The Role of Artificial Intelligence for Providing Scientific Content for Laboratory Medicine

Article:
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Guest: Dr. Alan Wu from San Francisco General Hospital and the University of California, San Francisco.

Randye Kaye: Hello and welcome to this edition of *JALM* Talk from *The Journal of Applied Laboratory Medicine*, a publication of the Association for Diagnostics & Laboratory Medicine. I'm your host, Randye Kaye.

Artificial intelligence, or AI, has the potential to provide innovative tools for the clinical laboratory. For example, AI software could aid in interpreting serum protein electrophoresis or mass spectral analysis in the toxicology laboratory. Additionally, AI programs are now available to provide instant answers to almost any question. However, there are concerns about the accuracy of these tools, especially in the area of laboratory medicine.

The March 2024 issue of *JALM* features a special report describing an exercise in which the authors posed a question relative to clinical laboratorians to an AI program. That question was, "Should labs eliminate CK-MB testing?" The AI-generated results were critically reviewed by a cardiologist, an emergency department physician, and four clinical laboratorians for accuracy and appropriateness.

Today, we are joined by the corresponding author of the article, Dr. Alan Wu. Dr. Wu is the chief of clinical chemistry and toxicology at San Francisco General Hospital and a professor of laboratory medicine at the University of California, San Francisco. His research interests include clinical toxicology, cardiac biomarkers, and point-of-care testing. Welcome, Dr. Wu. Let's start with this. You asked the AI tool, "Should labs eliminate CK-MB testing?" What kind of answer did you get and how accurate was that answer?

Alan Wu: Yes. It's a question that should be on the minds of a lot of my colleagues in the field, or perhaps they've already answered that question. Certainly, amongst the expertise on this, we've already answered that question, but there are still many labs that are sort of struggling as to whether or not they should continue to offer CK-MB in the light of the troponin era and the ChatGPT response was largely accurate. It cited a number of studies that suggest that troponin is

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probably the standard but there were some inaccuracies that we felt needed to be pointed out.

Randye Kaye: All right. Thank you. So, do you believe that AI will eventually replace some of the other more traditional sources of medical information like PubMed or Google Scholar or WebMD?

Alan Wu: Yes. I think it already has replaced in a lot of people's minds in terms of a place to find information. We in the laboratory, as directors and staff, are exceptionally busy. Sometimes to go to the traditional sources takes time away from the job and to be able to get answers more quickly is always desirable, and I think that there are people who don't know how to use some of these other traditional sources because they don't do them regularly, or maybe they just want a quick answer to something that they need. From my standpoint, because I'm not only just a lab director, but also authors of scientific work, I think that the answers that I get have to be vetted. They have to be well-sourced. They can't just be opinion by AI program and so, in that regard, I don't think that we're ready.

Randye Kaye: I see. Quick is great, but so is accurate. So, what are the medical-legal considerations for using AI-generated information to make medical or laboratory decisions?

Alan Wu: Yeah, definitely, there are different levels of risk. If we're going to make a medical decision based on an AI information, we are definitely not at that stage that these programs are not good enough to rely on solely to make a medical decision because there can be consequences of that. If we're talking laboratory decisions, then I think the bar is a little bit lower, not to diminish the role that we have. But the information that we provide needs to be vetted by the caregivers. These decisions are being made by physicians, not by the laboratory, and it's always been, "Okay, you get what you get and you either believe it or you don't." So, some of the interpretation of laboratory results are probably not ready for AI.

But if we're talking about certain management decisions, like the one that I posed onto our article, it's not a medical decision to discontinue CK-MB.

Randye Kaye: All right. Thank you. Certainly, this covers a lot of fields, that need for accuracy and human checking. So, what about text produced by AI to write manuscripts like articles submitted to *JALM*? Should this be allowed?

Alan Wu: In my opinion, no. The editorial staff of *JALM* has made it very clear recently in our board meeting just a few weeks ago that we're not going to accept AI for primary text and

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manuscripts, that this is not how we want the profession to go. We want expert opinion. We want experimental data. We want sourced information and AI cannot achieve that today.

Randye Kaye: All right. Finally, what do you think about using AI to assist clinical laboratories in predicting analyzer failures? Could this be a good use for AI?

Alan Wu: I believe that that is the natural starting point for implementation of AI, that this is all good, that you have electronic signals or you have some means to monitor instrument parameters and progress remotely through some type of a connection by an AI program, who then comes back and says, "This particular module or this particular part is about ready to fail" and therefore, preventive or reparative measures are taken in advance to the actual failure. Failure of equipment in the laboratory is potentially catastrophic because we need our equipment to be able to deliver results, in many cases 24 hours a day, 7 days a week, and we are easily better able to correct potential errors than having an instrument that go down and therefore be out of service. So, I fully endorse AI in this regard. I'm not convinced yet how successful it is, but hope that improvements in the programming will lead to better uptime for our equipment.

Randye Kaye: AI is certainly a hot topic in many fields and laboratory certainly is one of them. Dr. Wu, thank you for joining us today.

Alan Wu: Thank you, Randye.

Randye Kaye: That was Dr. Alan Wu from University of California, San Francisco, discussing the *JALM* Article, "The Role of Artificial Intelligence for Providing Scientific Content for Laboratory Medicine." Thanks for tuning in to this episode of *JALM* Talk. See you next time and don't forget to submit something for us to talk about.

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