

# Best Practices for Establishing a Dedicated Human Milk and Formula Preparation Room in Your Hospital

**Featuring:**

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## TRANSCRIPT

**ANHI:** Providing nutrition to hospitalized infants is a fundamental care practice, especially in the NICU. After all, growth is one of the primary reasons they are in the hospital! Providing human milk and formulas to hospitalized infants can be a complicated task with many different steps. If not done correctly, serious problems such as contamination of feedings, preparation errors, and misadministration of feedings can occur. Many healthcare facilities are recognizing the value of a dedicated human milk and formula preparation area. Providing a separate space, staffed by trained personnel can ensure safe, accurate, and consistent technique in the handling of human milk and formulas.

**ANHI:** Welcome to Abbott Nutrition Health Institute's, Power of Nutrition Podcast. My name is Ashley Bronston and I'm with the Abbott Nutrition Health Institute. Today, I'm excited to bring you a discussion on developing a dedicated human milk and formula preparation room for a hospital setting.

**ANHI:** We are lucky to have Kristi Spaide, MS, RD, CNSC with us today. She is the Clinical Nutrition Manager at Pennsylvania Hospital, a part of PennMedicine. She has over 15 years of clinical experience and recently led the team that pioneered a dedicated human milk and formula preparation room at her institution. She was instrumental in the analysis and planning as well as establishing the policies and procedures that accompany the room.

**ANHI:** Welcome, Kristi.

**Kristi:** Thank you so much for having me today, Ashley, I'm really excited to be here.

**ANHI:** Before we start, I should note that I'm recording in the studio while Kristi is dialing in from Mount Laurel, New Jersey so you may notice a small difference in the sound quality of our respective microphones.

**ANHI:** Kristi, I always like to take a few minutes to properly introduce our guests. Would you mind taking a moment to tell us a bit about yourself and your background?

**Kristi:** Yeah, absolutely. As you previously mentioned, I'm currently the clinical nutrition manager at Pennsylvania Hospital, but prior to that, I was working as the neonatal dietitian for about seven years, which is during the time that we developed our milk room. And even before that, I was actually working as an adult dietitian for the length of my career prior. Actually, before I started my career as a dietitian, I was actually a pastry chef. My degrees are actually in culinary nutrition, and I also have a master's in food science. As you can tell, I have a lot of interest in all things when it comes to food, especially the science behind it all. And when I'm not working, I'm actually at home in my other job as a mom of three little boys and they keep me incredibly busy.

**ANHI:** Thank you for that, again it is such a pleasure to have you here. Let's start at the beginning. What prompted the initiative to develop a dedicated human milk and formula preparation room in your institution and how did you start the conversation in your hospital? What types of information did you need to gather in order to put your proposal together?

**Kristi:** Developing the centralized milk prep was really one of the first big projects that I worked on as a neonatal dietitian. It was a nurse-driven initiative that I had the pleasure to be a part of. Our amazing nurse manager and educator really spearheaded the data collection, which primarily involved time studies to show the amount of time it was taking nurses to prep infant feeds from start to finish multiple times a day. This was an inefficient process and valuable time was being taken away from the bedside care that could be given back, and this time has a price tag. Additionally, I did some observations and asked a lot of questions, a lot of questions, about how the feeds were prepared, and we ultimately determined that practice was often inconsistent as well as inaccurate. Another big selling point on change was the lack of clean space for preparation. So our first version of a nutrition room was born. It was literally the size of a closet. We were lucky enough to have plumbing, so our upgrades included a stainless-steel counter, shelves, some storage, a new fridge, and a sanitizing dish room. And then after a short time, we improved our practice, and we received approval for a much larger space and opened the wonderful nutrition room that we use today.

**ANHI:** Can you discuss who the members of your team were and what role they played in implementing your plan?

**Kristi:** Definitely. As I mentioned, this was a very much nurse-driven initiative from the beginning. So our nurse manager really took over this project as far as identifying who needs to be involved for sure, and our nurse educator did a lot as well with working with our team. So there were some nurse champions identified, and I think that's always really key, especially since we're changing practice. As you can imagine, not

everybody was excited about the change because change is always difficult, but they would quickly realize how much of a benefit actually is to them. So having nurses involved in this, including the time studies and potentially even training down the road would be really important. When you're looking at the development of the space, it is really important to have at least one physician involved in that as well as potentially your infection prevention team and somebody from regulatory because that's always going to be important when determining what you can do in the space and what is required in that space. So it is definitely a big team. Having obviously nutrition involved as well, if you have a dietitian that is available is always going to be really beneficial. Not all NICUs have a dietitian, but you could always reach out to the clinical team and see if there is anybody that would be able to assist with that too.

**ANHI:** Thank you for that information and congratulations on your new preparation room. Can you provide guidance to our listeners on what equipment and supplies are essential when establishing a room in their hospital?

**Kristi:** Yeah, absolutely. At a minimum, a nutrition room should be equipped with a stainless-steel countertop for preparation. It's going to be smooth and it's going to be easy to clean, so that's important. You definitely want to have milk warmers or a bath in order to thaw frozen milk and product. If you don't have the space to have those warmers available in your prep space, you could consider the space being used at the bedside and then you would be collecting the already thawed milk but having it in the prep space would be ideal. And then you have to think about your PPE, so you need disposable gloves, hair bouffants or hair coverings, disposable gowns, or you could use reusable gowns that get washed by your hospital laundry service. Ideally shoe coverings as well when you're entering into the prep space, trying to keep that as clean as possible.

**Kristi:** And then if you use all disposable equipment, this will help you to avoid having to wash, sanitize, and dry reusable equipment, but then you need to ensure that you have bottles that you're able to easily measure liquid with. And ideally, they should have a lid, so these bottles can be the bottles that you provide to moms to collect milk or the bottles that nurses use to feed the infants as well. But again, they should have a lid and also clear marking so they can be measured. And it is really important to make sure that the markings are actually accurately measuring the volume that you intend. So you can actually check this. You can use a graduated cylinder as your gold standard for volume measurement, and then you would actually measure water in that graduated cylinder and make sure you're looking eye level to ensure that you're hitting the mark where you intend, and then you would pour that volume of water into the measuring cups or bottles that you'll be using and make sure that they actually reach the same volume measurements. If you do not have a graduated cylinder, you could consider placing a bottle on a gram scale. You would zero it out and then use water to measure, and you would see if 250 mls of water is measured, it should weigh 250 grams,

but definitely, a graduated cylinder would be your gold standard there. Additional equipment would depend on the scope of the nutrition room, so products your facility uses, how you plan to deliver the prep feeds. These are all things to take into consideration if you want to deliver just bulk, so like one large bottle and then it's drawn up at the bedside. You could do that, but ideally, you would be drawing up individual aliquots in the prep space, so then you would need the syringes available as well as one of your pieces of equipment. If you are measuring powder formula, you would want to use a gram scale, and then you would also need to have some disposable flexible cups or a container as well as some disposable spoons so that you can measure out your powder. And then some of the larger equipment will also depend on the space that you have to work with. Obviously, refrigerators and freezers would be really necessary in that space as well as a separate hand washing sink. And then you would need a sanitizing dishwasher if you plan to use reusable equipment such as beakers, graduated cylinders, and whisks, and then also consider dishwashing sinks, ideally a three-compartment sink, which would be needed if your dishwasher were to break.

**ANHI:** This is very helpful, now that we have a better understanding of the equipment needs can you elaborate on the most optimal layout for a room? Is there a logical flow for materials, receiving, preparation, storage, and cleanup?

**Kristi:** I don't believe there's actually one perfect layout. This really, again, does depend on the space that you have available. Some people have much larger space than others. So many units, especially those in an adult hospital are already limited for space, so you might need to really get creative. So if space is available, I would 100% advocate for an anteroom that has some storage, computers, and a hand washing sink. If you also have space to have a dedicated storage location where you can keep your shelf-stable products formulas, that would be amazing as well to have that on the unit. You may also want to consider a pass-through window where milk can be dropped off and a pass-through refrigerator is also a great functional piece that allows you to drop milk off and then be unloaded into the prep space. And then you can also load prepped feeds into the pass-through refrigerator to be then unloaded into the anteroom for delivery. This allows you not having to go back and forth into the prep space, which is trying to keep clean. The prep space should ideally be a positive pressure room. This would allow for the removal of any airborne particles and prevent any potential pathogens from circulating back into the room. And then when you're thinking about your design, think clean lines. Cleaning should not be made difficult by having too many crevices or surfaces for dust and dirt to collect. You do want to avoid open shelving if you can, especially over your clean prep space. Again, the reason behind that being any collected dirt or dust can then fall down onto your prep space and obviously not ideal, especially if you're actually actively prepping human milk and formula. Make sure that you have closed cabinetry for storage. You want to keep some product and some equipment. You want to avoid too much storage. You really don't want that potential for clutter, which again really comes back to

the collection of dirt and dust. You're really going to want a nice big stainless steel surface for mixing. If you have a large operation, you may want to have more than one stainless steel surface or an extra large island in the middle of your space, and the layout should really allow for a flow from clean to dirty, which is really important.

**Kristi:** Additional things to consider in the prep space is the placement of your hand washing sink and your dishwashing sinks and ensure that you follow the regulations for spacing, especially considering the depths of the sink and the height of your splash guards, and that is to prevent water splashing onto your clean surface. So of course you cannot forget your refrigeration and freezer space. That's a given. Make sure you have enough fridge and freezer space. Consider your operation how many babies you're actually preparing for and how many bins are going to fit into a single fridge. You want to make sure that you are going to have enough space, enough freezers, and fridges to store all the milk that you have. And of course, don't forget your donor milk. You'll need the freezer space for them and maybe even a separate freezer just for those products. Your fridges and freezers should also be easily accessible without obstacles. There should not be too many steps to take from where your prep space is to your fridge. Your techs are going to be going back and forth frequently, and this will be a waste of time if they have to take too many steps all over the place. So thinking about that layout is really important.

And then as far as cleanup is concerned, it's important that the persons working in the clean prep space understand how vital it is to keep that space clean. This should really be included in their training and their competencies, and you should also work with your infection prevention team to determine the best cleaners to be using on your surfaces. Develop a cleaning schedule for your team and also work with your house cleaning or your environmental department for additional support in cleaning that space.

**ANHI:** You mentioned storage. Are there best in class procedures around the storage of human milk? And are there any recommendations or guidelines for tracking and labeling of human milk?

**Kristi:** When it comes to storage of human milk, each facility should have their own specific storage guidelines. There definitely is some variability in the recommendations for refrigerated milk being kept anywhere from 48 to 96 hours prior to freezing, and that's going to depend on obviously the resource that you're looking at, but also with a little caveat in there that you could potentially use refrigerated milk longer, 72 to 96 hours if you have clean collection and also a dedicated space that you're really maintaining a clean working environment. Another nurse-driven initiative at our hospital was transitioning from a completely manual process of managing human milk to electronic, and this was a huge project and incredibly valuable. I

have to say, it was eye-opening to learn how much potential there was for human error. Our manual process is still retained for downtime, which is important, but we are fully electronic, and it makes a world of difference. There're multiple steps where milk has the potential to be labeled incorrectly with the wrong patient, fortified, and labeled incorrectly with the wrong contents, labeled with the wrong expiration, or with the right expiration, but then still fed past expiration. And of course, one of the scariest that we all dread is obviously feeding the wrong baby's milk to the wrong baby. Of course, it's required to have a two RN check at the point of feeding, but even this sometimes does not catch it all. Then once the infant's feed is actually tossed, you have no way of tracking it at all. So electronic milk management systems provide great opportunities to keep track of everything from mom's pumping frequency and volume. Then being able to manage the inventory once it comes into the hospital and see how much milk is available at all times, fresh or frozen, at home even, what the prepared feeds look like, and then having those scanning capabilities at every possible point to catch any opportunities for error. So in the operation of actually prepping milk, you're scanning the bottles and making sure that there's not Baby Jones's bottle isn't mixed with Baby Smith's bottle and you just don't catch it because you're going so quickly running through it. It'll identify that immediately so that you can make that correction and prevent making an error there. Same thing at the point of feeding. You're trying to feed the wrong baby, the wrong milk. It's going to notify you immediately if you're trying to prepare the wrong recipe, it's not what's actually ordered, it's going to notify you immediately. There's a lot of different human milk management programs out there now, something that is actually kind of a growing business at this time. So there definitely are some options available. Some are maybe a little bit less involved than others, but it's definitely something to strongly consider. It'll really improve overall the practice that's done and really make, I think everybody feel a little bit more comfortable with the potential for errors.

**Kristi:** As far as different resources that are available, when it comes to going back to the storage of human milk, I would definitely just look at the Human Milk Banking Association of North America and also the Academy of Nutrition and Dietetics, Infant and Pediatric Feedings. Those are both excellent resources when it comes to centralized milk prep and also storage of human milk.

**ANHI:** Thank you, this information is so important. Now that we have information on setup, can you provide guidance on staffing and workflow? Can you also discuss the recommended competencies we should look for as we hire personnel to work in this area?

**Kristi:** When it comes to competencies, I believe the visual observation and ongoing teaching or correction and practice if needed is really important in this space. So if you have an education department or a dedicated educator position that's available to you, they're going to be incredibly valuable and a partner for

maintaining competency for all of the staff. And I think nutrition techs sometimes fall in their own little bubble. Nobody really is a hundred percent sure how to manage them because they're not nursing, they're not nutrition, but they're preparing feeds. So it is really important to have people dedicated to understanding what their role is and how to manage them, their schedules, and also obviously their competencies and training.

**Kristi:** At a minimum, I would make sure that there's an annual competency, a written competency, ideally, that is a collection of questions related to storage guidelines, the differences between products, how to measure mass, of course, calculating feeding volumes, calculating recipes, hand hygiene, and then preparation with aseptic technique as well as cleaning processes. These are all things that they should really be kept up with. In addition to the competency, if you have the ability to. I would also consider developing an audit tool for visual observation and implement action plans for corrective action when needed, this would also be really helpful. When you have new hires, include your existing staff in the training of the new staff. This helps them to feel confident in the process as well when it comes to being able to impart their knowledge onto the new staff. And it also gives you an opportunity to make sure that they are actually saying the correct things and following the guidelines that were set in place.

**Kristi:** Now when it comes to staffing, having time studies is helpful in determining how many techs are needed to prepare the infant feeds for the day. It also is going to depend on how big of an operation you plan on having. Are they just preparing prepared feeds or are they also drawing up unfortified milk for nurses? This is a seven day a week operation. You shouldn't expect that we have centralized milk prep five days a week, but on the weekends, nurses do it, or that if somebody's on vacation, nobody's going to fill that job. It's really setting the wrong example of what our expectations are with this clean, safe space and standardized practice in preparing feeds. So keeping that in mind, seven days a week, you need to have the extra coverage. And then how many times a day are they preparing? Are we preparing 24-hour feeds or do you have the ability to actually prepare 12-hour batches? 12-hour batches would really allow a little bit more flexibility with changes in feeding orders and things like that so that you're not over preparing and potentially wasting if a baby goes NPO or if they have the need to back off of fortified milk, down to unfortified milk, somewhere along those lines.

**ANHI:** For our listeners that want to offer additional training to their staff can you provide recommendations on programs that are currently available?



**Kristi:** Sure. Training in this area is very specialized, and that can actually make things a little bit challenging. In general, I think having a lead position that's involved in training can really be helpful, along with giving staff the opportunity to take part in training their new staff. You should really take some time to develop the training material that's specific to your area or your facility. This should include information on the importance of centralized milk prep, why we fortify milk or provide high-calorie specialized formulas and products, how orders are received, how to collect milk, and determine how much frozen human milk, whether it be maternal or donor milk is needed. How to calculate recipes, proper hand hygiene, and then PPE for preparing feeds, proper aseptic technique or no touch technique for preparing feeds. And then the products that are being used, your formulary, they need to be very well aware of all the products that they're using. And then storage guidelines of course too, and expiration guidelines. And then the last thing when it comes to training in this material would be measuring. It should be really hands-on, they should be taught how to measure liquid, how to measure dry ingredients. And then the last thing would be cleaning, obviously, making sure that they understand what the cleaning schedule looks like, what their responsibilities are, and what other people's responsibilities are when it comes to cleaning that space and keeping that pristine, clean location for prep.

**Kristi:** There are some helpful training programs that exist. The two certificate programs that I'm aware of are the Ohio State Infant Feeding Technician Certificate Course and Columbus State Community College Formula and Human Milk Technician Certificate Program. They're different programs, but one of them definitely might be a good fit for your facility, especially if you're starting off new with a staff of green techs to train. If you have the budget to hire new techs, that's wonderful, and you should get them all started and do a program all at once. If you don't have the ability to hire new techs and you're going to be using nursing or regardless, it would be helpful to have nurses or some dedicated staff that is going to be backups, maybe some other techs on the unit. This should also be a part of that training. And then your leadership should also be included. If you're going to do one of those programs, I think it's really helpful to have your staff ready and have your staff attend those courses around the same time or at the same time, if possible. This way they're all receiving it together. They can ask questions at the same time and can really work together on what your program is going to look like.

**ANHI:** And for those who are exploring developing a human milk and formula preparation room in their hospital, can you provide more information on the best resources available?

**Kristi:** There's always obviously articles out there that you can do some searches and people publishing new stuff, especially as new milk rooms are really coming about. So there definitely are some good articles out



there if you wanted to do a search. But when it comes to kind of my core, go-to resources, the four that I would use would be the Academy of Nutrition Dietetics - Infant and Pediatric Feedings, the third edition, the Human Milk Banking Association of North America as well that I previously mentioned, always has a very in-depth guidelines published for banking for human milk. They have great information as what you should also expect of your clean space. And then the Facilities Guideline Institute, this is the guidelines for design and construction. They actually have specific guidelines for developing centralized milk space. So that's another really great resource. There's not a ton in there, but that's something that your regulatory department should be referencing when it comes to building your new space. And then the WHO and the CDC always have guidelines as far as human milk storage as well, always are going to be important resources to include when you're putting all of your materials together.

**ANHI:** Some listeners might feel they can't implement this type of initiative due to limited space or funding available. How were you able to secure the room in your facility? And can you provide guidance or best practice when a "state-of-the-art facility" just isn't feasible in a hospital?

**Kristi:** I honestly can't credit our nursing staff enough. Our nursing staff specifically, our nurse manager was very persistent, so she was vital in moving things forward. She worked r hard to get in front of the right people and prove the importance of this space with all the information that we collected and how centralized milk prep is a gold standard for preparing infant feeds in a hospital setting. I think the main points that moved things along for us was the cost of nursing time to prepare feeds. So hiring nutrition techs is going to save money in that area, and it also then allows nurses back at the bedside to care for the patients. We all know that's going to be really important as well. We don't want them taken away from the bedside. And then the standardization of practice and safe handling of feeds in a clean, dedicated space. So those were the two big points that allowed us to really get movement and get approval for developing our centralized milk space.

**Kristi:** So when it comes to space, definitely don't let small spaces scare you. Of course, everybody wants that brand new kitchen with new cabinets, brand new appliances, maybe a farmhouse sink, maybe that's just me, a walk-in pantry. But sometimes you really just need to think about it. You need to repurpose and resurface until you have the money to go big. I would say if you have a small space like we did when we first started off, work with your facility to get it up to code with ventilation, stainless steel counters, like I said, that's really a must. Some storage and a sink and the fridge if you have the space in that room. If that is still not an option and you need to go smaller, think outside the box. Can you have a mobile prep space or use a stainless-steel counter in the corner of a room somewhere? The way I see it, the main goal in this is really having dedicated personnel that's specifically trained to prep infant feeds and have it away from the bedside on a clean surface

with completely standardized methods using aseptic technique. If you don't have a space at this time, think about how you can really just get it away from the bedside. Nobody wants to see their baby's feeds being prepared next to the dirty diaper pail. Just take some time and pay attention to what the nurses are doing. You will find that they're not all doing it the same, and you really want to, again, have that trained staff. Their sole job is to do this and do it the right way and do it consistently from one infant to the next. So just getting away from the bedside with that staff is what's most important.

**ANHI:** Thank you, Kristi, that's helpful. Are there any closing comments you'd like to share with our listeners – or any other key takeaways?

**Kristi:** Well, if you're listening to this podcast because you know that there's a need to implement centralized milk prep, so that of course, I think is the first step. So now obviously you just have to convince the people with the money to make it happen. So definitely identify your key stakeholders, collect your data, prove what a benefit it would be for your unit, and especially for, of course, the fragile infants that we're preparing these feeds for and we're caring for. We don't want things to go wrong. Don't back down. Be persistent. We know it's best practice, and it may take a couple of steps or versions to get there, but it's hard to deny the importance of dedicated central milk prep. You can definitely do this. You can make it happen.

**ANHI:** Kristi, it's been such a pleasure speaking with you today. Thank you so much for your insights, and for joining us on today's Power of Nutrition podcast.

**Kristi:** Thank you. It really was my pleasure. I really enjoyed being here with you today too.

**ANHI:** For our listeners, if you're looking for more education on handling of human milk and formula, you can find our course catalog by clicking EDUCATION at the top of the home page, and then COURSE CATALOG.

**ANHI:** Thank you for listening today. Stay healthy and safe everyone.

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