

Virtual Nursing: Inpatient Outcomes (Virtual Nursing x.0 z)



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Virtual Nursing is gaining traction. This article identifies the outcomes identified by Virtual Nursing programs applied to the inpatient setting – or using the **Virtual Nursing Maturity Framework** – Virtual Nursing x.0. z.

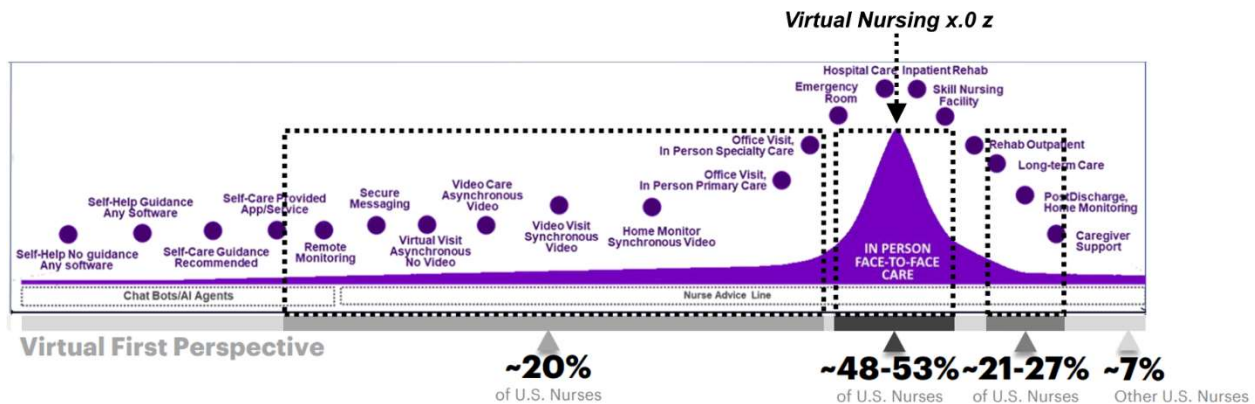


Figure 1: Virtual Nursing x.0 z tracks the progress in inpatient care settings

Virtual Nursing is a solution gaining rapid momentum in healthcare, which Accenture defines as the collaboration between Humans + Automation to achieve Care Reinvention. Three common themes drive virtual nursing:

1. Redefining the nursing care delivery model through co-creation with nurses, creating diverse opportunities for experienced nurses and those interested in nursing, prioritizing the wellbeing of nurses, and extending the career longevity of seasoned, semi-retired nurses by reducing brain drain.
2. Reducing the cost of labor impacts associated with high nurse turnover rates. The need to do better than “moving the deck chairs on the Titanic” by creating fundamental change in nursing care delivery.
3. Develop scalable solutions that enrich the relationship between nurses and patients and offer career flexibility.

The foundation for understanding the identified outcomes is provided at the end of this article. The foundation is also described in several other articles on Virtual Nursing.

Outcomes of Virtual Nursing x.0 z

Inpatient Virtual Nursing is still in development and adoption. Identifying the outcomes applicable to inpatient Virtual Nursing is essential and is described below.

Nurse Retention and Recruitment

One of the more promising early successes of inpatient Virtual Nursing is the positive change it has made in the interest of nurses and other staff in remaining in their current careers. The following nursing retention and recruitment outcomes are essential to demonstrating the value of Virtual Nursing initiatives.

1. **Retention.** Before and ongoing measurement of nursing and other staff staying with an organization changing to a care model leveraging Virtual Nursing. Since the issues faced by nursing are decades in the making, retention should be an ongoing outcome measure. In early Virtual Nursing programs, nurse and staff retention or intention have shifted positively. A reversal in these positive changes is possible if early task shifting or augmentation stops at Virtual Nursing 1.0
2. **Career Options.** Nurses cite their reason for staying or joining an organization because Virtual Nursing has created diversity in career options, such as becoming a virtual nurse.
3. **Recruitment.** Candidates for nursing positions when using Virtual Nursing. Applicants for Virtual Nursing positions. Experience level of candidates for Virtual Nursing positions.
4. **Mentoring.** Use of Virtual Nurses to mentor newer or inexperienced nurses. It also includes instances when a Virtual Nurse takes over tasks so a floor nurse can mentor another nurse on the floor.

Nurse Staffing

While many use cases of Virtual Nursing have focused on changing the perception and care model to improve retention and recruitment, there are several examples of staffing outcomes.

1. **Full-Time Equivalent and Headcount**
 - a) **Inpatient Medical/Surgical.** Change in the number of nursing staff required to care for patients in a specific unit. Often, the mix of nursing staff along with other unit staff has changed and had an overall positive impact on headcount.
 - b) **Inpatient, Virtual Nursing Delivery Center.** At times, a virtual nurse can support across multiple care units. Staffing across units, hospitals, and geographic locations begins to describe delivery center capabilities. Often, this outcome will occur as Virtual Nursing initiatives expand from a pilot to more of an enterprise use.
2. **Care Model Ratios.** Often, nurse-to-patient ratios are set by regulation or by institutional committees. One of the early impacts of Virtual Nursing has been improvements in the nurse ratios.

- a) **Inpatient Medical/Surgical.** While some organizations have focused on adding a virtual nurse into an existing care team, thus focusing on the improvement of care team dynamics, others have also been able to expand their nurse-to-patient ratio, such as from one nurse to four patients to 1:6 in a medical/surgical unit.
- b) **Patient Observation (Non-Intensive).** Sitting and other non-intensive observational use cases have been common over the last decade. Interestingly, as Virtual Nursing expands into different use cases, tasks, and inpatient care situations, there is greater recognition of the benefits of coordinating these initiatives. For example, ratios in non-intensive Virtual Nursing have increased by recognizing that Virtual Nurses answering the call button resolved many concerns that caused slips, falls, or patient anxiety.
- c) **Patient Monitoring (Intensive).** From the example of Virtual Nursing in the intensive care setting, there are additional use cases where a Virtual Nurse can monitor telemetry from the bedside. These use cases have seen an increased number of patients that a single virtual nurse can monitor.
- d) **Nurse Expert Support.** Mentoring by an experienced nurse or escalation to an experienced nurse continues to be an essential use case for Virtual Nursing. Sometimes, an experienced nurse takes on a role like a traditional nurse advice line, providing advice to other nurses rather than patients. The ratios for this Virtual Nurse advice capability can be substantial.

Satisfaction

So far, Virtual Nursing has contributed to changing satisfaction with the care provided in an inpatient setting. Satisfaction changes, though, have been seen through the various touch points with a Virtual Nurse.

1. **Nurse.** Bedside or floor nurses are to be one of the primary beneficiaries of the changes in the Virtual Nursing care model. Ensuring that initiatives are changing the bedside/floor nurse's ability to operate at the top of their license, with reduced stress and increased patient focus, is typically an anticipated outcome.
2. **Physician, Specialist, Hospitalist, Etc.** Physician satisfaction is a typical outcome measured in many Virtual Nursing initiatives. At times, the goal has been to ensure no adverse physician reactions to Virtual Nursing. Since the pandemic and the pressures on physicians and other clinicians in an inpatient setting, Virtual Nursing has the potential to increase physicians' satisfaction.
3. **Other Unit Staff.** One of the exciting outcomes of some of the beginning Virtual Nursing programs is that satisfaction has extended to other staff besides the bedside/floor nurse. In the Virtual Nursing Approach described in other articles, this staff is of particular interest, and Virtual Nursing should continue to assess the impact on the satisfaction of other staff.
4. **Patient.** Whether through HACHAPS or other patient measures, patient satisfaction should be routine in Virtual Nursing initiatives.
5. **Family.** Several task-shifting and augmentation approaches in Virtual Nursing also target the family. Whether it's family education or communication, Virtual Nursing initiatives measure the impact on the family and the patient.

Well-Being

Before the COVID-19 pandemic, inpatient nurses faced a challenging responsibility. Nurse burnout and stress increased along with the burden on nurses during the pandemic. Any improvement in inpatient nursing would be remiss if outcomes did not track nurse well-being from this point forward. Legislation, such as H.R. 1667 (117th) Dr. Lorna Breen Health Care Provider Protection Act, emphasizes how well-being has reached a level of importance.

1. **Saves.** Nurses who identified or sought support. Recognition of symptoms in nurses that indicate well-being may be of concern.
2. **Stabilize and Improve Well-being.** Task shifting and automation in Virtual Nursing intends to reduce nurse stress and burnout. Interestingly, Virtual Nursing touchpoints and automation create opportunities to assess, identify, and connect nurses to well-being services.

Productivity

At the heart of Virtual Nursing is the intent to shift or augment tasks performed by a bedside or floor nurse. Consequently, productivity outcomes are typically of particular interest in Virtual Nursing.

1. **Intra-Task Efficiency.** In previous articles and at the end of this article, there is a list of the forty (40) most common tasks performed by inpatient nurses. Virtual Nursing aims to shift or augment these tasks so that a bedside/floor nurse is no longer performing the task or increasing the efficiency of the task by using one or more of the Virtual Nursing Approach levers. A standard outcome measure is the before-to-after duration of completing a particular task in Virtual Nursing. As many as forty outcome measures would describe the intra-task outcomes of Virtual Nursing.
2. **Inter-Task Efficiency.** Virtual Nursing also enables faster or better transition from one task to another in an inpatient setting. For instance, the following are examples of inter-task outcomes.
 - a) **Dismissal Times to Discharge.** The patient and family perceive the delay between dismissal time and discharge as significant. Dismissal time corresponds to between placing an order and discharging a patient. Discharge includes several tasks but is a critical event to the patient and family, realizing there are concrete steps to leaving the current care setting.
 - b) **Locate to Deliver.** Virtual Nursing can improve the ability to locate needed supplies, orders, results, documentation, etc., directly resulting from specific tasks performed in an inpatient setting. The same is true for the delivery of the located item. A Virtual Nursing outcome of interest is the benefits of knowing where, when, and the progress of resolving the need for a bedside/floor nurse.
3. **ED Throughput.** Generally, throughput is an outcome of Virtual Nursing. In the instance of Emergency Department throughput, the result reflects increased movement out of an ED into an inpatient bed.
4. **Bed Availability.** Bed availability is also a common Virtual Nursing outcome as discharged patients leave a bed to go home or to another care setting.

Clinical Outcomes

Virtual Nursing intends to impact the care tasks in an inpatient setting. Consequently, a growing list of clinical outcomes has shown benefit from Virtual Nursing.

1. **Length of Stay.** The patient's duration in the inpatient stay has long been an essential clinical performance measurement. When inpatient staff, particularly nurses, are overburdened, often the result is delaying necessary tasks. These delays have a rippling effect and negatively impact a patient's length of stay.
2. **Readmissions.** Penalties are associated with patients discharged from an inpatient stay who are readmitted with a related problem. Discharge, patient education, and family education are particularly interesting in many Virtual Nursing initiatives and impact the potential of a patient readmission. Readmissions also highlight that other care settings are appropriate for Virtual Nursing, especially where Virtual Nursing can connect tasks across care settings.
3. **Patient Safety.** Patient safety is a broad range of concerns that include infections, slips/falls, and other concerns. The Virtual Nursing Approach, with the four levers, supports efforts to enhance patient safety through various nursing, automation, or delegation support.
4. **Slips, Falls, and Mental Health Support.** Sitter programs are standard. The most recent improvements in sitter programs have included insights that patient slips, falls, anxiety, mental health events, etc., are often caused or triggered by other inpatient tasks. Consequently, a Virtual Nursing initiative benefits when it takes a comprehensive view of tasks rather than considering each separately.
5. **Missed Medical Care.** Nurse burden, critical events, and the mix of patients in an inpatient setting can lead to missed nursing care, which is an error of omission or delay of a needed task, either in whole or part. The Missed Nursing Care Survey (MISSCARE Survey) can be helpful when implementing Virtual Nursing.
6. **Good Catches.** A good catch occurs when a near miss, potential error, care plan deficiency, missed task, or patient/family misunderstanding is avoided. Virtual Nursing has proven to be an extra set of ears, eyes, and tracking insights to make it possible to positively catch issues early.
7. **National Database of Nursing Quality Indicators.** A broad array of identified quality metrics highlight the role and activities of the bedside nurse. Virtual Nursing will contribute to many of these indicators by shifting or augmenting other tasks or portions of these tasks away from the bedside so the nurse can focus or be mentored in their performance.

Financial

The return on investment of Virtual Nursing will always be an essential outcome to be analyzed. Many early programs focus on improving the perception of bedside/floor nurses. Virtual Nursing initiatives have also demonstrated positive financial impact. The following are some of the earlier financial outcomes tracked.

1. **Labor Cost per Unit of Service.** The nursing and other staff labor costs by shift on a particular unit.
2. **Clinical and Productivity Outcome Impact.** The financial impact from increased throughput, availability of beds, reduced length of stay, readmissions, and other clinical improvements. The section on Productivity will often identify changes that have a financial impact.

HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems)

Virtual Nursing primarily aims to change how bedside/floor nurses can practice at the top of their license and achieve their desired patient focus. Virtual Nursing achieves that end by involving others, automation, and coordinating among a broader definition of the care team. The patient, family, and bedside/floor

nurses should be the direct beneficiaries of Virtual Nursing. Consequently, Virtual Nursing impacts many of the HCAHPS indicators.

1. Virtual nurses and other nurses interact with

- Enhanced courtesy and respect
- Carefully listening
- Enhancing patient and family education and understanding
- Patients or families who press the call button promptly meet patient expectations.

2. Leveraging virtual nurses, nurses, and automation to improve the hospital environment.

- Ensuring the cleanliness of the room and bathroom
- Ensuring the room and area around the room are quiet at night.

3. Hospital experience

- Help from staff doing basic hygiene on time.
- Understanding of the purpose, uses, and side effects of medications.

4. At the end of an inpatient stay

- Educated and understanding of the help you need after leaving the hospital.
- Education, understanding, and materials (in writing and video) about post-inpatient stay symptoms or health problems to watch for
- Education and understanding of your post-inpatient stay care.
- Patient, family, or caregiver preferences were considered when defining my post-inpatient care needs.
- Education and understanding of what was required to manage the patient's condition.
- Education and understanding of medication compliance.

Inpatient Virtual Nursing Outcome Examples

Below are Virtual Nursing initiatives that demonstrate some of the outcomes listed in this article.

- Virtual Nursing: The New Reality in Quality Care Sue Schuelke, PhD, RN-BC, CNE; Sarah Aurit, MPH; Nancy Connot, BSN; Shannon Denney, MSN, RN, NE-BC, Nurs Admin Q Vol. 43, No. 4, pp. 322–328 Copyright c 2019 Wolters Kluwer Health, Inc.
- The Effect of Virtual Nursing and Missed Nursing Care Sue Schuelke, PhD; Sarah Aurit, MPH; Nancy Connot, BSN; Shannon Denney, MSN, Nurs Admin Q Vol. 44, No. 3, pp. 280–287 Copyright c 2020 Wolters Kluwer Health, Inc.
- Virtually Integrated Care A New Paradigm in Patient Care Delivery Shannon Denney, MSN, RN; Elizabeth Miller Evans, PhD, Nurs Admin Q Vol. 41, No. 4, pp. 288–296 Copyright c 2017 Wolters Kluwer Health, Inc. All rights reserved.
- The Business of Health Care Virtual Nursing, a Postpandemic Plan for Efficiency and Cost Savings Harold “Pat” Patton, DNP, MSN, RN, NEA-BC, Nurs Admin Q Vol. 47, No. 4, pp. 350–354 Copyright © 2023 Wolters Kluwer Health, Inc.

- A Call to Action: Overcoming Communication Challenges in Hospitals, Frances Dare, Kathleen Lennon, R.N., Marie R. Sanders, R.N., Accenture.
- “Banyan Virtual Nursing: Transforming the Delivery of Healthcare,” May 2023. [Link](#).
- “Health Leaders: Saint Luke’s Gives Nurses Their Own Virtual Care Unit,” Jennifer Ball. [Link](#).
- “Initiating Virtual Nursing in General Inpatient Care,” Roberson, et.al., American Journal of Nursing, June 2023, Volume 123, Number 6, pp. 48-54.
- “How much time do nurses spend using electronic devices at work?” Carolyn Sun, PhD, RN, ANP-BC, and Kenrick Cato, PhD, RN, CPHIMS, FAAN, Nursing Management, March 2020, pp. 22-29.
- Webinar - A Guide to Virtual Nursing: Inpatient Settings, July 20, 2022. [Link](#).
- “Providence rolls out virtual nursing to 8 hospitals,” Giles Bruce, June 6, 2023. [Link](#).

Expectations for Future Outcomes

This article aims to encourage a broad perspective on the value and outcomes associated with Virtual Nursing. Many Virtual Nursing initiatives in an inpatient setting are in the early stages with limited task shifting and augmentation and moving to scaling. Virtual Nursing in an inpatient setting is a journey with many expecting several years to reach maturity. Virtual Nursing is appropriate in many other care settings. While Virtual Nursing in an inpatient setting intends to change what bedside/floor nurses perform so they may further focus on patients, executives are also expecting a well-defined set of outcomes. Consequently, Virtual Nursing programs must track the breadth of outcomes and identify outcomes appropriate to a specific care setting.

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Background: Virtual Nursing Maturity Framework

For decades, there has been a need to change nursing care models. The COVID-19 pandemic proved the value of virtual health. Consequently, Virtual Nursing has begun evolving nursing care models across the continuum. The **Virtual Nursing Maturity Framework**, described below, highlights how health systems can pursue the Virtual Nursing transformation journey across the care continuum.

Current **Virtual Nursing Maturity** is:

f(Progress shifting & augmenting tasks, Care setting, Delivery approach)

At the core of the **Virtual Nursing Maturity Framework** is the recognition that the journey will take time. Over time, more tasks will be shifted or augmented. Therefore, it is helpful to understand the breadth of the tasks performed within a particular care setting. The **Virtual Nursing Maturity Framework** considers three dimensions: Progression, Setting, and Delivery. Table 1 describes each dimension.

Table 1: Virtual Nursing Maturity Framework Dimensions

Dimension	Description
Progression	<p>This dimension focuses on the progress made in shifting or augmenting identified tasks within a particular nursing care setting. An example of progressions within an inpatient department is highlighted below:</p> <p>Progression 1 = 15% of identified tasks are shifted or augmented.</p> <p>Progression 2 = Approximately 50% of identified tasks are shifted or augmented.</p> <p>Progression 3 = All identified tasks are shifted or augmented.</p> <p>This approach is consistent with how progress is reflected as improvements are built into each iteration using the previous progression as a foundation.</p>
Setting	<p>The Virtual Nursing Maturity Framework can be applied to more than inpatient care. “Setting” can be used within a health system to track the progress of the scalability of their Virtual Nursing programs that map to their various care settings. Suppose a healthcare organization’s Virtual Nursing program only focuses on the inpatient setting. In that case, the setting number of 0 is assigned, indicating that only one care setting has implemented a Virtual Nursing program. If the program expands to include ambulatory/outpatient care departments, the setting number of 1 is assigned.</p>
Delivery (D=Delivery Center; C=Command Center)	<p>Many healthcare organizations will find improvements to nurse-to-patient ratios as one of the great benefits of implementing Virtual Nursing programs. Organizations often find that a remote nurse can support more than one nursing unit, outpatient clinic, hospital, or community care center.</p> <p>Subsequently, Virtual Nursing begins to take on a centralized “delivery center”</p>

care model where a nursing resource is provided across the enterprise. A great example of this progression across settings towards a centralized approach is Mercy Virtual, Veterans Administration eICU, and how vendors such as Banyan, Andor Health, and Accenture offer nurse staffing to meet the needs in Lever 3: Leverage Team Support of the Virtual Nursing Model. A Command Center approach is used to direct Virtual Nursing resources to meet real-time or near-real-time needs like a physician command center.

Virtual Nursing x.0 z: Inpatient Care

For this article, the focus is on Virtual Nursing in the inpatient or acute care setting. As described in several articles, Virtual Nursing progress is based on the task shifting or augmentation of the following tasks.

