# STREAMING IN THE EMERGENCY DEPARTMENT: AN INNOVATIVE CARE DELIVERY DESIGN

by

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## ABSTRACT

Emergency departments (EDs) in urban settings are experiencing extreme challenges such as overcrowding, long wait times, and patient dissatisfaction (Kelley, Bryant, Cox, & Jolley, 2007). Streaming in the Emergency Department is an innovative care delivery design that is designed to reduce ED overcrowding and improve access to care. Streaming enables moderately acute ambulatory Triage Level 3 patients, who often wait the longest, to be cared for in a separate area embedded within the main ED. These patients receive care to the same standards but sit in a chair for most of their stay, only lying in a bed for examinations, treatments, and tests. This care approach often closely matches the way fast track or minor treatment clinics are run for lower acuity Triage Levels 4 and 5 patients in many urban EDs. This study aims to create a deeper understanding of "streaming." The research examined what factors influenced the successful streaming of moderately acute ambulatory patients within the streaming unit of Hospital X (British Columbia, Canada). A qualitative descriptive design using a single site case study was employed. The data analysis involved reducing data into meaning units, then reducing them to sub-themes which were finally grouped into four major themes (Graneheim & Lundman, 2003; Yin, 2004). These themes were: "facing health care realities," "doing it right," "maintaining flow," and" what matters?" 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).

## PREFACE

This research was approved by the UBC Behavioural Research Ethics Board on September 12, 2011, Ethics Certificate #H10-02071. This research was also approved by the Interior Health Research Ethics Board on December 1, 2011, research file identifier #2011-12-026-E.

## TABLE OF CONTENTS

## LIST OF TABLES

## ACKNOWLEDGMENTS

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What a unique adventure. May this only be the beginning of a great journey?

# CHAPTER 1: BACKGROUND, INTRODUCTION AND PROBLEM STATEMENT

## 1.1 My Shift, My Story

I come on shift. I look to the assignment staffing board in my busy emergency department and cross my fingers. The emergency nurses start to stand around the assignment board and computer screens to get report from night shift. "Please don't let me be at triage today," I whisper to myself. But it's me, for 12 hours. I stay for report so that I know where we are starting at for the day. So that I can hear about what patients are presently in our care. You can *feel* how a day is going to be when you enter the main nursing station. It's hard to describe unless you have worked in the environment, but you can. Almost every bed has a patient in it, and it's only 0730.

I can hear the alarm on a ventilator going off in the trauma room and know it must be a critically ill patient because there are two nurses, a respiratory technician, and two doctors in there. A bad motor vehicle trauma, I hear in report. His young wife and teenage son died before he arrived. He is badly injured. "It was a horrible night," the charge nurse says. I can hear a mental health client in our locked psychiatric room kicking and screaming and swearing; the charge nurse says, "We need to assemble a code white team to give him an injection to sedate him as there are no locked beds on our psychiatric unit until after lunch." Report carries on: lots of sick patients but there are no beds in the hospital; almost all the units are overcapacity and we have patients in the hallways. The charge nurse sums it up: "We have 19 admissions in our 21 beds." Finally, I hear what affects me in triage: who has been waiting and who is on the way. "We have five patients in the waiting room that have all been there since the early hours of the morning, two with abdominal pain, a patient with a migraine, and twin three-year-olds with fevers and sore ears. There is a stroke patient coming from a rural community, and the

highways, we hear, are horrible. So expect the traumas to start." We hear that the parents of the trauma patient will be back in an hour. They are grieving the loss of their daughter and grandson. "The intensive care unit is full but they expect to make some moves to accommodate him by noon. Maybe. It depends on what comes in before then." The only area that has capacity to see patients is our minor treatment department, so patients with a cut or a broken arm will see a doctor quickly. My heart sinks, because it seems wrong that sicker patients are waiting while lower acuity patients get fast treatment. All patients need to be seen in a timely manner. I am thankful my family is at home in bed sleeping in on this snowy Saturday morning. At the front desk, I get to work.

I am the triage nurse. I am responsible for assessing all the patients that come through our emergency department and making decisions about next steps. I have worked here for 15 years but am challenged every day. Who should go where? How can we get the sickest patients seen? I order lab tests and ECGs based on my nurse-initiated order sets, and I work collaboratively with my physicians, colleagues, ambulance attendants, charge nurse, and administrative team. I care for the patients, communicating with them to the best of my ability and reassessing them as often as I possibly can while they wait to get a bed in our already over-capacity department. Sometimes patients wait eight to ten hours; a lot can change in a patient in that time. I worry, I reassess, and I work in a system that is falling apart around me. Some patients or their families scream or threaten me, as if somehow this wait is my fault. I apologize but they do not hear me. They do not understand. Sometimes I do not understand either. It is so complicated that I do not know where to even start to improve the problems in my own department. Could we do something different? Can I do something to give these sick patients faster access to health care? I can't keep working like this. It's too hard. Please help me.

## 1.2 Introduction

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.; Kwa & Blake, 2008). This situations leads researchers and healthcare 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 & Turris, 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). Both options require diligent monitoring of patient outcomes and ED indicators such as Left Without Being Seen (LWBS) percentages, triage to doctor times, and door to doctor times.

### 1.3 The Complexity of Health Care

The emergency department is one small piece of a complex and ever-changing healthcare system. As resources become scarce and demands on our health care system intensify, problems may multiply and simple solutions may no longer be effective (Anderson & McDaniel, 2000). Each ED is situated within not only a single hospital, but also within a health care organization that is governed by provincial and national legislation. Moreover, the ED itself is a complex and ever-changing system; its activities, and the successful delivery of health care on the frontline, are dependent on changing relationships among people, processes, places, and procedures.

For these reasons, it is helpful to study these activities and relationships through the lens of complexity theory. Complexity theory is the study of complex adaptive systems (Crowell, 2011). This theory considers the patterns of relationships in a system, how they are sustained, self-regulated, and self-organized, as well as how outcomes emerge (Crowell, 2011). The ED is nested within a complex healthcare system nested within other complex systems, such as the community. Complexity theory, therefore, is a useful strategy for beginning the task of studying a system as a part of an integrated whole (Anderson, Crabtree, Steele, & McDaniel, 2005). In

fact, "it is within the context of the organization itself that many of the answers lie for understanding and improving health care delivery" (Anderson et al., p. 670). Complexity theory suggests that organizations, such as those in health care, are organic and living (Anderson et al., 2005). This is an accurate representation of the ED as it is woven into a larger whole, and a deep understanding of these dynamics will enhance attempts to improve emergency departments.

Complexity theory helped me view "dynamic agents of change" within one particular emergency department. My research illuminated the importance of relationships in the ED system and the flow not only of patients, but of information. I was able to see clearly how a patient's care is "the sum of all the members' [of the ED] participation" (Crowell, 2011) and how specialized units within the ED are complex adaptive systems.

### 1.4 Assumptions and Biases

The topic of improving care for the emergency department patient sits close to my heart. I have been a Registered Nurse for 19 years and an Emergency Department Registered Nurse for 15 years. I have lived the reality of increasing patient acuities, decreasing numbers of admission beds, hospital overcrowding, and longer wait times, all while striving to give the best possible care to patients and their families. I work in a busy ED situated in Kamloops, part of the Interior Health Authority (IHA) in British Columbia (BC), Canada. I am currently the Clinical Practice Educator (CPE); my role is to support staff in day-to-day practice. I am also part of a working group responsible for assessing patient access and care delivery within our ED. We recently implemented a minor treatment unit for Levels 4 and 5 patients and a streaming unit for moderately acute ambulatory Level 3 patients. These units are based on similar units in BC that are located in larger urban centers. Because our lower acuity services are modeled after many such ED services, I decided to study within my own health authority at a nearby hospital,

Hospital X. I also hoped to reduce researcher bias by studying a streaming unit in a different healthcare facility with different staff from my own practice environment.

## 1.5 Problem Statement and Purpose

The purpose of my research was to focus on an innovative care delivery approach, the streaming unit, for a specific moderately acute ambulatory patient population, the Triage Level 3 patients.

While streaming units have the potential to address emergency department overcrowding, they have been the focus of very few studies. These studies used outcomes indicators, known as quality indicators, such as "time to see doctor" and "time to discharge." Although these measurable quality indicators are useful for examining how EDs are performing, they do not capture the depth of what is actually going on within ED settings.

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 understudied, 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. A complexity theory lens, combined with a case study approach, provided me with a way of studying streaming as an integrated part of the ED as it is situated within a complex healthcare system (Anderson, Crabtree, Steele, & McDaniel, 2005).

## 1.6 Research Question

The research was conducted around the following question: what factors are most influential for successful outcomes in one urban ED streaming unit with respect to management of moderately acute ambulatory Triage Level 3 patients?

# CHAPTER 2: LITERATURE REVIEW

## 2.1 Challenges in the Emergency Department

Emergency department overcrowding in urban hospitals has been worsening since the 1990's; the problem stems from a combination of increasing patient volumes and wait times in the ED, a lack of inpatient acute care beds, a lack of long-term beds outside of the hospital, increased acuity and complexity of ED and acute care patients, complex discharge processes, and an aging population (Kinsman, et al., 2008; Taylor, Bennett, & Cameron, 2004). Emergency department staff have no control over the type, numbers, or acuity of patients who present at triage and who require care (Nash, Zachariah, Nitschmann, & Psencik, 2007). "No one is refused care, even when the hospital is at capacity, which results in long wait times, overworked staff, overcrowded departments, and patient dissatisfaction" (Quattrini & Swan, 2011, p. 40). Devkaran et al. (2009) stated that ED overcrowding is a systemic and serious public health issue that affects industrialized countries all over the world.

## 2.2 Review of Literature and Recommendations for Research

Research into improving access to care within emergency departments is critical so that knowledge on how to best approach system and process changes can be shared and integrated. Innovative ideas have been implemented, researched, and evaluated in various countries, and viewing these through the lens of evidence will provide an increased understanding of how to best provide care for ED patients and families (Cook, et al., 2004). Research has shown that fast-track or minor treatment clinics within an ED can successfully manage lower acuity patients (i.e., Levels 4 and 5) without extending the wait times of higher acuity patients (Ardagh et al., 2002; Darrab, et al., 2006; Devkaran, Parsons, Van Dyke, Drennan, & Rajah, 2009). Less is known about the efficient, effective management of moderately acute ambulatory Level 3

patients. There is very limited research available on streaming (as I have defined it) this type of patient. Due to the limitaton of such available literature, I have looked to research on improving emergency departments through the use of minor treatment and fast-track clinics for Levels 4 and 5 patients; I have also looked at emergency departments using low versus higher complexity units (these higher complexity units have also been referred to as streaming units). Research on units similar and/or parallel to streaming units may be transferable to an understanding of streaming units.

The existing research on emergency department innovations includes several articles from Australia, a couple from the United States, a British meta-analysis, and a couple of Canadian articles. The majority of pertinent research has focused on low acuity (i.e. Levels 4 and 5) patients, while a few studies looked to stream patients based on complexity rather than triage scores. The overarching question asked by all researchers was whether a minor treatment, fast-track, or streaming clinic could decrease overall length of stay (LOS) for a patient in the ED, which is a common benchmark of efficiency (Cook, et. al, 2004). Other quantitative indicators used in the research included time to physician (an indicator of wait times), time to admission, Left Without Being Seen (LWBS), and readmission rates. LWBS is described as a strong indicator of patient satisfaction (Devkaran, Parsons, Van Dyke, Drennan, & Rajah, 2009). With many of the studies, the important indicator is whether the LOS for moderately acute ambulatory Level 3 patients increased or decreased with the implementation of a unit that cares for lower acuity patients (Levels 4 and 5).

Length of stay for low acuity patients (Levels 4 and 5) in the intervention group after a minor treatment, fast-track, or streaming unit was implemented successfully decreased in all studies that examined this quantitative indicator. The level of significance of the reduction

varied but most reached statistical significance. Two studies reported increases in length of stay for Level 3 patients when a statistically significant decrease was noted for Levels 4 and 5 patients (Ardagh, Wells, Cooper, Lyons, Patterson, & O'Donovan, 2002; King, Ben-Tovin, & Bassham, 2006). Improving care for low acuity patients at the detriment of moderate acuity patients is a worrisome result. The Ardagh et al. study (2002) was a small sample size (n= 360) and the King et al. research (2006) tried a new concept of triaging to one of two streams based on patients' likelihood of being admitted versus being discharged. This may require further study as the data collection started immediately after the introduction of the new process. In 2006, Darrab et al. successfully decreased LOS for Levels 3 and 5 patients with a decrease, though not statistically significant, for Level 4 patients. However, the relatively small sample size (n= 368 in pre- and 380 in post-intervention group) of this study bears noting.

Improved statistical significance was observed in studies with longer hours of operations for the streaming units. Being open 24 hours a day did not guarantee better results, but hours of operation into the evening and staying open seven days a week did. In 2008, Ieraci, Digiusto, Sonntag, Dann, & Fox publised a study of an Australian emergency department with a fast-track unit open 24 hours per day that streamed patients based on complexity as well as triage level (therefore, Level 3 patients could go to this unit if not high complexity). This study looked at wait times, treatment times, Left Without Being Seen, and readmission within 48 hours; all but the representation rates decreased with statistical significance. A second study in 2009 by Devkaran, Parsons, Van Dyke, Drennan, & Rajah researched a 24-hour, seven-day-a-week fast-track unit in a large hospital in the United Arab Emirates. It looked at length of stay, wait times to see doctor, mortality and, specifically, whether a fast-track clinic would negatively impact the urgent care patients in the Level 3 category. A large sample size of over 500 patients in each

group made the statistically significant results in all areas except overall LOS for Level 3 patients (decreased, but not statistically so) clinically relevant.

One study by Finamore and Turris (2009) was conducted with low acuity patients (Levels 4 and 5) at Burnaby Hospital in British Columbia, Canada. They found that their model for low-acuity management reduced ED overcrowding, shortened time to treatment, and improved patient satisfaction. This clinic, however, was not designed to manage moderately acute ambulatory Level 3 patients. The research suggests that fast-track clinics within emergency departments are effective ways to manage lower acuity patients, and there is interest in using similar approaches with moderately acute ambulatory Level 3 patients.

Those patients who wait the longest in urban emergency departments are the moderately acute Level 3 patients (Cook, et al., 2004; King, Ben-Tovin, & Bassham, 2006). The literature has suggested that management strategies for Levels 4 and 5 patients might apply for Level 3 patients (Ardagh, Wells, Cooper, Lyons, Patterson, & O'Donovan, 2002; King, Ben-Tovin, & Bassham, 2006). I am optimistic that these concepts are transferable to the moderately acute ambulatory population. As the literature suggests, these patients could be embedded within a currently functioning fast-track unit or put through a separate and dedicated streaming unit (Devkaran, Parsons, Van Dyke, Drennan, & Rajah, 2009; Ieraci, Digiusto, Sonntag, Dann, & Fox, 2008). The literature also suggests that the utilization of senior emergency department staff leads to improved length of stay (Considine, Kropman, Kelly, & Winter, 2008; Kinsman, et al., 2008; Nash, Zachariah, Nitschmann, & Psencik, 2007). Traditionally in an ED, senior staff are felt best suited for roles in trauma and triage, but research suggests that the fast and dynamic pace of streaming units requires experienced staff (Nash, Zachariah, Nitschmann, & Psencik, 2007). Research also shows that streaming units run best when built within or near the ED as

they provide quick access to resources and services typically reserved for higher acuity patients. Streaming units need clear patient inclusion/exclusion criteria for staff and physicians to follow (AnalysisWorks, 2007; Interior Health Authority, 2010). Finally, longer operational hours into the evening for seven days a week has proven to be statistically significant in the success of streaming units (Considine, Kropman, Kelly, & Winter, 2008; Kelley, Bryant, Cox, & Jolley, 2007; Ieraci, Digiusto, Sonntag, Dann, & Fox, 2008).

With so many healthcare organizations doing research on the effectiveness of their fast-track unit implementations, I would again like to pose this question: If this is already being done within an emergency department, then can these same concepts of streamlining care be used to care for moderately acute ambulatory Level 3 patients? Or, can they be cared for together? Literature strongly supports the use of fast-track clinics for low acuity patients (Cook, et al., 2004), as has been described. Of clinical importance is the fact that ED leaders must carefully monitor the effects of a FT clinic on its more acute patients in regards to time to physician and length of stay. The adherent risk of a FT clinic is that sicker patients will then wait longer than low acuity patients to be seen (Ardagh, Wells, Cooper, Lyons, Patterson, & O'Donovan, 2002; King, Ben-Tovin, & Bassham, 2006).

Also clinically significant is the consideration of operational times and staffing of a fast-track or streaming unit. Units open seven days per week with longer hours that ran into the later evening, early morning, or even up to 24 hours per day showed some improved results over those with more limited hours (Considine, Kropman, Kelly, & Winter, 2008; Devkaran, Parsons, Van Dyke, Drennan, & Rajah, 2009; Kelley, Bryant, Cox, & Jolley, 2007; Ieraci, Digiusto, Sonntag, Dann, & Fox, 2008). The reasons for this were not well discussed. These must be carefully considered in relation to internal staffing of nurses, nurse practitioners, and/or physicians. Junior

staff not familiar with ED protocols in the fast pace and quick-transitioning of an FT clinic may initially negatively impact wait times and length of stay (Nash, Zachariah, Nitschmann, & Psencik, 2007). Again, frequent monitoring of the quantitative indicators is essential. The most statistically significant results occurred when senior staff were assigned to this area (Considine, Kropman, Kelly, & Winter, 2008; Kinsman, et al., 2008).

Left Without Being Seen, a well accepted indicator of patient satisfaction, requires attention. Six of the studies examined this indicator, and five of those noted improvements, meaning fewer patients left the ED without seeing a physician or nurse practitioner. Four of the five reached statistical significance, two of those with p=0.001. Interestingly, Kinsman, et al. (2008) did not see an improvement in Left Without Being Seen. The study focused on an urban ED that implemented a fast-tracik unit and staffed it with nurse practitioners (NP). Three of the four NPs were junior, and the data was collected after implementation. Future research as to the impact of junior NPs or primary caregiver care on LWBS rates would need to be studied.

A final note of clinical significance is the reasearch published in 2008 by Kwa and Blake, as well as the study by Ieraci, Digiusto, Sonntag, Dann, & Fox (2008). The two Australian emergency departments operate their fast-track clinics with different approaches but both included moderately acute patients as well as low acuity patients, and both used a model whereby patients were only in beds permanently if being monitored. Otherwise, they moved in and out of beds for assessement and treatment only. Although their results were not as statistically significant as some of the other studies, it is an innovative idea, and no negative results emerged, such as increased indicator times. Both studies above also suggested more research into these new designs.

Fast-track clinics for low acuity patients embedded within a functioning urban adult/pediatric emergency department are statistically supported endeavours. Careful monitoring of the quantitative indicators such as time to physician, overall length of stay, and Left Without Being Seen need to be monitored prior to opening such a unit as well as initially following the intervention and at regular intervals on an ongoing basis. Furthermore, the same indicators must be carefully monitored as to the impact of a fast-track unit on the moderately acute ambulatory patient population to ensure that their care is not being compromised with a fast-track clinic dedicated to lower acuity patients. Senior staff should work within the unit and consideration should be given to inclusion of moderately acute ambulatory patient population. Hours of operation should be carefully considered once data as to the busiest times in the department have been clearly analyzed. Frequently, this is the later afternoon and evening hours.

Clear gaps in this body of knowledge are evident. The concept of changing criteria for inclusion from low acuity (Levels 4 and 5) to a low complexity model for inclusion requires more research (Ieraci, Digiusto, Sonntag, Dann, & Fox, 2008; King, Ben-Tovin, & Bassham, 2006). This is an innovative idea that does not exclude a higher acuity patient (such as a Level 2 or 3). Finally, lacking from this body of literature is qualitative research. In 2007, Nash, Zachariah, Nitschmann, & Psencik conducted a patient survey, but with a response rate of less than 2%, it is difficult to feel confident in the findings. Is a fast-track or streaming model affecting the perception of care in the emergency department, either by nurses, nurse practitioners, or physicians? Are patients feeling cared for in a competent and compassionate manner? Or, is time to physician and overall length of stay in the emergency department the only thing that matters? These are questions that solid qualitative research could help to answer.

Streaming may very well challenge the traditional paradigm of emergency department care, and it has the potential to influence positive change in our complex healthcare system. Timely care of the ED patient, especially the modearly acute ambulatory ED patient, is a public health crisis – early intervention and timely care for these patients will save lives (Devkaran, Parsons, Van Dyke, Drennan, & Rajah, 2009).

## 2.3 Theoretical Framework

Health care organizations are becoming increasingly complex (Crowell, 2011). Hospital emergency departments are, themselves, complex systems embedded in the complex whole. The nature of ED relationships can be better understood with respect to complexity science principles (Crowell, 2011). These principles include several key ideas: systems do not fall apart—they self-organize; systems self-organize as they approach chaos; self-organization emerges from relationships within the system—not top-down imposition; order is found in information, and information is abundant and open (Crowell, 2011). Complexity theory provides a useful way of looking at the "chaos" of emergency departments and streaming units. We can see how they self-organize through the activities and relationships of the people who work together to make the departments function.

When complexity theory is applied to the study of emergency department streaming units, we can see the importance of making sense of the organization, designing for the future, keeping structures and processes fluid and open for revisions, and allowing relationships among providers and patients to identify and promote best approaches for delivering care. Complexity theory acknowledges that organizations, at all levels, learn, grow, and improvise in order to make sense of new ways to envision the future (Anderson, Crabtree, Steele, & McDaniel, 2005; Anderson & McDaniel, 2000). These systems are often characterized by dynamic agents, such as

nurses and doctors, who interact in non-linear fashions (Anderson & McDaniel, 2000). Although what they do can never be totally predicted, patterns emerge over time that characterize the best ways they have found to meet patients' needs (Anderson & McDaniel, 2000). Viewing the ED through a complexity theory lens will allow me to learn more from its dynamic agents (i.e., care providers) about best approaches for streaming unit management of moderately acute ambulatory Level 3 patients.

# CHAPTER 3: METHODS

## 3.1 Introduction

The purpose of this study is to investigate the factors involved in the successful emergency department streaming of moderately acute ambulatory Level 3 patients using a qualitative case study methodology. Qualitative research, which provides rich description and deep understanding, enables others to make sense of clinical reality (Morse & Field, 1995). This makes it an appropriate approach for this study, which focuses on the realities in a particular clinical setting. Moreover, qualitative case study methodology allows a researcher to study and understand complex phenomena within their contexts using a variety of data sources (Baxter & Jack, 2008; Keen & Packwood, 1995; Yin,1994), and an in-depth investigation of a solitary unit, or single case study, allows researchers to review a representative case in its natural context in order to evaluate it in detail (Polit & Beck, 2008). With case study research, we can appreciate the uniqueness and complexity of the case (Stake, 1995).

I also chose a case study methodology because it allows a "useful way to explore a phenomenon that has not been rigorously researched" (Polit & Beck, 2008, p. 235). As I have outlined, streaming in emergency departments has not been the subject of rigorous research. Further, an explanatory case study, using multiple data collection options, is likely to answer the "how" and "why" questions associated with a phenomenon that lacks full understanding (Yin, 1994). Pope and Mays (2006) noted that a case study provides evidence useful to form judgements about the appropriateness of a program and whether the outcomes of the intervention are justified by their structures and processes.

## 3.2 Ethical Considerations

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. Dr. Maura MacPhee at UBC oversaw my UBC Ethics application. I also had administrative approval from two emergency department nurse managers and the Chief Medical Officer at Hospital X. All materials related to this study are being kept in a locked, secure location, and they will be erased (digital recordings) and shredded (hard copies) five years after the completion of this study, as per ethics protocol.

## 3.3 Setting-Selection Criteria

"The critical first step in qualitative sampling is selecting a setting with a high potential for information richness" (Polit & Beck, 2008, p. 354). With this in mind, I based my setting selection on the purposive sampling method referred to as criterion sampling. Purposive sampling allows a site to be selected on the basis that it is typical of the phenomenon being studied (Pope & Mays, 2006), while criterion sampling, more specifically, involves "studying cases that meet a predetermined criterion of importance" (Polit & Beck, 2008, p. 356). The setting which fulfilled these criteria was the Emergency Department at Hospital X. The streaming unit in this hospital had been operating for approximately five years (opened in November 2007), so I hypothesized those effective streaming structures and processes would be in place. This hospital is also within a reasonable driving distance to make it feasible to travel back and forth to interview staff and obtain documents.

Hospital X is a tertiary care hospital located in the center of a city with a population of more than 160,000 residents (City of Kelowna: Population and Demographics, 2011). The emergency department sees a total of 60,000 adult and pediatric patients per year (150-180 visits

per day) of all CTAS levels. The ED is open 24 hours per day, seven days per week and is staffed with first-line nurse managers (known as charge nurses), registered nurses (RNs), licensed practical nurses (LPNs), medical doctors (MDs), unit clerks, and support staff. The emergency department has three defined units: a trauma/resuscitation area, a low acuity minor treatment clinic (MT) and a streaming unit. The main ED has 23 beds with two trauma rooms, a procedural sedation room and a locked psychiatric secure room. The main ED manages inpatient admissions and higher acuity patients, including Levels 1 and 2, and non-ambulatory Level 3 patients. The MT clinic is for low acuity patients (Levels 4 and 5). The streaming unit, the focus of this study, is designed for moderately acute ambulatory Level 3 patients. It consists of four rooms and 12 chairs.

### 3.4 Participant-Selection Criteria

Two types of participants – interview participants and key informants - were selected carefully from Hospital X.

#### 3.4.1 Interview Participants

Interview participants were selected using purposive sampling for key informants and convenience and snowball sampling for the rest of the participants until data saturation was complete. Once my study was approved through both ethics boards, I used a purposive sample for the three key informants: a registered nurse, a manager, and an emergency room physician (MD). Then, through these key informants, the study information was emailed to staff in the ED, lab, and X-ray unit. Therefore, those that responded to the email were contacted and offered more information, if required, before asking them to sign a consent form. Eleven staff members responded: two from X-ray, one unit clerk, and eight RNs who work in the ED in various roles. The final participant was recruited when I was at the hospital doing interviews; he came to me as

he had heard about the other staff doing interviews and requested to sign consent and participate also. Therefore, a total of 15 interviews were done including the three key informants. I booked interview times, using email as the only source of communication, over a two-week period, starting January 15, 2012 and finishing on January 28, 2012. Twelve of the 15 interviews were done between January 22 and 25, when I went and stayed in the city for four days. Each day I did pre-booked interviews in a quiet and private room in the ED. All interviews followed a semi-structured format using guiding questions as per Appendix C.

### 3.4.2 Key Informants

Interviews with key informants were used to obtain the information required for the background section of this thesis as well as information regarding current unit design and future development. The key informants were chosen purposively, as they play a key role in understanding the department (Polit & Beck, 2008). Informed consent was obtained from the lead medical doctor for Hospital X's emergency department, as well as the prior emergency department manager, and the emergency department educator prior to the interviews. These interviews will assist the readers in understanding how this streaming unit evolved and what the plans are for the near future (a new ED opened in May 2012). . These interviews also followed a semi-structured format using guiding questions as per Appendix A.

## 3.5 Procedures

### 3.5.1 Interviewing

I booked interview times using work e-mail and conducted all of the interviews by the end of January 2012. These individual interviews took place in a quiet room at Hospital X, which I booked in advance of the interviews. Interviews were conducted at times that were convenient for interviewees. I used a digital recorder to record all the interviews, which were

between 15 minutes and one hour. By the end of the 15 staff and doctor interviews, data saturation had been reached and no additional individuals were recruited for interviews. I had planned to use a snowball approach to recruit additional interviewees, but this was not necessary. The ethics-approved questions appear are in Appendix C. Small tokens of appreciation, $5 gift cards, were given to each interviewee.

### 3.5.2 Field Notes

I compiled copious field notes after each interview. These notes consisted of quick points on comments made by the participant; I reworked them later in the day into meaningful reflections (Morse & Field, 1995). My field notes contained the brief descriptions of what was discussed and contained many things that I believed to be worth noting. These included such things as my feelings, my reactions to the interview, reflections on personal meanings of the interview and the significance of what was being said by the participant (Patton, 2002; Polit & Beck, 2008). My field notes also helped me maintain a clear chain of evidence, increasing the reliability of my case study analysis (Yin, 1994).

### 3.5.3 Reflexivity

Reflexivity is the process of critically reflecting on oneself and analyzing and making note of one's personal values that may affect data collection and analysis (Polit & Beck, 2008). This process establishes researchers' awareness of themselves as part of the data they are collecting; it describes the struggle between being the researcher and becoming a member of the culture (Speziale & Carpenter, 2007). Reflexivity can be used to enhance the quality of research by acknowledging that this is to be expected in qualitative research and that researchers should explore these issues before entering the field (Polit & Beck, 2008). I kept a journal before, during, and after my research in order to clarify my thoughts and feelings related to this case

study. I referred to these notes to address any hidden assumptions or biases throughout the case study process.

### 3.5.4 Document Analysis.

In addition to interviews, document analysis was done by obtaining copies of the policies, procedures, and charting forms related to implementation and ongoing evaluation of the streaming unit at Hospital X's emergency department. Of particular importance was a binder with streaming unit policies, patient inclusion/exclusion criteria, and treatment protocols for staff and doctors to use as a resource. I also reviewed the charts which are used for staff and doctor documentation and the administrative documents used to record quality indicator data (e.g., "time to see MD").

### 3.5.5 Data Analysis

Initial interpretation and analysis of qualitative data can occur virtually simultaneously (Polit & Beck, 2008; Stake, 1995). This was done by listening to the interviews, taking field notes, reflecting on interviews, and making journal entries after each interview. Case study data analysis consists of examining, categorizing and recombining the evidence to address the initial propositions of the study (Yin, 1994). Graneheim and Lundman (2004) refer to a similar process of data analysis that involves a clear step-by-step process called content analysis. After the completion of interviews, I downloaded and transcribed all the interviews using Dragon Naturally Speaking Version 11 software and a headset. These transcriptions were then re-read for accuracy to digital recordings. I compiled my data in NVivo software, which enabled me to break the interviews down into meaning units, or constellations of words, sentences, and paragraphs that contained certain aspects that related to each other through their content and context (Graneheim & Lundman, 2004). Similar meaning units (known as "nodes" in NVivo)

were organized into 29 unique categories. I then went about "condensing" the data, or shortening the data while still preserving its core (Graneheim & Lundman). Although I could have done this with NVivo software, due to my novice understanding of this software program, I chose to manually arrange meaning units/nodes into code categories and themes. I preferred touching and writing on the data sets, and I developed a colour coding schema to arrange meaning units into categories and themes. In summary, my data was coded, categorized, and then moved to sub-categories and finally themes in "order to strive to weave the thematic pieces together into an integrated whole" and unveil the evidence (Polit & Beck, 2008, p. 517; Yin, 1994). I discussed this analytic process with my committee supervisor during weekly meetings and via frequent e-mail exchanges.

### 3.6 Rigor

"Without rigor, research is worthless, becomes fiction, and loses its utility" (Morse, Barrett, Mayan, Olson, & Spiers, 2002, p. 14). There is debate in qualitative methodology as to how to ensure rigor and goodness (Speziale & Carpenter, 2007). Morse et al. (2002) advocate focusing on verification processes throughout the entire study, as opposed to waiting for the end of the study. I accepted this idea, and for this research, rigor and trustworthiness were built into the research process from the initial stages. Included in this were investigator responsiveness and the verification strategies of methodological coherence, theoretical and sampling adequacy, maintaining an active analytical stance, and saturation. These strategies allowed me to correct both the direction of the analysis and the development of the study as necessary (Morse et al., 2002). My thesis supervisor, offered support throughout data collection and analysis to assist with maintenance of rigor.

It is essential that the investigator, at all stages of research, remain open and insightful. For example, the researcher must be willing to relinquish any ideas that are later poorly supported by the research despite any excitement that may have been felt when the theme initially appeared (Morse, 2006). In this study, I used the skill and expertise of the supporting committee to ensure that critical reflection on methodology, data collection, and data analysis was done throughout the research process and not just at the end of the study.

Qualitative inquiry must be verified reflexively at each step throughout the research and data analysis; this ensures that verifications are self-correcting (Morse, 2006; Polit & Beck, 2008). The ongoing question to oneself as a researcher must be: "How can I be confident that my observations and analysis are accurate and insightful?" (Polit & Beck, 2008). All data were reflected upon, reviewed critically, and discussed with the thesis committee to ensure appropriateness, accuracy, and meaningfulness.

Methodological coherence refers to the assurance that there is congruence between the research question and the components of the chosen methodology. Although I chose my methods with committee assistance, I used reflexivity and my field notes to ensure that I stayed focused on Hospital X to avoid biases related to other experiences with streaming units. Ensuring saturation of data within this one site meant that I sought replication of interview findings. Replication "verifies, and ensures comprehension and completeness" (Morse, Barrett, Mayan, Olson, & Spiers, 2002, p. 18). As I collected and analyzed data, I kept going back to my initial notes and codes to ensure that nothing new was emerging from the data. As suggested by Morse (2006), I had to think theoretically, constantly checking and rechecking data so that I could build new data and, potentially, new theories.

# CHAPTER 4: RESULTS

## 4.1 Introduction

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? By viewing Hospital X's emergency department as a complex adaptive system, I used document analysis and interviews with staff, managers, and physicians as multiple data sources to gain a rich understanding of one streaming unit. In this chapter, I will discuss the four major themes that emerged from this data. These themes, together with their subthemes, are presented in Figure 1 below.

Table 1. Themes and Subthemes

| **Theme** | **Subthemes** |
|---|---|
| Facing Health Care Realities | None |
| Doing it Right | Prep work<br>Envisioning success<br>Leadership<br>Teamwork<br>Experienced staff<br>Privacy and Advocacy |
| Maintaining Flow | Patients<br>The process<br>Physicians<br>Consultants and surgeons<br>Staff<br>Resources<br>Diagnostic imaging and the Laboratory<br>Discharge |
| What Matters? | None |

## 4.2 Facing Health Care Realities

Key informants described how Hospital X's emergency department used to be before its redesign into three separate but interrelated units (i.e., main ED, minor treatment clinic, and streaming unit). They explained that the ED was always in gridlock, with long wait times the norm and some patients staying for days. Staff interviews confirmed these perceptions: beds were "completely full every day." Documents showed that ED patient volumes in 2006-2007 were very high, with an average of 130-150 patients per day and some days hitting peaks of 220 visits per day. Since 2006-2007, the visits have increased by 10-20 percent, but the redesign has shifted the majority of patient volume to the minor treatment clinic and streaming unit. According to key informants, the majority of patients being seen are treated as they would in a walk-in clinic or general practitioner's office. Key informants noted another major change since the redesign: physicians used to sit around waiting to see patients, even at full capacity, because there was nowhere to see them. Waiting rooms used to be packed to overflowing, but doctors would have no physical space to see them in private. Patients complained about the long waits and staff frequently voiced their frustration with overcrowding and an inability to provide care for their community.

Key informants stated that challenges persist but that the redesign has decreased the long waits as well as the patient and staff frustration. With respect to the streaming unit, three to four hours in a waiting room before seeing a doctor is the exception to the rule now, not the norm. In interviews, staff stated that the streaming unit "is not perfect or pretty, but it's functional and it works." The streaming unit is comprised of nothing more than four small but private rooms with doors. These four rooms are just off a busy hallway that is used by the public, the staff, ancillary services, and volunteers to bring patients into and out of the department. It is noisy and one of

the highest traffic areas in the emergency department. Walking two steps from the last of the four rooms and taking a sharp right, one can find 10 standard chairs and one double bench. This is where patients and their family members wait and are cared for as they move back and forth between the chairs and private rooms for assessment, treatment, reassessment, and teaching, until they are either admitted or discharged home. This tiny hall with 12 seats is across from a dirty service/utility room and a high-traffic bathroom. Indeed, this is not ideal, but it works. Patients are seen and cared for.

The realities of health care and emergency department care delivery today are challenging. The leadership team, healthcare professionals, and support staff at Hospital X looked within for improvements to the complexities they were facing. They challenged the norms by looking at a way to re-order their space to meet the needs of patients at different CTAS levels. Pilot testing and ongoing evaluation provided them with evidence that their redesign was successful.

### 4.3 Doing it Right

Although Hospital X's streaming unit opened on November 14, 2007, work began six months before that. It started with a registered nurse attending a conference in Toronto on behalf of Interior Health Authority (IHA) emergency departments and learning about work being done in St. Michael's Hospital in Toronto. This hospital was also struggling with long emergency department waits and overcrowding, and they had moved their moderately acute ambulatory Level 3 patients to a separate care area. The nurse attending the conference was the ED Services Network Director for IHA, and she returned to her ED with a vision of a new way to address the overcrowding that was plaguing their emergency department.

### 4.3.1 Prep Work

"We knew we really needed to come up with something that was very innovative and creative… we knew we needed to do something different" (Key informant, 2012). The key informant stated that prior to establishment of the streaming unit; there was a team a Hospital X that was looking at access and flow as part of a British Columbia healthcare innovation initiative to improve emergency department management or "flow." The Interior Health Authority contracted a consulting firm called Analysis Works to assist with project management and measurements of change and success. The network director quickly put together a small leadership group from KGH ED to fly out to Toronto to view St. Michael's streaming unit. This team included all three key informants for this case study. As stated by one key informant: "We went and saw their Rapid Access Unit (RAZ) in Toronto. We were absolutely blown away. We came back and said: we've got to start planning this."

The leadership team liked the name "streaming," because it reminded them of flowing water; patients would enter, move through a complex system, and flow out, either home or into the hospital for further care. This stream needed to stay fluid and not freeze. It needed to remain free from large branches, rocks, or dams so that the flow could be maintained and communities at the far end of the stream could be sustained and relied upon, for the present and the future. This streaming metaphor is what the leadership team wanted for emergency department care at Hospital X.

Hospital X knew their department was different than St. Michael's, which had larger pockets of space for separate care areas. With less space to work with, the ED leadership team got to work and formed a committee of a large number of stakeholder groups to "get it right." In hindsight, a key informant said that some groups should have been included that weren't, such as

volunteers and unit clerks. Overall, however, the leadership team felt well-supported by high administration, staff, and the consulting firm. The consulting firm guided them through "baby-steps:" there were documents, binders, rules, flow maps, and well-planned decisions, always made as a team.

At one point in the process, a nurse-physician emergency department team came from Toronto to meet with the streaming project team at Hospital X. Staff and were able to ask these visitors questions. In addition, the ED nursing educator flew to St. Michael's and spent a shift working in their department and watching the triage process and the operations within their RAZ (streaming) unit. In an interview with this educator, she stated that she was able to compare their ED to the St. Michael's RAZ to better determine what would work or not work in their urban ED. Upon return home, she was able to discuss her observations and thoughts in detail with the streaming project team. One of her concerns stemmed from a blunt warning by St. Michael's leadership: "They said some staff would get pretty pissed off and even quit." The project team, therefore, prepared for possible resistance from staff and physicians.

After nearly six months of planning and meetings, short trials were planned for a new streaming unit in Hospital X's emergency department. According to the key informants, space was the biggest hurdle. The back of the ED was finally chosen for the site of the streaming unit. "It was not great, but it was the best choice." The very first trial was a mock one involving actors as "patients." This mock trial gave them a clear indication of problems still remaining. Throughout the process of trial and error with mock trials, the whole project team stayed committed to working together and making decisions together. Eventually, short three- to four-hour trials with real patients were successfully conducted with ED staff. The opening day was November 14, 2007. It ended up being the day of the funeral of a senior RN from the ED that

had died from cancer. Staff was grieving and many had gone to the funeral. They decided to open it anyway, just for four hours. "We couldn't stop. We ended up running it 24/7 after that day."

As part of the initial streaming unit evaluation, follow-up phone surveys were done by staff. A key informant stated that this helped the project team know how patients felt about the care they were receiving. The surveys helped the staff learn that despite the space and the chairs, the patients were satisfied with the care delivery process. Quality indicators were also monitored and discussed at leadership and project team meetings. As stated by a key informant: "We learned very quickly that, despite us wanting to do quick fixes, doing this altered the process. We had to give time and then involve project team… we recognized that kind of a global approach worked, bring it back to the team to make decisions."

### 4.3.2 Envisioning Success

The leadership team had such a positive outlook that they felt they were seeing a new type of light. One of the key informants described that she knew they needed to find a "new rock," a new way of doing business and a way to create opportunities for success within her own department rather than a large, complex solution at a hospital level. Streaming was it. "We had such a gem… we had a gem here that we knew we could work with and we knew we had to move it forward."

As the streaming project moved forward, the project team kept monitoring the outcomes they wanted to achieve. They wanted improved time to see physicians, and they aggressively planned for less than one hour for pediatric patients and less than two hours for adult patients. They wanted to see fewer complaints by patients, particularly aggressive or verbally threatening behaviours (reported by staff in incident reports). In interviews, staff confirmed the importance

of decreasing wait times with respect to patient and staff frustration. Staff interviews also revealed their other priorities when the streaming unit got underway: faster access to consultants, specialists and diagnostics (e.g., ultrasounds); "unblocked" ED beds and inpatient beds for patients really needing them; follow-up post-discharge with community physicians to ensure adequate care in the community and fewer unnecessary returns to the ED; privacy and confidentiality for patients; improved staff morale; and a healthier and happier patient community. Staff felt that their concerns were heard and are still factored into ongoing redesign issues with respect to the continuity of care provision among the ED, inpatient beds, and the community.

### 4.3.3 Leadership

Although there was a formal leadership team responsible for Hospital X's emergency department's streaming unit project, they depended on stakeholder input, the project team and consulting firm, and buy-in from staff and physicians. Everyone knew they had to look within for solutions to a complex problem. According to one key informant: "It's a new direction, it has to change. It has to change for health care. I guess I can do this, it's just new." Leadership was also willing to say "I'm sorry." In the excitement of planning, some key stakeholders were not brought into the change process. After opening the streaming unit, there were many follow-up meetings to explain and apologize. Formal leaders took accountability for planning mistakes and asked everybody for their input during the trials and after unit opening. Staff responses were very positive to leader requests for their input. As one staff member said: "Streaming is amazing. It is bringing the ED back to what it should be. If it's done properly, patient care does not suffer." Leadership showed the way to emergency department system redesign.

### 4.3.4 Teamwork

Teamwork was essential in both planning and the day-to-day work of the streaming unit. Improved communication and processes were essential. This involved smooth transitions from patient arrival and triage to physician assessment and computer order entry, to necessary lab tests and re-assessments, and to teaching, discharge, or admission. As one staff member stated: "We need to work as a team, let each other know what is going on, what we've done or it's very frustrating… just even let the unit clerk know." A physician commented on another streaming unit concept adapted from St. Michael's: the MD-RN tandem team. "The assigned streaming RN controls the flow and who should be seen first, not the physician. In their eyes, there may be someone who needs to be seen before someone who registered earlier. We trust their judgment." A physician commented that "overall, nurses control the flow of bringing in patients; however, a lot of docs will bring in patients themselves depending on what the situation is. One nurse can't always do it all, especially at night." Listening to the interviews, I sensed shared power between nurses, physicians, and support staff.

Some staff comments indicated that not everything was perfect. One RN stated "there are just some people, some staff that will help and some that won't. You have the streaming nurse running her ass off seeing over 40 patients in a shift and no one is going to help her. So, if you have a proper "society" within your unit, people get up and work and give a hand. Help doing whatever. Otherwise you will burn out nurses. Also, you have to be willing, within your society, to identify who is good at working here, and who is not. Some people just aren't right."

### 4.3.5 Experienced Staff

The typical nurse to patient ratio in Hospital X's emergency department is one registered nurse to four patients. In the streaming unit this ratio is often 1:12. As one RN said, "So, I kind

of liken it to 12 different people to remember. Not all nurses can do that. It's really multi-tasking. Some are good at it and some aren't." The streaming unit sees a lot of pediatric patients, and therefore solid knowledge of pediatric assessment is important for the nursing staff. "Knowledge" and "experience" were commonly mentioned by management and staff as ingredients for success. As one physician said: "There are advantages to having certain nurses that just work back there. You get to know them so well it's like running an office. We've never measured it but there sure seems to be less conflict when it's those nurses… they're very good at it."

The permanent, dedicated RNs in the streaming unit have built up expertise in streaming, but a few staff commented that they sometimes act as a "clique" in an "us versus them" situation. That said, one physician stated "there are advantages to having certain nurses that work just in streaming; they are specialized in streaming. I'm really impressed as they work really hard and they love it." One RN said, "It's a big job by yourself. The RN brings in patients, does assessments, anticipates and initiates care, builds rapport quickly with patients and families, does doctors' orders, admits, and discharges. This role is really big. The RN does everything. Usually, the RN sees the patients before the ERP (MD) arrives." Another RN said that it is important to know quickly "if someone is sick and then initiating care such as an IV so that they get some fluid and have a line already in the patient so that they can deliver meds quickly once the ERP (MD) sees the patient." Staff and management did not seem supportive of having new graduates in the streaming unit. According to one RN: "Patients may not be identified at triage as really sick, but they can be. This can be really dangerous for a new grad."

### 4.3.6 Privacy and Advocacy

Confidentiality and privacy were commented on by all interviewees. As streaming involves a few rooms and 12 seats, the project team decided that patient information should not be given in the hallway space where chairs are situated. A rule or protocol was established to only give information to patients in a private room. Some staff members were concerned about the proximity of chairs to the unit clerk station and chart racks. One staff interviewee noted that "it's impossible for some patients not to hear some things - such as overhearing orders, report and phone calls." Staff members are very aware that the patients can hear them. "We try to see our patients in a very private manner. We are very careful not to discuss results or plans in front of the other patients or in the chairs."

Patient advocacy was also mentioned by registered nurses. One RN was worried about patients in chairs being overlooked or treated as "not as sick" as other patients in the emergency department. Nurses feel that they are the advocates for streaming patients to ensure that they are "not forgotten" as they move from chairs to rooms back to chairs, and so on. One RN noted how some of these patients need to lie down and that chairs aren't always appropriate. "They deserve it; they need to lie down and rest."

## 4.4 Maintaining Flow

In order to achieve many of the desired outcomes for the moderately acute ambulatory Level 3 patients, the "flow" analogy of streams came up in many interviews. One RN described it thus: "I use the analogy of a stream; it flows like patients go through our department. Leaving patients in beds is like throwing a large branch in the stream. It starts catching and it bogs up." The enablers of flow are listed below as sub-themes.

### 4.4.1 The Patients

Sending the right patients to the streaming unit facilitates flow. Sending the wrong patients is like putting up a dam; water backs up and nothing moves forward. This entire process begins, naturally, at the beginning. For the emergency department, this is at triage. "The concern is that you have to funnel patients to the right zone of care. It is important that patients are ambulatory, follow commands, and have issues that can be dealt with in a timely manner." Clearly, the most general rule is that patients must be ambulatory and cognitively intact to be sent to the streaming unit. However, there are several other criteria that influence flow. For example, consider a 50-year-old male who is alert and ambulatory but having active chest pain and a history of angina. Despite meeting initial streaming criteria of ambulatory and alert, this patient needs extensive monitoring, testing and frequent re-assessment. Because this patient will probably need close cardiac monitoring, he is the wrong patient for a streaming unit. Potentially complex or complex patients with extensive monitoring needs do not belong in the streaming unit. To help address these complex patient factors, Hospital X uses nurse-initiated blood work, diagnostics and order sets (NIBDOS). These are initiated at triage by experienced nurses so that wait times can be decreased. Earlier screening and evaluation helps to rule out those who will need the higher acuity ED services.

At times, triage may send a patient to the streaming unit because the patient meets streaming unit criteria at the time of triage. The reality is that patient conditions can change, even get worse, in a short time frame. These situations are not always possible to avoid, although experienced RNs and MDs can often detect potential problems early on. In these instances, triage is alerted to change in patient status and the patient is moved to an appropriate care area. One RN

laughed and stated “Fails are ok; you need to expect that some will not meet the criteria for streaming after all. It is important to have forethought as to which patients may cause a logjam.”

### 4.4.2 The Process

Despite running a streaming unit in an environment that is less than ideal, Hospital X’s emergency department moves an amazing number of patients through this small area. Patients move in and out of four private rooms from the 12 chairs in a process that is clear and known to all that work there. Patients and/or admissions that are unable to receive care in a chair require a move back to the main ED when a bed is available so that patient flow is maintained. The process stays the same no matter what time of day or night. However, if it is 0400 and the flow and patient volumes are down, the streaming unit RN will likely let a patient stay in one of the four patient assessment rooms for a while to rest, but this process is clearly explained to the patient so that he or she understands if the RN asks them a while later to move back to a chair.

The unit clerk is a key ingredient to consistent patient flow: she ensures that charts are appropriately maintained and not lost and that patients are in gowns (if not changed by an RN) so that they can move quickly to the laboratory or diagnostics. The unit clerk is also near the hallway so that she sees the area and knows where patients and staff are located in relation to each other. As one RN described it: “She sees the action and knows exactly what is going on.”

Nurses control the flow of streaming and make decisions with respect to patient movement in and out of rooms. A unit clerk described a situation in which a doctor puts a patient in a room, saying that he will come right back: “No, no, no- he’s never right back. He’ll get distracted. When the doctor shows up, then we will move the patient to a room or he can, not before.” Despite not being able to “see” patients who are in the main waiting room, the patient’s name shows up on a large screen, a computerized tracker board or smart board, in an area that is

labelled as the streaming waiting room. The RN knows to go get the patient and check for NIBDOS and completed test results on the patient chart. The new streaming process saves precious time.

### 4.4.3 Physicians

Emergency medical doctors in the streaming unit are essential. There are times when some patients do not even need to see a nurse. An example may be a patient who has returned to the streaming unit after a discharge home to "wait and see." These patients can be seen directly by an emergency department doctor. Some MDs will even make the bed when they are done assessing and discharging a stable follow-up patient. These actions keep the flow going. Proactive MDs help free up RNs to carry out interventions such as starting intravenous lines, giving medications, and reassessing patients after interventions. Effective communication and teamwork make these arrangements between RNs and MDs work.

Many nurses were concerned about how physicians move among the main emergency department, the minor treatment clinic and the streaming unit, as opposed to being in a dedicated area for their whole shift. "So, they cover the entire department in a shift and I think it would be better if you had one physician for streaming and one for MT." Unit clerks and RNs described the problems associated with findings MDs and getting them to return to the streaming unit from another location. "The ERPs are all over- in the main ED or in MT clinic. So we do a lot of walking to look for them. It may take a while, but the ERPs do come back and see the patients, but at least they know the results that they needed to know, such as a high white blood cell count."

Physician staffing was discussed by many interviewees. Different suggestions were offered, such as increasing MD numbers on night shifts. Management and physicians noted that

conditions have improved with the recent hiring of more MDs: there are now 19 MDs while previously there were 12. As one doctor stated, "It's much more civilized work. We used to get hammered, seeing 44-55 patients per day. We did not feel like we were providing great medicine. Now, we'll see 25-35 and although it's less income, I think at the end of the day, and my point to the group, is that if money is an issue, you'll be healthier and you can work a bit more. So, now, none of us leave our shift bruised and battered."

Just as some nurses are suited to the dynamism of the streaming unit, the same is true for doctors. Some MDs are better suited to multi-tasking than others. As one RN stated, "If you have an ERP who wants to find out everything right now, it can clog up the system, like a beaver dam in the stream. I'm not going to change the way they practice. You have to be clear on who is fast and who is slow. We don't want them to change, just be aware."

### 4.4.4 Consultants and Surgeons

The ability to access consultants and surgeons for Level 3 patients also influences patient flow and health outcomes. Because Level 3 consultations vary in urgency, some patients have to wait until the consultant is available, or they have to return the next day to see him/her after their follow-up diagnostics are completed, such as an ultrasound. At times, four or five patients may be waiting for the same consultant, such as the gastroenterologist. Patients can wait many hours, since these specialists are very busy. One RN described the following situation:

> "There was this poor young girl in at 0200, and she didn't see the surgeon until 1500 that afternoon. She'd been waiting for the surgeon since probably 0800. So that's a long time waiting just for a surgeon. I know they are busy too. I don't know how that's fixable, the surgeon is operating, and he can't come down. The patients will sometimes say 'I will just go home', but we

will say ‘please stay, don’t go home. You need to see a surgeon and if you go home, it’s just not going to happen.”

As one RN noted, prior to streaming, there was often no bed for a patient to be examined in due to emergency department overcrowding. With four dedicated rooms in the streaming unit, consultants can readily see a patient for examination. This is described as a success of streaming: there is always a space to see a patient.

### 4.4.5 Staff

Current staffing resources for the streaming unit include one registered nurse who works a 12-hour day shift and one who works a 12-hour night shift. These RNs are cross-trained to all the areas of the emergency department. A second RN works from 1000 to 2200 each day. This shift is staffed by one of three RNs who work exclusively in streaming. The emergency department medical doctors rotate through streaming as part of their eight-hour shift, typically spending two to three hours in the streaming unit. A unit clerk is assigned to the streaming unit from 1030 to 2230 and is dedicated to this area. Other staff members that come and go as needed are the charge nurse, the lab staff, housekeeping, and additional RNs from other parts of the hospital who may be asked to help out or “float” to the streaming unit during high demand periods.

The RN interviewees independently concurred that staffing is not adequate for the volume and acuity of patients that the streaming unit sees in 24 hours. They do the best they can and work as a team. They communicate with each other and the patients when they get busy so that everyone understands the state of the streaming unit. This is said to help a lot to deal with the overwhelming workload. Nurses feel they do not, at times, deliver the best care they can due to high patient volumes and a 12:1 patient assignment. One RN said, “We need more staff. We

need to get our breaks. That's important, as when you're tired you don't do as good of work. You miss things. You don't get your reassessments done. You don't get things done in a timely manner. It's all important." Another RN said, "It's a huge workload. The area is the busiest. It's a huge workload for one nurse. It's her license really. Twelve patients is too much." Some interviewees said that a dedicated unit clerk 24 hours a day, seven days a week would be one of the biggest benefits in that it would decrease the time that the RN does non-nursing duties such as data entry and answering telephones.

### 4.4.6 Resources

Dedicated resources for a busy area like the streaming unit are also considered essential. Nurses expressed frustration with looking for a blood pressure cuff. Because the streaming unit is near other areas in the ED, equipment goes wandering. Staff also expressed a desire for more places to wash their hands and for patients and families to wash their hands. The unit clerk shared her frustrations concerning the physical layout of her space: "The desk area is very small and located in the main busy hallway. There are a lot of orders that need to be processed and one computer and one phone just isn't enough. The first year, I didn't even have a desk. I had a table on an arm on the wall and no printer. I had to run to the front for everything that printed. I had to stand for 12 hours. There was a stool, but I'm 4'11" and I couldn't reach them." Understandably, having the right tools for those requiring them are essential to the ongoing flow of patients in a busy streaming area.

### 4.4.7 Diagnostic Imaging (DI) and the Laboratory

The streaming unit is nearly adjacent to the diagnostic imaging department, and this has helped expedite imaging of patients and improve timely access to required results. The laboratory is not located nearby, but it is on the same floor as the emergency department; staff must walk to and from the ED to deliver samples. Results from the lab are available on the computer when they are complete. Moreover, these results print out in the streaming unit and are put on the patient charts by the unit clerk. "X-rays, as soon as the doctor orders them, are generally done within ten minutes." Although laboratory technicians come to the streaming unit, the staff would like to have a dedicated ED technician to improve specimen collection efficiency and management.

### 4.4.8 Discharge

The streaming unit discharge process seems to be working, according to everyone interviewed. In order to send a patient home, the doctor must reassess the patient after all of the necessary diagnostics are complete. The staff in streaming will let the MD know when the patient is ready for this to occur. "We have a computer and a smart board, it will flag in a different colour when the patient is to be reassessed, some of us use it, but some docs never use it. They would ignore it. But we need that continual flow." Although the nurses are sensitive about "hounding" the doctors for reassessment and discharge, they do it, and the MDs accept it as a necessity.

The access to next-day outpatient diagnostics allows MDs to send some patients home for follow-up the next day, either to have tests completed or to check up on completed tests. This process has increased staff and patient satisfaction with the discharge and follow-up processes. Staff uses a discharge handout for patients that helps standardize communication between

healthcare providers in the ED, the hospital, the community, and patients and their families. According to one MD, the results are positive:

> "We set them up the next day to come back to the ED and get the ultrasound and then the results the same day so it's a good continuation of care. We have the capacity to get them to return for tests too and there are also lots of clinics –So they don't just sit there for six hours and then say 'oh sorry'… the follow up is good and I'm happy with that."

### 4.5 What Matters?

Patient care is what mattered the most to those that 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 MD 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 that 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 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 the MD was clearly optimistic: “it addresses all the structural issues we have now. Although there is anxiety from 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.

# CHAPTER 5: DISCUSSION AND IMPLICATIONS

## 5.1 Introduction

During the time of this study, the emergency department at Hospital X was experiencing challenges of overcrowding, patient dissatisfaction, and staff frustration. The patient population that waited the longest was the Level 3 patients, often children, with serious abdominal pain, respiratory issues, headaches, and genitourinary or gynecological concerns. On an average day in 2007, there were wait times of six to eight, even ten hours for a CTAS Level 3 patient to be seen by a doctor. Even more upsetting for staff was that lower acuity patients were being seen before the moderately acute ambulatory Level 3 patients. As described by the story at the beginning of this thesis, there was low staff morale and ethical distress related to overcrowding and ineffective patient care delivery.

A qualitative, descriptive case study methodology linked closely with complexity theory helped me explore and understand the factors associated with effective management of Level 3 patients within one emergency department streaming unit. The case method is particularly useful in uncovering unexpected results, because the researcher is in the field and can ask the agents about their relationships within the healthcare system (Anderson, Crabtree, Steele, & McDaniel, 2005). Health care organizations are dynamic and intricately interwoven at many levels (Crowell, 2011). The ED is its own unique but complicated entity that is part of a much larger whole. Viewing the ED through a complexity theory lens helped me focus on the nature of relationships among the dynamic agents in this streaming unit, and how the unit is part of the greater whole.

Interviews with key stakeholders from Hospital X were an important link in this qualitative descriptive study, not only for a complete and detailed background on their streaming

project but so that I could have a complete understanding of how the streaming unit fits into the complex care system in Hospital X. These dynamic agents of change included a nursing administrator, the ED nursing manager, an ED MD, and the ED nursing educator. They were all intimately linked to the successful rollout and ongoing success and evolution of this unit. Being aware of the ED as part of a complex whole, it was not a surprise to find three nurses and their lead MD as "trailblazers and fully contemporary contributors" to those that were leading change, challenging the standards of care delivery, and leading innovation (Crowell, 2011). These leaders listened and stayed closely connected to their staff during the change process. They continually asked "what is going on here?" and let this complex system change and evolve around them. They found the surprise at the end of the initial journey to be one of creativity, growth and learning; in short, they found success (Crowell, 2011). Although the stakeholders were not aware of complexity theory or complex systems, they were clearly working within one. They embraced change, built strong and multi-disciplinary relationships, and shared information and success with all of those involved.

When these stakeholders stepped forward and pushed to challenge the paradigm of care delivery known as streaming, they became dynamic agents of change (Anderson, Crabtree, Steele, & McDaniel, 2005). They kept their goal of improving patient care as their focus and worked to have others join in their vision of change. Dynamic agents of change must draw attention to the expertise of their team and value the system of professional communities. Allowing and encouraging the self-organization of the team enables change agents to gain increased coordination and unity within the system (Anderson et al., 2005). A rich understanding of the relationships and elements in a case study such as Hospital X's Streaming unit can only be done from understanding those involved in the change as well as those that lead

it. “In complexity theory, this phenomenon is referred to as interdependency of present and past. Thus, learning how the system has evolved over time will provide insight into its present patterns” (Anderson et al., 2005, p. 680).

The case study approach provides us with a strategy for studying integrated systems. Complexity theory is a useful companion as it fosters attention to emerging and current patterns, while focusing attention on the defined system (Anderson, Crabtree, Steele, & McDaniel, 2005). Leaders, or dynamic agents within complex systems, such as the key stakeholders in this study, interact locally in a non-linear way in order to build relationships, listen, engage, and share information coming from within the environment (Anderson & McDaniel, 2000).

## 5.2 Discussion and Implications Relating to Themes

There were four major themes and several subthemes that emerged from the data. In the following sections, I will summarize the key findings from each major theme and tie these findings to the literature. I will also provide implications for nurses with respect to the four domains of nursing: practice, leadership, research, and education.

### 5.2.1 Facing Health Care Realities

The key finding to emerge from this theme was that “challenges persist.” According to complexity theory, continuous change is inevitable; that is, nothing stays static (Crowell, 2011). This is especially true of the emergency department, which is one of the most challenging areas in the healthcare system because overcrowded EDs are linked to a higher risk of poor outcomes, including increased wait times, patient dissatisfaction, staff frustration, and increased patient mortality (Darrab et al., 2006; Forero et al., 2010; Kwa & Blake, 2008).

The implication for this key finding is that healthcare leaders must stay current and be proactive in the face of ever-changing health care demands. According to Anderson and

McDaniel (2000), successful healthcare organizations have innovators who are always scanning the environment for the possibility of innovation or positive change. They cannot act alone: leaders must advocate and support innovation by providing the necessary resources and supports for effective change.

From the standpoint of education, health care professionals need to face the reality of challenging and persistent change (Craig & Smyth, 2007). In health care programs, such as medical school and nursing school, new professionals need to be primed as continuous learners: they must continue to be receptive to new knowledge. Education and research go hand-in-hand. Professionals need to be amenable to ongoing research and willing to explore and answer questions related to best practices under constantly changing conditions (Craig & Smyth, 2007). Healthcare professionals, inevitably, are responsible for providing the very best care, or serving as the link between theory and practice. In this study, health care professionals illustrated their desire to make things better and to maximize quality care delivery by trying a new innovation, the streaming unit. They also demonstrated commitment to their leadership, and they supported my research because they were eager to learn whether streaming was truly making a difference.

### 5.2.2 Doing it Right

The key findings from this theme relate to the importance of "doing it right," or paying close attention to preparation and process. The effective implementation of any new program requires careful planning for short-term realities and a vision or strategy for the future. The important ingredients for short-term and long-term planning emerged as sub-themes: prep work, envisioning success, leadership, teamwork, experienced staff, and privacy and advocacy.

With respect to the sub-theme prep work, the key finding was that leadership and emergency department staff should take the time to gather data on their current situation before

initiating a new project such as streaming. Such things as triage to physician times, Left Without Being Seen percentages, and triage to discharge times for all CTAS levels, not just the Level 3 patients that are the focus of this study, should all be studied and documented for a baseline. The inherent risk of implementing a new care area or care delivery method is that it could negatively affect wait times for sicker patients (Kelley, Bryant, Cox, & Jolley, 2007; King, Ben-Tovin, & Bassham, 2006). Beyond baseline quantitative data, leaders and staff need baseline qualitative data, such as patient and staff satisfaction. This type of data is harder to measure and was not found in reviewed literature. Kelley et al. (2007) did mention that a post-implementation staff satisfaction survey was completed and that there was improvement in this area, but this was merely one sentence of the study, and minimal information was given as to how that data was achieved.

Envisioning success was both challenging and rewarding for the staff at Hospital X. They had goals in mind long before the implementation of streaming, including reducing triage to physician time from six to ten hours to one to two hours (Analysis Works, 2007). Leadership, teamwork, and a vision of improved care enabled staff to continue to strive for improvement, despite their workspace, location, and their complex environment (Anderson & McDaniel, 2000).

The experience of staff members was repeatedly mentioned by both nurses and doctors as a key to success in streaming. It was not that more junior RNs could not work in streaming; rather, the less experienced RNs would need to be supported by more senior staff as patients could have complex and unpredictable conditions that required the confidence of an experienced health care provider. The streaming RN position was compared to that of a trauma, triage, or charge nurse: all roles held by the more senior ED nurses who could easily anticipate and

intervene quickly and independently when patient statuses changed. This finding is supported by Considine, Kropman, Kelly, & Winter (2008), whose study of a new fast-track clinic claims that the use of senior RNs and Nurse Practitioners (NP) with extensive experience in their ED was a significant contributor to success. At Hospital X, the "speed" of streaming unit staff was also relevant, as some RNs and some MDs require more time for patient assessments, decision making and discharge planning, factors which could lead to delays in care and emergency department flow. The relative speed of nurses or doctors, however, has not received any attention in the reviewed literature. On the whole, study participants clearly asserted that not all staff members are well suited to work in a chaotic environment such as streaming. This clearly relates to the "practice" domain of nursing and points to the importance of RNs being reflective of their practice as well as their strengths and weaknesses in order to ensure patient safety.

Finally, the theme of "doing it right" included the sub-themes of patient advocacy, confidentiality, and privacy. Nurses serve as advocates for their patients in the busy and often fast-paced environment of the emergency department. They are continuously prioritizing, reassessing, and navigating the system for patients and their families. They move patients in and out of care rooms to ensure confidentiality and privacy and are constantly striving to ensure that quality care is given. This frequently became a challenge for emergency department nurses and doctors, as this small, cramped streaming unit led to hallway discussions, phone calls, and charts being held in places that were less than ideal. However, acknowledgment of these issues demonstrated the leadership of all staff that work in the streaming unit. The unit clerk and RNs were often the ones who enabled privacy and confidentiality by helping move patients, protecting charts in chart racks, and assisting staff in moving hallway conversations into more

appropriate areas. Adoption of clear protocols for assessing patients only in a room, not in a hallway chair, also enabled success in this sub-theme.

The first implication for "doing it right" is that leadership must be aware of the types of patients coming into their emergency department. If a large percentage of their longer waits are by moderately acute ambulatory Level 3 patients, then a streaming unit may be ideal. However, if the overcrowding is due to a large percentage of low acuity patients, then other solutions, such as more inpatient beds or a minor treatment clinic, may be more appropriate (Considine, Kropman, Kelly, & Winter, 2008; Devkaran, Parsons, Van Dyke, Drennan, & Rajah, 2009; Finamore & Turris, 2009). A key stakeholder RN educator in Hospital X stated that "our beds are always full every day. Our numbers are about 130-150 patients per day and the reality is that our numbers are going up by 10-20 percent per year. And our city has a very older demographic, so it's been a real challenge looking at flow in our department." Another key stakeholder stated: "we had a team already looking at access and flow." Hospital X took the time to know the data and their situation before implementing change.

Documented metrics on the current situation will allow for the next phase of preparation to begin. For the leadership and staff at Hospital X, this next phase went well beyond the physical set up of a new care area. Key stakeholders, an interdisciplinary team, a vision, and open communication were key elements of successful preparation. Staff needed to understand and adapt to the idea of change as well as have the opportunity to engage. This included staff in all disciplines from the volunteers to the unit clerks, nurses, and MDs. Available literature did not speak to the "how's and why's" of the preparation and set up of a new area within a functioning urban ED.

Staff at  Hospital X's emergency department envisioned success and monitored the change process very closely. Initially, this monitoring was a daily process: every patient who came through the streaming unit was surveyed. Staff was also surveyed, and one finding was that patients may need more education on the streaming unit, by way of a handout for them to read while they wait. Moreover, staff needed to have their concerns addressed on a regular basis, so project leaders and emergency department administration were close by during the initial months and weekly project team meetings were essential.

The emergency department does have three permanent part-time RN positions: all three of these nurses work exclusively in streaming from 1000-2200 each day, seven days a week. These are the busiest hours in streaming. There is also a dedicated unit clerk in streaming these same hours seven days a week and this team works very well together. One doctor noted that "in streaming, you have the advantage of working with just one nurse, as a team".

However, staffing was a frequent concern, as one interview participant explained that one RN and only a unit clerk for twelve hours a day was not adequate. All staff felt that increased staffing of the busy streaming unit was essential for patient safety as well as for the maintenance of safe practice standards by RNs.

Privacy, confidentiality, and delivery of quality patient care must remain important even if the new care area is less than ideal, as it was in Hospital X, in which the streaming unit was a tiny back hallway of the ED. Processes and protocols must be put in place to ensure standards of practice are met.

### 5.2.3 Maintaining Flow

The key findings to emerge from the theme of "maintaining flow" were that 1) patients must move into and out of the streaming area in a timely fashion, and 2) issues that lead to delays

in care could impede patient flow and lead to longer wait times and challenges in the delivery of timely patient care. Sub-themes of "maintaining flow" included the patients, the process, physicians (ED MDs as well as consultants), staff (including diagnostic imaging and lab), resources, and discharge.

Ensuring that the right patient arrives in Hospital X's streaming unit is essential to patient flow. The emergency department set clear inclusion/exclusion criteria for their streaming unit: patients must be ambulatory, cognitively capable, not needing cardiac monitoring, and not requiring complex care (Analysis Works, 2007). This works well for them and is symbotic with their minor treatment clinic for lower acuity patients, located nearby in the ED. This initial sorting of patients is the first of a very important set of clear processess that must unfold for every adult or pediatric patient that presents to the streaming unit in order for their care to be delivered successfully from admission to discharge. Ieraci, Digiusto, Sonntag, P., Dann, & Fox (2008) also spoke of this important sorting process in their research on low vs higher complexity units in their ED in Australia. Another important point is that Nurse Initiated Bloodwork and Diagnostic Order Sets (including electrocardiograms and urine samples) need to be initiated at triage if patients were not to be directly sent to streaming. At Hospital X, triage forethought as to the appropriate funneling of patients to streaming improved the overall movement of patients from admission to discharge.

Clear and well documented processes that were followed by all emergency department streaming staff led to maximized outcomes for staff and patients. Essential to this is initial and ongoing buy-in from staff and emergency department doctors, through education and clear communication. Chart movement and documentation processes are also very important. Typically, the RNs brought in the patients and controlled patient flow; an exception was an

occasional night shift, during which nurses and doctors communicated regarding changes in this process. In any case, teamwork and trust enabled good flow. Processes for movement of the patient to and from the four patient care rooms, diagnostic imaging, and chairs lead to smooth transitions in care delivery. The use of the smart board and RN or unit clerk notification of the ERP for lab work and reassessments was also important. This further highlights the importance of communication and teamwork.

Timely access to emergency department doctors and consultants is important to both staff and patients at Hospital X; however, wait times can still be lengthy, and this can mean delays and a slowing of patient turnover. At times, RNs and unit clerks become frustrated trying to locate a doctor but also understand that they were caring for patients in other areas of their busy ED. It should be noted that ED MDs at Hospital X are paid on a fee-for-service basis in lieu of a salary model.

Conflict is to be expected in a complex system. There is tremendous tension between the business of healthcare and the practice of health care; for this reason, articulating and understanding conflict is important (Anderson & McDaniel, 2000). There are so many agents interacting together in a unit such as an emergency department or, more specifically, the streaming unit, that conflict should be expected and embraced. One particular conflict that appeared was between the processes of how X-rays are ordered and how patients move to and from the diagnostic imaging department, as well as how ERP's are scheduled and move through the streaming department. Both of these process issues will need to be addressed. An occasional lack of teamwork was also noted to be an area of ongoing staff conflict. In the realm of complexity science, conflict should be viewed as a positive emotion, to be watched for and listened to so that changes can continually be made.

Dedicated resources for a busy streaming unit were deemed essential by staff. Assigned computers, charts, equipment, supplies, and staff were key ingredients for success. Time spent looking for supplies took time away from patient care. Nurses also frequently noted that they wished the chairs were more comfortable and that there were enough seats to accommodate at least one family member per patient.

Timely discharge processes, a discharge handout, and the ability for outpatient diagnostic imaging tests allowed for staff to send patients home and have them return the next day if necessary for tests and re-examination. The implications for this theme are that patients, processes, interdisciplinary staff, and discharge must all work closely toward the common purpose of quality patient care. Problems or shortcomings in one of these areas can lead to complex problems in other areas. Research, staff education, and ongoing monitoring must be done in order for this complex system to run efficiently. Processes must be written down and available for all to see, follow, and understand. Hospital X's Emergency Department moved beyond basic monitoring when they allowed my research to begin; they saw the value in going beyond quantitative metrics and attempting to gain a more complete understanding of this complex entity called streaming.

### 5.2.4 What Matters?

The key finding to emerge from the theme "what matters" was that the ability to deliver quality patient care matters to the staff in Hospital X's emergency department. It distressed staff to have patients waiting ten hours to see a doctor. In fact, delivering and receiving care mattered to staff and patients far more than the fact that the location of the streaming unit was less than ideal: in a cramped busy back hallway across from a bathroom. Other primary issues that mattered to staff include: providing comfort, even in the form of a simple warm blanket while a

patient sat in a chair, assessing patients (getting tests done quickly, and delivering medication , as required), and communication (both with patients and among each other). Of paramount importance were teamwork, shared power, and trust among doctors, nurses, unit clerks, and all other staff that care for the patient. Finally, staff think about the future. The planned opening of a new emergency department in May of 2012 made staff hopeful, excited, and anxious about the changes on the horizon.

It is clear from the findings in this theme that the ability to provide timely, quality care far exceeds the need to have a new, aesthetically pleasing, and modern care area. The decision to trial something such as streaming should not be delayed until a renovation is conducted or a new emergency department is built. A streaming unit can be done with vision, leadership, a commitment to doing it right, a continuous eye on improving and maintaining patient flow, and knowing what matters to your patients and your staff.

### 5.3 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 that 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 3's that had not been seen. There were none. There was no one in the waiting room. We used to have 20-30 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.

### 5.4 Study Limitations

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 and neophyte researcher, 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.

### 5.5 Implications for Future Research

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.

### 5.6 Conclusion

Care delivery for the moderately acute ambulatory Level 3 patients in the emergency department a Hospital X has forever changed. It will continue to change because it is part of a complex healthcare system nested within other, broader systems, including the community, the region, and the province. Despite overcrowding and complex challenges common to today's health care realities, streaming is an innovation that seems to be working at Hospital X. What has helped it work, and what can other emergency departments learn from this? Hospital X took the time to face their reality before embarking on change; doing it right, ensuring patient flow, and knowing what matters has ensured successful and sustainable change. Care is streamlined. A group of dedicated and committed health care professionals worked as a team and successfully implemented change. The direction the river will take in order to avoid logjams and flow freely is being watched and studied so that sustainable health care is available for today and the future in the emergency department of Hospital X. Nurses must be prepared to lead such changes as advocates for their patients and to improve health care delivery.

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## APPENDICES

### Appendix A: Cover Letter to Potential Staff and Physician Participants

THE UNIVERSITY OF BRITISH COLUMBIA

**School of Nursing**
T201- 2211 Westbrook Mall
Vancouver, B.C. Canada
V6T 2B5

Tel: (604) 822-7417
Fax: (604) 822-7466

To prospective **STREAMING** study participants:

My name is Sherri Morrish. I am a Registered Nurse and the Clinical Practice Educator at Royal Inland Hospital in Kamloops, BC. I am also a graduate student at the University of British Columbia- Vancouver Campus. I am currently working on my thesis. My thesis research will be a case study analysis of the **Streaming Unit in your Emergency Department**. I will be using policy and procedures related to streaming, and I will be interviewing health care staff, managers, and physicians involved in the care of streaming patients.

For this study, **streaming** is defined as a unit where ambulatory, acutely ill patients (CTAS level 3) are cared for in a separate space within the emergency department in order to decrease wait times and improve emergency department flow without decreasing the quality of patient care. The purpose of this study is to understand the Kelowna General Hospital streaming unit and what factors influence the successful streaming of emergency department patients.

If you would like to participate, please complete the attached consent form and leave it in a sealed envelope for me in the **locked drop box in the Emergency Department**. I will contact you and arrange a follow-up interview or focus group.

If you have any questions, please do not hesitate to call or email me.

Sincerely,

Sherri Morrish, RN, BSN

**Appendix B: Participant Information and Conset Form**

**Project Title:** Streaming: An Innovative Emergency Services Care Delivery Design
**Date:** November 29, 2011
**Principal Investigator:** Sherri Morrish, RN, BSN
Clinical Practice Educator (CPE) Emergency, RIH
**Co-Investigator:** Dr. Maura MacPhee RN, PhD, Assistant Professor, UBC

**Introduction:** You are being asked to take part in a qualitative case study research project in the Kelowna General Hospital (KGH) Emergency Department's (ED) Streaming Unit that is being conducted by Sherri Morrish, Clinical Practice Educator (CPE) Emergency at Royal Inland Hospital. This study is for the completion of my Masters of Science in Nursing at the University of British Columbia Vancouver under the supervision of Dr. Maura MacPhee, Dr. Colleen Varcoe, and Dr. Susan Duncan.
For this study, streaming is defined as a unit where ambulatory, acutely ill patients (Canadian Triage Acuity Score 3) are cared for in a separate space within the emergency department in order to decrease wait times and improve emergency department flow without decreasing the quality of patient care.
Streaming is a newer care delivery design that is currently not well understood or studied. You are being asked to participate because you have been identified by the KGH ED manager, Lisa Davidson, as working with streaming patients in KGH triage, in the streaming unit, or in the ED at KGH. I will selectively interview ED unit clerks, nurses, managers and physicians who are directly involved in the care and coordination of care for KGH ED streaming patients. I would like to recruit 10-15 participants from a variety of professional designations (i.e. Unit clerks, Nurses, Physicians).
Your participation is entirely voluntary, and a decision to not participate will not, in any way, be used against you.

**Purpose:** The purpose of this study is to understand the KGH streaming unit and what factors influence the successful streaming of ED patients.

**Procedure:** If you agree to participate in this study, please sign the consent form and place it in a sealed envelope in the locked drop box in the KGH ED. This locked box will stay in the main ED area and will be monitored by the ED manager, Lisa Davidson, daily. I will contact you

within 1-2 weeks by way of your preferred contact information (i.e., e-mail or phone). I will meet you at a pre-arranged time to participate in either a private interview or a focus group (2-4 participants). The interview or focus group will last a maximum of 1 hour. Questions are included in this consent form for you to review and consider. The interview or focus group will take place in a quiet, reserved location at KGH at a pre-set time. A digital recorder will be used as a back-up for notes. No personal identifiers will be used on any notes or recordings or any other materials associated with the interview or focus group.

**Risks/Benefits:** There are no known risks associated with this case study research. You will receive a $5 Starbucks gift card as a thank-you for your participation in the interview/ focus group and cookies/snacks will also be available.
It is anticipated that the results of this study will be shared with others through publication in healthcare journals. I also would like to present study findings at healthcare conferences. Study results will be sent to KGH ED staff by way of an email as well as a letter to the department upon completion of data analysis.

**Confidentiality:** Confidentiality will be respected. You may withdraw from participation at any time without penalty. If you do withdraw from the study, your data will not be used for the purpose of this research study and the notes will be shredded.
Only I and my committee (Dr. Maura MacPhee, Dr. Coleen Varcoe, and Dr. Susan Duncan) will have access to my notes and files. Interview notes, digital transcripts, and any departmental policies, procedures, and documents will be stored with the hard copies of the consent forms in a locked personal filing cabinet for 7 years as per ethics review policy. No names will be on any of these forms as each signed consent form will receive a numbered code. The code will be used on all other documents related to this study. Information from my notes will be typed into a password protected computer and also stored for 7 years. These files and digital recordings will be destroyed by way of confidential shredding and digital erasure at the end of 7 years.

**Contacts and Questions:** If you have questions about this research study, please feel free to contact Sherri Morrish. If you have questions about your rights as a research participant, you may contact the Chair of the Interior Health Research Ethics Board.

**Statement of Consent:** Your signature below indicates that you have read and understood the information provided above, have had an opportunity to ask questions, and agree to participate in this research study**.** You will be given a copy of this form to keep for your records.

_____ _____ _____

**Participant Signature** **Designation (i.e. unit clerk, nurse, physician)** **Date**

_____ _____

**Researcher (or Witness) Signature** **Date**

**Preferred Contact Method: Name (printed)_____**
**email_____**
**phone #_____**

## Appendix C: Questions for Interviews/Focus Groups

1. Can you please tell me what point of care do you work (i.e. triage, streaming, discharge etc.)?
2. What is working will with Streaming in your unit?
    a. Why do you think so?
    b. What outcomes do you expect to see because of your streaming unit?
    c. What needs to be done in order to achieve the outcomes you'd like to see?
3. What is not working well with your streaming unit?
    a. Why do you think so?
    b. What outcomes are not being met or what would you like to see instead?
    c. In order to meet these outcomes, what do you think you need to have in place?
4. Do you have any other comments on streaming or the inflow/outflow of your patients within the Emergency department and/or health care system that you'd like to share with me?

**Appendix D: Poster for Advertisement of Study**

Seeking:

**KGH Emergency Department**
**Staff and Physicians**
**to participate in an interview**
**for <u>case-study research project</u> on**
**Streaming!**

Details coming soon via IHA EMAIL

Thank-you,
Sherri Morrish, RN, BSN,
CPE Emergency RIH & UBC Vancouver Graduate Student

## Appendix E: Theme Chart with Supporting Quotes

1. Facing Health Care Realities
2. Doing it Right
3. What Matters
4. Maintaining Flow

| Theme | Subtheme | Meaning Units for Supporting Evidence |
|---|---|---|
| **1. FACING HEALTH CARE REALITIES** | none | …our numbers are about 130-150 patients/day. We were talking about what went on over New Year's. I think the volume got as high as 220/day<br><br>We think it is a reality that our ED visits are increasing by 10-20% per year<br><br>we are up to over 55,000 visit/year now and we see about 75-80% of our patients through our minor treatment and areas<br><br>We have a very older demographic here in Kelowna, so its been a real challenge to look at flow in our department<br><br>at the time, we were seeing about 50,000 patients/year. And, on the average day, about 130-150 patients/day. So in a small little ED, that's a lot of people ot put through<br><br>Our wait times, for CTAS III and IV's were creeping up to 8-10 hours in the waiting room<br><br>We had 12 ft ERP's. We are on fee for service -<br>…at the time, we were in gridlock. We had overcrowding issues much like we do now. Many days we would have a waiting room full of patients and the doctor just sat around as there was no where to see patients. Angry patients too<br><br>The ED is now a ward, and patients may stary there a day, a day and and a half, or three days<br><br>our beds were completely full every day |

| Theme | Subtheme | Meaning Units for Supporting Evidence |
|---|---|---|
| **2. DOING IT RIGHT** | Prepwork | We decided to give it a try on one day after all the planning, it ended up being the day on the funeral of one of the senior ED nurses that died of cancer. I was telling people to go to the funeral, or they were thinking about it, but we did it, and we ended up running it 24/7 after that day. Planned for 24/7 hours<br><br>we really needed to come up with something that was very innovative and creative. Our network lead had attended this conference in Toronto, St. Michaels Hospital. We knew we needed to do something different<br><br>We went and saw their RAZ (rapid assessment zone) in Toronto first, we were absolutely blown away-manager, lead ERP, Pcc, and Sue went<br><br>We came back and said we've got to start planning this<br><br>We had a team looking at access and flow at KGH, we had Jason Goto, with Analysis Works consulting, they were viewing our pressure points<br><br>Our environment was very different from Toronto. They had a large department with pockets of areas. We knew we had a lot of project work and planning to make it work at our site<br><br>We knew there was going to be a revolt from nursing and physicians<br><br>I was completely committed to it- we had a lot of stakeholders- we had support from Sue Carpenters team<br><br>We called it streaming. That took a lot of meetings, a lot of analysis and a lot of involvement of our team, physicians, nursing, all the other players right up to senior administration<br><br>six months of planning<br><br>We learned very quickly, that despite wanting to do quick fixes, doing this altered process. We had to give time and then involve project team … we recognized that kind of global approach, the physician and nursing project members, bring it back to the team for make decisions<br><br>Very carefully involve all stakeholders- we missed a few people (lab, DI, ECG, Consultants/surgeons, Volunteers, and unit clerks<br><br>it's one area in our ED, its only 4 beds out of 30. But how much that can change something within the health care system<br><br>The lead nurse and physician from Toronto came to Kelowna and met with us and our staff- they were pretty blunt and said some people got pretty pissed off and some people even quit<br><br>The first time we tried it, we got actors coming in. We pretended. |

| Theme | Subtheme | Meaning Units for Supporting Evidence |
|---|---|---|
| | Envisioning Success | We found out from that first trial run that we could not do anything. We still had a lot of questions to answer<br><br>We hammered out issues; we did some short trials with real patients. Small dedicated times. I was streaming nurse and Mike was physician and a very select group of staff to work with us<br><br>Initially, every single person that went through had a patient satisfaction survey follow-up<br><br>We had a consulting firm guide us thru set up and the baby-steps- they came on board from the get-go. There were binders and lots of documents for the rules of the streaming unit<br><br>Ambulatory patients go somewhere different in department in Toronto<br><br>At first, we were monitored and surveyed and analyzed weekly. There is no gate-keeper anymore. Complacency has come back in its place. We need to step it up<br><br>New dept will have issues- x-ray a long way away and no porters<br><br>Improve door to physician time<br><br>Moving admitted patients out of streaming into a bed<br><br>I expect a healthier Kelowna<br><br>They get care- they get what they need- they get diagnosed or set up for more follow-up<br><br>Patients wait a lot less and get good follow up with specialists and diagnostics the ERP's do a really good job - they are very concerned and want people to have the best outcome.<br><br>See people faster- treated, everything done faster. Their entire stay is shorter<br><br>Quick access to a doctor can mean better patient outcomes- preventing things from happening if they were waiting in waiting room x 8 hrs<br><br>Improved patient satisfaction<br><br>Aiming for adults to be seen in 2 hrs and children in 1 hr<br><br>Streaming is amazing. It is bringing ED back to what it should be. If its done properly, patient care does not and should not suffer. They should get no less of an assessment and no less TLC<br><br>Clear system for follow up; which is nice- we never had that before.<br><br>Triage is more appealing now- staff used to get verbally abused and |

| Theme | Subtheme | Meaning Units for Supporting Evidence |
|---|---|---|
| | | sometimes felt physically threatened with long waits<br><br>I expect improved flow<br><br>Improved communication ; patients would transition smoothly, from the time they arrive, orders are entered, processed, and tests done. Right through to when they are admitted or discharged. A lot smoother process<br><br>Privacy and confidentiality |
| | Leadership | RN leaders pushed change forward ;network lead & ED manager along with lead ERP and CPE of ED<br><br>It's a new direction, it has to change. It has to change for healthcare. I guess I can do this… it's new<br><br>We recognized that we had to, we needed to come up with something that was very innovative and creative<br><br>We had such a positive outlook that we saw the light… we had such a gem, we knew we had to create our own different rock. We had a gem here that we knew we could work with and move forward<br><br>We knew we could have greater efficiencies within our own dept |
| | Teamwork | We need to work as a team, let each other know what is going on. What we've done or its frustrating. Or, especially, if the doctors do things and they don't let us know. Just even let the unit clerk know<br><br>You have the streaming nurse running her ass off seeing over 40 pts in a shift and no one is going to help her. So, if you have a proper "society" within your unit, people get up and work and give a hand. Help doing whatever- otherwise, you will burn out nurses. Also, you have to be able to be willing, within your society, to identify who is good at working there and who is not. Some people just aren't right<br><br>I mean, not everybody, there are some people, some staff that will help and some that won't. I don't think this is anything new<br><br>In streaming, you have the advantage of working with just one nurse as team<br><br>A lot of docs will bring in patients back themselves depending on what the situation is- the nurse can't always do it all. Especially at night This doesn't work doing the day so well, the nurse needs to have control in day<br><br>The idea of a physician work tandem with a nurse has really helped - it helps with the flow<br><br>The nurse controls who should be seen first, not the physician. In their eyes, there may be someone who needs to be seen before some who registered earlier. We trust their judgment |

| Theme | Subtheme | Meaning Units for Supporting Evidence |
|---|---|---|
| | Experienced Staff | One nurse can have 12 patients, not 4 like in main ED, so I kind of liken<br>it to 12 different people to remember. Not all nurses can do that. Really multi-talking. Some are good at it and some aren't<br><br>We have lots of sick children thru here, you need to know a lot about a lot<br><br>All other nurses, except for us 10-10 RN's, float thru streaming.<br>It can end up being an "us vs. them"; cliqueness. But, by being there all the time, we build up expertise<br><br>You have to be well organized, experienced, and keep things straight for 12 patients. Some and cope and some cannot. It's not a good or bad it's just honest<br><br>We put some new grads back there, but because the patients are not identified as really sick, but they can be. That is really dangerous for a new grad<br><br>"There are advantages to having certain nurses that work just in streaming- they are specialized in streaming. I'm really impressed as they work really hard and they love it<br><br>We bring in patients, see patients, do assessments, anticipate and start care, do doctors orders, admit, discharge; our role is really big. We do everything- we make sure its done well<br><br>If we see the patient first, and know they are sick, we always start an IV on them. They have already had some fluid and all we have to do is get some analgesic or anti-emetic after ERP sees them. Then we can send them for xray- that part works really well<br><br>"there is one certain advantage to having certain nurses that just work back there. You get to know them so well it's like running office. We've never measured it, but there sure seems to be less conflict when it's those nurses<br><br>they're very good at what they do and they know the area. |
| | Privacy & Advocacy | We see our patients in a private manner , we are very careful not to discuss results or plans in front of the other patients or in the chairs<br><br>We don't give information to our patients in a chair- that's wrong. That's not where you ask them if their medicine is working- that's not where you do discharge teaching. That's why we have rooms with doors<br><br>If they are admitted, I try really hard to look out for them to make sure they get moved up to main ED & get a bed- there deserve it; they need to rest |

| Theme | Subtheme | Meaning Units for Supporting Evidence |
|---|---|---|
| **3. MAINTAINING FLOW** | The Patients | Ambulatory Cognitively intact; issues that are not too complex- forethought Triage 3 mostly; appropriate 2's ok; 4's<br><br>Do NIBDOS; ECG, urine dips at triage - results on chart for ERP<br><br>A solid triage is critical- but patients can change quickly<br>you have to funnel them to right zone of care<br><br>"Fails" are ok (laughs)- you expect some to come back to triage<br>as they are not meeting criteria for streaming after all |
| | The Process | 24/7- we knew these would be our hours from the start<br><br>to/from one of 12 chairs to one of 4 rooms for assessment and treatment; not pretty- across from bathroom in back hallway<br><br>It's run more or less like a walk-in-clinic. You are not given a bed There may be a wait, but the flow is in and out<br><br>The doctor asked me to put patient in room, he'll be right back. No-no-no- he's never right back. He'll get distracted. When the doctor shows up, then put the pt in a room, not before<br><br>the environment is not ideal, by any stretch of the imagination, but people get in and out<br><br>I'll start an IV on someone, do a bit of something, even though ERP hasn't seen them yet<br><br>Patients need to be in gown, so it slows things down if they aren't changed- gown for x-ray. I often help with that (U/C)<br><br>let's say it's 4 in the am, flow is down, I might let pt lay in room for a while to rest, I'll just explain to them<br><br>Chart flow very important so patients don't get lost/chart lost and that care is delivered in timely way<br><br>Unit clerk is key- she is there, close in hall- needs to see area<br>"I know where the patients and staff are" - it helps me to see the action so I know what is going on<br><br>try not to leave admit in bed- slows flow- send to main ED or admit can wait in chair ; sometimes we just have to then we make do with 3 beds - let PCC know we have an admit.<br><br>the new department will have Voicera to communicate |
| | Emerg Physicians | " the doctors are inundated, they're all over- they are in the front, they are in the back, they might be in minor treatment or the trauma room- so I do a lot of walking if I have, for e.g., a critical lab result to tell the physician. It may take them a while to get back to see patient, but at least they know result |

| Theme | Subtheme | Meaning Units for Supporting Evidence |
|---|---|---|
| | | a lot of physicians don't like streaming- they have a tendency to kind of filter who they'll see so they can turn over quickly<br><br>they start in acute, then come to streaming, then move into m/t. So, they cover entire dept and shift. I think it would be better if you had one physician for streaming and one for m/t (urgent care). Obviously, there would be a backlash, because they would have to manipulate their schedule. That would be' a big piece. So that will not happen until we have our new dept It's coming<br><br>if you have a ERP who wants to find out everything right now, it clogs up system, "like a beaver dam in the stream". I'm not going to change the way they practice<br><br>there are physicians that are very good at the area and do their job - there are others that just don't like it<br><br>we need another doctor on nights- 24 hrs; at least 2 docs. The volume is high<br><br>some of our docs are really good streaming docs, they don't involve the nurse when they don't need to. Some will even clean a bed<br><br>you have to be clear on who is fast and who is slow- we don't want them to change, just be aware |
| | Consultants and Surgeons | up to 4 or 5/12 chairs are pts waiting for consultant. They can wait a really long time for them. … but at least when they come, there is a bed for them to see a patient in with streaming<br><br>there was this poor young girl in at 2 in the morning, and she didn't see the surgeon until three in the afternoon. She'd been waiting for the surgeon since probably 0800. So that's a long time waiting just for a surgeon. I know they are busy too. I don't know how that's fixable, the surgeon is operating, he can't come down. The patient will sometimes say "I will just go home", but we say "please stay, don't go home- you need to see a surgeon and if you go home, its just not going to happen<br><br>its another success of the unit because there's always a room available when GI comes down to see pts- there is space for them to see the patient |
| | Staff | We need a unit clerk there all the time- you need to have the right person for the right job- then nurse not doing data entry and she can do nursing instead; just answering phone can be a lot here<br><br>Its not a place for new grads- you can, however, match a seasoned nurses with a new grad- that could be one strategy |

| Theme | Subtheme | Meaning Units for Supporting Evidence |
|---|---|---|
| | | permanent streaming lines- 10-2200- I have worked here 20 yrs<br><br>We work one RN by herself till 1030 am and again at night. She is responsible for it all- getting patients, assessing patients, doing doctors orders (unit clerk works 1030-2230) , and making sure everything is done<br><br>Ensure enough staffing for adequate break relief- fatigue an issue as standing for entire shift- even to chart<br><br>The huge workload, the area is the busiest… it's a huge work load for that nurse- its her license really, 12 patients… too much<br><br>So the staffing level Is not sufficient, but everyone knows that and you just do the best with what you have<br><br>we need more staff. We need staff to get nursing breaks. That's important, when you're tired you don't do as good as work. You miss things. You don't get your reassessments done. You don't get things done in a timely manner. All of that |
| | Resources | We need our own supplies and equipment dedicated to us<br><br>Computer orders; they are a lot. One computer and one phone The phone can be a lot. The desk area is really small<br><br>The first year we were back there, I didn't even have a desk. I had a small charting table on the wall and no printer so I had to run to the front for everything. The computer was on an arm off the wall. I had to stand for 12 hours. There were stools back there but I'm 4'11" and I couldn't reach them<br><br>You need enough places to wash your hands… sometimes you can cut through the germs- you can get a bit freaky |
| | Proximity to DI and Access to Lab | the positioning of streaming in the department has helped<br><br>because it's close to DI<br><br>X-rays, as soon as doctor orders them, they are generally done within 10 minutes. The Patients walk , they follow line on floor<br><br>The phone… I'm alone and phone rings- its likely X-ray calling for a patient to get his test. I lose his spot because I'm in a room and can't get to the phone. There has to be a better way<br><br>Xrays are not part of NIBDOS; unless ordered to return for outpatient test<br><br>we need dedicated lab in the ED and streaming- that would help with flow and turnaround |

| Theme | Subtheme | Meaning Units for Supporting Evidence |
|---|---|---|
| | Discharge Planning and Follow-up Care | we set them up the next day to come back to ED and get that<br><br>ultrasound and then they get results the same day so it's a good continuation of care… we have the capacity to get them to return for CT's too and there are a lot of clinics also- DVT's, PE's, anticoagulation and the such. So they don't just sit there for 6 hrs and then say , oh, sorry- the follow up is quite good… so I'm happy with that<br><br>Discharging is good- I am careful with explicit instructions on our discharge note about what they need to do<br><br>we have a computer and smart board- it will flag in different colour when pt is to be reassessed- some use it, some docs never use it- they would ignore it. We need continual flow<br><br>nurses are sensitive about "hounding" us (laughs)- but they have to for reassess and discharge |
| **4. WHAT MATTERS** | none | We want to treat people kindly and give patients good care<br><br>Its fast paced, its not ideal care… do I 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, assessing them, and treating them… you need balance<br><br>you really do need to get your mind around how you give care it's not going to be tucked in; its not the most comfortable way to give care for nurses or patients. But, the other side is not giving care at all<br><br>you have to keep in mind that you are helping people<br><br>There's a lot to be said by just watching a patient go back and forth between the chair and the room- you can do a lot of assessments by watching. So it's not bad to do this, get them up and down, it's actually good for them. You are reviewing your initial assessment. The patient's feelings can not be ignored; you're giving them 1:1 attention<br><br>for the most part, the public is pretty good. We have a few patients that don't like it. It will be better in the new area<br><br>when we communicate with each other, it works very well<br><br>as long as I have a room to bring the patient back into, to reassess them, to give them discharge instructions , I don't think streaming takes away from the amount of bedside time I have with my patient |

| Theme | Subtheme | Meaning Units for Supporting Evidence |
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| | | There has to be clear process; paper process, DI, Lab, etc- so things can run smoothly each time<br><br>streaming has been so good for staff morale<br><br>the longest patients wait, even on a busy day now, is 3 hours<br><br>I think in sort of, in terms of utilizing the few examination beds that we have - we are utilizing them to the greatest potential- that is working really well. When I first saw it, I thought it was a very novel idea. A clever way to optimize the use of a few beds for many patients<br><br>Keen, hardworking staff- we want this to work<br><br>KGH has an opportunity in the new ED (May 2012) because it will be larger. We were very involved in planning it - the part of the ED will be what we dreamt it should be. enough seating (50)so that patients can have family with them, lots of different (9) rooms , 2 areas, an ideal area.<br><br>the new department won't make things better, but it will make things more comfortable for patients and staff. The system will ultimately stay the same<br><br>We often see the children first- the nursing staff see most of the patients first so they set 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 |

**Appendix F: Coding and Aggregation Worksheet**

| ***Condensed Meaning Units (for original meaning unit, see Nvivo notes)or Description Close to the Text*** | ***Condensed Meaning Unit Interpretation of the Underlying Meaning*** | ***Sub-Theme*** | ***Theme*** |
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