Patient Safety Case Study

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The case study that stood out most to me was Case 18, which is “Not for IV Use: The Story of an Enteral Tubing Misconnection.” In this case, a woman was 35 weeks pregnant and admitted to the hospital for extreme nausea and vomiting and early induction of labor. By the end of the day she was in extreme pain and eventually her baby died and she coded and could not be resuscitated. These events were all caused by a tubing misconnection. Though many things contributed to this mistake there were not proper systems in place to prevent an error such as this from occurring.

The mother, Robin, was assumed to be given TPN while she was in the hospital because that is what she had been relying on as her source of nutrition throughout the second half of her pregnancy due to her severe nausea. When she was admitted, a bag of enteral feeding was delivered to the unit with Robin’s name on it. This solution came from the dietary department since it was considered food and the TPN that she was supposed to receive through her PICC line would have come from the pharmacy since it is considered a drug. Regardless, there was no written physician orders for the enteral feeding or the TPN, but somehow it appeared on the unit. The hospital was in the process of introducing a new computer system and they were hand-writing orders for the secretary to put in, but the secretary claimed she had not put the order into the computer. The hospital policy for this hospital was that before TPN was given that two nurses must check the ingredients against the physician’s order, Robin’s nurse didn’t have a second nurse to witness, nor was there even an order to check the ingredients to. She knew that the plan was for Robin to get TPN so she just assumed that is what the bag was.

There are many issues in this case, and many times when a competent nurse should have realized that something was wrong and she should have stopped to investigate. Even though it is easy to blame the nurse responsible for misconnecting the tubing, it is not always that person’s
fault. The cause of this error should not be only focused on the sharp end error (the nurse’s mistake) but all the latent errors that lead up to the nurse misconnecting the tubing. This is drawn from James Reason’s “Swiss cheese model,” which explains, “Such errors must penetrate multiple incomplete layers of protection to cause a devastating result. Reason highlights the need to focus less on the goal of trying to perfect human behavior and more on aiming to shrink the holes in the Swiss cheese and create multiple overlapping layers of protection to decrease the probability that the holes will ever align and let an error slip through” (Wachter, 2012, p. 21-22). Therefore we should focus on what the root cause of this error was in order to improve the system as a whole and not allow this to happen again. There were some screening measures that were part of hospital protocol that was simply not followed by the nurse. Had the nurse had a second nurse check the TPN (enteral feeding), and had an order to compare the package to, as well as scanned the barcode, this mistake might have been avoided. These three measures are great things put in place by the hospital to protect patients, but they only work if they are done correctly and in this case, it was not done according to hospital policy.

There are many other layers of protection involved in this case where the holes were too big which also contributed to an error occurring. The first is the tubing that was connected to the IV. Manufacturers typically have enteral solutions connected to a tube that will only fit a feeding tube and not an IV. However not all manufacturers do so, the one in Robin’s case was sent only with a bag and no tubing connected. The nurse retrieved IV tubing, spiked the bag, and put the tubing into the infusion pump. The nurse then connected the distal portion of the IV tubing to Robin’s PICC line and began the infusion. For this particular hospital, it was hospital policy that any patient that was to begin TPN must be visited by a nutritionist first. Robin had not been visited by the nutritionist because there was no order for TPN. When the nurse mentioned to the
nutritionist that Robin had been started on TPN, it was then that they realized her mistake, and by that time it was too late, the infusion had been running for a total of 6 hours.

In order to prevent a terrible tragedy such as this one from occurring again, many steps must be taken to improve the systems. The nurse responsible for the large majority of this error was fired and surrendered her license for 8 months before it was reinstated. This may help the nurse to realize her mistakes but it doesn’t necessarily protect any other nurses from making this same mistake. That is why it is so important for hospitals to learn from errors such as this and make changes to their systems. One way to ensure correct medication, TPN, or enteral feeding administration is to scan the barcode on the medication in the patient’s room. If it is the wrong dose, medication, or patient it should alert the user on the screen to recheck the orders against the medication because there is a discrepancy. This barcode scanning computer system could also alert the nurse to any protocols that haven’t been followed prior to administering a medication. For example this hospital’s protocol was for a nutritionist to visit a patient before they received TPN. Had the nurse tried to give the patient this medication, the computer could have alerted her that a nutritionist must approve this action before she is to give the TPN. This is an example of a forcing function because it doesn’t allow the nurse to give the medication until the nutritionist has seen and signed off on that patient. This system is used in many hospitals today and may have even been used in the hospital in this case, but the fact that the nurse did not even try to scan it is what created a problem. The nursing staff should be extensively trained on the computer systems and how to scan medications in the patient rooms so problems such as this don’t arise. Doing that one step could have made the difference of life and death for Robin and her unborn child.
Perhaps one of the simplest ways to prevent this type of misconnection of tubing is the tubing connections themselves. The bag that the enteral feeding was in came with no tubing in the package which meant the nurse had to go find tubing. Since she assumed it was TPN and was going to be inserted into the patient’s bloodstream, she found IV tubing and spiked the bag to begin the infusion. However, had the manufacturer included tubing that would not allow it to be connected to and IV hub and only to a feeding tube, this error could have been avoided. A way to prevent this in the future is for all manufacturers who produce prepackaged enteral feedings, to include a tubing that will not connect to an IV. This would prevent anyone thinking it might be used intravenously, from being able to connect it to an IV and hopefully would cause them to take a second look at the label.

The issue of misconnection of tubing has been an issue in healthcare facilities for quite some time due to the high level of stress, fatigue, and distractions that occur in many hospitals. A lack of education for nurses on their equipment may also contribute to the number of errors caused by tubing misconnections. Another way to prevent errors such as this from occurring again is extensive education to nursing staff on different tubing and the danger of misconnections. However, hours of education will still not completely eradicate this problem. “The only real solution is to redesign the tubing connections to eliminate the possibility of connections between incompatible systems” (Johnson, Haskell, & Barach, 2016). Though some hospitals have changed their connections to be different for each system, this is not something that everyone has gone to, and this issue itself is the root cause of this error. I think this is something that should be done throughout the country because it would greatly decrease the amount of errors. “A patient may be connected to several devices used to administer fluids through a vein; deliver feedings to the stomach; monitor blood pressure; and administer oxygen
via mask or cannula. This collection of devices, all of which may include luer connectors, poses a risk of tubing misconnection” (Tubing misconnections, 2015). As this describes, a critically ill patient may be connected to 10 machines or more and if even 4 of those 10 have luer-lock connections, a tube that may be meant for one thing can easily be connected to something else on accident.

The error that occurred in this case should have never happened due to the steps that were in place such as the barcode scan, the second nurse check, and comparing the package to the physician’s orders. However, the nurse did not follow these, and a patient’s life and her baby’s life was put in danger because of that. When we look at the Swiss cheese model, we see that there are many layers that are involved in an error and we must look at that as a whole and greatly consider the root cause instead of focusing on the one action that lead to the error. Overall, the system must be improved by finding the root cause, which in this case was the lack of tubing included with the feeding and the similar connections of different systems. There were many things that contributed to this error and they are all things that can be improved upon to prevent a tragedy such as this from occurring again.
References


http://www.premiersafetyinstitute.org/safety-topics-az/tubing-misconnections/tubing-misconnections/