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Announcer:

Empowering our doctors to find small changes that can have huge benefits to the environment. Learn what Northern Light Health is doing about that today on sustainable health care.

Tim Doak:

Welcome, podcast listeners, to this edition of Sustainable Healthcare. I'm your host, Tim Doak. Sustainable Healthcare is part of our Healthy, Happy, and Wise Podcast Series, designed to heal, inspire and inform you. Thanks for being here. When we think about the unique role that healthcare plays in sustainability, one element we need to talk about is the use of anesthetic gases for surgery or procedures. To help us understand this better, we're pleased to have as our guest today, Dr. Sarah Smith, Chief of Anesthesiology for Eastern Maine Medical Center in Bangor. Dr. Smith has been instrumental in identifying anesthetic gases as a sustainability opportunity within Northern Light Health and championing a transition away from a specific gas that is particularly damaging to the environment. Dr. Smith, we are so pleased you're joining us today.

Dr. Smith:

Thank you, Tim. It's my pleasure.

Tim Doak:

It's great to have you here. So let's start with some basics. Can you explain what anesthetic gases are and how we might use them during the delivery of healthcare?

Dr. Smith:

Sure. So anesthesia gases are inhaled medications that are used during surgery to keep patients asleep. So there are different types of anesthesia gases, desflurane being one of them. They all have different properties that fit some situations better than others. And so desflurane in particular is unique in that it wears off quickly and allows us to wake the patient up more quickly after the surgery. This is particularly helpful, for example, for outpatient surgeries when the patient wants to go home that same day.

Tim Doak:

Okay. So these gases are inhaled by the patient during surgery. Tell us how that impacts the environment?

Dr. Smith:

So during surgery, most of the inhaled gases are actually then exhaled by the patient, collected, and then eventually released into the atmosphere. And these gases all have a specific GWP, which is the global warming potential. And so this is a measurement of how much heat a gas traps in the atmosphere compared to carbon dioxide over a set period of time. So desflurane's GWP is thousands of times greater than carbon dioxide, and to make matters worse, it stays in the atmosphere for up to 14 years and continuing to trap heat all that time. So ultimately, it is a potent greenhouse gas with a long lifespan.

Tim Doak:

So pretty considerable impact when compared with CO□, as you've mentioned. You did also mention there are several different types of gases that are sometime used. Do they all have this similar impact to the environment?

Dr. Smith:

No. There are different gases and they all have differing impacts. They all have different GWPs and there's for... They act on global warming in a variety of ways. Desflurane though is by far the most impactful to the environment because its GWP of 2,500 means that it is 2,500 times more potent as a greenhouse gas than carbon dioxide. The other inhaled anesthetics, sevoflurane, isoflurane, they have much lower GWPs. So they're still contributors to the greenhouse effect, but to a much lower degree by far compared to desflurane.

Tim Doak:

Okay. So of these three different inhaled anesthetics, I think if we look at that purely from an environmental impact viewpoint, we'd want to use something different than desflurane, certainly. What about the implications of that change? Is any one of these gases better for a patient from a clinical standpoint?

Dr. Smith:

No. All the gases, they have their own unique properties, but in general, we can provide a safe, cost-effective and just effective overall anesthetic with any of the gases. So we are able to use as an alternative to desflurane, sevoflurane, isoflurane as inhaled gases, but also, we can use other non-gas techniques such as an all-IV anesthesia, as well as spinals and epidurals and nerve blocks.

Tim Doak:

Okay, that makes great sense. So we've talked about really, how the various gases have various effects on the environment, and you just talked a little bit about really, the impacts or lack thereof to patients as we think about how we select them. What about the economics of the situation? Is there any difference in the cost that the organization sees to buy each of these different gases?

Dr. Smith:

Yes. When it comes to the inhaled anesthetics, it's more of a direct comparison, obviously. And so of the three gases we've talked about today, isoflurane, sevoflurane, desflurane, the desflurane is more expensive. And so by reducing the use or eliminating the use entirely, there can be a cost-benefit to the organization.

Tim Doak:

Okay. So Northern Light Health had a goal last year of substantially reducing our use of desflurane, knowing that it probably wasn't the best selection from an environmental standpoint. That work was very, very successful and it actually resulted in a complete discontinuance of the use of desflurane across our footprint. You of course, were our provider champion for this work. You did some amazing things and you were really quite critical in the success of the project. How did you convince your colleagues to do something different? And were those hard conversations?

Dr. Smith:

The process actually went better than I was expecting it to.

Tim Doak:

Sure.

Dr. Smith:

So it started with assessing the group's baseline knowledge of and attitudes towards the use of desflurane, and then we followed that up with providing education of the environmental impact of desflurane, and then also just the alternative anesthetics. And we use those all the time, but I think it was just letting people know, "These are things we can continue to incorporate more into our practice to replace that desflurane use." So this really did set the change for achieving that necessarily, "Buy-in," that I thought was going to be required to be able to suggest to the group about removing desflurane, or in the beginning at least doing a reduction. And that's what we ended up ultimately doing, was doing it in a staged process where we started with the reduction of desflurane, which eventually then led to the elimination of it entirely.

Tim Doak:

So from my standpoint, and I was involved with this together with our Sustainability Manager, Jen Boothroyd, and you two made a pretty amazing team as you step through this, I think it was absolutely critical that we had this work led by a provider. I'm an engineer. I'm happy to talk to a physician anytime, but I can't have the same quality of conversation with a clinician that another clinician can have. I think that was a secret sauce in how we looked at this. What do you think your colleagues thought about having you available as a resource as they were considering how to move in a different direction here?

Dr. Smith:

Well, I definitely do think that that probably makes the process easier, knowing that they can discuss the issues in our own language.

Tim Doak:

Right.

Dr. Smith:

And then bringing those clinical concerns. Because desflurane, it has been used here, and certainly other places for specific cases, specific patient situations, and just for provider preference. So people did have some concerns regarding, "Geez, I use this all the time. This is my go-to gas. Please don't take it away from me."

Tim Doak:

Sure.

Dr. Smith:

So we had to have those tough conversations to say, "Well, we appreciate that, but I think we can talk about some alternatives, and I will support you and we'll help to make this implementation of desflurane reduction palatable to everybody."

Tim Doak:

How are things gone since then? I can tell you that from an economic standpoint, you mentioned the cost difference in the gas, I think if we quantify the savings from moving away from desflurane for Northern Light Health based on the volume we historically had used, it's around $50,000 a year. So pretty

meaningful cost savings for us. From a clinical standpoint, how's it gone? Have there been any concerns or issues?

Dr. Smith:

Actually, I haven't heard a single one.

Tim Doak:

That's good.

Dr. Smith:

So I really do think it was very successful, and I think we were already on a pathway of not having a very heavy reliance on it like maybe an outpatient ambulatory center would. So I think we were well poised to be able to undertake this. And so I think the attitude was very positive for most of the group. I think there were, as I said, a couple of people who were like, "Oh, please don't take this away," but once it was gone, you find alternatives, you find other ways of doing things. And so really, there's been no complaints and no problems, at least that we've heard of.

Tim Doak:

That's a great success story.

Dr. Smith:

Yeah.

Tim Doak:

So if there's someone out there from another hospital or health system perhaps that's listening and thinking about how they could affect change within their own organization, what advice would you have for them?

Dr. Smith:

Yeah, so I think it's vitally important to actively engage with the group. I think it was really important to get that buy-in, to provide the education, to listen to what their concerns were. And so I think also doing things in a staged fashion as we did, makes it a little bit, as I said, more palatable. It's just easier to make that transition to elimination rather than just shutting everything down-

Tim Doak:

Right.

Dr. Smith:

All in one fell swoop. So yeah, I think communication, education, getting the buy-in and doing things in a staged fashion, it was successful here. And so those are what I would recommend for others to give a try.

Tim Doak:

All great advice. Dr. Smith, it has been fantastic working with you on this initiative. Thank you so much for being our guest today and for all your great leadership with this work.

Dr. Smith:

Thank you so much for having me, Tim.

Tim Doak:

Thank you also to our podcast listeners. Until next time, I'm Tim Doak, asking you to think sustainably.

Announcer:

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