluster 2: Tailored Services on the Care Continuum
6	case management
22	using a determinants of health perspective as a lens for examining client needs
16	identifying short and long-term goals
7	focusing on multiple relationships (e.g., staff, organizations, women, children, families)
25	standardized assessment
38	prevention
	Cluster 3a: Sustainability and Organizational Health
23	reflecting on what is working and what is needed
34	sustainability
55	long-term investment
31	dedicated time and expertise for program evaluation
29	access to literature about evidence
9	building on strengths of staff, management, and women
19	orienting toward outcomes and cost-effectiveness
50	evidence includes clinical experience and wisdom
	Cluster 3b: Investing in Staff
3	supportive leadership
8	secure funding
45	being able to attract and retain competitive staff
41	identifying core competencies for staff
47	system/policy-level thinking
	Cluster 4: Innovative and Coordinated Partnerships
57	integration among services and into community
53	clarity of roles and responsibilities of each partner
54	clarity of procedures for sharing client information
26	respecting the boundaries and/or limitations of each organization
2	creative and shared use of resources
17	clear organizational structure between and within organization
49	service agreements
4	collocation with other frequently accessed services
21	finding the intersection of vision, mission, and values of various partners
32	the whole is greater than the sum of its parts
44	mutual benefit of program and partner
52	collaboration
35	bringing together unlikely partners

	Cluster 5: Cross Ministry Coordination
61	innovation
59	increased capacity
12	a range of experience
48	integrated funding for initiatives
10	data sharing across ministries
27	having a process for navigating conflict, legal issues, and relevant legislation
30	joint education and training
14	risk management
	Cluster 6: Accessible and Coordinated Care for Clients
60	accessible system
42	continuity of care
33	each point of entry has awareness of all the potential parts of the system and services available
56	seamless
28	streamlined process of referral between partners
20	working toward a common goal
51	no wrong door
43	communicate, communicate, communicate
40	partnerships evolve over time as client's needs change
37	shared care plans

FIGURE 1. ***Six Cluster Map of Effective Integrated Service Delivery Illustrating Overall Statements and Components***



Cluster 1: *Holistic and Empowering Care for Mom, Baby*
Cluster 2: *Tailored and Continuum-Based Service Comp*
Cluster 3a: *Sustainability and Organizational Health*
Cluster 3b: *Investing in Staff*
Cluster 4: *Innovative and Coordinated Partnerships*
Cluster 5: *Cross Ministry Coordination*
Cluster 6: *Accessible and Coordinated Care for Clients*

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An international hub of culture, creativity and innovation, Montreal enjoys an enviable reputation as a modern and cutting edge North American centre. Shaped by nearly 375 years of exciting history, Montreal of today is a cultural beacon, a gourmet destination, a digital arts capital and a hotspot for design, architecture and fashion. It is a warm city with European flair that is expressed through diversity, culture, neighborhoods, its downtown area, businesses, fine cuisine and communities. Its dynamic and discovery-rich neighborhoods move to the beat of the joie de vivre and hospitality of its 4 million citizens, while its streets, parks and venues are annually host to its one-of-kind festivals, non-stop nightlife and array of events for all tastes and ages.

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This year we are excited to announce that ISAM will be having a joint scientific conference with CSAM-SMCA (Canadian Society of Addiction Medicine) in historic Montreal, Canada October 20-22, 2016 at the Marriott Chateau Champlain, rated four-diamond, that provides its guests with one of the most central locations of any downtown Montreal hotel close to downtown Montreal's extraordinary boutiques, expansive shopping districts, eclectic restaurants and lively nightlife.

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- Dr. Jurgen Rehm, on Substances and Gambling Prevention & Policies

The one-day Fundamentals in Addiction Medicine course will be offered post-conference on Sunday Oct 23, 2016 and requires separate registration.

Registration as well as the Call for Abstracts (deadline for submission May 1, 2016) and for Symposium (deadline for submission April 1, 2016) is now open – please consult isamweb.org or csam-smca.org for more details.

We look forward to having you join us for what we feel will be a very educational event to those working in the field.

INTERNATIONAL CERTIFICATION EXAM

ISAM's Certification of Addiction Medicine is a credentialing process that assures the public that the holder has the pre-requisite knowledge competence to practice in that field within the confines of his/her medical license. The overall Objective is to meet the needs of an international membership of practicing physicians for standardized, valid and affordable credentialing in addiction medicine.

The examination is composed of 225 multiple choice questions testing knowledge and some clinical judgment. The exam will take 4½ hours and will be administered in two parts (2 hrs 15 min each) with a 15 min health break in between. The main reference book will be the Textbook of Addiction Treatment: International Perspectives (Springer Publishing www. Springer.com).

In 2016 the Exam is being offered in Montreal, Canada on October 19, 2016 the day before the start of the 2016 joint ISAM and CSAM-SMCA Scientific Conference at the Marriott Chateau Champlain. Please see the ISAM webpages for details and application form: isamweb.org

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TEXTBOOK

The Textbook of Addiction Treatment: International Perspectives is a 4-tome reference available through Springer Publishing. Presenting a world view of the spectrum of addictions-related problems across different cultures, this reference volume highlights the main differences and similarities between clinical practices in the field of Addiction Medicine based on neurobiological similarities as well as epidemiological and socio-cultural differences.

This Textbook, which collates the experience and wisdom of some 250 leaders in the field, from 30 countries, is promoted by the International Society of Addiction Medicine (ISAM), founded in 1999, which has as its principal mission the education of practitioners in Addiction Medicine and their trainees worldwide.

Please go to isamweb.com for the links to discounts in cost for ISAM members.

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