

Testing the reliability and accuracy of urgency ratings determined by triage nurses for
mental health scenarios,

using the Canadian Triage and Acuity Scale

by

Anne-Marie Brown

A Thesis submitted to the Faculty of Graduate Studies
of

The University of Manitoba

in partial fulfilment of the requirements of the degree of

MASTER OF NURSING

Faculty of Nursing

University of Manitoba

Winnipeg

Copyright © 2011 by Anne-Marie Brown

TABLE OF CONTENTS

ABSTRACT	iv
ACKNOWLEDGEMENTS	v
DEDICATION	vi
LIST OF FIGURES	vii
LIST OF TABLES	viii
LIST OF APPENDICES	ix
CHAPTER 1	1
Introduction	1
Purpose of the study	4
Research questions	4
CHAPTER 2	6
Background	6
Mental Disorders	7
Mental Health in EDs	8
Mental Health Triage	10
CHAPTER 3.....	12
Theoretical Framework.....	12
Cognitive Continuum Theory (CCT)	12
Scope of the theory	13
Context of the theory	13
Content of the theory	14
Significance	15

Applications of the CCT	15
Triage decisions and the CCT	16
CHAPTER 4.....	18
Literature Review	18
Mental health presentation to EDs	19
Triage nurses and mental health patients	22
Emergency department triage	24
Accuracy and reliability of triage.....	25
Triage scales.....	27
Canadian Triage and Acuity Scale (CTAS)	29
Computerized decision support tools	29
Decision making	31
Education	33
CHAPTER 5	34
Methodology	34
Aims	34
Scenario Development	35
Research Design	37
Procedures	37
Inter-rater reliability.....	40
Ethical Considerations	41
CHAPTER 6	43
Results.....	43

Description of sample: Sites and participants	43
Data analysis	47
Use of modifiers	52
CHAPTER 7	53
Discussion	53
Influence of sample	54
Agreement and accuracy by CTAS level	56
Over-triaged or under-triaged	57
Use of over-ride	59
Application of theory to triage nurses' decision making	60
Influence of education and comfort level.....	61
Limitations of study.....	63
Future research	65
Recommendations.....	66
CHAPTER 8	67
Conclusion	67
REFERENCES	68

Abstract

Over-crowded emergency departments (EDs) are commonplace necessitating triage systems. Although several triage scales exist, the Canadian Triage and Acuity Scale (CTAS) is used across EDs nationally. Interestingly, few mental health scenarios have been included in studies testing the reliability and accuracy of the CTAS. Moreover, EDs are increasingly used by individuals in a mental health crisis. The purpose of this study was to test the inter-rater reliability and accuracy of triage nurses' assignment of urgency ratings for mental health patient scenarios utilizing current CTAS guidelines. The overall Fleiss kappa for this sample of triage nurses (n=18) was 0.31180 representing only fair agreement while the Kendall's coefficient was 0.67964 or moderate agreement. Both calculations were statistically significant ($p < .0001$). Several limitations exist nevertheless, observations from this study specifically, focus on the use of second order modifiers in education of triage nurses, may improve the inter-rater agreement for mental health presentations.

Acknowledgements

Many individuals deserve sincere expressions of appreciation for their contributions toward this project. First I would like to thank my committee members Dr. Elaine Murdoch and Dr. Julie Spence for their expertise, generosity and kindness during this process. I am indebted to Dr. Diana Clarke for her relentless encouragement prior to and throughout my entire graduate school experience. I will be forever grateful for her wisdom, support and motivation during a series of ups and downs along this journey. I hope our relationship of student and teacher continues in many ways for many years only to be surpassed by our friendship that I trust will continue beyond that. I also extend my sincere appreciation to Manitoba Health for their significant support for this project from the very beginning and their commitment throughout the longer than anticipated journey that ensued.

I must also make specific mention of the nurses involved in this study who participated on their own time often just before or immediately following a shift at work. I am so grateful to each of them for without their participation I could not have completed this work. Recruitment can be complicated and is perhaps best facilitated by keen and supportive individuals. To my delight this project had many supporters including leadership at the WRHA Emergency Program, senior level administrators from the various sites, educators and enthusiastic research and development offices across the region. Often it was the small gestures from many that fall within this list that kept me going. Individual participants themselves no doubt had an enormous impact on the number of participants I was able to recruit. For each of you that encouraged your colleagues to consider participating I am sincerely grateful.

Dedication

To my family, that has grown to include two beautiful little girls since I first began graduate studies both of whom have had to hear “No” far too many times so that mom could finish her school work. I love you Maddy and Olivia and I am so proud to be your mom. To my sister Norma who although not here to see this final manuscript in print remains with me in *spirit* for each of my life lessons. Thank you for all that you taught me and for all the beautiful memories you left behind. In the classroom of life you had long ago become a Master. For my husband who has stuck by me through many all night sessions and emotionally labile moments, a sincere Thank you, I am truly blessed to have you in my life. To my mother who has made the final stretch so much more manageable in more ways than I could possibly recount, I am eternally grateful you were here.

To all my friends and colleagues who have endured eye rolling and evasive responses to the “how is your thesis coming” question for so long, I am better for having the opportunity to share pieces of my path with each of you. Lastly, I am genuinely thankful for the Spiritual Health Services department at the HSC, the shared wisdom of your department and its services were a welcome gift that allowed me to keep putting one foot in front of the other these last few years.

List of figures

<u>Figure</u>	<u>Description</u>	<u>Page</u>
1	Theoretical Framework: The cognitive continuum matrix	16, 61

Permissions

Reprinted from *International Journal of Nursing Studies*, 45(6), Offredy, M., Kendall, S., & Goodman, C. (2008), with permission from Elsevier. Also: Copyright© 1988 Cambridge University Press. Reprinted with the permission of Cambridge University Press.

List of tables

<u>Table</u>	<u>Description</u>	<u>Page</u>
1	Number of years of triage experience	44
2	Specialized mental health training or experience	45
3	Triage nurses comfort level with mental health patient presentations	47
4	Fleiss Kappa statistics for nominal response	48
5	Triage nurses accuracy scoring for mental health patient scenarios	49
6	Accuracy, over-triage and under-triage by one level	51
7	% correct by CTAS urgency level	52

List of appendices

<u>Appendix</u>	<u>Description</u>	<u>Page</u>
A	Final 38 patient scenarios	79
B	Final 20 patient scenarios	92
C	Script used with each participant	99
D	Participant demographic questionnaire	100
E	Participant consent form	102
F	Research participant information sheet	104

Chapter 1

Introduction

Modern day emergency departments (EDs) are commonly required to provide service to more patients than their resources can handle (Considine, Ung & Thomas, 2000), leading to significant pressures on emergency personnel and department overcrowding (Ding et al., 2006; Dong et al., 2006). It seems to have become the norm that Canadian emergency departments are over-represented in depictions of hallway medicine and in other news stories of failures in the healthcare system. High demands on over-stretched resources typically require some type of process of prioritization; in emergency departments that process is called, triage. As EDs worldwide face the persistent challenge of over-crowding, rising patient acuity and longer lengths of stay, there is increasing pressure to devise and implement triage systems that are both fast and accurate (Ruger, Lewis, & Richter, 2007).

Triage has been called the gateway to emergency care and as a result, triage decisions are believed to be fundamental in determining the course of a patient's care in the department (Considine, Botti, & Thomas, 2007). Emergency personnel, namely physicians and nurses, rely on triage processes to ensure that the most critically ill patients receive the most immediate care, while hospital administrators, researchers, and politicians each for their own vested interest routinely turn their focus and attention to the process as well (Grafstein, 2004). Regardless, of the levers for ongoing investigation and exploration of triage processes by various stakeholders, appropriate and accurate assignment of urgency levels to patients attending EDs can be seen as a high risk activity that has "major influence on patient outcomes"

(Considine et al., 2007, p722). As such, triage is an established topic of emergency research and will likely remain a focus of research for years to come.

A particular subtopic within the body of triage research seems to be investigations of triage decisions, commonly attempting to measure their accuracy, inter-rater and intra-observer reliability (Considine et al., 2007, Goransson, Ehrenberg, Marklund, & Ehnfors, 2005a). Other studies have examined the skills of emergency health care professionals, in specific instances focusing on registered nurses' skills in assigning urgency ratings to patients at triage (Considine et al., 2007; Considine, LeVasseur, & Villeneuve, 2004; Goransson et al., 2005a). Criticism has emerged from the work of some of these authors, directed at the actual triage scales being used, calling into question their reliability and validity (Fernandes, Wuerz, Clark, & Djurdjerev, 1999; Manos, Petrie, Beveridge, Walter, & Ducharme, 2002).

Research studies designed in part to investigate triage scales have tested three, four, and five level triage scales for accuracy and reliability, often making comparisons among each of these types (Considine et al., 2004; Considine, Ung, & Thomas, 2001; Eitel, Travers, Rosenau, Gilboy, & Wuerz, 2003; Fernandes et al., 1999; Goransson et al., 2005a; Ruger et al., 2007). The bulk of Canadian research on the subject of triage scales has focused on the Canadian Triage and Acuity Scale (CTAS) (Beveridge, Ducharme, Janes, Beaulieu, & Walter, 1999; Grafstein, Innes, Westman, Christenson, & Thorne, 2003; Manos et al., 2002;) a five level scale based on the Australian Triage Scale developed in 1993 (Considine et al., 2001).

Studies of the CTAS have found that inter-observer reliability is "high" or "significant" (Beveridge et al, 1999; Manos et al., 2002) while others have found

lower rates of agreement, described as moderate (Dong et al., 2007) or good (Dong et al., 2006). Agreement and accuracy study designs among CTAS research have varied, one group of researchers conducted inter-rater reliability testing in “real-time” (Dong et al., 2007; Dong et al., 2006), while most have used paper based patient scenarios to record and compare participant’s urgency ratings (Beveridge et al., 1999; Fernandes et al., 1999; Manos et al., 2002). Arguably, because the chaotic environment of an ED is not replicated in studies relying on patient scenarios, real-time studies may be more generalizable (Dong et al, 2006). Interestingly, few mental health scenarios have been included in these research designs (personal communication, M Bullard), despite the fact that studies of ED processes have found triage is not applied to all patients with the same degree of accuracy (Andersson, Omberg, & Svedlund, 2006; Happell, Summers, & Pinikahana, 2002). While triage nurses have demonstrated high rates of accuracy for medical presentations (Hay, Bekerman, Rosenberg, & Peled, 2001), their accuracy for assigning levels of urgency for mental health presentations has been much lower (Happell et al., 2002).

Although the origins of the triage process are “medical” in nature (Iserson & Moskop, 2007; Robertson-Steel, 2006), today’s emergency departments have also become an important entry point into the acute mental health system for individuals in distress or in a mental health crisis (Clarke, Brown, Hughes, & Motluk, 2006; Kerrison & Chapman, 2007). Despite the significant number of patients that attend EDs for some type of formalized mental health assessment, triage nurses have admitted to a lack of confidence and expertise in mental health presentations (Broadbent, Moxham, & Dwyer, 2007; Clarke et al, 2006; Heslop, 2000; Kerrison &

Chapman, 2007; Wand & Happell, 2001). Arguably, the omission of mental health patient scenarios from studies that aim to test the inter-rater reliability of triage nurses and their accuracy in assigning urgency ratings has the potential to be misrepresentative. While a significant body of research exists on the topic of ED triage processes and triage scales specifically, a gap in the Canadian literature exists. Assigning urgency ratings to mental health presentations, using the CTAS guidelines should be explored with the similar intent of earlier studies, to ensure patients seeking emergency care are accurately and reliably triaged.

Purpose of the study

The purpose of the study was to test the inter-rater reliability and accuracy of triage nurses' assignment of urgency ratings for mental health patient scenarios utilizing current Canadian Triage and Acuity Scale (CTAS) guidelines (Bullard, Unger, Spence, & Grafstein, 2008). In order to do so mental health patient scenarios were developed in the early stages of the project. The scenarios developed have the potential to be used for future replications of this study, as the basis for research exploring decision-making processes of triage nurses or for ongoing education and training of CTAS guidelines.

Research Questions

The following research questions were developed for this study:

- 1) What is the inter-rater/inter-observer reliability among triage nurses assigning levels of urgency to mental health patient scenarios, based on the 2008 CTAS guidelines, using a computerized triage tool (EDIS)?

- 2) How accurate are triage nurses in assigning levels of urgency to mental health patient scenarios, based on the 2008 CTAS guidelines, using a computerized tool (EDIS)?

Chapter 2

Background

The concept of triage, derived from the French word ‘trier’ meaning to sort (Andersson et al., 2006; Broadbent et al., 2007) was originally defined as “assorting according to quality” (Oxford English Dictionary, 2011). The concept was first introduced into healthcare at the time of the Napoleonic wars when wounded soldiers were removed from battle and taken to receive surgical services, providing they were assessed to be potentially salvageable (Broadbent et al., 2007; Iserson & Moskop, 2007).

Despite its narrowly defined early uses, since the 1950’s *triage* has been adopted worldwide as a concept that refers to a process of prioritization that ensures immediate intervention and greatest resource for those with life threatening illness or injury (Considine et al., 2001; Goransson et al., 2005a; Yousif, Bebbington, & Foley, 2005). Most commonly, triage is associated with a formal process, whereby injuries or illness are assessed to prevent, or minimize potential detrimental effect through rapid assessment and decision making (Gerdtz & Bucknall, 2001; Winnipeg Regional Health Authority, 2007).

The concept of triage taken outside the healthcare context has also been described as a “commonsense, if callous concept” that dominates in situations where resources are scarce (*Time Magazine*, Nov 11, 1974). While few may refer to triage as “callous” in the healthcare literature, many patients or their worried families may view it as such. The act of prioritizing the care of individuals experiencing health care emergencies is an emotionally charged process that often results in frustration, anger,

misunderstanding and dissatisfaction (Goransson et al., 2005b). Assigning resources where they will do the most good involves a degree of subjectivity creating vulnerabilities for minority and marginalized groups, such as individuals presenting with mental health complaints, who may feel particularly victimized by the process.

Mental Disorders

The current estimates of mental illnesses from the World Health Organization (WHO) are that 1 in 4 “will develop one or more mental or behavioural disorders during their lifetime” (WHO, 2004, p16). The Mental Health Commission of Canada (MHCC) recently reported that in 2009, 7 million Canadians (1 in 5) will experience a mental illness (MHCC, 2009). Mental health conditions reportedly contribute to more disability than cancer, diabetes, and cardiovascular disease (Health Canada, 2002; Statistics Canada, 2002) and have been said to represent anywhere from 4-12% of payroll costs in Canada (MHCC, 2009). The National Institute of Mental Health (NIMH) states that mental disorders are the leading cause of disability in the U.S. and Canada for individuals aged 15-44 (NIMH, 2008). Estimates of the economic costs of mental illness in Canada reach 33 billion a year (MHCC, 2009). Despite the rising prevalence rates, particularly in the last several years, and the degree of disability experienced by many with mental illness diagnoses, the broader social stigma of mental illnesses persists (Wright, Linde, Rau, Gayman, & Viggiano, 2003). It is precisely the stigma related to mental health issues that has long been thought to contribute to delays in diagnosis and treatment.

Unlike other more mainstream illnesses mental disorders still struggle to invoke the type of widespread public support seen in national campaigns like those for breast cancer. In a recent report, mental illness was described as continuing to have the “taint of leprosy” causing many of those diagnosed with a mental illness to suffer more from stigma, than from the illness itself (Kirby, 2008). While the report identified increased awareness of mental illness in society and the growing research exploring biological determinants, it also suggested a corresponding increase in discrimination has occurred and that factors including the media have contributed to stereotyping individuals with mental illness as “dangerous and incompetent” (Kirby, 2008). Attempting to portray mental illness as a “disease like any other” has also reportedly fallen short of its goal to aid in reducing stigma (The Carter Center, 2009). Dissemination of research investigating the biological underpinnings to mental illness has been said to indicate permanence, reducing hope for recovery and helping to further reduce support for improving social and physical environments that contribute to poor mental health (The Carter Center, 2009).

Mental Health in EDs

If one considers the rising rates of mental health issues in the general population and the contribution of deinstitutionalization, the shift from institutional care to community based care in Canada in the mid 1990’s (Cristine, Hartford, Vingilis, & White, 2007), it may come as no surprise that increasing numbers of individuals suffering with mental health issues are accessing services from general hospital EDs (Benveniste, Hibbert, & Runciman, 2005; Broadbent et al., 2007;

Happell et al., 2002; McDonough et al., 2004; Wright et al., 2003). Mental health presentations to emergency departments reportedly range from 5-10% (Clarke et al., 2006; Kerrison & Chapman, 2007; Kirby & Keon, 2004), although these rates are expected to rise. In fact, a recent publication disclosed that psychiatric emergency visits in the United States had increased from “5.4% of all visits in 2000 to 12.5% in 2007” (Chang et al., 2011, p1). Similarly, data from the department of human services in Melbourne suggests that mental health presentations increased by 47% over a period of four years (Shafiei, Gaynor & Farrell (2011). More specifically, Broadbent, Moxham, & Dwyer (2010) stated “the increasing use of EDs as a focal point of primary access to mental health services has been increasing since the implementation of deinstitutionalisation and mainstreaming as mental health policy”(p118).

Although the proportion of mental health presentations as compared to non-mental health presentations seems low, the overall impact of mental health patients on the department can be significant. The direct or indirect needs of an individual experiencing a mental health emergency can be remarkably different than other typical presentations to EDs (Clarke et al., 2006) resulting in a disruption in the department’s normal flow (Clarke et al., 2007). Patients seeking mental health care in EDs can be variously compliant with the triage assessment and often present with vague or non-specific symptoms, typically the sorts of symptoms that do not lend themselves easily to common ED diagnostics (Clarke et al., 2007). The authors of one study reported that while mental health presentations represented less than 5% of presentations to the ED “they account for almost 10% of the time spent in the ED by all patients” (King, Kalucy, de Crespigny, Stuhlmiller, & Thomas, 2004, p156).

While mental health patients may require more staff time to complete an assessment they can also engage in disruptive behaviour that may necessitate increased or at times intense involvement of ED staff such as calling for security for threatening behaviour, using physical or chemical restraint (Knott, Pleban, Taylor, & Castle 2007; Wright et al., 2003). A participant in a recent study commented that “people with mental health issues can escalate and make a big scene very quickly” (Pich, Hazelton, Sundin & Kable, 2011, p 15). Undoubtedly these types of presentations influence the ED staffs perceptions of other less demanding mental health presentations. Managing “scenes” or other challenging behaviour related to mental health and substance abuse issues contributes to stress levels among ED staff (Farrell, Shafiei, & Salmon, 2010). The authors describe mental health presentations as “some of the most challenging clinical situations in regards to their assessment and management by the emergency department staff” (Shafiei et al., 2011, p10)

Mental Health Triage

Although a dearth of literature on nurses’ clinical decision-making exists, a relatively smaller body of literature specifically addresses ED triage nurses decision-making (Cone & Murray, 2002). It can be assumed that triage decision making is of particular significance when examining care provided within EDs because of its role in determining an individual’s “wait time” for treatment. Of note, there are several factors specific to nurses that have the potential to impact these decisions including: educational preparation, experience, and personal characteristics (Chen, Chen, Ng,

Chen, Lee, & Chang, 2010; Goransson, Ehrenberg, Marklund, & Ehnfors, 2006; Smith & Cone, 2010)

Although thinking strategies of triage nurses have previously been described (Goransson, Ehnfors, Fonteyn & Ehrenberg, 2008; Smith & Cone, 2010), no specific references were found in Canadian publications. Additionally, no studies exploring triage nurses decision-making using mental health patient scenarios were found among Canadian publications. ED staff in general lack the confidence and skill in providing care to individuals with mental health issues (Happell, 2001; Heslop, Elsom, & Parker, 2000; Kerrison & Chapman, 2007; Shafiei, 2010) while triage nurses in particular have admitted to reduced confidence in assigning urgency ratings to mental health presentations (Clarke et al., 2006). Findings from a recent study corroborated the assertion that triage nurses do not feel adequately prepared to deal with mental health patients as illustrated by one participant who stated “none of us have any mental health training other than in our basic university training” (Pich et al, 2011, p15).

Studies testing the accuracy of nurses’ triage decision making have reported variable results (Chen et al., 2010). Studies that have specifically tested triage nurses accuracy in assigning urgency ratings to mental health patients have found accuracy rates are lower (Happell et al., 2002). Based on the available research findings, exploring accuracy and inter-rater reliability among triage nurses, using the CTAS to specifically assess mental health patient scenarios was believed to have the potential to contribute to a current gap in the literature on the subject.

Chapter 3

Theoretical Framework

Cognitive Continuum Theory

The theoretical framework chosen to guide this study was the Cognitive Continuum Theory (CCT) by Hammond (1996). Several theories that aim to help understand clinical decision-making exist; however they typically focus on two exclusive cognitive approaches, intuition and analytical reasoning (Harbison, 2001; Muir, 2004). Although analytical reasoning has been demonstrated in nursing (Lauri et al, 2001; Lyneham, 1998), it has also been suggested that nursing relies less on this form of cognition because decisions in nursing rarely fall into either/or categories (Gerdtz & Bucknall, 2001). Alternatively, intuition is more commonly associated with nursing practice and has been a significant feature of nursing research since the work of Carper (1978) and Benner and Tanner (1987). Some authors have suggested that nurses do not rely exclusively on one form of cognition or another but rather use a combination of analysis and intuition when making decisions (Lauri et al., 1998, Muir, 2004).

In light of the fact that triage nurses' decision-making is not well understood (Cone & Murray, 2002) it was seen as advantageous to choose a theory that would allow for the broadest possible framework to help interpret triage decisions. Specifically, the intent was to avoid theories that would attempt to explain triage decisions with a bias for pure analysis or intuition, and instead would allow for the possibility of either one or a combination of both, the CCT provides this possibility.

The CCT emphasizes the importance of task structure on thinking; for example, in situations where tasks are “ill structured” intuition is the most appropriate mode of cognition to use (Cader, Campbell, & Watson, 2005; Lamond & Thompson, 2000). Conversely, when the task is well-structured, there are fewer cues and sufficient time is available, analysis should be used (Cader et al., 2005; Lamond & Thompson, 2000).

Scope of the theory

The CCT can be classified as a middle range theory and although Cader et al (2005) state that the theory is descriptive, it might better be described as explanatory and predictive. Predictive theories describe the precise relationships between concepts; however they are also able to describe future outcomes in a consistent way (McEwen & Willis, 2007). While it does not appear, at this stage of the CCT’s theory’s development, that consistent outcomes have been demonstrated nonetheless, Harbison (2001) refers to the theory as prescriptive, owing the predicted relationships between tasks and modes of cognition.

Context of the theory

The CCT is not a nursing theory and therefore does not explicitly comment on the nursing metaparadigm concepts of person, environment, health and nurse or their related propositions. CCT is, however, a theory that deals directly with the process of decision-making. Nurses are constantly making decisions, often in conditions of uncertainty that have significant consequences on a person’s health and that of his/her family (Bakalis, 2006). Since environments in which nurses and patients interact are

unquestionably complex and changing, Cader et al (2005) effectively argue that while the nursing metaparadigm concepts are not addressed directly, they are implicit in the theory.

The CCT has its roots in cognitive psychology, and is derived from the Social Judgment Theory put forward by Brunswik in 1943 (Hammond, 2000). Social Judgment Theory posits that the accuracy of an individual's judgment is dependent on how the information cues are weighted and combined (Cader et al., 2005). If cues from a situation are "weighted to reflect the real situation, judgments will be accurate" (Cader et al., 2005, p399). The conceptual model from which the theory is based is Brunswik's lens model, developed in 1952 (Mathwick, Malhotra, & Rigdon, 2002).

Content of the theory

Hammond (1996, 2000) clearly identifies the main concepts of the Cognitive Continuum Theory as modes of *cognition* and *task properties*. Additional concepts, described by Hammond (1996), are *modes of inquiry*, *pattern recognition*, *functional relations*, *oscillation* and *alternation*. Modes of cognition are made up by three dimensions: *analysis*, *intuition*, and *quasi-rationality*. Hammond (1996) defined analysis as a process of step-by-step, conscious, logical, defensible thought that relies on verbal or quantitative metaphors and stated that intuition is a cognitive process that results in an answer to a question or problem without the use of a conscious, logical, stepwise process. Hammond (1996) explains that quasi-rationality forms the cognition that occurs along the continuum between intuition and analysis. More specifically, it has been defined as imperfect reasoning that includes elements of intuition and

analysis (Dunwoody, Haarbauer, Mahan, Mannot, & Tang, 2000; Cader et al., 2005), and is perhaps best understood by lay persons as the form of cognition known as ‘common sense’ (Hammond 2000).

Task properties is another primary concept in the CCT, and refers to the complexity, ambiguity, and presentation of the task (Cader et al., 2005). According to the CCT, the strongest influence on whether a practitioner uses an analytical or intuitive approach in decision-making is dependent on the position of the task on the continuum (Thompson, 1999). This task continuum is conceptualized as adjacent to the cognitive continuum, and is anchored by ill-structured and well structured tasks (Dunwoody et al., 2000; Cader et al., 2005).

Significance

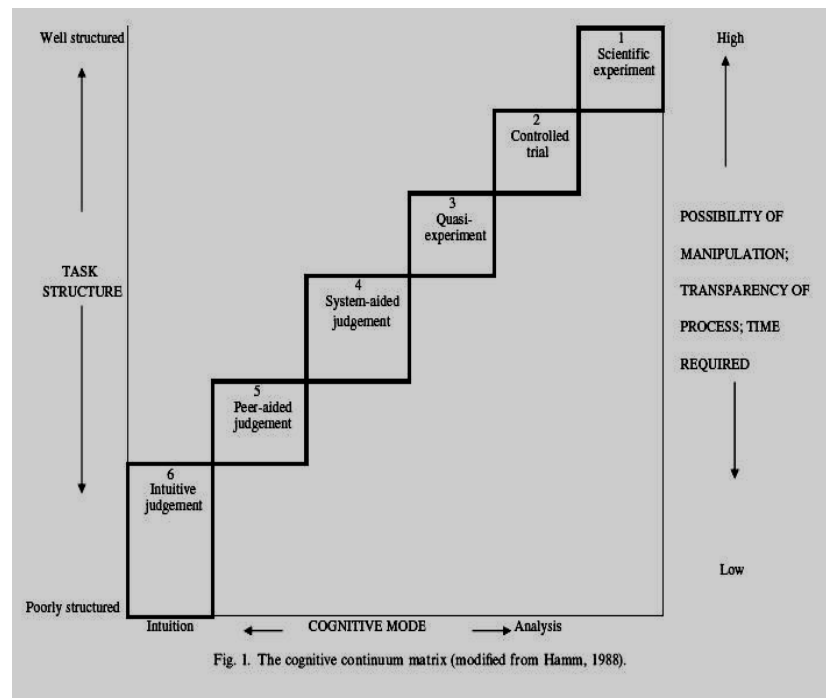
The special significance offered by this theory to this study is the compromise that is introduced to the discourse on decision-making. The theory suggests an alternate approach to cognition that makes possible the existence of analysis and intuition in the same cognitive process. This broader view that accepts intuition and analysis are possible was thought to be valuable in guiding the project as well as interpreting its findings.

Applications of the CCT

The CCT has not been used or even widely referred to in nursing research, despite having much to offer (Thompson, 2001). First articulated in 1981, the CCT has been described as a broad, unifying theory that helps to explain cognition during the

completion of complex tasks (Hamm, Clark, & Bursztajn, 1984; Hammond, 1996; Mathwick et al., 2002; Cader et al, 2005). The CCT proposes six modes of inquiry based on a cognitive continuum, anchored by analysis and intuition, and an adjacent task continuum ranging from well-structured to ill-structured (Cader et al, 2005). The CCT makes clear that neither intuition nor analysis is superior (Dunwoody et al., 2000).

FIGURE 1 Theoretical Framework: The cognitive continuum matrix



(Reprinted from Offredy et al., 2008 with permission from Elsevier: Also Copyright ©1988 Cambridge University Press. Reprinted with the permission of Cambridge University Press)

Triage decisions and the CCT

Uncertainty has been called an “unavoidable characteristic of clinical practice” (Thompson & Dowding, 2001, p610). Given the inherent uncertainty in clinical situations and the potential for life and death decisions in the ED, an attempt to better understand triage nurses’ decision making has the potential to significantly impact nursing practice in this area. Although a review of the published literature did not find evidence that the CCT has specifically been used to guide analysis of triage decision-making, the theory has been used to guide other nursing studies (Cader et al., 2005; Offredy, Kendall, & Goodman, 2008; Standing, 2008). One study that specifically investigated triage nurses “thinking strategies” did find that a small number of nurses in the sample moved “back and forth during the triage process” (Goransson et al., 2007), as suggested by the CCT. Referring to the underlying assumptions of the theory, it is seems quite possible that some triage decisions will be more “well structured” allowing for greater analysis while others are “less structured”, require more cues and therefore may appropriately use more intuitive cognitions.

Chapter 4

Literature Review

Searches of the Medline database, using key words *triage nurses, decision-making, emergency departments, CTAS, mental health* resulted in 302 articles for review. A search of PsycINFO, using the key term *cognitive continuum theory*, resulted in a further 5 sources. Searches were limited to the last 10 years and to studies that focused on adult populations. Hand searching, consultations with colleagues, and a review of reference lists and grey literature found additional references.

It should be mentioned early on that many references to wait time exist among publications on the topic of triage and mental health triage in particular. Not unlike other concepts explored through research the terms used to describe waiting in the ED often refer to very different aspects of an individual patient process. Triage scales typically focus on time to physician, such that the assigned level of urgency has an association to an expected time the patient should be seen by an emergency room physician. While this is an important piece in determining the overall wait for the patient in the department, the complexity of presentations, factors within the department such as time to assessment by a nurse, and variables outside the department like availability of specialty services or inpatient beds, are also important contributing factors. These diverse and equally important factors impacting on overall wait times in EDs should be considered when assessing the research findings discussed throughout this chapter.

Mental Health Presentation to EDs

General hospital emergency departments provide around the clock care and as such may serve as the first contact with the mental health system for some patients and their families (Clarke et al., 2007) providing an entry way into the acute mental health system (Kerrison & Chapman, 2007). In our present day health care system, EDs have also been identified as the default centre for care for individuals in psychiatric crisis (Kirby & Keon, 2004). Not unlike medical presentations, EDs have regrettably become the fall back destination for those mental health patients “with nowhere else to go” (Clarke et al., 2007, p.128).

Despite the significant increase (Beneveniste et al., 2005; Broadbent et al., 2007; Happell et al., 2002; McDonough et al., 2004; Wright et al., 2003) in mental health presentations to general hospital EDs, consumers of mental health services and their families often perceive that mental health presentations are given lower urgency ratings at triage than medical presentations (Clarke et al., 2007). Anecdotally, mental health patients are believed to be “sent to the back of the line in emergency departments, even if they are in serious distress” (Kirby, 2008, p12). Relegating mental health consumers as a lower priority (Clarke et al., 2007) has the potential to result in longer stays in crowded waiting rooms that limit privacy and may contribute to increased fear, anxiety, stress, and overstimulation for the individual experiencing mental health issues (Clarke et al., 2007).

Research evidence exists that confirms to some degree the concerns of mental health consumers and their families. In one study the “highest percentage of mental health presentations was triaged into a less urgent category than the highest percentage

of medical presentations” (Clarke et al., 2006, p217). Similarly, data collected over a one year period in another study showed that psychiatric patients were typically classified as level four on a five level scale. Conversely, a more recent study observed differences in urgency levels assigned and wait times, and found that the highest percentage of mental health patients were triaged a level 3 (urgent) on a 5 level scale whereas the highest percentage of non-mental health patients were triaged a level 4 (semi-urgent) on the same scale (Shafiei et al., 2011). Additionally, the authors noted that “mental health patients were significantly more likely to be triaged as category 1 compared to non-mental health patients” (Shafiei et al., 2011, p13).

Authors have also suggested that inappropriate assignment of urgency ratings by triage nurses acts to extend the stay of mental health patients in EDs (Kerrison & Chapman, 2007). The assignment of urgency levels at triage can extend a patient’s time in the ED. In one Canadian study the wait time in the ED for mental health patients was on average approximately 2 hours longer than for a medical patient (Clarke et al., 2006). Similarly, an Australian study found that 21% of mental health patients waited in the ED more than 8 hours compared to 9% of non-mental health patients (Shafiei et al., 2011) while a US paper found the duration of mental health visits were 42% longer than non-mental health visits (4.25 hours compared to 3.0 hours respectively) (Slade, Dixon, & Semmel, 2010). Extended wait times can result in unintended outcomes including an increase in the number of patients leaving before being seen (Ding et al., 2006). It should not be assumed that patients leaving the department prior to being seen do not require emergency care as it has been shown that upwards of 25% of patients needed emergent or urgent care (Ding et al, 2006).

Consumers themselves have suggested that their length of stay in the ED can also be affected by the specific complaints with which they present namely, suicide and self harm complaints (Clarke et al., 2007). The assertion that delays in care can result or can at least be impacted by certain diagnoses or entrance complaints has been supported in ED literature (McDonough et al., 2004). Interestingly, one study that explored triage nurses' appraisal of patients' credibility seemed to suggest that triage nurses establish a degree of scepticism about the impression of severity of the patients presenting complaint (Edwards & Sines, 2007). Perhaps it is precisely the assumption that patients exaggerate their symptoms in the hope of expediting their process that results in extended wait times for individuals presenting with thoughts of suicide or self harm.

As previously discussed, particularly in relation to presentations for suicide or self harm, the appropriate assessment, treatment and therapy may itself be a significant factor in prolonging a patients stay in the department. As an example, suicide attempts involving an overdose of prescribed or illicit substances may require initial treatment to stabilize the patient that contributes to the overall delay in their disposition. Chang et al (2011) discussed a variety of additional influences that can impact length of stay in the ED specifically, treatment availability, toxicology screening, use of sitters, availability of inpatient beds, transfer delays to alternate hospitals and the reduction of outpatient services. The authors ultimately urged for future research to explore systems issues that may improve the efficiency and quality of care mental health patients receive (Chang et al., 2011).

Triage Nurses and Mental Health Patients

Delays in care and extended wait times in emergency departments may begin with the urgency ratings assigned but they have also been associated with the beliefs held by ED staff toward individuals with mental health issues. Attitudes of ED nurses toward mental health patients is believed to be, in part, based on popular media and negative stereotypes (Happell et al., 2002; Happell, Summers, & Pinikahana, 2003). Violent and at times horrific events involving individuals with suspected or known mental health issues are featured in the media, often in such a way that encourages public discrimination. Arguably, ED nurses are not immune to the influence of these negative and frightening stereotypes, which may directly affect their care and treatment of individuals with mental health issues.

Wright et al. (2003) suggested that attitudes of ED nurses toward mental health patients are also shaped by the culture of the organizations in which they were employed, as well as their own individual experiences with mental health patients. If the department has an explicitly or impliedly negative culture toward this patient population it undoubtedly becomes more challenging for individual staff to resist that influence. Additionally, it is reasonable to assume that the nurses own positive experiences with mental health patients, either personally or professionally, may result in increased empathy, sympathy and understanding while negative experiences can create fear, anxiety and avoidance.

Personal preferences should not be underestimated as contributors to the type of work in which nurses engage. Emergency nurses reportedly appreciate the variety, unpredictability, and immediacy of emergency work, placing the greatest value on

caring for “trauma cases, because of the excitement and drama it provides” (Crowley, 2000, p3). Mental health patients typically stand in stark contrast to these preferences by presenting with vague or challenging symptoms that are neither quick to assess nor easy to resolve.

Triage nurses have acknowledged lacking the necessary skills or the resources to effectively manage mental health patients, particularly those who present as psychotic or violent/aggressive (Kerrison & Chapman, 2007; Farrell et al., 2010) despite the significant amount of time mental health patients spend in direct interactions with ED staff (Wright et al., 2003). Variations in skill and comfort level among triage staff in dealing with patients presenting with mental health issues are reflected in extended wait times, lower rates of accuracy in triage decisions as compared to medical presentations, and decreased consumer satisfaction (Clarke et al., 2006). Triage nurses in one study admitted they were reluctant to make direct inquiries of mental health patients, that they actively avoided them, and assumed their issues were typically more social or behavioural in nature (Kerrison & Chapman, 2007).

While some triage nurses may hold negative beliefs and attitudes about individuals with mental health issues, it should be pointed out that these biases are not exclusive to this group of nurses. Mental health professionals whom are presumed to possess the necessary knowledge, skills and resources to work with mental health patients, were recently found to be three times more likely to support restrictions on people with mental health issues than the general public (Kirby, 2008).

Emergency Department Triage

Unlike other departments in acute care hospitals, the ED is always open, and the volume of patients are hard to reliably predict from day to day (Christ, Grossman, Winter, Bingisser, & Platz, 2010), leading to consistent examination of resource utilization. Increasing numbers of patients seeking health care through EDs worldwide has necessitated the use of triage to sort patients by their level of urgency for care rather than simply their arrival time (Christ et al., 2010). The demand for ED services results in a hectic environment where rapid assessment, prioritization, and treatment are essential elements to maintaining safe and effective care to increasingly complex presentations (Cioffi, 1998; Gerdtz & Bucknall, 2001; WRHA, 2007).

Triage has been called a “unique form of nurse-patient encounter, demanding a rapid, superficial, yet accurate assessment and disposition” (Edwards & Sines, 2006, p.2444). Despite these expectations, seemingly inconsistent and counter-intuitive observations have been reported. As an example, patients assigned lower urgency ratings at triage in one study were later assessed to require admission (Smart, Pollard, & Walpole, 1999). This finding was later repeated in a Canadian study that found nearly 50% of patients triaged into the lowest level of urgency (level 5) based on the CTAS guidelines, ultimately required admission (Clarke et al., 2006). It is worth restating that triage scales are developed to assign time to see physician and although this determination may correlate with admission, the scale is not specifically designed for that purpose. Mental health patients may well be accurately triaged at the lowest level of urgency and yet based on psychiatric assessment and consideration of a variety of patient and system related factors; admission may be determined to be the

best course of action. One response to inconsistency and inaccuracy in triaging mental health patients has been to develop specific mental health triage scales (Broadbent, Jarmin, & Berk, 2002; Happell et al., 2003). These mental health triage scales have been found to reduce wait times, increase confidence of ED nurses, increase accuracy, and improve referrals and transitions to appropriate services (Broadbent et al, 2002; Coristine et al., 2007).

Accuracy and Reliability of Triage

A primary aim of ED triage is to identify those patients who can safely wait and those who cannot. Arguably a process that serves to delay care for patients triaged to a lower urgency level must strive for accuracy (Goransson, Ehnfors, Fonteyn, & Ehrenberg, 2007). Appropriate allocation of urgency significantly impacts total transit time (Smart, Pollard, & Walpole, 1999) and may directly impact patient outcomes. Not surprisingly, one of the primary focuses of the research on triage is the type and accuracy of triage and the triage scales being utilized (Chen et al., 2010; Christ et al., 2010; Goransson et al., 2005a; Grouse, Bishop, & Bannon, 2010). Measuring accuracy in some instances has relied on using an expert panel to assign urgency levels to simulated patient scenarios and then assessing the degree to which study responses are in agreement with those of the expert panel (Olofsson, Gellerstedt & Carlstrom, 2009).

Inaccurate triage results in patients seeking emergency care being either over-triaged or under-triaged (Chen et al., 2010). Over-triage is said to occur when a patient is assigned a level of urgency which results in the patient being seen faster than is necessary (Considine et al., 2000; Considine et al., 2004). One study found that less

experienced triage nurses over-triage, convinced it is safer practice for patients (Considine et al., 2000), although experienced nurses have admitted to doing the same (Chung, 2005). While this situation does not typically pose a risk to the patient in question it has the potential to delay wait times and adversely affect other patients waiting in the department (Considine et al., 2000; Olofsson et al, 2009).

Under-triage describes the type of triage decision that results in an individual being assigned an acuity rating that is lower than is considered appropriate (Considine et al., 2000). Under-triage serves to prolong the wait time for a patient and delay their access to medical care. A patient who is under-triaged has the potential to experience serious negative outcomes including deterioration, prolonged pain and, in extreme situations, death while waiting (Considine et al., 2003). Patients who are under-triaged are also at risk to leave without being seen, raising concerns of patient safety (Clarke et al., 2006).

One early study of ED triage reliability found that the triage assessment was poor and that substantial inter-rater disagreement existed (Wuerz, Fernandes, & Alarcon, 1998). The authors further explained that when raters in the study had been presented the same information on two separate occasions they often failed to agree with their own earlier ratings (Wuerz et al., 1998). Studies of inter-rater reliability have also found wide variation in responses often across three triage categories (Considine et al., 2000). One study that attempted to identify high risk patients found that the most accurate patient triage happened at the most urgent and non-urgent ends of the scale, based on admission/death rates (Ruger et al., 2007).

Triage Scales

As EDs face increasing demands, rising acuity and longer wait times, well developed triage systems that demonstrate accuracy, ease of use, sensitivity and specificity are increasingly important (Ruger et al., 2007). Triage scales require enough sensitivity to identify patients at risk for deterioration during the wait to see a physician and have enough specificity to identify patients who can safely wait (Ruger et al., 2007). Triage scales are meant to determine priority for evaluation and treatment of patients and are based on the underlying question of “how long can patients wait” (Eitel et al., 2003, p. 1070).

Triage scales have been developed for a wide variety of uses including; the military (Iserson & Moskop, 2007), libraries (Neustalder et al, 2005), ecosystem restoration (Brooks, Wardrop, & Cole, 2006), disease outbreaks (Woodson, 2008), and even for sorting coffee (Ramalakshmi, Kubra & Rao, 2007). Despite the existence of these several types of triage scales, this current review is limited in its scope only to those developed for the specific purpose of managing resource allocation in emergency departments.

Several triage scales have been developed by authors worldwide. Scales are typically developed as 3 or 5 level scales with three level systems more common in the United States (Eitel et al., 2003). Despite their widespread use in the U.S., three level scales have been criticized for their lack of validation with clinical outcomes and reliability (Eitel et al., 2003). Recently, the Taiwan Triage Scale (TTS) a four level scale was also found to be inferior in predicting patient acuity and resource utilization, to a five level triage scale (Ng et al., 2010).

Triage systems have evolved considerably in the last several years from traditional paper based systems to a variety of computer based programs (Dong et al., 2006). Standardized computer based triage systems, for example eTriage, a Web-based triage decision support tool that “was designed to support the written CTAS guidelines and to support the autonomy of nursing clinical judgement” (Dong et al., 2007) aim to: a) facilitate equity of access by providing quality care that is based on clinical criteria (Chung, 2005; Gertdz & Bucknall, 2007), and b) ensure patients receive adequate attention, in a suitable location, with the appropriate degree of urgency (Considine et al., 2000).

Several triage scales based on five levels have been developed and include the Australasian Triage Scale (ATS, Australia and New Zealand), the Manchester Triage System (MTS, United Kingdom) and the Canadian Triage and Acuity Scale (CTAS, Canada) (Eitel et al., 2003). Although all scales aim to address the same issue, these five level scales have demonstrated improved reliability and validity (Eitel et al., 2003). A recent study of the MTS found “good” inter-rater reliability and “high” levels of accuracy overall however, lower rates of agreement and accuracy were recorded at level three (green) and level four (yellow) prompting the authors to conclude that nurses in the study had some difficulty differentiating between these two specific levels of urgency (Olofsson et al., 2009). More recently, a sample of triage nurses using the MTS were tested to determine how accurately they could predict the need for admission of patients in the ED. The study found that triage nurses were able to positively predict patients requiring admission to hospital only slightly more than 50% of the time (Beardsell & Robinson, 2011).

Canadian Triage and Acuity Scale

The CTAS has been called a dynamic set of guidelines that has been revised several times since its development in 1998. The CTAS is a five level system each with an acceptable guideline for time to be seen by a physician: 1-resuscitation (immediate physician response), 2- emergent (less than 15 minutes), 3-urgent (less than 30 minutes), 4 – less urgent (less than 60 minutes), and 5 – non urgent (less than 120 minutes). The response times by the physician are objectives and not established standards (Beveridge, 1998).

The CTAS was updated in 2001 with the addition of a Paediatric module and again in 2004, when first order and second order modifiers were included (Bullard, Unger, Spence, & Grafstein, 2008). First order modifiers include vital signs, pain location and severity and mechanism of injury and can be applied to most CTAS chief complaints. Second order modifiers are specific modifiers that apply to one or several complaints only (Bullard et al., 2008). The most recent update in 2008 includes significant revision of the mental health chief complaint category as well as changes to the corresponding second order modifiers (Bullard et al., 2008).

Computerized Decision Support Tools

Traditional triage methods have typically relied on the user's memory, in addition to a number of aids such as memory cards and checklists, of the specific triage guidelines (Dong et al., 2006). Relying on memory creates the potential for error as triage nurses are pressured for time and may not immediately recall specific triage guidelines or easily access those available in print (Dong et al., 2006).

Computerized systems have the potential to enhance nurses' memory thereby improving triage reliability (Dong et al., 2007; Dong et al., 2006), for example eTriage, based on CTAS is currently used in several Canadian EDs (Dong et al., 2006). The eTriage application is based on a standardized complaint list that generates a specific complaint CTAS template that displays all the appropriate discriminators to assist the user in arriving at the accurate triage level (Dong et al., 2006). The eTriage application was designed to support the written CTAS guidelines nevertheless maintaining the clinicians ability to "override" the computer generated triage level, providing the user documents their rationale for doing so (Dong et al., 2006; Dong et al., 2007). Research has found eTriage is user friendly even for novice computer users, assessment time of triage nurses is not increased, and triage nurses have widely accepted it (Dong et al., 2007). Agreement studies using the application eTriage reported good agreement (using quadratic k) to moderate agreement using linear k (Dong et al., 2006).

More recently the sites used for this research project moved to the EDIS software provided by Eclipsys. EDIS like other computerized tools automates triage as well as patient tracking, orders/results, documentation and discharge information (Manitoba eHealth, 2008). EDIS is said to improve access to clinical information thereby assisting the flow of patients through the ED and producing much needed data about ED activity in order to monitor outcomes and implement improvement (Manitoba eHealth, 2008).

Decision Making

“Clinical reasoning and sound nursing judgement is essential to sound nursing practice” (Fonteyn & Fisher, 1995, p. 124). Several studies of clinical decision-making in nursing emphasize the use of two primary forms of cognition: analytical reasoning or intuition (Benner & Tanner, 1987; Hamers, Hayjer Abu-Saad, & Halfens, 1994; Lauri et al, 2001; Muir, 2004; Bakalis, 2006). The assertion that clinical decision-making in health care is either analytical or intuitive has created a research discourse that aims to discredit one form of decision-making in order to strengthen the argument for the other. In a recent review of the literature on nurses decision making conducted by Bakalis (2006) a discussion of facts related to decision making concluded that the “relationship between knowledge and clinical decision making is ambiguous” (p.42). The review also suggested whether nurses use research based or practice based knowledge to make decisions is also unclear (Bakalis, 2006). In light of the tensions between analysis and intuition, the CCT, which asserts that both modes of cognition can occur and that it depends on the degree of structure (ill-structured or well structured) which form of cognition is most appropriate, was chosen to guide this study and its findings.

It has been suggested that the concentration of decision-making is higher in EDs than almost any other area of health care (Croskerry, 2002). Decision-making at triage practice is remarkably different than other areas of nursing practice (Bakalis, 2006; Chung, 2005). Nurses working at triage are typically the first to assess a patient and determine their trajectory for care (Evans, 2005). Triage nurses are also typically

quite isolated in the ED and as a result commonly arrive at decisions without input from their colleagues (Chung, 2005).

It is not simply the number of decisions made at triage or the challenges and risks of prioritizing to ensure the most appropriate patient is seen next, that creates the level of complexity, it is also the degree of uncertainty that exists within the environment. Uncertainty in health care is considered an “unavoidable reality” in virtually all clinical practice activities (Hammond, 1996; Thompson & Dowding, 2001). In an ED where the majority of patients are unknown and “their illnesses are seen through only small windows of focus and time” (Croskerry, 2002, p.1184) levels of uncertainty run very high.

Triage decisions do not rely on objective data alone rather subjective cues such as verbal and non-verbal communication were early source of information with more objective cues being used later on (Lyneham, 1998). While subjectivity in triage decision making is not considered inappropriate, it must be “used cautiously to avoid bias in the triage process” (Chung, 2005, p212). Although triage guidelines aim to reduce potential bias, triage nurses have admitted to loosely following guidelines (Chung, 2005) and computerized decision tools like CTAS have continued to allow for the user’s own clinical judgment (Dong et al., 2006).

While computerized decision support (i.e. EDIS) has the potential to improve certain aspects of clinical decision-making, intuition will continue to be an appropriate form of cognition (Croskerry, 2002). Improving mental health patient outcomes in Canadian ED’s no doubt relies on the continuous efforts to improve triage systems while recognizing the effect of experience, knowledge, skill, confidence and attitudes

among triage nurses on the accuracy of their decisions and the quality of care they provide.

Education

The role of education and experience on clinical decision making has been investigated with a range of conclusions. Cioffi (1998) found that less experienced nurses collected more information when making triage decisions while more experienced nurses made more inferences. While it has been suggested that experts make better decisions (Bakalis, 2006), this assumption has been both confirmed and refuted (Hamers et al., 1994). The conflict may be partially explained by describing experts by degree of factual knowledge (education) or experience. A review of published literature, examining the relationship between triage decisions and accuracy, concluded that factual knowledge was shown to lead to better triage decisions, however no significant relationship between experience and improved triage decision making was demonstrated (Considine et al., 2007). The authors did however discuss the use of paper based scenarios as a potential weakness of the studies reviewed (Considine et al., 2007).

Although education on mental health presentations has been shown to improve nurses' comfort level and patient satisfaction (Clarke et al., 2007), it has been acknowledged that ongoing opportunities for education and skill development on mental health topics is lacking (Broadbent et al., 2007) despite publications identifying triage nurses lack of skills and expertise in assessing and managing mental health presentations (Heslop et al., 2000; Kerrison & Chapman, 2007).

Chapter 5

Methodology

Aims

The overall aim of this study was to test inter-rater agreement among triage nurses working in a general hospital emergency setting, assigning levels of urgency to mental health patient scenarios. Additionally, the study sought to determine the accuracy of triage nurses decision-making aided by the CTAS, during assignment of urgency levels for mental health presentations.

The specific aims of the study were to determine the validity of the CTAS, in assigning levels of urgency to mental health scenarios by:

- 1) testing the inter-rater reliability among triage nurses assigning urgency levels to mental health patient scenarios.
- 2) determining the accuracy of urgency ratings assigned by triage nurses to mental health patient scenarios.

In addition, the study also hoped to;

- a) explore potential differences in accuracy based on years of experience at triage or educational preparation and training and,
- b) investigate any potential influences of comfort level with mental health presentations and accuracy in assigned urgency ratings.

Following a review of previous work on inter-rater reliability involving triage nurses, a consistent approach to research design was not found. Many of the published studies on measuring inter-rater reliability did not discuss their study design in detail often referring to it as an experimental design (Fernandes et al., 2002). Published

studies that specifically identified their design used a prospective observation design (Dong et al, 2006) and correlation design using survey methods (Considine et al., 2000). The current study did not follow the specific criteria of any one research method and is best described as a non-experimental descriptive design.

Scenario Development

Although a small number of publications on ED triage have used “real time” triage encounters (Dong et al., 2006), most commonly, research on ED triage has utilized retrospective chart audits and scripted patient scenarios (Dong et al., 2006; Goransson et al., 2005a). Patient scenarios are considered to be a valid method of measuring the problem solving skills of nurses and are considered useful in evaluating clinical decision making (Considine et al., 2001). Using patient scenarios offers the ability to obtain responses from all participants based on the same information, reducing the variability of the patient’s presentation that would occur in real time triage episodes (Considine et al, 2001).

Conversely, using paper-based patient scenarios has inherent weaknesses, which include reduced generalizability of the findings owing to the fact that the triage environment is ultimately contrived and the scenarios, although based on abstracted patient data, remain fictional for all intents and purposes. The use of patient scenarios creates a fictional environment by: a) removing the additional visual cues obtained from the presentation of the patient; b) restricting the data the triage nurse can use in their assessment; c) reducing the stress; and d) removing the immediate demand for maintaining department flow (Considine et al., 2001). Despite the stated weaknesses

related to the use of patient scenarios, it was determined that developing mental health scenarios may prove beneficial for ongoing education or use in future studies and that the limits on time and variation among patient presentations across the participating sites were sufficiently important enough to rule out a “real time” design.

The patient scenarios used in this study were developed by referencing actual triage notes from documented mental health patients’ presentations through a general hospital emergency department. The abstracted data for the patient scenarios included: a) CEDIS category, b) CTAS chief complaint, c) age, d) mode of arrival, e) vital signs, and f) details of the triage note. The abstracted data also indicated whether or not the patient attended the department alone and, in most cases, it included the patient’s status, whether voluntary or involuntary, under the provincial *Mental Health Act*. The abstracted data formed a template for the mental health patient scenarios and served as the first stage of development of the scenarios to be used in the study. The abstracted data was primarily used to determine the types of pertinent observations triage nurses made when conducting mental health assessments i.e. history of mental health diagnoses, level of risk, and agitation/aggression.

A total of 38 scenarios were developed (Appendix A) and distributed to the thesis committee and an additional clinical expert on the CTAS, to be reviewed for face and content validity. The review served as an expert panel and provided insights into adjustments in content as well as directed revisions in order to establish a credible “correct” score for use in determining rates of accuracy. The scenarios were developed with the intent that specific CEDIS complaints would be chosen together with the second order modifiers set out in the CTAS guidelines (2008) and built into the EDIS

triage document, in order to arrive at the correct score. Based on a series of revisions and consultation with the expert panel, the group of 38 scenarios was reduced to 20. The final 20 scenarios (Appendix B) used by the participants in the study included representation of all five CTAS levels in the following frequency; level 1- two scenarios, level 2 – five scenarios, level 3 – six scenarios, level 4 – five scenarios, level 5 – two scenarios. The distribution of scenarios by urgency level was informed by CTAS experts. Specifically, the number of scenarios was reduced to 20 in order to increase the likelihood that participants would complete all assigned scenarios. It was felt that extending the number of scenarios much beyond 20 would increase the time each participant would be required to commit to, potentially creating barriers to recruitment or increasing the likelihood of incomplete data. The number of scenarios developed for each corresponding CTAS level was based on a combination of expert knowledge of the typical distribution of presentations by urgency rating and a desire to specifically incorporate more recently revised second order modifiers such as, “uncertain flight and safety risk”.

Research Design

Procedures

Study participants received copies of the twenty paper based mental health patient scenarios for use during the computerized urgency ratings. All ratings were performed using the EDIS system, in computer labs at the various participating sites or as an alternate in the researcher’s office. Although it was anticipated in the proposal of this project that nurses may come together in groups to participate, this did not occur

and any concerns regarding contamination of the data through discussions were unfounded.

Each participant triaged the same 20 scenarios presented in a randomized order in an attempt to reduce potential sharing of information and responses among participants. Participants were each given scripted information prior to initiating the urgency ratings, which included a number of assumptions about the fictional patient scenario (see Appendix C). Participants were asked to assume for example; a regular heart rate, no communicable disease exposure and normal airway, breathing and circulation, all assessment data prompted by the triage document in the EDIS database.

The researcher remained in the room for the majority of the time participants were entering data and was therefore available for questions. Participants were informed at the outset that detailed responses would not be given in attempt to keep all responses free of the researcher's bias. Participants were asked to enter their triage assessments as true to a real life scenario as possible. Although participants were not given a time limit for completing their decision making, based on earlier research (Gerdtz & Bucknall, 2001) it was proposed that participants would not exceed 10 minutes per scenario. None of the eighteen participants took longer than 2 hours to complete all twenty scenarios and therefore did not exceed the maximum previously established (Gerdtz & Bucknall, 2001).

During the proposal of this project concerns were raised regarding the research design, specifically that the final inter-rater reliability calculations might, in essence, be reporting the reliability of the computerized decision support tool rather than the

nurse's decision making. Suggestions were made that the study design might be strengthened and this risk reduced by requesting participants to triage each of the scenarios using paper CTAS guidelines as well as the computerized system. Several discussions with CTAS experts ultimately concluded that the computerized decision support tool should still allow nurses to make independent assessments of the scenarios and not overtly influence their decisions.

As previously stated, computerized decision making tools such as the EDIS, continue to allow the clinician's judgement to affect the urgency rating assigned. Triage nurses in this case chose from multiple Canadian emergency department information systems (CEDIS) complaint categories and second order modifiers in order to assign their ratings. In the interest of practicality the CEDIS complaint categories were initially limited but the list has since expanded to include many more complaint categories such as genitourinary, environmental, cardiovascular or mental health and psychosocial issues (Bullard et al., 2008). Triage nurses also maintained the ability to over-ride the final CTAS generated score from the emergency department information system (EDIS) and choose a rating that best matched their assessment, providing they documented a rationale. Since the triage decision making process continues to rely on the clinician, it was felt that the selected responses would reflect the research participant's decision making process and not simply those chosen by the computerized algorithm. As a result the decision was made that all the data on urgency ratings was collected exclusively from the EDIS system.

Inter-Rater Reliability

Inter-rater reliability is estimated by having more than one rater (Polit and Beck, 2004), in this case recording a response according to instructions. The inter-rater reliability of the CTAS has been measured in previous studies using written patient scenarios and analyzed using an unweighted and weighted kappa statistic (Grafstein et al., 2003; Manos et al., 2002; Olofsson et al., 2009). Unlike these previous studies which typically compared raters of one group (i.e. physicians) with raters of another group (i.e. nurses), the current study tested the agreement among one group made up of all eighteen triage nurses. This distinction necessitated the use of a different statistical analysis, capable of measuring agreement among multiple raters.

Following consultation with a statistician from the Faculty of Nursing, Manitoba Centre for Nursing and Health Research, it was determined that the Fleiss kappa statistic (Braga-Baiak, Shah, Pietrobon, Braga, Neto & Cook, 2008; Landis & Koch, 1977) and the Kendall's coefficient of concordance (Legendere, 2005; Sigler & Tallent-Runnels, 2006;) would be used for the analysis. The Fleiss kappa statistic is used for calculating agreement between multiple raters and is bounded between 1 and -1, where 0 represents no agreement and perfect agreement is considered to be at values above .80 (Braga-Baiak et al., 2008; Fleck, Tandon, Jones, Mulvihill, & Minns, 2010; Landis & Koch, 1977a; Landis & Koch, 1977b). The Kendall's coefficient of concordance is related to Spearman's nonparametric test and is capable of determining the "consistency of ranked responses" (Sigler & Tallent-Runnels, 2006, p265) on an ordinal scale, for multiple raters. Kendall's coefficient calculation ranges between 0-1,

where 0 represents no agreement and 1 represents complete agreement (Sigler & Tallent-Runnels, 2006).

Overall agreement scores calculated using the Kendall's statistic may be higher because, unlike the Fleiss the calculation of the Kendall's coefficient, it partially accounts for the degree of closeness of responses. As an illustration, in this study where nurses could vary across five levels in their responses, the Fleiss does not weight responses that are off by 1 level any different than responses that are off by 2 or 3 levels. The Kendall's coefficient does take into account for these differences and weights the closeness of responses.

Ethical Considerations

Prior to the development of the patient scenarios or the recruitment of participants ethical approval was obtained from the University of Manitoba, Education/Nursing Research Ethics Board (ENREB). Additional approval was received from the Health Sciences Centre Impact and Access Committee, the Victoria General Hospital Research and Development Office and St. Boniface Hospital Research and Ethics Board in order to recruitment possible participants from a variety of sites.

The study did not involve any patients directly but did rely on abstracted patient data for the early development of the patient scenarios. No specific patient identifiers were included in the scenarios used. Nurses who participated in the study were assigned a rater number and are in no way identified in the results or discussion of this project. Each participant signed a copy of the project consent form. Copies of

the signed consent forms were sent to each participant and the original copies remain in the researcher's locked office.

Every triage nurse who participated in the study received a fifty dollar honorarium. The honorarium was explicitly intended to reimburse any costs incurred as a result of participation in the project such as; parking, babysitting, or meals. The research participant information form clearly stated that the honoraria would be paid regardless of the number of scenarios each nurse completed.

Chapter 6

Results

Description of Sample: Sites and Participants

A total of three hospitals participated in this study resulting in a total sample size of eighteen triage nurses. The sites included two major tertiary acute care teaching hospitals and one community hospital. Data specific to differences in patient population from the various sites were not gathered for the purposes of this study but it can be assumed that differences in the type of presentations and frequency of certain diagnoses may exist between the three sites.

For this purposes of this study in order to meet inclusion criteria to participate individuals needed only to be a triage nurse employed in an ED within the WRHA. Triage nurses could be part-time or full-time and no minimum expectation was placed on their years of experience. Participants were recruited through invitations sent via email or placed in individual nurses' mailboxes. The invitations were supplemented by informal introductions of the project by the researcher in department coffee rooms, during shift change report and through posters displayed. Recruitment was in most instances influenced by strongly supportive managers and directors from the various program sites and perhaps most significantly by the word of mouth encouragement from one participant to their colleagues. Interested participants contacted the researcher directly and appointments were based on mutually agreed upon times and/or the availability of computer training labs.

Each participant in the sample was asked to complete a demographic questionnaire (see Appendix D) that asked for information about years of experience

at triage, specific education or training and the nurses' comfort level with specific mental health presentations. In order to protect privacy, the participants in this study were not asked to provide any data related to their age or gender; data will not be included in the analysis. All data were initially entered into SPSS v9.2 with the assistance of a research assistant from the University of Manitoba, Faculty of Nursing, Manitoba Centre for Nursing and Health Research. Data were later reviewed by the researcher to ensure that no obvious errors had occurred during data entry.

Based on the number of years of experience at triage, the sample can be described as a very experienced group (see Table 1). Based on the total sample of eighteen triage nurses, more than 65% of the participants reported greater than five years experience at triage and 44% of the total sample reported more than ten years of triage experience.

Table 1 – Number of years of triage experience

Years of experience	Frequency	Percent
Less than one	3	16.7
More than one, less than five	3	16.7
Between five and ten	4	22.2
More than 10	8	44.4
Total	18	100.0

Participants were also asked to report any specialized training in mental health they may have received on the demographic questionnaire (see Table 2). In order to identify their level of training, participants were asked to choose from a list of responses including; none, CTAS training, regional triage orientation (which includes

a minimum of two full days of mental health topics) and the advanced emergency course. Participants were also given the opportunity to report any other training they may have received. Once again, the sample is viewed as a well educated group of triage nurses with more than 65% of the participants indicating they had participated in more than one of the mental health related educational programs listed.

Table 2 – Specialized mental health training or experience

Educational course	Frequency	Percent
None	2	11.1
CTAS training	1	5.6
Regional triage orientation	1	5.6
Advanced emergency course	1	5.6
Other	1	5.6
More than one	12	66.7
Total	18	100.0

Nearly eighty percent of the sample in this study rated themselves moderately or very confident in their triage of mental health patients (see Table 3). Although the small sample size limited the ability to make conclusions about the impact of number of years of triage experience on the triage nurses comfort level with mental health presentations, no significant differences were noted. Only four nurses of the eighteen who completed the comfort level scale reported feeling mildly confident with mental health triage; however half of these nurses had more than one year experience and less than five, while the other half had more than ten years experience.

When the participants were asked to rate their level of confidence with specific mental health presentations, greater variability in responses was observed. Most

notably, a fairly high percentage of the sample (30%) reported feeling mildly confident with triaging psychotic symptoms, while nearly 100% of the sample either reported feeling moderately or very confident, with depression and/or suicidal presentations. In contrast to earlier findings, participants in this study did not report high levels of decreased confidence with aggressive behaviours (Farrell et al., 2010, Heslop et al., 2000). Lower levels of confidence with presentations of behaviour and/or personality disorders had been demonstrated earlier by Clarke et al., (2006).

Again there was no obvious relationship between confidence and years of experience for specific mental health presentations (see table 3). Typically, nurses with five years or less experience at triage reported levels of confidence similar or identical to nurses with more than ten years experience. "Patients with manic symptoms", was perhaps the only presentation that saw a difference in confidence based on years of experience. All eight of the nurses with more than ten years experience rated themselves moderately or very comfortable with this presentation, while forty percent of the nurses with less than ten years experience reported feeling only mildly confident.

Table 3 – Triage nurses comfort level with mental health patient presentations

Presentation	Not at all comfortable	Mildly confident	Moderately confident	Very confident	Total
Triage of mental health patients	0	4	7	7	18
Psychotic symptoms	0	6	8	4	18
Manic symptoms	0	4	9	5	18
Anxiety	0	0	9	9	18
Depression	0	1	9	8	18
Suicidal ideation	0	1	10	7	18
Aggressive behaviours	0	4	9	5	18
Behaviour/ Personality disorders	2	7	5	4	18

Data Analysis

The research questions developed to guide this study were focused on determining a) the inter-rater reliability among triage nurses (n=18) assigning urgency ratings to mental health presentations, and b) the accuracy of triage nurses (n=18) urgency ratings, and c) utilizing the results of both the calculations to comment on the validity of the CTAS in relation to mental health presentations. The statistical analysis of the Fleiss kappa statistic and its p-value, conducted to determine rate of agreement amongst the participants, was calculated using the “magree” macro in SAS v9.2. As previously stated this statistic is bounded between -1 and +1, with 0 representing no agreement.

Table 4 – Fleiss Kappa statistics for nominal response – “magree” macro in SAS v9.2

Rating	Kappa	Standard error	z	Prob>z
1	0.45898	0.018078	25.3893	<.0001
2	0.10687	0.018078	5.9115	<.0001
3	0.21815	0.018078	12.0676	<.0001
4	0.49991	0.018078	27.6536	<.0001
5	0.02293	0.018078	1.2685	0.1023
Overall	0.31180	0.010733	29.0510	<.0001

The overall Fleiss kappa for this sample of triage nurses (n=18) was 0.31180 (see Table 4). Based on the guidelines developed by Landis & Koch (1977) this kappa represents only fair agreement but is nonetheless significantly better than chance ($p < 0.0001$). Additional analysis was conducted to show the agreement among triage nurses based on levels of urgency (CTAS level 1-5). Based on these statistics, triage nurses agreed with one other most often, moderate agreement, on scenarios assigned CTAS level 1 (kappa=0.45898) and CTAS level 4 (kappa 0.49991).

The second statistic calculated was the Kendall’s Coefficient of Concordance for ordinal response, bounded between 0 and 1 where one is complete concordance among raters and 0 indicates complete randomness. As discussed earlier, this statistic takes into consideration the closeness of responses resulting in a higher rate of agreement. The Kendall’s coefficient for this sample of eighteen triage nurses was 0.67964, moderate agreement and it too was statistically significant ($p < 0.0001$). The frequencies of CTAS levels assigned as calculated by SPSS v9.2 are reported in Table 5 below.

Finding a statistical package capable of determining the accuracy or the measure of agreement among the triage nurses to the standard or correct response in

this case, proved somewhat challenging and was ultimately completed using a custom code in SAS to run the equation to compute the “Light” statistic (Light, 1971). This calculation tests whether or not the raters agree with the standard or correct response significantly more likely than they would do by chance alone. The statistic does not produce a kappa statistic that can be interpreted as those above but the p-value of the data obtained from the sample, was calculated as less than 0.001 allowing for the conclusion that triage nurses did not agree with the standard in a purely random fashion (Dufault, 2011, personal communication).

Table 5 – Triage nurses accuracy scoring for mental health patient scenarios

Scenario Number	Correct CTAS level	Frequencies of CTAS level (n=18)					Total
		1	2	3	4	5	
1	3	1	1	13	3	0	18
2	4	0	0	1	17	0	18
3	2	8	4	6	0	0	18
4	4	0	0	4	14	0	18
5	2	6	4	6	2	0	18
6	3	0	3	13	2	0	18
7	4	0	0	0	17	1	18
8	1	14	4	0	0	0	18
9	2	6	7	4	1	0	18
10	3	1	3	13	1	0	18
11	3	0	2	11	5	0	18
12	1	13	2	3	0	0	18
13	2	1	8	9	0	0	18
14	3	0	0	13	6	0	18
15	4	0	0	3	14	1	18
16	5	0	0	5	11	2	18
17	5	0	4	10	2	2	18
18	2	0	6	9	3	0	18
19	3	0	8	9	1	0	18
20	4	0	3	14	1	0	18

In order to better appreciate the observed differences between the Fleiss kappa, that does not consider degree of closeness but rather absolute agreement or not and the Kendall's coefficient of concordance which does factor into its calculation the clumping of raters around a particular response, additional frequencies were produced using the data from SPSS v 9.2. The frequencies were specifically used to help identify responses that were one level below or above the standard or the assigned correct score (see table 6).

Examining the responses with a view to observe, not only how frequently the sample of triage nurses were in complete agreement, but also how close they were to each other when they did not completely agree, it was observed that for seventeen of the twenty scenarios, 80% of nurses were within one triage level of each other. Paying specific attention to certain scenarios for example, number seventeen, it may well be that the scenario was poorly crafted accounting for the significantly lower rate of exact or even close agreement. Removing this scenario and perhaps others as "outliers" prior to the data analysis may well have increased both the Fleiss statistic and the Kendall's coefficient of concordance.

Table 6 – Accuracy, over-triage and under-triage by one level

Scenario Number	Correct Answer	# of nurses with correct response	% of correct responses (accuracy) n=18	# of nurses who over-triaged by one level	#of nurses who under-triaged by one level	Total N=18
1	3	13	72.2%	1	3	17
2	4	17	94%	1	0	18
3	2	4	22.2%	8	6	18
4	4	14	77.7%	4	0	18
5	2	4	22.2%	6	6	14
6	3	13	72.2%	3	2	18
7	4	17	94%	0	1	18
8	1	14	77.7%	0	4	18
9	2	7	38.8%	6	4	17
10	3	13	72.2%	3	1	17
11	3	11	61.1%	2	5	18
12	1	13	72.2%	0	2	15
13	2	8	44.4%	1	9	18
14	3	12	66.6%	0	6	18
15	4	14	77.7%	3	1	18
16	5	2	11.1%	11	0	13
17	5	2	11.1%	2	0	4
18	2	6	33.3%	0	9	15
19	3	9	50%	8	1	18
20	4	1	0.05%	14	0	15

As an alternate method of presenting accuracy, an example from an earlier study measuring inter-rater reliability and accuracy (Olofsson et al, 2009) was used. The results of this study seemed to report accuracy as a percentage of correct responses by urgency level. A similar calculation was performed in this study in an attempt to provide further clarity to the CTAS levels that produced the highest reported accuracy.

Table 7 - % correct by CTAS urgency level

CTAS urgency level	# of scenarios	# of correct responses	# of responses	% correct
1	2	27	36	75%
2	5	29	90	32.2%
3	6	71	108	65.7%
4	5	63	90	70%
5	2	4	36	11.1%

Use of modifiers

Nurses that assigned urgency ratings that matched the “correct” response more than sixty percent of the time, used second order modifiers for the vast majority, if not all of the twenty scenarios. Additionally, nurses in this group typically refrained from or avoided entirely the use of over-ride to change the computer generated CTAS score. Alternatively, nurses that assigned the “correct” score less than or equal to forty percent of the time were less likely to use the second order modifiers or avoided their use all together. This second group of nurses also utilized over-ride more often than triage nurses who had higher frequencies of “correct” responses. Discussions did not take place with the participants immediately following completion of their urgency ratings therefore explanations regarding the variability in modifier and over-ride use are speculative at best. It does appear however that consistent use of the second order modifiers increases the accuracy of urgency rating for paper based mental health scenarios.

Chapter 7

Discussion

The results of this study appear to suggest that inter-rater agreement among triage nurses assigning urgency ratings to mental health scenarios is fair to moderate. Rates of agreement were observed to increase from “fair” to “moderate” as calculations of statistical analysis took into consideration the closeness of the nurse’s responses to one another. To date a similar study testing inter-rater reliability of mental health patient scenarios, using the CTAS has not taken place and therefore no comparisons of these findings to earlier work can be made. Some comparisons can be discussed by reviewing previous inter-rater and accuracy studies involving urgency ratings at triage however, this earlier work was not specific to mental health scenarios and may or may not have included these presentations in their calculations.

Based on frequencies calculated with SPSS v 9.2, the highest rate of agreement in the present study occurred at the highest and lower ends of the scale (CTAS level 4), which is somewhat similar to an earlier study by Beveridge et al (1999) although in that study the highest agreement was recorded at either extreme of the scale, level 1 and level 5. In this study the Kappa statistic recorded for CTAS level 5 was the lowest calculated (0.02293) indicating very little agreement at this end of the scale. Specifically, ten nurses assigned an urgency rating two levels higher (CTAS level 3) for scenario seventeen. While this may be explained by a poorly crafted scenario and therefore represent an outlier, scenario sixteen, similarly intended to be scored a CTAS level 5, also showed significant variations in scoring.

It may be possible that nurses in the present study were reluctant to assign a level 5 to any of the scenarios perhaps out of concern that doing so may confirm conclusions from previous studies suggesting mental health patients are triaged at the low end of the scale regardless of their presentations (Clarke et al., 2007). Based on the data from this study, it is however just as likely that the content of the scenario itself did not provide sufficient details of the patient presentation to indicate to this group of triage nurses, the correct urgency rating should have been a CTAS level 5.

Influence of the Sample

One of the original goals of this study was to use a homogenous sample, that is to say that it was intended that all participants would be recruited from one site within the health region. Challenges to recruitment meant that additional sites needed to be approached in order to produce a sufficient sample. As a result the final sample of eighteen nurses came from a total of three sites across the region. Although CTAS aims for high reliability and validity, variability in inter-rater reliability has been shown in previous studies (Beveridge et al., 1999; Manos et al., 2002). Research on an alternate scale, the Australian Triage Scale (ATS) reported low inter-rater reliability with mental health presentations and concluded that reliability is influenced by more than the clinical presentation (Broadbent et al., 2010). Additional factors which can include the culture of the ED toward mental health presentations (Wright et al., 2003), nurse related variables such as variations in skill and confidence (Clarke et al., 2006; Farrell et al., 2010; Kerrison & Chapman, 2007; Shafiei et al., 2011) can impact the level of agreement or accuracy observed.

Higher rates of agreement may have been observed had the statistical analysis of agreement separated the sample into distinct groups of nurses based on their site of employment. Wright et al (2003) discussed the influence of organizations on triage nurses' attitudes and concluded that the culture of the workplace helps shape the view of mental health patients in the ED. Other factors related to the differences across sites such as patient population, frequency of presentations, differences in educational uptake and specific program practices arguably contribute to the level of agreement among triage nurses. Shared experiences, particularly with certain patient presentations, common training and site based education, practices, culture and attitudes toward mental health patients may all be important factors influencing urgency ratings. Practices such the use of over-ride and second order modifiers as well as tendencies toward over and under-triaging, may well be site specific.

Regrettably, the sample size in this study was sufficiently small enough that dividing up the sample into three distinct groups may well have limited the power to calculate statistical significance. Additionally, reporting by site would have reduced n values to the extent that the confidentiality of participants may have been compromised, thus no analysis of site specific data was performed. Had the sample been homogeneous additional conclusions may have been drawn regarding specific educational strategies that could be emphasized or strengthened.

Agreement and accuracy by CTAS level

Since the degree of overall agreement was calculated statistically to be “fair”, it can be concluded that significant variability in the urgency ratings existed. In order to assist in the interpretation of the data, it was noted that triage level 1 (emergent), level 2 (more urgent) and level 4 (less urgent), reported the highest agreement, as recorded in the observations in table 4. It may not come as a surprise based on earlier research to see higher rates of agreement and accuracy at level one (Ruger et al., 2007; Beveridge et al., 1999); it is however somewhat more surprising to see a high rate of agreement at the less urgent level. Intuitively it seems to make sense that the most extremes end of the scale would demonstrate both higher agreement and accuracy in rating. Patients who absolutely cannot wait and those who can are likely in most instances to be more easily “sorted”. It makes sense that patients presenting in the middle of the scale might be harder to distinguish between one level and the other as demonstrated in a recent study that concluded nurses had a difficult time distinguishing between level 3 and level 4 (Olofsson et al., 2010).

Determining accuracy statistically proved to be more challenging than originally thought. The Light (1971) statistic does not produce a kappa statistic that can be interpreted in the same way as the Fleiss Kappa or the Kendall’s coefficient of concordance; however the p-value of the data obtained from the sample was calculated as less than 0.001. It was explained that this finding means triage nurses in this sample did not agree with the correct responses in a purely random fashion (Dufault, 2011, personal communication). Using the Olofsson et al (2010) study as an example, additional calculations of accuracy as percentage of correct responses by CTAS level

were performed (table 7). Based on these calculations triage nurses in this study provided more accurate responses at CTAS level 1 and CTAS level 4, the lowest accuracy ratings were recorded at CTAS level 5. It should be pointed out that only two scenarios out of twenty were developed to be CTAS level 5 presentations. Perhaps if a greater proportion of scenarios in the overall sample were developed to be assigned an urgency of level 5, greater measures of agreement and/or accuracy may have been recorded.

These findings lend support for the reliance on a triage scale such as CTAS to increase the reliability and accuracy of urgency ratings at triage. Presumably if all nurses within the sample relied on the second order modifiers to the degree that the majority of the sample appeared to have done, the overall rate of agreement and accuracy would likely have been calculated higher. The second order modifiers in CTAS are designed to further aid in the triage nurses decision making. The additional cues provided by these modifiers can help to increase the structure of the tasks at triage thereby allowing for greater analysis on the part of the nurse in making their decision. Arguably, not utilizing these modifiers places a greater amount of dependency on intuition and gut reactions which are understandably much harder to interpret when the triage nurse is relying on a paper based scenario.

Over-triaged or under-triaged

Over-triage and under-triage are important considerations in the literature on triage decision making particularly as it relates to the accuracy of the urgency ratings. As previously discussed, over-triage results in a patient being seen faster than is

necessary creating longer delays for others in the department while the practice of under-triaging results in a patient waiting longer than is considered appropriate (Considine et al., 2000). There have been mixed findings regarding experience level and the rate of over-triaging that occurs. One study suggested less experienced triage nurses over-triage (Considine et al., 2000) while another suggested experienced nurses admit to over-triaging particularly when wait times were long, rationalizing that to do so results in safer practice (Chung, 2005).

In the current study, simply based on frequencies, nurses were more likely to over-triage a patient scenario by one level than they were to under-triage by one level. The slight tendency toward over-triaging the scenarios might be explained by the fact that the triage nurses were assigning these urgency levels under very atypical conditions, allowing more time to analyse what they were reading without the immediate pressure of the department. Additionally, the tendency toward assigning higher levels of urgency may well result from the Hawthorne effect (Polit & Beck, 2004) specifically the triage nurses knowledge that they were participating in a study may have affected their behaviour.

Looking at specific scenario responses, nearly 78% of the triage nurses in this study over-triaged scenario twenty by one CTAS level, while 55% of the participants over-triaged scenario sixteen by one CTAS level. Based on the high percentage of triage nurses that assigned CTAS level 3 to scenario twenty, it might be suggested that the content of the scenario more accurately represented that level of urgency. The frequencies calculated for under-triaging by one level across all scenarios shows that 50% of nurse's under-triaged scenarios thirteen and eighteen, assigning a CTAS level

3 rather than the correct score of CTAS level 2. While this percentage is quite a bit lower than that recorded for the over-triage observations, it may suggest that distinguishing between CTAS level 2 and 3 creates challenges when triaging mental health presentations.

Use of Over-ride

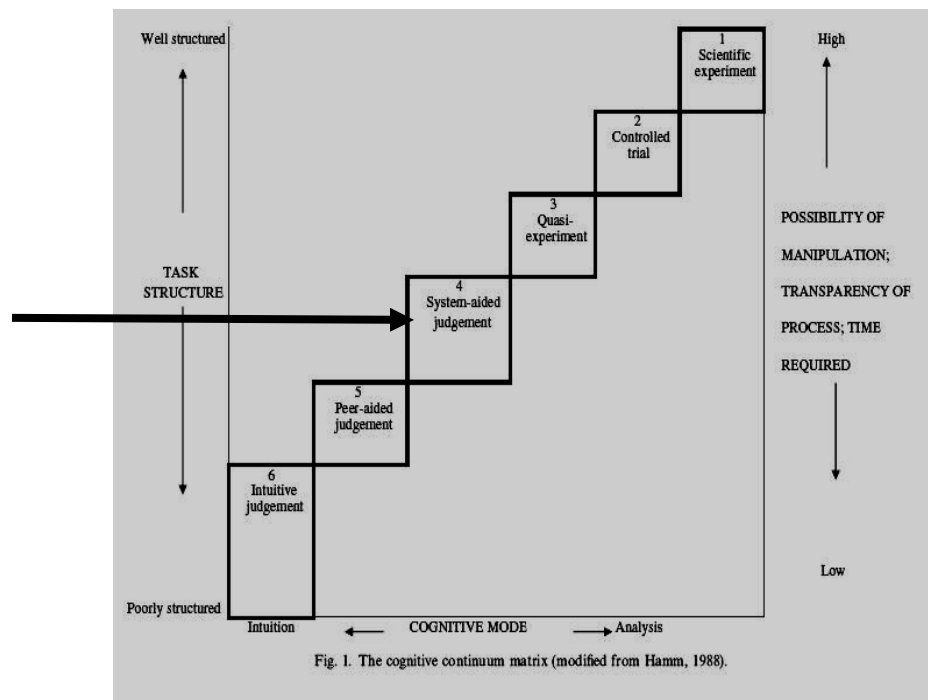
As previously discussed, CTAS allows the clinical judgement of the triage nurse to factor into the urgency rating through the use of “over-ride”. To “over-ride” means the triage nurse may manually change the calculated CTAS score and assign the urgency rating they believe best matches the presentation in front of them. The triage nurse is able to assign the urgency rating they have determined to be most appropriate providing he or she chooses an explanation, such as impression of acuity higher or lower or special circumstances.

In the present study, when triage nurses utilized over-ride to complete their urgency ratings, the tendency was to over-ride the calculated CTAS and assign a higher level of urgency. The present study obtained a total of 360 urgency ratings (18 raters multiplied by 20 scenarios) and over-ride was used to assign the urgency rating 8.6% of the time. In the 31 scenarios where over-ride was used 84% of the time the urgency rating was increased and the explanation in the vast majority of these cases was “impression of acuity higher”. Again in the majority of cases in which over-ride was used a second order modifier had not been chosen. Arguably if a second order modifier had been chosen the CTAS score generated may have been the same as the score chosen by use of over-ride.

Application of Theory to Triage Nurses Decision Making

The CCT suggests that, when making decisions, the use of analysis versus intuition is dependent on the structure of the task at hand. System aided judgment is depicted at stage 4 of the continuum (see Figure 1) thus, falling in the middle between intuition and analysis.

FIGURE 1: Theoretical Framework: The cognitive continuum matrix



(Reprinted from Offredy et al., 2008 with permission from Elsevier: Also Copyright ©1988 Cambridge University Press. Reprinted with the permission of Cambridge University Press)

Triage that relies on a triage scale such as CTAS and a computerized system like the EDIS could arguably fall into this fourth stage of “system aided judgment”, therefore relying on a mix of both intuition and analysis. Based on this theory, paper based scenarios while commonly used in these types of agreement studies may

actually limit triage nurses decision making. While some participants talked informally about their use of intuition and in one instance a nurse commented on their use of intuition on the demographic questionnaire under “other” comments, nurses in this study were not asked specifically to comment on their tendency toward analysis or intuition. While triage nurses may use their “intuition” by relying on past experiences while triaging paper scenarios as was the case in this study, the inability to rely on visual cues likely restricts them from moving back and forth between intuition and analysis as previously reported (Goransson et al., 2007).

The use of computerized decision tools such as EDIS in the case of this project help to move the triage nurses decision making more toward analysis. According to the CCT, the more structured the task the more analysis can occur. CTAS creates more structure in the triage task, specifically by adding the second order modifiers to the mental health chief complaints the amount of variability in responses can be reduced. For nurses who do not use the second order modifiers and are more inclined to rely on intuition, triaging paper based scenarios may have been particularly challenging. Arguably, triage nurses with more experience triaging prior to the implementation of computer assisted triage scales may well be at a disadvantage in a study such as this that so limits the ability to access their gut level reactions in the same way.

Influence of Education and Comfort Level

The vast majority of triage nurses in this sample rated themselves overall as moderately or very confident in triaging mental health presentations. Greater than sixty percent of the nurses within the sample indicated that they had participated in

more than two of the education programs listed on the demographic questionnaire, including the regional triage orientation and the advanced emergency course. The regional triage orientation consists of four days of classroom time that involves educational materials from Canadian Association of Emergency Physicians (CAEP), instructions on CTAS including the definitions, modifiers, and acuity scores, as well as a four hour lecture on mental health disorders with an opportunity for role playing with the triage nurses. All triage nurses within the regional health authority are also expected to attend an annual eight hour triage update that focuses on working through scenarios and reviewing department occurrences with a view to improve care. The advanced emergency course is an 18 week course that includes more than 12 hours of mental health lectures that includes adult and paediatric, which takes place over three days.

Based on this sample little can be said regarding the influence of education and comfort on the accuracy or the inter-rater reliability of urgency ratings by triage nurses. Overall the inter-rater reliability was fair to moderate despite the high levels of confidence reported as well as the significant amount of education on triage and mental health, many of the triage nurses had participated in. Triage nurses in this sample that agreed with the correct score for more than thirteen of the scenarios had ratings spread across the confidence scale i.e. mildly, moderately or very confident and indicated they had participated in many educational courses including regional triage orientation, CTAS training, and the advanced emergency course or no additional training. Similar variability in responses in regard to confidence and education was observed among nurses who assigned urgency ratings in agreement with the correct

responses, nine times or less. The only obvious distinction, based on self report was that the nurse who had the greatest number of correct responses also reported the highest number of educational courses which included specific mental health courses.

Limitations of study

Several limitations of the present study exist. Triage nurses in this study were asked to triage paper based mental health scenarios. While many other inter-agreement studies, specifically those involving nurses, have utilized paper based scenarios they have several inherent weaknesses. In this study the scenarios were vetted through the thesis committee with the additional review from an expert emergency room physician with significant experience with the CTAS and its evaluation. Despite this process involving experts in both CTAS and mental health presentations there was no consultation with expert triage nurses nor was there a preliminary pilot study with a group of triage nurses to test the validity of the scenarios, thereby potentially limiting the validity of the scenarios themselves.

A second major limitation of the scenarios themselves is the missing emphasis on behaviour and personality disorder presentations. This omission may well have impacted the agreement level of the triage nurse or the calculation of accuracy since it was precisely this presentation that ranked among the lowest for triage nurses' level of confidence. It should also be noted however that those nurses who assigned the "correct" responses for 40% or less of the twenty patient scenarios rated themselves moderately or very confident overall in triaging mental health presentations. Additionally, previous studies which relied on paper scenarios have suggested scripted

scenarios remove the cues triage nurses would normally gather from the visual assessment of the patient, nor do they allow for additional data to be gathered through the questioning that would typically take place at the triage desk. Although these are not insignificant concerns the benefit of obtaining responses from a variety of participants based on the same information, in a reasonable amount of time was very influential in the decision to utilize patient scenarios.

The environment in which the participants were asked to complete the urgency rating can also be considered another limitation of the study. It is not clear whether or not the quiet, un-interrupted conditions of an office or computer lab would serve to improve or decrease accuracy in the assigning of CTAS levels to the patient scenarios. Nevertheless, the study environment was a dramatic contrast to the usual work settings of these participants.

Both the sample size and the research design were also limitations of the study that must be taken into consideration when reviewing these findings. The sample size was small, particularly as compared to previous studies investigating inter-rater reliability. Not only was the number of triage nurses small, the number of scenarios was also restricted. Previous studies have collected much larger data sets; however for the purposes of this study the numbers of scenarios were specifically limited in order to reduce the burden on each participant. The sample included nurses from three separate sites which may be viewed increasing the generalizability of the findings. Alternatively, variation across the region likely exists both in the type of patient presentations triage nurses might encounter and the practice regarding modifier and over-ride use despite the attempt to provide regional education. Assuming a degree of

variability across the sites the overall inter-rater reliability and accuracy may have been affected by combining the data from three sites into one sample.

The intent of the study had also been to attempt to fill a potential gap in the CTAS literature. However the study design utilized in this study was significantly different in that no comparison group was used; therefore results reported here are different than previous CTAS studies (Dong et al., 2007; Dong et al., 2006) reducing the ability to compare across studies.

Future Research

In order to better understand the findings related to accuracy in this study additional research on the decision making of triage nurses particularly for presentations that may require greater reliance on intuition in order to distinguish between two triage levels future research should focus on understanding what cues triage nurses use to decide for one or the other. Strategies such as the ‘think aloud’ method (Fonteyn & Fisher, 1995) would gather additional insights into a triage nurses thinking by asking them to talk aloud while triaging thereby articulating for the researchers the pieces of information they are utilizing to help structure their cognitions. The information shared through such a process may well provide better insights into the discrete symptoms related to mental health presentations, triage nurses emphasize in their urgency ratings.

Recommendations

Based on the findings of this study it is recommended that triage educators responsible for the orientation and ongoing education of the CTAS, stress the use of second order modifiers when triaging mental health presentations. Although it remains possible that the scenarios in this study were not sufficiently clear or lacked specific cues triage nurses rely on when assigning urgency ratings to mental health presentations, participants who consistently choose a second order modifier had higher accuracy ratings. It is also recommended that future research investigate accuracy and rates of agreement in 'real time'. Ideally these studies would be designed with the intent to examine whether rates of accuracy and agreement were influenced by the use of second order modifiers. As the CTAS continues to undergo evaluation the lower rates of agreement at CTAS level 2 and 3 reported for mental health presentations in this study should be considered. Patients assigned an urgency rating of CTAS level 2 or 3, depending on flow in the department, can face long waits. Increased understanding of what factors might influence the lower rates observed at these two levels has the potential to improve patient care.

Chapter 8

Conclusion

It has been recognized that greater numbers of individuals with mental health issues are presenting to general hospital emergency rooms (Benveniste et al., 2005; Broadbent et al., 2007; Happell et al., 2002; McDonough et al., 2004; Wright et al., 2003). Interestingly, inter-rater reliability among triage nurses assigning urgency ratings to mental health scenarios is reportedly low (Broadbent et al., 2010) and the accuracy of assigning triage ratings to mental health presentations has also been found to be lower than those for medical presentations (Clarke et al., 2006). Lack of confidence and training in mental health presentations combined with attitudes toward individuals with mental health diagnoses can influence the level of inter-rater agreement and accuracy reported in triage decisions. This study has attempted to fill a gap in the literature on the triage of mental health presentations using the CTAS. Specifically, it was hoped that testing the inter-rater reliability among triage nurses assigning triage ratings to mental health patient scenarios, using the CTAS would help to inform ED researchers, administrators, clinicians and educators of possible areas of strength and those that may require more attention.

Several limitations exist within this study such that providing clear direction and recommendations to key stakeholders presents a greater challenge. Nevertheless, there are observations from this study that can be used to assist in future research or guide educational strategies. Specifically, attention on the use of second order modifiers in orientation and ongoing education of triage nurses may improve the inter-rater agreement for mental health presentations.

References

- American Psychological Association. (2001). *Publication manual of the American psychological association* (5th ed.). Washington, DC: Author.
- Aiken, L. M., Marshall, A. P., Elliott, R., & McKinley, S. (2008). Critical care nurses' decision making: sedation assessment and management in intensive care. *Journal of Clinical Nursing*, 1-11.
- Andersson, A., Omberg, M., & Svedlund, M. (2006). Triage in the emergency department – a qualitative study of the factors which nurses consider when making decisions. *Nursing in Critical Care*, 11(3), 136-145.
- Bakalis, N. (2006). Clinical decision-making in cardiac nursing a review of the literature. *Nursing Standard*, 21(12), 39-46.
- Banning, M. (2008). Clinical reasoning and its application to nursing: Concepts and research studies. *Nursing Education in Practice*, 8, 177-183.
- Beardsell, I., & Robinson, S. (2010). Can emergency department nurses performing triage predict the need for admission. *Emergency Medicine Journal*, doi:10.1136/emj.2010.096362
- Benner, P., & Tanner, C. (1987). Clinical judgment: How expert nurses use intuition. *American Journal of Nursing*, 87(1), 23-31.
- Benveniste, K. A., Hibbert, P. D., & Runciman, W. B. (2005). Violence in health care: the contribution of the Australian patient safety foundation to incident monitoring and analysis. *Medical Journal of Australia*, 183(7), 348-351.
- Beveridge, R., Ducharme, J., Janes, L., Beulieu, S., & Walter, S. (1999). Reliability of the Canadian Emergency Department Triage and Acuity Scale: Interrater agreement. *Annals of Emergency Medicine*, 34(2), 155-159.
- Beveridge, R. C. (1998). The Canadian triage and acuity scale: A new and critical element in health care reform. *Journal of Emergency Medicine*, 16, 507-511.
- Braga-Baiak, A., Shah, A., Pietrobon, R., Braga, L., Neto, A., & Cook, C. (2008). Intra and inter-observer reliability of MRI examination of intervertebral disc abnormalities in patients with cervical myelopathy. *European Journal of Radiology*, 65, 91-98.
- Broadbent, M., Moxham, L., & Dwyer, T. (2010). Issues associated with the triage of clients with a mental illness in Australian emergency departments. *Australasian Emergency Nursing Journal*, 13, 117-123.

- Broadbent, M., Moxham, L., & Dwyer, T. (2007). The development and use of the mental health triage scales in Australia. *International Journal of Mental Health Nursing, 16*, 413-421.
- Broadbent, M., Jarman, H., & Berk, M. (2002). Improving competence in emergency mental health triage. *Accident and Emergency Nursing, 10*, 155-162.
- Brooks, R. P., Wardrop, D. H., & Cole, C. (2006). Inventorying and monitoring wetland condition and restoration potential on a watershed basis with examples from Spring Creek Watershed, Pennsylvania, USA. *Environmental Management, 38*, 673-687.
- Bullard, M. J., Unger, B., Spence, J., & Grafstein, E. (2008). Revisions to the Canadian Emergency Department Triage and Acuity Scale (CTAS) adult guidelines. *Canadian Journal of Emergency Medicine, 10*(2), 136-142.
- Cader, R., Campbell, S., & Watson, D. (2005). Cognitive Continuum Theory in nursing decision-making. *Journal of Advanced Nursing, 49*(4), 397-405.
- Canadian Mental Health Association (CMHA). Fast facts: Mental health/mental illness. Retrieved January 29, 2008, from http://www.cmha.ca/bins/content_page.asp?cid=6-20-23-43
- Carper, B. A. (1978). Fundamental patterns of knowing in nursing. *Advances in Nursing Science, 1*(1), 13-23.
- Chang, G., Weiss, A. P., Orav, E. J., Jones, J., Finn, C. T., Gitlin, D. F., Haimovici, F., Hazen, E., Kosowsky, J. M., Schechter, M. D., & Rauch, S. (2011). Hospital variability in emergency department length of stay for adult patients receiving psychiatric consultation: A prospective study. *Annals of Emergency Medicine*, doi: 10.1016/j.annemergmed.2010.12.003
- Chen, S., Chen, J., Ng, C., Chen, P., Lee, P., & Chang, W. (2010). Factors that influence the accuracy of triage nurses' judgment in emergency departments. *Emergency Medicine Journal, 27*, 451-455.
- Christ, M., Grossman, F., Winter, D., Bingisser, R., & Platz, E. (2010). Modern triage in the emergency department. *Deutsches Arzteblatt International, 107*(5), 892-898.
- Chung, J. Y. M. (2005). An exploration of accident and emergency nurse experiences of triage decision making in Hong Kong. *Accident and Emergency Nursing, 13*, 206-213.

- Cioffi, J. (1998). Decision making by emergency nurses in triage assessments. *Accident and Emergency Nursing, 6*, 184-191.
- Clarke, D. E., Dusome, D., & Hughes, L. (2007). Emergency department from the mental health client's perspective. *International Journal of Mental Health Nursing, 16*, 126-131.
- Clarke, D. E., Brown, A., Hughes, L., & Motluk, L. (2006). Education to improve the triage of mental health patients in general hospital emergency departments. *Accident and Emergency Nursing, 14*, 210-218.
- Cone, K., & Murray, R. (2002). Characteristics, insights, decision making and preparation of ED triage nurses. *Journal of Emergency Nursing, 28(5)*, 401-406.
- Considine, J., Botti, M., & Thomas, S. (2007). Do knowledge and experience have specific roles in triage decision-making? *Academic Emergency Medicine, 14*, 722-726.
- Considine, J., LeVasseur, S. A., & Villanueva, E. (2004). The Australiasian Triage Scale: examining emergency department nurses' performance using computer and paper scenarios. *Annals of Emergency Medicine, 44(5)*, 516-523.
- Considine, J., Ung, L., & Thomas, S. (2001). Clinical decisions using the National Triage Scale: how important is postgraduate education? *Accident and Emergency Nursing, 9*, 101-108.
- Considine, J., Ung, L., & Thomas, S. (2000). Triage nurses' decisions using the National Triage Scale for Australian emergency departments. *Accident and Emergency Nursing, 8*, 201-209.
- Coristine, R. W., Hartford, K., Vingilis, E., & White, D. (2007). Mental health triage in the ER: a qualitative study. *Journal of Evaluation in Clinical Practice, 13*, 303-309.
- Croskerry, P. (2002). Achieving quality in clinical decision making: cognitive strategies and detection of bias. *Quality in Clinical Decision Making, 9*, 1184-1204.
- Crowley, J. J. (2000). A clash of cultures: A&E and mental health. *Accident and Emergency Nursing, 8*, 2-8.
- Ding, R., McCarthy, M., Li, G., Kirsch, T. D., Jung, J. J., & Kelen, G. D. (2006). Patients who leave without being seen: Their characteristics and history of emergency department use. *Annals of Emergency Medicine, 48(6)*, 686-692.

- Dong, S. L., Bullard, M. J., Meurer, D. P., Blitz, S., Holroyd, B. R., & Rowe, B. H. (2007). The effect of training on nurse agreement using an electronic triage system. *Canadian Journal of Emergency Medicine, 9*(4), 260-6.
- Dong, S. L., Bullard, M. J., Meurer, D. P., Blitz, S., Ohinmaa, A., Holroyd, B. R., & Rowe, B. H. (2006). Reliability of computerized emergency triage. *Academic Emergency Medicine, 13*, 269-275.
- Dunwoody, P. T., Haarbauer, E., Mahan, R. P., Marino, C., & Tang, C. (2000). Cognitive adaptation and its consequences: A test of cognitive continuum theory. *Journal of Behavioural Decision Making, 13*, 35-54
- Edwards, B., & Sines, D. (2007). Passing the audition – the appraisal of client credibility and assessment by nurses at triage. *Journal of Clinical Nursing, 17*, 2444-2451.
- Edwards, B. (2007). Walking in – initial visualization and assessment at triage. *Accident and Emergency Nursing, 15*, 73-78.
- Eitel, D. R., Travers, D. A., Rosenau, A. M., Gilboy, N., & Wuerz, R. C. (2003). The emergency severity index triage algorithm version 2 is reliable and valid. *Academic Emergency Medicine, 10*(10), 1070-1080.
- Ericsson, K. A., & Simon, H. (1984). *Protocol analysis: Verbal reports as data*. Cambridge: MIT press.
- Evans, C. (2005). Clinical decision making theories: patient assessment in the A&E. *Emergency Nurse, 13*(5), 16-19.
- Farrell, G., Shafiei, T., & Salmon, P. (2010). Facing up to challenging behaviour: A model for training in staff-client interaction. *Journal of Advanced Nursing, 66*, 1644-1655.
- Fernandes, C., Wuerz, R., Clark, S., & Djurdjev, O. (1999). How reliable is emergency department triage? *Annals of Emergency Medicine, 34*(2), 141-147.
- Fleck, B. W., Tandon, A., Jones, P. A., Mulvihill, A. O., & Minns, R. A. (2010). An interrater reliability study of new zonal classification for reporting the location of retinal haemorrhages in childhood for clinical, legal and research purposes. *British Journal of Ophthalmology, 94*, 886-890, doi: 10.1136/bjo.2009.162271
- Fonteyn, M. E., Kuipers, B., & Grobe, S. J. (1993). A description of think aloud method and protocol analysis. *Qualitative Health Research, 3*(4), 430-441.

- Fonteyn, M., & Fisher, A. (1995). Use of think aloud method to study nurses' reasoning and decision making in clinical practice settings. *Journal of Neuroscience Nursing*, 27(2), 124-128.
- Fry, M., & Stainton, C. (2005). An educational framework for triage nursing based on gatekeeping, timekeeping, and decision-making processes. *Accident and Emergency Nursing*, 13, 214-219.
- Funkesson, K. H., Anbacken, E., & Ek, A. (2007). Nurses' reasoning process during care planning taking pressure ulcer prevention as an example. A think-aloud study. *International Journal of Nursing Studies*, 44, 1109-1119.
- Gerdtz, M. F., & Bucknall, T. K. (2007). Influence of task properties and subjectivity on consistency of triage: a simulation study. *Journal of Advanced Nursing*, 58(2), 180-190.
- Gerdtz, M. F., & Bucknall, T. K. (2001). Triage nurses' clinical decision making. An observational study of urgency assessment. *Journal of Advanced Nursing*, 35(4), 550-561.
- Gerdtz, M. F., & Bucknall, T. K. (1999). Why do we do the things we do: applying decision making frameworks to triage practice. *Accident and Emergency Nursing*, 7, 50-57.
- Goransson, K. E., Ehnfors, M., Fonteyn, & Ehrenberg, A. (2008). Thinking strategies used by registered nurses during emergency department triage. *Journal of Advanced Nursing*, 61(2), 163-172.
- Goransson, K. E., Ehrenberg, A., Marklund, B., & Ehnfors, M. (2006). Emergency department triage: Is there a link between nurses' personal characteristics and accuracy in triage decisions? *Accident and Emergency Nursing*, 14, 83-88.
- Goransson, K. E., Ehrenberg, A., Marklund, B., & Ehnfors, M. (2005a). Accuracy and concordance of nurses in emergency department triage. *Scand J Caring Sci*, 19, 432-438.
- Goransson, K. E., Ehrenberg, A., & Ehnfors, M. (2005b). Triage in emergency departments: national survey. *Journal of Clinical Nursing*, 14, 1067-1074.
- Grafstein, E., Innes, G., Westman, J., Christenson, J., & Thorne, A. (2003). Inter-rater reliability of a computerized presenting complaint-linked triage system in an urban emergency department. *Canadian Journal of Emergency Medicine*, 5(5), 323-329.
- Grafstein, E. (2004). Close only counts in horseshoes and ...trriage? *Canadian Journal of Emergency Medicine*, 6(4), 288-289.

- Grouse, A., Bishop, R. O., & Bannon, A. M. (2009). The Manchester triage system provides good reliability in an Australian emergency department. *Emergency Medicine Journal*, 26, 484-486.
- Hamers, J. P. H., Huijjer Abu-Saad, H., & Halpens, R. J. G. (1994). Diagnostic process and decision making in nursing: a literature review. *Journal of Professional Nursing*, 10(3), 154-163.
- Hamilton, S. (2004). Clinical decision making: thinking outside the box. *Emergency Nurse*, 12, 18-20.
- Hamm, R. M., Clark, J. A., & Bursztajn, H. (1984). Psychiatrists' thorny judgements, describing and improving decision making processes. *Medical Decision Making*, 4(4), 425-447.
- Hammond, K. R. (2000). *Judgments under stress*. New York: Oxford University Press.
- Hammond, K. R. (1996). *Human judgment and social policy: Irreducible uncertainty, inevitable error, unavoidable injustice*. New York: Oxford University Press.
- Happell, B., Summers, M., & Pinikahana, J. (2003). Measuring the effectiveness of the national Mental Health triage Scale in an emergency department. *International Journal of Mental Health Nursing*, 12, 288-292.
- Happell, B., Summers, M., & Pinikahana, J. (2002). The triage of psychiatric patients in the hospital emergency department: a comparison between emergency department nurses and psychiatric nurse consultants. *Accident and Emergency Nursing*, 10, 65-71.
- Harbison, J. (2001). Clinical decision making in nursing: Theoretical perspectives and their relevance to practice. *Journal of Advanced Nursing* 35(1) 126-133.
- Harris, J., & Hendricks, J. (1996). The lifeline of triage. *Accident and Emergency Nursing*, 4, 82-87.
- Hay, E., Bekerman, L., Rosenberg, G., & Peled, R., (2001). Quality assurance of nurse triage: consistency of results over three years. *American Journal of Emergency Medicine*, 19, 113-117.
- Health Canada. (2002). A report on Mental Illnesses in Canada. Ottawa. Retrieved March 10, 2008, from http://www.phac-aspc.gc.ca/publicat/miic-mmac/pdf/men_ill_e.pdf

- Heslop, L., Elsom, S., & Parker, N. (2000). Improving continuity of care across psychiatric and emergency services: combining patient data within a participatory action research framework. *Journal of Advanced Nursing*, *31*(1), 135-143.
- Iseron, K. V., & Moskop, J. C. (2007). Triage in medicine, part I: Concept, history, and types. *Annals of Emergency Medicine*, *49*(3), 275-281.
- Kirby, M. (2008). The branding that devalues. Retrieved April 3, 2011, from http://www.mentalhealthcommission.ca/SiteCollectionDocuments/Key_Documents/en/2008/EN_Kirby_GibandMI_Jn28_08.pdf
- Kirby, M. J., & Keon, W. J. (2004). Mental Health, Mental Illness and Addiction. The Standing Committee on Social Affairs, Sciences and Technology, Ottawa, Canada.
- Kerrison, S. A., & Chapman, R. (2007). What general emergency nurses want to know about mental health patients presenting to their emergency department. *Accident and Emergency Nursing*, *15*, 48-55.
- King, D. L., Kaluchy, R. S., Descrespigny, C. F., Stuhlmiller, C. M., & Thomas, L. J. (2004). Mental health and alcohol and other drug training for emergency department workers: One solution to help manage increasing demand. *Emergency Medicine Australasia*, *16*(2), 155-60.
- Knott, J. C., Pleban, A., Taylor, D., et al. (2007). Management of mental health patients attending Victorian emergency departments. *Australian and New Zealand Journal of Psychiatry* *41*, 756-767.
- Lamond, D., & Thompson, C. (2000). Intuition and analysis in decision making and choice. *Journal of Nursing Scholarship*, *32*(3), 411-414.
- Landis, R. J., & Koch, G. G. (1977a). The measurement of observer agreement for categorical data. *Biometrics*, *33*(1), 159-174.
- Landis, R. J., & Koch, G. G. (1977b). An application of hierarchical Kappa-type statistics in the assessment of majority agreement among multiple observers. *Biometrics*, *33*(2), 363-374.
- Lauri, S., Salantera, S., Chalmers, K., Ekman, S., Kim, H. S., Kappeli, S., & Macleod, M. (2001). An exploratory study of clinical decision-making in five countries. *Journal of Nursing Scholarship*, *33*(1), 83-90.
- Legendre, P. (2005). Species associations: The Kendall coefficient of concordance revisited. *Journal of Agricultural, Biological, and Environmental Statistics*, *10*(2), 226-245.

- Lyneham, J. (1998). The process of decision-making by emergency nurses. *Australian Journal of Advanced Nursing*, 16(2), 7-14.
- Manitoba Health. (2008). Emergency department information system (EDIS). Retrieved January 26, 2008, from http://www.manitoba-ehealth.ca/ehr_EDIS.html
- Manos, D., Petrie, D. A., Beveridge, R. C., Walter, S., & Ducharme, J. (2002). Inter-observer agreement using the Canadian Emergency Department Triage and Acuity Scale. *Canadian Journal of Emergency Medicine*, 4(1), 16-22.
- Mathwick, C., Malhotra, N. K., & Rigdon, E. (2002). The effect of dynamic retail experiences on experiential perceptions of value: An Internet and catalog comparison. *Journal of Retailing*, 78, 51-60.
- Mazor, K. M., Canavan, C., Farrell, M., Margolis, M. J., & Clauser, B. E. (2008). Collecting validity evidence for an assessment of professionalism: findings from think aloud interviews. *Academic Medicine*, 83(10), S9-S12.
- McDonough, S., Wynaden, D., Finn, M., McGowan, S., Chapman, R., & Hood, S. (2004). Emergency department mental health triage consultancy service: an evaluation of the first year of the service. *Accident and Emergency Nursing*, 12, 31-38.
- McEwen, M., & Willis, E. M. (2007). *Theoretical Basis for Nursing* (2nd ed.). Philadelphia: Lippincott Williams & Wilkins.
- Mental Health Commission of Canada. (2009). Presentation to the house of commons standing committee human resources, social development and the status of person with disabilities. Retrieved April 3, 2011, from [http://www.mentalhealthcommission.ca/SiteCollectionDocuments/Key_Documents/en/2009/Parl%20Committee%20statement%20\(2\).pdf](http://www.mentalhealthcommission.ca/SiteCollectionDocuments/Key_Documents/en/2009/Parl%20Committee%20statement%20(2).pdf)
- Muir, N. (2004). Clinical decision-making: theory and practice. *Nursing Standard*, 19(18), 47-54.
- Neustaedter, C., Brush, A. J., & Smith, M. A. (2005). Beyond “from” and “received”: Exploring the dynamics of email triage. Retrieved February 11, 2008, from <http://research.microsoft.com/research/pubs/view.aspx?type=Publication&id=1401>
- National Institute of Mental Health (NIMH). (2008). The numbers count: Mental disorders in America. Retrieved April 3, 2011, from <http://www.dhmh.maryland.gov/mt/pdfs/Reference%20-%20Transformation%20-%20The%20Numbers%20Count.pdf>

- Ng, C., Hsu, K., Kuan, J., Chiu, T., Chen, W., Lin, H., Bullard, M. J., & Chen, J. (2010). Comparison between Canadian triage and acuity scale and Taiwan triage system in emergency departments. *J Formos Med Assoc, 109(11)*, 828-837.
- Offredy, M., Kendall, S., & Goodman, C. (2008). The use of cognitive continuum theory and patient scenarios to explore nurse prescribers' pharmacological knowledge and decision-making. *International Journal of Nursing Studies, 45(6)*, 855-868.
- Olofsson, P., Gellerstedt, M., & Carlstrom, E. D. (2009). Manchester triage in Sweden-interrater reliability and accuracy. *International Emergency Nursing, 17*, 143-148.
- Oxford English Dictionary. (2011). Retrieved April 3, 2011, from http://www.oxforddictionaries.com/view/entry/m_en_gb0880740#m_en_gb0880740
- Pich, J., Hazelton, M., Sundin, D., & Kable, A. (2011). Patient-related violence at triage: A qualitative descriptive study. *International Emergency Nursing, 19*, 12-19.
- Polit, D. F., & Beck, C. T. (2004). *Nursing Research: Principles and methods*. Philadelphia PA: Lippincott Williams & Wilkins
- Ramalakshmi, K., Kubra, I. R., & Rao, L. J. (2007). Physiochemical characteristics of green coffee: Comparison of graded and defective beans. *Journal of Food Science, 72(5)*, S333-337.
- Roberston-Steel, I. (2006). Evolution of triage systems. *Emergency Medicine Journal, 23*, 154-155.
- Rowe, B. H., Bond, K., Ospina, M. B., Blitz, S., Schull, M., Sinclair, D., & Bullard, M. (2006). Data collection on patients in emergency departments in Canada. *Canadian Journal of Emergency Medicine, 8(6)*, 417-424.
- Ruger, J. P., Lewis, L. M., & Richter, C. J. (2007). Identifying high-risk patients for triage and resource allocation in the ED. *American Journal of Emergency Medicine, 25*, 794-798.
- Shafiei, T., Gaynor, N., & Farrell, G. (2011). The characteristics, management and outcomes of people identified with mental health issues in an emergency department, Melbourne, Australia. *Journal of Psychiatric and Mental Health Nursing, 18*, 9-16.

- Sigler, E. A., & Tallent-Runnels, M. K. (2006). Examining the validity of scores from an instrument designed to measure metacognition of problem solving. *The Journal of General Psychology, 133*(3), 257-276.
- Slade, E. P., Dixon, L. B., & Semmel, S. (2010). Trends in the duration of emergency department visits, 2001-2006. *Psychiatric Services, 61*(9), 878-884.
- Smart, D., Pollard, C., & Walpole, B. (1999). Mental health triage in emergency medicine. *Australian and New Zealand Journal of Psychiatry, 33*, 57-66.
- Smith, A., & Cone, K. J. (2010). Triage decision-making skills. *Journal for Nurses in Staff Development, 26*(1), E14-E19.
- Standing, M. (2008). Clinical judgement and decision-making in nursing – nine modes of practice in a revised cognitive continuum. *Journal of Advanced Nursing, 62*(1), 124-134.
- Statistics Canada. (2002). The Canadian Community Health Survey (CCHS) – Mental Health and Well Being. Retrieved March 10, 2008, from <http://www.statcan.ca/Daily/English/030903/d030903a.htm>
- The Carter Center. (2009). A meeting of international mental illness stigma and discrimination leaders. Retrieved April 3, 2011, from http://www.mentalhealthcommission.ca/English/OpeningMinds/IntlStigmaLeadersReport_June09.pdf
- Thompson, C., Cullum, N., McCaughan, D., Sheldon, T., & Raynor, P. (2004). Nurses, information use, and clinical decision making – the real world potential for evidence based decisions in nursing. *Evidence Based Nursing, 7*, 68-72.
- Thompson, C. (2001). Jan Forum: Clinical decision making in nursing: Theoretical perspectives and their relevance to practice – a response to Jean Harbison. *Journal of Advanced Nursing, 35*(1), 134-137.
- Thompson, C., & Dowding, D. (2001). Responding to uncertainty in nursing practice. *International Journal of Nursing Studies, 38*, 609-615.
- Thompson, C. (1999). A conceptual treadmill: The need for ‘middle ground’ in clinical decision making theory in nursing. *Journal of Advanced Nursing, 30*(5), 1222-1229.
- Time Magazine. (1974, November 11). What to do: Costly choices. Retrieved April 3, 2011, from <http://www.time.com/time/magazine/article/0,9171,911505,00.html>

- Van Gervan, R., Delooz, H., & Sermeus, W. (2001). Systematic triage in the emergency department using the Australian National Triage Scale: a pilot project. *European Journal of Emergency Medicine, 8*, 3-7.
- Wand, T., & Happell, B. (2001). The mental health nurse: contributing to improved outcomes for patients in the emergency department. *Accident and Emergency Nursing, 9*, 166-176.
- Winnipeg Regional Health Authority. (2007). *Emergency Department Triage, regional policy 110.080.010*.
- Wright, E. R., Linde, B., Rau, L., Gayman, M., & Viggiano, T. (2003). The effect of organizational climate on the clinical care of patients with mental health problems. *Journal of Emergency Nursing, 29*(4), 314-321.
- Woodson, G. (2008). Patient triage during pandemic influenza. Retrieved February 11, 2008, from <http://www.birdflumanual.com/articles/patTriage.asp>
- World Health Organization (WHO). (2004). Prevention of mental disorders: Effective interventions and policy options. Retrieved April 3, 2011 from http://www.who.int/mental_health/evidence/en/prevention_of_mental_disorders_sr.pdf
- Wuerz, R., Fernandes, C. M. B., & Alarcon, J. (1998). Inconsistency of emergency department triage. *Annals of Emergency Medicine, 32*(4), 431-435.
- Yousif, K., Bebbington, J., & Foley, B. (2005). Impact on patients triage distribution utilizing the Australasian Triage Scale compared with its predecessor the National Triage Scale. *Emergency Medicine Australasia, 17*, 429-433.

Appendix A

Final 38 Patient Scenarios

1. A 21 year old female is brought to the ED alone, by EMS. She was found by a friend, at home alone, with deep lacerations to both wrists. The patient has no previous history of suicide attempts but the rest of her past psychiatric history is unknown. The patient to be appears selectively mute and is refusing to answer questions at triage. Vitals signs: RR16, HR 112, BP 130/74, T 37, O2 Sat 97%.

Answer Key: CTAS 2

CEDIS complaint – Depression, suicidal or deliberate self harm

Second order modifier – uncertain flight and safety risk, &/or attempted suicide or clear suicide plan, &/or active suicidal intent

2. A 35 year old female, brought herself to ED. The patient reports feeling depressed and recently has been more tearful. She has episodic suicidal ideation but no specific plan. She has a past psychiatric history of depression and has recently stopped taking her antidepressants. She lives alone. Vitals: RR 18, HR 96, BP 128/70, T37 O2 Sat 96%.

Answer Key: CTAS 3

CEDIS complaint – Depression, suicidal or deliberate self harm

Second order modifier – suicidal ideation, no plan

3. A 42 year old male is brought to the ED by a family member who reports that in the last two weeks the patient has been “moody” and seems depressed. He reports sleep disruption for 1 week. The family member reports that the patient has been “gambling again”. The patient has had previous hospitalizations for depression. He is currently employed fulltime but has not gone to work for several days and is at risk of losing his job. He denies alcohol or drug use and denies thoughts of suicide. Vitals RR 16, HR 80, BP 130/78, T36 O2 Sat 96%.

Answer Key: CTAS 4

CEDIS complaint – Depression, suicidal or deliberate self harm

Second order modifier – depressed, no suicidal ideation

4. A 51 year old female is brought to the ED by the police. She was picked up at a bus stop following bystander complaints of threatening behaviour. She was agitated and uncooperative with the police on route. At triage she is unable follow commands, to cooperate or to answer triage questions.

Vitals RR 18, HR 108, BP 135/76, T 37.5 O2 Sat 97%

Answer Key: CTAS 2

CEDIS complaint – Bizarre behaviour, or anxiety / situational crisis, or hallucinations / delusions

Second order modifier – uncertain flight or safety risk

5. A 22 year old Inuit female is Medivaced from Rankin Inlet, without escort (the crew is unable to stay). She was found wandering alone, dressed inappropriately for the winter weather. Reportedly, the patient's sister was found dead yesterday following a completed suicide. She is cooperative but displays very poor eye contact and responds in brief whispers to triage questions. She denies any history of alcohol or drug use or previous psychiatric history. Vitals RR15, HR 96, BP 118/68, T37 O2 Sat 98%.

Answer Key: CTAS 2

CEDIS complaint – Anxiety / situational crisis, or depression, suicidal or deliberate self harm or bizarre behaviour

Second order modifier – uncertain flight or safety risk

6. A 35 year old female presents to the ED restless, fidgeting and pacing at the triage desk. She was brought to the ED by a friend after reportedly stating “I am going to crawl out of my skin”. She reports not being able to sleep for 2 days after abruptly stopping her “anxiety pills”. Her friend will be staying with her in the waiting room. Vitals RR19, HR 100, BP 135/80, T37, O2 Sat 96%

Answer Key: CTAS 3

CEDIS complaint – Anxiety / situational crisis

Second order modifier - moderate anxiety / agitation

7. An 82 year old female is brought to the ED by her daughter. The patient's daughter reports her mother has recently become increasingly restless, "moody" and having difficulty falling asleep. She lives with her husband who is reportedly very "frail". The patient's family are very supportive and live nearby. She is currently taking medications to manage hypertension and osteoporosis.
Vitals RR 16, HR 89, BP 141/81, T36.8, O2 Sat 97%

Answer Key: CTAS 4

CEDIS complaint – Anxiety / situational crisis, or social problem, or Insomnia

Second order modifier – mild anxiety / agitation (for anxiety / situational crisis), unable to cope (for social problem), or acute (for insomnia)

8. A 30 year old male is brought to the ED by the police. The patient was found in the garage of his parent's home muttering to himself and brandishing a shovel over his head. The patient reportedly urged his mom and dad to leave the premises. His parents called 911 and the police were able to disarm and subdue him. He has no injuries. He does not respond to verbal questions or commands. The patient was previously diagnosed with Schizophrenia.
Vitals RR 19, HR 120, BP 140/90, T37, O2 Sat 99%.

Answer Key: CTAS 2

CEDIS complaint – Hallucinations / delusions or bizarre behaviour

Second order modifier – acute psychosis, severe anxiety &/or agitation (for hallucinations / delusions), or uncertain flight or safety risk (for either hallucinations / delusions or bizarre behaviour)

9. A 21 year old female is brought to the ED by her father. The patient's father reports that his daughter has become increasing paranoid at home and work. He reports that over the last week his daughter had become very concerned about the cleaning products in her home and is openly suspicious of her family as well as certain coworkers. He reports that he has heard his daughter muttering to herself. The patient does not respond to questions, although she does follow directions. Her father will stay with her. She has one previous admission to hospital for delusional and paranoid behaviour.

Vitals RR16, HR100, BP 117/68, T36, O2 Sat 96%.

Answer Key: CTAS 3

CEDIS complaint – Hallucinations / delusions

Second order modifier - moderate anxiety / agitation OR with paranoia

10. A 66 year old male brought himself to hospital complaining of being unable to sleep. He reports that in the last 4 days he has had no more than 2 hours of sleep per night. He reports feeling increasingly restless and frustrated. He is pleasant and cooperative at triage. He lives alone and is employed fulltime.

Vitals RR 15, HR81, BP 143/83, T36.3, O2 Sat 97%

Answer Key: CTAS 4

CEDIS complaint – Insomnia
Second order modifier - acute

11. A 25 year old male is brought to the ED by the RCMP. The patient presents as extremely violent, lashing out at officers and ED staff. The patient is repeatedly uttering nonsensical statements and shouting about ‘terrorists’. RCMP officers report that it required 4 officers to contain the patient and bring him to the ED safely. The patient is bleeding from minor self inflicted injury to his hand.

Vitals RR 18, HR 120, T37.5, O2 Sat 96%

Answer Key: CTAS 1

CEDIS complaint – Violent / homicidal behaviour or bizarre behaviour
Second order modifier – imminent harm to self or others or specific plans (for violent or homicidal behaviour), or uncontrolled (for bizarre behaviour)

12. A 21 year old female brought herself to the ED requesting to see a psychiatrist for “help”. The patient, on initial presentation was pleasant and cooperative but quickly became argumentative, demanding, and started screaming and swearing at the triage desk. The patient refused to answer triage questions and responded to questions by shouting obscenities. She is pacing at the doors of the department.

Vitals RR 17, HR 100, T 36.5, O2 Sat 98%.

Answer Key: CTAS 2

CEDIS complaint – Violent / homicidal behaviour or Anxiety / situational crisis or Bizarre behaviour
Second order modifier – uncertain flight or safety risk (for violent or homicidal behaviour), or severe anxiety / agitation (for anxiety / situational crisis), or uncertain flight or safety risk (for bizarre behaviour)

13. A 32 year old female is brought in to the ED by her father after physically (i.e. trying to hit) and verbally attacking her family. The patient's father states his daughter has previously been admitted to psychiatry for "aggressive behaviour". He reports his daughter was prescribed medication but he suspects she is not taking it. He states the patient's violent outburst was "out of the blue". The patient is refusing to answer questions but has displayed neither violent nor aggressive behaviour at triage. Her father will stay with her until she is assessed.

Vitals RR 19, HR 78, T 37, O2 Sat 98%.

Answer Key: CTAS 3

CEDIS complaint – Violent / homicidal behaviour or Bizarre behaviour

Second order modifier – violent / homicidal ideation, no plan (for violent or homicidal behaviour), or controlled (for bizarre behaviour)

14. A 41 year old female brought herself to the ED. The patient reports feeling like she is having a "nervous breakdown". She reports that she witnesses daily acts of violence in her apartment block which is causing her to feel very frightened and unsafe. The patient reports feeling increasingly "stressed out". The patient denies a history of mental health issues. She lives alone and has no social support.

Vitals RR 16, HR 87, T36.3, O2 Sat 96%

Answer Key: CTAS 3

CEDIS complaint – Social problem or Anxiety / situational crisis

Second order modifier – abuse physical, mental, high emotional stress (for social problem), or moderate anxiety / agitation (for anxiety / situational crisis)

15. A 50 year old female patient is brought in to the ED by a neighbour. The patient requested to see "psychiatry" for "my troubles". The patient reports that she can no longer manage on her own. The patient states that she forgets to take her pills and cannot even "keep myself clean". The patient requested a prescription for cough medicine and something that could help her "sleep". She is cooperative at triage.

Vitals RR 15, HR 80, T37, O2 Sat 97%.

Answer Key: CTAS 4

CEDIS complaint – Social problem or Bizarre behaviour

Second order modifier – unable to cope (for social problem), or harmless behaviour (for bizarre behaviour)

16. A 30 year old male patient was brought to the ED in handcuffs by police. The patient was picked up at his home after he assaulted a family member. The patient's brother reports that the patient was muttering to himself throughout the night. His brother states the patient began swearing, and making threatening gestures toward family and friends. His family contacted police after the patient refused to respond to requests from his family to leave. The brother states that before the police arrived the patient began to bang his head on the wall and ultimately put his head through a window but did not cut himself. He continues to be agitated in the ED. Vitals HR 120, RR 20, T 36.5, O2 Sat 96%.

Answer Key: CTAS 1

CEDIS complaint – Bizarre behaviour or Violent / homicidal behaviour

Second order modifier – uncontrolled (for bizarre behaviour), or imminent harm to self or others or specific plans (for violent or homicidal behaviour)

17. A 19 year old female brought herself to the ED. The patient approached the triage desk but stood silently. She presented her wallet as identification but remained mute and refused to make eye contact. The patient is inappropriately dressed, malodorous, and wearing excessive makeup. She is refusing to make eye contact. Vitals RR 17, HR 80, T36.1, O2 Sat 97%.

Answer Key: CTAS 2

CEDIS complaint – Bizarre behaviour

Second order modifier – uncertain flight or safety risk

18. A 37 year old male was brought to the ED by his community mental health worker. The worker reports he has known the patient for many years and states that his comments and behaviour today is totally “out of the ordinary”. Initially, the patient did not recognize the worker and then began talking nonsensically about “pirates and stolen treasures”. The patient is slightly agitated, expressing frustration and hostility toward his worker, but appears to be cooperative with triage process. His worker is willing to stay with him. Vitals RR 15, HR 78, T36, O2 Sat 97%

Answer Key: CTAS 3

CEDIS complaint – Bizarre behaviour or Hallucinations / delusions or Anxiety / situational crisis

Second order modifier – controlled (for bizarre behaviour), or moderate anxiety / agitation OR with paranoia (for hallucinations / delusions), or moderate anxiety / agitation (for anxiety / situational crisis)

19. A 62 year old female presented to the ED whistling loudly and laughing to herself. The patient stated that she lives alone but that her “worker” comes to see her. The patient initially said she came to the ED to get food for her cat but later she said she thought she should see a doctor. The patient does not provide any straight forward responses to questions. She is politely requests to see a doctor before leaving or her cats will get angry with her.

Vitals RR 16, HR 70, T37, O2 Sat 98%.

Answer Key: CTAS 4

CEDIS complaint – Bizarre behaviour or Hallucinations / delusions

Second order modifier – harmless behaviour (for bizarre behaviour), or mild anxiety / agitation, chronic hallucinations (for hallucinations / delusions)

20. A 50 year old female brought herself to the ED asking to see a psychiatrist so she can find a better medication. The patient states that she has been to several other EDs and walk-in clinics looking for “help”. She states that she does not like her current pills because they make her “itchy” and she is convinced her constant scratching is scaring her friends. The patient presents as somewhat disorganized but cooperative with the triage process.

Vitals RR 14, HR 80, T36.7, O2 Sat 97%

Answer Key: CTAS 5

CEDIS complaint – Bizarre behaviour

Second order modifier – chronic non urgent

21. A 35 year old female is brought to the ED by police. The patient’s husband called 911 to report his wife’s threats to “kill him”. The patient was reportedly wielding a knife in her home and chased her husband into a basement bedroom. The patient’s husband reported to police that his wife suffers from Schizophrenia and he suspects that she has not taken her medication in several weeks. The patient’s husband informed police that his wife has previously threatened and physically assaulted him in the past. The patient is in handcuffs but continues to spit and has been attempting to “head butt” the officers. The patient is not cooperative with triage questions and communicates only by screaming obscenities and threatening the ED staff.

Vitals RR 21, HR 110, T37, O2 Sat 97%.

Answer Key: CTAS 1

CEDIS complaint – Violent / homicidal behaviour or Bizarre behaviour

Second order modifier – imminent harm to self or others, or specific plans (for violent or homicidal behaviour) or uncontrolled (for bizarre behaviour)

22. A 55 year old male brought himself to the ED “looking for help”. The patient states his wife recently left him and that as a result he has felt too emotionally devastated to go to work. He says that he received a phone call from his employer who called to notify him that if he does not return to work ASAP he will be fired. The patient says he is feeling totally overwhelmed and is unable to sleep or eat. He endorses thoughts of wanting to die and recently has begun considering taking an overdose of his medications. The patient states he has a past history of depression with a previous suicide attempt several years ago.

Vitals RR 15, HR 68, T 37.1, O2 Sat 97%.

Answer Key: CTAS 2

CEDIS complaint – Depression / suicidal / deliberate self harm

Second order modifier – attempted suicide or clear plan, or active suicide intent, or uncertain flight or safety risk

23. A 19 year old male is brought to the ED by police following a disturbance with employees at the airport. The patient reportedly approached an airport employee at one of the airline counters demanding a ticket. He did not have a destination in mind, nor did he have any money but was insistent he be taken to a plane so that he could begin his “journey”. The patient became increasingly agitated, and belligerent, cursing at airport staff and insisting that they would be punished by god if he was not immediately given a “ticket”. He is refusing to answer questions at triage but has not been violent or agitated in the ED. Vitals RR 19, HR 73, T 37.3, O2 Sat 96%

Answer Key: CTAS 2

CEDIS complaint – Hallucinations / delusions or Violent / homicidal behaviour or Bizarre behaviour

Second order modifier – acute psychosis or severe anxiety / agitation, or uncertain flight or safety risk (for hallucinations / delusions), or uncertain flight or safety risk (for violent or homicidal behaviour), or uncertain flight or safety risk (for bizarre behaviour)

24. A 26 year old female brought herself to the ED saying she is unable to “cope”. “I am having trouble thinking and I feel all mixed up”. The patient reports having fleeting thoughts of “wishing she were dead”. She presents as very tearful at triage but denies a clear plan to harm herself. She has a diagnosis of bipolar affective disorder and she reports experiencing increased stress lately. She reports an alteration in her sleeping and eating habits. She is cooperative and what to stay to be seen.

Vitals RR 15, HR 68, T 36.9, O2 Sat 98%

Answer Key: CTAS 3

CEDIS complaint – Depression / suicidal / deliberate self harm or Anxiety / situational crisis

Second order modifier – suicidal ideation, no plan (for depression, suicidal or deliberate self harm) or moderate anxiety / agitation (for anxiety / situational crisis)

25. A 51 year old female is brought to the ED by her friend. The patient's friend states that the patient was overheard at work becoming increasingly "distressed" on the phone. The friend describes a recent dramatic decline in her level of functioning. Her friend describes the patient as often tearful, restless and unable to concentrate or complete her daily tasks. The patient acknowledges that she is experiencing a great deal of stress. She presents as pleasant and cooperative but restless, fidgety, unable to sit still and resists making eye contact. The patient appears to be stammering when trying to answer questions but denies alcohol or substance use. The patient states that she feels like she wants to "jump out of her skin".

Vitals HR 80, RR 18, T37, O2 Sat 96%

Answer Key: CTAS 3

CEDIS complaint – Anxiety / situational crisis

Second order modifier – moderate anxiety / agitation

26. A 42 year old male is brought to hospital by his community support worker. The patient was reportedly overheard threatening another tenant in his apartment block. The tenant reported the threats, stating that the patient was becoming increasingly frightening over the last few days. The patient is described by his support worker as frequently verbally abusive toward other residents of the building. He has no known history of perpetrating violence against others. The patient presents as angry, hostile, refusing to speak other than an occasional grunt. The patient is somewhat responsive to his support workers attempts at redirection. His support worker will stay with him. Vitals RR 16, HR 90, T 36.7, O2 Sat 97%.

Answer Key: CTAS 3

CEDIS complaint – Violent / homicidal behaviour or Bizarre behaviour

Second order modifier – violent / homicidal ideation, no plan (for violent or homicidal ideation), or controlled (for bizarre behaviour)

27. A 48 year old male brought himself to the ED requesting to see a doctor. The patient states that he needs some medication to help him "cope". He reportedly had an altercation with his employment assistance worker when he arrived to get his "cheque". The patient states that his worker was intentionally trying to withhold his money. The patient states he has no food in his house and that his landlord was going to force him to "move out". The patient presents as flustered, and is unkempt but is cooperative and easily re-directed.

Vitals RR 16, HR 88, T 37, O2 Sat 98%

Answer Key: CTAS 4

CEDIS complaint – Social problem or Bizarre behaviour

Second order modifier – unable to cope (for social problem) or harmless behaviour (for bizarre behaviour)

28. A 39 year old male brought himself to the ED pushing a shopping cart and asking to see a social worker. He presents as dishevelled with very poor hygiene. The patient states he needs someone to “get him a place to live and some money”. He reports that he has been evicted from his home and has been staying at a shelter. The patient refers to himself as the “holy one” and urged that his needs should be met or “strange things could happen”. The patient denies previous psychiatric history but says he “sometimes takes medication for his thinking”.

Vitals RR 18, HR70, T36, O2 Sat 97%.

Answer Key: CTAS 5

CEDIS complaint – Bizarre behaviour or Hallucinations / delusions

Second order modifier – chronic, non urgent problem (for bizarre behaviour), or mild anxiety / agitation, chronic hallucinations (for hallucinations / delusions)

29. A 43 year old female brought herself to the ED tonight quite tearful asking for “help”. She states she has not slept for the last five nights and feels like she “is falling apart”. The patient reports a long standing history of sleep disruptions and currently takes medication to help her sleep. The patient states she has an appointment with her family physician in a few days. The patient lives with her husband who she describes as very supportive and their two children.

Vitals RR 17, HR 75, T37, O2 Sat 99%.

Answer Key: CTAS 5

CEDIS complaint – Insomnia

Second order modifier - chronic

30. A 61 year old male has brought himself to the ED requesting to see a priest stating that he needs to be cleansed of his evil spirits. He suggests that spirits are “interrupting his thoughts”. The patient denies alcohol or substance use. He denies taking any regular medication. The patient reports several previous admissions to psychiatry but refuses to provide additional information. The patient presents as cooperative although is also noted to be muttering to himself.

Vitals RR 15, HR 70, T36.8, O2 Sat 98%.

Answer Key: CTAS 5

CEDIS complaint – Hallucinations / delusions or Bizarre behaviour

Second order modifier – mild anxiety / agitation, chronic hallucinations (for hallucinations / delusions), or chronic, non urgent condition (for bizarre behaviour)

31. A 19 year old male is brought in to the ED by police. The patient was picked up at his school after his teacher called 911. The patient reportedly became explosive and threatening in class and was making explicit threats to “kill” his teacher and classmates. Police state that the patient was described by his classmates as looking “possessed” and had a “vacant look in his eyes”. Classmates told police that many of the patient’s threats “sounded crazy” and included bizarre statements about the “apocalypse” and the “Mayan calendar”. The patient was very combative with police upon arrival to the ED. He is currently in the police room, in handcuffs. Vitals – cannot be obtained.

Answer Key: CTAS 1

CEDIS complaint – Violent / homicidal behaviour or Bizarre behaviour

Second order modifier – imminent harm to self or others or specific plans (for violent or homicidal behaviour), or uncontrolled (for bizarre behaviour)

32. A 25 year old female brought herself to the ED requesting to see “psych people”. The patient initially refused to disclose any reasons for coming to the ED. The patient presents as paranoid, pacing, restless and responds abruptly to questions. She hinted that she was recently “attacked” but will not say by whom or in what manner. The patient appears to be very distracted. She denies alcohol or substance use and states she has been prescribed medication to help with her moods and “worries”. She is not able to recall the names or dosages of her medications. She presents as easily frustrated and agitated, stating she needs to see someone “immediately”.
Vitals HR 98, RR 18, T36.9, O2 Sat 97%

Answer Key: CTAS 2

CEDIS complaint – Anxiety / situational crisis or Hallucinations / delusions or Bizarre behaviour

Second order modifier – uncertain flight or safety risk, or severe anxiety / agitation (for anxiety / situational crisis), or severe anxiety / agitation, or uncertain flight or safety risk (for hallucinations / delusions), or uncertain flight or safety risk (for bizarre behaviour)

33. A 31 year old male brought himself to the ED. He was completely mute at triage. The patient appeared dishevelled and dressed inappropriately for the weather. It seemed initially that the patient was going to communicate in writing but placed only blank notes on the triage desk. The patient did not acknowledge a request to empty his pockets. The patient appears very preoccupied, anxious, restless and somewhat agitated in appearance. Vitals HR 80, RR 16, T37, O2 Sat 99%.

Answer Key: CTAS 2

CEDIS complaint – Bizarre behaviour or Hallucinations / delusions

Second order modifier – uncertain flight or safety risk (for bizarre behaviour), or acute psychosis, or uncertain flight or safety risk (for hallucinations / delusions)

34. A 22 year old female is brought to the ED by her two friends after she confided in them her thoughts of self harm. The patient reports a past history of self harm (“cutting”) and has two previous admissions to psychiatry. She denies alcohol or substance use. The patient has been prescribed antidepressant by her family doctor but admits to “irregular” use. She states she just ended a long term relationship and has been struggling with school. She says she is so far behind in her courses she is concerned she is going to “flunk out” and has no “hope” for the future. The patient admits to actively “wanting to die” but does not have a suicide plan. She presents as tearful, feels “sad” and is having great difficulty concentrating.
Vitals HR 82, RR 18, T37, O2 Sat 98%.

Answer Key: CTAS 2

CEDIS complaint – Depression / suicidal / deliberate self harm
Second order modifier – active suicidal intent, or uncertain flight or safety risk

35. A 30 year old male is brought to the ED by his brother. The patient reportedly disclosed to his brother today that he is having frequent thoughts of “just wanting to go away”. The patient reports a history of depression and several previous admissions to psychiatry. He reports two previous suicide attempts with the last attempt taking place five years ago. The patient denies drug use but admits to regular alcohol consumption which has recently increased. He does not appear to be intoxicated at the time of presentation. The patient works fulltime but has begun to repeatedly call in sick. He acknowledges suicidal ideation but denies a plan. The patient also states he has not been sleeping and has lost “a few pounds”. His brother will stay with him.
Vitals HR 68, RR 16, T36.4, O2 Sat 98%.

Answer Key: CTAS 3

CEDIS complaint – Depression / suicidal / deliberate self harm
Second order modifier – suicidal ideation, no plan

36. A 48 year old female brought herself to the ED stating she was “desperate”. The patient presents as very anxious, wringing her hands and almost stuttering when she speaks. She states she has recently lost her job and is at risk of losing her children in a very “ugly” divorce. The patient reports a lengthy history of anxiety and has had previous admissions to psychiatry. The patient presents as very tearful saying “because I am crazy he is taking my kids”. The patient is pacing at triage and presents as easily flustered by questions. She denies recent drug or alcohol use but states she drinks “socially”. She states that she is currently prescribed medication “my nerves” and “to try and get at least a few hours of sleep”.

Vitals HR 92, RR 19, T37.1, O2 Sat 99%

Answer Key: CTAS 3

CEDIS complaint – Anxiety / situational crisis

Second order modifier – moderate anxiety / agitation

37. An 18 year old male is brought to the ED by his mother. The patient's mother states that she brought her son to hospital after finding notes left around her home containing threatening statements. She states that when the patient was confronted he became verbally abusive. The patient was recently admitted to inpatient psychiatry for the first time. The patient's mother states that her son was admitted for psychosis and sent home on regular medication. The patient's mother reports her suspicion that her son is not compliant with his meds. The patient presents as very reluctant to speak, at times hostile in appearance glaring when asked questions and grunting with teeth clenched when asked to do something.

Vitals HR 76, RR 16, T36.5, O2 Sat 98%.

Answer Key: CTAS 3

CEDIS complaint – Violent / homicidal behaviour or Hallucinations / delusions or Bizarre behaviour

Second order modifier – violent / homicidal ideation, no plan (for violent or homicidal behaviour), or moderate anxiety / agitation OR with paranoia (for hallucinations / delusions), or controlled (for bizarre behaviour)

38. A 64 year old female is brought to the ED by her neighbour after she was found "chanting" in her backyard. The patient's neighbour reports that this "chanting" had gone on for hours but that she did go indoors when she was asked to stop. The neighbour states he has never seen the patient acting this way before. The patient repeatedly states that she was attempting to communicate with the "spiritual realm". The patient denies any previous psychiatric history. The patient denies substance use and states that she "takes no medications", stating "I am as healthy as a horse". The patient lives with her husband. She presents as distracted, somewhat inappropriate at times, giggling and almost flirtatious with the ED staff.

Vitals HR 60, RR14, T36.8

Answer Key: CTAS 4

CEDIS complaint – Bizarre behaviour or Hallucinations / delusions

Second order modifier – harmless behaviour (for bizarre behaviour), or mild agitation, stable (for hallucinations / delusions)

Appendix B

Final 20 scenarios

1. (2). A 35 year old female, brought herself to ED. The patient reports feeling depressed and recently has been more tearful. She has episodic suicidal ideation but no specific plan. She has a past psychiatric history of depression and has recently stopped taking her antidepressants. She lives alone.

No known allergies

Vitals: RR 18, HR 96, BP 128/70, T37 (oral) O2 Sat 96%.

Answer Key: CTAS 3

CEDIS complaint – Depression, suicidal or deliberate self harm

Second order modifier – suicidal ideation, no plan

2. (3). A 42 year old male is brought to the ED by a family member who reports that in the last two weeks the patient has been “moody” and seems depressed. He reports sleep disruption for 1 week. The family member reports that the patient has been “gambling again”. The patient has had previous hospitalizations for depression. He is currently employed fulltime but has not gone to work for several days and is at risk of losing his job. He denies alcohol or drug use and denies thoughts of suicide. No known allergies.

Vitals RR 16, HR 80, BP 130/78, T36 (oral) O2 Sat 96%.

Answer Key: CTAS 4

CEDIS complaint – Depression, suicidal or deliberate self harm

Second order modifier – depressed, no suicidal ideation +/- passive thoughts

3. (4). A 51 year old female is brought to the ED by the police. She was picked up at a bus stop following bystander complaints of threatening behaviour. She was agitated and uncooperative with the police on route. At triage she is unable follow commands, to cooperate or to answer triage questions. Past medical history is unknown.

Vitals RR 18, HR 108, BP 135/76, T 37.5 (oral) O2 Sat 97%

Answer Key: CTAS 2

CEDIS complaint – Bizarre behaviour, or anxiety / situational crisis, or hallucinations / delusions

Second order modifier – uncertain flight or safety risk

4. (7). An 82 year old female is brought to the ED by her daughter. The patient’s daughter reports her mother has recently become increasingly restless, “moody” and having difficulty falling asleep. She lives with her husband who is reportedly very “frail”. The patient’s family are very supportive and live nearby. She is currently taking medications to manage hypertension and osteoporosis.

Vitals RR 16, HR 70 BP 141/81, T36.8 (oral), O2 Sat 97%

Answer Key: CTAS 4

CEDIS complaint – Anxiety / situational crisis, or social problem, or Insomnia

Second order modifier – mild anxiety / agitation (for anxiety / situational crisis), unable to cope (for social problem), or acute (for insomnia)

5. (8). A 30 year old male is brought to the ED by the police in handcuffs. The patient was found in the garage of his parent's home muttering to himself and brandishing a shovel over his head. The patient reportedly urged his mom and dad to leave the premises. His parents called 911 and the police were able to disarm and subdue him. He has no injuries. He does not respond to verbal questions or commands. The patient was previously diagnosed with Schizophrenia.

Vitals RR 19, HR 120, BP 140/90, T37(oral), O2 Sat 99%.

Answer Key: CTAS 2

CEDIS complaint – Hallucinations / delusions or bizarre behaviour

Second order modifier – acute psychosis, severe anxiety &/or agitation (for hallucinations / delusions), or uncertain flight or safety risk (for either hallucinations / delusions or bizarre behaviour)

6. (9). A 21 year old female is brought to the ED by her father. The patient's father reports that his daughter has become increasing paranoid at home and work. He reports that over the last week his daughter had become very concerned about the cleaning products in her home and is openly suspicious of her family as well as certain coworkers. He reports that he has heard his daughter muttering to herself. The patient does not respond to questions, although she does follow directions. Her father will stay with her. She has one previous admission to hospital for delusional and paranoid behaviour.

Vitals RR16, HR100, BP 117/68, T36 (oral), O2 Sat 96%.

Answer Key: CTAS 3

CEDIS complaint – Hallucinations / delusions

Second order modifier - moderate agitation OR with paranoia

7. (10). A 66 year old male brought himself to hospital complaining of being unable to sleep. He reports that in the last 4 days he has had no more than 2 hours of sleep per night. He reports feeling increasingly restless and frustrated. He is pleasant and cooperative at triage. He lives alone and is employed fulltime.
Vitals RR 15, HR81, BP 143/83, T36.3 (oral), O2 Sat 97%

Answer Key: CTAS 4
CEDIS complaint – Insomnia
Second order modifier - acute

8. (11). A 25 year old male is brought to the ED by the RCMP. The patient presents as extremely violent, lashing out at officers and ED staff. The patient is repeatedly uttering nonsensical statements and shouting about ‘terrorists’. RCMP officers report that it required 4 officers to contain the patient and bring him to the ED safely. The patient is bleeding from minor self inflicted injury to his hand.
Vitals RR 18, HR 120, BP130/77, T37.5 (oral), O2 Sat 96%

Answer Key: CTAS 1
CEDIS complaint – Violent / homicidal behaviour or Bizarre behaviour
Second order modifier – imminent harm to self or others or specific plans (for violent or homicidal behaviour), or uncontrolled (for bizarre behaviour)

9. (12). A 21 year old female brought herself to the ED requesting to see a psychiatrist for “help”. The patient, on initial presentation was pleasant and cooperative but quickly became argumentative, demanding, and started screaming and swearing at the triage desk. The patient refused to answer triage questions and responded to questions by shouting obscenities. She is pacing at the doors of the department.
Vitals RR 17, HR 100, BP119/76, T 36.5 (oral), O2 Sat 98%.

Answer Key: CTAS 2
CEDIS complaint – Violent / homicidal behaviour or Anxiety / situational crisis or Bizarre behaviour
Second order modifier – uncertain flight or safety risk (for violent or homicidal behaviour), or severe anxiety / agitation (for anxiety / situational crisis), or uncertain flight or safety risk (for bizarre behaviour)

10. (13). A 32 year old female is brought in to the ED by her father after physically (i.e. trying to hit) and verbally attacking her family. The patient’s father states his daughter has previously been admitted to psychiatry for “aggressive behaviour”. He reports his daughter was prescribed medication but he suspects she is not taking it. He states the patient’s violent outburst was “out of the blue”. The patient is refusing to answer questions but has displayed neither violent nor aggressive behaviour at triage. Her father will stay with her until she is assessed.

Vitals RR 19, HR 78, BP123/70, T 37 (oral), O2 Sat 98%.

Answer Key: CTAS 3

CEDIS complaint – Violent / homicidal behaviour or Bizarre behaviour

Second order modifier – violent / homicidal ideation, no plan (for violent or homicidal behaviour), or controlled (for bizarre behaviour)

11. (14). A 41 year old female brought herself to the ED. The patient reports feeling like she is having a “nervous breakdown”. She reports that she witnesses daily acts of violence and is routinely threatened with abusive behaviour in her apartment block. She states the stress is causing her to feel very frightened and unsafe. The patient reports feeling increasingly “stressed out”. She presents as tearful, pacing back and forth and is noted to be wringing her hands. The patient denies a history of mental health issues. She lives alone and has no social support.

Vitals RR 16, HR 87, BP131/78, T36.3 (oral), O2 Sat 96%

Answer Key: CTAS 3

CEDIS complaint – Social problem or Anxiety / situational crisis

Second order modifier – abuse physical, mental, high emotional stress (for social problem), or moderate anxiety / agitation (for anxiety / situational crisis)

12. (16). A 30 year old male patient was brought to the ED in handcuffs by police. The patient was picked up at his home after he assaulted a family member. The patient’s brother reports that the patient was muttering to himself throughout the night. His brother states the patient began swearing, and making threatening gestures toward family and friends. His family contacted police after the patient refused to respond to requests from his family to leave. The brother states that before the police arrived the patient began to bang his head on the wall and ultimately put his head through a window but did not cut himself. He continues to be agitated in the ED.

Vitals HR 120, RR 20, BP126/75, T 36.5 (oral), O2 Sat 96%.

Answer Key: CTAS 1

CEDIS complaint – Bizarre behaviour or Violent / homicidal behaviour

Second order modifier – uncontrolled (for bizarre behaviour), or imminent harm to self or others or specific plans (for violent or homicidal behaviour)

13. (17). A 19 year old female brought herself to the ED. The patient approached the triage desk but stood silently. She presented her wallet as identification but remained mute and refused to make eye contact. The patient is inappropriately dressed, malodorous, and wearing excessive makeup. She is refusing to make eye contact.

Vitals HR 80, RR 17, BP 117/68, T36.1 (oral), O2 Sat 97%.

Answer Key: CTAS 2

CEDIS complaint – Bizarre behaviour

Second order modifier – uncertain flight or safety risk

14. (25). A 51 year old female is brought to the ED by her friend. The patient's friend states that the patient was overheard at work becoming increasingly "distressed" on the phone. The friend describes a recent dramatic decline in her level of functioning. Her friend describes the patient as often tearful, restless and unable to concentrate or complete her daily tasks. The patient acknowledges that she is experiencing a great deal of stress. She presents as pleasant and cooperative but restless, fidgety, unable to sit still and resists making eye contact. The patient appears to be stammering when trying to answer questions but denies alcohol or substance use. The patient states that she feels like she wants to "jump out of her skin".

Vitals HR 80, RR 18, BP 139/81, T37 (oral), O2 Sat 96%

Answer Key: CTAS 3

CEDIS complaint – Anxiety / situational crisis

Second order modifier – moderate anxiety / agitation

15. (27). A 48 year old male brought himself to the ED requesting to see a doctor. The patient states that he needs some medication to help him "cope". He reportedly had a verbal altercation with his employment assistance worker when he arrived to get his "cheque". The patient states that his worker was intentionally trying to withhold his money. The patient states he has no food in his house and that his landlord was going to force him to "move out". The patient presents as flustered, and is unkempt but is cooperative and easily re-directed.

Vitals HR88, RR 16, BP 123/81, T 37 (oral), O2 Sat 98%

Answer Key: CTAS 4

CEDIS complaint – Social problem or anxiety or situational crisis

Second order modifier – unable to cope (for social problem) or mild anxiety/agitation (for anxiety or situational crisis behaviour)

16. (28). A 39 year old male brought himself to the ED pushing a shopping cart and asking to see a social worker. He presents as dishevelled with very poor hygiene. The patient states he needs someone to "get him a place to live and some money". He reports that he has been evicted from his home and has been staying at a shelter. The patient refers to himself as the "holy one" and urged that his needs should be met or "strange things could happen". The patient denies previous psychiatric history but says he "sometimes takes medication for his thinking".

Vitals HR 70, RR 18, BP 119/68, T36 (oral), O2 Sat 97%.

Answer Key: CTAS 5

CEDIS complaint – Bizarre behaviour or Hallucinations / delusions

Second order modifier – chronic, non urgent problem (for bizarre behaviour), or mild anxiety / agitation, chronic hallucinations (for hallucinations / delusions)

17. (30). A 61 year old male has brought himself to the ED requesting to see a priest stating that he needs to be cleansed of his evil spirits. He suggests that spirits are “interrupting his thoughts”. The patient denies alcohol or substance use. He denies taking any regular medication. The patient reports several previous admissions to psychiatry but refuses to provide additional information. The patient presents as cooperative although is also noted to be muttering to himself.
Vitals HR 70, RR 15, BP 136/79, T36.8 (oral), O2 Sat 98%.

Answer Key: CTAS 5

CEDIS complaint – Hallucinations / delusions or Bizarre behaviour
Second order modifier – mild anxiety / agitation, chronic hallucinations (for hallucinations / delusions), or chronic, non urgent condition (for bizarre behaviour)

18. (34). A 22 year old female brought herself to the ED verbalizing thoughts of self harm. The patient reports a past history of self harm (“cutting”) and has two previous admissions to psychiatry. She denies alcohol or substance use. The patient has been prescribed antidepressant by her family doctor but admits to “irregular” use. She states she just ended a long term relationship and has been struggling with school. She says she is so far behind in her courses she is concerned she is going to “flunk out” and has no “hope” for the future. The patient admits to actively “wanting to die” but does not have a suicide plan. She presents as tearful, feels “sad” and is having great difficulty concentrating.
Vitals HR 82, RR 18, BP 113/66, T37 (oral), O2 Sat 98%.

Answer Key: CTAS 2

CEDIS complaint – Depression / suicidal / deliberate self harm
Second order modifier – active suicidal intent or active thoughts and altered mental state requiring close observations.

19. (36). A 48 year old female brought herself to the ED stating she was “desperate”. The patient presents as very anxious, wringing her hands and almost stuttering when she speaks. She states she has recently lost her job and is at risk of losing her children in a very “ugly” divorce. The patient reports a lengthy history of anxiety and has had previous admissions to psychiatry. The patient presents as very tearful saying “because I am crazy he is taking my kids”. The patient is pacing at triage and presents as easily flustered by questions. She denies recent drug or alcohol use but states she drinks “socially”. She states that she is currently prescribed medication “my nerves” and “to try and get at least a few hours of sleep”.
Vitals HR 92, RR 19, BP 131/77, T37.1 (oral), O2 Sat 99%

Answer Key: CTAS 3

CEDIS complaint – Anxiety / situational crisis

Second order modifier – moderate anxiety / agitation

20. (38). A 54 year old female is brought to the ED by her husband after she was found “chanting” in her backyard. The patient’s husband reports that this “chanting” had gone on for nearly an hour but that she did go indoors when she was asked to stop. The husband states he has never seen the patient acting this way before. The patient repeatedly states that she was attempting to communicate with the “spiritual realm”. The patient denies any previous psychiatric history. The patient denies substance use and states that she “takes no medications”, stating “I am as healthy as a horse”. She presents as distracted, somewhat inappropriate at times, giggling and almost flirtatious with the ED staff.

Vitals HR 60, RR14, BP 132/80, T36.8 (oral) O2 Sat 98%

Answer Key: CTAS 4

CEDIS complaint – Bizarre behaviour or Hallucinations / delusions

Second order modifier – harmless behaviour (for bizarre behaviour), or mild agitation, stable (for hallucinations / delusions)

Appendix C

Script used with each participant

Thank you for freeing up your own time to participate in this study. Your contributions are important and greatly appreciated. Once completed this study will help to fill a gap in the published literature on the Canadian Triage and Acuity Scale (CTAS) and has the potential to inform future educational materials specific to mental health presentations.

Each participant will triage 20 fictional scenarios that have been developed with actual triage presentations in an attempt to make them as realistic as possible. The scenarios are paper based but I ask that you use the EDIS computer system just as you would at triage to complete each scenario. The paper based scenarios do not include information about a patient's GCS status in all cases nor do they include communicable disease or ABC cues necessarily. I would ask that you assume their GCS is in the normal range, that their Airway is open, their breathing regular and their circulation – pink. Vital signs are available for each scenario and again I would ask that you assume each heart rate is regular.

In the scenarios that state the patient has arrived by ambulance or with EMS, the EDIS system asks you to enter something in the EMS account line and will not let you proceed unless you enter something in that box. You just need to enter “anything” so that something is listed in that field.

Lastly – although the scenarios are based on the published 2008 CTAS guidelines the chief complaint of “Concern for patient’s welfare” was not included and therefore none of the corresponding modifiers were included either. So for the purposes of this study please do not use that chief complaint for any of the 20 scenarios that you have been provided with.

Each participant will triage 20 scenarios and their CTAS scores will be saved for data analysis. In order to save all the data recorded for each scenario I would ask that you submit each of the scenarios you triage so that I may print them once you have completed your last scenario. Please let me know if you have used the override function for any of the scenarios. The order of the scenarios has been randomized so that each participant will triage the same 20 scenarios but will do so in a different order.

Please do not hesitate to ask me questions as they arise however I may not be able to answer specific questions related to the content of the scenarios because of the potential risks to the quality of the data.

This should take approximately 2 hours at which time I am happy to provide you your honorarium and a small token of my appreciation.

Appendix D

Participant demographic questionnaire



Triage nurses comfort with mental health patient scenarios

Please help to better explain the results of our study findings by providing the research team answers to some questions about your work with mental health patients at triage. Your honest responses are appreciated. Please understand that your participation is voluntary and you are under no obligation to answer all or any questions. Please do not put your name on this survey so that we can ensure complete anonymity. Results of the study will be used to determine the reliability and accuracy of triage ratings for mental health scenarios using CTAS. The results of this study will be presented during a thesis defense and at conferences or CTAS National Working Group meetings. If you have any questions about this survey, please contact Anne-Marie Brown, Principal Researcher at 787-5088 or Dr. Diana Clarke, Thesis Chair at 474-6771.

1. Number of years of triage experience

- Less than 1
- More than 1, less than 5
- Between 5 and 10
- More than 10

2. Do you have any specialized mental health training or experience?

- None
- CTAS training
- Regional Triage Orientation
- Advanced Emergency Course
- Other/please explain

3. How confident are you in your triage of mental health patients?

- Not confident at all
- Mildly confident
- Moderately confident
- Very confident

Please explain:

4. How comfortable are you in dealing with patients who present with:

	Not at all Comfortable	Mildly	Moderately	Very Comfortable
a. Psychotic symptoms	1	2	3	4
b. Manic symptoms	1	2	3	4
c. Anxiety	1	2	3	4
d. Depression	1	2	3	4
e. Suicidal ideation	1	2	3	4
f. Aggressive behaviours	1	2	3	4
g. Behavioural/ Personality issues	1	2	3	4

Participant Code:

Appendix E

Participant consent form



Research Project Title: Testing the reliability and accuracy of urgency ratings determined by triage nurses for mental health scenarios, using the Canadian Triage and Acuity Scale.

Researcher(s): Anne-Marie Brown RN BScN MN (student)

Sponsor (if applicable): Manitoba Health

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

The purpose of the study is to test the inter-rater reliability and accuracy of triage nurses' assignment of urgency ratings for mental health patient scenarios utilizing the Canadian Triage and Acuity Scale (CTAS) guidelines (CTAS, 2008).

Triage nurses who agree to participate and sign the consent form will be asked to rate 20 mental health patient scenarios using the computerized EDIS system based on the CTAS guidelines (2008) in a lab at the proposed study site. Participants will be asked to be available on one date only and the process of assigning the urgency rating is expected to take no more than five minutes per scenario up to an anticipated maximum of 2 hours. Participants will be asked to complete a brief questionnaire regarding comfort and confidence in dealing with the triaging of mental health patients. The questionnaire is anonymous and will take you about 10 minutes to complete. Each participant that takes part in assigning urgency ratings for the mental health scenarios will receive an honorarium of \$50 to cover the costs related to their attendance such as parking or child care expenses. The honorarium will be paid to each participant whether or not they complete all the scenarios presented.

There is no foreseeable risk to the participants in this study however benefits of their participation include; contribution to the body of CTAS research, the ongoing improvement of the CTAS and identification of specific educational needs.

Additionally, improved knowledge of the reliability and accuracy of CTAS, particularly among mental health presentations has the potential to improve patient outcomes. No recording devices will be used.

Names of study subjects will only be maintained for the purposes of sending feedback related to the study at the completion of their participation. Rather than using first or last names of subjects, codes will be used to identify demographic and inter-rater reliability data being gathered. Participants may be in a computer lab with people they know however there will be no opportunity for individuals to see one another's responses. Only the principal investigator and the thesis committee will have access to the data being gathered. The data along with any other research materials will be kept in a locked drawer in the office of the principal investigator at the PsychHealth Centre for seven years after which point it will be confidentially shredded.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

Anne-Marie Brown Principal Researcher @ 787-5088 or
Dr. Diana Clarke Thesis Chair @ 474-6771

This research has been approved by the Education/Nursing Research Ethics Board (ENREB). If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Secretariat at 474-7122, or e-mail margaret_bowman@umanitoba.ca. A copy of this consent form has been given to you to keep for your records and reference.

 Participant's Signature

Date

 Researcher and/or Delegate's Signature

Date

Appendix F

Research participant information sheet

**RESEARCH PARTICIPANT INFORMATION FORM**

Title of study: “Testing the reliability and accuracy of urgency ratings determined by triage nurses using mental health scenarios”

**Principal Researcher: Anne-Marie Brown RN, BScN, MN (student)
Thesis Chair: Dr. Diana Clarke RN, PhD**

Sponsor: Manitoba Health

Purpose of the study:

This thesis project represents partial fulfillment of a Master’s in Nursing. You are being asked to participate in this study because of your position as a general duty/triage nurse in the emergency department (ED). All triage nurses who work in the Health Sciences Centre (HSC) adult ED are being approached regarding participation.

The purpose of the study is to **test the inter-rater reliability and accuracy of triage nurses’ assignment of urgency ratings for mental health patient scenarios utilizing the Canadian Triage and Acuity Scale (CTAS) guidelines (CTAS, 2008)**. Additionally, the study will develop mental health patient scenarios that may be used in future replications of this study or as the basis for research on triage nurses decision-making when assessing mental health presentations in general hospital emergency departments. This study is being conducted because inter-rater reliability and accuracy of triage nurses assignment of urgency ratings for mental health patient scenarios using CTAS has not been tested to the same degree as other patient presentations.

Study procedure:

Part 1: The principal researcher will collect data from actual mental health patient presentations to the ED primarily from the EDIS database. The information will be supplemented from actual patient health records as necessary to construct patient based scenarios that are realistic and valid.

Participants will not be required to contribute to this phase of the study.

Part 2: You will be asked to attend a pre-scheduled laboratory session where you will first be asked to complete a brief questionnaire regarding comfort and confidence in dealing with the triaging of mental health patients. This questionnaire is anonymous and will take you about 10 minutes to complete. Once the questionnaire is complete you will be asked to use the current CTAS (2008) guidelines to assign a triage level to approximately 20 mental health patient scenarios.

Risks and discomforts:

It is not anticipated that you will be exposed to any risks that you do not encounter in your daily work.

Benefits:

This study has the potential to:

- Contribute to the body of CTAS research
- Contribute to the ongoing improvement of the CTAS
- Identify specific learning needs
- Improve mental health patient outcomes as a result of increasing knowledge of reliability and accuracy of CTAS, particularly with mental health presentations.

Cost/payment for participation:

All participants will receive a \$50.00 honorarium for assigning urgency ratings to approximately 20 mental health patient scenarios. The honorarium will be provided regardless of the number of scenarios triaged by the participant.

Confidentiality:

Your name will not appear on any of the research data. The list of participating nurses will be maintained by the principal researcher only for the purpose of scheduling their time to participate in the inter-rater reliability testing and to receive feedback regarding the project at the conclusion of their participation. The list of participants will be kept in a locked drawer in the office of the principal researcher. Results of the study will be reported in an aggregate form and be shared in the process of preparation and defense of the principal researcher's thesis. No individuals will be identifiable in the results. Findings will be presented at the defense of this thesis, published in a scientific or clinical journal or presented at conference.

The University of Manitoba Health Nursing Research Ethics Board may review research related records for quality assurance purposes.

Voluntary Participation:

Your decision to take part in this study is voluntary. You may refuse to participate or you may withdraw from this study at any time. Your decision not to participate or to withdraw from the study will not affect your employment with your place of work or the Winnipeg Regional Health Authority in any way. The principal investigator will be the only person who will know who participated in this study and who did not. We

will share with you any new information that may affect your willingness to stay in this study.

Questions:

You are free to ask any questions you may have about your participation in this study and about your rights as a research participant. If questions arise during or after the study contact the principal researcher Anne-Marie Brown at (204) 787-5088. For questions regarding your rights as a research participant, you may contact the University of Manitoba Nursing Research Ethics Board at (204) 474-7122.