

TACKLING WICKED HEALTH CARE PROBLEMS



WHEN IT COMES TO WICKED PROBLEMS, health care is certainly high on the list. Like all such problems, it involves a series of moving parts: a complex system of stakeholders, care networks, financial concerns, clinical standards and protocols, public relations and government regulations, amongst other considerations. Further complicating matters, every disease and condition comes with its own subset of complexities.

The wicked nature of health care problems can leave decision makers feeling powerless to solve them, leading them to either give up on the big picture or focus in on a single point in the chain that will not necessarily create meaningful value to the entire system – or the patient.

At **Rotman Designworks**, we have found that design can play an important role in providing frameworks and guidelines for advancing health care and patient management, whether it be through the design of the patient experience in a specific facility, the design of relationships between commercial interests and consumers, or design of the grander evolution of the entire system. Following is one story from our growing repertoire that tackled a specialized health care problem using design principles and practices.

The Wicked Problem: Heart Failure

Let's start with some basic facts. It is estimated that there are 400,000 Canadians living with congestive heart failure (CHF): of those, about 40,000 experience cardiac arrest every year; and

less than five per cent of those who have a cardiac arrest outside of a hospital (the majority of cases) survive. Depending on the severity of symptoms, heart dysfunction, age and other factors, CHF can be associated with an annual mortality of between five and 50 per cent. Between 40 and 50 per cent of people with congestive heart failure die within five years of diagnosis.

Now let's look at what this means for the health care system. A study by the **Canadian Cardiovascular Society** that examined hospital discharges for fiscal 2000 found that a total of 1.38 million hospital days were associated with CHF. The average hospital stay was slightly less than 13 days. Re-admission to hospital was also examined. There were a total of 106,130 discharges for CHF in 85,679 patients – suggesting that there were 20,451 re-admissions among these patients. This is a re-admission rate that Dr. **Ross Tsuyuki**, associate professor of Cardiology at the University of Alberta, has cited as a call to action for health care professionals. "We must adopt more effective therapies, better apply already-proven therapies, and undertake better patient education on congestive heart failure."

The Challenge

One treatment option for CHF is an implantable cardiac defibrillator (ICD), a device that resets a patient's heart following sudden cardiac arrest. However, this treatment is limited relative to the number of patient cases in the population. While not all patients are indicated for an ICD, here is one point of comparison: the number of Canadian heart-failure patients that receive an ICD is about one-fifth the per capita

implant rate in the U.S., and about one-third that of Germany. This suggests not which country has a better system, but rather that Canadians are far less likely to get ICD's where they are indicated. Thus, there appears to be a gap in Canada between best practices for the patient and what is best for a population with limited resources.

Medical professionals wrestle with this issue, along with providers of medical products and services. Hospitals and the government are committed to solving it and supporting it. Yet the fact remains: heart failure patients are lost in a complex care system, often without resolution that delivers both optimal patient outcomes and cost optimization. In this respect, heart disease is like so many other health care issues.

The Project

To tackle this challenge, **Medtronic** (a leading global medical device company that makes heart rhythm devices, including ICDs) and **Hamilton General Hospital** undertook a study in 2007 to shed light on this important issue and explore North American practices in heart-failure management, with a focus on resolving the Canadian challenge. While the study initially centered on ICD referrals, the scope was broadened early on to consider the broader systemic context. From an ICD standpoint, devices are ultimately recommended by and implanted by an electro physiologist (EP) – a sub-specialist in cardiology. Thus, it is natural to start the exploration with these knowledgeable experts who diagnose, counsel and manage patients that come to them as ICD candidates.

However, it is important to recognize that, from a patient management standpoint, much has come before the EP's encounter with the patient. For perspective, only a very small percentage of patients with cardiac conditions treatable by ICD's are seen by an EP specialist, according to Dr. **Dante Morra** of the **Centre for Innovation and Complex Care** at the University of Toronto. The majority of cardiac care in both the community and hospitals is provided by family physicians, emergency physicians and internal medicine specialists.

One step in the referral chain before the EP is the general cardiologist. Surprisingly, less than 10 per cent of patients make it that far in the pipeline. On the other hand, many of them see internal medicine specialists, particularly in emergency. The challenge, then, is not simply focused on how EPs can better process the patients referred to them; it is a much broader systemic issue. By opening up the scope of the challenge, important issues and opportunities were revealed.

Following is a 10-step process indicating how a team of business designers tackled this perplexing challenge.

Step 1: Broaden the lens to consider every stakeholder in the patient's journey.

Where do you begin with a wicked problem? With the big picture. The first step is to identify every major point of patient contact in the health care system. The patient journey begins long before the EP is involved, and even long before a cardiologist is brought into the mix. These other stakeholders include internal medicine, emergency room

staff, general practitioners and nurses at every point along the path. Often nurses in GP offices, emergency rooms, heart failure clinics and specialist offices have the most 'face time' with patients along their journey.

Step 2: Empathize with patients and plot their varied journeys through the system.

Understanding the patient flow from one professional stakeholder to another and from one site to another (i.e., GP's office, emergency room, hospital/heart failure clinic), reveals the frequent loops in their care that have them returning to the same people and the same places in the system.

Step 3: Visualize patient flow within the broader context of the system to create a workable framework for designing more effective patient-management strategies.

While this project revealed a rather messy system of rework and, in some cases, 'lost patients' (i.e., patients who dropped off the system's radar), the system was reframed as a map of stakeholder relationships and patient flow that revealed two important findings. First, patients were being bounced back and forth like pinballs in the system. As the arrows in the distilled framework show (see **Figure One**), patients would land in emergency and be referred to a cardiologist or maybe back to their GP, who may or may not be equipped to educate, diagnose or refer the patient. For patients who made it to a cardiologist, they may or may not proceed to an EP, depending on their test results, and even if they were referred to an EP, they may be sent back for repeated tests because an EP doesn't recognize that particular cardiologist's expertise. Despite being bounced around, these patients remained active in the system.

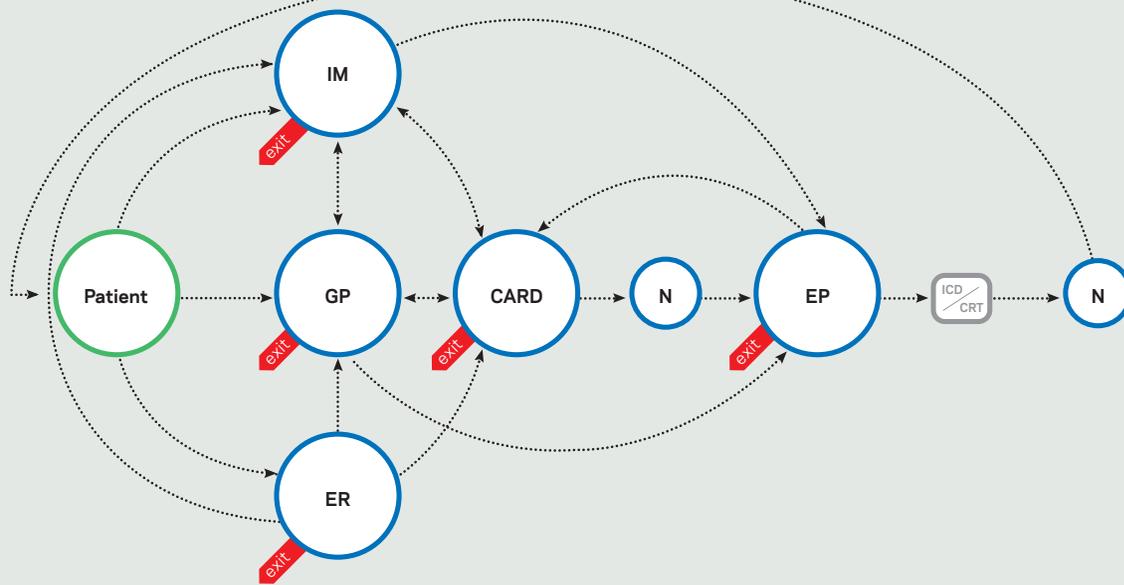
Second, for a variety of reasons, some patients were dropping out of the system and not identified for critical 'fast tracking' and resolution of their potentially-fatal condition. This phenomenon is depicted by the red 'exit arrows' in the diagram. For patients suffering from either the pinball effect or drop-out, this led to higher anxiety, resignation, or false resolution. For those at serious risk, this means that they were walking through life like ticking time bombs.

This framework becomes an important reference for everyone involved in solution development, implementation and measurement later in the process.

Step 4: Identify the issues that are causing the systemic problem.

The key question we had is, *why?* Why are these patients falling off the radar and why are they being bounced back and forth? We refer to this as the 'hairballs in the system' (i.e., points in the pipeline where flow is disrupted or diverted). Through in-depth interviews with all stakeholders (18 patients and 24 professional stakeholders operating in a number of different facilities and networks), we began to define what was causing the looping and losses, which included the following:

- **Variation in protocols** among professionals (different protocols and criteria within different practices and networks);



..... Patient pathway ● Patient GP General Practitioner ER Emergency Room Physician CARD Cardiologist
exit Patient exit point ICD/CRT Heart Therapy Device IM Internal Medicine N Nurse Practitioner EP Electrophysiologist

- **Undefined referral networks or patient pathways** (with the exception of well-orchestrated heart failure clinics);
- **Shortage of patient-management tools** to register and manage the patient in an effective (clinically based), expedient (time and cost-efficient) manner; and
- **Inadequate patient education.** These patients are often eager to understand ‘what’s happening to me and what can I do?’, in terms of both practitioner tools and patient resources.

Some networks were better at some of these things than others, with clues to broad-based fixes coming from individual centres and practitioner groups. Our overriding discovery was in the inconsistencies in practice and outcomes. While each party in the mix was doing their job to the best of their ability, it was the *connections* within the broader system that caused the problems. Issues of variations in technical assessments and patient dialogue were creating doubt and confusion in the minds of both patients and medical professionals. As one professional summed it up: “There needs to be a path of clear direction, further nurse-clinician support and patient education.”

Step 5: Understand the needs of each stakeholder.

A key success factor in helping to make any system work is recognizing the needs of each individual stakeholder and building an integrated solution that knits together all parties so they

can be more effective in their particular area while making the overall system work better. As one participant commented, “Physicians have to realize that they do not own the patient. They are all working together.” A smart health care system is a delicate balance of stakeholders. Each of them must be considered equally, because each represents a vital link to optimizing both patient outcomes and cost management.

Based on our research methodology that brings forward stories that reveals unmet needs, some critical considerations were established for creating an integrated solution. For the patient, their shared needs, both emotional and practical, were:

Understanding: Patient empowerment and participation in the process is key. It is vital for them to understand everything as it pertains to their treatment – physical aspects, the care process, options and decisions, lifestyle changes.

Simplicity: Conflicting messages and incomprehensible technical jargon and data only make the journey more difficult. The treatment process needs to be simple and easy to follow.

Personal Support: To alleviate anxiety, patients need to feel competently supported and connected to family, medical professionals and other patients.

Peace of Mind: To have a sense of physical and emotional

well-being is an important aspect in managing anxiety and overall health.

While every medical professional has their own important role and set of needs, following are the needs they collectively shared:

Knowledge and Understanding: To be abreast of the latest and most up to date information affecting patient care and clinical outcomes.

Network Support: To be in synch with and supported by their professional network (closely and broadly), and to know they can count on others to give patients the best medical care and deliver what's needed.

Control: To be confident they have the abilities, tools and systems to control the process and environment, and the outcomes of their patients.

Professional Confidence: To have faith in their own abilities, their colleagues and the system in doing the right thing.

Respect and Recognition: To be acknowledged and respected for the position they hold and the contribution they make to their profession and the patients' lives.

The challenge is to create common linkages between these needs through education, communication, protocols and tools that address the 'pinball challenge' in a way that creates a collective win for all stakeholders.

Step 6: Openly explore solutions in a holistic manner.

This includes drawing from the success of others, both locally and globally, and creating new and specific tactical solutions which can 'unblock the hairballs' in the system and help everyone do their job in a way that facilitates moving patients through a more efficient process.

Solutions needed to cover operations, education, collaboration and communication. Specific tactics included simple 'patient alert' checklists for Emergency, patient-education materials, and patient 'passports' in which a patient could have a user-friendly reference for their own use as well as the physicians they visit. Some of the solutions required continuing professional education, standardized protocols and local network design and collaboration. At the exploration stage, there are no bad ideas, because every possible solution can ultimately inform a brilliant and viable solution.

Step 7: Distill the solutions into viable strategies and doable tasks.

By clustering and analyzing feasibility of the hundreds of ideas generated, solutions can be mapped back into the operating framework and distilled into core strategies for success. At this stage, both broader development programs (like patient education) and specific tactics (like the Emergency reference check) are valuable. This gives stakeholders both something they can act on today, as well as broader solutions to collectively tackle.

Step 8: Identify who's needed to make it happen.

In designing the ultimate game plan, there are a number of

stakeholders who can and should play an important role. This also means considering an extended consortium into the development program. Bringing in the most knowledgeable, credible and capable partners is critical.

Step 9: Join forces around a collective game plan; activate and iterate.

With a strategic framework in place, the collaborative can drill down on short-term and long-term goals, define priority tactics, and activate a game plan to test out better practices. Instead of waiting for everything to be perfect, there are effective and efficient ways to get prototypes into testing in both 'dry lab' (simulated) and 'wet lab' (clinical, real-life settings) on a small scale. This will enable the development process to move forward in a real-time, real-learning manner until the broader program can be knit together and a case made for both economic and human impact.

Step 10: Measure, adapt and keep moving forward with conviction.

Using the 'pinball machine' as a framework, metrics and ratings can be defined. As an example, this can help to assess how quickly patients move through the system, how efficiently they get assessed and treated, how much rework can be eliminated, how satisfied both patients and health care professionals are with the solutions, and, ultimately, the impact on both patient outcomes and economics. These measurements will provide the evidence needed to roll-out and invest the time, energy and money into broader implementation and integration. Along the way, the collaborative will need to be prepared to adjust tactics, expand on good ideas and abandon the ones that don't work.

In closing

While solving wicked problems is far from an easy 10-step process, the project highlighted here illustrates how design thinking can be used to frame problems and map strategies for resolution. The ultimate value lies in the commitment of all parties to ascribe to the following design principles:

- Look at the problem holistically
- Understand the motivations and needs of all stakeholders, emotionally and practically
- Collaborate with the broader set of system stakeholders
- Explore the broadest set of possibilities
- Think about the solution as a system of strategies and activities
- Act: start now and evolve to a better future state.

In the case of smarter health care, the solution is not necessarily about spending more money, but rather finding cost-effective solutions to deliver better patient outcomes and experiences. **R**

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