Evaluating Outcomes of an Integrated Medical Care Model in an Acute Care Hospital: A Program Evaluation

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Abstract

**Background:** Increased awareness of disparities for people with co-occurring medical and behavioral health disorders identified a gap in their individualized health care plan. This gap provides opportunities for hospitals and acute care centers to evaluate current care models for this specific patient population. **Problem:** Hospitals are challenged to meet the growing needs of patients while working to decrease operational costs. Patients with behavioral health disorders also have significantly greater spending for general medical conditions than patients without a behavioral health disorder (Chu et al., 2019). **Methods:** Hospitals are attempting to address this gap in care through interdisciplinary or collaborative care models. In this Integrated Medical Care Model program evaluation, the outcomes for calendar year 2022 (CY22) will be examined. Data used to evaluate the quality of care and decreased costs are the hospital readmission rate, RN turnover rate, and falls with injury. **Interventions:** Identified patients are admitted to one department and a multidisciplinary clinical team is assigned to meet the needs of both the medical and behavioral health diagnoses. **Results:** A one-year evaluation showed a decrease in hospital readmission rate, a decrease in nursing staff turnover, and a decrease in patient injury with falls. **Conclusions:** Integrated Medical Care supports a holistic approach for acute medical care for persons with both medical and behavioral health diagnoses. This approach also creates an environment of continued training and collaboration among care providers, reducing staff turnover and yielding safer hospitalization for the patient through decreased injuries with falls.

**Keywords:** Integrated medical care, coordinated care, interdisciplinary collaboration, behavioral health, acute care facilities, medical care with behavioral health, reduce readmissions, nursing turnover
Evaluating Outcomes of an Integrated Medical Care Model in an Acute Care Hospital: A Program Evaluation

This DNP project evaluates a new care model for decreased readmission rates, decreased nursing turnover rates, and decreased patient injuries with falls. The purpose of this program evaluation is to examine if these objectives are met. The problem identified is a gap in individualized care for those with complex co-occurring medical and behavioral health diagnoses within the acute hospital setting. Traditionally, people are treated for chronic and acute medical conditions without consideration for underlying behavioral health issues. It is common for this patient population to have fractured care that spans across several facilities and community agencies. The lack of coordinated care for patients with these diagnoses forces them to seek care from expensive hospital settings such as emergency departments (ED).

In past practice within acute care settings, persons who have behavioral health diagnoses are treated with bias, stigma, and avoidance, and are even discharged early or against medical advice because their behavior was not fully understood. Patients’ physical and behavioral health are inextricable. As researchers have noted, “historically, the health care system developed along two separate and distinct lines: one that treats physical illnesses and another that treats behavioral health disorders” (Chu et al., 2019, p. 4). These two distinct lines have led to years of misunderstanding and suboptimal care causing increased use of acute care hospitals for chronic medical and behavioral health issues. To address this inequity, several stakeholders proposed a new model of care with a focus on both medical and behavioral diagnosis merging as one diagnosis called the Integrated Medical Care Model.

Within the Integrated Medical Care Model, there is a focus on collaboration and a holistic approach to address all healthcare needs, both medical and mental to improve overall health,
reduce stigma and bias, and reduce acute care costs. To support this Integrated Medical Care Model, Chu et al. (2019) suggest “increased access to behavioral health services is associated with improved health outcomes, patient satisfaction, and quality as well as lower overall health costs” (p.5). In this program evaluation, the model strives to improve access to behavioral health services not just while inpatient, but to set up outpatient resources for overall improved health outcomes, “which causes a reduction in the use of acute services” (Chu et al., 2019, p. 5).

A 2018 study in *The Journal of American Medical Association Network* (JAMA) found that 30% of patients who visited a hospital ED had at least one behavioral health diagnosis. Also, the more severe the initial behavioral health diagnosis, the more frequently the same patient visited the ED within the next year (Chu et al., 2019). Conversely, when those same patients are cared for by specially trained providers, they tend to complete the necessary medical care and enroll in support services outside the hospital to continue their health management. This leads to improved outcomes for both the care team and the patients. Integrated physical and mental health care programs have been found to improve mental health symptoms, health-related quality of life, and overall functioning in patients with heart disease, depression, and anxiety (Huffman et al., 2018).

Addressing patients at high risk for readmission is key to reducing preventable and unnecessary hospital readmission. With the average cost of a hospital readmission in the U.S. at approximately $7,200 (Health Catalyst, 2017), it is in the best financial interest to find a way to reduce those costs. With fewer comprehensive services to manage health issues outside of hospitals, patients with complex behavioral health diagnoses tend to seek acute care settings when in crisis. Benjenk and Chen (2018) report that “patients hospitalized for physical health conditions who have mental illness have been found to be 28% more likely to be readmitted
within thirty days than their counterparts without mental illnesses” (p.45). Hospitals in the United States are financially penalized for having a higher than 30-day readmission rate predetermined by the government. Those “patients who are hospitalized for heart failure, acute myocardial infarction (AMI), pneumonia, chronic obstructive pulmonary disease (COPD), coronary artery bypass graft (CABG) surgery, or hip and knee replacement” are paid at a lower rate from the Centers for Medicare Services (CMS) when readmitted within 30 days from discharge (Benjenk & Chen, 2018, p.45). These medical diagnoses require frequent outpatient follow-ups for management. This is an added challenge for those with behavioral health diagnoses because this patient population often struggles with consistency and follow-up due to limited access.

Behavioral health disorders significantly impact individual and community health, utilization of services, and overall costs. Chu et al. (2019) have found that “costs are 75% higher for people diagnosed with both behavioral health and other common chronic medical conditions than for those without a co-occurring behavioral health diagnosis” (p.5). To manage those costs, hospitals are challenged to find new care models to integrate all services needed for the overall improvement of patients' health. In this project, one hospital department piloted an Integrated Medical Care Model to meet the needs of this patient population.

The Integrated Medical Care Model provides patients with access to community mental health resources prior to discharge, collaborates with patients to understand their individual challenges, and improves adherence to their treatment plans through participation with specially trained nurses, physicians, and social workers on the multidisciplinary team.
Literature Review

The search strategy followed the framework of the Johns Hopkins Evidenced-Based Practice Model (EBP). This model is a powerful problem-solving approach to clinical decision-making through the EBP process (Vera, n.d.). Through the Johns Hopkins Model, primary sources of data collection were obtained from the hospital's electronic health records, peer-reviewed research journals, abstracts, and information from the Centers for Medicare & Medicaid Services (CMS). Databases where this information can be found included PubMed, CINHAHL, Exerta Medica Database (EMBASE), ELSEVIER, library catalogs, and Duquesne University repositories (Dang & Dearholt, 2018).

In this project, the search terms included integrated care, collaborated care, behavior health care in non-behavioral health settings, Allegheny County behavioral health resources, hospital readmission, nursing turnover, falls with injury, and nursing bias. Inclusion criteria consisted of adults, medical, and behavioral health. Exclusion criteria included adolescents, surgical procedures, psychiatric hospitals, and research articles dated before 2015.

Using the inclusion and exclusion criteria, 10 articles were appraised. The average quality was good, and the level of evidence ranged from one to five and included randomized control trials, systemic review, qualitative, quantitative, cohort, and non-research.

Literature Synthesis

After critical appraisals of several articles, six represent the information needed and identified the three main themes of technology with internet usage, collaboration among several disciplines, and outpatient services.

In the articles, The effectiveness of collaborative care on depression outcomes for racial/ethnic minority population in primary care (Hu et al., 2020), Media use and internet addiction in
adult depression (Dieris-Hirche et al., 2017), and a randomized controlled trial of internet delivered dialectal behavior therapy skill training for suicidal and heavy episodic drinkers (Wilks et al., 2018). The common themes were the use of technology for self and group-guided activities involving videos, reading, and talk therapy. The socioeconomic challenges affecting technology usage were similar among the participants despite the diverse sample demographics and included access and literacy, consistency with follow-up appointments, and following through to the end of the study.

The articles, Understanding integrated care at the frontline using organization learning theory (Lalani et al., 2020), Stakeholder impact on the implementation of integrated care (Kearney et al., 2021), and Experiences of nursing student during clinical education in mental health clinics (Günaydin & Arguvanli Çoban, 2021), the common themes included understanding the complex needs of the people with behavioral health diagnoses such as misaligned priorities, insurance coverage, access to primary care providers, stigma and bias.

In the article, Implementing Collaborative Care Management of Behavioral Health patients with Inflammatory Bowel Disease (Flicek et al., 2021), medical specialists collaborate with psychiatry and case management to implement measures to reduce anxiety and depression in patients with a chronic medical diagnosis.

In the article, Behavioral Health Integration, Treating the whole person (Chu et al., 2019), three main topics are explored in the setting of integrating multiple health services as a patient-centered approach. The topics include the emergency department and inpatient care, the outpatient care offered, and the community behavioral health access. This article most closely aligns with this program evaluation as it discusses the benefit of a coordinated approach to
admission, addressing all healthcare needs during an inpatient stay, and setting up outpatient services to reduce the use of the acute care setting for routine health management.

Despite the wide range in the research sample, size, setting, and evidence type, the common barriers among all the articles are the competing priorities between care providers, the physical and financial challenges to reaching and sustaining engagement, and the need for more research to determine the best way to establish and utilize integrated care. Interestingly, only one article included acute hospital admissions and coordinating care for both chronic and acute medical conditions with underlying behavioral health diagnoses. Other articles that involved hospital admissions were focused on surgical outcomes, not co-occurring medical and behavioral health diagnoses.

This search highlights minimal literature focused on integrated care management within an acute care hospital setting for persons with co-occurring medical and behavioral health diagnoses. Evaluating the outcomes of this Integrated Medical Care Model is important in understanding the unique needs of providing care for this complex, often underrepresented, patient population.

**Theorists and Model**

Two theorists that align with the Integrated Medical Care program evaluation are Peplau’s Interpersonal Model and Neuman’s System Model. Peplau’s Theory of Interpersonal Relations explains the importance of the patient and nurse working together towards mutually agreed-upon goals using Peplau’s four-step approach. These steps start with defining the patient problem, clarification of expectations for all those involved in care, the patient using the services that are agreed upon, and achievement of the patient’s goals with the support of the care team.
Peplau’s theory (Parker, 2005) ensures the patient should be active in achieving the agreed-upon goals prior to discharge from the acute care setting to reduce the need for readmission.

Behavioral health is a chronic condition, and the patient should be active and participatory in their psychological and medical treatment plan. If the plan is not clear, obtainable, or agreed upon, there is a low likelihood of achieving the desired goals. However, the patient who is in the center of care, with specially trained nursing support, can develop obtainable goals which will lead to success in managing concurrent disease processes.

In Neuman’s Systems Model, (Parker, 2005) the goal of nursing is to promote wellness through the identification of prevention strategies. Developing three types of prevention: primary, secondary, and tertiary, the nurse assists the patient in identifying and assessing the impact of stressors and develops tools for the patient to successfully navigate each stage. Through understanding their own actions, triggers, and feelings, individuals can seek treatment sooner and ideally with less costly services such as the Emergency Department.

Both theorists focus on patient involvement in creating an individualized, specific, and unique treatment plan for wellness to be achieved. Treatment plans using collaborative and integrative care among healthcare team members and patients help identify some of the internal and external factors which may affect their stability and wellness.

**Methodology**

Several methods were considered for this program evaluation; however, the W.K. Kellogg Foundation (WKKF) model adequately organizes the steps necessary for achieving short-term, intermediate, and long-term sustainable outcomes. In this system-oriented evaluation of a new model of care, the Integrated Medical Care Model will use the visual format of the WKKF logic model (Figure 1). The logic model is defined as a picture of how an organization
does its work, who is needed, and the mutually agreed upon goals. A program logic model links outcomes (both short- and long-term) with program activities/processes and the theoretical assumptions and principles of the program (Logic Model Development Guide, n.d.). The WKKF model considers the investments needed, how they will be used, and how to measure the outcomes within a defined period.

The components within the Logic Model for the Integrated Medical Care Model are education, full-time employees, training, finance, and community support. The success of the Integrated Medical Care Model requires the achievement of the outcomes and sustainability of long-term goals. As part of the education components, care providers will be experts and train inexperienced staff in managing complex behavioral health situations. Full-time employees will champion the model and drive the ethical utilization of resources through reduced turnover and increased collaboration within the multidisciplinary team. In addition, standards of care will be established to include a patient pathway from admission to discharge. The finance component will include an increase in CMS reimbursement through decreased hospital readmission rates and costs associated with nursing turnover rate and decreased patient injuries with falls. Finally, the community component will benefit through overall improved community health.
Description of Project

Persons with co-occurring medical and behavioral health diagnoses face additional challenges in navigating health systems. These challenges include accessing available resources, unstable housing, unreliable access to phones and transportation as well as limited health knowledge. Once admitted to an acute care setting, many patients are treated for their medical condition without consideration of the behavioral diagnoses which underlie their medical care.

Often, this patient population encounters care providers with limited education or training to identify patient-specific needs. Care providers lack de-escalation techniques which can lead to frequent use of psychiatric medications, restraints, and less compassionate care. Comprehensive
training of staff that includes empathy, patience, understanding, and connecting with the patient is crucial to improve the patient experience and overall health.

This system-oriented program evaluation will determine if a new model of care, the Integrated Medical Care Model (IMCM), will improve outcomes for patients and the hospital through decreased hospital readmission rate, decrease nursing turnover rate, and decreased patient falls with injury. Each of these aims and their objectives will be reviewed in the calendar year 2022.

**Readmission Rate**

Patients with co-occurring medical and behavioral health diagnoses are at a greater risk than patients without behavioral health diagnoses for readmission which negatively impacts both the patient and the hospital. The Hospital Readmissions Reduction Program (HRRP) is a Medicare value-based purchasing program that encourages hospitals to improve communication and care coordination to better engage patients and caregivers in discharge plans to reduce avoidable hospital readmission (Hospital Readmissions Reduction Program (HRRP), 2022). In this project, the hospital, department within the Integrated Medical Care Model, and four comparable departments' readmission rates, as well as the Registered Nurse (RN) turnover rates, and the fall rates with injury will be reviewed.

**Nursing Turnover**

Nursing turnover has always been an additional cost and factor in hospital management. However, with the COVID-19 pandemic disrupting healthcare norms, hospitals are in a race to reduce nursing turnover, reduce costs associated with onboarding, and increase care providers to keep beds open and increase patient revenue. According to a Colosi (2023) survey, “the average cost of turnover for a bedside RN is $52,350, a 13.5% increase over the past two years, resulting
in the average hospital losing between $6.6m – $10.5m. Each percent change in RN turnover will cost/save the average hospital an additional $380,600/yr. Registered Nurses working in telemetry, step down and medical/surgical services experienced the highest turnover rate” (p.1). Because of these identified at-risk departments experiencing high rates of turnover, hospitals are exploring new care models to not only improve patient care but also retain the Registered Nurses within these departments.

In this program evaluation, the department with the Integrated Medical Care Model and the comparison departments are the highest risk turnover group since they are telemetry, step down, and medical/surgical departments. The Integrated Medical Care Model is different from the standard nursing and physician care, providing an inclusive and collaborative framework for equal partnership, autotomy, increased training and support, and advanced nursing practice. Education and training within this model empower the nurse to be more confident in practice with complex situations and improve engagement and commitment to the department. By improving education for all staff in medication, physical restraints and providing alternative methods, more ethical decisions with positive outcomes can be implemented. This leads to reduced RN turnover (Gunawardena, 2019).

**Falls With Injury**

More than one-third of hospital falls result in injury. Death or serious injury resulting from a fall while being cared for in a healthcare facility is considered a never event, and the Centers for Medicare and Medicaid Services (CMS) do not reimburse hospitals for additional costs associated with patient falls. Falls that do not result in injury can be serious as well. As noted in a Patient Safety Network (PSNet) (2019) perspective, "even supposedly 'no harm' falls can cause distress and anxiety to patients, their family members, and health care staff, and may
mark the beginning of a negative cycle where fear of falling" (para. 2). Falls are often associated with nursing care and many hospitals take measures to reduce a patient’s risk for fall. However, falls with injury often result in increased care costs and reduced reimbursement from CMS creating a financial ‘double whammy.’

Fear is often behind the choice of whether nurses may over-medicate or use restraints. Nurses may increase restraints when dealing with complex patients at risk of falling from delirium or medication management. Both scenarios are prevalent in the behavioral health patient (Benjenk, 2018). The use of restraints and medication can increase the risk of falls with injuries which lead to increased length of stay and increased costs associated with patient care. Patients with behavioral health diagnoses are already a marginalized and vulnerable population within healthcare settings. Staff who have inadequate training are at a greater risk of using restraints or medication or becoming fearful of the patients. This creates an environment where these patients are at a greater risk for injury while hospitalized (Benjenk, 2018). Additional training offered in the Integrated Medical Care Model gives nurses tools to reduce restraint usage, administer appropriate medication management, and implement alternative fall reduction measures.

Despite financial incentives to reduce readmission, reduce turnover and reduce falls with injury, there is limited literature related to successful models of care to meet those goals. In this project, one hospital department is exploring the use of a collaborative and integrative approach in caring for complex patients with co-occurring medical and behavioral health diagnoses. This new model of care was implemented in 2019 in a medical nursing department within an urban hospital. Initially, within the model, eight beds were dedicated to the department. The model combines a medical teaching service, psychiatry, toxicology, nursing, social work, pharmacy,
and a senior administrator to collaborate and provide comprehensive care from admission to discharge. In this care model, increased education and training are provided to the staff caring for this population of patients with weekly ongoing support to improve the confidence and skills of the nursing staff. Through comprehensive discharge planning led by an Evaluator Clinician, who is a specialized social worker, the team will address care needs prior to discharge and outpatient services would be utilized.

When a patient presents to the hospital with a medical condition meeting the criteria for inpatient hospital admission, a review of current and past medical conditions is completed by both nurses and physicians during the admission assessment and the history and physical (H&P). When a behavioral health diagnosis is identified, the admitting medical team discusses if the patient would benefit from enhanced services provided through the Integrated Medical Care Model. If the patient would benefit, they are transferred to the dedicated medical team coordinating the Integrated Medical Care Model. The transfer is arranged with the Administrator on Duty (AOD) who facilitates bed placement.

On admission to the department, the specially trained nurses begin assessment while connecting to the patient’s needs. Consulting services of psychiatry, toxicology, and social work are engaged as soon as the patient arrives at the dedicated medical department. Once the team agrees on a medical and behavioral health plan, they meet with the patient to include their input in formulating a complete care plan. Each day, the integrated team collaborates with each other and the patient to adapt the plan based on the medical and behavioral needs of the patient at that time. Through this constant integration of services, the patient receives medical and behavioral health care while in the hospital. The Evaluation Clinician and Case Manager collaborate on resources for continued health improvement after discharge. Prior to the Integrated Medical Care
Model, patients with co-occurring medical and behavioral health diagnoses were placed from the Emergency Department to any inpatient nursing department and assigned to general physicians.

To evaluate this new model of care through a systems-oriented program evaluation, comparison data will be used from overall hospital data as well as four other medical departments within the hospital that receive patients who meet the criteria but are not involved in the Integrated Medical Care Model (Non-IMCM). Comparing, evaluating, and interpreting the data will determine if there are improved outcomes for patients and the hospital through decreased hospital readmission rates, decreased nursing turnover rate and decreased patient injuries with falls.

Aims and Objectives

**Aim #1: Evaluate and compare Integrated Medical Care establishment costs for patients with both medical and behavioral health diagnoses to hospital costs and non-Integrated Medical Care nursing department costs.**

Objective 1: Obtain readmission rate and cost (data) for identified patients meeting criteria for Integrated Medical Care

- Review hospital readmission data for identified patients in CY22
- Review department readmission data for non-Integrated Medical Care Model nursing departments in CY22

Objective 2: Identify cost of staff education for the Integrated Medical Care Model for CY22

- Cost of annual specialized training for registered nurses

Objective 3: Evaluate nursing staff turnover metrics

- Obtain and review CY22 rate of nursing staff turnover within hospital
• Obtain and review CY22 rate of nursing staff turnover for department utilizing the Integrated Medical Care Model

• Obtain and review CY22 rate of nursing staff turnover for comparable departments not utilizing the Integrated Medical Care Model

**Aim #2: Evaluate the patient care provided within the Integrated Medical Care Model**

**Objective 1: Identify patient criteria inclusion for the Integrated Medical Care Model**

• Define inpatient medical diagnoses admission criteria for Integrated Medical Care Model

• Define behavioral health diagnoses admission criteria for Integrated Medical Care Model

**Objective 2: Review patient care outcomes of Integrated Medical Care Model**

• Obtain CY22 injury with fall rates for hospital patients not within the Integrated Medical Care Model

• Obtain CY22 injury with fall rates for hospital patients within the Integrated Medical Care Model

**Objective 3: Identify opportunities for improved flow process from Emergency Department to Integrated Medical Care department**

• Review current bed placement process for patient transfer from Emergency Department to department utilizing Integrated Medical Care Model

**Aim #3: Complete a summative program evaluation of the Integrated Medical Care Model**

**Objective 1: Identify strengths, weaknesses, opportunities, and recommendations for improvement of the Integrated Medical Care Model**

• Communicate reports on key metrics (readmission rate, nursing turnover rate, injury with fall rates) to stakeholders to support their continued engagement.
Objective 2: Interview team members regarding their experiences working within the Integrated Medical Care Model

- Obtain CY22 professional statements from team members of experience working within Integrated Medical Care Model

Objective 3: Present the summative report to stakeholders to determine continuation of the Integrated Medical Care model and implementation of recommendations.

- Attend meeting to present summative report

Setting and Population

- 430-bed acute care teaching hospital in an urban setting
- Patients admitted with a medical diagnosis who also have co-occurring behavioral health diagnoses.
- Stakeholders include members from the executive leadership, finance, psychiatry, medicine, pharmacy, social work, and nursing.

Methodology: Program Evaluation

The population of the Integrated Medical Care Model patients includes adults in an urban hospital, a primary medical diagnosis, and a past or present behavioral health diagnosis. The intervention integrates a medical service, psychiatry, toxicology, nursing, social work, care manager, and pharmacy to address individual needs. The multidisciplinary team meets daily to formulate short- and long-term plans prior to discharge. Comparing data markers such as readmission rates, nursing turnover, and falls with injury will indicate the cost-effectiveness and benefits of the model.

In 2019, one specific inpatient medical nursing department was chosen as the pilot for this new care model. Once the patient is assigned to the Integrated Medical Care department, the
specially trained nurses will assess the patient to identify their unique needs and begin to create an individualized nursing care plan. The nurses collaborate with the medical service, psychiatry, toxicology, social work, care manager, and pharmacy to partner with the patient to achieve healthcare goals. The patient care plan extends beyond the hospital admission; a comprehensive discharge plan ensures the patient will receive appropriate outpatient care to reduce the need for acute care hospital readmission.

Using the logic model (Figure 1), the timeline, tools, and goals were established and presented. Specialized training for registered nurses included crisis management classes, de-escalation skills, medication management education, personal safety education, and behavioral health disease management. Creating a safe environment for the nursing staff was integral to the buy-in and support of this model. Relationship building between the multidisciplinary teams was encouraged and trust and support was created between all parties. To further support the registered nurses, continuing weekly education was provided on topics chosen by the nursing staff.

Physicians were supportive of the new care model and role definition was established. Weekly small groups and monthly larger group meetings were conducted to ensure the process was meeting the timeline of the short-term, intermediate, and long-term goals and that all the key stakeholders were informed.

For the Integrated Medical Care Model, stakeholders included hospital administrators, physicians, nurses, pharmacists, social workers, community support contacts, families, and patients. Stakeholders for any project include a variety of clinical and non-clinical staff, departmental and organizational leaders, patients and families, and regulators (Dang & Dearhold, 2018). There is little agreement among stakeholders in the mental healthcare system causing
collaboration to be challenging even outside a behavioral health setting (Hermann, 2004). To improve collaboration for this model, there is engagement of physician champions to rally support from senior administrators which is crucial for buy-in, implementation, and sustainability. For the success of this model, support from the medical team, administration, and nursing is needed to overcome the barriers of changing leadership, hospital bed capacity, and competing priorities within executive leadership.

**Implementation**

After over a year of planning, program development, stakeholder support, role assignment, and staff education, the Integrated Medical Care Model launched 8 dedicated beds on the designated nursing department in 2019.

On admission to the dedicated department, patients are evaluated by a specially trained nurse, medical residents, and psychiatry. Each nurse in the department has extra hours annually on de-escalation, crisis management, navigating complex conversations, suicide assessment, use of restraints, pharmacological management, and appropriate clinical care. There is weekly continuing education from content experts on topics such as navigating complex patient care through verbal de-escalation, personal bias awareness, therapeutic communication, preferred medication decisions, and navigating substance and alcohol withdrawal symptoms. At-the-elbow coaching is provided by the psychiatry department during daily rounds and in acute escalated patient events.

The integrated team rounds daily with the patient to discuss the individualized medical and behavioral health care plan. Social work, through an Evaluator Clinician, provides council services and discharge planning to ensure the patient can continue their health and wellness beyond the hospital's walls. Community resources are provided and set up with the patient and
family prior to discharge. The patient’s input and collaboration are integral to the overall success of the model. When the patient is an active partner in their own care, improved health outcomes and increased staff engagement occur.

In 2020, COVID-19 re-prioritized resources, and staff allocation, and disrupted many hospital programs, including the Integrated Medical Care Model. Bed availability became a priority as the Emergency Room experienced overcrowding and increased capacity. This caused the dedicated 8 beds for the model to become unavailable. Data was difficult to collect as patients were scattered, and the model was incomplete. However, stakeholder support was strong and staff in the dedicated department championed for the model to return. With an adaptation to any 8 beds within the department, not just specific beds, the Integrated Medical Care Model was reorganized, education resumed and patients meeting criteria were identified. For the calendar year 2022, 12 months of data related to the patients within the department, comparison departments, and the hospital was collected and evaluated.

The timeline (Figure 2) indicated the implementation of the IMCM to program evaluation.

Figure 2

Timeline
Data Management Plan

Tools that can support the doctoral APN's practice and that will be utilized in this program evaluation are organized into four categories: reference management, data collection, data analysis, and report generation (Dreher, 2017). This project relies on the hospital’s electronic health record (EHR) data that will be extrapolated to review the readmission rate for patients admitted to medical departments with a behavioral health diagnosis. The electronic health record and other data analytic programs provide information such as admitting medical diagnoses, behavioral health consult notes, readmission rates, and injury with falls.

Data collection from the Human Resources department and Data Analytics were used to compare RN turnover rates from the dedicated department utilizing Integrated Medical Care Model (IMCM) to four other medicine nursing departments not utilizing the Integrated Medical Care Model (non-IMCM). In addition, data were compared to the overall hospital RN turnover rate. Data retrieved from Data Analytics, Risk Master, and the Quality and Safety department provided information on the Fall rate with injury. The timeline includes data from the calendar year 2022 (CY22).

Project Results

Aim 1

Aim 1 of this program evaluation is to evaluate and compare Integrated Medical Care establishment costs for patients with both medical and behavioral health diagnoses to hospital costs and to non-Integrated Medical Care nursing department costs. The costs evaluated are those associated with readmission rates, continued education, and RN turnover.
**Aim 1 Readmission Rates**

As previously mentioned, the average cost of a hospital readmission in the U.S. is approximately $7,200 (Health Catalyst, 2017), multiplied by thousands of patients it becomes a financial burden for organizations of any size to have a high readmission rate. In this hospital, readmission rates are discussed by percentage and evaluated with goals to reduce. For this program evaluation, comparing the readmission rate for the hospital, the department with the Integrated Medical Care Model, the specific patients within the model, and the average of the four comparable departments who care for patients with both medical and behavioral health diagnosis, but not utilizing the integrated model of care were explored. Although the overall 30-day hospital readmission rate was the lowest (15.1%), most impactful is the significantly lower percentages for patients receiving care in the Integrated Medical Model (18.1%) than those without (19.5%), especially when compared to the other similar nursing departments not utilizing the model of care (figures 3, 4).

**Figure 3**

*Readmission Rates*
Aim 1 Staff Education

For the nurses working within the model, there is annual continuing education to enhance their skill set. There are 12 additional continuing education hours not offered to nurses in other medical departments. In addition, embedded in new hire orientation, is a crisis management and personal safety class. Each week, there are continuing education topics chosen by the nursing staff and presented by content experts not requiring additional paid time or an increase in the department budget. These additional 12 hours of education cost approximately $19,000 per year over the other departments (Figure 5).
Over the past five years Registered Nurses in step-down, emergency services, behavioral health, and telemetry were most mobile with a cumulative turnover rate between 108.7 percent and 115.2 percent. "Essentially, these departments will turn over their entire RN staff in less than five years" (Gamble, 2023, section 8). However, reviewing CY22, the opposite trend emerged and there was a significantly lower rate of turnover in the department utilizing the Integrated Medical Care Model than the other medical departments who cared for patients with both medical and behavioral health diagnoses but did not utilize the model (Figure 5). For the calendar year 2022, the hospital turnover rate was 22.11%, the comparable medical departments had a 38.74% turnover rate while the department utilizing the Integrated Medical Care Model had an 11% turnover rate. This indicates that the nurses working within this model were more engaged, committed, and less likely to leave the hospital; therefore, saving the hospital significant money.
Using the national average cost of 1% = $380,600, in CY22, the hospital lost revenue of approximately $8.4M in RN turnover. The departments that cared for patients with both medical and behavioral health patients without the additional annual and weekly continuing education or the additional skills of crisis management in new hire onboarding had over triple the rate of RN turnover. Using the same average cost of 1% = $380,600, the hospital cost of RN turnover in those departments was $14.7M versus the $4.2M of the Integrated Medical Care Model department (Figures 6,7,8).

**Figure 6**

*RN Turnover*
Figure 7

*RN Turnover Percentage and Cost in Millions*

![RN Turnover Cost Savings](image)

Figure 8

*CY22*

<table>
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<td>Department non-IMCM</td>
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Aim 2

Aim 2 is to evaluate the patient care provided within the Integrated Medical Care Model by identifying the criteria for the model in a measurable outcome of reduced falls with injury and in evaluating the flow process from the Emergency Department.

Aim 2 Inclusion Criteria

The inclusion criteria state a patient must meet the following: 1) admission to inpatient care with a primary medical diagnosis; 2) have a co-occurring behavioral health diagnosis; 3) be an adult and; 4) have a psychiatric consult during admission. The exclusion criteria are 1) substance use disorder without acute psychiatric condition; 2) delirium unrelated to psychiatric condition; 3) major neurocognitive disorder without psychiatric condition. Ideally, patients are screened for those meeting criteria in the emergency room to properly bed them in the department utilizing the model (figure 9).

Figure 9

IMCM Criteria

Aim #2: Evaluate the patient care provided within the Integrated Medical Care Model

PATIENT CRITERIA FOR INTEGRATED MEDICAL CARE MODEL

Inclusion Criteria:
- Admission to inpatient care with a primary medical diagnosis
- Co-occurring behavioral health diagnosis
- Adult patients
- Psychiatric Consult during admission

Exclusion Criteria:
- Substance use disorder without acute psychiatric condition
- Delirium unrelated to psychiatric condition
- Major neurocognitive disorders without psychiatric condition
Aim 2 Reducing Falls with Injury

According to the National Quality Forum (2023) inpatient falls are among the most common incidents reported in hospitals and can increase length of stay and patient costs. Due to the potential for serious harm associated with patient falls, “patient death or serious injury associated with a fall while being cared for in a health care setting” is considered a Serious Reportable Event by the NQF (National Quality Forum). Falls are often considered preventable, a nursing measure, and can lead to acute or chronic medical issues that can lead to increased inpatient costs and increased risk for hospital readmission.

As of 2008, CMS does not reimburse hospitals for certain types of traumatic injuries that occur while a patient is in the hospital; many of these injuries could occur after a fall. Patients who receive psychiatric medications, exhibit withdrawal symptoms, or have acute delirium are at a higher risk for an unplanned fall. Patients within the Integrated Medical Care Model often receive these medications and the nursing staff must be on high alert for a potential fall. Fall prevention requires the active engagement of many individuals, including the multiple disciplines and teams involved in caring for the patient. The model provides daily discussion, especially with the pharmacist, to decrease any adverse effects to the medication treatment prescribed. Using the multidisciplinary approach, a culture of accountability, teamwork and communication, and individual expertise creates a safer patient and staff experience (AHRQ, 2013).

CMS pays acute care hospitals a base payment for inpatient stays determined by the patient’s diagnosis and severity of illness. Subject to certain adjustments, a hospital receives a single payment for the case based on the payment classification assigned at discharge. In CMS FY22 hospitals that did not submit quality data (i.e., fall with injury and readmission data) or fail
to meet all Hospital Inpatient Quality Reporting (IQR) Program requirements are subject to a one-fourth reduction in their annual payment (Hospital Inpatient Quality Reporting Program, 2021). This reduction in pay and risk for patient injury places increased emphasis on fall reduction.

Determining the cost of a fall with injury was difficult as there is minimal literature on the specific and actual cost to an organization. This is because the severity of the injury determines the out-of-pocket cost for the hospital. One study by Dykes et al. (2023), reviewed seven hospitals in two cities to determine the average cost of a fall with injury at $64,526.

Data obtained for the CY22 fall rate for the department utilizing the Integrated Medical Care Model and the four comparable departments (Figure 10) shows the Integrated Medical Care Model had a 12-monthly average of 3.71 falls versus a monthly fall average of 3.99 for the department without IMCM. Specifically reviewing falls with injury, the IMCM department had 50% less falls with injury. Note the low number of falls with injury over the calendar year for all departments. This was not a significant cost savings from the Integrated Medical Care Model.
Aim 2 Improved Flow

The flow process (Figure 11) begins with identification in the Emergency Department where care providers consisting of nurses and physician share information regarding patient needs, specifically those who have a history of behavioral health diagnoses which may impact their medical care. Once a patient has been identified, this information is communicated to the Administrator on Duty who does the bed placement at this hospital. Early and appropriate bed placement in the department with the Integrated Medical Care Model is crucial to meeting the needs of the patient in a timely manner. Once that patient is admitted, the specialized Registered Nurses will assess the patient and form a therapeutic relationship.
Aim 3

Aim 3 is to complete a summative program evaluation of the Integrated Medical Care Model through examining the strengths, weaknesses, opportunities, and threats (SWOT analysis Figure 12), obtaining professional statements on impact of IMCM, and present results to stakeholders.

_Aim 3 SWOT Analysis_

As noted in the logic model (Figure 1) there are many moving parts from inception to sustainability for the Integrated Medical Care Model. One of the strengths of this care model is stakeholder support. Even through COVID-19, there was support for the model to care for this vulnerable and growing patient population. Senior executive leadership identified the need for the model of care and alongside the finance department allocated resources for a full-time Evaluator Clinician and dedicated Pharmacist. Since its inception in 2019, there has been a reduced readmission rate for this patient population through a strong discharge plan and follow-
up care within the community, thus reducing the usage of more expensive acute hospital services. Another strength is the Registered Nurses working within this model of care. A partnership within the multidisciplinary team and a commitment to this patient population can be attributed to the lower turnover rate.

One weakness of the IMCM is the data collection process. The comparison of the model of care department to similar nursing departments was challenging due to the patients who met the criteria for the model but were placed on the other nursing departments were not identified for readmission. Therefore, patients' information was collected, but follow-up on discharge plans and readmission was missed. Another weakness is the competing priorities within the hospital administration. Changes in leadership, changes in finances, and any immediate crisis can cause a shift in focus, especially since the model of care is currently in one department. Perhaps if the IMCM was a service line along all nursing departments, shifting priorities would be less of a threat.

Opportunities for improvement include earlier identification in the Emergency Department and improved communication for appropriate bed placement. Opportunities to spread the model to all nursing departments, provide continuing education for all nurses, provide an Evaluator Clinician and Pharmacist would improve the strength of this model of care.

Threats to sustainability include limited bed availability. Hospitals across the country, including this hospital, struggle with overcrowding within emergency rooms and limited inpatient bed availability. When there is overcrowding or the closing of beds related to staffing ratios, the patients are less likely to be identified and placed within the model. In addition, nursing ratios may be increased, leaving less time for specially trained nurses to provide therapeutic communication and the relationship building needed for this patient population.
Aim 3 Professional Statements

Professional statements were obtained from the dedicated pharmacist, the psychiatrist, and several nurses working within the department. The statements below demonstrate the opinions and impact of those directly involved in the Integrated Medical Care Model.

Pharmacist:

“The pharmacist conducts an admission medication history and reconciliation. Because these patients tend to have numerous social issues in addition to their medical and psychiatric maladies, they are at high risk of readmission.” Joe, Pharmacist

“The second role of the pharmacist is to manage and coordinate access to medications at the transition point from inpatient stay to post-hospital environment. This includes discharge medication reconciliation and patient counseling, if applicable.” Joe, Pharmacist
Integrated Medical Care Model:

“The involvement of psychiatrists, medicine attendings, internal medicine residents, pharmacists, bedside nurses, discharge plan managers, and social workers creates an environment in which all aspects of patient care are discussed.” Joe, Pharmacist

“The nurse would be able to see the routine of these patients and let the physicians know the behaviors of the patients and therefore be able to figure out what times medications needed to be scheduled.” Krista, RN

“The integration of these different medical personnel improves communication throughout the patient's hospital stay and as they transition to post-hospital care. The forward-thinking approaches of the entire team lead to less unexpected barriers to a successful discharge.” Joe, Pharmacist

“I believe both patients and staff benefited from the IMCU. The collaborative care between medicine, nursing, psychiatry, addiction medicine, peer navigators, toxicology and evaluated clinician provided the opportunity for comprehensive care of the patient, identifying barriers to patient's compliance and success in the treatment of their acute and chronic illness. I believe it also increased the warm handoff to the community. Coordination of this level of care demonstrated a decrease in recidivism and length of stay.” Kris, Psychiatrist

Registered Nurses:

“The unit benefited so many patients; I saw how we helped patients and how these patients started to trust the staff when they never had before. These patients began to talk openly, knowing we had no judgment on them.” Krista, RN

“As nurses, we made a difference in these patients' lives, and we were a small step for them to the next level of care, whatever that may have been.” Krista, RN
“The Integrated Medical Care Model gives opportunity for staff to enhance their skills in managing difficult psychosocial issues, personality, and characterological make-up of the psychiatrically ill patient. They are more comfortable when discussing psychiatric symptoms and suicidality.” Kris, Psychiatrist

“I feel like the IMCU taught everyone about the importance of specialized approach to some people. We have learned to see people beyond the diagnosis and how to treat people as people. We all have learned a lot and I feel this approach of caring and compassion fills the cup as nurses. We want to care for people, and we appreciate the ability to help others and so the environment on the floor was one of a caring place to work, and we saw better staff retention. We also saw this as a drawing point for new hires and this is a good place to start their career.” Kate, RN

**Cost Benefit Analysis**

**Cost of Implementation**

Many of the costs associated with the Integrated Medical Care Model are already embedded in the annual department budget. Costs such as the Registered Nurses, support staff, onboarding and new hire orientation, weekly education, and case management are net neutral to the model. The physician (Medical and Psychiatric) costs are also embedded into hospital contract salaries and medical residency teaching hours. Therefore, the only additional costs to the model are the dedicated social worker working as an Evaluator Clinician, additional annual continuing education, and a dedicated pharmacist. As in Figure 5, the total additional cost for the model is approximately $190,000 per year.
Benefits of Implementation

The financial benefit for the hospital is seen in the reduction of readmission rate, reduced RN turnover, and reduced falls with injury, therefore, creating hospital savings (Figures 6, 7, 8). Intangible results are seen with staff engagement, improved job satisfaction, improved patient compliance, and holistically caring for a complex person with dignity. The benefits outweigh the cost in providing quality care to a vulnerable population while reducing overall hospital costs associated with their care.

Conclusion:

This program evaluation concludes the Integrated Medical Care Model is a value-added model of care for patients seeking acute care who have both medical and co-occurring behavioral health diagnoses. As identified in the literature search, there is minimal evidenced based literature to support one model of care for this vulnerable patient population. The Integrated Medical Care Model created a defined hospital pathway for patients who meet the criteria to receive the specific and targeted care needed to improve both health and hospital financial outcomes.

In the IMCM, the inclusion of the bedside nurse in all decision-making was crucial to the success of meeting the aims and objectives. Nurses working within this model had leadership opportunities and were equal partners with all team members. This created an environment in which the nurse thrived. In comparing the data from the departments not utilizing the Integrated Medical Care Model, it highlighted the difference in care of the nurses with additional specialized training versus the traditional training. Improving engagement and partnership led to reduced RN turnover which resulted in significant hospital cost savings. More important than the
positive financial impacts of retaining nursing staff and reducing readmission rates, are the
comments connecting the purpose of the nursing profession.

Highlighted in the professional statements, the nurses felt valued, included, and made a
personal difference in each of the patients they cared for within the model. Retention of
Registered Nurses improves the department culture, improves patient care, and advances the
profession into leadership roles. In a climate of nursing shortages, lucrative travel nursing
contracts, and less-than-ideal work environments the Registered Nurses working with this model
of care remained at the bedside.
References


*Hospital readmissions reduction program (hrrp)*. (2022, August 5). https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program


