MILLENIUM NEONATOLOGY:
BUILDING FOR THE FUTURE

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The Dilemma

This was not how to optimally care for these children and their families. Can refinements in the design of facilities lead to additional improvements in outcomes for children? For their families?

Background

Move to the new building:
• Site visits
• 10,000 sq ft to 50,000 sq ft
• Huge cultural shift
• Model of care and flow of care changes
• Simulation for orientation to the new facility
• The “NICU Study”

Guiding Principles

• Family-centered care: parents as “partners”
• Developmentally supportive care environment
• Clinical excellence
• Staff invested
• Incorporate established evidence-based clinical and safety practices
• Point of service care
• Planning/incorporating future flexibility/sustainability
• Location: single NICU
• Unique W&I identity

Design Principles

• Welcoming and reassuring
• Single family rooms
• Clarity of organization
• Zoning of NICU
• Balance between staff and family needs
• “Green Design”
• Sensitivity to end of life issues
Overview

Things we did right

- Vanderbilt University Children’s Hospital
  Nashville, Tennessee
- Blank Children’s Hospital
  Des Moines, Iowa
- Northside Hospital
  Atlanta, Georgia
- Scottish Rite Children’s Hospital
  Atlanta, Georgia
- Children’s Hospitals – St. Paul
  St. Paul, Minnesota
- Women & Infants
  Providence, Rhode Island

Benchmarking: Site Visits

New Site Plan

NICU Room

The overall design, “green” construction and improved quality of life led to LEEDS Gold Certification!
NICU Room

Twin Room

“Neighborhood” Corridor

Nurses Alcove

Clustering and Visual Communication
**Scope**

- Using Simulation created 4-6 complex scenarios to play out.
- Scripted established and new roles
- Used an entire “neighborhood”
- Done 6-9 weeks prior to the move.
- Used Sim New Baby™ and other mannequins to provide as real life as possible.
- New technology and computer use adapted, tested, and refined.

**New Technology Developed for the new unit: ASCOM Phones**

- Functionality (In our unit)
  - Bedside Alarms
  - Buddy Groups
  - Nurse Call
  - Code Blue
  - Delivery Team “Bridge Phone” to 10 people
  - Critical labs
  - CPOE

**New Technology Developed for the new unit: SharePoint Communication**

- Functionality In our unit
  - Who is where
  - Who is on what phone
  - Who has each child
  - What is theme for the day in each room
  - Who is coming, who is going and who is post-op
  - Who is critical
Overview

Is it working?

Parent Satisfaction

Press Ganey Scores FY 2008 - 2010
- Database Ranking 2008, 10-40%
- Database ranking 2009 -12, 88.9% - 95%
- Peer Group Ranking 2009 -12, 99.9% 5/10 quarters
During Care Regulation Aids to Self Regulation at Participation Experiences Aids to Self Family Goals

1) Minimal activity/handling.
2) Reduced activity/sound levels at bedside.
3) Shield eyes from bright lighting.
4) Correctly-sized pacifier for non-nutritive sucking when awake.

Medical Practices
- Open Bay vs. Single Room
- Family Centered Care
- Developmental Care
- Parent/Family Factors
- Staff Behavior/Attitudes
- Medical Practices

Timeline

2008-2009 2010-2011
OPEN BAY NICU SINGLE ROOM NICU

Medical Outcomes
Neurobehavior Outcomes
Family Centered Care
Developmental Care
Staff/Family Practices
Medical Practices

NICU Design and Infant Outcomes

Data Analysis: Model

Elements of Developmental Care in the NICU

Data Analysis: Model
Structural Equation Modeling

Hypothetical: NICU Main Effect

NICU $\rightarrow$ Infant Outcome

$\beta = 0.70$

Hypothetical: NICU Reduced Effect

Hypothetical: No NICU Effect

Comparative Fit Index > 0.95

Things we did wrong

- Sinks at each entrance foyer
- Size of the front door
- Breakaway doors (out vs in)
- Plugs in the hallways
- Weight of the storage cabinetry
- Pixus deployment
- Triplet rooms, NO!
- Twin room in ea neighborhood, YES!
- Family kitchen area is smallish

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