

# **Clinical Center Research Hospital Board**

## **Electronic Health Record Modernization Project Updates**

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# Electronic Health Record Modernization Project

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## Background

- Commercial name of the NIH Clinical Center's Electronic Health Record (EHR) is Sunrise Clinical Manager
- NIH CC moniker: Clinical Research Information System (CRIS)
- Installed at the NIH CC in 2004 as the best available EHR solution for a clinical research environment.
- The Sunrise product line has been controlled by three separate parent companies
  - Eclipsys (2004-2010)
  - Allscripts (2010-2022)
  - Altera (2022 to the present)

# EHR Modernization Project: Why

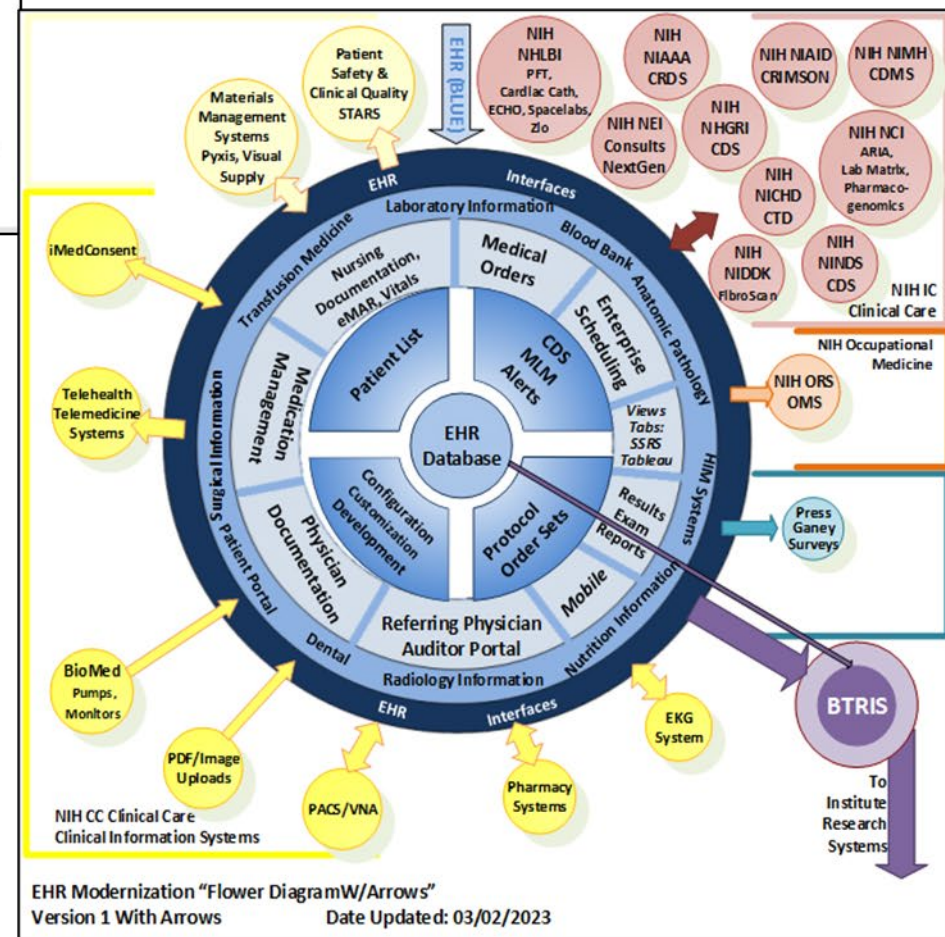
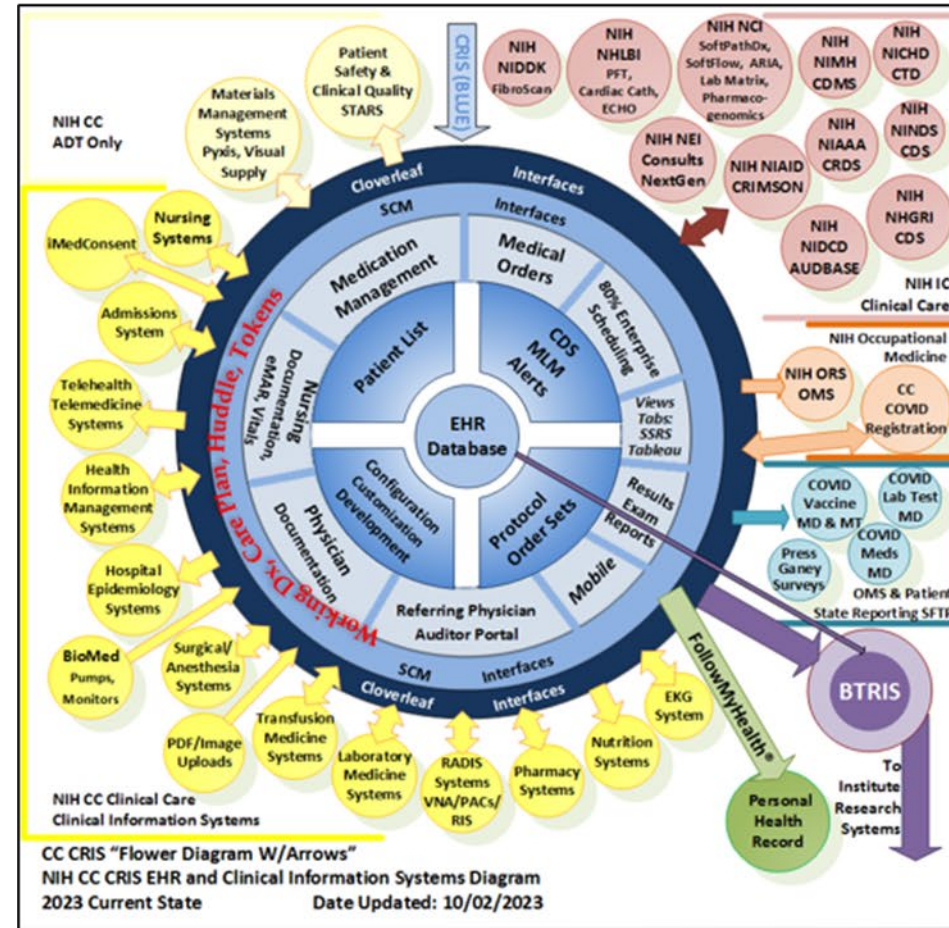
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- COMPLEXITY – Difficult to manage/maintain, fragility
- 15+ Clinical Information Systems (LIS, RIS, Nutrition, SIS)
- 280+ Interfaces
- 3 Data Centers
  - 100+ Virtualization Servers (41 production, 62 development)
  - 80+ CITRIX Servers
- Usability challenges
- Efficiency/best practices

# EHR Goal



- Monolithic, Integrated
- Support Direct Patient-Care
  - Order entry and orders management
  - Management of medication and other therapeutics;
  - Clinical documentation (eMAR, vitals, problems lists);
  - Results: retrieval, display, queries, re-use, etc.
  - Nursing Workflows
  - Physician Clinical Workflows
  - Surgery/Anesthesia/Interventional Radiology
  - Diagnostic Imaging (Radiology)
  - Lab Medicine
  - Transfusion Medicine
  - Cell Therapy
- Administrative functions
  - Patient registration and profile management
  - Bed and other facility-type management
- Research Functions
  - Support clinical research workflows
  - Support clinical research data/terminology



# EHR Modernization Project: Goals

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- Streamline patient throughput and clinical workflow to provide the patient story in a concise manner
- Improve patient safety and quality of clinical care delivery
- Improve patient experience and engagement
- Improve decision-making and communication across clinical and research care roles
- Reduce complexity to support systems from security patching, configuration, and customization
- Improve system availability

# EHR Modernization Project: Procurement Updates

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## Secure Funding

- FITARA/ITAR (Federal IT Acquisition Reform Act) NIH Approved 9/12/2023; HHS Approved with Mods 4/15/2024
- NEF Request (Non-Expiring Funds) (Submitted 5/31/2024 to HHS for 2026 Budget)

## MITRE - Performance Work Structure (PWS)/Statement of Work (SOW)

- Prepare Request for Information (RFI) – February 2025
- Complete Market Research – August 2025
- Feedback
  - Survey of 1,400 Requirements
  - Additional Focus Groups
  - Market Research Vendor Days

# EHR Modernization Executive Steering Committee

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This is a Complex Organizational Project with IT Components.

This will require participation from NIH Leadership, NIH Clinical Leadership, Prescribers, Principal Investigators, CC Clinical Departments, Technicians, Technical staff and all CRIS Users to be successful.

Purpose – The Electronic Health Record (EHR) Modernization Executive Steering Committee (ESC) will provide strategic oversight and leadership and shall make executive-level decisions affecting how EHR Modernization is achieved. These decisions impact the scope of the EHR Modernization initiative, funding and acquisitions, organizational change management, risk identification and mitigation, and engagement with key partners and stakeholders, among others. The ESC is accountable for program results and provides strategic guidance supporting the EHR Modernization initiative's goal to improve the health status of the NIH-CC patient partners while supporting sound clinical research.

## Membership

- 22 Members
- Represent CC Clinical Departments and Administrative Areas
- Represent NIH ICs
- Represents Clinical Care
- Represents Clinical Research

# EHR Modernization Project: “Why” Statement

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EHR Executive Steering Committee “Why” statement

**The purpose of our** Electronic Health Record (EHR) modernization project is to implement a cutting-edge EHR system that will revolutionize clinical care and research at the NIH Clinical Center, empowering our dedicated patient care teams to deliver exceptional service and support.

**In a way that** ensures unparalleled security, drives innovation, maximizes efficiency, promotes user satisfaction, maintains high reliability and availability, responds to evolving needs, delivers compassionate care, and fosters seamless teamwork.

**So that** we instill confidence, ensure high quality, and patient safety across all aspects of research and clinical care, supporting our partners in research, meeting the needs of current and future generations, while upholding NIH's mission to advance global human health through groundbreaking research.

# EHR Modernization Project: Status Update

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- Requirements gathered, documented, final review stage
- CRIS User Requirements Survey
- Clinical workflow modeling

# EHR Modernization Project: CRIS User Requirement Survey

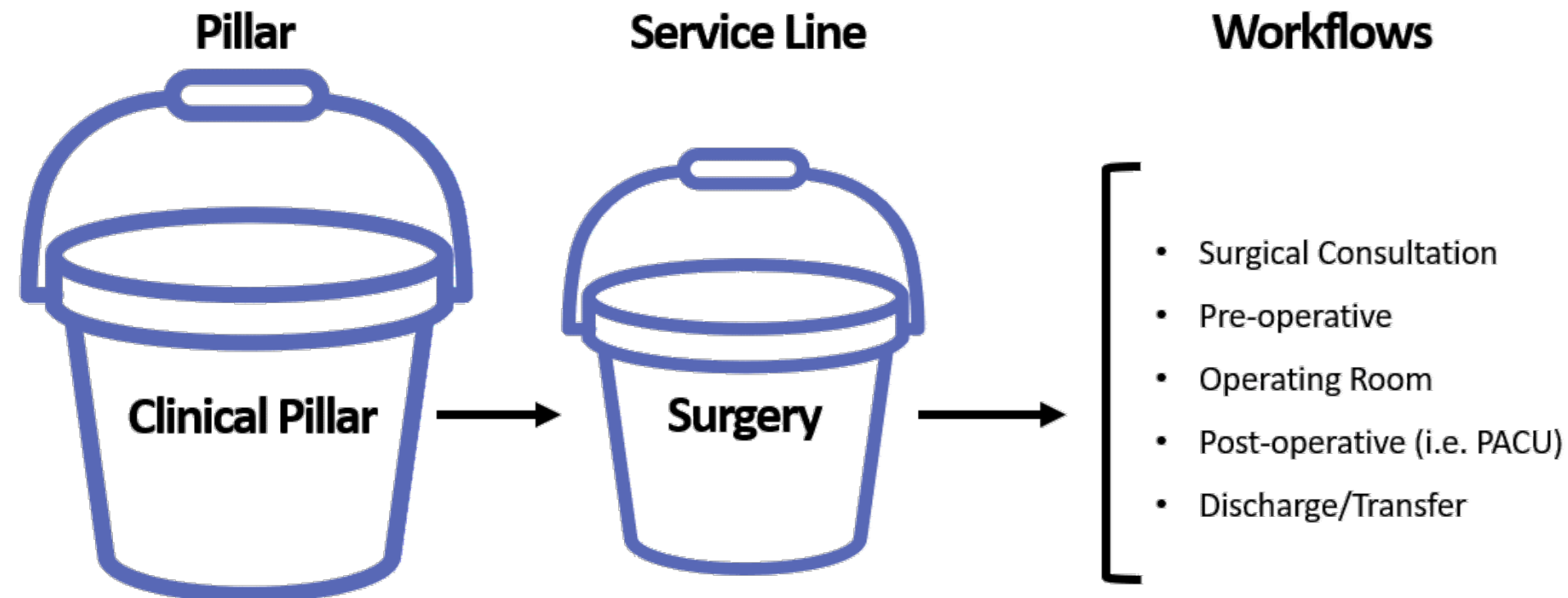
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The purpose of the survey was to better understand clinicians and researchers EHR needs, solicit feedback, identify current problems that could be solved from an EHR perspective.

- 9/4/2024, a survey was emailed to 3,463 CRIS users to complete
- 363 (10.5%) staff completed the survey tool
  - This was a success given the survey tool contained >1,400 items!
- Of those that who responded, 100 staff provided an additional 765 comments on specific items in the survey

# EHR Modernization Project: Definitions

- Clinical Workflow Modeling: Mapping out the step-by-step process taken to deliver patient care services, identifying each task, decision point, and interaction with the EHR system, to understand how to optimize the workflow and improve efficiency with the new EHR design
- Pillars: Groups in which related service lines are categorized
- Service Lines: Groups in which related workflow processes are contained
- Workflows: Processes related to specific tasks completed




# EHR Modernization Project: Clinical Workflow Modeling

- Three pillars: Clinical, Clinical Research, Administrative
- Total workflows identified (as of 10/2024): ~100
- 50 workflows to be fully documented by August 2025



**Clinical**

- Consultations
- Laboratory
- Pharmacy
- Radiology
- Surgery, Anesthesia & Procedures
- Visits/ Encounters



**Clinical Research**

- Clinical Research Study Management
- Investigational Drug Management
- Protocol Management



**Administrative**

- Patient Experience & Access
- Patient Registration & Scheduling

# Modeling Status Update

October 2024 - May 2025

## Clinical

1. Consult Requests
2. Specimen Collection
3. Specimen Processing for Chemistry and Hematology
4. Specimen Processing for Microbiology
5. Specimen Processing for Blood Bank
6. Specimen Processing for Pathology
7. Point of Care Testing
8. Result Management
9. Medication Reconciliation
10. Outpatient Medication Management
11. Refill Management
12. Mail Order Refill Management
13. Inpatient Medication Management
14. Sterile IV Use
15. Unit Dose Medication Use
16. Non-Sterile Compound Use
17. Oncology Medication Use
18. **Adverse Drug Event Management**

19. **Drug Diversion/Controlled Substance Monitoring**
20. Imaging
21. Nuclear Medicine
22. PET Scan
23. Interventional Radiology
24. Outpatient Pre-Surgical Planning
25. Inpatient Pre-Surgical Planning
26. Perform Patient Assessment (Pre-Op)
27. Prepare the Operating Room
28. Outpatient Surgery
29. Inpatient Surgery
30. Post Anesthesia Care Unit
31. Transition Surgical Care (Post-Op Care)
32. Outpatient
33. Day Hospital
34. Inpatient
35. Inpatient Behavioral health
36. Intensive Care

## Administrative

37. Patient Scheduling

## Research

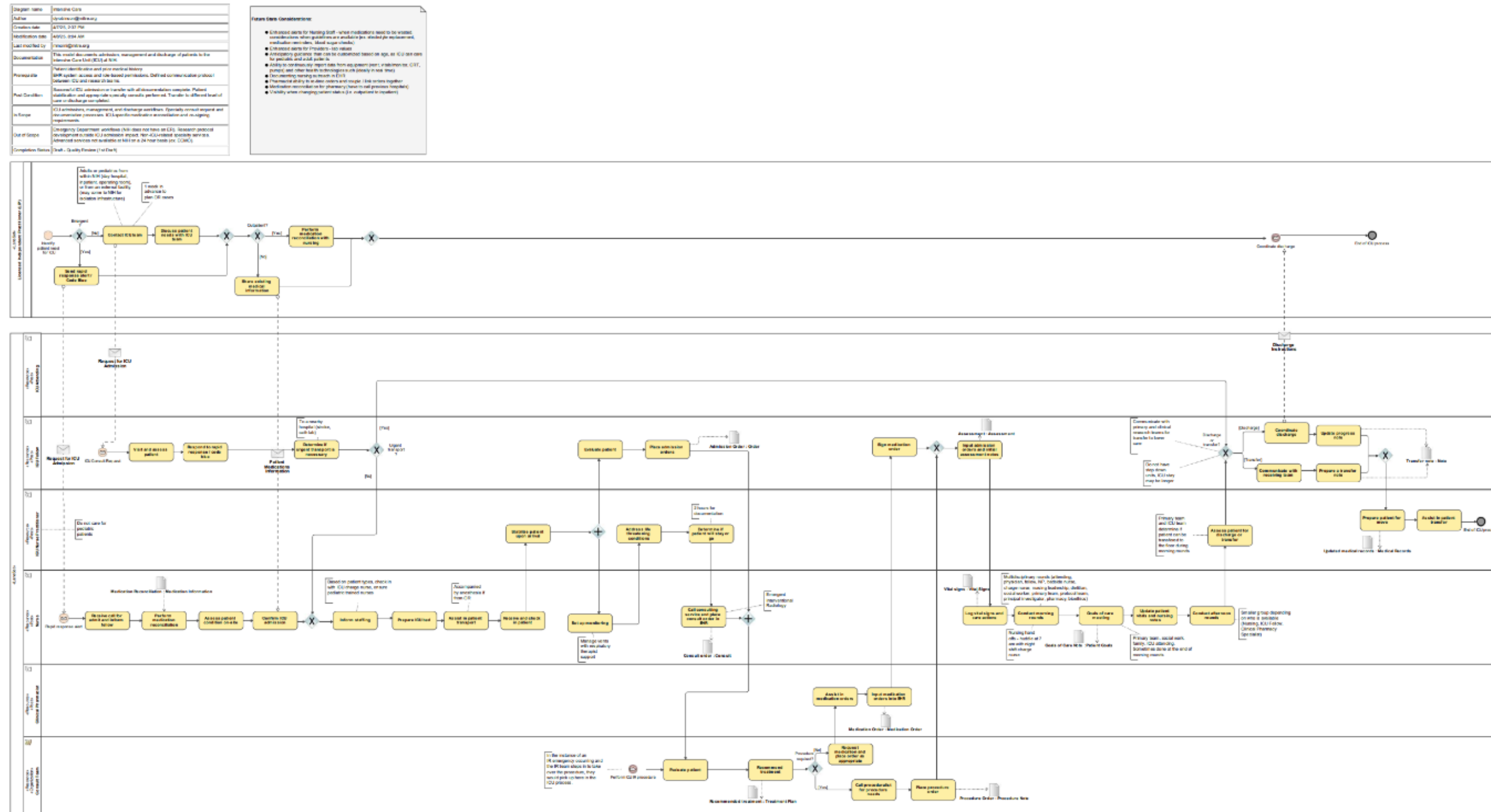
38. Consenting
39. Enrollment
40. Recruitment
41. Study Documentation
42. Study Monitoring
43. Attribution, Assignment, and Tracking

**Legend:**

Black = Modeling complete and in final review

**Bold/purple** = Modeling in progress

# Modeling Status Update, cont.



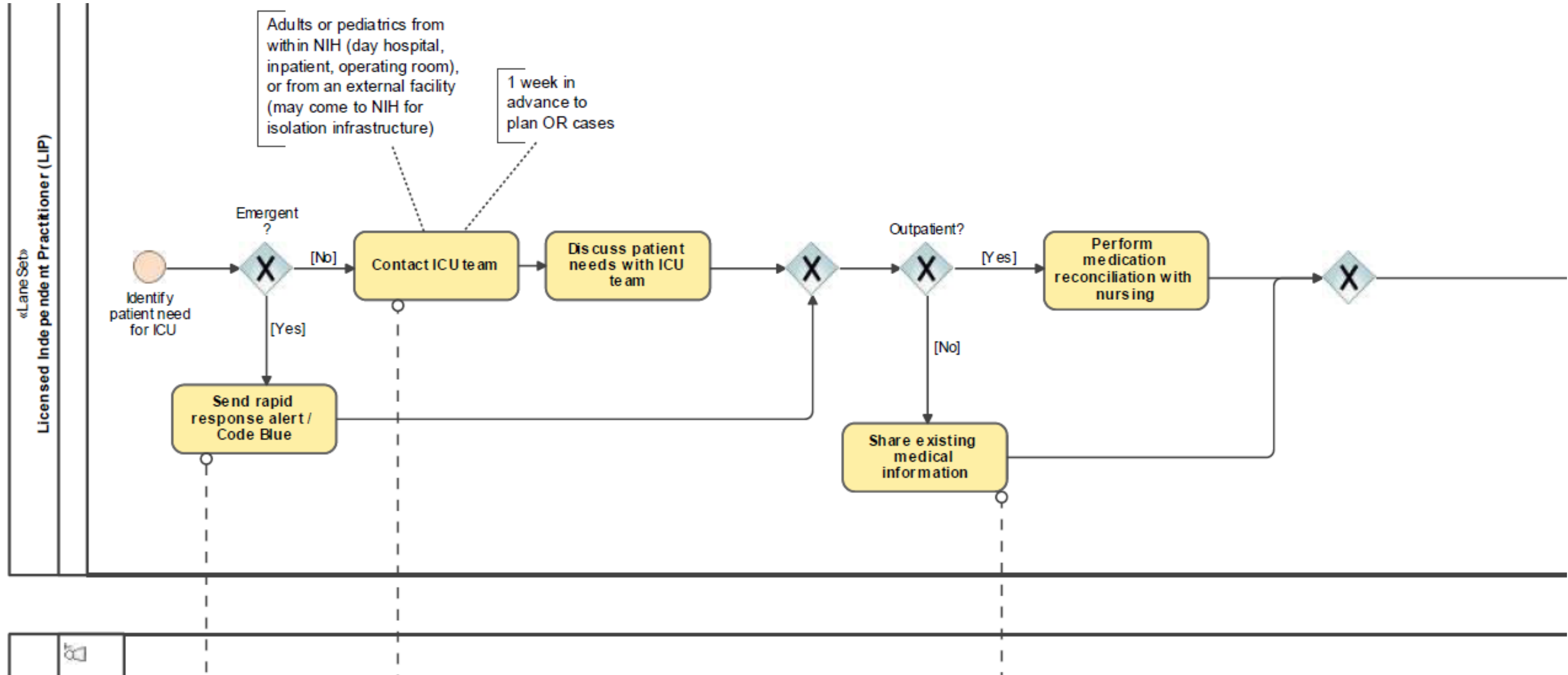
# Modeling Example (1 of 3)

Diagram name	Intensive Care
Author	dyrobinson@mitre.org
Creation date	4/7/25, 2:37 PM
Modification date	4/8/25, 8:04 AM
Last modified by	mmoini@mitre.org
Documentation	This model documents admission, management and discharge of patients to the Intensive Care Unit (ICU) at NIH.
Prerequisite	Patient identification and prior medical history. EHR system access and role-based permissions. Defined communication protocol between ICU and research teams.
Post Condition	Successful ICU admission or transfer with all documentation complete. Patient stabilization and appropriate specialty consults performed. Transfer to different level of care or discharge completed.
In Scope	ICU admissions, management, and discharge workflows. Specialty consult request and documentation processes. ICU-specific medication reconciliation and co-signing requirements.
Out of Scope	Emergency Department workflows (NIH does not have an ER). Research protocol development outside ICU admission impact. Non-ICU-related specialty services. Advanced services not available at NIH on a 24 hour basis (ex. ECMO).
Completion Status	Draft - Quality Review (1st Draft)

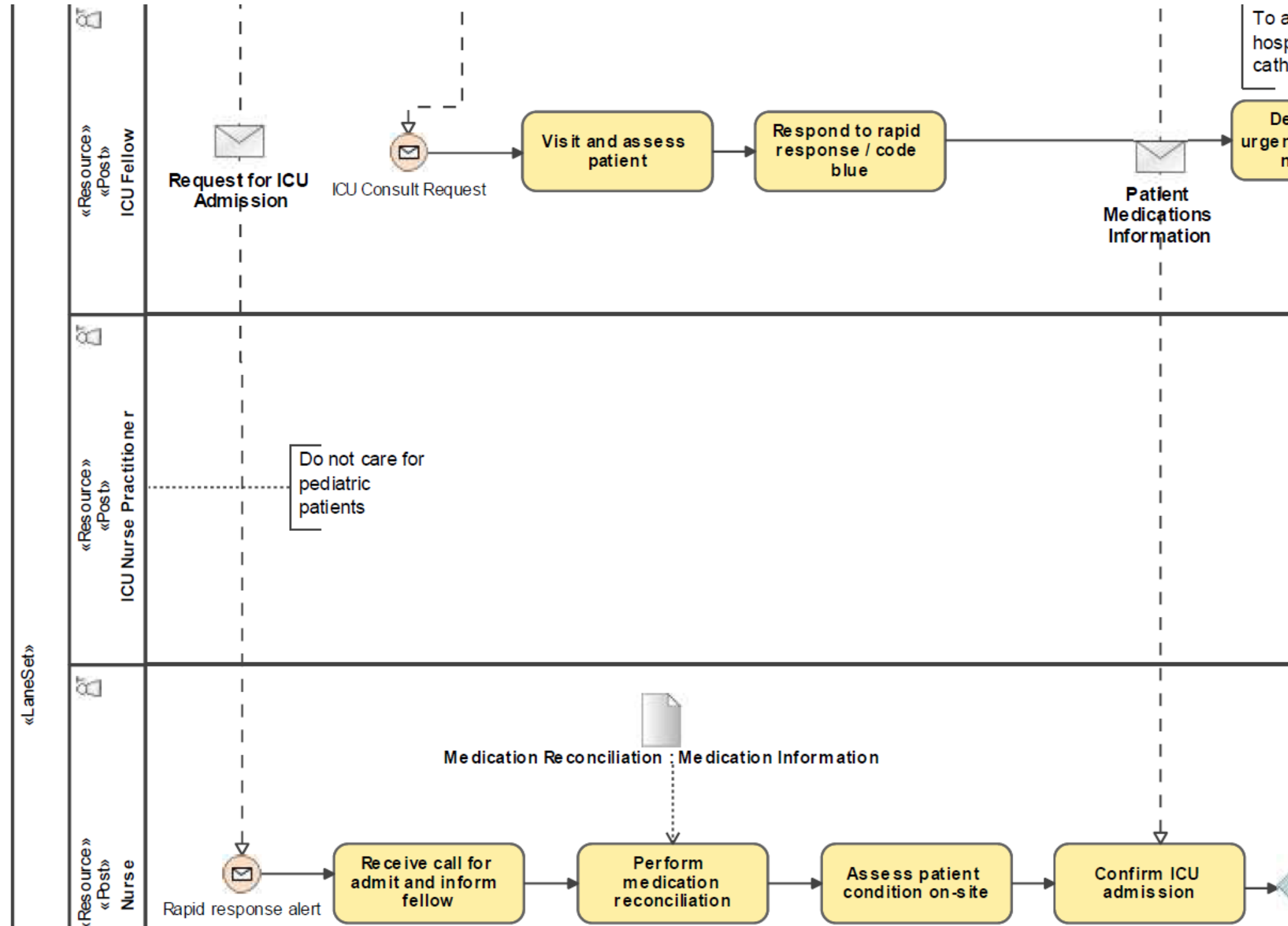
## Future State Considerations:

- Enhanced alerts for Nursing Staff - when medications need to be wasted, considerations when guidelines are available (ex. electrolyte replacement, medication reminders, blood sugar checks)
- Enhanced alerts for Providers - lab values
- Anticipatory guidance that can be customized based on age, as ICU can care for pediatric and adult patients
- Ability to continuously import data from equipment (vent, vitals/monitor, CRT, pumps) and other health technologies such (ideally in real time)
- Documenting nursing outreach in EHR
- Pharmacist ability to re-time orders and couple / link orders together
- Medication reconciliation for pharmacy (have to call previous hospitals)
- Visibility when changing patient status (i.e. outpatient to inpatient)

# Modeling Example (2 of 3)



# Modeling Example (3 of 3)



# EHR Modernization Project: Next Steps

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- Clinical workflow modeling
- Quality reviews of drafted models
- Training

# Questions?