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Marie Fiedler
Western University

Bryanna Lucyk
Lawson Health Research Institute

Cheryl Forchuk
Western University, cforchuk@uwo.ca

Ava A. John-Baptiste
Western University, ajohnbap@uwo.ca

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CASE 6

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

Marie Fiedler, BHSc (Hons), MPH (Class of 2019)
Bryanna Lucyk, BA (Hons), Research Coordinator, Lawson Health Research Institute
Cheryl Forchuk, RN, PhD (Professor, Western University)
Ava John-Baptiste, PhD (Associate Professor, Western University)

“I don’t know how we’re going to do it Najwa, but really... this needs to stop.”

On that note, Jillian Chang, the Executive Director of Hampden Community House, ended the phone call. It had been a challenging discussion, initiated after Hampden Community House had received two clients by taxi in one week from psychiatric inpatient units at Hampden Health Care.

“Our shelters are no place for people to recover in,” Jillian had stressed on the phone call, “they’re over capacity, unhygienic, crowded, and loud—they are not ideal for anyone, but they are *especially* not ideal for people who have just been discharged from a hospital and are trying to stay healthy.”

As the CEO of Hampden Health Care, the only health care system in the region with psychiatric care units, Najwa D’Souza had been asked to help solve this problem. She was sympathetic to this issue because she really did not want any of her clients discharged to homelessness either, but she was unsure how much she could actually do. It was not only Hampden Community House, the organization that ran all of Hampden’s local shelters, that was running over capacity. Her hospitals were over capacity as well. To admit patients who needed help, they needed to discharge others who no longer needed care in hospital settings.

But this was not the first call they had received from shelters in the region. Hampden Health Care’s leadership team had been dealing with this situation for months and fielding similar phone calls. More than 6% of patients discharged from the psychiatric care units at Hampden Health care were discharged to homelessness. In their annual report on the housing crisis in Hampden, Hampden Community House disclosed that 196 clients of their clients had been discharged to their shelters from psychiatric units within the last year. Understandably, shelter staff from around the region of Hampden were angry that psychiatric clients were intentionally being discharged to homelessness. Moreover, her organization’s mission was, “improving the health of our community and the world by providing exceptional, compassionate care,” and one of its principles was “affirming every person’s dignity and value.” Discharging people to homelessness hardly seemed congruent with these goals and values.

Jillian was right, this needed to end.

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

BACKGROUND

Numerous studies indicate that people who have a mental illness are overrepresented within Canada's homeless population (Hwang, 2001; Public Health Agency of Canada, 2006). In one of the nation's most comprehensive studies of the characteristics of people experiencing homelessness, two thirds of respondents reported having a mental illness diagnosis (Goering, et al., 2002). The relationship between mental illness and homelessness is complex. For some, mental health struggles precede the onset of homelessness (Canadian Population Health Initiative of the Canadian Institute for Health Information, 2009). In these cases, the lack of energy, social isolation, pain, psychosocial distress, challenges maintaining a job, difficulties managing personal finances, and the stigma of mental illness can make securing and maintaining stable housing challenging (Topor & Ljungqvist, 2017; Frith & Johnstone, 2003). For these reasons, people who have serious mental illnesses are also more likely to experience chronic homelessness (Canadian Population Health Initiative of the Canadian Institute for Health Information, 2009). For others, mental health can deteriorate as a result of prolonged homelessness (Frankish et al., 2005). Mental health deterioration has been attributed to the harsh conditions that often accompany homelessness, which include living in crowded shelters, suffering from food insecurity and experiencing prolonged outdoor exposure (Frankish et al., 2005).

Regardless of the circumstances that lead to homelessness, many find themselves in this situation after receiving care at public institutions (Forchuk, 2013a). In general, there is a lack of integration among various public sector services and programs such as housing, financial aid, corrections, health, and child protection services. In particular, housing is often seen as outside the mandate of these other systems (Forchuk, 2013a). As a result, people are sometimes released from the care of public institutions without housing or support networks (Forchuk, 2013a).

Hospitals contribute significantly to this problem. People experiencing homelessness have been found to be high users of hospital services in Canada (Buccieri et al., 2019; Tadros, et al., 2016). On average, they spend four more days per year hospitalized than people who have housing (Highley, 2008). Additionally, once they are discharged, they are four times more likely to be readmitted to hospital within 30 days (Saab et al., 2016). Because of this, recent estimates suggest the annual average cost of hospitalization for someone experiencing homelessness in Canada is \$2,495 compared with \$524 for someone who is housed (Gaetz, 2012; Hwang & Henderson, 2010).

Although these figures strongly suggest that hospitals should have a role in preventing homelessness and providing interventions to reduce homelessness, a national survey of key stakeholders conducted by the Canadian Observatory on Homelessness suggests that, if anything, these institutions are exacerbating the issue (Buccieri et al., 2019):

- Ninety-three percent of respondents agreed with the statement, "hospital discharge planning for patients experiencing homelessness is an issue that needs to be better addressed in my community."
- Eighty-three percent of respondents agreed with the statement that, "persons experiencing homelessness are usually discharged from hospitals to the streets or a shelter."
- Twenty-four percent of respondents agreed with the statement that, "hospitals and homelessness sector agencies work well together to coordinate care."
- Eighteen percent of respondents agreed with the statement that, "persons experiencing

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

homelessness are usually discharged from hospitals with treatment plans that are clear and easy to follow.”

- Eleven percent of respondents agreed with the statement that, “persons experiencing homelessness are usually discharged from hospitals into supportive housing.”

THE NO FIXED ADDRESS MODEL

The week after her phone call with Jillian, Najwa skimmed the literature discussing the problem of discharge to homelessness from psychiatric hospital units. She was horrified at how blind she had been to her organization’s culpability. It was hard accepting the fact that homelessness can not only lead to hospitalization, but that hospitalization can trigger homelessness. However, she felt a sense of commitment and hope realizing that for these same reasons, Hampden Health Care could also be a key site in the prevention of homelessness in her community.

With this in mind, she sent an e-mail to Zola Malik, her lead for knowledge synthesis. In it, she asked her to identify the most effective models for preventing psychiatric discharge to homelessness. She specified she was looking for models that were evaluated in contexts and patient populations similar to Hampden Health Care’s psychiatric units; essentially, she was looking for interventions which were successful in large Canadian hospital systems. She also gave Zola a rough profile of the clients from her psychiatric units who were being discharged to homelessness so she could select models with the highest likelihood of applicability and success for her patients. Many of her clients:

- had diverse ethnocultural backgrounds, ages, and family structures;
- were suffering from physical comorbidities in addition to mental health issues;
- were generally unemployed or underemployed; and
- were recipients of income from Ontario Works¹ or the Ontario Disability Support Program (ODSP)¹.

Two weeks later, Zola set up a meeting to present what she had found.

In the meeting, Zola started by saying, “There’s bad news and good news. The bad news is that there hasn’t been a lot of research examining the links between mental illness, homelessness, and hospital discharge, especially in Canada. The good news is that the research that has been done is coming from London, Ontario, a city that is quite similar to Hampden, so the model for intervention that they have generated seems very applicable to our context.”

Najwa breathed a sigh of relief—she always preferred not having to reinvent the wheel. “That’s wonderful,” she said, “what’s the program called?”

“The *No Fixed Address* program, or NFA for short,” responded Zola.

“So, what did they do exactly?”

“It was a program for clients of psychiatric hospital units who were either experiencing homelessness or at risk of homelessness. Hospital staff referred clients they suspected were at risk of being discharged to homelessness to the NFA program. From there, clients received help

¹ See Exhibit 1 for a description of Ontario Works, the Ontario Disability Support Program (ODSP), acute psychiatric hospital units, and tertiary psychiatric hospital units.

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

from program staff during drop-in hours to identify housing and income support” (Forchuk et al., 2013a).

“Okay, so they connected people to pre-existing community services while in hospital,” summarized Najwa.

“Exactly,” Zola responded. “Community services can be hard to navigate, especially when you’re struggling with mental illness. Having people help clients navigate those services while in the hospital made a real difference.”

Zola took a moment to shuffle her papers before continuing. “That’s the general overview. Like all programs, it evolved over time, so there were three stages that looked somewhat different. In the first stage, the program was studied in a very small, proof of concept, randomized controlled trial. Policies concerning housing and start-up fees were modified for some Ontario Works and ODSP income recipients. The trial enrolled a total of 14 inpatient clients of acute and tertiary psychiatric hospital units¹ who had no history of homelessness before their current hospital admission, who had stable income either through Ontario Works or ODSP, and who were stable psychiatrically when they were discharged” (Forchuk et al., 2008).

“Hmm, that’s a bit of an ideal patient population isn’t it?”

“Yes it was, but it was a small trial, you know?” Zola responded. “Program developers were just looking for proof of concept or lack thereof.”

Najwa considered this. She supposed it was okay as long as the other stages had positive results and incorporated individuals who were more similar to her client population.

Zola continued, “So seven clients were randomly selected to be placed in the treatment arm. This group received streamlined Ontario Works or ODSP income support and rapid access to community start-up funds. Those funds were for things such as rent deposits, first month’s rent, and utility arrears. The NFA team achieved this by negotiating with their local Ontario Works and ODSP offices to change certain procedures for the program’s participants. Managers of these programs were able to fast-track the applications for NFA program participants. They also had access to a Canadian Mental Health Association (CMHA) housing advocate who helped them find housing by giving them information about rental listings and providing them with transportation to viewings. The remaining seven people were placed in a control arm and received ‘usual care’” (Forchuk et al., 2008).

“What was the usual care?” asked Najwa.

“Same as it is here for people at risk of discharge to homelessness. They didn’t receive any income or housing interventions in hospital. They had their acute health care needs met, but that was about it.”

Najwa nodded. “So what differences did they see?”

“All seven clients who accessed the NFA program were housed at follow-up, six months after discharge. For the people who received usual care, six of the seven were experiencing homelessness. So only one person, or 14.3% of their control group, was able to maintain housing without the program’s support. After these preliminary results, the team felt they could

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

not ethically randomize clients in future stages. If these relatively stable clients who had no history of homelessness were becoming and remaining homeless without the intervention, they realized that the more vulnerable clients would probably be the same” (Forchuk et al., 2008).

Randomized controlled trials were often considered the highest form of evidence on which to base decisions. The goal had been to enroll more patients into the trial, but Najwa could understand why the researchers felt they could not ethically continue after seeing the results from the trial with such a pronounced difference between the treatment and control arms after enrolling only 14 patients.

Pressing on she asked, “So what were stages two and three?”

“Stage two involved clients who were receiving acute psychiatric care at a London hospital, either inpatient or outpatient, and who were at risk of being discharged to homelessness. Anyone who met this criterion was invited to participate in the program and its associated study regardless of their financial stability, mental health status upon discharge from psychiatric care, or prior histories of homelessness – they could have experienced homelessness in the past, be presently experiencing it, or be at risk of experiencing it. Participants could be referred to the program by staff or self-refer. So, the NFA team were no longer working with the ideal population of the first study. That said, the services were similar to those of the first study. Ontario Works had a staff member who provided part-time in-person assistance to any Ontario Works applicants or recipients. This meant direct, in-hospital access to community start-up funds and income support. The CMHA once again provided a housing advocate. This individual had access to housing resources, referral applications for supportive housing, and a database of rental listings. The third stage offered the same services, but instead implemented them in a tertiary care psychiatric unit” (Forchuk et al., 2013a).

“So how did they evaluate those stages if not a randomized control trial?”

Referring to her notes, Zola responded. “Stages two and three were studied using a cohort design. They had a larger intervention sample of 251 clients, with 219 receiving acute psychiatric hospital care, and 32 receiving tertiary psychiatric hospital care. According to data tracked by the CMHA housing advocate, 92.5% of program participants who were identified as at risk of becoming homeless, or were already homeless, were housed by the time they were discharged” (Forchuk et al., 2013b).

“That’s incredible,” said Najwa, thinking about the implications. That was a lot of people diverted from homelessness. She was satisfied with those potential results and curious to see how implementing this type of NFA program, stages two and three specifically, would work in her hospitals.

THE NFA PROGRAM AT HAMPDEN HEALTH CARE

Najwa spent the following few weeks poring over as many details of London’s NFA programs as she could. She shared the details of the program and their evaluations with her leadership team. She spent hours imagining and discussing what this type of program would look like in Hampden Health Care. Finally, she sat down with Boku Okafore, her Director of Community Collaborations, to draw up a proposal for a Hampden Health Care *No Fixed Address* program.

They decided that the program would run in Hampden Health Care’s two psychiatric units. One of these units delivered acute psychiatric care and the other delivered tertiary psychiatric care.

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

All clients who were at risk of being discharged to homelessness and who were accessing care from these units could enroll in the program. This meant program participants could presently be experiencing homelessness, or they could be at risk of losing housing. Staff responsible for managing intake and discharge on these units would be instructed to refer people to the program who did not have a fixed address at intake or during discharge planning. Najwa didn't foresee this adding any significant amount of time to these processes because staff were required to collect addresses from clients during both of these patient interactions. To encourage clients to refer themselves if they felt their housing situation was precarious, posters advertising the program would be hung up around the units.

At its core, the pilot program would be run much like the NFA program in London. There would be program office hours held three times a week in each unit. Office hours would be three hours long. Najwa recognized that she was making the assumption that the number of drop-in hours sufficient to serve London's NFA clients would be the same for Hampden Health Care clients. However, given the two cities' comparable population sizes, housing crisis, and number of annual clients discharged from hospital-based psychiatric care, she was hoping her assumption would prove to be correct.

In terms of collaborators, in London the NFA program was conducted in partnership with Ontario Works, the main organization that administered the delivery of financial aid, and in partnership with the CMHA because they employed housing advocates. In Hampden, Ontario Works was also the primary administrator of financial aid. However, most of the city's housing advocate workers were employed by Hampden Community House. As such, Najwa and Boku saw Ontario Works and Hampden Community House as the organizations they would need to get on board. First, they would need to ask Hampden's regional Ontario Works office to commit to the same procedure changes that London's had in terms of fast-tracking applications for financial support for first and last month's rent, rent in arrears, and utility in arrears. They would also need to ask them to send and cover the wages of two Ontario Works staff who could be present during the program's office hours. These staff members would help people apply for Ontario Works or ODSP, make referrals to Hampden's ODSP office when necessary, and help fast track applications for financial support.

Najwa wondered whether Hampden Community House could be convinced to be a project partner and cover the wages of two housing advocate workers to be present at NFA office hours. The housing advocates would help program participants secure appropriate and affordable housing. Their responsibilities would include finding and sharing listings, helping clients attend viewings, supporting clients in submitting required documents, assisting with the review and signing of leases, or making arrangements with agencies that had transitional housing programs. In addition to the housing advocate's wages, Najwa also hoped that transportation costs incurred by the housing advocates while taking clients to viewings would be reimbursed by the Hampden Community House.

After walking around the two hospital units where the program would be delivered, Najwa decided that the best they could do space-wise would be to provide two board rooms for office hours, one for each psychiatric unit. Office hours would run simultaneously on the units, so each would need their own Ontario Works employee and housing advocate staff to be present throughout. An added benefit to using these rooms would be that they were already equipped with telephones and Wi-Fi that could be used for NFA purposes and these costs would already be accounted for in the cost of renting the board room. Boku also informed her that they would need to provide parking passes for the staff they were hoping to bring in from Ontario Works

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

and Hampden Community House (two per organization), purchase a computer for each unit, and have a budget for necessary printing and office supply costs (e.g. printer paper and pens).

ECONOMIC EVALUATION

Hampden Health Care was committed to being a leader in providing exceptional care to its clients. However, the organization was inundated with requests to provide new treatments, services, and programs. At the same time, their overall budget had increased marginally over the past decade. In response to these realities, the board adopted a policy in 2007 that required all new proposed treatments, services, and programs to undergo an economic evaluation to assess their value for money before a pilot project could be approved. These evaluations compared the proposed treatment, service, or program against what was currently being done in terms of their costs and their consequences (Hurley, 2010). The board used the findings of economic evaluations to decide whether proposed treatments, services, or programs would be adopted.

Najwa had already decided she would present a cost-effectiveness analysis to the board. This is a method of economic evaluation that measures consequences in the natural units in which they occur (Hurley, 2010). If a cost-effectiveness analysis was conducted, the board also required that an incremental cost-effectiveness ratio (ICER) be calculated. This statistic summarizes cost-effectiveness by dividing the difference in cost between two potential interventions by the difference in their effect (Hurley, 2010). The board required that consequences be considered, and so conducting a cost-analysis, that is comparing only the costs without consideration of consequences, was out of the question. Cost-utility analyses standardized the units used to measure consequences using healthy year equivalents such as the quality-adjusted life year (Hurley, 2010). This was helpful when choosing which interventions to adopt among many different types that addressed different health problems. However, Najwa chose to focus on cost-effectiveness analysis using natural units. The board would not be comparing the NFA intervention to other interventions, but would be considering the NFA on its own. Najwa needed the board to make a decision about continuing as they had been or piloting the NFA intervention. Cost-benefit analyses were economic evaluations that valued health outcomes in monetary terms (Hurley, 2010). This valuation of consequences was often challenging and time consuming, so Najwa opted to avoid this method.

Before sending this assignment to her health economics consultant, Najwa knew she needed to make a few more decisions. First, she needed to choose which perspectives to incorporate in the assessment. They did not have infinite time and resources to invest in this research and, if Jillian Chang had stressed nothing else on their call, it was that they needed to do something and do it quickly. Obviously, they needed to include Hampden Health Care's perspective, but which other perspectives were to be included? Remembering she would eventually need to approach her local Ontario Works office and Jillian Chang about establishing a partnership for a pilot project, she decided these were the two other perspectives she would include. If she could prepare a cost-effectiveness estimate for them, it might reduce some of the uncertainty in their decision making process.

The second decision Najwa needed to make was which consequences to prioritize. The two that stood out to her were the number of people at risk of discharge to homelessness from Hampden Healthcare's psychiatric units who were housed upon discharge and the number of people diverted from discharge to a homeless shelter from Hampden Healthcare's psychiatric units.

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

Finally, Najwa needed to decide on a time frame for the evaluation. She felt a one-year time horizon was realistically achievable and would provide enough information to approve or reject a pilot project. Although longer time horizons were usually preferable because they allow decision makers to see how the program costs and consequences would evolve over time, modelling became a lot more difficult — more information about the program and its effects would be needed and more complex calculations would be required. This meant that conducting an economic evaluation for anything longer than a year was more than Najwa could reasonably expect given the turnaround time she was hoping for.

Having decided what she needed, Najwa sent these specifications to her lead health economist along with the proposal that had been written and the background research Zola had compiled. Now all there was to do was wait.

NEXT STEPS

Using the information Zola compiled and searching for additional information when necessary, a member of Najwa's health economist team put together a list of parameters relevant to estimating the costs and consequences associated with running the NFA program at Hampden Health Care (Exhibit 2).

As a member of the health economist team, you have been assigned the tasks of comparing consequences, comparing costs, and generating ICERs. To do this, use the information provided in this case and the notes on assumptions which are provided on the worksheets:

1. Complete worksheet 1 to compare consequences for the comparators.
2. Complete worksheet 2 to compare the costs for the comparators.
3. Complete worksheet 3 and 4 to determine the ICERs for the NFA program compared to no program, from the perspectives of Hampden Health Care, Hampden Community House, and Ontario Works.

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

EXHIBIT 1

Descriptions of Programs Relevant to NFA

Acute Psychiatric Hospital Units: Psychiatric units within general hospitals. These are generally the first place someone with a mental illness would be admitted. Often, treatment focuses on working through a temporary crisis. Depending on their unique needs and circumstances, clients may receive treatment on either an inpatient or outpatient basis.

Canadian Mental Health Association (CMHA): A non-profit organization that provides advocacy, resources, and community-based programs that help prevent and address mental health problems and illness across 330 communities in Canada (Community Mental Health Association National, n.d.). The organization has 75 service regions (Community Mental Health Association National, n.d.) that provide unique combinations of programs to best address the needs of the community they serve.

Ontario Disability Support Program (ODSP): A government program that runs across the province of Ontario to assist individuals who have a disability and who do not have sufficient financial resources to cover basic living expenses. The program is delivered through regional offices. It offers recipients financial assistance through income support and by providing health benefits not covered by the province's universal health insurance program (e.g. dental care). It also offers support to clients in finding employment and advancing their careers (Ontario Ministry of Children, Community, and Social Services, 2020a).

Ontario Works: A government program that runs across the province of Ontario to assist individuals whose household does not have sufficient financial resources to cover basic living expenses. The program is delivered through regional offices. It offers recipients financial assistance through income support and by providing health benefits not covered by the province's universal health insurance program (e.g. dental care). It also offers employment assistance to help recipients find, apply to, and sustain employment. If an individual or family is in crisis (e.g. they have lost their home, they are fleeing violence), emergency financial assistance is available to cover essential expenses (Ontario Ministry of Children, Community, and Social Services, 2020b).

Tertiary Psychiatric Hospital Units: Psychiatric hospital units provide specialized care for individuals with a mental illness. Clients often receive care on a tertiary psychiatry hospital unit after a number of acute psychiatric care admissions. Treatment is generally longer and focuses on rehabilitation instead of the management of a crisis. Depending on their unique needs and circumstances, clients may receive treatment on either an inpatient or outpatient basis.

**No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent
Psychiatric Discharge to Homelessness**

EXHIBIT 2

**List of Parameters Relevant to Estimating the Costs and Consequences of Implementing
No Intervention and Running the NFA program at Hampden Health Care**

Parameter	Value	Source	Notes & Assumptions
Number of discharges from Hampden Health Care psychiatric units	3481	Hampden Health Care Patient Activity Reports	Assumes the number of clients discharged from Hampden Health Care's psychiatric units will be the same as the organization's yearly average over the past five years.
Percentage of psychiatric clients at risk of being discharged to homelessness	6.74%	Hampden Health Care Patient Activity Reports	Assumes that 1) the percentage of psychiatric clients at risk of being discharged to homelessness is equivalent to the number of clients who report not having a fixed address at intake or during discharge planning (this number likely underestimates those who are at risk of being discharged to homelessness), and 2) assumes the percentage of clients will be the same as the organization's yearly average over the past five years.
Percentage of people at risk of discharge to homelessness who are discharged housed after participating in the NFA program	92.5%	Forchuk et al., 2013b	Assumes the NFA program will have the same effect in Hampden as it did in stages 2 and 3 of London's NFA program. CMHA identified that this percentage of NFA participants who were receiving either acute or tertiary psychiatric hospital care were discharged housed.
Percentage of people identified as being at risk of discharge to homelessness from psychiatric units who are able to find housing without an NFA intervention	14.3%	Forchuk et al., 2008	Assumes that people who do not receive the NFA intervention in Hampden will be able to find housing prior to discharge at the same frequency as people who were able to find housing in the control arm of the original NFA randomized control trial (stage 1). This percentage is likely to be lower as Hampden Healthcare's NFA criteria for participation is a lot more inclusive than the study population of the first stage of NFA. Specifically, participants can have prior histories of homelessness, unstable income, and not be psychiatrically 'stable'

**No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent
Psychiatric Discharge to Homelessness**

Parameter	Value	Source	Notes & Assumptions
			at discharge to participate in Hampden Health Care's NFA program.
Number of discharges from psychiatric units to homeless shelters without an intervention	196	Hampden Community House, 2019	Assumes that the number of people discharged from psychiatric units to a homeless shelter in Hampden will be the same as it was in 2019 if an intervention is not delivered.
Percent reduction in discharges from psychiatric units to homeless shelters when the NFA program is implemented in a community's psychiatric units	92.3%	Forchuk et al., 2013b	Assumes that the same percentage reduction to discharge from psychiatric units to homeless shelters seen in London, Ontario between 2002 (before the NFA program was implemented) and 2008 (after NFA was delivered in acute and tertiary psychiatric hospital units) will be seen in Hampden once Hampden Health Care implements the NFA program in their psychiatric units. In London, the number of individuals discharged to homelessness decreased from 194 in 2002 to 15 in 2008.
Number of Hampden Health Care psychiatric hospital units	two		The program will need to be set up and run in two locations: in Hampden Health Care's acute psychiatric care unit and its tertiary psychiatric care unit.
Number of rooms needed to deliver the NFA program per psychiatric hospital unit	one	Forchuk et al., 2013a	Assumes the amount of space needed to successfully run the NFA program in a Hampden hospital unit will be the same as it was in stages 2 and 3 of London's NFA program.
Cost of renting a hospital board room at Hampden Health Care	\$195 per hour	Hampden Health Care, 2018	Although Hampden Health Care is entitled to use the board room free of charge, the board requires an estimate of the opportunity cost of all hospital space. The cost listed indicates what would be charged to a private corporation seeking to rent a hospital boardroom from Hampden Health Care.
Number of drop-in hours for clients needed per hospital unit	nine hours per week	Forchuk et al., 2013a	Assumes the amount of drop-in hours needed to successfully run the NFA program in a Hampden hospital unit will be the same as it was in stages 2 and 3 of London's NFA program. One Ontario Works

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

Parameter	Value	Source	Notes & Assumptions
			staff and one housing advocate would be available during the drop-in hours.
Number of computers needed per hospital unit	one	A. Peters, personal communication, May 28, 2019	Assumes the number of computers needed to successfully run the NFA program in a Hampden hospital unit will be the same as it was in stages 2 and 3 of London's NFA program.
Cost of a computer	\$865.74	Statista, 2019	The cost of a computer used for the NFA program is equivalent to the average selling price of personal computers worldwide in 2019. \$632.00 USD = 865.74 CAD. USD to CAD conversion calculated June 26, 2020.
Number of parking passes needed for NFA staff	4		Allows office hours to be run at the same time on the different psychiatric units. i.e, two Ontario Works employees and two housing advocates could be working NFA office hours and using their parking passes at the same time.
Cost of a monthly parking pass at Hampden Health Care	\$75	Hampden Health Care parking service desk	
Printing and office supply costs per program participant	\$0.15	A. Peters, personal communication, May 28, 2019	Assumes the amount of printing and office supplies needed to successfully run the NFA program in a Hampden hospital unit will be the same as it was in stages 2 and 3 of London's NFA program.
Housing advocate time per hospital unit	nine hours per week	Forchuk et al., 2013a	The housing advocate will staff the drop-in centre at one of the hospital units.
Housing advocate hourly wage	\$20.66 per hour	Neuvoo, 2020a	Assumes the average compensation of a housing support worker in Canada is the same as that of housing advocates employed by shelters in Hampden.

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

Parameter	Value	Source	Notes & Assumptions
Number of apartments viewed before signing a lease	three	B. Tracey, personal communication, June 7, 2019	Assumes Hampden's NFA program participants will look at the average number of apartments viewed before signing a lease in London, Ontario.
Round trip driving distance to view apartments	21.3 km	Google Maps, n.d.	Assumes the average round trip to an apartment will be halfway across Hampden.
Cost of transportation	\$0.58 per km	Government of Canada, 2019	Assumes the cost of transportation is equal to the Government of Canada's automobile allowance rates for kilometres driven under 5000 kilometres.
Cost of housing someone in a homeless shelter per year	\$15,600	London Ontario Community and Protective Services Committee, 2008	Assumes that the cost of housing someone in Hampden Community House is the same as housing someone in shelters in London, Ontario in 2008.
Ontario Works employee time per hospital unit	nine hours per week	Forchuk et al., 2013a	Assumes the amount of drop-in hours needed to successfully run the NFA program in a Hampden hospital unit will be the same as it was in stages 2 and 3 of London's NFA program.

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

WORKSHEET 1 Comparison of Consequences

Consequence	No Intervention	No Fixed Address (NFA) Intervention	Difference
Number discharged from Hampden Health Care psychiatric units			
Number at risk of discharge to homelessness			
Number of clients served			
Number of people at risk of discharge to homelessness who were housed upon discharge			
Number of people diverted from discharge to a homeless shelter			

Assumptions

Of the people at risk of being discharged to homelessness from Hampden Health Care, 100% will take part in the voluntary NFA program.

**No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent
Psychiatric Discharge to Homelessness**

**WORKSHEET 2
Comparisons of Costs**

Cost	No Intervention	No Fixed Address (NFA) Intervention	Difference
Hampden Health Care Costs			
NFA office rent (opportunity cost)			
Computers			
Parking passes			
Printing and office supply costs			
Total Organizational Costs			
Hampden Community House			
Housing advocate worker wages			
Transportation costs			
Cost of housing clients discharged from Hampden Health Care's psychiatric units			
Total Organizational Costs			
Ontario Works			
Ontario Works employee wages			
Total Organizational Costs			
Costs to all Organizations (Hampden Health Care, Shelter(s), Ontario Works)			
Total Costs			

Assumptions

The 196 clients discharged from Hampden Health Care's psychiatric units to shelter will remain in shelter for the entirety of the year. The average duration of a period of homelessness identified by Allgood and Warren (2003) is 761 days. As such, it is assumed that clients will spend at least the first year of that time in shelter. Additionally, it is assumed that clients who did not initially get discharged to shelter will not utilize shelter services throughout the year. While clients who access shelters regularly cycle in and out of using them, the rate of this cycling is unknown. As such, an individual's housing status (in shelter or otherwise homelessness) at the moment of discharge is assumed to be their status for the duration of the year.

**No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent
Psychiatric Discharge to Homelessness**

WORKSHEET 3

**Calculating Incremental Cost-Effectiveness Ratios for the
Number of People at Risk of Discharge to Homelessness Who Were Housed Upon
Discharge**

Perspective	Calculating Incremental Cost-Effectiveness Ratios (ICER)	ICER
Hampden Health Care		
Hampden Community House		
Ontario Works		
All Partnered Organizations		

**No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent
Psychiatric Discharge to Homelessness**

WORKSHEET 4

**Calculating Incremental Cost-Effectiveness Ratios for the
Number of People Diverted from Discharge to a Homeless Shelter**

Perspective	Calculating Incremental Cost-Effectiveness Ratios (ICER)	ICER
Hampden Health Care		
Hampden Community House		
Ontario Works		
All Partnered Organizations		

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

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INSTRUCTOR GUIDANCE

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

Marie Fiedler, BHSc (Hons), MPH (Class of 2019)
Bryanna Lucyk, BA (Hons), Research Coordinator, Lawson Health Research Institute
Cheryl Forchuk, RN, PhD (Professor, Western University)
Ava John-Baptiste, PhD (Associate Professor, Western University)

BACKGROUND

Najwa D'Souza, the CEO of Hampden Health Care, is looking for an intervention that will reduce the rate of discharge to homelessness from the psychiatric units at her hospitals. She is presented with the *No Fixed Address* (NFA) program as a possible solution. This intervention is a multipronged, hospital-based intervention that provides support to psychiatric clients who are either experiencing homelessness or are at risk of homelessness. To implement the program at Hampden Health Care, hospital staff would refer clients they suspect are at risk of being discharged to homelessness to the NFA program. From there, clients would have the option of receiving streamlined Ontario Works support or seeing a housing advocate who is employed by the local shelter system, Hampden Community House. Excited about the possibilities this intervention holds, Najwa must conduct an economic evaluation to assess the NFA program's value for money, and support decision making for Hampden Health Care and other relevant stakeholders.

Students take the perspective of someone on Najwa's health economics team. They are given a list of parameters including the types, quantities, and costs per unit of the resources needed for the two interventions being compared (usual care versus NFA program). Students must incorporate the parameters into a model-based economic evaluation comparing the costs and consequences of the alternative interventions. Students are then tasked with working through the rest of the steps to complete a cost-effectiveness analysis.

OBJECTIVES

1. Review the various steps of conducting an economic evaluation.
2. Estimate costs and consequences for inclusion in a cost-effectiveness analysis when given a list of parameters (resources required, quantity of resources used, and valuation of resources).
3. Calculate and interpret incremental cost-effectiveness ratios (ICERs).

DISCUSSION QUESTIONS

1. What are the four types of economic evaluations? How do they differ in terms of their valuation of costs and consequences, and their associated key metrics?
2. Describe the stages of conducting an economic evaluation. How do you see them reflected in the case?
3. What are the steps of conducting a cost analysis?

No Fixed Address: A Cost-Effectiveness Analysis of a Program to Prevent Psychiatric Discharge to Homelessness

4. Do the ICERs calculated represent good value for money for the different stakeholders represented? Would you recommend moving forward with the program?

KEYWORDS

Cost-effectiveness analysis; homelessness interventions; incremental cost-effectiveness ratio; No Fixed Address (NFA); value for money