



## EPISODE 18 - Making Sense of Refeeding Syndrome

### Transcript

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I was the nutrition support specialist working in the critical care unit. I got to work and starting screening the patients on my unit. There was a new admit and I was consulted to complete a nutrition assessment. I reviewed the medical record. The patient was a 51 year old homeless male. He was underweight and was admitted with the chief complaint of stomach pain. He was intubated and sedated so I wasn't able to talk to him and get a thorough diet history. There was no family to be contacted yet. Social work was trying to locate family. I went up to the unit and saw the patient. He was NPO at the time. I spoke with the doctor regarding the patient and to collaborate on the best nutrition plan going forward. The patient had some scans which showed an obstructing gastric tumor. That was the reason for his stomach pain. The plan at the time was to start parenteral nutrition. The patient was malnourished and needed to get some nutrition. They wanted parenteral nutrition recommendations for when the patient had line access to initiate nutrition. I placed TPN recommendations. This patient was high risk because he was underweight, hadn't been eating due to stomach pain, and was found to have a gastric tumor obstructing the GI tract. He was starting TPN. There was one condition I was particularly concerned about when starting nutrition in this patient. Stay with me.

[Music and Intro]

Hey there. Today's episode is a big topic. It can be complicated but is so important to know and not just for the exam. If you work with malnourished people or people with eating disorders, this episode is for you. We're talking about refeeding syndrome. If you're preparing to take the RD exam and want to make sure you nail any questions about refeeding syndrome, I got you. In this episode, I'm gonna review what refeeding syndrome is, how to prevent it, and what to do if someone starts to show concerning signs and symptoms of refeeding syndrome.

But before we get started, I want to give a big shout-out to Keri Dougless, a new RD who just passed the RD Exam. She was introduced to the podcast from someone in her internship group and listened to every episode. I'm so thankful the episodes helped her along her journey. Congratulations Keri. Your energy and one of a kind you is gonna make a huge impact on the lives you touch. Welcome to the RD community. So happy you're here. If you want a shout-out on the podcast, send me a message and let me know. You can find me on instagram @jananichollrd. I'd love to be able to celebrate you too. You deserve it.

Ok so let's talk about refeeding syndrome. Thankfully, it's on the radar with the increased focus on malnutrition over the years. Which is a good thing because if refeeding syndrome isn't caught and addressed as soon as the symptoms start showing up, it can be deadly. So let's start with what it is and why it happens. Refeeding syndrome happens in malnourished patients and patient who have gone long periods of time without adequate nutrition for example, in patients with anorexia nervosa have prolonged fasting and restrict calories. A couple other conditions that put someone at risk of referring syndrome are patients who have prolonged diarrhea, vomiting, and high output fistulas. The reason these patients are at risk is because all of these conditions cause electrolyte losses. And refeeding syndrome is basically a condition of electrolyte imbalance or better yet, electrolyte depletion. When patients have diarrhea, and vomiting, one of the interventions is to give an electrolyte beverage to replete electrolytes such as pedialyte or gatorade.

When the body and cells have been deprived of nutrition for a while, the body finds ways to make energy. It shifts from using glucose to using ketone bodies. When the body is finally given carbohydrates, that's when refeeding syndrome happens.

I remember it best as a condition of electrolyte imbalance caused when giving carbohydrate after prolonged periods of fasting, starvation, and malnutrition.

Refeeding syndrome is often associated with parenteral nutrition but it can happen when giving enteral nutrition too. The terminology can sometimes be confusing so I want to clarify. Another term for enteral nutrition and the one more commonly used in the clinical setting is tube feeding. Parenteral nutrition on the other hand might be called PN or TPN or even hyperalimentation or HyperAl for short. They all mean IV nutrition.

The goal of this episode is to give you a general overview of this condition so you will accurately answer any questions that will pop up on the exam and to have an awareness if you ever work with malnourished patients. You aren't expected to be a refeeding syndrome expert. Remember, the exam is an entry-level exam.

Ok. If a patient receives parenteral nutrition, the form of carbohydrate given is dextrose. Remember, that 1 gram of dextrose has 3.4 kcal. Some IVF's also contain dextrose. Notice I said some, not all. There's different formulations available depending on what the patient needs. One of the common IVF's is D5 1/2 NS. The D5 in the IVF stands for 5% dextrose or dextrose 5%. D5. Therefore someone could develop refeeding syndrome after starting IVF that contains dextrose. Also, it's not just limited to IV forms of carbohydrate. It could potentially happen after initiating tube feeding because tube feeding formulas contain carbohydrate. And may even happen

with no intake. To be safe, refeeding syndrome should be on the radar with all malnourished patients who start receiving nutrition.

During starvation or prolonged fasting, phosphorus stores are depleted. Phosphorus is really important because it's needed for glycolysis. Remember, the result of glycolysis is the production of ATP or energy. When a malnourished body or someone who's been fasting for a prolonged period of time gets carbohydrate, insulin is secreted and the CHO gets sucked into the cell pulling phosphorus and other electrolytes such as potassium and magnesium with it. So what happens is an intracellular shift of electrolytes. The starving cell uses up phosphorus right away to make energy causing the levels to drop which is called hypophosphatemia. In addition to hypophosphatemia, patients with refeeding syndrome also experience hypomagnesemia and hypokalemia. Remember hypo means low so people with refeeding syndrome have low phos, low magnesium and low potassium. When these levels drop to dangerously low levels, it can cause symptoms that are associated with refeeding syndrome. These symptoms include generalized fatigue, edema, muscle weakness, lethargy, cardiac arrhythmia and hemolysis. It can also result in death.

The point is...electrolytes are very important in the body and are involved in a lot of our body functions which is why it's dangerous when the levels drop to very low levels.

Now that you know what it is and the general mechanism for why it happens, what can you do as a dietitian working with patients who are at risk of refeeding syndrome. Before initiating any nutrition, the electrolyte levels should be checked. If they're low, they should be repleted. The goal is for the electrolyte levels to be within normal limits. Once nutrition is initiated, it should be started slowly. When giving parenteral and enteral nutrition, you can control the amount you give. In order to prevent refeeding syndrome, the rate should be a low rate and electrolytes should be checked to see if they need to be repleted. If the patient is receiving parenteral nutrition, you can work with the physician and pharmacist to make sure the patient is also getting phosphorus, magnesium and potassium in the parenteral nutrition solution which can help with stabilizing the levels so they don't drop to dangerously low levels. As with anything, the goal is to prevent instead of having to deal with a dangerous situation. If nutrition is initiated at a low rate and the patient still shows signs of refeeding syndrome, holding nutrition and repleting the levels until they're back to normal levels then resuming at a low rate is recommended.

Let's do a recap of refeeding syndrome. It's a condition that happens to people who are malnourished or have fasted for a prolonged period of time. The electrolytes involved are primarily phosphorus, magnesium, and potassium. Low phosphorus has largely been the main characteristic of refeeding syndrome. The syndrome

occurs when carbohydrate is given which causes a release of insulin, an uptake of carbohydrate into the cell which causes an intracellular shift of electrolytes. Phosphorus is used quickly to make ATP which causes the levels to drop to dangerous levels both intracellularly and extracellularly. The symptoms associated with refeeding syndrome are fatigue, muscle weakness, edema, cardiac arrhythmia, hemolysis and death if it's not addressed and caught timely. The best way to avoid refeeding syndrome is to be aware of how long an individual's gone without nutrition or has lost electrolytes through diarrhea and vomiting. You want to initiate nutrition slowly and at a low rate and monitor electrolyte levels, repleting as needed. Also, you need to pay attention to the symptoms associated with refeeding syndrome so it's caught right away.

There you have it. Remember for the RD Exam, you just need to know the basic, entry-level concepts. We talked a little about parenteral and enteral nutrition and how these forms of nutrition need to be initiated slowly in order to prevent refeeding syndrome. If calculating parenteral and enteral nutrition is something you never want to doubt again or worry you're not doing it correctly, check out the show notes for resources made specifically with you in mind. They show you step-by-step how to calculate nutrition support so you never have to question if you're doing it right again.

You got this. You have what it takes to pass this exam. Believe in yourself. You can do hard things. You just need a score of 25 to pass. Non one will ask or care what score you got on the test. A pass is a pass is a pass. As Mark Twain said, "Continuous improvement is better than delayed perfection". You're not expected to be perfect. It doesn't exist. You just have to trust and believe in yourself. Truest that you know enough to pass the exam. Stay on top of your study game. There's no limits to achieving the success you so deeply desire. Until next time.

[Music and Outro]