

Case Study: Safer Chemicals - DEHP/PVC Reduction**Summary**

Beaumont Health System is committed to environmental sustainability and signed onto all six Challenges of the Healthier Hospitals Initiative (HHI), including the Safer Chemicals Challenge.

The Safer Chemicals Challenge includes a goal to reduce the use of medical devices containing PVC and DEHP, many of which are used in Neonatal Intensive Care Units (NICUs)

Beaumont Health System's NICU core team worked together, with the support of hospital administration, to identify the hospitals' PVC and DEHP-containing products, specifically those in the NICU, and replace them with DEHP-free products.

The hospital was able to eliminate a number of DEHP products thus reducing exposure to DEHP and providing a healthier environment for patients.

Beaumont Health System, Michigan

The Problem

In 2002, the Food and Drug Administration issued a Public Health Notification after completing its safety assessment of a common plasticizer called Di(2-ethylhexyl)phthalate (DEHP). DEHP can be released from polyvinyl chloride (PVC) medical devices. The FDA Public Health Notification advised hospitals to take steps to reduce the risk of exposure in certain patients based on a finding that DEHP can leach out of plastic medical devices into solutions that come in contact with the plastic. Exposure to DEHP has produced a range of adverse effects in laboratory animals, but of greatest concern are effects on the development of the male reproductive system. The FDA highlighted a number of procedures, particularly in neonates, that should be prioritized for DEHP-free devices. Those procedures included multiple procedures in sick neonates including exchange transfusion and extracorporeal membrane oxygenation (ECMO), total parenteral nutrition (TPN), hemodialysis in peripubertal males and pregnant or lactating women and enteral nutrition, among others.

Since the FDA Public Health Notification was issued, many hospitals have been taking action to reduce the use of DEHP-containing medical devices, including Beaumont. HHI helped the system expand these efforts.

The Strategy Selected**Create a Team**

A core group of NICU staff and hospital administration created a team to undertake the Initiative.

Identify target products

The team decided to focus on nutritional products, pharmacy, and respiratory supplies as well as invasive lines for neonates with the goal of decreasing the use of DEHP-containing devices and reducing potential exposures to NICU patients.

The team then identified four priority product areas and divided the work among them to determine if DEHP was present in the materials. The team identified PVC and DEHP-containing products through product labeling and conversations with device manufacturers. The research uncovered that the hospital's feeding

About Beaumont Health System

One of the founding organizations of Beaumont Health, Beaumont Health System includes three hospitals with 1,778 licensed beds, more than 20,200 employees and 3,100 physicians, including 553 employed physicians in the Beaumont Medical Group and more than 2,500 private-practice physicians. In addition to its hospitals in Royal Oak, Troy and Grosse Pointe, Beaumont has 54 community-based sites of care including medical centers in Oakland, Macomb and Wayne counties, family practice and internal medicine practices, five nursing centers, home care services and hospice. The Beaumont Research Institute has 924 open research studies including 270 clinical trials with more than 7,800 participants. Beaumont is the exclusive clinical teaching site for the Oakland University William Beaumont School of Medicine. Visit Beaumont on the web at www.beaumont.edu.

supplies and invasive lines were already DEHP-free. For the other materials, the group worked to find DEHP-free options. For example, with pharmacy supplies, the group consulted the director of nursing who oversees the supply chain in that area. She was able to connect the team to their IV vendor. For respiratory, the team looked at alternatives through contacting other HHI-enrolled hospitals and looking to HHI's online resources.

Implementation Process

Once the materials were identified, the group presented the opportunity to their supply chain, with the support of the director of nursing, a clinical champion for the project. Having a clinical champion on the team resulted in meetings with key vendors and was instrumental in developing a pilot trial. The trial of the DEHP-free product was successful – the staff did not notice a significant difference with the new product and the new materials were purchased. Additionally, administrative oversight worked to ensure that henceforth inventory control delivered only DEHP-free products to the NICU.

Benefits

- Reduced exposure to toxic chemicals for patients, as per FDA recommendations and the scientific literature.
- The opportunity to promote the NICU's use of DEHP-free medical devices
- DEHP-free products are slightly more expensive, but Beaumont Health System made the commitment knowing the investment was a strong one leading to healthier patients and outcomes.

Challenges

Converting all products to PVC and DEHP-free is still a challenge. Our IV bags, endotracheal tubes, and tracheostomy tubes are still not DEHP-free. Cost and clinical acceptance are two reasons for this. For example, with respiratory supplies, physician preference is a consideration. Clinical education is critical for medical device change.

Overall, it was challenging to dedicate the amount of time necessary to this project while handling a busy unit. Assistance from Kay Winokur, VP of quality, safety and accreditation, was important for decision-making, leadership engagement and team productivity. Her leadership, and the leadership of champions within the system, was critical to getting the work done.

The Team

Mara Sipols, RN, MSN, NICU

Administrative Manager

Audrey Kalasky, RN MSN, Unit

Clinical Nurse Specialist

Susan Slack, RN and other RN staff members

Trish Riker, NNP, Neonatal Nurse

Practitioner

Veena Rajanna, Pediatric Clinical

Pharmacist

Jean Aphram, Senior Therapist,

Respiratory Therapy

Mike Wagner, Director, Respiratory

Therapy

Kay Winokur, RN, Administration

Additional staffers were consulted and worked with the group, depending on the issue.

Lessons Learned

Above all else, a focus on best practices is critical. Do not let cost be a deterrent. Administrators and clinical champions are sensitive to sustainability and health issues and willing to work with teams to move towards healthier and safer products, equipment and materials. Start small and keep building. Pilot new devices before making the switch. Organizations like Practice Greenhealth, Health Care Without Harm, and regional support like the Michigan Health & Hospital Association's Green Healthcare Committee provide technical assistance, resources and networking with others to realize success. Beaumont is optimistic that they will continue to transition away from the remaining products containing DEHP.