Research Article

# The Effect of Group–Based Family Orientation to Community Mental Health Services

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Introduction: A simple initial family orientation session (IGS) focusing on what families might expect by way of treatment and with the provision of community resources if required was designed and implemented in a regional mental health service. The effects of the IGS were examined in terms of clinical measures that align closely with the provincially developed SMART goals for treatment and the nationally developed mental health theme of 'recovery-oriented services', as well as readmission rates and cumulative lengths of stay.
Methods: Employing clinical and registration data from a regional information and registration system, we examined readmission rates and cumulative lengths of both within and between groups exposed and unexposed to IGS over comparable time periods before and after November 2016.
Results: The IGS-exposed group had a greater reduction in admissions and cumulative length of stay compared to the unexposed group, with the greatest reduction in IGS-exposed emergency admissions. Clinical data indicated that both IGS-exposed and unexposed groups were similar.
Conclusions: The findings support the hypothesis that changes in admission rates and overall days in service were potentially an effect of the IGS. The clinical measurement system and the IGS align closely with the provincially developed SMART goals for treatment and the nationally developed mental health theme of 'recovery-oriented services'.

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## Introduction

In this paper, we describe the effect on readmission rates of two groups comprised of those exposed and those unexposed to a post-referral, pre-admission initial family orientation session (IGS) implemented in November 2016. Based on this naturalistic design, we examine two outcomes, readmission rates and cumulative lengths of stay, both within and between these groups over comparable time periods.

A recent qualitative report, presently unpublished but circulated in September 2022 within the organization from which this study was derived, was directly related to another quantitative study based on the same sample, presently published in QEIOS: https://doi.org/10.32388/0DKU2V. Interestingly, one theme emerging from the analyzed documents in the qualitative report was 'recovery-focused treatment', an informal frontline staff-driven initiative, and IGS, a formal staff-driven initiative that is the subject of this study. A description of 'recovery-focused treatment', a national initiative, and IGS is included in this paper, which was written about 3 years before the qualitative report. Both 'recovery-focused treatment' and IGS emerged as dominant themes in the qualitative report noted above, whereas the top-down administratively driven initiatives did not emerge as dominant themes in the 332,392 case note entries analyzed in 210,471 registrations for 116,161 patients (Cawthorpe, personal communication).

The following is a description of recovery-focused treatment based on a national government initiative and subsequently a quantitative analysis of the IGS based on an established regional registration and clinical measurement system. We tested the hypothesis that IGS would have an impact on patients' readmission rates and their cumulative lengths of stay that was in alignment with service optimization (lower readmission rates and cumulative length of stay).

# Background

*Recovery-focused treatment relationship to the initial family orientation session (IGS)*

The Mental Health Commission of Canada (MHCC) defines the basis of recovery-focused treatment in their recently published guidelines:

> "Recovery approaches stand on two pillars. First, they recognize that each person is a unique individual with the right to determine his or her own path towards mental health and well-being. Second, they also understand that we all live our lives in complex societies where many intersecting factors (biological, psychological, social, economic, cultural, and spiritual) have an impact on mental health and well-being."[1]

Recovery-oriented mental health services have become a focus of development and reform for several nations, including Canada.[1] The recent provincial implementation of Alberta Health Services SMART goals (Specific, Measurable, Attainable, Rewarding, and Timely) aligns with recovery-oriented mental health services in respect to patient participation in goal planning and execution.[2]

Recovery-oriented services consist of services in which consumers actively participate in selecting services and developing treatment plans in the process of recovering[2][3][4][5]. Recovery-oriented mental health services are a philosophy and evidence-informed approach to practice that requires staff orientation in addition to patients and their families[5]. Evidence suggests that recovery-oriented mental health services are more effective and efficient than traditional psychiatric medical models[6].

One key to success is related to the measurement of the processes and effects of program implementation[7][8]. Those who reported receiving higher levels of recovery-oriented services also reported better recovery outcomes. Specifically,

three domains of recovery-oriented services, i.e., life goal vs. symptom management, tailored to the individual, and diversity of treatment options, are associated with better overall recovery and specifically three aspects of recovery, namely willingness to ask for help, goal and success orientation, as well as reliance on others[9].

Patient education is a necessary cornerstone of recovery-oriented mental health services. However, patient education has been shown to have effects of relatively short duration[10]. Some services focus on pre-admission information sessions for those seeking treatment. Where studied in areas other than mental health, such as cancer care, orientation sessions are associated with high levels of satisfaction and help participants deal more effectively with their first visit *via* increasing their feelings of relaxation and comfort and reducing their feelings of fear and anxiety. These results support the use of informational support interventions as an effective means of improving care[11]. When measured with respect to children's mental health[12][13][14], evidence supports the use of parent and family orientation and education groups, and even in the context of longer-term multi-family therapy[15].

### Initial Group Session (IGS)

The purpose of this evaluative study was to examine the effect of a family orientation to community child, adolescent, and family mental health services, locally titled by the front-line staff composed quality improvement team as the 'Initial Group Session' (IGS)[1]. This orientation session has been offered weekly since November 2016 as a standard of care and is an expected step for families who, post-referral, have elected to enroll in community-based mental health services to address the mental health concerns within their families. In a one-hour session once per week, attending families were oriented in simple terms to what to expect from assessment and treatment. Families were also oriented to the CAAMHPP continuum of care and additional resources available within the community. The weekly groups were led by two of the community clinics' staff who were familiar with the CAAMHPP continuum of care. Naturally, services were also provided to those who were unable to attend the IGS group sessions (e.g., unexposed group). The IGS intervention was very basic in terms of how families were oriented to what they might expect in terms of assessment and treatment. There was no specialized training involved. The staff assigned to lead the group were generally experienced mental health workers or practitioners with master-level social work or nursing education who were familiar with the system of care.

### Local Context

Recovery-oriented services, a nationally developed theme, consist of services in which consumers actively participate in selecting services and developing treatment plans in the process of recovery. The recent provincial implementation of Alberta Health Services SMART goals (Specific, Measurable, Attainable, Rewarding, and Timely) aligns with recovery-oriented mental health services with respect to patient participation in goal planning and execution [2] and importantly how clinical treatment goals and their related outcomes have been measured over the past 18 years [16] in the Calgary Health Zone's Child and Adolescent, Addiction, Mental Health, and Psychiatry Program (CAAMHPP).

# Methods

## Setting

Data for this paper were collected under ethics ID-REB15-1057. The community clinics (CC) in the Northwest, Northeast, and South of Calgary have operated serving the mental health needs of families and children, originally under the auspices of the Alberta Mental Health Board and more recently within the administration of the Alberta Health Services (AHS) serving that Calgary Health Zone and attendant rural areas. Since 2008, the community clinics (formerly of the Alberta Mental Health Board) have fallen under the AHS administrative auspices within the regional division of the CAAMHPP. The community clinics offer a wide range of psychosocial assessment and treatment services to children aged 5 to 18 years with moderate to severe mental health issues, together with their families. Services include individual, family, and group therapy in an outpatient community clinic setting. The service is accessed via three referral streams from any individual or community source to centralized access mental health (e.g., self, family, schools, social services, community agencies, physicians, nurses, etc.) or directly from any individual, health, or allied health professional or organization, or an internal referral from within CAAMHPP. On contact with the family, an estimated wait time is provided at the time of appointment booking. If required, interpretation and translation services are available, in addition to individuals' access requirements. The key service providers include family counsellors, psychiatrists, psychologists, registered nurses, mental health and addiction counsellors, and social workers. The Community Clinics, formerly named Family, Adolescent, and Child Services, then Child and Adolescent Addiction and Mental Health Community Services, have served the Calgary community for over 40 years under various provincial and regional administrative umbrellas.

## Participants

The sample consisted of two groups: families of patients exposed to IGS and patients' families not exposed to IGS, who were enrolled in CAAMHPP services. The unexposed group was broken into two parts in time, represented by before and after the IGS implementation (November 2016), for the purposes of comparison.

## Data

All patients in CAAMHPP are registered in the regional access and information system (RAIS). The RAIS served as the data repository from which anonymous service information was extracted[17]. Variables included de-identified, encrypted system-assigned patient and registration identifiers, age, sex, clinic, admission date, discharge date, Western Canada Waitlist Children's Mental Health Priority Criteria Score Survey items and total score[18][19], Adverse Childhood Experience Survey items and total score[20][21], and the Measurable Treatment Plan (MTP) problem severity and global function scale scores[16].

## Study Design

A naturalistic quasi-experimental design was employed to analyze the data[22]. To minimize threats to validity [23], the analysis required set time frames so that

the within-group rates of re-admission were comparable before and after IGS exposure. Additionally, the exposed groups were compared to similarly constructed pre- and post-unexposed groups. The two groups (IGS exposed and unexposed) thus formed the basis of comparing within- and between-group differences with respect to the admission rates, with the IGE implementation date forming the time of the pre/post intervals. The IGS-exposed groups formed two natural pre- and post-IGS exposure groups based on November 1, 2016. The unexposed comparison group also formed two arbitrary groups based on before and after the IGS November 1, 2016 start date. The pre-post IGS exposure groups did not include those enrolled only prior to or only after the IGS commencement date. Exposed and unexposed groups were further divided, where noted, into scheduled, representing referrals booked with wait times ideally no more than the provincial benchmark of one month, and emergent, representing presentation to regional hospital-based emergency departments or admission to inpatient units, or both. The data collection was truncated to include similar time intervals pre- and post-IGS implementation and did not include data after 2019 (e.g., COVID-19) so as to improve the isolation of the IGS effects on readmission rates and cumulative lengths of stay, comparing exposed and unexposed groups before and after ISG implementation.

### Analysis

Descriptive statistics of the variables were reported for each group. Within-group and between-group comparisons were based on bivariate comparison of sample sizes, means, standard deviations, and ranges that permit readers to compare the groups quantitatively to find that they are clinically similar (Table 4). Comparisons permitted assessment of whether there were any systematic differences between the groups based on clinical variables. The IGS effect was evaluated based on comparing the within- and between-group readmission rates for those with readmissions in each of the pre- and post-, exposed, and unexposed groups.

## Results

### Sample description

There were 1,352 individuals (mean age 13.1; Std. Dev. 2.9 years) in the unexposed group and 1,368 individuals (mean age 14.4; Std. Dev. 2.6 years) in the exposed group before November 2016. Note that unique individuals can have multiple registrations (Table 1). Before and after November 2016, 67% of the admissions were female, 31% were male, and 2% were self-defined sex. Similarly, family composition was 59% biological, 13% blended, 22% single parent, and 6% other (adoptive, ward, foster, blood relative).

*Admissions*

| Admission Year | Group | | | | |
|---|---|---|---|---|---|
| | **0** | **1** | **2** | **3** | **Total** |
| **2013** | 54 | 0 | 89 | 0 | 143 |
| **2014** | 402 | 0 | 648 | 0 | 1050 |
| **2015** | 630 | 0 | 944 | 0 | 1574 |
| **2016** | 858 | 212 | 1009 | 231 | 2310 |
| **2017** | 0 | 885 | 0 | 1159 | 2044 |
| **2018** | 0 | 539 | 0 | 744 | 1283 |
| **2019** | 0 | 270 | 0 | 436 | 706 |
| **Total** | 1944 | 1906 | 2690 | 2570 | 9110 |

**Table 1.** Registrations by year and total per group.

Table 2 shows the reduction in the registrations per group, with the greatest reductions post-exposure in the IGS-exposed scheduled and emergent groups.

| Group | Admission Reductions % | Difference in number of admissions |
|---|---|---|
| **Unexposed Scheduled** | 2 | 38 |
| **Exposed Scheduled** | 4.5 | 120 |
| **Unexposed Emergent** | 7 | 75 |
| **Exposed Emergent** | 24.1 | 324 |

**Table 2.** Reduction in the registrations per group.

Table 3 shows the reduction in total (summed) length of stay by each group, comparing post to pre-exposed and unexposed groups. Both IGS exposed and unexposed groups showed reductions in total (summed) LOS after November 2016. The percent reduction was greater for the exposed scheduled and emergent groups compared to the post-pre differences of the corresponding unexposed groups.

| Group | Reduction Admission LOS % | Difference (days) |
|---|---|---|
| Unexposed Scheduled | 36 | 110586 |
| Exposed Scheduled | 33 | 152908* |
| Unexposed Emergent | 43 | 9414 |
| Exposed Emergent | 53 | 12091 |

**Table 3.** Length of stay (LOS: days) by group comparing post to pre–November 2016 periods.

*Note that the length of stay is significantly reduced (p < 0.05) in the post–intervention exposed group.*

The reduction in the summed total days comparing post–pre groups for both exposed and unexposed groups was greater for the IGS exposed scheduled and emergent groups.

## Clinical Profile of Groups

Table 4 shows the descriptive clinical variables related to scheduled admissions for the four groups. Note in Table 4 that the clinical variables were similar across all groups. This indicates that overall, the clinical severity of those with repeated admissions before and after November 2016 within exposed and unexposed groups was similar.

| Groups | N | mean | Std. Dev. | min | max |
|---|---|---|---|---|---|
| **All Previous Admissions** | | | | | |
| Admission CGAS | 35634 | 50.81 | 10.61 | 5 | 95 |
| Admission Problem Severity | 19350 | 3.56 | 1.72 | 1 | 20 |
| WCWL–CMH–PCS | 15407 | 31.6 | 12.14 | 3 | 87 |
| ACE score | 13850 | 2.78 | 2.47 | 0 | 10 |
| **Pre–Unexposed** | | | | | |
| Admission CGAS | 1202 | 47.11 | 10.58 | 5 | 85 |
| Admission Problem Severity | 789 | 3.66 | 1.74 | 1 | 13 |
| WCWL–CMH–PCS | 390 | 34.61 | 10.83 | 4 | 65 |
| ACE score | 1383 | 3.47 | 2.71 | 0 | 10 |
| **Post–Unexposed** | | | | | |
| Admission CGAS | 1025 | 47.56 | 10.49 | 5 | 85 |
| Admission Problem Severity | 594 | 3.9 | 1.84 | 1 | 15 |
| WCWL–CMH–PCS | 214 | 34.2 | 10.01 | 9 | 62 |
| ACE score | 1453 | 3.57 | 2.65 | 0 | 10 |
| **Pre–Exposed** | | | | | |
| Admission CGAS | 2067 | 47.75 | 8.67 | 5 | 85 |
| Admission Problem Severity | 1577 | 3.36 | 1.48 | 1 | 15 |
| WCWL–CMH–PCS | 539 | 33.2 | 10.35 | 3 | 75 |
| ACE score | 2092 | 3.53 | 2.61 | 0 | 10 |
| **Post–Exposed** | | | | | |
| Admission CGAS | 1553 | 47.99 | 9.04 | 5 | 95 |
| Admission Problem Severity | 1182 | 3.47 | 1.59 | 1 | 20 |
| WCWL–CMH–PCS | 342 | 34.35 | 8.56 | 14 | 58 |
| ACE score | 2167 | 3.65 | 2.64 | 0 | 10 |

Table 4. Clinical Profile of scheduled admissions by exposed and unexposed groups

## *Summary and conclusions of length of stay differences*

Given the similarity of the clinical profiles of each of the unexposed and exposed groups for scheduled and emergent services, the findings support the hypothesis that changes in admission rates and length of stay (overall days in service) were potentially an effect of the IGS.

# Discussion

Family education and orientation are measurable components of recovery-focused family treatment. Recent examination of the 2002-2017 impact of the CAAMHPP's centralized regional access and intake system (RAIS) has formed the evidence base for evaluating not only clinical outcomes[16][17], but also for providing key information related to system-wide initiatives directed towards becoming trauma-informed, -competent, and -focused[20][21]. In addition, the RAIS's clinical and system-level data provided the basis for successfully evaluating community-level education of physicians in terms of referral quality and capacity[24], winning the team the 2019 President's Award for Research and Innovation. The CC-IGS has provided similar evidence in support of both its continuation and system-wide expansion.

In alignment with the 'Shaping Demand' concept introduced in the RAIS development paper[17], providing education to families appears to help orient them to the expectations and tasks required by engaging with services. The next step is to develop a means to provide such orientation services on a system-wide basis. To this end, CAAMHPP has developed a group to examine how best to achieve this priority goal. This goal is a priority because it may turn out, as noted in the RAIS development paper[17], that educating and orienting families to their mental health issues, system navigation, what to expect in treatment, etc., may via IGS orientation further assist in shaping demand and creating more clinical space for families in greater need of direct mental health services. Families attending IGS or an advanced online orientation may not need to wait for service; rather, they may be better equipped to self-help and/or access alternative resources. A system-wide online orientation model has been developed and piloted, the result being unfortunately in the format of a 20-minute voice-over PowerPoint, rather than the presentation of information tuned to more contemporary social media platforms and viewer expectations (e.g., shorter information segments). Preliminary examination of the video analytics indicates that most viewers do not watch more than a few minutes of the online presentation.

Were this automated online orientation approach to be improved to better match viewer behaviors and attention spans, it might prove more fruitful and be presented more ubiquitously. Such an improvement might necessarily raise the competence bar on both sides of the service. For example, more educated consumers equipped with the lexicon of assessment and treatment would necessarily have matching expectations of the quality of the service delivered. Providing families with relevant *a priori* information may, in fact, satisfy their needs, thereby creating space for those who may require tertiary services, more as a function of their urgency and severity. For example, implementing the WCWL-CMH-PCS[18][16] in April 2002 served the purpose of fairly rationing limited service resources to those most in need, rather than families waiting on the hitherto traditional and arbitrary first-come-first-serve basis. Together with the MTP[16], a reliable and valid basis for case evaluation and prioritization was established and has subsequently proven robust in several areas, especially in relation to community-level education[24].

The next step in achieving the goal of system-wide family orientation and education, a legitimate cornerstone of shaping demand[17], will be to develop, in addition to traditional referral pathways, a fully automated system for family

orientation and problem definition that incorporates guided access to vetted educational resources. If direct access to traditional services is subsequently required, when self-service proves insufficient, families may be better equipped to communicate, navigate services, and engage with service providers. The foregoing results demonstrate that there is a basis on which to formally evaluate the achievement of such goals as a standard of care.

Establishing automated orientation, navigation, and access to automated self-assessment and resources will help systems better service families in the next pandemic or time of crisis or natural disaster[25]. In fact, who knows if the system of care would have responded differently to the last pandemic were the administration to have acted on the first opportunities presented for such developments and linked into technology advancements when offered over the subsequent years. For example, the computerized diagnostic inventory for children (CDISC) was shown over 23 years ago to diagnose depression more accurately in children and adolescents compared to psychiatrists[26].

An ultimate next step will be the ability for services to provide access to comprehensive assessment and treatment via virtual reality and artificial intelligence[27][28]. Assessment and treatment assisted by virtual reality and artificial intelligence (VRAI) is rapidly emerging as a potential standard of care[29][30].

### Limitations

Quasi-experimental designs[22] in real-world studies cannot isolate all the variables that might influence outcomes over time. The benefit of the present study is that the design consisted of data from an embedded clinical measurement system[17] and the ability to measure lead-in time for both exposed and unexposed groups, together with a large sample size, permitted a relative isolation of the IGS effect, the main variable of interest, wherein other potential influences are assumed to be random effects (e.g., access to additional resources or supports), or effects evenly distributed between the IGS-exposed and unexposed dependent groups. The clinical profile analysis in Table 4 appears to support this assumption. The groups were similar in terms of the clinical variables measured at the time of admission, yet compared to the unexposed group, the IGS-exposed group had substantial reductions in both readmissions (Table 2) and cumulative length of stay (Table 3).

While access to additional resources or supports is considered a random effect for the purpose of analysis, in the IGS, staff would explicitly direct families to additional information about community resources. Families referred to the community clinics via the regional central intake services also receive information about community resources with their confirmation of referral and assessment (traditional mail, email, etc.), whereas those referred from emergency services or on discharge from inpatient services may not receive such information as part of their discharge care planning. Hence, the explicit components of IGS causing the observed effects in readmission rates and cumulative length of stay may reside in the face-to-face aspect of the IGS (e.g., paralinguistic or relational factors), rather than the informational content of the sessions. Further research is required to sort out the mechanistic details of the IGS effect. The IGS effect is apparent and, compared to other innovations, is the most economical[31].

## Conclusions

The initial group session (IGS) has proven to be an excellent evidence-based innovation for shaping service demand. IGS was a ground-up, locally developed innovation led by frontline staff as a quality improvement initiative. The IGS created more clinical space through reduced readmissions and lengths of stay at substantially less investment cost and with equal benefit compared to other innovations[31]. The clinical measurement system and the IGS align closely with the nationally developed mental health theme of 'recovery-oriented services'.

While future VRAI developments must necessarily be led and developed largely by technology-competent, capital-based organizations with close industry connections,[30], the IGS in the format described in this paper is very suitable for poorly resourced, human-based, publicly funded services in rural or urban settings that tend to remain static and advance slowly in terms of the standards of care they provide to families, children, and youth affected by mental problems.

## Statements and Declarations

### Ethics

This study involving human participants utilized existing data collected under the approval of the Conjoint Health Research Ethics Board at the University of Calgary (Ethics ID: REB15-1057). The research was conducted in accordance with the Declaration of Helsinki and relevant institutional and national guidelines. Specific procedures regarding participant consent for the original data collection and its secondary use in this study were reviewed and approved by the ethics committee.

### Informed Consent

Patient/participant records used in this study were accessed from a pre-existing regional access and information system (RAIS). Data were de-identified prior to analysis. The requirement for explicit informed consent for this specific retrospective analysis was waived by the Institutional Review Board/Ethics Committee. Further details can be obtained from the corresponding author upon reasonable request.

### Data Availability

The datasets analyzed for this study were derived from the regional access and information system (RAIS). Due to privacy regulations and the sensitive nature of patient mental health data, the raw datasets are not publicly available. Requests for access to aggregated or further de-identified data summaries may be considered by the authors upon reasonable request, subject to institutional policies and ethics board regulations. Inquiries can be directed to the corresponding author.

### Author Contributions

All authors contributed to the design and implementation of the study, collection of data, and reviewed the manuscript. Dr. Cawthorpe extracted and analyzed the data.

## Footnotes

[1] Acronym 'IGS' as sometimes only individuals attend rather than families.

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## Declarations