

Streaming in the emergency department: An innovative care delivery design

By Sherri Morrish, RN, MSN

Emergency departments (EDs) in urban settings are experiencing extreme challenges such as overcrowding, long wait times, and patient dissatisfaction (Kelley, Bryant, Cox, & Jolley, 2007). Emergency department overcrowding is defined as a situation in which ED function is impeded by the fact that the number of patients waiting to be seen, undergoing assessment and treatment, or waiting for departure exceeds the physical or staffing capacity of the department (Forero et al., 2010). The literature on ED overcrowding, which comes primarily from the United Kingdom and Australia, demonstrates that the problem represents an imbalance between the supply of resources and demand for service. Moreover, this supply-demand imbalance is influenced by a complex web of internal and external factors (Darrab et al., 2006; Devkaran, Parsons, Van Dyke, Drennan, & Rajah, 2009; Kelley et al., 2007). Internally, there are factors such as the difficulty of inpatient discharges; externally, there is a lack of family physicians and walk-in clinics, limited hours of clinics that do exist, an aging population, and the closing of small rural hospitals. Overcrowded EDs are linked to a higher risk of poor outcomes, including increased wait times, patient dissatisfaction, staff frustration, and patient mortality (Darrab et al., 2006; Forero et al., 2010; Kwa & Blake, 2008). This situation leads researchers and health care leaders to look for solutions, as they examine the flow of patients into and out of emergency departments.

That flow begins at the triage desk, and the triage nurse's decision about the patient's acuity. This decision is made within the framework of the Canadian Triage and Acuity Scale (CTAS), which is used in many countries as a system to assign a level of acuity to all patients who arrive at triage (Bullard, Unger, Spence, & Grafstein, 2008). Patients are scored on the CTAS from Level 1 (most acute) to Level 5 (least

acute). Level 1 patients should be seen immediately by a physician upon presentation at the emergency department. Examples of a CTAS Level 1 is a patient in full cardiac arrest or severely injured. Level 2 patients include those having an acute heart attack, sepsis, active suicidal thoughts, or severe shortness of breath. Level 3 patients display such things as depression, headaches, abdominal pain, and potential miscarriage. Levels 4 and 5 include extremity fractures, sutures, coughs and colds, and back pain. Many factors influence CTAS scoring, and health care providers using the CTAS must be experienced and well trained.

In many emergency departments, care delivery for Level 1 and 2 patients takes place immediately by trauma-trained physicians and nurses. Levels 4 and 5 require straightforward care, and they are often seen in a minor treatment clinic (MT) or fast-track clinic (FT) located near or in the main ED. Level 3, moderately acute ambulatory patients, still pose a challenge for efficient, effective care delivery, and many potential solutions for overcrowding have focused on this level. One solution, in particular, and the focus of this study is a special unit within the ED for these moderately acute ambulatory Level 3 patients.

Several names have been given to such units, including "streaming units" and "rapid assessment zones (RAZ)." For the purposes of this study, we will refer to them as streaming units. Streaming units redesign the flow of moderately acute ambulatory Level 3 patients through the ED in order to decrease wait times without decreasing the quality of care (KGH Streaming Project Material, 2007-09). These streaming units are embedded in a separate area within a functioning urban ED, but are often viewed as a parallel system with dedicated staff and resources. In this way, they are similar to fast-track (FT) and minor treatment (MT) clinics, which are located within (or very near) the main ED and care for patients

with urgent, but less-serious conditions (Finamore & Turriss, 2009; Quattrini & Swan, 2011). Both FT/MT and streaming units function by moving patients in and out of chairs and only putting them in exam rooms for assessment and treatment (Interior Health Authority, 2010; Kwa & Blake, 2008; Ieraci, Digiusto, Sonntag, Dann, & Fox, 2008). This process results in improved patient flow and shorter wait times (Quattrini & Swan, 2011). By redirecting selected patients out of the main ED, stretchers are also more readily available for patients in need of urgent care (Interior Health Authority, 2010).

In order to understand the complexities of streaming unit care delivery, I used a qualitative, descriptive approach: the single case study approach. Case studies can answer the "how" and "why" questions when the focus is an under-studied, contemporary phenomenon within a real-life context (Yin, 1994). Case studies rely on multiple sources of evidence. I used semi-structured interviews and departmental documents as my data sources.

Ethics approval was obtained independently through the University of British Columbia (UBC), as well as the Interior Health Authority (IHA) in the summer and fall of 2011. A total of 15 semi-structured interviews were done including the three key informants over a two-week period, starting January 15, 2012, and finishing on January 28, 2012.

My research was guided by the following research question: What structures and processes are most influential for successful outcomes in one urban ED streaming unit with respect to management of moderately acute ambulatory triage Level 3 patients? I used document analysis and interviews with staff, managers, and physicians, as well as analyzing department documents in order to obtain multiple data sources in hopes of gaining a rich understanding of one streaming unit.

Patient care is what mattered the most to those who were interviewed. “We want to treat people kindly and give good patient care.” The physical space of the streaming unit, despite being small and cramped, only really mattered to staff when patient care and patient flow were interrupted and access to care was delayed. “It’s fast-paced. Do I really want people to be in chairs? Not really, but when you balance it... do you want them to still be in the waiting room waiting or would you rather them be in a chair treating them... you need balance.” Care delivery, to nurses and doctors, went beyond assessment and treatment of the patient; it included comfort, such as a warm blanket, having family present when space allowed, timely access to diagnostics, and offering a meal when appropriate. It involved spending time with patients, including one-on-one time. As one doctor put it: “I don’t think streaming should take away from the amount of bedside time I have with my patients.”

Communication—with each other and with patients—matters to staff. In fact, communication is a key ingredient to success for hospital X’s streaming unit staff. For example, timely reassessment by physicians is important, and staff needs to update doctors on patient status and get them back to the streaming unit. Unit clerks play a key role in the communication chain and often “see and know all” that is going on within this busy area. Communication is also important to patients. They need and want to understand this new way of receiving care, and explaining the streaming unit protocol made patients more satisfied and reduced complaints. “We often see children first. The nursing staff sees most of the patients first, so they set the charts up with who is first. I don’t look at the times, I take the first chart. We don’t get a lot of pushback from patients. The nurses do a really good job of explaining to patients why you may not be seen before someone else.”

Changing the way each staff member views emergency department care delivery matters. Care is going to “look different—it’s not going to be tucked in and the most comfortable way to give care for nurses or patients. But the other side is not giving care at all.” Not all staff like the streaming unit. As one informant

said, “Buy-in is so important. Some staff members really enjoy it, the challenge of it, and there are others who just have a brick wall up against it. They skulk back.” It is not for everyone, but over the past five years, as health care providers have learned how the streaming unit works, acceptance has grown. “I think in terms of utilizing the few examination beds we have to the greatest potential. It is a clever way to optimize the use of a few beds for many patients.”

Teamwork matters. Hardworking staff members who strive to maintain the integrity of the stream and its flow improve the success of the system, as well as general staff morale. Working with the “rules” of the area allows care to be moved along smoothly, with everyone working as a team for best patient outcomes. Sharing power amongst the team is important, whether it is expressed as doctors changing linens or unit clerks and nurses seeking out MDs in other parts of the emergency department. Everyone pitches in to make it work.

For the streaming unit, understanding and following pre-determined processes allows for timely care delivery. Although these processes were originally outlined by the project team, many key stakeholders have since provided input on which processes are working and which need revisions. There have been no quick fixes using a teamwork approach. As the unit has evolved, changes are still documented and decided upon with a team approach. The tools and resources work because of inclusive approaches to revising and refining them. “There has to be a clear process; paper and charts, DI, lab, etc... so things can run smoothly each time.”

Finally, staff thinks of the future. At the time of this research, a new emergency department was being built, which offers hope to those who will work there. It is a state-of-the-art facility, but brings a new set of challenges. Staff members are confident, however, that they can overcome the issues put before them. According to the MD key informant: “The new space is a zone unto itself. As far as I know, it’s the first streaming area built specifically for that. In any department in the world, quite frankly. So, it’s a massive area. We were blown away... we are building for

the future.” At the time of this study, the facility had not yet opened, but an RN was clearly optimistic: “It addresses all the structural issues we have now. Although there is anxiety from members of the staff, they are hopeful that these will, once again, be reviewed, adjusted, and supported through a team approach, as part of the change process.” Staff also spoke of the new department in very positive terms.

Implications for overcrowded urban emergency departments

In the literature, streamlined care for moderately acute ambulatory Level 3 patients has been presented as a stand-alone unit or as a combined unit for lower acuity (Levels 4 and 5) patients and Level 3 patients (Darrab, et al., 2006; Devkaran, Parsons, Van Dyke, Drennan, & Rajah, 2009; Ieraci, Digiusto, Sonntag, Dann, & Fox, 2008; Kelley, Bryant, Cox, & Jolley, 2007 & Kinsman, et al., 2008). This case study has shown what works well for hospital X’s emergency department: three, interrelated ED services in close proximity to each other.


Innovative and streamlined emergency department care for moderately acute ambulatory Level 3 patients has arrived at hospital X. According to the key informant MD: “I believe this is just my line; this is the best thing that has happened to ED medicine. At least in my career. I think that every physician who has been around before and after would say that... It’s the single most important thing in our department.” Another RN key informant stated: “When did we know we were having success? Honestly, it was on day one. When I left that day, I didn’t have 25 charts sitting there that were CTAS 3s that had not been seen. There were none. There was no one in the waiting room. We used to have 20 to 30, so we knew we picked the right project. We knew we would have to tweak it, but we knew we would never go back. This would be the way we would deal with ambulatory patients”.

Emergency departments with long wait times for their moderately acute ambulatory Level 3 patients should consider the possibility of a streaming unit.

Hospital X's emergency department was chosen purposively as a research site due to its successful and long-running streaming unit. This site has pioneered streaming in British Columbia's Interior Health Authority. However, due to time limitations as a graduate student, the methodology was limited to two data collection approaches. Potential bias was limited by not researching in the site I work in, by taking field notes and doing reflective journaling, and by being aware that the purpose of this research was not to compare sites in any way.

A single-site case study lacks generalizability. Therefore, a multi-site case study analysis of emergency departments with different types of streaming units will help us understand the key elements necessary for successful implementation of a streaming unit. For example, studying a combined minor treatment/streaming unit with separate or stand-alone streaming units would be worthwhile. Looking at these ideas from quantitative, as well as qualitative methodologies would enrich

the understanding of such units. Finally, I would like to see a pre-post intervention design or time series design to complement qualitative findings from document and interview analyses. I would also envision repeating this same study at hospital X in one to two years, following the opening of their new ED including their 50-chair, 12-bed streaming unit. This unit was built exclusively for streaming and includes all the key features staff felt were missing in the setting as it was studied for this research.

From this research, it is clear that streaming is improving care, patient outcomes, and staff satisfaction in hospital X's emergency department. This innovative care delivery design for moderately acute ambulatory patients is challenging the traditional paradigm of ED care, bringing positive changes in a complex health care environment. Timely care for ED patients through such innovative models as a streaming unit can save lives (Devkaran, Parsons, Van Dyke, Drennan, & Rajah, 2009). 

About the author



I have been an RN for 20 years, graduating with a diploma in 1993, a BSN from Thompson Rivers University in 2005, and my Master's in Nursing from UBC Vancouver in 2012.

I completed research and a thesis on ED flow (with a focus on ambulatory CTAS 3 patients) and improving access to ED care. Our health authority refers to our unit as "streaming"—that is, streamlining care of ambulatory, triage 3 patients. I completed a qualitative, descriptive study with 15 staff interviews at one hospital.

I am the Clinical Practice Educator (CPE) in the Emergency Department at Royal Inland Hospital in Kamloops, B.C. Our busy, tertiary ED sees close to 60,000 patients per year of combined adult and pediatrics.

I have been married for 20 years and have two lovely daughters: Anna, 14, and Victoria, 7.

CJEN Bouquets

Ottawa, Tuesday, March 5, 2013

— The Canadian Nurses Association (CNA) is recognizing 30 registered nurses (RNs) for their outstanding contribution to nursing and health care with Queen Elizabeth II Diamond Jubilee medals. The recipients from across the country were selected by provincial/territorial nursing colleges and associations and awarded their medals in a ceremony that included Health Minister Leona Aglukkaq, CNA president Barb Mildon and CNA CEO Rachel Bard.

"Congratulations to all the recipients of the Queen Elizabeth II Diamond Jubilee Medal," said the Honourable Leona Aglukkaq, Minister of Health. "Your outstanding contributions in nursing have earned you this great honour and set a fine example for others in your profession to follow. Please accept my best wishes for your continued success in serving Canadians and the health-care profession in such an exemplary manner."

Among the recipients are Heather Jewers and Landon Graham James. Ms. Jewers,

an RN in Nova Scotia for 38 years, is currently an assistant professor at St. Francis Xavier University. With her specialty certification in palliative care nursing, she has provided education services to nurses, other health care professionals, patients and families as a nurse consultant with St. Martha's Regional Hospital in Antigonish. Mr. James, from British Columbia, began his career 15 years ago as an emergency room nurse. During that time he has led two different emergency departments and volunteered countless hours for the St. John Ambulance brigade and the National Emergency Nurses' Affiliation of Canada. As a leader in education, he's brought emergency education to nurses in previously under-served communities throughout B.C. and the Northwest Territories.

Queen Elizabeth II Diamond Jubilee Medal awarded to nurses across Canada

On March 5, 2013, 30 registered nurses from across Canada received a medal in

honour of the Queen Elizabeth II Diamond Jubilee. The medals honour Canadians who have dedicated themselves to the service of their fellow citizens, their community and their country. Among those recognized for their outstanding contribution to nursing and health care is Past President Landon James. Landon truly represents the best in nursing leadership, commitment and passion in the profession of nursing. Congratulations to all the recipients: Theresa Agnew, Pam Archibald, Elsie Duff, Wendy Duggleby, Lisa Guidry, Natalie Hache Losier, Landon Graham James, Leah Jamnicki, Heather Jewers, Heather Johnson, Heather Keith, Janet Lapins, Patrice Lindsay, Lenora Marcellus, Donna Mendel, Thelma Midori, Mary Morris, Donna Murnaghan, Bernadette Pauly, Brenda Poulton, Sandra Reilly, Josephine Santos, Barb Shellan, Tracey Taulu, Anna Tumchewics, Ardene Vollman, Ruth Walden, Karen Wall, Beverly White and Lorraine Wright.