

Implementation of a new health care infrastructure: University of Michigan Milk Room – an evolution of our human milk practice model resulting in improved patient safety and financial outcomes

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PROBLEM/ISSUE

For infants in the hospital setting, human milk (HM) is a crucial part of the medical treatment plan and ensures optimal healing and growth. Despite this, many pediatric medical centers have limited operations to support the use of best practices for storage, fortification and dispensing of HM. Without a centralized operation, suboptimal outcomes can ensue, including patient safety issues and inefficient uses of labor.^{1,2}

In 2011, a centralized operation, the Milk Room (MR), was implemented with the goal of utilizing best practices to safely and efficiently prepare HM feedings in the hospital setting. The MR currently services 50-60% of our inpatient population daily.

Improvement Opportunity:

- Historically all aspects of HM were handled at unit level at this institution
- This caused safety risks associated with HM misadministration, as well as labor inefficiency

Human Milk Misadministration

- High incidence with inadequate storage, no formal oversight, high volume of people handling HM
- HM misadministration causes: emotional harm, risk of transmitting infectious diseases, cost to the institution

Inefficient Use of Labor

- Inefficiency in work output prior to MR opening
- Higher cost care providers performing work instead of lower cost care providers (Dietetic Technicians)

PLAN: BASELINE DATA

- Institutional safety incident reports reviewed to quantify incidence of HM misadministration³
 - Average of 2 HM misadministrations per year prior to MR opening
- Pathology collaboration to quantify misadministration cost⁴
 - Pathology cost is \$409/incidence of misadministration (not inclusive of provider time spent, unquantifiable cost of emotional harm, etc.)
- Labor cost identified by role and wage of employee doing work, quantified time handling HM and # feedings handled. An annual projection of labor cost using hourly salaries for these roles was performed.
 - Labor cost per year with HM at unit level=\$624,609

GOALS

The following improvements will be seen upon opening a centralized feeding operation:

- Quality Indicator 1:** Optimize patient safety by reducing HM misadministration occurrences by 75% annually.
- Quality Indicator 2:** Decrease cost of labor for handling/preparing HM in the pediatric inpatient setting by 50% annually.

DO: IMPLEMENTING CHANGE

- Nursing and Patient Food and Nutrition Services form partnership to combine HM and formula operations into one space (the MR) in new hospital.
- MR provides 24/7 support of all infant/pediatric nutrition needs –MR opening day: 12/4/2011.

Tools used to operationalize MR from current state⁶

The image shows several screenshots of operational tools used to implement the Milk Room. These include:

- Standard Operating Procedures (SOPs) for HM storage and handling.
- Checklists for HM preparation and dispensing.
- Data tables showing HM inventory and usage.
- Flowcharts for the HM process.

References:

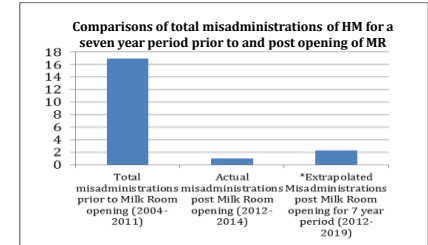
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- Robbins, S.T., & Meyers, R. (2011). Infant Feedings: Guidelines for Preparation of Human Milk and Formula in Health Care Facilities: Second Addition. United States of America: Academy of Nutrition and Dietetics
- University of Michigan Office of Clinical Safety. Located at: 1500 E. Medical Center Drive Ann Arbor, MI 48109
- University of Michigan Department of Pathology. Located at: 1301 Catherine Street, Ann Arbor, MI 48109
- University of Michigan Department of Human Resources. Located at: 2072 Administrative Services Building, Ann Arbor, MI 48109-1432
- Tools provided by University of Michigan Children's and Women's Hospital Activation team. Located at: 1500 E. Medical Center Drive Ann Arbor, MI 48109

STUDY: OUTCOMES

Two notable outcomes have been shown with the opening of this centralized operation.

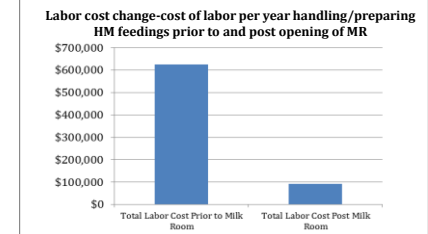
Quality Indicator 1 Outcome: Patient Safety goal met

- Decrease from 2 events on avg/year to 0.33 events on avg/year of HM misadministration
 - 85% reduction per yr post MR opening.
 - Attributed to:** optimal storage methods/space for HM, and a small, highly trained group handling HM
 - Pathology costs of misadministration of HM projected to decrease from avg of \$818/yr (n=2 incidences/yr) to \$122/yr (n=0.3 incidence/yr).



Quality Indicator 2 Outcome: labor efficiency goal met.

- Decrease in avg. labor cost: \$624,609/yr to \$93,228/yr.
 - 85% reduction post MR opening with utilization of DT staff vs. nursing staff.
 - Attributed to:** utilizing lower cost providers and performing tasks with greatly increased efficiency



ACT: NEXT STEPS

- Monitor safety incident reports once annually
- Optimize barcoding to prevent misadministration
- Optimize donor human milk usage
- Share lessons learned through this process with those implementing similar operations, via the U of M Milk Room Practicum

Daily Labor Snapshot	Average Salary ⁵
Dietetic Technician	\$15.10/hr
Registered Nurse	\$28.66/hr