As the first program of its kind in our state, our Hospital at Home program allows qualifying patients to receive hospital-level care in their own home using people, process, and technology. This was made possible through continuous collaboration between Informatics and Clinical Leadership of our Integrated Delivery Network to ensure equitable access to safe, clinically appropriate, and efficient care. Program criteria is limited to seven acute conditions and needs.

**Abstract**

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**System Analysis & Design**

**Planning**

- Comprehensive clinical and administrative inclusion and exclusion criteria for the program
- Defined areas of impact to the IDN and developed workstreams based on objectives

**Teams are the Key to Success**

- Rev Ops
- Patient Througput
- Pharmacy
- Clinical Content & Training
- Ancillary Departments
- Technology
- Clinical Competencies & Policies

**System Design**

**The Informaticist's Guiding Principles to Design**

- Clinician workflow optimizations to increase confidence in technology
- Utilize the electronic health record (EHR) to the top of its capability
- Removal of existing electronic functions irrelevant to providing care in the patient's home
- Perspective of the bedside clinician heavily weighted
- Leave interoperability intact between the acute care hospital building and the virtual home unit to support data flow and maintenance

Seek the intended outcome based upon clinical workflow and the patient experience

**Remote Patient Monitoring (RPM)**

- Vetted workflow requirements against vendor capability
- Excluded redundant functions found in EHR, defining responsibility, and assigning roles within RPM software
- EHR integration considered
- Incorporated use of telehealth/RPM into all clinical workstreams

**Testing Applications & Devices**

- Informaticists developed EHR test scripts at all phases of testing:
  - Utilized process maps and data flow diagrams to test multiple patient scenarios would occur as expected (interface rules, validation of data, etc.)
  - User Acceptance Testing (UAT) by clinicians helped reinforce training and allowed assessment of system performance
  - Informaticists participated in UAT for RPM with clinicians
  - Tested hardware configuration and provided "Field Training" to clinicians in advance of implementation

**System Implementation**

- Key clinical and IT resources identified for implementation support
- Rundown of technical activities reviewed with IT teams
- Informaticists provided hybrid physical and virtual support

**Social Determinants of Care**

- Transportation
- Diagnostic testing during program admission
- Home delivery of discharge medications
- Food insecurities
- EHR tool for pre-admission screening and planning
- Dietician consultation with at risk patients
- Meal delivery available
- Social Support from Family
- Telemedicine participation with the care team, in their care, decision making, and health education.

**Patient-Centered Design**

- **Multidisciplinary Care**
  - Electronic Diagnosis
  - Personalized Care
  - Detailed Screening Process
  - Multidisciplinary Support Team

- **RPM Alarm Parameters**
  - RPM Alarm Parameters for Individualized Care
  - Electronic Diagnosis
  - Personalized Care Sets

- **Icahn School of Medicine at Mount Sinai (2018). Mount Sinai Hospitalization at Home and Rehabilitation at Home Implementation Manual.**

**Executive Summary**

As the first program of its kind in our state, our Hospital at Home program allows qualifying patients to receive hospital-level care in their own home using people, process, and technology. This was made possible through continuous collaboration between Informatics and Clinical Leadership of our Integrated Delivery Network to ensure equitable access to safe, clinically appropriate, and efficient care. Program criteria is limited to seven acute conditions and needs.
Informatics Helps Deliver Hospital at Home

Tracy Irwin, BSN, RN-BC | Nia Bradley, CPHIMS | Suzette Kirby, RN

Abstract
As the first program of its kind in our state, our Hospital at Home program allows qualifying patients to receive hospital-level care in their own home using people, process, and technology. This was made possible through continuous collaboration between Informatics and Clinical Leadership of our Integrated Delivery Network to ensure equitable access to safe, clinically appropriate, and efficient care.

Program criteria is limited to seven acute conditions and needs:
- Primary Trauma Infection
- Simple Pneumonia/Cellulitis
- Heart Failure
- Chronic Obstructive Pulmonary Disease
- Bronchitis and Asthma

Inclusion/Exclusion for Program

A list of clinical and administrative criteria to include:
- Pharmacy environment.
- Patient’s support system.
- Patient’s functional capacity – assessed with the BMAT tool, must be independent or have an HHA.
- Proximity to the hospital: within a 10-mile radius from the ED.

Objectives
- Understand how informatics builds on inherent knowledge of workflow and gap analysis to facilitate end to end integration.
- Explore available options to mitigate social determinants of health in the delivery of remote care.
- Discover how to empathetically remain patient-centered throughout the design process.

System Analysis & Design
The development of the Hospital at Home program required extensive planning, in-depth workflow and systems analysis, thoughtful design, and thorough testing to ensure implementation success.

Planning
- Scope defined in the project charter by executive-level project sponsors.
- “Success” and project expansion milestones defined to monitor progress; challenged by lack of benchmark data.
- Informaticists defined areas of clinical, technological, quality, and safety impacts and developed workstream bases on objective.

Workstream
- Registration/Req. Ope
- Patient Throughput
- Pharmacy
- Clinical Content & Application
- Pharmacy
- Nursing
- Ancillary departments
- Technology
- Clinical Competencies & Policies

Analysis of Workflow and System Impact
- Informaticists leveraged existing knowledge of inpatient operations and associated workflows to establish workstreams and their structure.
- Each workstream comprised of: Stakeholder, Facilitator, Department delegates with authority to approve process changes.
- Developed workstream objectives and defined requirements.

Testing Applications and Devices
- Informaticists developed EHR test scripts at all phases of testing:
  - Utilized maps and data flow diagrams to test that workflows and systems impact potentials to facilitate group decision-making and served as trusted technology consultants for process changes.
- Maintained project/workstream meeting documents such as Process Maps, Decision Tracking, Sign off Summaries, RACI chart to keep accountable parties informed; provided project transparency

System Design
- Knowledge of current-state technological environment of systems up and downstream from EHR is critical to efficient system design.
- Identified key actors and impacted workflows.
- Developed new future-state workflows via process maps clearly defined new workflows.
- Process maps translated to data flow diagrams served as focal points of discussion with systems analysts and interface engineers.

Social Determinants of Care
- Transportation
- Access to food services
- Aversion to hospitalization

Organizational Implications
- Fewer Readmissions
- Higher Patient Satisfaction
- Lower Costs of Care

<table>
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<tr>
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<th>Baseline</th>
<th>Target</th>
<th>Reduction</th>
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System Implementation
- Key clinical and IT resources identified for implementation support.
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- Informaticists provided hybrid physical/virtual support for coverage

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Patient-Centered Design
- Detailed goals breakdown:
  - Post-assessment tools and patient preferences.
  - Technical teams engaged in the process.

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