Rady Children's Health Orange County
Best Evidence and Recommendations (BEaR)

Creating a Virtually Integrated Care Team Model

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Abstract
Background: Virtual nursing gained momentum during the COVID-19 pandemic as a strategy to address challenges related to an aging nursing workforce, high turnover rates, and the increasing complexity of inpatient care. These factors have contributed to rising burnout and decreased engagement among both staff and patients. Virtual nursing models vary across organizations, influenced by institutional priorities, available resources, and readiness for change.

Purpose: The purpose of this project was to examine current approaches to virtual nursing and identify the essential steps for establishing an effective program. By integrating evidence-based practices, the goal was to develop a Virtually Integrated Care (VIC) Team Model designed to align with the organization's strategic goals and commitments to quality, safety, and engagement.

Recommendations: Following the nine steps developed from the literature will set the foundation for successful implementation of a VIC Team Model on an inpatient pediatric unit.
Outcomes: To understand the impact of the proposed intervention, monitor adherence to the steps outlined to implement a VIC team model, completion of creation of a VIC team, identified key performance indicators based on goals established in Step 1, and return on investment.

Implications for practice: A VIC team model holds the potential to expand the nursing role, contribute to workforce sustainability, improve the continuity and coordination of care, and improve patient and family safety and satisfaction.

Keywords
acute care, inpatient pediatric hospital, nursing efficiency, nursing outcomes, nursing team model, virtual integrated care, virtual nursing

PICO(T)
In a suburban pediatric hospital setting (P), what are best practices for the implementation of a virtual nursing care model (I), compared to traditional in-person care and standard clinical workflows (C), to improve clinical outcomes and enhance workflow efficiency (O)?

Background and Significance

Virtual nursing, in its simplest form, involves a nurse in a remote location monitoring and supporting patient care. It was initially implemented in outpatient clinics, where patients were geographically distant, and in hospital critical care areas where close observation was essential. During the COVID-19 pandemic, however, a convergence of workforce and care delivery challenges accelerated the adoption of virtual nursing within medical-surgical acute care settings. Several factors drove this shift:

- **High registered nurse (RN) turnover:** The pandemic triggered unprecedented workforce losses, with an estimated 100,000 nurses leaving the profession between 2020 and 2021 in what the

American Nurses Association has termed the "Great Resignation" (Wachs, 2025). This trend persists, with a projected shortage of 78,000 full-time inpatient nurses anticipated by the end of 2025 (Khairat et al., 2024). Despite significant demand, acute care has experienced a decade-long decline in nursing applicants (Boston-Fleischhauer, 2025), leaving hospitals with insufficient staffing, inexperienced teams, and widespread burnout (Ransford et al., 2024). The 2025 Press Ganey Nurse Experience report highlighted that 24% of Gen Z nurses exited the workforce in 2024, with Press Ganey's CNO Jeff Doucette noting that young nurses "feel neither their professional work, nor their wellbeing is being supported" (Hatfield, 2025).

- **Increased complexity of care leading to RN burnout:** Nursing burnout is a state of exhaustion that can be physical, mental, or emotional due to stressors in the nursing profession. Rising patient acuity, higher census, and complex psychosocial needs of families paired with understaffing, and increased documentation demands are all stressors for nurses (Sagastume & Peterson, 2023). Bedside nurses also often face competing priorities within a typical day resulting in delayed or missed nursing care (Schuelke et al., 2020).
- **Aging workforce:** The median age of bedside nurses is 52 years (Robertson et al., 2023). Since COVID-19, many nurses have retired 5 years earlier than anticipated (Trepanier, 2023) while others are leaving inpatient practice for more flexible or physically less demanding roles that still allow them to contribute meaningfully to patient care and the profession (Thomas, 2025). This trend has left fewer experienced nurses available to mentor the incoming workforce.
- **Decreased patient engagement:** Patient's rate their experience following healthcare interactions by completing post experience surveys such as Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS), Press Ganey, Patient Activation Measure (PAM), or other external and internal surveys employed by hospitals to measure patient experience. Although patient experience scores initially rose during the pandemic as communities expressed appreciation for healthcare workers, scores steadily declined post-pandemic (Dicello et al., 2024).
- **Need for a new care model:** The prevailing primary care model of nursing, in which one RN is accountable for all aspects of a patient's care during a shift, has been increasingly difficult to sustain given persistent workforce shortages (Trepanier et al., 2023). Maintaining safe staffing ratios is challenging, leading to lack of care and an increasing need for innovative solutions. Advances in telehealth, coupled with increasing patient and family comfort with virtual platforms, have created an opportunity to integrate virtual nurses into the healthcare team (Russel, 2023; Sagastume & Peterson, 2023). A virtual nurse (VN) has the potential to promote patient safety, reduce bedside burden, and preserve the quality of care.

In response, Rady Children's Hospital Orange County implemented an initial VN pilot conducted on a multispecialty unit from September 2023 to March 2024. With plans to expand virtual nursing care to other areas of the hospital, this EBP project explores the best practices for integration of a virtual nursing care model to improve clinical outcomes and enhance workflow efficiency.

Framework

This EBP project utilizes the "Translating Evidence into Practice: CHOC's Approach to EBP" model, adapted in November 2023 from the *Revised 2018 version of* Evidence Based Practice Institute Model © 2007 Caroline E. Brown and Laurie Ecoff (Ecoff, Stichler & Davidson, 2020).

Search for the Evidence

Databases searched for this review included CINAHL, Medline in EBSCO, and PubMed. Key search words were utilized, including *inpatient hospital, nursing implementation, outcome efficiency, quality care, telehealth nursing, virtual integrated care, virtual nurse, and virtual nursing.* This search yielded 75 articles. After reviewing initial content, 44 articles were excluded due to the articles not focusing specifically on inpatient virtual nursing, leaving 31 articles with information regarding the use of virtual nursing in an inpatient setting. After a further focused review of the articles related to virtual program design and implementation, 15 articles were removed. Thus, 16 articles were included for content and evidence synthesis.

Specific grey literature was also included, such as unpublished documents related to the initial Virtual Nursing pilot held at Rady Children's Hospital Orange County from 2024-2025.

Critical Appraisal and Synthesis of the Evidence

Following a review of the literature, the following 9 steps were shown to be utilized by organizations that successfully adopted a VIC Team Model of nursing establishing them as best practices for implementation: (1) identify goals and associated outcomes, (2) choose an implementation framework, (3) organize the virtual integrated care (VIC) team, (4) select VN candidates, (5) create the environment, (6) create tasks, workflows, and scheduling, (7) identify barriers, (8) develop and implement comprehensive training, and (9) roll out program (see Table 1).

Step 1: Identify Goals and Associated Outcomes

- The first step guides organizations in identifying their intended goals for virtual nursing, which then serve as the foundation and guiding framework for all subsequent steps. These goals may include:*Increase patient safety and quality of care*: VNs can provide increased rounding on patients, additional safety checks, and real-time chart reviews.
- *Engage patient education and communication*: Consistent communication can be offered through an initial welcome to the hospital; setting expectations for the plan of care; alleviating concerns; answering questions; educating about life changing procedures, skills, and medications; and practicing compassionate presenting through active listening.
- *Optimize available staff*: With a VIC team, all nursing team members are able to practice at the top of their licensure and educational skill set through workload distribution. VNs take on educational, mentoring, and administrative tasks which free up bedside nurses. VNs also delegate to ancillary staff (ie. nursing assistants) tasks that would be otherwise placed upon bedside nurses (Trepanier et al., 2023; Johnson- Salderno et al., 2025). This optimization allows for greater efficiency in both speed of workflow and overall tasks completed.
- *Increase Retention*: A VN position creates a meaningful role for experienced RNs (Bhaloo et al., 2025), allows for professional growth and career extension (Dicello et al., 2024), and retains technically competent and highly educated nurses at the bedside (Khairat et al., 2024; Wachs, 2025). In addition to retaining skilled staff, mentorship offered by an experienced VN allows novice nurses to increase in both their confidence and competence, thus increasing overall nurse retention at the organization (Trepanier et al., 2023).
- *Improve physician rounding*: Rady Children's Hospital Orange County encourages nurse-led multidisciplinary rounding, acknowledging their crucial role in providing information about the patient's current condition, advocating for patient needs, and contributing to the care plan.

Measurable Outcomes

Measurable outcomes, also referred to as Key Performance Indicators, are found throughout the research data and are directly related to implementation goals identified. From the literature, implementing a VIC team model has been found to be effective at producing positive results for the following metric categories:

- *Increased engagement and satisfaction scores* for both staff and patients.
- *Improved quality metrics* including decreased missed cares, falls, hospital acquired infections, and mortality rates.
- *Improved patient safety*, demonstrated in decreased adverse event reports and an increase in safety reporting, good catches, and hospital system improvements.
- *Improved throughput* through decreased length of stay, improved bed ready to admission time, and faster discharges.
- *Financial incentives*, exemplified in decreased overtime and double time, less traveler and agency nursing use, and lower hospital readmission rates.
- *Improved recruitment and retention* shown through decreased RN turnover with skilled RNs staying on unit as resources.

Step 2: Choose an Implementation Framework

As various organizations have adopted different implementation frameworks, the outcomes of implementing the VIC team model are less dependent on the specific framework utilized and more impacted by the framework's ability to be used as a guide to address behavioral issues that influence how the organization adapts to change (Bhaloo et al., 2025). The following frameworks were identified in the literature:

- A **High Reliability Organizational (HRO) Framework** began in industries, such as aviation, in which errors had significant consequences. The five organizing principles include: preoccupation with failure, reluctance to simplify, sensitivity to operations, deference to expertise and empowerment of every staff member, and commitment to resilience (Sagastume & Peterson, 2023).
- **Activate** is a new framework for virtual nursing developed by Dr. Bonnie Clipper for use by organizations considering initial implementation of a program (Clipper, 2024).
- ANCC Pathway to Excellence (PTE) Framework is based on six evidence-based standards: shared decision-making, leadership, safety, quality, professional development, and well-being. (American Nurses Credentialing Center, 2025). Within the context of virtual nursing, PTE may help facilitate a positive work environment and promote high-quality delivery of care (Ransford et al., 2024).
- Proctor's Implementation Outcome Framework distinguishes implementation, service, and client outcome, presenting implementation outcomes as preceding service and client outcomes (Proctor et al., 2011). The framework identifies eight implementation outcomes: acceptability, adoption, appropriateness, fidelity, cost, penetration, and sustainability. In virtual nursing, Proctor's Implementation Outcome Framework may help provide clear operational definitions for identified outcomes (Bhaloo et al., 2025).
- Koetters Change Theory has been utilized when building a VT program (Trepanier et al., 2023; Wachs, 2025). Kotter's 8 Accelerators for Change model includes: create a sense of urgency, build a guiding coalition, form a strategic vision, enlist a volunteer army, enable action by removing barriers, generate short-term wins, sustain acceleration, and institute change (Kotter

International Inc., 2026).

Step 3: Organize the VIC Team

Members of the VIC team model from the nursing discipline and their associated responsibilities include:

- Nurse administrator who advocates for innovative practice redesign and works to reduce system barriers (Roberson et al., 2023)
- Nurse manager who oversees staffing, equipment and supplies, and resource allocation (Roberson et al., 2023)
- Clinical nurse specialist who creates workflows, establishes prioritization of tasks, and ensures resources are available (Roberson et al., 2023)
- Education specialist who creates the VN orientation process, identifies ongoing learning needs development, and designs resources to support virtual nursing practice and skill development (Roberson et al., 2023)
- VN who performs daily workflows from a remote location (Roberson et al., 2023)

Multidisciplinary care team members are equally important to the virtual team and can include:

- Physicians who oversee patient evaluations, diagnosis, order set, and test result reviews
- Patient and Family Advocacy Council members who act as ambassadors to hand out materials to inform patients about virtual nursing and their benefits (DiCello et al., 2024; Welsh et al., 2025)
- Interpretation services both inside of the hospital and through a virtual platform (such as Language Care line)
- Information Technology (IT) Department involvement to aid with the implementation of new technology, devices, network capacity and load testing, software upgrades, and more (Thomas, 2024)
- Legal team members are often utilized when using virtual nursing across state lines and to aid in role responsibilities and scope (DiCello et al., 2024)
- Marketing team members who design patient and family experience handouts

Step 4: Select Virtual Nurse Candidates

Initially, VNs focused on admission, discharges, and transfers. These tasks improved throughput while reducing administrative burden on bedside nurses. Newer research from 2023 to 2025 shows the VN role evolving, moving beyond task-based approaches to optimize skills an experience seasoned VNs possess. VNs should therefore initially be selected with these skills in mind:

- *Clinical experience*: All sources agree, they must be experts in their fields. They should have at least 3-5 years of clinical experience with many VNs having previous preceptor or charge nurse experience (Johnson-Salderno et al., 2025; Roberson et al., 2023; Thomas, 2024).
- *Critical thinking and adaptability*: They should be able to navigate, and problem solve complex patient care situations while monitoring for early warning signs of changes in patient conditions (Bhaloo et al., 2025; Sagatsume & Peterson, 2023).
- *Communication skills*: They should be proficient in open ended and closed loop communication skills, demonstrating skills in building rapport with patients and families (Bhaloo et al., 2025).
- *Educators*: They should be able to educate patients and families with undivided attention and the required time to resolve patient and family concerns (Bhaloo et al., 2025; Johnson-Salderno et al., 2025).

- *Electronic Medical Record (EMR) knowledge*: They should be able to search for incomplete or missed orders, and respond quickly to high-risk situations (Bhaloo et al., 2025).
- *Mentor and coach*: They should be a resource and mentor to their colleagues, helping new nurses to find their voice, multitask, prioritize, or work through complex problems (Bhaloo et al., 2025; Sagatsume & Peterson, 2023; Schuelke et al., 2020).
- *Technology skills*: They should be able to use various hardware equipment, software applications, and platforms simultaneously (Trepanier et al., 2023).

Since VN roles are typically filled from existing staff, leadership should be intentional in selecting candidates and provide role-modeling and training for the required competencies, acknowledging that no ideal candidate fully meets all expectations. Having change motivated initial candidates can help create the culture for virtual nursing.

Step 5: Create the Environment

Where VNs are stationed is an important element to consider that should align with the goals of the VIC Team Model:

- *Location*: The VN environment should begin with planning the location of VN office. VNs struggle to "stay virtual" when the office is in close proximity to the inpatient unit, so it is vital to ensure the remote location is not on the chosen unit (Bhaloo et al., 2025; Wachs, 2025). Options for VN location noted in the research have included having VNs operate from home, from an administrative building adjacent to the hospital, or within the hospital at a distance determined remote enough (Khairat et al., 2024; Sagatsume & Peterson, 2023).
- *Necessary technology*: Multiple screen computer systems with access to technology, mobile phones (such as Voalte), landline phones, interpretation services, and the EMR (Bhaloo et al., 2025)
- *Shared space with other VNs*: Having multiple VNs in a single space allows for a team-based approach to support and teach each other when one VN has a particularly heavy workload (Bhaloo et al., 2025). It also allows for workstations, connectivity, and proper equipment to be housed in one main area, decreasing the need for unnecessary equipment (DiCello et al., 2024). It is important to account for ways to maintain privacy in a shared location. In a recently published VN implementation at Nemour's Children's, they utilized headsets for VNs to enhance confidentiality (Ransford et al., 2024).

Equally as important are the technological features located in the patient room:

- *Camera placement*: If utilizing fixed cameras, they should be out of reach of family and patients, avoiding doors, and corners to prevent interferences and allow for full camera zoom, tilt, and ability to pan around the area. Within the patient rooms, crib railings and placement of equipment can block camera view of the patients. Care should be taken to plan for placement to allow full view and safety monitoring.
- *Video visibility*: Audio visual equipment should be in the room allowing families to both see and hear the VN.
- *Privacy*: In double rooms, workflows should be created to utilize bedside phones in the room instead of audio via the television audio system as needed for sensitive conversations not to be overheard by neighboring patients (DiCello et al., 2024).

Step 6: Create Tasks, Workflows, and Scheduling

Tasks and Workflows:
Tasks are duties which the VN completes during their assigned shift. A workflow is a visual flowchart that outlines the steps needed to complete that task. Tasks and workflows should be decided and created based upon unit needs and VIC Model Team goals. Examples of workflows can include admission, discharge, engagement rounding, dual medication verification, safety rounding, physician rounding, privacy maintenance for double rooms, etc.

Evidence shows that having visually delineated tasks helps to promote VN and bedside nurse (BN) understanding of role responsibilities and collaboration between the two nurses as part of the VIC team. Venn diagrams are typically used to show separation and overlapping of nursing tasks. Itemized tasks and workflow creations also help to avoid the expectation for the VN role to assume all extra duties, which would distract and confuse VNs from focusing on implementation goals (Russell, 2023; Sagatsume & Peterson, 2023).

Scheduling
Scheduling should be considered based on unit resources and needs. Of the 17 studies, only 10 included information on the hours when a VN was scheduled. Five programs scheduled a 24-hour VN, 3 programs used a 12-hour VN, 1 program used a 10-hour VN, and 1 program used an 8-hour VN. Of note, during the VN pilot trial on the multispecialty unit at Rady Children's Hospital Orange County, the majority of the safety checks and good catches for error prevention occurred between the hours of 8:00 AM to 12:00 PM and 8:00 PM to 12:00 AM.

Step 7: Identify Barriers
When planning for the implementation of the VIC team model consideration should be given to unit culture, patient demographic characteristics, and program focus to determine potential barriers and plans for overcoming those barriers. Barriers identified in the literature included staff and family perceptions of virtual care, staff adaptability to change, financial costs involved with program start up, inclusion and exclusion criteria for patients who participate in virtual nursing, hours of operation, availability of staff and support services, and locations for VN offices.

Step 8: Develop and Implement Comprehensive Training
Training should occur for both the selected VNs and unit BNs to promote unity, clarify role delineation, and discuss changes in the nursing model to be implemented. Training should occur roughly 2 weeks prior to implementation (Wachs, 2024). Among nurses, the most utilized approach for training was in-person during staff meetings. An alternative option could be through computer-based training (Ecoff et al., 2020).

Training for the whole team should include:

- Team building exercises that promote two-way communication and highlight how each individual contributes to the team (Bhaloo et al., 2025; Sagatsume & Peterson, 2023).
- An introduction to the VIC team model of nursing, comparing it to the modified primary care model currently utilized. In the modified primary care model, a single BN coordinates care autonomously throughout a patient's hospitalization. With the change to a VIC team model,

nursing care is now to be shared between two RNs, easing the task burdens of the BN while requiring enhanced communication to balance the workload more effectively across the patient care team (Sagastume & Peterson, 2023; Trepanier et al., 2023).

- Communication strategies, handoff communication expectations, and netiquette for virtual communications can help to ease tensions that arise during implementation and should be included in training (DiCello et al., 2024). Evidence shows that overcoming the old way of doing things and welcoming the new way was found to be the most challenging part of VN implementation (Sagatsume & Peterson, 2023).
- Once the staff understands their role, training on scripting can be implemented with ways for staff to introduce the new VN care model, technology, and role to families. Early introduction and explanation of the new care team model leads to most families being comfortable with technology and VNs (Bhaloo et al., 2025).

Training specific to the VN should include:

- The technology being used includes cameras, EMR documentation, and use of communication devices (Bhaloo et al., 2025)
- Workflows and prioritization of workflows (Wachs, 2025)
- Communication skills with patients and family, each other, and other members of the healthcare team (Johnson-Salerno et al., 2025; Perpetua et al., 2023; Roberson et al., 2023)
- Netiquette for virtual platforms, telepresence, and virtual communication techniques including making eye contact with the camera rather than the image, pausing after speaking to allow for any delays in video transmission, and adjusting intake and output volumes as needed (Dicello et al., 2024)

Step 9: Roll Out

With the implementation of the VIC team model, it is important to support all members of the team through transition into their new roles, aiding in sustainability. This can be accomplished through:

- Having a designated area to write concerns or questions that arise with a method to work through questions or problems
- Having designated information technology (IT) specialists available to troubleshoot technical problems during VN hours
- Hosting day and night shift huddles for the first week on the unit by nursing leaders to touch base with both virtual and bedside staff (DiCello et al., 2024)
- Ensuring daily conferences with the interdisciplinary team representatives for the first week and then weekly conferences until the VIC team model is well established
- Embedding train the trainer role modeling of new VNs with peer and manager support (Perpetua et al., 2023)
- Educating patients and families on virtual nursing by multiple modalities and disciplines. Patient and Family Experience team members, nursing leadership, and BNs can all act as resources for families.

Table 1

Synthesis of Best Practices for Implementing a Virtual Nursing Care Model

#	Author	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Level of Evidence
1	Bhaloo et al. (2025)	x	x	x	x	x	x	x	x		V
2	Clipper (2024)	x	x				x			x	V
3	DiCello et al. (2024)	x		x	x	x	x	x		x	V
4	Johnson-Salerna et al. (2025)	x		x	x	x	x	x	x	x	V
5	Khairat et al. (2025)	x					x				IV
6	Khairat et al. (2024)	x	x	x	x	x	x		x		V
7	Perpetua et al. (2023)	x		x	x	x	x		x	x	V
8	Ransford et al. (2024)	x	x	x		x	x	x			V
9	Roberson et al. (2023)	x		x	x	x	x	x	x	x	V
10	Sagatsume & Peterson (2023)	x	x	x	x	x	x	x	x	x	V
11	Schuelke et al. (2019)	x		x	x	x	x	x			V
12	Schuelke et al. (2020)	x		x		x	x	x			V
13	Tanner (2025)	x		x	x	x	x	x	x	x	V
14	Thomas (2024)	x		x	x	x	x	x	x	x	V
15	Trepanier et al. (2023)	x	x	x	x	x	x	x	x		V
16	Wachs (2025)	x	x	x	x		x		x		V
17	Welch et al. (2025)	x			x		x	x		x	V

Note: The table depicts a synthesis of best practices for implementing a virtual nursing care model based on the nine most utilized steps presented above. To help determine quality, articles were leveled using the organization's *Levels of Evidence* pyramid, adapted from Melnyk and Fineout-Overholt (2019), which includes five levels of evidence with those at the top indicating highest evidence.

Practice Recommendations

- Identify units that are best suited for adoption of the VIC team nursing model
- Select champions within each unit to lead process change and guide nursing leadership teams through the evidence-based practice (EBP) steps outlined above
- Begin with Step 1, identify unit-specific goals, and follow the EBP steps described in the literature to implement virtual nursing
- Document practices, challenges, and outcomes for future quality improvement and potential research projects within the organization

Outcome Measures

Outcome measures should include:

1. Adherence to the steps outlined in the VIC team model
2. Creation of a VIC team

3. Measuring identified key performance indicators based on goals established in Step 1
4. Return on investment

Organizations should also remain attentive to unexpected results, as implementation may yield additional benefits beyond those initially anticipated (Sagatsume & Peterson, 2023).

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