# Telemetry and Vital Signs

## Edited Video Transcript

### Vital Signs

Say you're working in acute care, and your patient had a recent myocardial infarction (MI) and went through coronary artery bypass graft (CABG) times three—you're going to be concerned about their vital signs. As we talked about before, vital signs are really helpful indicators of how their system is working. This applies way more in the scenario that may be your total hip replacement—that may be your patient with COPD—that may be your older adult who had a fall. Vital signs are really helpful. That may be the cart that we used earlier this semester that takes their heart rate, their oxygenation, their blood pressure. It may be taking that stuff manually. The other option that we've not talked about is the idea of telemetry.

Monitor Telemetry Machines

Telemetry is what's on the screen. What telemetry means is effectively [your client will] have electrodes placed on their chest. They have a sensor on their finger or somewhere else on their body that's detecting oxygenation. These are all giving real-time information that's constantly displayed up on a screen that's constantly being recorded to be very helpful. They may also have a blood pressure cuff that's hooked up to this [machine]. Blood pressure typically doesn't give you real-time information. You actually have to measure it. It’s just kind of automated. So, if we look up on the screen, in the green we see our heart rate.

Heart Rate What's a normal heart rate? Somewhere between 60 to 100. We see our SpO2, which is the percent of hemoglobin in their blood that's carrying oxygen.

Oxygenation What's a normal oxygenation percent? Above 90 is kind of the bare minimum, and below 90 is where I start to get worried. Normally, you're going to see above 94 for most people.

Respiration We see the respiration with our respirations per minute. What is normal respiration? Twelve to 20—above that will be very usually a gasping [sound from your client]. Below that, we worry they're not getting enough oxygen. Very rarely do I see below that, honestly. And then finally, we have our blood pressure.

Blood Pressure What's a normal blood pressure? So 120 over 80 is basically perfect. Once we start seeing above 130 over 90, we start to worry about high blood pressure. When we start seeing low blood pressure, I am most concerned about the diastolic number, but you'll see things in the 90s, below a hundred over 60s or 70s—above that will be hypertension, below that will be hypotension.

Electrocardiograms/ Electrocardiographs So let's say we go into a room. You're working with your first client of the day. You do all your pre-work, which we'll talk about in a moment, and you go into the room and you see these vitals displayed on the screen. What's your first thought? Everything's pretty darn normal. We are good to go. Now, one thing I didn't talk about yet, we've not learned about electrocardiograms (EKGs) or electrocardiographs (ECGs), depending on where you're [working]. This is just the electrical activity of the heart. This is a normal sinus rhythm. It is above an entry level occupational therapy assistant (OTA) or OT’s [scope] to read EKGs. Doctors and nurses have courses, semester-long courses, on reading EKGs, so it's a complex thing. You can get advanced training to know more if you're working on a cardiac floor. It would actually be a really useful advanced training to get. This is our constant update—this [wavey line below the sinus line] is the last information.

Medical Emergencies—Know how to Respond

The Heart Stops So what happens? Well, I'll show you. Let's say you go into the room, and you see that [straight line], What has happened? The heart has stopped, right. So, what is the appropriate response? We need help! We need to work on saving their life, right. First, within your medicalized settings, this is called calling a code. Every setting is different. How do you do that? There may be a button to push. It may be yelling at somebody in the hall, maybe calling a special phone number. This is going to instigate the medical team to get involved and help save this person's life. As an OTA, as an OT, you're normally not on that team, however, if appropriate, it is okay to start cardiopulmonary resuscitation (CPR). So work with your OT, work with your medical supervisors to know what the policy is. In some instances, the policy is always start CPR. In some instances, if you know the person is do-not-resuscitate (DNR), do not start CPR. That's why I say know your facility’s policies and procedures. Know your client, and work as appropriate. At the University of Utah for example, you just start CPR. It is the code [team’s] decision to do something else. Other facilities, it's different, all right. Again, this is an emergency situation—call a code.

Ventricular Fibrillation Let's say we see something like that [short irregular wavey lines]. Oh my, no, good question. This is ventricular fibrillation (VFib), actually. What is our action here? Well, it's [blood is] actually not being pumped from the ventricle to the atrium. Oh yes, you're right. So it's not being pumped out to the body at all or effectively at all, yes. Oh, it's still not reading accurately because the heart's actually not getting a full beat. Well effectively, their heart's not beating. The heart is almost spasming is probably a better term for it. So what is our action here? Is it, “Oh, by the way, I saw Mr. Johnson this morning.” What do you think? This is, again, a case of calling code. This is a medical emergency. Both of these—the heart is not beating sufficiently to deliver blood to the body. There likely would be, yeah, things like that can happen. The other thing is, like I said before, you maybe have a vitals cart, right, and you may take their pulse manually, and this is what you actually detect. Yeah, and there will be alarms. Both of these cases, you will have an alarm that's going to alert. However, you still may be the first person in there, so your actions are the same.

Bradycardia Now let's reset it, okay. We're [seeing] something like that [a repetitive high/low wave line with a big straight-line space between the peaks]. So, you're going to go into your next room with your next client, and you see something like that. That heart rate's a little extreme, but roughly accurate. What would be that condition? This would be bradycardia. Like I said, that's actually pretty severe. I would expect to see something more like that [same line but with small peaks before each high-peak interval] because there's more complex stuff going on. Back to the point that reading EKGs is a more complex skill. There's a lot of information buried in there. You're not just seeing it. It changes other stuff too. But in this case, I just tried to reset it [the EKG machine] so I could show a more realistic heart rate.

Know What Is Not a Medical Emergency

Now, we go into our next client, and it's something like this [same low wave with small peaks before a high-peak interval]. Now what do we do? It's still low. It's still concerning. I think you're hitting a good point here. Is this condition life-threatening in and of itself? Is it like death immediate? Very true, thank you, very true, and we'll talk about this again. Knowing what the client's normal is is a big difference, right. Your client who's at rest and their heart rate is in the 70s and 80s, and it's this, is different than if normally their heart rate is 110 or 120 or 130, and it's this. It's a different beast. It is still outside of our normal parameters. It is worth talking to nursing to make certain they're aware of it and that they know what's going on, but not urgently. This is not worth them interrupting their coffee and donut. It's worth telling them, right, so they can keep it in their brain. But, I guess if you find their nurse, and they're having coffee and a donut: “So I'm seeing Mr. Johnson. Just checked. Heart rate is in the mid-40s. It looks like that's about where he's been.” “Thank you for letting me know. I'm going to go back and finish my coffee and donut.” Completely acceptable response. But Phil had a good point—this is going to likely change activity tolerance. It's going to change how they feel. It's going to change a lot of things. Now, let's change the scenario again.

Tachycardia We go into our next client. It's looking something like that [intervals of very close high peaks followed by very short peaks close together]. What is this condition? Tachycardia, where the heart rate is too fast. Same question—what's our response? Yeah, again, this is not immediately life-threatening. It's not good, right, but they're not going to die in this moment. Mention to nursing. Make certain they're aware of it. Realize it's going to affect activity tolerance. It's going to affect how they feel during activity and what you can do and tolerate. I normally don't ask them. Well, because it's kind of going to be on what most clients know. [Inaudible Question - Would this effect how the person feels?] Yes, that's a solid question because that is what they know: “How are you feeling right now?” Yeah, exactly. That, I think, is a very valid question, exactly. And generally, “What's your normal heart rate?” Yeah, yeah, that's going to be the answer I would expect. “How are you feeling right now?” Yeah, and generally, again, because if you're going to see somebody who's either bradycardic or tachycardic, they're probably pretty darn sick. They're probably not in a state to answer, “What's your normal heart rate?” It can be because of medication. It can be because of medical conditions. Say again? Yeah, so caffeine can affect this, and many conditions. We'll talk about sepsis tomorrow, [which] can cause this, yeah. You'll see it more often—cardiac dysfunction, arrhythmias can occur.

Atrial Fibrillation One last condition—we see something like that [two to three high peaks followed by a short peak series] that is atrial fibrillation (AFib)—normal, but highly concerning. The problem with AFib is that generally people have episodes of AFib, but the atrium is not pumping effectively. That can cause blood to effectively stagnate, which collects clots. The person will then throw a clot, and they are much more likely to have a heart attack or stroke because it's going straight to the brain from the atrium, right. Because if you think about the way that the heart flows, your most direct lines are either to the lungs or to the brain. Everything else, you have big turns, like ninety-degree angles, that will impede that clot. Now effectively, this is again [a situation in which you], make sure nursing's aware. Get the medical team clearance before you know what to do next, all right.

Polytraumas

I'm going to reset it to normal, okay. Now, we're going to throw some scenarios in. First we talked about it last week in polytrauma. The things we do for safety going into these complex medical rooms, right. You're working with a client recovering from coronavirus disease (COVID). You're in the intensive care unit (ICU) checking on a client after a total hip. You are working with a client who just had a triple CABG. You're working with a client who just had a kidney transplant. These are really sick clients. And I'm thinking, working in acute care, working in long-term acute care hospitals (LTACHs), working in intensive care units, even working in your rehabs, you're skilled nursing, your transitional rehabs—those are complex medical clients.

Review Your Client’s Chart First—Always-No-Matter-What First, this is an always-no-matter-what setting, no matter the complexity, you're going to review the client's chart because you need to know what's going on with them, what their medical conditions are. That includes reviewing your histories and physicals but also the recent doctor notes. That includes your recent OT and PT speech notes because that's going to give you an idea of how the client is doing functionally, how the client is responding to activity, what they did last time so that you can build on it. In this chart review, there are recent vitals. What is their normal at the moment? Are they having episodes of VFib? Are they dealing with bradycardia? How has their blood pressure been? Are they on supplemental oxygen? Okay, then finally in that chart review, you're going to figure out what lines and drains they have, all right. You know what's wrong with them, how they're doing functionally, what their vital signs are, and what lines and drains they’ve got sticking out of them. That's our chart review. All this is in your polytrauma presentation by the way.

Simple to Complex Chart Reviews Yes, so a relatively simple chart review—let's say that client who had a kidney replacement is in the ICU but recovering as expected—is under five minutes. A complex—let's say that individual with COVID who was intubated, had a ventilator stuck down into their lungs, and then went septic, and then had a little tiny stroke, and then, and then, and then-type scenario—that may take longer. That may take up to twenty minutes as a guess. [Reading a chart] has been built into it. It's built into the systems. If you think about it, for me, if I'm working acute care, I'm going to show up, depending on where I'm working, either at seven or seven thirty. And then if I have ten patients, and each one, let's say, one's complex, the other are pretty simple—half an hour to forty-five minutes. That [chart review] is built into your day because that's the time that it takes to see patients, so that's what the productivity center is based on. Whereas, if you're in a skilled nursing facility where the patients are less complex—because they have to be or they'd still be in the acute care of the ICU—then you're going to be working with the same patients every day, so your chart review is very simple: “Well, let me see the note. Since I worked with them yesterday, let me see their vitals from overnight. Cool good to go.” That is a minute process. You've got four to six patients, so that's ten minutes while you're finishing your coffee. . I generally pick my higher priorities, review them first thing in the morning, spend the morning trying to hit those. Spend the afternoon trying to hit my lower priorities, or seeing the high priorities that I couldn't see in the morning. So, I'll kind of do a two-set-one just because of data flow in my brain. If I'm going to see my high priorities, I want to keep that information fresh in my brain and not spend the time instead on the five other people. But you'll figure that out. Yes, and so that's the other thing, with acute care, it's a very flexible schedule because there are more patients than you can see in the day. Whereas in something like when I'm in inpatient rehab, I have a schedule, which means I know each appointment. I don't have much ability to flip-flop people, so it'll be different. You'll figure that out with fieldwork and when you're orienting that first week in your real job when you're being paid real money. I know you've already forgotten it—that vital skill of how to deal with a paycheck!

For Complex Patients—Always Check in With Nursing All right, so there's one last piece. You've done your chart review. But for these complex patients, you're going to check in with nursing because with these complex patients, it does need to be an interdisciplinary effort. If you're working in outpatient rehab, and you've got a patient who had a total hip, and you're training them on adapted dressing strategies, or if you're doing home health with a client who had a COPD exacerbation, yeah, then you can kind of do what you do. You're going to work as a larger team of course, but you're not going to need to work hand-in-glove. Whereas with these complex medical [clients], you really do need to work hand-in-glove with your nursing and your doctors, your respiratory therapists, your caseworkers, your social workers—to meet the needs of the client and to keep them moving forward—not moving backwards. So, I'm always checking in with nursing.