Optimal design of a newborn intensive care unit (NICU) first requires that the NICU staff, hospital administration, community leaders, and consumers agree on the purpose and scope of the project. Those planning an entirely new facility will need to consider the niche this unit will fill in the community and region with respect to other providers of NICU services, whereas a team planning an upgrade of an existing facility may focus more on specific needs, such as more space or better technological capability to serve an already well-defined market. In each case, the time spent reaching agreement on a mission statement and specific goals will pay dividends when difficult decisions concerning cost or space allocation arise, allowing those decisions to be made with regard to the overarching mission and goals, rather than personal preferences or short-term considerations.

After the key stakeholders have agreed on a mission and goals, specialized teams must be established to address key aspects of the project. In many cases, individuals will serve on two or more teams, and all teams should include at least two or three clinicians and a parent. These committees will take different shapes and responsibilities in each unique circumstance, so what follows is simply meant to identify a typical arrangement, rather than a required formula.

**Strategic Planning Committee**
Is charged with establishing the size of the unit based on calculations of patient population, market share, and demographic trends. They must identify staffing needs and consider the impact of the new unit on other hospital departments. Once these projections are made, an architectural team should be chosen, a timetable for the project determined, and financial estimates presented to the necessary decision-making body of the hospital. As the design emerges through the work of other committees, this group will be responsible to review the assumptions made initially regarding space, personnel, and financial needs so that as more definitive information arises, it is incorporated into the process to avoid completion of a unit designed and built based on flawed or outdated assumptions.

**Care Practices Team**
Has the crucial role of using the decision to build or renovate the NICU as an opportunity to re-visit all of the core assumptions on which current care policies and procedures are based. For example, new models for incorporating parents into the care and decision-making aspects previously assigned exclusively, or nearly so, to the medical team may have a profound impact on how a NICU is designed and operated. The optimal time to review and change these policies is at the
crucial that this team include all those who will use the space, as well as representatives from all the support services vital to the ongoing function of the unit. Site visits to other state-of-the-art NICUs that have successfully addressed the goals most important to this team are very helpful in an early stage of this team’s operation. Later, as the design evolves, construction of a mock-up of the patient care space allows those who will use the space a much better concept of how the new design will work than can be obtained from blueprints or computerized “virtual” tours.
Is it really necessary to develop a mission statement and goals when we all agree that we want to give the best possible care to babies?

Absolutely. How the “best possible care” gets defined varies greatly from one place and one time to another. For example, in the 1980s, the “best possible care” was usually assumed to be the finest state-of-the-art equipment available, and units were designed as monuments to technology, with insufficient attention given to the environmental needs of babies and caregivers. In the 1990s, “best possible care” was usually defined as developmentally appropriate care, so units became quieter and dimmer, but often at the expense of providing adequate facilities and environment for those providing the care. Today, the needs of the baby, the staff, the families, and the financial and strategic goals of the institution all have the potential of creating competing priorities. By articulating what comprises “best possible care” for the particular setting, a team is forced to discuss, compromise, and eventually understand much more clearly how a new unit will meet many disparate needs within available resources.
How do we decide which units to visit, and how do we make the most of our trip?

Site visits, if done properly, entail a significant expense, so they are a step that is often short-changed in new unit planning. Nevertheless, they provide insight to the design team that cannot be obtained in any other fashion. A true perspective of how certain design concepts such as single-patient rooms or ceiling-mounted headwall systems work in real life cannot be obtained from blueprints, mockups, photos, or phone calls, nor can they be fully understood unless the site visit team includes all the crucial team members. A parent, architect, nurse, and physician are essential team members for the site visit, as well as a respiratory therapist and developmental therapist, if these are used extensively in the NICU.

Planning for a site visit is important. A list of questions that will be asked should be generated based on initial discussions of the design team concerning ideas people would like to see incorporated into the new unit. The site to be visited should be asked to make individuals available from each of the disciplines represented on the site visit team, and 2-3 hours should be committed to the visit, although not every individual at the host site needs to be available for the full time period.

Choosing sites to visit will depend on which features are most important to the design team. If the team is trying to choose between a single-patient and multiple-bed room design or plans a combination of the two, for example, they will probably want to visit good examples of each, whereas a team that has already decided on which concept they will utilize would be less likely to benefit from this strategy. The type of headwall system, floor covering, rooming-in arrangement, and lighting systems under consideration are other examples of how representative units to visit might be chosen. A NICU designed previously by the architectural firm involved in your project is usually worth a visit as well. At each site, finding out what people would like to improve about their design is as important to determine as hearing the features they're most proud of.

Once the important aspects to be seen are identified, finding appropriate units to visit has usually been accomplished by word-of-mouth via phone calls or meetings. It is our hope that this site can provide considerable assistance in that regard, both through questions posted at this location, which can be responded to by general correspondents and the expert moderators, and through the new unit presentation section.
How do we choose a good architect?

This is a difficult question to answer since many NICU design teams are constrained by geography or hospital contracts from access to those architectural firms with the most experience in NICU design. Whenever possible, though, a firm with previous NICU design experience of the sort you are hoping to achieve should be selected. When this is not possible, retaining a hospital-planning firm with NICU design experience as a consultant is very helpful. These firms assist in the early conceptual design process, then work with the hospital team to review the blueprints and mock-up produced by the architectural firm, thereby giving you someone working beside you with considerable experience to make sure small, but potentially crucial, issues are not missed. Most people on a hospital NICU design team do not have previous experience with a NICU design and often, the design process is unduly driven by efforts to overcome perceived shortcomings of the old unit, without adequately considering other equally important factors. If neither the architectural firm nor most of the hospital design team have previous NICU design experience, access to a consultant with extensive experience is almost essential to avoid costly and usually permanent errors.
References


http://www.hsc.usf.edu/publichealth/conted/highrisk03.html
(Information on The Physical and Developmental Environment of the High Risk Infant Conference, January 29 – February 1, 2003, Sheraton Sand Key, Clearwater Beach, Florida)
I'm interested in comments on a couple topics here: 1) for those who have gone on site visits, did you develop a checklist of questions to ask and if so, would you be willing to share this with others? 2) for those who have built mockups, could you describe the process as it would be ideally done - e.g., does the mockup need to be an entire patient care area, or just a headwall? How long does it need to be in place? Who needs to evaluate it besides the bedside staff (RNs, RTs, MDs)?

Reply to: "View Planning Presentation and Discussion"