

Title Page: Research on the Frontline's of Healthcare – A Cooperative Learning Approach

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**Note: POD refers to a grouping of beds by different geographical areas of the ED, is staffed by three nurses - two primary care nurses and pod leader – a technical partner to help with certain clinical care tasks under nurse supervision, an administrative partner to help with paperwork and phone calls, and one physician.*

Abstract

Background. Evidence-based practice (EBP) is a common goal in hospitals, but learning about research so that EBP can be done is often challenging for clinicians.

Approach. We assembled a multi-disciplinary team of clinicians and scientists with the plan to both learn and do research while evaluating a Level I Trauma Center's Emergency Department (ED) waiting room. The team researcher used a cooperative learning method approach to teach research concepts, and the team chose a mixed methods research approach.

Results. This team demonstrated their knowledge and understanding of the research concepts used in this study by being actively involved in the creation and implementation of the baseline methods used for this study, and by presenting the following at a recent, national nursing research conference: 1) rationale for evaluating their ED waiting room environment, 2) development and validation of an ED waiting room evaluation survey; 3) use of a qualitative approach to evaluate outcomes from the multidisciplinary team's waiting room observations; and 4) methods for developing realistic interventions to improve satisfaction with the waiting room environment based on their study findings.

Discussion. This dynamic partnership with researchers, and the use of a collaborative research approach, provides a model to support a deeper understanding of ways to evaluate and effectively address issues related to quality of care, while also learning about the research concepts needed to put evidence into practice.

Key Words. Patient, Satisfaction, Trauma Services

Background. Patient care based on evidence is part of the culture of this 770-bed tertiary care Magnet Hospital and Level 1 Trauma Center. However, assuring that all processes are based on research can be daunting because of the multitude of processes and activities that impact patient care and the challenge of finding, understanding and applying research to support them. Being proactive, our hospital has the infrastructure to support research activities, including researchers with clinical backgrounds who work closely with clinical leadership and staff on research endeavors. This model illustrates an effective way to integrate research into practice by providing individuals with research expertise who also understand the clinical aspects of patient care (Langer & Wolf, 1996) and appears to be even more effective when the researcher finds ways to incorporate the process of research into the process of day-to-day activities of bedside nurses (Endo, Miyahara, Suzuki & Ohmasa, 2005). To encourage clinicians to learn more about research, this project included other effective methods reported in the literature, including research as part of a professional practice model (Ingersoll, Witzel & Smith, 2005), addressing *perceived* barriers to the understanding and use of research in practice (Fink, Thompson & Bonnes, 2005), using a team and process improvement methods (Buckley, Burns & Bleck, 2005, Donaldson et al., 2005) and development of a community of scholars who support each other (Schmidt Bunkers, 2005).

Approach. Historically, leaders facing challenges in a specific clinical environment will request a specialist researcher to develop and do a study that will effectively evaluate the environment. Then, the researcher shares the results of the study and their recommendations. While this may be an effective measure to impact change, the clinical leader must rely on the researchers' understanding of the clinical environment and must, in turn, do their best to interpret

how these results can be used to improve their environment. This study team chose to develop their project in a collaborative environment and used an approach called Cooperative Learning (CL), a creative and dynamic learning approach (Thousand, Villa & Nevin, 1994). A nice description of CL is given in a report by Johnson and his colleagues (1991), which summarized CL as a type of instruction that involves students working in teams to accomplish a common objective using the following:

- 1) **Positive interdependence.** Team members rely on one another to achieve the goal. If any team members fail to do their part, everyone suffers consequences.
- 2) **Individual accountability.** All learners in a group are held accountable for completing their share of the work and for learning all of the concepts taught.
- 3) **Face-to-face promotive interaction.** Although some of the group work may be delegated to and completed by specific individuals, some must be done interactively, with group members providing one another with feedback, challenging one another's conclusions and reasoning, and perhaps most importantly, teaching and encouraging one another.
- 4) **Appropriate use of collaborative skills.** Learners are encouraged and helped to develop and practice trust-building, leadership, decision-making, communication, and conflict management skills.
- 5) **Group processing.** Team members set group goals, periodically assess what they are doing well as a team, and identify changes they will make to function more effectively in the future.

There are several reasons why cooperative learning works as well as it does. The idea that individuals learn more by doing something active than by simply watching and listening has long been known by successful teachers and cognitive psychologists (Bonwell & Eison, 1991), and cooperative learning is about action. Cooperation increases knowledge and understanding in several ways. Individuals who have difficulty learning and who work alone, are likely to give up when they don't understand something; working cooperatively, they are given the confidence to

keep going. Strong learners faced with the task of explaining and clarifying material to weaker learners often find gaps in their own understanding and study to fill in those gaps. Learners working alone may tend to procrastinate, completing assignments late or skipping them altogether. However, when they know that others are counting on them, they are often driven to do the work in a timely manner. Learners working competitively have incentives not to help one another; whereas, when working cooperatively, they are actually rewarded for helping (Johnson, Johnson & Smith, 1991).

Using this cooperative methods approach, the multi-disciplinary team of clinicians and scientists formed a team with the plan to both learn and do research.

The team. The team was lead by an experienced, well-respected administrator. Other members of the team included two nursing directors, a physician, a patient representative, an analyst, several project assistants, a research specialist and a healthcare researcher. Also important to this team were several consultants, including a medical anthropologist who was skilled in qualitative research methods, and the experiences and information from a recent “Promoting Palliative Care Excellence in the ICU” research study (Deitrick et al., 2005) which included evaluation of the ICU waiting room, under the leadership of a physician, a nurse specialist, and a medical anthropologist

Cooperative Learning Model. The primary investigator (PI) identified research-based practice as a priority for her ED staff (Barnsteiner, 1996; Bayley, MacLean & McMahon, 2004; and asked that she and her colleagues be taught research principles and be given the opportunity to put those principles into practice. The value of this type of partnership is described by Endo, Miyahar, Suzuki and Ohmasa (2005) who found that when nurses are actively involved in doing

a study, what they learn in the study can transform their practice in a dynamic and positive way. The PI worked closely with the team researcher to set up monthly activity meetings. During the first few meetings, the medical anthropologist attended and provided information and stories about the qualitative research methods she recommended for the project. The team members actively participated in all meetings and all research activities, putting into practice the research concepts they learned during the meetings. Together, the team decided on methods that would best help them evaluate the waiting room environment.

Results. There were two sets of results from this study: 1) The active involvement of each team member in all aspects of the project and in presentation of the baseline results - evidence that the team members had learned research principles, and 2) The baseline results from the actual study implemented by the team. Both sets of results will be reported concurrently since they are so closely related. At the time of this report, only the baseline phase was complete. The intervention phase is currently in progress.

Searching the evidence. At the beginning of the project, all team members completed a literature review on the topic of emergency department waiting rooms and satisfaction. While there were many reports about satisfaction with non-ED waiting room environments (Adams, Schmidt, Sanders, Larkin, Knopp, 1998; Carmichael & Agre, 2002; Mowinski Jennings, Heiner, Loan, Hemman & Swanson, 2005), or the entire ED experience (Davis & Bush, 2003; Kipp, 2001; Sun et al., 2000; Walrath, Tomallo-Bowman & Maguire, 2004), there were few formal studies which focused exclusively on the impact of the ED waiting room on satisfaction (Hutchison et al., 2003; Nielson, 2004; Samson, 1998). Understanding this, the team decided to

develop their own questionnaire to quantitatively and qualitatively evaluate factors that could influence patient satisfaction.

Then, we carefully looked at our overall ED environment and all the factors that could possibly influence the ED waiting room and satisfaction. As a 770-bed tertiary care MAGNET Hospital and Level I Trauma Center, we see an average of 113,000 patients per year in our three Emergency Department (ED) sites. The Level I Trauma Center site, our largest ED, saw over 50,000 patients in 2004 (resulting in 49% of all hospital admissions) and was designated as our study site. Like other ED's throughout the nation, our ED was experiencing overcrowding due to continued pressure for demand for hospital services from our community. We were a hospital "bulging at the seams." The ED is considered the front door to our hospital and we wanted to make a "difference at the door" for our patients.

As demand for access increased, capacity pressure within the ED also increased, leading to long delays in the ED waiting room and decreased patient satisfaction. We were further facing challenges of long delays for admission bed assignments, which lead to patients staying longer in the ED waiting room or the ED treatment area, and sometimes even in beds in the hallways. Patient and family satisfaction has always been a high priority in our network and we knew from patient and family feedback, that the ED was critical point of first impressions and an important factor in overall satisfaction with the hospital. We knew we were not unique, since this link between ED overcrowding and decreased patient satisfaction has been reported by many other hospitals throughout the nation (Derlet & Richards, 2002; Gantt, 2004; Hutchison et al., 2003; Lui, Hobgood & Brice, 2003).

Recognizing our access and capacity issues, in 2003 our senior LVHHN management initiated a major hospital-wide process improvement project with goals to facilitate patient

throughput from the ED from admission to discharge. This initiative was aptly named the Growing Organizational Capacity (GOC) project, and launched 17 sub-projects over a 2-year period. The projects that directly influenced ED throughput included an electronic Bed Board that tracked dirty, in process and clean admission beds.

Patient Flow Coordinators were then designated. These Patient Flow Coordinators were registered nurses whose daily role revolved around facilitating patient flow through the system. A PULL system was also established, modeled on manufacturing efficiency concepts to decrease process steps and proactively plan for and meet access demands.

As GOC rolled out these and other new processes to impact patient capacity and flow, the ED team was charged with the specific task of improving ED patient satisfaction. As a result, a Patient Satisfaction Improvement Council was formed from a multi-disciplinary team of ED clinicians and leadership.

Addressing the most pressing patient dissatisfiers, we had mandatory staff training sessions. We implemented a “zero tolerance for rudeness” policy and developed a theme “Courtesy, Competency and Efficiency.” The ED also initiated an ED-callback program which enlisted the help of University MedEvac Staff, our hospital’s helicopter air medical transport service. These phone calls let patients know they mattered and gave them an opportunity to offer suggestions on how we could improve their ED experience. These calls highlighted the waiting room as a major dissatisfier. We received excellent comments about the care patients received once the patients and families got back into the treatment area of the ED, but there were consistent negative comments about time spent in the waiting room.

Additionally, a “Touch-Time” study, led by one of our authors, was done to evaluate the length of wait time for each patient. As reported in the literature, wait time and perception of

wait time are highly associated with satisfaction in ED patients and their families (Davis & Bush, 2003; Mowen, Licata, McPhail, 1993) and approaches to decrease wait time can improve satisfaction (Howell, Bessman & Rubin, 2004; Nieslen, 2004; Spaite et al., 2002). Study team members observed patients from the time they entered the ED until they were first seen by a physician or physician's assistant. This study helped to support an ED LOS - reduction sub-project by providing recommendations on support factors that would be needed to improve ED services for our patients. It further identified that there were many opportunities for improvement in the ED waiting room itself, since both family and patient often spent significant amounts of time there. In this context, our ED waiting room satisfaction study was developed.

Defining the research questions. The team used their findings from the literature and their own evidence reports (“Touch-Time” study, “Ideal Waiting room environment” focus group results – a study which defined what factors patients, families and ED staff felt would make the waiting room environment experience “ideal”) to develop and refine their research question, *How can we define and improve ED waiting room-specific factors that are associated with low patient satisfaction?*

Choosing the research approach. The team developed a research plan based on patient admission rates and research resources. They chose a mixed methods approach, using both qualitative and quantitative methods of evaluation. They chose to evaluate both the scientific literature and their own internal data, do observations of the waiting room itself, map patient flow on a scaled map of the waiting room, and give an ED waiting room satisfaction survey.

Waiting room structure. They began by looking at the structure of the waiting room. The waiting room is a large rectangular-shaped room with 45 chairs that are individually placed,

grouped by twos or threes, or connected in rows of seven to eight chairs. By each chair grouping are small tables and magazine racks. There are also two reclining chairs, assorted small tables, a child's activity table, child sofa and child chair. There are two TV's – one for adults which is primarily tuned to the news channel and a second one for children, which can also play videos. There is a large main entrance in front of the reception desk, a walkway through the back of the waiting room that goes by the ED restrooms and pay phones to the main hospital, an opening behind the receptionist desk which leads to the triage room on one side and the nurse's station on the other, the door to the security office and two doors directly back to the ED clinical area. Photographs were also taken of all sections of the waiting room to evaluate lighting, décor and furniture layout. This area was mapped and patient type (adult, child, handicapped in wheelchair, etc.) was recorded to evaluate any potential issues related to seating arrangement during the observation phase of this project, as described later on in this article.

Survey. Since no valid and reliable surveys were found in the literature that specifically evaluated satisfaction with the ED waiting room environment, the team decided their first task would be to develop a survey. They used collaborative research methods specifically for the questionnaire development that were described by Doherty (2002). Collaboration builds on the CL style and is a way which acknowledges values and notes individual group members' contributions and abilities. In his article he describes how collaborative, action-orientated research is one of the best ways to develop research hypotheses and research questions that are contextually sensitive and address the true problems of practitioners and participants.

First, a draft questionnaire was developed using statements that took into account the previously mentioned dissatisfiers, many already and addressed areas the experienced team

members felt should be evaluated. The team was fortunate to have the questionnaire created for the “Promoting Palliative Care Excellence in the ICU” research study (Deitrick et al., 2005) as a guide to build on. They decided they wanted the questionnaire to be anonymous and placed in a locked box to protect patient identity and assure honest answers. The draft anonymous questionnaire was then pilot-tested with a small group of patients and their families (n = 38). Also, nurses and other ED staff were asked to evaluate and rate the appropriateness of each question, and to suggest additional questions. Pilot questionnaire data was then reviewed, and the questionnaire was refined. The final questionnaire had 14 Likert-scale questions and 7 open-ended questions about the waiting room environment, including questions about atmosphere, phones, staff presence, thoroughfare, professional behavior, food, triage, child-specific issues, confidentiality and parking. Only a few demographics were asked to maintain confidentiality. The patient’s Emergency Severity Index (ESI) was written on the top of the questionnaire before it was handed to the patient. ESI is a measure of the patient’s severity that defines unique aspects of ED processes of care (Tanabe, Gimbel, Yarnold, & Adams, 2004), and the team felt it was an important demographic that they might want to explore further during the analysis phase. The final anonymous questionnaire was given over a two-week period (April 12 – 26, 2004) and at random times and random days in a way that captured what might be different during the different shifts, days of week and weekends.

Questionnaire process. The triage nurse wrote the patient’s ESI scores on the questionnaire and gave it to the patient after their initial intake session, with instructions for them or their families to fill out while they were in the waiting room. Patients and families were assured that all comments were strictly confidential and were to be placed in a locked box at the volunteer’s desk. Nurses made a tick mark on a flow sheet for each survey given. A total of 53

surveys were returned, an 82% return rate. One surprising outcome of this study was the observation that the numbers of family and/or patients in waiting room were dramatically lower than expected. During our study the, the number of individuals in the waiting room ranged from 0 – 18 individuals (frequent ranging from 0 – 8) instead of the expected 20 – 30 individuals as observed in the “Touch-Time” study. Wait times were also much lower, with most waits less than one hour, and frequently only 5 – 15 minutes instead of greater than an hour as observed in the earlier “Touch-Time” study as well.

ED waiting room observations. As a group, the team chose a three-week observation period to encompass the same time period that the surveys were given. Six observers from the group were trained to do observations during a study session. A random observation schedule was developed. During their observations, they used a narrative format to document what they saw and heard in the waiting room environment at random times and during random days. They used a scaled map of the waiting room and its furniture to document location of individuals & objects (e.g., wheelchairs). They recorded the number of individuals, along with date, and time of day at the beginning and end of each observation.

Evaluating the data. Observation narratives and open-ended question data were typed from the hand-written forms to electronic files and then themed. Then, the themed data were grouped by day of week, then time of day, and then by ESI score to evaluate trends. Demographics were reported as frequencies and Likert-scale data were reported as boxplots. Thirty-four percent of the respondents were male, fifty-eight percent were female and 8% did not report their gender. Of those who indicated their relationship to the patient being admitted, 42% (n = 22) were the patient, and 49% (n = 26) were a family member or friend. There was a nice

distribution of respondents across all age groups, with the majority in the 35-59 age group (n = 20). Of note, ESI scores on the 53 surveys were similar to the usual number of admissions in each score by month, with 12 (23%) at ESI 2, 17 (32%) at ESI 3, 13 (25%) at ESI 4. Also, when survey data were grouped by ESI score, there were now significant differences in scores between groups using Mann Whitney U test for non-parametric data. Using exploratory factor analysis on the 14 Likert-scale questionnaire questions, four factors were identified which accounted for 77% of the variance in responses to questions. This information will be used for further refinement of the questionnaire. While the researcher ran the statistics in SPSS 12.0, all data output were shared with the team and reasons for using each test on the particular data type were explained.

Reporting the baseline results. This team demonstrated their knowledge and understanding of the research concepts used in this study by presenting the following at a recent, national nursing research conference: 1) rationale for evaluating their ED waiting room environment, 2) development and validation of an ED waiting room evaluation survey; 3) use of a qualitative approach to evaluate outcomes from the multidisciplinary team's waiting room observations; and 4) methods for developing realistic interventions to improve satisfaction with the waiting room environment based on their study findings. All team members were actively involved in preparing the presentation and practiced their presentations as a team over a 2-month period. The actual presentation went smoothly and all presenters were able to adequately field any questions presented to them. This article is a summary of that presentation, although with more in-depth information about the cooperative methods approach. The team celebrated their successes as presenters and researchers at a special dinner, and have decided to continue using the cooperative methods approach until the study is complete. Not surprising, this team has

developed a strong bond with each other, and have reported that research can be fun and not too time-consuming when using this approach.

Discussion. This research team's initial goal was to learn about research while doing it, and then to use what they learned to change practice. This was accomplished. Further, both staff and leadership were committed to the changes that would be made during the intervention phase because they were supported by data from their observations. This is effective method to help clinicians and healthcare leaders understand and do Evidence-Based practice.

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Figure 1: Collaborative Research Team Activities

Figure 2: Research Findings and Interventions by Theme

Figure 3: Anonymous ED Waiting Room Improvement Survey (front) – Do not use without permission

Figure 4: Anonymous ED Waiting Room Improvement Survey (back) – Do not use without permission

Tables/Figures:

Figure 1

Questionnaire Development	Observation Process	Other
<ul style="list-style-type: none"> Review literature Discuss questionnaire development study methods Review previous focus group data, Develop draft survey Pilot draft survey Refine draft survey Final survey given Compile and analyze survey data Define interventions 	<ul style="list-style-type: none"> Review literature and ICU waiting room report Define and discuss qualitative study methods – observation of waiting room, diagram of waiting room environment, pictures of waiting room Observe waiting room environment Record observations Compile observations Define observation themes Code and analyze observation data Define interventions 	<ul style="list-style-type: none"> Talk to staff and volunteers about their perceptions of patient and family dissatisfiers with the ED waiting room Identify other processes (new and previously instituted) that could impact patient satisfaction in the ED waiting room Develop timeline of activities

Figure 2

Theme	Findings (Seen or Heard)	Action/Intervention
Atmosphere	<ul style="list-style-type: none"> No magazines Furniture seemed dingy Child climbing on chairs, activity table broken, comment, “You need a protected area for children!” 	<ul style="list-style-type: none"> Reading material re-stock system developed New and updated furniture bought Aloha playhouse donated by volunteers and IBM to provide a protected play area for children
Phones	<p>Frequent comments:</p> <ul style="list-style-type: none"> <i>It seems strange that with the upgrade in technology, we can’t use our cell phones.</i> <i>They need to get some new phone books. The ones they have are old!</i> <i>I couldn’t find the phones</i> 	<ul style="list-style-type: none"> Investigation of cell phone technology in progress Old phone books discarded and replace with new Large sign indicates location of courtesy phones
Parking and Thoroughfare	<ul style="list-style-type: none"> Visitors coming through the ED entrance to get into the main hospital via the vending machine hallway. Dr. *** walks through the ED several times (3rd consecutive time he has done this) More staff in scrubs use waiting room as thoroughfare 	<ul style="list-style-type: none"> Outside access door locked New vending are place in public are for house staff and visitor use Announcement made to staff and unit leaders not to use ED waiting room as a thoroughfare
Professional Behavior/Staff Presence	<p>Frequent observation comments:</p> <ul style="list-style-type: none"> <i>No one checking in the waiting room</i> <i>No one at front desk</i> <i>Four people waiting at desk; no one there</i> 	<ul style="list-style-type: none"> Refine “Ambassador Program” – designed to encourage staff and volunteers to go out of their way to make patients and families feel welcome Increased number of volunteers Added front desk position to “light duty” job list for the network
Security	<ul style="list-style-type: none"> Triage nurse or other staff had to keep getting up to let patients or families back into the clinical area of the ED Security office door closed and shades down – unsure if security person is there 	<ul style="list-style-type: none"> Evaluating the possibility of a buzzer that nurse or volunteer can use to unlock ED access door Security has constant, visible presence in ED waiting room on all shifts
Triage & Confidentiality	<ul style="list-style-type: none"> Patient and family unsure if the <i>order they were seen was fair</i> Several observations of this type of scenario: <i>Nurse comes out for patient, calls his name (loud enough for every one to hear) and then comments, You were here yesterday!</i> 	<ul style="list-style-type: none"> ED expansion plans include separate “walking wounded” and “sick and dying” waiting rooms Importance of patient confidentiality during Ambassador Program re-education

Figure 3

**Emergency Department
ANONYMOUS
Waiting Room Improvement Survey**

ESI Score

Your honest opinion will help us make things better! Thank you!!

We are always working to improve the satisfaction of our patients and their families! We want to find out what you think about the **COMFORT** and **APPEARANCE** of the ED (Emergency Department) waiting room. To help us make things better, please take a few minutes and fill out this survey. **DO NOT PUT YOUR NAME ON SURVEY!**

Please place your completed survey in the locked gray box marked 'Completed Surveys' located at the **ED FRONT DESK** (as you come in the main ED doors). We appreciate your feedback about our waiting room. Thank you!

Today's Date: _____ Time survey completed: _____

How did patient arrive: WALK-IN VIA AMBULANCE OR EMERGENCY VEHICLE
 EXPRESS ADMIT OTHER _____

Person filling out questionnaire: Patient Family/Friend

Your Gender: Male Female

Your age (years): less than 18 18-24 25-34 35-59 60 or more

If you are not the patient, patient's age (years):
 0 - 17 18-24 25-34 35-59 60 or more

Please **CIRCLE** the answer that best describes how satisfied you are with the ED waiting room environment and service. (Circle "0" if they do not apply.)

		Definitely Disagree	Probably Disagree	Not Sure	Probably Agree	Definitely Agree	N/A
1	The waiting room seating is comfortable.	1	2	3	4	5	0
2	The lighting is adequate.	1	2	3	4	5	0
3	The room is noisy.	1	2	3	4	5	0
4	I was greeted on arrival.	1	2	3	4	5	0
5	My or my family member's initial evaluation by the nurse was adequate	1	2	3	4	5	0
6	Reading materials are available.	1	2	3	4	5	0
7	The telephone is in a convenient location.	1	2	3	4	5	0
8	The waiting room is clean and neat.	1	2	3	4	5	0
9	The restrooms are clean and neat.	1	2	3	4	5	0
10	I was informed about delays in treatment.	1	2	3	4	5	0
11	The order in which patients were seen seemed fair.	1	2	3	4	5	0
12	If needed, I was able to find locations within the hospital (i.e. cafeteria, gift shop, etc.)	1	2	3	4	5	0
13	The vending machines were adequate.	1	2	3	4	5	0
14	I felt I had privacy in discussing my or my family members medical condition.	1	2	3	4	5	0

USE BY PERMISSION ONLY

PLEASE TURN SURVEY OVER for OTHER IMPORTANT QUESTIONS!!

Figure 4

Please answer the questions below:

1. What do you like most about the ED waiting room?
2. What do you like least about the ED waiting room?
3. What would help improve your satisfaction with the ED waiting room?
4. Please tell us what you think about the parking process.
5. How can we make the ED waiting room a better environment for children?
6. Please tell us how it was to find or get the food you needed. This could include things about vending machines and the cafeteria.
7. Do you have any other comments?

THANK YOU again for helping us MAKE THINGS BETTER! Please place your completed survey in the locked gray box located on the **ED FRONT DESK** (as you come in the main ED doors).

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