Future State Workflow Redesign at SBMI Oncology Hospital

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BMI 5329 Workflow Process Modeling

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Introduction

This project presents a future state analysis of SBMI Oncology Hospital focused on transforming the patient transport workflow through physical redesign and digital health innovation. The primary purpose is to address persistent communication, coordination, and scheduling inefficiencies between the nursing unit, transport services, and the radiation therapy department. This initiative aims to improve patient safety, workflow efficiency, and care continuity through infrastructure enhancements, such as wider hallways, improved signage, and technology-enabled waiting areas, paired with informatics solutions like the integrated BMIEHR+ system, electronic handoffs, and real-time tracking. The deliverables reflect a shift from fragmented, paper-based processes to a streamlined, patient-centered model that aligns with the hospital's mission of delivering high-quality oncology care.

Future State Process Plan Flowchart (Figure 1)

SBMI Oncology Hospital's future state analysis comprehensively transforms the transportation workflow through physical and digital enhancements. The redesigned space features improved signage, wider hallways, proper waiting areas with digital displays, and dedicated reception points in both departments, collectively eliminating confusion and congestion while ensuring clear handoff protocols. These physical improvements work synergistically with the deliverables that address project goals with varying effectiveness: the Process Plan implements an integrated EHR system resolving communication and scheduling issues; the Physical Analysis enhances interdepartmental coordination though doesn't fully address all scheduling conflicts; while the Data Flow Yourdon Diagram excels by creating the fully integrated BMIEHR+ system that replaces paper-based workflows with digital handoffs and real-time tracking. Although the Blueprint lacks sufficient detail and the Oral Recording

cannot be assessed, the combined deliverables create a comprehensive solution that significantly improves interdepartmental communication, patient flow, and satisfaction by eliminating the manual processes and fragmented systems that previously caused delays, confusion, and backflow in the radiation therapy schedule.

Future State Blueprint of Physical Analysis of Space (Figure 2)

SBMI Oncology Hospital's infrastructure design significantly influences patient safety, clinical efficiency, and overall care. A physical layout aligned with digital tools creates an environment that supports patient comfort and provider workflow. An integrated EHR system, with strong interoperability between departments, ensures that information is shared in real time for faster decisions and more accurate handoffs. Navigation throughout the facility should feel intuitive, with clear visual cues and real-time digital updates guiding patients and staff. Waiting areas that feel calm and organized help reduce stress and prevent overcrowding. Treatment and inpatient rooms should balance functionality with a sense of privacy and calm, supporting focused care in a healing environment. Embedded EHR access points in workrooms and offices will foster better communication and more responsive care. Integrating physical space and interoperable technology will lead to a more connected, efficient, and safe treatment environment.

Future State Data Flow Yourdon Diagram (Figure 3)

The Future State Yourdon Data Diagram effectively fulfills the project sponsor's goals of improving interdepartmental communication, reducing treatment delays, and enhancing patient safety across SBMI Oncology Hospital (Fig. 3). Unlike the current state, where fragmented systems with manual, paper-based processes (e.g., physical "Ticket to Ride" form) led to

frequent inefficiencies and miscommunication, this future-state model illustrates a fully integrated, EHR-enabled workflow that streamlines patient movement and data exchange.

In the Future State Yourdon Data Diagram, BMIEHR+ is a centralized data hub connecting the oncology unit, transportation, and radiation therapy department (Fig. 3). Appointments are auto-scheduled and shared across departments using a unified digital schedule. At the same time, nurses utilize mobile dashboards for patient preparation and electronic handoffs. The integrated EHR directly resolves prior issues of uncoordinated transport arrivals and last-minute patient prep, as identified in the current state analysis. Additionally, transportation is updated through a real-time PTS module, and the BMIEHR+ integrated RADS system now allows radiation therapists to confirm arrivals, document treatment, and automatically trigger return transport requests. These enhancements eliminate manual handoffs, reduce reliance on paper forms, and support real-time updates. The Future State Yourdon Data Diagram addresses the sponsor's priority of achieving seamless interoperability and data visibility across all roles and departments (Fig. 3). It demonstrates how an integrated digital workflow can replace inefficient legacy processes, improve care coordination, and enhance the overall quality and safety of patient transitions within the hospital.

Future State Workflow Swimlane Diagram (Figure 4)

The Future State Process Flow Diagram in a Swim Lane format illustrates an improved EHR-based workflow for Mr. Sai's radiation therapy transport process. This optimized future process minimizes delays, enhances communication, and utilizes EHR integration to prevent manual handoffs and reduce paper chart dependencies.

Future State Blueprint for EHR Optimization (Figure 5)

The EHR-optimized blueprint deliverable directly supports the project sponsor's goal of improving workflow efficiency. Visually embedded EHR workstations throughout critical care areas – including nursing stations, transport hubs, and radiation treatment rooms – demonstrate how real-time interoperability can be achieved. The design facilitates streamlined handoffs, better communication, and faster access to patient charts. This optimizes the workflow by reducing delays and minimizing spatial congestion. Clearly labeled treatment rooms and centralized information displays further support an intuitive environment that is safe for patients and effective for staff. The blueprint successfully translates the workflow improvements into a tangible environment, showing how infrastructure and technology can align for enhanced care delivery.

Future State Prototype Electronic Ticket to Ride Form (Figure 6)

The Future State Prototype Electronic Ticket to Ride Form directly supports the project sponsor's goals of improving patient safety, enhancing communication, and reducing workflow delays at SBMI Oncology Hospital (Fig. 6). In contrast to the current state physical "Ticket to Ride" Form, which requires handwritten entries, verbal clarifications, and physical transport across departments, the electronic version introduces a digitized, interoperable solution that reduces manual effort and improves standardization.

One of the primary improvements is the incorporation of structured drop-down menus for critical fields such as Code Status, Mental Status, Restraints, and Activity (Fig. 6). This reduces user input error, eliminates ambiguous handwriting, and ensures consistent data entry across all roles. Drop-down menus also minimize the need for excessive scrolling or typing, supporting faster and more accurate form completion during high-pressure patient transitions (Fig. 6). This

feature aligns with the sponsor's emphasis on reducing the documentation burden and increasing staff efficiency during transport coordination.

The Future State Prototype Electronic Ticket to Ride Form integrates seamlessly with the hospital's enhanced EHR infrastructure, enabling real-time updates and accessibility for nursing staff, transporters, and radiation therapists. The system logs timestamps and verifies patient identity using dual confirmation prompts at every transition point to strengthen patient safety by enforcing compliance with Joint Commission standards for transport handoffs.

Unlike the original paper "Ticket to Ride," which was prone to being misplaced, delayed, or illegible, the Future State Prototype Electronic Ticket to Ride Form automatically stores and links to the patient's digital chart. This guarantees accessibility from any authorized workstation or mobile device and significantly reduces the risk of documentation loss or communication gaps during handoffs.

Furthermore, the Future State Prototype Electronic Ticket to Ride Form facilitates role-specific accountability. Each section (RN sender, transporter, RN receiver) includes required digital signatures and timestamps, reinforcing clarity around who is responsible at each step of the transport process (Fig. 6). These built-in checkpoints address prior sponsor concerns about delayed return transports and undocumented communication loops.

In summary, the Future State Electronic Ticket to Ride Form meets the project sponsor's goals by offering a real-time, standardized, error-reducing solution for patient transport documentation. It eliminates the risks caused by manual paper processes, reinforces interdepartmental accountability, and enhances workflow efficiency, contributing to safer, more reliable patient care transitions.

TeamSTEPPS

SBMI Oncology Hospital faces severe communication issues affecting patient care, employee productivity, and departmental coordination. The case study recognized the problems of long waiting times and treatment delays due to poor interdepartmental communication. To address these workflow and communication issues, we suggest a customized implementation of the TeamSTEPPS and I PASS the BATON communication models. These models will attempt to standardize communication among the nursing units, transportation, and the radiation oncology department. Through this process, we intend to reduce delays, reduce patient wait times, and enhance care coordination.

1. **Communication**

   Use of SBAR Communication Protocol to Exchange Standardized Information

   Use the Call-out process for immediate feedback

   Check-back system to confirm receipt of information

2. **Team Leadership**

   Team Huddles for brief, scheduled team coordination meetings

   Defined leadership by department:

- Nursing Unit: The charge nurse oversees patients for discharge
- Transportation: The transport coordinator oversees patient transport
- Radiation Therapy: Lead therapist oversees schedule adjustment

3. **Monitoring Situations**

   STEP Assessment Tool to provide overall situation awareness

   Digital Status Board by the department for real-time monitoring

4. **Support Interchange**

   Task Assistance Protocol to support collaboration

Feedback Framework to enhance continuous improvement

I PASS the BATON

I PASS the BATON system provides basic patient transfer information in easy-to-recognize sections:

I- Introduction: Begin with basic information such as the patient's name, Medical Record Number, location, and diagnosis.

P- Patient Information: Include age, weight/height, and isolation.

A- Assessment: Evaluate for vital signs, mental status, and pain scores.

S- Situation: Include the reason for transport and other helpful treatment information.

S- Safety Concerns: Document hazards, equipment needed, and safety precautions, including fall risk assessments and transfer assistance required.

T- Time: Document the timeline, including departure times, treatment times expected, and return times anticipated.

H- Handoff: Confirm preparation of transfer documents, documenting receiving contact individual and special care instructions.

E- Electronic Verification: Confirm handoff through signatures and timestamps for all involved.

B- Background: Briefly summarize history, including previous treatments, procedures, complications, and lab results.

A- Actions: Check for completion of tasks before, during, and after transport.

T- Timing (for Medications): Check for any time-sensitive medications.

O- Ownership: Establish clear patient care responsibilities among staff.

Next Steps: Outline follow-up plans, including post-procedure care instructions and appointments.

TeamSTEPPS implementation in conjunction with I PASS the BATON at SBMI Oncology Hospital allows for an evolution from a fragmented, paper-based communication method to an electronic, integrated system that prioritizes patient safety and high-quality care.

Conclusion

The future-state redesign of SBMI Oncology Hospital addresses critical communication, documentation, and workflow coordination inefficiencies. Integrating BMIEHR+ with the RADS and PTS systems establishes a centralized, interoperable infrastructure that ensures timely access to patient data and enables streamlined handoffs across departments. In biomedical informatics, interoperability is the ability of different systems, devices, and applications to access, exchange, and cooperatively use data in a coordinated way. Achieving this level of interoperability allows the nursing unit, transportation services, and radiation therapy department to operate from a shared, real-time data environment, which eliminates delays, manual errors, and communication silos. Implementing the electronic "Ticket to Ride" form introduces a standardized, digital tool that reduces manual input errors, improves documentation accuracy, and reinforces accountability through automated timestamps and identity verification. Redesigned swimlane workflows and data flow diagrams illustrate how each department contributes to a unified, EHR-enabled process, replacing fragmented manual steps with efficient digital pathways. Physical redesign strategies, which include improved signage, waiting area configuration, and workstation accessibility, further enhance staff efficiency and operational flow. Finally, adopting structured communication models such as TeamSTEPPS and I PASS the BATON promotes role-based collaboration and minimizes information loss during patient transitions. Collectively, these future-state innovations fulfill the project's goals by reducing treatment delays, eliminating

redundant documentation, improving patient safety, and enabling the delivery of high-quality, patient-centered cancer care within a complex clinical environment.

References

Future State Blueprint for EHR Optimization (2025, April 7). Lucid Software Inc. Lucidchart. https://www.lucidchart.com

Future State Blueprint of Physical Analysis of Space (2025, March 31). Lucid Software Inc. Lucidchart. https://www.lucidchart.com

Future State Data Flow Yourdon Data Diagram (2025, March 31). Lucid Software Inc., Lucidchart. https://www.lucidchart.com

Future State Process Plan Flowchart (2025, March 31). Lucid Software Inc. Lucidchart. https://www.lucidchart.com

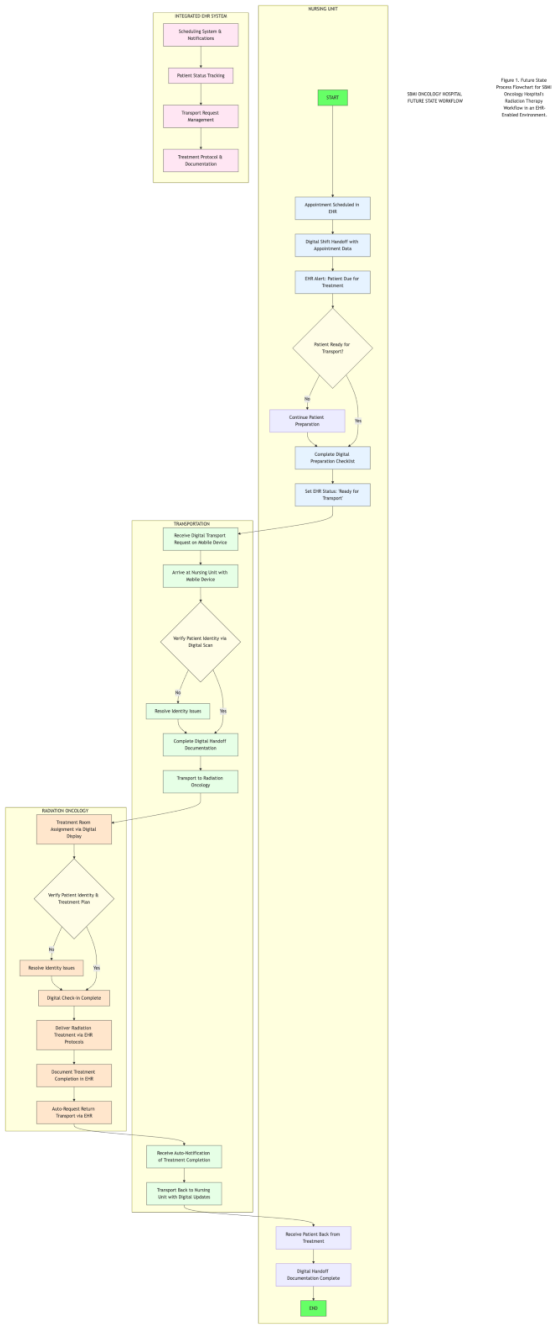
Future State Prototype Electronic Ticket to Ride Form (2025, April 4). Microsoft Word. Figure adapted from HTS Inc. (2013). [Image of Patient Transport Ticket checklist]. *Minimizing errors: Using checklists in transition planning*.

Future State Workflow Swimlane Diagram (2025, April 7). Microsoft Word.

Appendix

Figure 1

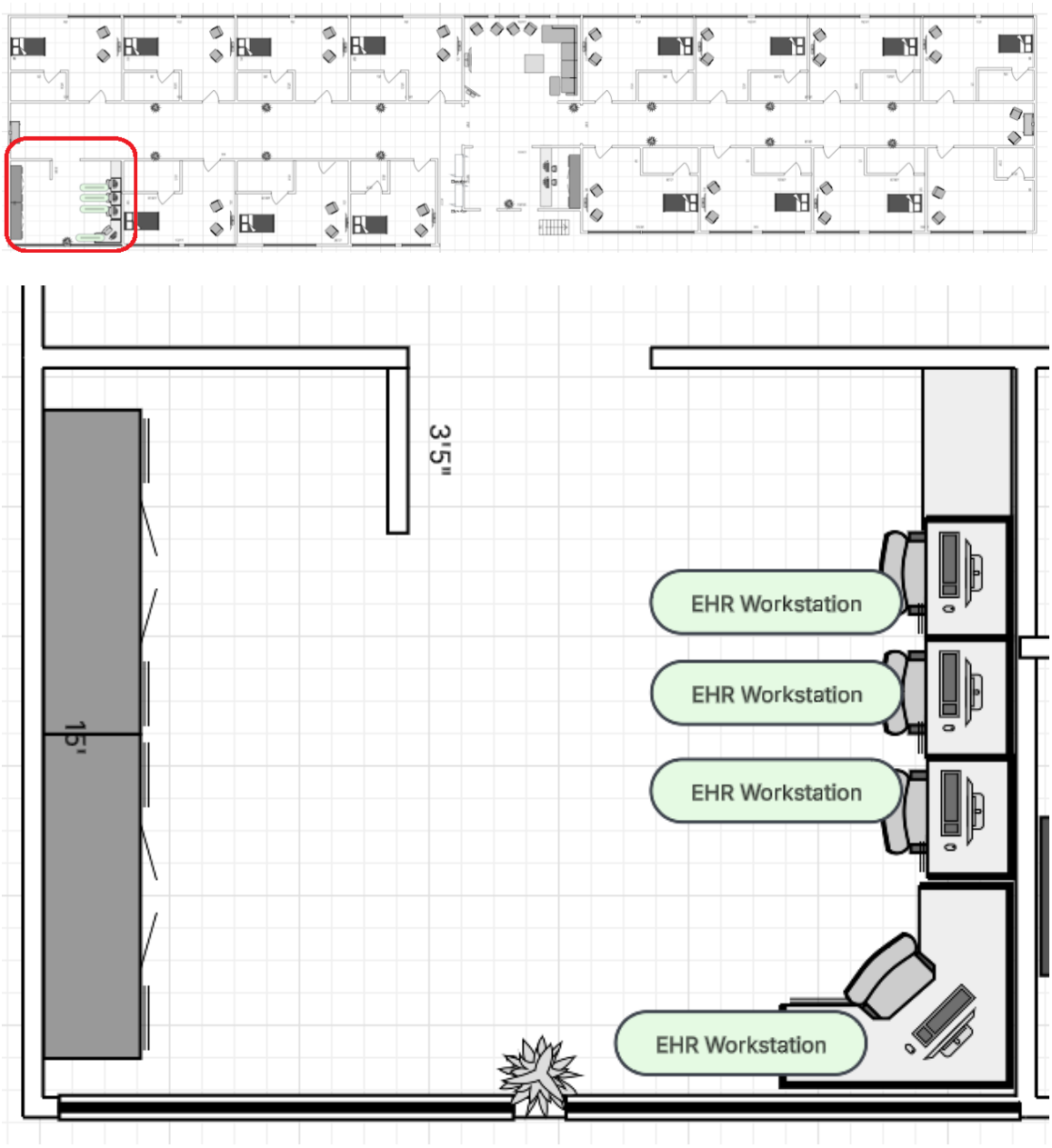
Future State Process Plan Flowchart



Note. This diagram illustrates the optimized process flow with integrated systems, automated notifications, and streamlined patient movement across departments.

Figure 2

Future State Blueprint of Physical Analysis of Space



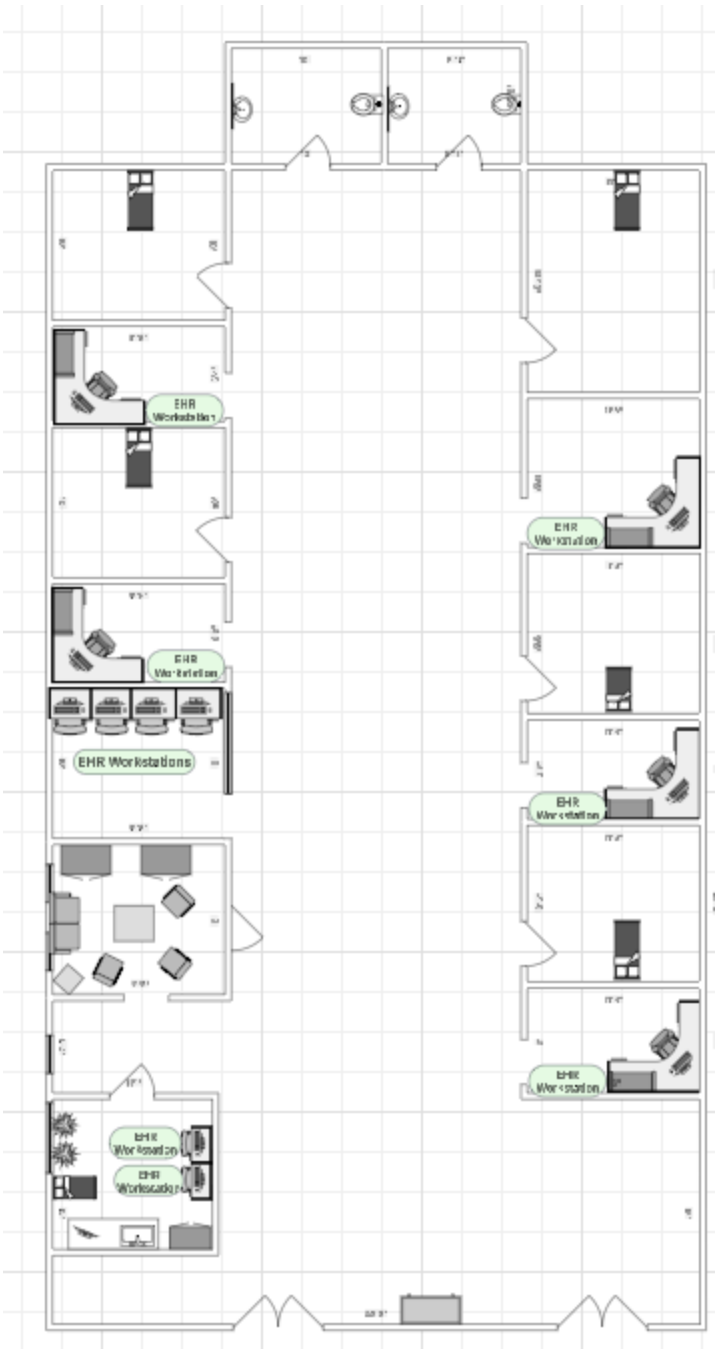
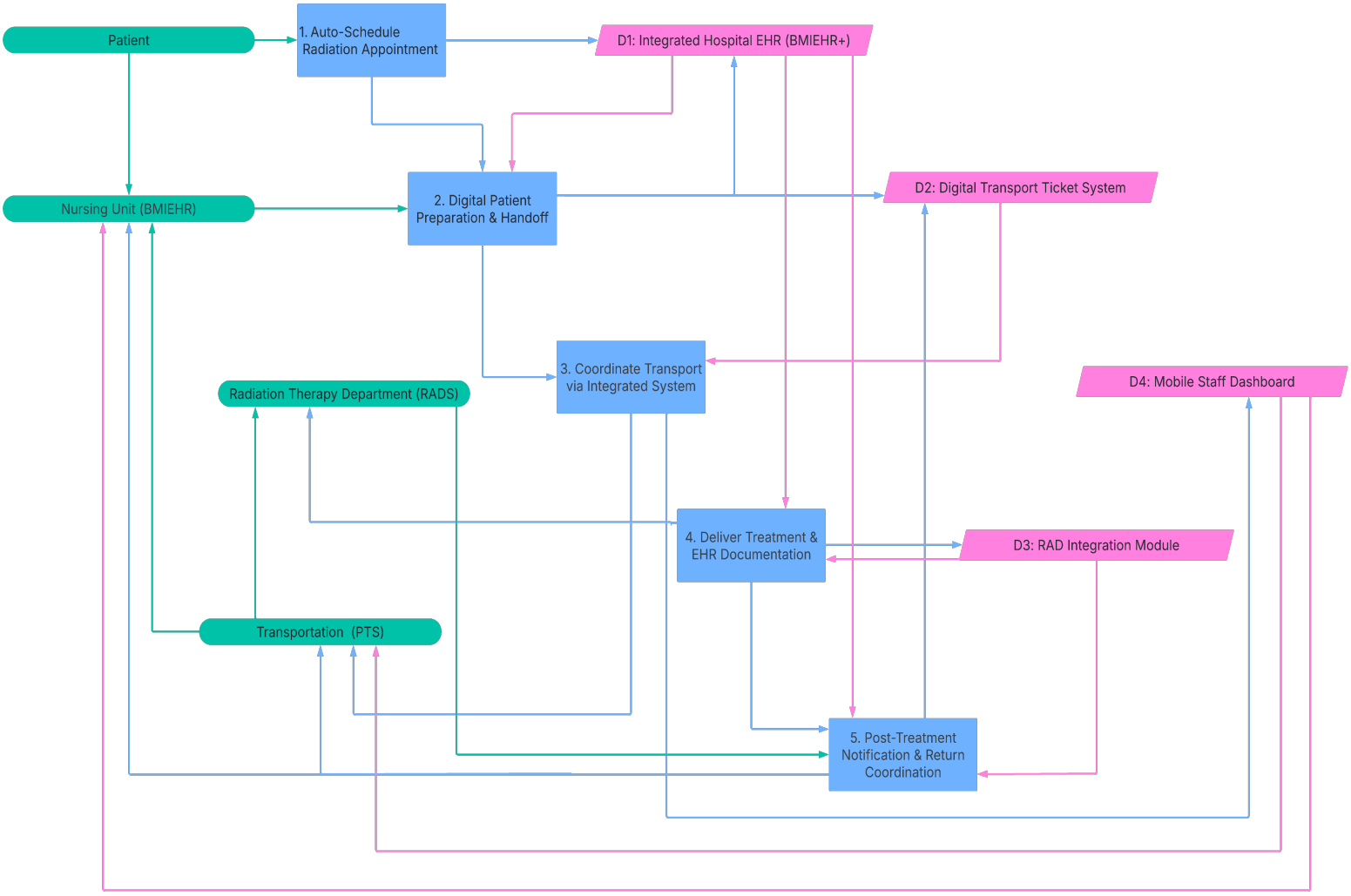

EHR Workstation
EHR Workstation
EHR Workstations
EHR Workstation
EHR Workstation
EHR Workstation
EHR Workstation
EHR Workstation

Figure 3

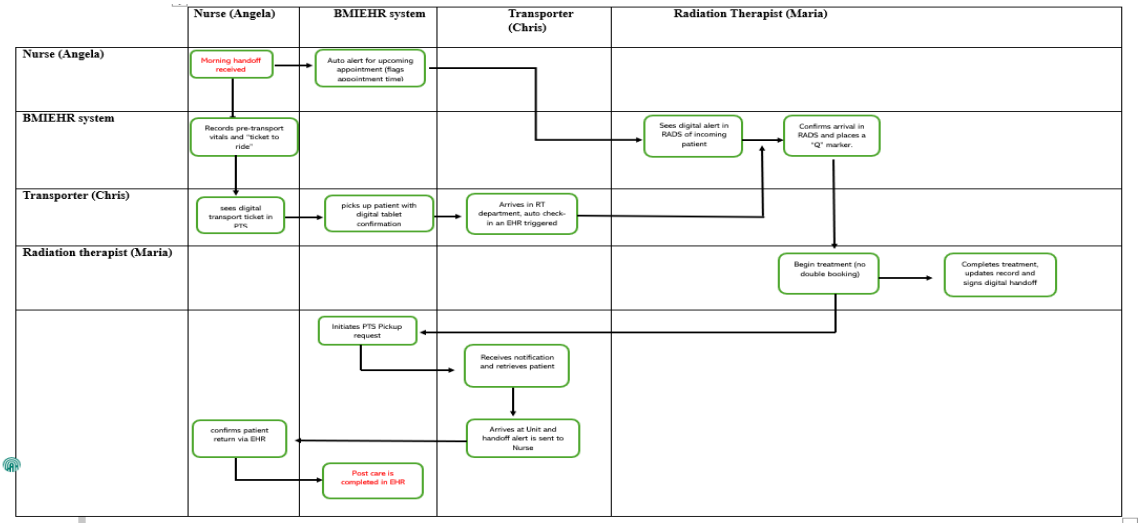
Future State Data Flow Yourdon Diagram



Note. This Future State Data Flow Yourdon Diagram illustrates an optimized, EHR-integrated data exchange between the oncology unit, transport services, and the radiation therapy department. It eliminates reliance on the physical "Ticket to Ride" form by introducing a digital workflow with interoperable systems. This transformation enhances real-time communication, reduces manual errors, and supports the project sponsor's goals of improving care coordination, operational efficiency, and patient safety.

Figure 4

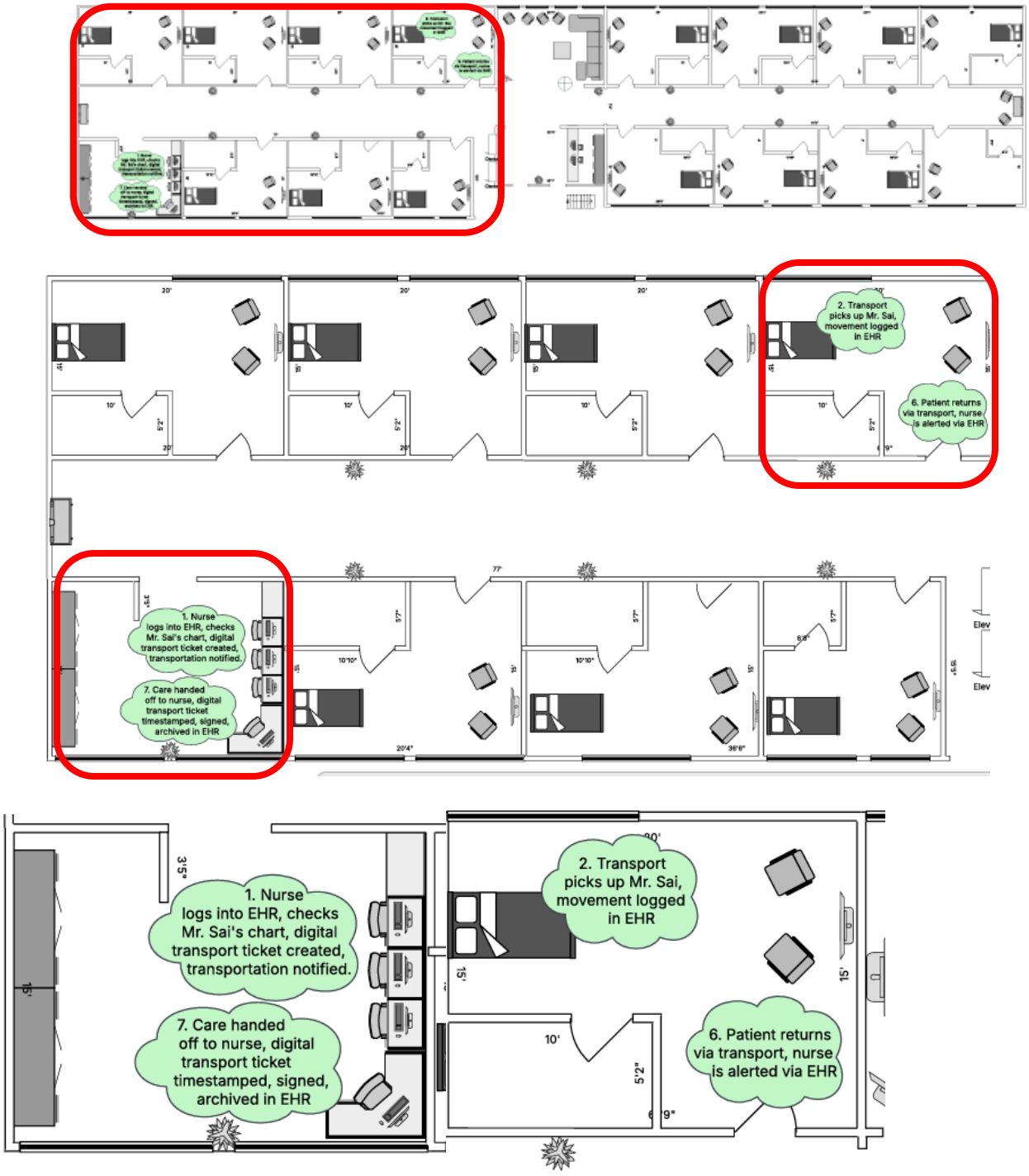
Future State Workflow Swimlane Diagram



Note. Patient Movement from nursing unit to Radiation Therapy and back to the unit (EHR-Based).

Figure 5

Future State Blueprint for EHR Optimization



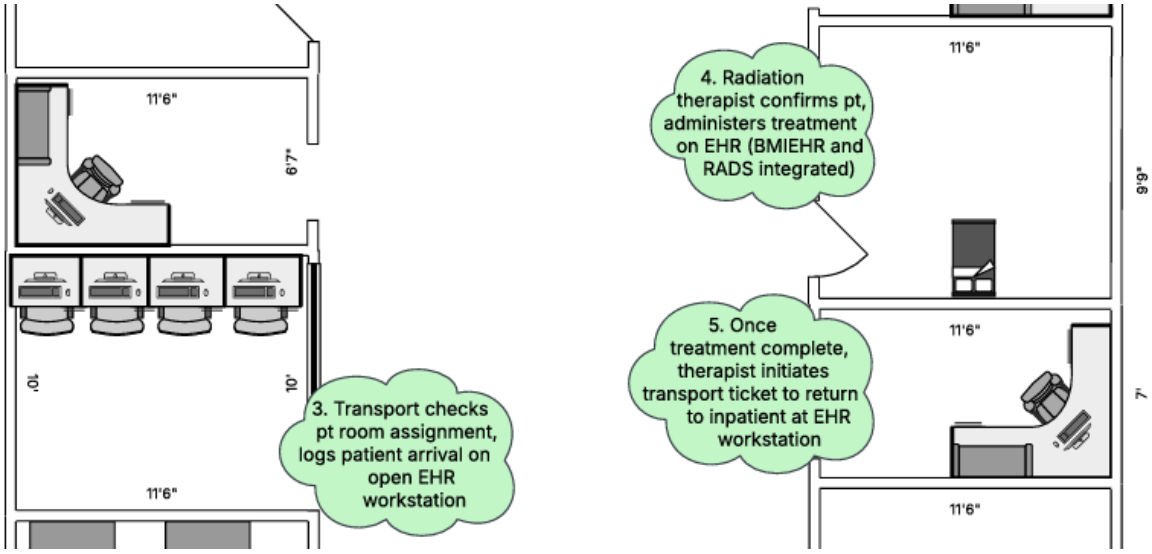

11'6"
6'7"
10'
10'
11'6"
3. Transport checks pt room assignment, logs patient arrival on open EHR workstation
11'6"
4. Radiation therapist confirms pt, administers treatment on EHR (BMIEHR and RADS integrated)
9'8"
11'6"
5. Once treatment complete, therapist initiates transport ticket to return to inpatient at EHR workstation
7'
11'6"

Figure 6

Future State Prototype Electronic Ticket to Ride Form

<table>
<tr><td colspan="3"><u>Patient Transport Ticket</u></td></tr>
<tr><td colspan="3">Patient name: Current room #:
Patient ID:
Diagnosis:
Allergies:
Transfer to unit: New room #:</td></tr>
<tr><td rowspan="3">Patient Transport Ticket</td><td>SENDING UNIT:
Telephone #: Report called to (name & title):
Sent with patient:
Select
Medications:
Select:
☐ Patient Identification verified with two identifiers: Armband (name & medical record #) or Verbal (name & date of birth)
Signature of RN:
Date & Time:</td><td rowspan="2"><u>Patient Information</u>
Code Status:
Select:
Isolation:
Type:
Mental Status:
Select:
Fall Risk:
Select</td></tr>
<tr><td>PATIENT TANSPORTER (RN or transporter):
☐ Patient Identification verified with two identifiers: Armband (name & medical record #) or Verbal (name & date of birth)
Signature of transporter:
Date & Time:</td></tr>
<tr><td>RECEIVING UNIT:
Bed #:
Time Received:
☐ Patient Identification verified with two identifiers: Armband (name & medical record #) or Verbal (name & date of birth)
Signature of receiving RN:
Date & Time:</td><td>Restraints:
Select
Type:
Activity:
Select:
Oxygen:
☐ LPM / Via:
☐ Ventilator:
Telemetry:
☐ Rhythm
Exceptional Considerations / Deficits:
Select:</td></tr>
</table>

Note. This Future State Prototype Electronic Ticket to Ride Form was developed to reflect optimized workflows in a digital hospital setting. It incorporates EHR integration, real-time

documentation, and role-specific data entry, enabling automated timestamps and digital verification at each transfer point. Including drop-down menus improves data standardization, reduces input errors, and minimizes scrolling, contributing to faster and more consistent documentation. This form directly supports the project sponsor's goals of improving communication, reducing delays, and enhancing patient safety across departments. The structure and content were adapted from HTS Inc. (2013) to align with current informatics practices and to improve patient safety during transport transitions.