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ELECTRONIC INTENSIVE CARE UNIT (eiCU)

Dissertation Submitted to



The IIHMR University, Jaipur
for the partial fulfillment for the award of the degree of
Master of Business Administration (MBA)

in
Hospital and Health Management
by

SUSHIL KUMAR

Under the Supervision and Guidance of

Mr. ARINDHAM DAS

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DECLARATION BY STUDENT

I hereby declare that this dissertation titled **ELECTRONIC INTENSIVE CARE UNIT (eiCU)** is the Bonafede record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

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CERTIFICATE

This is to certify that dissertation titled **ELECTRONIC INTENSIVE CARE UNIT (eICU)** is a record of the research work undertaken by **SUSHIL KUMAR** in partial fulfillment of the requirements for the award of the degree of **MBA (Hospital and Health Management)** from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific, and analytical.

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Abstract

Patients in critical care are closely watched as their illnesses progress. Large volumes of data are frequently gathered for these patients as a result of this surveillance. The eICU Program, a telehealth system created by Apex Hospital, Malviya Nagar, Jaipur, Rajasthan, makes use of these data to support the management of critically sick patients. Here, we provide an overview of the eICU Collaborative Research Database, a multi-center intensive care unit (ICU) database that contains high-granularity information on more than 100,000 admissions to ICUs across the India (State like Rajasthan, Utter Pradesh, Haryana) that are under the supervision of eICU Programs. The database is deidentified and contains data on vital signs, care plans, measurements of the severity of illnesses, diagnoses, treatments, and more. After registering, completing a course on doing research with human subjects, and signing a data release agreement, data are made publicly accessible.

Design Type	• Data integration objective • Database creation objective
Measurement Type	• Administrative Activity • Clinical Evaluation • Care • Treatment Plan • Vital Signs Measurement
Technology Type	• Documenting • Performing a clinical assessment • Multiparameter monitor
Factor Type	• Anthropometric measurement • Diagnosis

	• Treatment
Sample Characteristic	• Homo sapiens • • India • Hospital

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Chapter 1: INTRODUCTION

1.1. Introduction

The first intensive care units (ICUs) were created in the 1950 in response to advancements in anesthesia and surgery that required nursing personnel to do careful, frequent post-operative observations. Except for a lower nurse to patient care ratio and more frequent patient assessments, early ICUs resembled ordinary patient care units. Early ICUs lacked several modern pieces of hardware and technology. Open heart surgery increased in popularity in the United States in the 1960, necessitating more advanced monitoring equipment in the early postoperative period while the doctor was away. ICUs evolved into highly technological patient care facilities with the capacity to assess and treat critically ill patients quickly.

ICU beds currently make up 10% of all inpatient acute care hospital beds, cost hospitals 20–30% of their revenue, and represent 1% of their gross domestic product.

There is a national scarcity of trained intensivists and ICU nurses, even though the intensivist-led paradigm of care in the ICU is favored. In the nation, there are over 6,000 intensive care units that treat about 55,000 patients every day. One-third of these patients are currently being treated by an intensivist who serves as either the primary physician or a consultant. The lack of ICU specialists, according to demographic and labor data, is expected to get worse over time.

1.2. Purpose of Study

A new model of intensive healthcare is the eICU model of care. Through the utilization of offsite monitoring, this change in health care delivery systems holds out the potential of early intervention. In the eICU style of care, the roles of registered nurses and intensivists are increasingly expanding. The duties of eICU staff members and this model, however, have not been discussed in the medical literature. This study set out to describe what it's like to work in the eICU workplace daily.

1.3. Rationale for Study

It is possible to increase the scarce pool of qualified intensivists and ICU nurses by using telemedicine. It is a significant transition for doctors and nurses to go from a bedside, hands-on ICU practice to a remote location that is connected to patients and staff by cameras, computers, and telephone connections. This study sheds light on the dynamics of the eICU workplace and the adjustments made by nurses and doctors to function there. This study is the first qualitative ethnographic investigation of the remote work environment for an eICU product.

The adoption of a telemedicine model of care and better comprehension of the telemedicine workplace are both impacted by this study.

1.4. Assumptions

The two foundations for the following study's premises:

1. People do what they say they do.
2. The eICU nurses' and doctors' interpretations will be true to the complexity of the working environment.

1.5 Research Questions

The dissertation questions for this study:

1. What are the experiences of the health care workers in the eICU setting?
2. How do health care workers function in the eICU setting.

1.6. Limitations

One of the study's disadvantages is that it only includes one eICU department. This study's generalizability to various eICU settings across the nation is so constrained.

1.7. Summary

Patients with complicated medical illnesses are cared for in intensive care units, which are highly sophisticated facilities. According to research, the capacity to quickly evaluate and administer crucial. When intensivists oversee the care of ICU patients continually, the condition of sick patients is improved. Given the lack of intensivists in the India now, it is currently unable to supply that coverage for all patients in the ICU. The shortfall is anticipated to get worse over time.

A telemedicine platform is provided by the eICU model of care to enable intensivists and seasoned ICU nurses to continually monitor several ICU patients from a distance. A novel method for optimizing the benefits of intensivist medical management of ICU patients with fewer intensivists is the eICU model of care. The eICU team's workspace is physically separated from the ICU environment. The patients that the eICU department's staff monitors are not encountered face-to-face or "hands-on." Medical fields that have traditionally been "hands on" are the only ones with this type of remote work environment. Through the words and experiences of individuals who work there, the eICU work environment is described in this study

Chapter 2: REVIEW OF THE LITERATURE

2.1. Introduction

A new method of providing treatment called electronic intensive care gives critically sick patients greater supervision. The influence on patient safety served as the foundation for the creation of the eICU paradigm of care. The ICU work environment changed as a result of public and commercial pressure on hospitals to cut errors and enhance the standard of care. The study on patient safety, particularly in intensive care units, is covered first in this review of the literature. There will be a summary of the research describing how the working conditions in ICUs changed over time and how this influenced the creation of the eICU model of care.

Using the keyword eICU, a literature search was carried out in the **PubMed and Cumulative Index to Nursing and Allied Health Literature (CINAHL)** databases. For the term "eICU", eight articles were found in the results. Only two of the eight articles were found to be suitable for

this evaluation after further examination. Citations were deemed appropriate if they came from peer-reviewed journals and were based on research-based articles that were primarily concerned with the eICU model of care. To give context for the creation of the eICU work environment, additional searches were made using the terms "patient safety & ICU", "ICU work environment", "telemedicine work environment", "ICU collaboration", and "ICU communication." Ten more papers were considered suitable for this review after these more thorough searches.

2.2. Development of Intensive Care

The literature acknowledges that critical care nursing has its roots in the private duty nursing found in the respiratory wards that were established during the polio epidemic in the late 1940 and early 1950, notwithstanding the lack of a specific founding date (Fairman, 1992). In order to prevent postoperative mortality in the first 24 hours following surgery, it became vital to improve the abilities of nurses and reduce the nurse/patient ratio as anesthetic and surgical techniques advanced

Although the early ICUs' physical arrangement was like that of standard patient care units, the most seriously ill patients were given private or semi-private rooms adjacent to the nurses' station. Higher acuity patients received more frequent patient

Simple vital sign measurements and monitoring without the aid of sophisticated technologies. As open-heart surgery became more common in the 1960s, ICU technology evolved to enabling new monitoring tools like continuous electrocardiography (ECG). Nurses received training in advanced anatomy and physiology, ECG interpretation, and enhanced assessment abilities to monitor patients more efficiently without the physician. In the 1970s, doctors started entrusting ICU nurses with more tasks that previously belonged only to doctors, such as arterial blood gases and blood drawing.

ICUs and non-critical patient care units are frequently separated geographically in modern medicine. Critically ill patients are cared for in these facilities with reduced nurse-to-patient ratios, typically 1:2, and a wealth of advanced technology. ICU patient care is typically provided by a team. concept of committed medical professionals actively addressing issues and providing care at the bedside. In order to solve challenges, a team approach and a common understanding of the circumstances are used. The team is made up of nurses, patient care assistants, doctors, and many more allied health specialists. Prior to recently, the ICU treatment plan was frequently coordinated

by more than one clinician. Various subspecialists who controlled their "organ" of specialty made up the physician staff managing the patients in the intensive care unit.

Subspecialist doctors were not constantly keeping track on patients' health or assessing how their prescribed treatments interacted with those prescribed by other subspecialist doctors. In order to address urgent issues, nurses urgently paged the subspecialist for a phone or in-person appointment. Patient outcomes were significantly influenced by the bedside team's ability to identify problems quickly, communicate with the proper subspecialist physician, accurately convey information to the physician, and work diligently with the frequently distant subspecialist.

Intensivists are doctors that specialize in critical care medicine and are primarily responsible for treating patients in ICUs. Internal medicine critical care certification from the American Board of Medical Specialties dates to 1987, making this position a relatively young specialty. Recent studies have shown improvements in lowering costs and mortality when intensivists are involved in the care of critically sick patients. Despite Leapfrog Group and the Society of Critical Medicine have been voicing increasing support for the intensivist paradigm of treatment, which has been slowly gaining traction nationwide. The idea was opposed by subspecialist doctors because it would have an adverse effect on their referral practices. Due to the high costs of hiring intensivists, hospital management were hesitant to adopt the intensivist paradigm. However, the main obstacle to the intensivist paradigm in the United States is the national scarcity of intensivists.

ICU mortality, hospital mortality, and ICU complications served as clinical outcome indicators. According to data analysis, compared to the two baseline periods, severity-adjusted ICU mortality dropped by 68 percent ($p < 0.05$) and 46 percent ($p < 0.05$) during the intervention period. Hospital mortality did not differ significantly from one another. Severity Adjusted hospital complications dropped by 30% and 33%, respectively ($p < 0.05$). The frequency of ICU problems dropped by 44% ($p < 0.01$) and 50%. ($p < 0.01$). Inpatient and outpatient hospital lengths of stay, as well as costs. ICU length of stay decreased by 34% ($p < 0.01$) and 30% ($p < 0.01$), respectively. The number of days spent in the hospital did not differ significantly. Expenses related to the 33 percent ($p < 0.01$) and 36 percent ($p < 0.05$) of the ICU stay was cut short. Then there was no difference between the intervention period and the two in terms of total hospital costs. baseline intervals the eICU model of care was deemed to be a workable program by authors. To provide ICU patients with remote

monitoring that offers better treatment and lowering ICU expenses for facilities without 24 hour on-site intensivist coverage.

The intensive care unit (ICU) has evolved over time from an extension of a typical patient care unit to a physically separate unit staffed by highly qualified medical personnel and equipped with cutting-edge technology to care for critically ill patients. The eICU model of care is a development of the ICU that better utilizes the scarce resources of intensivists and critical care nurses while addressing the growing complexity of patient care. ICU mortality, complications, and expenditures have been demonstrated to decrease in early investigations of the eICU paradigm of care.

2.3. Safety

Florence Nightingale (1863–2004) commanded doctors to first do no harm. Despite that maxim, investigations conducted over a long period of time show that considerable Hospital patients frequently have negative outcomes. In to Err was released in 1999 by the Institute of Medicine (IOM) of the National Academy of Sciences. Building a safer healthcare system, is Human. The general public was informed that 44,000 to 98,000 Americans perish each year as a result of medical blunders. Patients in the ICU had a higher likelihood of having a negative incident than those in other departments of the hospital. The public was told at the time of publication that more Americans died in hospitals each year than from injuries they incurred in motor accidents.

Both public and commercial organizations, including the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and the Centers for Medicare and Medicaid Services, received the message (CMS). State departments of health started mandating healthcare organizations to report on clinical outcomes that have a beneficial impact on patient care as a result (Hader, 2005). Millions of people who use healthcare services are employed by a group of publicly and privately held businesses that came together to advance patient safety and raise the value of healthcare (Pronovost, Needham, Waters, et al, 2004).

The three evidence-based practices that The Leapfrog Group, a group of Chief Executive Officers from 100 of the largest corporations in the country, examined were computerized physician order entry, minimum volume standards for neonatal intensive care units and particular surgical procedures, and full-time intensivist staffing in ICUs.

A non-profit organization called the Institute of Healthcare Improvement (IHI) created ways to answer the 10M's suggestions. The IHI launched six strategic interventions under the name 100,000 Lives Campaign with the goal of saving 100,000 lives a year. The interventions included

- (a) creating Rapid Response Teams
- (b) enhancing care for acute myocardial infarction
- (c) preventing 17 adverse medication events
- (d) preventing infections from central lines
- (e) preventing infections from surgical site
- (f) preventing pneumonia from ventilators

Public and corporate organizations, along with professionals, are concentrating on patient safety in hospitals, particularly in ICUs. Continuous intensivist coverage for ICU patients is one national safety program. The eICU model of care supports this safety endeavor because it combines evidence-based protocols and clinical decision support tools with intensivist coverage for ICU patients from a distant location.

2.4. Communication

Multiple people operating in various roles must combine their specific knowledge through frequent, professional encounters and good communication in order to provide safe, high-quality patient care (American Association of Critical-Care Nurses, 2005). Written, spoken, and nonverbal exchanges all fall under the category of skilled communication (Joint Commission on Accreditation of Health Care Organizations, 2002; Institute of Safe Medication Practices, 2004). According to JCAHO, one of the main reasons for sentinel events is a breakdown in communication among healthcare teams (Joint Commission on Accreditation of Healthcare Organizations, 2007).

The AACN (2005) highlighted crucial components to guarantee effective communication in a

positive workplace culture. Hospitals are required to

- (a) support staff communication education and give them access to it
- (b) enforce a zero-tolerance policy against abusive and disrespectful behavior
- (c) set up structures and procedures that ensure effective communication
- (d) formally assess the influence of communication on clinical, financial, and workplace outcomes.
- (e) incorporate communication in informal performance reviews.

In order to "maximize the appropriateness, effectiveness, and efficiency of care" for ICU patients and their families, excellent communication between nurses and doctors is essential. Daily ICU bedside rounds can range from casual doctor visits to a formal, structured, interprofessional exchange of patient information. In a tertiary teaching hospital with a 15-bed medical-surgical ICU, carried out an interventional study. Prior to the intervention, the interdisciplinary ICU staff was polled after rounds on all ICU over the course of a month (n = 155 distinct bedside rounds) to get their thoughts on what went well during rounds, what didn't, and what they would change.

Communication of patient information that is timely, condensed, and correct is essential for group problem-solving and decision-making that results in the creation and implementation of care plans. A novel method of communication is provided by the eICU model of care and communication via telemedicine links the bedside ICU team with the distant eICU team.

2.5. Collaboration

According to the American Hospital Association Commission on Workforce for Hospitals and Health Systems 2002 report, effective teamwork necessitates coordination among team members as well as skillful communication, trust, knowledge, accountability, and respect for one another.

Hospitals must

- (a) educate staff on collaboration skills
- (b) develop, implement, and evaluate team member accountability measures
- (c) build and maintain operational structures that support nurses' decision-making authority

(d) make structured forums, such as ethics committees, readily available.

One of the cultural barriers to safety in hospitals is a lack of collaboration. According to the AACN (2005), effective teamwork and communication are just as crucial as clinical expertise. As team members from the remote eICU team and the bedside ICU team are expected to interact from a distance, the eICU model of care represents a novel culture that puts traditional conceptions of collaboration to the test.

2.6. Work Environment

The bedside ICU staff operates in a setting with numerous high-tech technological tools, including monitors, infusion pumps, and ventilators. An "ergonomic disaster" in the viewpoint of a human factors engineer is the ICU bedside work setting. The surroundings make it difficult for the bedside crew to get information and react correctly in high-stress circumstances. This setup creates a dangerous atmosphere for the patient and the bedside medical staff.

Due to the flashing lights, different alarm sounds, and the hum of the ventilator, suction, and other machines, the physical atmosphere is unfriendly. The bedside crew can examine and respond to a lot of data generated by these many instruments and monitors. Humans are naturally limited in the amount of information they can take in and act upon at one time.

The healthcare team finds it difficult to meet the physical requirements of working at a patient's bedside in an ICU. Identifying and managing many intravenous lines, tubes, leads, wires, and connections may be challenging. Monitors could be placed too far away to reach. It is possible for multiple alarms to sound at once, each with a different tone and volume. It may be difficult for the staff to determine and address the alarm's cause in this situation.

The ICU's hostile physical work environment includes noise, information overload, and ergonomic difficulties. For seasoned ICU nurses, prolonged exposure to this work environment frequently results in injury and burnout. The bedside ICU setting differs physically from the work environment of the eICU. The eICU work environment is significantly influenced by interpersonal contacts made possible through telemedicine connections, diffuse leadership across two physical units, and rewards linked to newly acquired behaviors and skills, in addition to the physical composition of the unit. The

effects this new eICU telemedicine work environment will have on the workplace are still unknown.

2.7. Staffing

Matching the demands of the patient with the abilities and talents of the nurse is a difficult procedure called staffing. ICU patients' conditions can rapidly and radically change, necessitating flexible nurse staffing as opposed to rigid nurse-to-patient ratios. According to the AACN, in order to deliver the best possible patient care, healthcare institutions must have staffing rules in place. According to JCAHO (2006), organizations must have procedures in place to assess staffing effectiveness and a way to alter staffing models to increase effectiveness in response to data on outcomes.

The bedside ICU team must include nurses as essential members. Patient outcomes have been demonstrated to be influenced by staffing levels and nurse experience. Thorens and others carried out a prospective study in a Geneva university hospital's medical ICU. Switzerland, to assess how nurse staffing affects the length of time to wean off. Patients with chronic obstructive pulmonary disease who receive mechanical ventilation (COPD). Data were gathered over the course of six years. A nursing index was created each year. As a percentage of the actual nursing workforce to the projected severity of the patients, as measured by a severity score index.

Team members exchange data and information for decision support as part of the mechanism of trade between the bedside ICU team and the eICU team. The eICU team has the advantage of immediate access to historical and current data as well as computerized decision support information, even though both bedside and remote workers have access to the same patient data. But until it is shared with and used by the bedside team, access to data and decision support is of limited value to patient care. It is still unknown how the eICU and ICU staff will strike the difficult balance between working toward common objectives and competing for limited resources in order to foster teamwork.

2.8. Technology

The role of telemedicine in the ICU workplace is analogous to how different disciplines support and impinge on practice patterns. It goes without saying that ICUs frequently use technical equipment. Using a qualitative research design, Wikström and Larsson examined how people and machines interacted in a Swedish intensive care unit. Field notes were used as the data during normal ICU operations. Three main themes emerged from the data analysis:

- (a) how technology interferes with the division of labor

(b) how technology impairs practical knowing and seeing

(c) how technology alters practice.

When certain employees are unable to use a device, technology interferes with the division of labor. In this study, the nursing leadership changed the patient assignments so that the nurse who knew how to use a bedside dialysis device was paired with the patient who required bedside dialysis.

When developing this labor assignment, it was decided that gadget usage knowledge was more important than patient knowledge. When a device presents a collection of data and a nurse notice something that conflicts with the data, technology has been found to challenge practical knowledge.

The eICU style of care makes use of numerous forms of communication as well as technology to assist the bedside team in problem-solving. When the eICU team monitors the patient at the bedside's request, the division of work is completed. when the patient is not actually in the bedside team's presence. the headboard ICU staff are aware that they can make decisions at any time by immediately contacting eICU personnel support. If there is a difference between the patient monitoring data and the bedside practitioner, the eICU practitioner, or the patient's presentation may prevail the technical.

2.9. Summary

The modern-day ICU has evolved into the eICU model of care. This study will discuss how the work done in the eICU department affects patient safety, workplace collaboration and communication, staffing, teamwork, and technology. In order to support national patient safety goals, the eICU model of care includes evidence-based procedures, clinical decision support tools, and intensivist coverage for ICU patients at a distance. Through telemedicine connections, the eICU model of care offers a novel method of communication and cooperation that links the remote eICU team with the bedside ICU team.

The new eICU telemedicine work environment's potential effects on the nursing labour pool are still unknown, even though the actual working environment in the ICU is unfriendly due to loudness, information overload, and ergonomic difficulties. ICU staffing is difficult due to the nationwide scarcity of skilled critical care nurses. Utilizing the eICU model of care allows for the extension of scarce critical care nursing resources. The goal is to combine bedside and eICU staff into a single patient care team, using technology as the foundation for the new style of care.

There is no description of daily life in an eICU department in the literature. Through the voices of those who work there, this study describes the typical experiences of working in the eICU department. An effective tool for describing cultures and work practices in health care research is postmodern ethnography.

Chapter III: PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

3.1. Introduction

The goal of this study was to provide an account of the routine operations of the eiCU department, an off-site care facility where medical personnel keep tabs on patients receiving intensive care in real facilities. Postmodern ethnography served as the study's research methodology. A study method known as post-modern ethnography involves the ethnographer interacting with the subjects in order to hear them out and hear their own stories.

3.2. Setting of data Collection

The investigation was conducted in an eiCU division of a sizable healthcare system in the Midwest of the United States. This unit was created in the spring of 2005 to oversee the monitoring of iCU beds spread among four hospitals in the vicinity of a sizable metropolis. The eiCU nurses and doctors carry out their duties in one area (CORE). One of the hospitals is where the CORE is located. Each desk in the CORE houses a computer station with six to eight flat panel screens. These computer stations are where registered nurse and intensivists work.

3.3. Population and sample description

A purposive sample of all eNurses and ePhysicians employed by the eiCU department were included in this investigation. Prior to working in the eiCU unit, every member of the staff had experience working at the bedside in ICUs, and everyone was encouraged to take part in the study.

3.4. Protection of Human Subjects

Institutional Review Boards at both Texas Woman's University and the collaborating institution approved the use of human subjects in the study. Participants in the sample were not limited in terms of their age, gender, or race or ethnicity. Prior to doing the ethnographic fieldwork and conducting the individual interviews, the lead investigator received written informed consent from potential participants. Each participant received a letter describing the specifics of the trial, the risks involved with participation, how to get in touch with them if they had any questions, and how to withdraw from the study.

3.5. Instruments

Each interviewee provided demographic data, such as their greatest level of formal schooling preparation, the number of years they have worked in the ICU, the number of years they have worked in the eiCU unit, and the number of years they have been in their field. Semi-structured individual interviews were performed at a time and location that was convenient for the participant. Based on information supplied by participants and observations made throughout the field study, open-ended questions changed over the course of the investigation. The interview protocol includes inquiries pertaining to the study's questions.

Multiple time blocks were used to observe the eiCU department in order to cover various hours of the

day and night and observe various staffing matrices. Every day of the week, eNurses are on duty at the eiCU department. Intensivists are not accounted for in the staffing matrix for every one of the day's 24 hours. The researcher performed fieldwork during times when intensivists were included in the staffing matrix and when they were not. These various staffing matrices were used as a lens through which to observe team dynamics.

3.6. Data Collection

Semi-structured interviews and ethnographic research were conducted in the CORE and private offices of the eiCU division. The lead investigator interacted with the eiCU team throughout the field trial in the CORE on weekdays, nights, and weekends after receiving informed consent. There was no impact on patient care from interactions between the lead investigator and the eiCU team during the field study and interviews. Alongside the field research, individual members of the eiCU team were subjected to semi structured interviews. Participants in the study were chosen based on regardless of how much experience they have in the eiCU work environment, the health care worker's availability and willingness to engage. The primary investigator sat in the CORE with the healthcare professionals to observe the daily eiCU work environment.

Chapter IV: ANALYSIS OF DATA

4.1. Introduction

This study's objective is to provide an account of what it's like to work in the eiCU department daily. Interviews and observations of the eiCU crew were done under the direction of a postmodern existential philosophical framework. The relationships among employees working in the eiCU department and any descriptive remarks regarding the eiCU work environment were searched for in the interview transcripts and participant observation notes. By reading transcripts to find words and

phrases that described the behaviors of the eiCU staff, the data were coded. These claims were grouped into categories that were further defined by participant verbal affirmation and field study observation. Themes were coded, memorized, and typologized to capture the appropriate categories. The study results and sample characteristics are covered in this chapter.

4.2. Sample

The eiCU team is now made up of 44 eNurses, 26 ePhysicians, and two IT staff members. A purposive sample of 43 eClinicians, including 13 nurses, 3 doctors, and 1 IT employee who work in the eiCU department, participated in this study and performed semi-structured interviews. The observational field study included twenty-seven more eClinicians. Prior to working in the eiCU® unit, all eClinicians had experience working at the bedside in ICUs.

4.3. Findings

The VISICU eiCU care system is a commercially available telemedicine platform that supports a complicated model of care and offers skilled ICU nurses and intensivists from a distant location, fondly known as "in the box," to instantly support the bedside ICU team. Findings will outline the development of an eiCU department before looking at specific aspects of the work done there.

Chapter V: SUMMARY OF THE STUDY

5.1. Introduction

A new model of intensive healthcare is the eiCU model of care. The potential of early intervention using off-site monitoring by skilled nurses and intensivists is offered by this change in the methods used to deliver healthcare. The roles of the main participants in the eiCU style of care, registered nurses and intensivists, are also expanding. There are no descriptions of this concept or the

responsibilities of eiCU staff in the medical literature. This study's aim was to explain the typical workday in an eiCU department through an ethnographic examination of the telemedicine workplace.

5.2. Summary

To investigate the day-to-day activities of eiCU staff, an existential ethnographic design influenced by the philosophical foundations of symbolic interaction was used. Individual interviews with eClinicians and 60 hours of fieldwork observation were used to collect the data. 43 eClinicians who took part in the field study's observational phase made up the purposive sample. Semi-structured interviews were conducted with seventeen eClinicians, comprising 13 registered nurses (RNs), three doctors, and one member of the IT team who work in the eiCU department. The researcher was able to describe the reality of the eiCU work environment by analysing the symbolic interactions seen in the eiCU department. Findings from the study look at departmental development, the eCollaborative's character, the realities of working there, and results.

5.3. Evolution of the eiCU Department

The eCollaborative has been around for three years, and throughout that time it has developed further. The eiCU model of care was developed as a result of the Medical Director of Critical Care's goal to improve the number of ICU referrals from remote community hospitals. He is still responsible for the program's development. His most recent suggestion is to approach ICUs outside of the Good Shepherd Healthcare System about offering eiCU coverage in exchange for payment. If that suggestion is accepted, it will undoubtedly call for additional development of the eCollaborative.

Interpersonal skills and communication have become increasingly important as the eCollaborative has grown, and many members of the eTeam have demonstrated significant improvement in having difficult conversations with the bedside team in a cooperative effort for the highest possible level of patient care. The bedside team must not find it objectionable when the eNurses and ePhysicians communicate. To get the right responses from the bedside team, the eNurses and ePhysicians must explain the necessary interventions clearly and efficiently. All actionable interventions recommended by the eTeam must be carried out by the bedside team because the eTeam has no direct contact with the patient.

5.4. Discussion of the Findings

The supportive team atmosphere that has been designed specifically to support the bedside physicians

with knowledgeable ICU nurses and intensivists in order to deliver the best care for ICU patients is the essence of working in the eiCU® work environment.

Either passive or active interactions with the bedside crew are possible. When the bedside team needs the eTeam, they may easily reach them in the passive mode. In the active mode, the eTeam contacts the bedside team to take action after determining that a patient intervention is necessary. Ironically, the bedside team frequently views the active form of assistance with skepticism, is unappreciative of it, and takes offence to it. The eClinicians must continually engage in collaborative communication in order to avoid offending the bedside medical staff and to integrate into the ICU patient care team as contributing members of the team.

The results of this study support the notion that in order to ensure the efficiency of the department and the efficacy of patient interventions, eClinicians must be proficient communicators. All eTeam members are expected to take responsibility for their words and deeds, and it is also expected that everyone else on the team—both at the patient's bedside and in the eCollaborative—will do the same. Even when there is no face-to-face interaction, efficient communication between nurses and doctors is essential for the information sharing required to "maximise the appropriateness, effectiveness, and efficiency of treatment" for ICU patients and their families. The eClinicians are continuously observed and mentored on collaborative ways to interact via webcam modality, and communication skills are taught at the unit orientation.

Chapter VI: Conclusions and Implications

The following conclusions can be drawn from study results.

1. The eiCU® model of care is still developing as more clinical settings use it. It is a relatively new model of care.

2. Effective contact requires collaborative communication. The eTeam is easily accessible to the bedside team to serve as a resource for information, but they are only useful when communication is cooperative.
3. The eClinicians experience physical and psychological pressures such as weight gain, weariness, boredom, difficulty focusing, and disrespect from the bedside nurses.

Implications of this study are:

1. The main stakeholders must continue to support the eiCU® model of care as it develops through time for it to be successful. This study has shown that the return on investment might not be what was anticipated. Return on investment must be evaluated from a safety standpoint, where eiCU® operations guard against any mistakes.
2. Given the distinct physical and mental strains connected to this new telemedicine work environment, the leaders in the eiCU® department must support and care for the eClinicians.
3. Effective intervention requires ongoing communication improvement initiatives and communication training. For eClinicians, ongoing communication training is crucial.
4. The bedside team anticipates the use of the eClinicians as instantly accessible information sources for a wide range of queries and issues. For the eClinicians to increase their capacity to quickly and effectively search the internet and online medical databases in order to most correctly respond to questions from the bedside team, formal and informal training on search engine tactics is required.

Recommendations for Further Study

Additional research is required to assess and characterize the eiCU® work environment.

1. In order to evaluate and contrast the traits that make up a telemedicine work environment, qualitative studies of various eiCU® units are required.
2. Quantitative investigations are required to ascertain whether the physical and emotional pressures related to working in the eiCU® unit have any measurable consequences.
3. This program is switching to a staffing paradigm that mandates that all newly employed eNurses work both at the bedside and in the eiCU® CORE. If this staffing approach leads to enhanced collaborative communications and interpersonal interactions between the eTeam and the bedside team, more research is required in this unit and others around the nation.
4. More research is required to specifically identify the information needs of the bedside team and the eTeam, both quantitatively and qualitatively, in order to identify currently available databases or the necessity of developing new information databases that will meet all or most of their needs.
5. More research is required to determine the best strategies for educating eClinicians on how to use biological databases and other electronic information sources.
6. A clinical informaticist was not included in the study's eiCU® staffing model. The existence of that staffing paradigm and the potential benefits of a clinical informaticist to this model of care require more investigation.
7. The eiCU® work environment assumes that critical care nurses who switch to this model of care will be able to increase the number of years they work as nurses. This assumption needs to be confirmed by additional research.
8. More quantitative research is required to assess the significance of the interventions the eTeam started. The amount of the cost savings attributable to the treatments' interventions has yet to be determined.