

Building Bridges to Integrate Care (BRIDGES): Incubating Health Service Innovation across the Continuum of Care for Patients with Multiple Chronic Conditions

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Abstract

Integrating care for people with complex needs is challenging. Indeed, evidence of solutions is mixed, and therefore, well-designed, shared evaluation approaches are needed to create cumulative learning. The Toronto-based Building Bridges to Integrate Care (BRIDGES) collaborative provided resources to refine and test nine new models linking primary, hospital and community care. It used mixed methods, a cross-project meta-evaluation and shared outcome measures. Given the range of skills required to develop effective interventions, a novel incubator was used to test and spread opportunities for system integration that included operational expertise and support for evaluation and process improvement.

Introduction

Patients with complex medical, mental health and social needs account for a large proportion of healthcare costs, and they often receive suboptimal care in systems built around specific diseases and institutions (Anderson 2010; Curry and Ham 2010). Improving system integration has been touted as a way to improve the experience of care, reduce costs and improve outcomes with some promising examples in the United States like Accountable Care Organizations (Jacob 2015; Nyweide et al. 2015). In Ontario, it is estimated that better integration of care would result in savings of \$4–\$6 billion per year from reductions in redundant services, improved coordination and provision of more appropriate services (Drummond 2012).

In the past two years, integration of care for people with complex needs has become a major priority in Ontario. This focus is timely, because a recent 10-country survey by the Commonwealth Fund found that Canadian primary care providers ranked seventh to tenth on perceived preparedness to manage care of people with a range of complex needs (Osborn et al. 2015). However, programs to design and rigorously evaluate the impact of new models of care integration are needed, as their effects have been highly variable. For example, of the 34 programs in the Medicare demonstration projects on disease management and care coordination, 19 had no significant impact on costs or hospitalizations, whereas 4 increased costs with no impact on quality (Nelson 2012). This variation in effectiveness could be addressed with structures that support iterative improvement and evaluation. Incubators, which started in the business sector, improve the capabilities of early-stage organizations and develop infrastructure that will allow them to flourish (Dutt et al. 2015). This approach could be applied to nascent health services, with direct support for program development and to promote policies that support the sustainability and spread of those programs. While there have been reviews of models of care for high-need, high-cost patients across the United States (Mcarthy et al. 2015), here we present an approach to developing a suite of new models within a jurisdiction as a way of increasing their collective impact (Dyck 2009). Building Bridges to Integrate Care (BRIDGES)

adapted the incubator model to support evaluation and shared learning about integration of care for people with complex needs to enable system change. This paper will describe the model, how it was deployed and its findings to date.

Intervention

BRIDGES solicited new healthcare delivery models from the practice community, selected promising ones and supported their evaluation and potential spread. The project was funded until 2015 by the Ontario Ministry of Health and Long-Term Care and co-led by the University of Toronto's Departments of Medicine, Family and Community Medicine and Psychiatry. It had a governance committee with senior health system leaders representing different sectors and a scientific advisory committee. The project started in 2011. Final results for all projects are expected by 2017, and these will be reviewed by the Ministry as they are received.

The BRIDGES initiative was managed by an executive committee composed of representatives from the three departments and their respective chairs, with input from a scientific review committee and a governance committee. BRIDGES had three components: an incubator that selected and provided financial and consultative support for individual projects in model design and evaluation; a collaborative that supported shared learning across projects; and a coordinating body that linked with system stakeholders to promote collective impact. BRIDGES funded a range of projects, because system change may be more easily achieved by engaging with a diversity of providers and organizations than through the discrete efforts of a single group. Solutions to complex problems are unlikely to come from single programs that are carefully described and, if effective, scaled up across a system (Kania and Kramer 2013). To increase the likelihood of collective impact, BRIDGES had a shared vision to improve care for people with complex needs, shared measurement across projects, promoted mutually reinforcing activities and had a mechanism for communicating with other health system stakeholders (Kania and Kramer 2011). The key components are described below.

Project selection

BRIDGES solicited proposals from individuals affiliated with the three university departments (medicine, family medicine and psychiatry) and selected projects with the criteria that they targeted patients with complex medical, mental health and social needs; partnered with hospital, community services and primary care; and they appeared feasible and scalable. Proposals were reviewed by the executive and scientific review committee for scientific rigour and by the governance committee for system relevance and sustainability. Selected teams received feedback from the review and revised their proposals prior to final approval.

Financial and consultative support

Each successful project team received up to \$200,000 per year for two years and agreed on quarterly milestones to qualify for ongoing funding during that time. BRIDGES funded the evaluation of projects, but the operating costs were covered by the implementing institutions to increase the likelihood of sustainability. Teams had access to advisory support for study design, quantitative and qualitative data analysis, database management and economic evaluation from the BRIDGES team and Hub Research Solutions, a research methods and trial support centre based at the University of Toronto. The BRIDGES executive encouraged testing underlying assumptions of the respective healthcare delivery model used for each project to identify and address problems early in implementation. All projects used quantitative methods to evaluate emergency department (ED) visits, hospitalizations and length of stay in hospital, in addition to project-specific outcomes. Economic evaluations included costs incurred to develop and maintain the intervention, with standard costs for ED visits and hospitalization. Each project also used qualitative methods. They shared a common interview guide and coding framework for patient, provider and caregiver interviews. In addition, interviews from most projects were combined to conduct a meta-analysis of broad themes related to inter-organizational integration from patient, caregiver and clinician perspectives (Webster et al. 2015).

Building a collaborative of project teams

The BRIDGES projects occupy a common geography, and many had been developing strategies and testing integration prior to BRIDGES. BRIDGES created an infrastructure that strengthened collaborations and further promoted the evolution of these integrated models. The teams had quarterly in-person meetings and a conference each year of the project to share lessons learned, encourage collaboration and address common challenges.

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Change Process/Methodology/Results Funded projects' characteristics

Approximately 20 proposals were submitted in each of the three rounds of funding from 2011 to 2013, with nine projects being selected. They included multidisciplinary home-based primary care for frail elderly (Smith-Carrier et al. 2012), ongoing and transitional case management for high-burden conditions (COPD and atrial fibrillation) (Meshkat et al. 2013), transitional case management for frequent ED users

for mental health (Kahan et al. 2016), simultaneous multi-disciplinary case conferences for people with complex needs (Tracy et al. 2013) and rapid access to addiction medicine or psychiatric care. Two other models supported solo family physicians engaged in the care of people with complex needs, either over the phone or through a mix of consultation and shared care. Patients were recruited from the ED in four projects and referred by family physicians in five others. The evaluations included three randomized controlled trials (where individuals are randomized to receive the intervention or usual care), three interrupted time-series (where trends in service use by individuals are tracked before and after the intervention with no control group), two propensity-matched cohorts (where patients in the intervention are matched with similar patients from an administrative database) and one process evaluation (which tracked the implementation and key activities over time, with no outcomes measured). Participating hospitals and clinics included academic and non-academic facilities (Table 1).

Supporting health service evaluation: Processes and challenges

The levels and types of support were tailored to teams’ needs, as some groups were undertaking their first program evaluation, while others were experienced health services researchers. The initial evaluation strategy comprised a short period of iterative improvement during early implementation, followed by full implementation with standardized data collection. In practice, many challenges arose after formal implementation began. As a result, we encouraged ongoing model refinement while rigorously measuring outcomes. Most projects had unanticipated difficulties with recruitment that required changing inclusion criteria, adding sites or revising recruitment methods, so the period of support was extended. Sample sizes varied from 124 to 530 patients, with six out of nine groups completing recruitment within two years. The largest study completed recruitment in three years, and two studies are still recruiting (despite no longer receiving funding from BRIDGES).

TABLE 1.
BRIDGES projects

Project	Patient population	Intervention	Number and type of sites
Coordinated Access to Care from Hospital Emergency Departments (CATCH ED)	Frequent ED users in mental health	Intensive case management for 4–6 months, to connect patients with primary, specialty care and community mental health services	Six EDs, four community health centres and five community mental health agencies
Hospital-based Services for Opioid and Alcohol Addicted Patients (H-SOAP)	Alcohol- and opioid-addicted patients	Consultation service for patients in community-based withdrawal management services, with outreach to ED and support for hospital and community providers	Two academic hospitals
Integrated Community Care Team (ICCT)	Complex older patients cared for by a solo primary care physician	Integrated interprofessional team with primary, community, specialty and acute care resources to support solo primary care providers in caring for complex older patients	One geriatric health care centre, one community hospital and two CCACs
Integrated Home-Based Primary Care (IHBPC)	Frail home-bound elders	Interprofessional primary care teams with specialist consult support providing ongoing care in the home	Six family health teams, one community service agency and one CCAC
Interprofessional Model of Practice for Aging and Complex Treatments (IMPACT+)	Complex elderly	Case conference with primary care team, hospital specialists and community support workers to develop comprehensive care plan with patient and caregiver	Four family health teams, one community health centre and one CCAC
Program of Integrated Care for Patients with Chronic Obstructive Pulmonary Disease and Other Comorbidities (PIC COPD)	Patients with chronic obstructive pulmonary disease and comorbidities	Nurse case management and self-management support with respirologist, with coordination of specialty services and outreach to family practice	Two community hospitals
Rapid Access for Psychopharmacologic Treatment (RAPT)	Patients needing rapid but not urgent psychiatric care	Rapid psychiatric consultation and brief follow-up offered to family practice patients, along with ongoing e-mail and telephone support of referring primary care providers	One community hospital, three family health teams and one nurse-practitioner-led clinic
Seamless Care to Optimize the Patient Experience (SCOPE)	Solo general practitioners with high numbers of ED visits from patients	Hospital-based navigation hub with one number for family physicians to call with direct access to an internist, a nurse acute care coordinator and a community service coordinator. Outreach to practices with support for quality improvement	Two academic hospitals with 30 general practitioners, and one CCAC
Transitioning Atrial Fibrillation Management (TEAM)	Patients with atrial fibrillation in ED	Nurse practitioner and pharmacist care coordination and education with internal medicine, cardiology and electrophysiology support; direct access to clinician hotline for patients and family physicians	One hospital department and three emergency departments

ED = emergency department; CCAC = community care access centre.

Support for project refinement and iterative testing improved over the three rounds of projects but required a high level of trust and access to operational data for the core team to provide useful input. There was a tension between designing an intervention to address a local need and trying to understand the underlying logic of the intervention for broader transferability of findings. The requirements of project teams were very high. They needed to understand the literature and theory behind their project, to engage stakeholders from multiple sites and types of institutions, implement a complex intervention with a short timeline and oversee study design, data management and cost-effectiveness analysis. Few groups had all of these skills, and despite the range of supports offered by BRIDGES, there were gaps in some of the projects, particularly in the area of implementation. Strong leadership with a drive to understand and improve a model rather than prove its success made it easier to benefit from BRIDGES advisory supports.

Building a high-functioning, integrated inter-organizational team often took 12–18 months because developing relationships and trust was necessary to overcome the inevitable policy and institutional barriers. Though it ran in parallel with implementation, evaluation was on an even longer timeline. Over half of the projects had to wait six or more months to get Research Ethics Board approval at participating sites. Three out of nine programs added sites during implementation due to slow recruitment, which added up to four months to their timeline. Depending on the project, enrolled patients needed to receive the intervention for 3–12 months to experience a benefit. On top of this, there was an additional nine-month delay to measure the impact through administrative data. So the initial two-year funding period was extended to three for many projects, and data on total health service utilization will not be available until four years after the start of funding for most projects.

Integrating across the continuum

Many of the key mechanisms and drivers of integration of care for high users of the health system are not well understood, so the solutions were tentative and many challenges arose. For instance, one project (Integrated Clinical Care Team) formed an integrated care team including staff from a geriatric hospital, a community hospital, community care access centres from two different regions and primary care physicians. Team members from different institutions entered the same data independently into different IT platforms because there was no mechanism for sharing information across institutions caring for the same patient. These types of workarounds were common when functionally integrated providers from different organizations tried to create one team at the point of care. It also highlighted the need to work within existing structures while developing the optimal

model for the future. Another project, Coordinated Access to Care from Hospital Emergency Departments, involved case managers from different organizations. They all had different skill sets and modes of practice and required additional training and common supervision to ensure the quality of their work. Outreach to primary care was a key expectation of projects based in hospitals or specialty care, but this process showed mixed results. Strategies such as faxing updates, telephone contact and email often generated limited response from primary care providers (PCPs). One project, SCOPE, provided solo PCPs with direct phone access to specialists and community resources. The project team invited them to presentations and dinners, visited clinics and used local champions. These strategies resulted in greater involvement of PCPs, but at a greater expense.

All of the projects included partners from across the continuum. Some focused on a single disease such as COPD, which created an integrated approach for one disease but sometimes generated new fragmentation in the process. Patients in the ED were invited to be seen in a clinic with a nurse case manager and specialist, but some had pre-existing respirologists not involved in the project and either declined or ended up seeing a new specialist during the transition.

Mental health issues were identified as a major contributor to individual disease burden in many projects. Therefore, the Department of Psychiatry was invited to co-lead BRIDGES in the second year, given the wide range of patients with co-morbid conditions, which helped promote functional integration between the physical and mental health parts of the system that have often had little cross-communication.

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Value-add from the learning and practice collaborative

The project teams were able to share experiences and solutions regarding research methods, recruitment, interventions and care of specific patients. They shared study protocols, ethics review board submissions and data collection forms. Some of the projects in the third round approached projects from the earlier rounds to help design interventions with similar populations. The Toronto Central Community Care Access Centre was a co-lead or partner on five of the nine projects, which supported its overall strategy and made sharing across projects easier. Finally, some hospitals are the focus of multiple BRIDGES-supported projects, which has encouraged project leads to consider how the models complement each other and in one case, combining several distinct models into a seamless process.

Discussion

In this article, we have described the initial experiences of an incubator to develop nine new models of care for patients with complex needs that span primary care, hospital and community services. The initiative supported each model's evaluation, built a collaborative to share experiences across projects and promoted collective impact through close linkage with system stakeholders involved in related efforts.

BRIDGES provided a link between practitioners invested in improving care for their patients, researchers trying to produce more generalizable knowledge and policy makers looking for practical solutions to system problems; it also helped manage the tension between these perspectives. It used an incubator model for support that is very hands-on, overseeing qualitative evaluation across all projects and supporting central databases for quantitative evaluation, which allowed for cross-project synthesis and supported data integrity. Also, the initiative supported changes that would optimize effectiveness versus the standard intervention study. Centralizing project support helped tailor approaches for teams with different levels of expertise and early pilots as well as more mature care models. This approach created greater overhead costs but allowed for economies of scale, operational learning across nine projects and flexibility with reallocation of funds across projects based on progress and need.

BRIDGES focused on coordination across providers and institutions to deliver integrated care to patients with complex needs (Curry and Ham 2010; Leutz 1999). There were stronger partnerships between hospitals, family health teams and community service organizations and weaker linkages with solo primary care providers that focus on direct care to patients with limited time for coordination. Models that were initiated by primary care teams were better at incorporating the patient's pre-existing circle of care than those that were specialist-driven or disease-specific. Primary care has a dearth of leaders and researchers and often uses visit-based models of care that do not serve the needs of complex patients. They are unlikely to change on their own, but we have shown that those with an interest can be supported, and mechanisms for shared accountability and standards for coordination would likely encourage others to make care of this population a priority. Risk-adjusted funding that considers the total cost of care for people with complex needs has given rise to a range of new models in the United States. They could be considered within our own blended funding models. BRIDGES has given rise to a strong partnership between primary care and specialists and found that collaborative leadership between clinicians, researchers, administrators and community partners is particularly powerful.

This is a challenging area to work in, and our experience suggests that models targeted at high users can take several years to get "right." While it is relatively easy to see if things are going wrong early on, it takes time to determine if they

are having an impact on health status and service use. Future evaluation programs should be tailored to a model's stage of maturity. This initiative is based in a well-resourced urban setting with many different providers, which may have different integration challenges than other environments. The choice of primary outcome measures, hospitalization and ED visits are of interest to the government but may not be a sensitive way to capture improvement in the care of complex patients, particularly in early phases of implementation. Finally, rapid learning is challenging when project timelines are long, but iterative testing of key hypotheses regarding mechanism of action and user uptake can identify positive and negative signals that inform ongoing design of the intervention.

Policy implications

The Ontario health system is trying to promote integration of care for people with complex needs in different regions through initiatives such as Health Links, a partnership between hospitals, primary care and community services to create coordinated care plans for people with complex needs (Ronson 2013). This initiative began after the start of BRIDGES, and its emerging evaluation strategy is informed by the BRIDGES experience. Many of the BRIDGES 28 project leads have become clinical champions for integration, with several leading Health Links initiatives. BRIDGES adapted its approach to cross-project evaluation to 35 Medically Complex Patient demonstration projects across the province of Ontario, in an attempt to make it more scalable.

The recent Naylor report outlined the need for a national strategy around the development, testing and scale-up of care integration models (Advisory Panel on Healthcare Innovation 2015). Though it predates the report, BRIDGES has operationalized many of its recommendations, such as support for provinces and regions "in adapting, scaling-up and spreading partial integration models." The report also recommends new funds to generate information on impacts on health outcomes, scalability and sustainability of new models. In BRIDGES, operating funds were covered by the implementing institutions, and, so far, eight out of nine projects have been sustained, while three are scaling up, in one case with support from Health Quality Ontario's Adopting Research to Improve Care program. This approach may inform federal efforts to support health service integration. There have been recent reports on key features of models to care for high-need, high-cost patients in the U.S. setting (McCarthy 2015). The final results of BRIDGES will identify effective models, as well as a process to develop new models for the Canadian context.

Conclusion

BRIDGES has helped develop and test nine new models of care integration for the highest users of the system through tailored project supports, a collaborative and a structure to communicate

lessons learned for system stakeholders. To demonstrate the broader applicability of the approach, BRIDGES has adapted its intensive evaluation of local efforts to a lighter touch evaluation of demonstration projects across Ontario. Given the difficulty finding and implementing care models that improve outcomes and reduce costs for complex patients in a given jurisdiction, incubators for innovation linking front-line clinicians with system stakeholders and academics are a promising way forward. **HQ**

Acknowledgements

This project was funded by the Ontario Ministry of Health and Long-Term Care's Health Quality Branch, with in-kind support from the University of Toronto's Departments of Medicine, Family and Community Medicine and Psychiatry. Onil Bhattacharyya received support from the Frigon-Blau Chair in Family Medicine Research at Women's College Hospital, University of Toronto. Gary Naglie received support from the George, Margaret and Gary Hunt Family Chair in Geriatric Medicine, University of Toronto. Gillian Hawker formerly received support from the F.M. Hill Chair in Academic Women's Medicine and is now the Sir John and Lady Eaton Professor and Chair of the Department of Medicine, University of Toronto. We also acknowledge support from Trevor Young as previous chair of psychiatry and current dean of the faculty of Medicine at the University of Toronto and Molyn Leszcz as interim chair of Psychiatry.

The members of the BRIDGES collaborative and co-leads of the BRIDGES projects are listed below. Coordinated Access to Care from Hospital Emergency Departments (CATCH ED): Vicky Stergiopoulos (lead), Tim Guimond, Don Wasylenki, Molyn Leszcz, Pat O'Campo, Stephen Hwang, Paul Kurdyak, Howard Ovens. Hospital-based Services for Opioid and Alcohol Addicted Patients (H-SOAP): Meldon Kahan, Sharon Spitoff, Anita Srivastava, Raj Gupta. Integrated Community Care Team (ICCT): Gary Naglie, Sid Feldman, Jodeme Goldhar (leads), Mary Burello, Gabriel Chan, Andrea Gruneir, Linda Jackson, Paul Katz, Jurgis Karuza, Barbara Liu, Dipti Purbhoo, Gayle Seddon, Susan Woolard. Integrated Home-based Primary Care (IHBPC): Sabrina Akhtar, Mark Nowaczynski, Thuy-Nga Pham, Samir Sinha, Tracy Smith-Carrier (leads), Selma Chaudry, Pauline Pariser, Jocelyn Charles. Interprofessional Model of Practice for Aging and Complex Treatments (IMPACT+): Ross Upshur, Howard Abrams (leads), Jocelyn Charles, Jason Xin Nie, Pauline Pariser, Shawn Tracy. Program of Integrated Care for Patients with Chronic Obstructive Pulmonary Disease and Other Comorbidities (PICOPD): Ian Fraser, Louise Rose, Roshan Shafai (leads). Rapid Access for Psychopharmacologic Treatment (RAPT): Mark Katz (lead) Patrick Clifford, Robert Dougherty. Seamless Care to Optimize the Patient Experience (SCOPE): Gillian Hawker, Noah Ivers, Tara O'Brien, Pauline Pariser, Dipti Purbhoo

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The Toronto Central Community Care Access Centre supported multiple projects both in-kind and as co-leads, particularly Stacey Daub, Jodeme Goldhar, Dipti Purbhoo and Gayle Seddon.

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