



Congress Interview

In this interview from the European Respiratory Society (ERS) Congress, Io Chi Yan Hui discusses the importance of a multidimensional approach to respiratory infections. Reflecting on the congress theme of moving beyond antibiotics, she explores how a broader understanding of prevention and management can inform clinical practice. The conversation highlights opportunities to strengthen respiratory infection care and considers the challenges involved in translating these approaches into improved patient outcomes.

Featuring: Io Chi Yan Hui

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Io Chi Yan Hui

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Q1 You organised the session 'Delivering Net Zero in Respiratory Health'. What do you hope delegates will take away from it?

I really want the audience to take away the message of collaboration. This year, the theme of the European Respiratory Society (ERS) Congress is collaborating with different people: collaborating with patients, making connections, and researchers working together. Different experts have different areas of expertise, so if they come together, they can do better. We also need to make sure that we have a net zero agenda without sacrificing the health issues that we are addressing for patients. That is the key message I wanted to convey when I organised this session.

Q2 Your work focuses on real-world challenges in implementing greener respiratory care. Where do you see the greatest barriers to translating sustainability targets into practice?

The greatest barrier, in my experience, is communication between groups when trying to deliver a green agenda within an organisation. For example, in some of the UK healthcare organisations, there are two groups with different areas of expertise involved in organising the net zero agenda. One is the infrastructure or facilities management group, and the other is the medical sustainability/clinical group.

The facilities management group thinks about emissions and sustainability designs within healthcare buildings, whereas the medical sustainability/clinical group thinks about patients' health and the innovations needed to improve patient care. These two agendas need to come together,

so the groups must communicate very well. One challenge I often see when organisations try to implement this agenda is to find a common language that can help bridge differences and avoid misunderstandings.

What role could AI and digital health play in delivering more sustainable respiratory care?

AI and digital health can provide a platform for people to come together and discuss the green agenda. Previously, when we talked about achieving net zero by 2040, or 2045, there did not seem to be a clear incentive to bring different groups together to discuss it.

Nowadays, everyone is talking about AI. If we do not talk about AI, people within the organisation may feel that they are falling behind. It is therefore a key incentive for people to come together and create something good. That is how I see its role in helping to overcome some of the barriers I have described.

Q3 Your recent work has examined the implementation of digital respiratory technologies. Why do clinicians and technologists often struggle to move successfully from research to clinical practice?

That is something I want to explore in greater depth. That was why we conducted a systematic scoping review with a network of global researchers in the ERS CRC CONNECT, looking at the barriers and facilitators to implementation.

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The key barrier is similar to the one I mentioned in relation to the green agenda: the differences that arise when people come together. If you look at our publication, we identified seven common implementation barriers

and nine facilitators in 84 digital respiratory initiatives from 31 countries. While no single barrier stood out among the seven, collaboration and mutual understanding emerged as recurring themes throughout the discussions.

This does not apply only to the green agenda. In digital health implementation, several groups are involved: data scientists, engineers, medical scientists, bioengineering scientists, clinicians, and patients. People have different perspectives. When these groups come together, they also need to develop a shared understanding of one another's expertise and language.

For example, when a patient says: "The technology is not representing me. I need it to do more to look after my condition," what do they mean by that? This is something we need to explore further through qualitative studies to understand what patients really mean. In my view, the key barrier is understanding one another. Inequality is another issue that we want to explore further as well.



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Q4 As remote monitoring expands, how can we ensure that the data collected are meaningful to providers, rather than simply increasing the amount of information available to them?

I would say that we need to co-develop the system with patients. If you develop it with your patients, you will know how to make the data meaningful. Otherwise, you may simply collect a lot of data that do not mean anything; they are just numbers.

If you co-develop the system, patients will tell you which outcomes are most important to them, whether that is their level of asthma control or the frequency with which they use their rescue inhaler. Scientists can then use AI to examine correlations between different factors and identify meaningful information within the data that patients may not be aware of.

We need to explore this kind of thinking. Again, we need collaborators to come together. We can use AI to uncover less obvious patterns and correlations in the data, while patient involvement can help identify which data are most valuable and meaningful to them.

One example I often use is the smart inhaler. It collects a lot of data, but how do you use that information? For example, the device may detect an unusually high number of puffs, suggesting potential overuse of the reliever inhaler. However, if you speak to the patient, they may explain the reason, and you may find that they were just simply testing

the sensor rather than actually overusing the medication. If you only have the data, you do not know the context. You have to talk to patients and consider different scenarios when using smart inhaler data.

I would therefore say that we need a combination of quantitative and qualitative approaches, rather than focusing on only one side.

Q5 How can we prevent digital respiratory care from widening existing health inequalities?

In one of our congress symposiums in 2024, 'Getting the balance right: the ethics of artificial intelligence in clinical decision making', we spoke about personalised medicine and AI, particularly in relation to imaging. We discussed points about reducing inequality and the distinction between personalisation and generalisation of data.

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In the scientific world, we talk about generalisability. This means that your data should represent as much of the wider population as possible, which helps demonstrate that your model is a good one. However, with AI, we now say that AI can capture individual health information and detect patterns relating to factors such as family history. That is personalisation.

When discussing digital inequality, are we saying that we want to emphasise personalisation, or that we want to find something that supports everyone? This is a question we need to explore further and discuss with more people. It is an important issue: personalisation versus generalisation.

There are also concerns about data inequality, because AI often uses generic datasets that are not fully representative of different populations. Most data come from high-income countries rather than low- and middle-income countries. We need to find and include multi-centre data to make sure the datasets are more representative. Again, however, that relates to generalisability rather than personalisation.

The core question is whether we want a system that is customised, or one that promotes equality through generalisability. The answer may be that, if the purpose is to identify and respond to major health threats, for example, by setting policy priorities and communicating population-level risks such as COVID-19 or future outbreaks, models that can be generalised across broad populations would be valuable.

However, if the technology is being used by individual patients for everyday care, they may want to see personalisation; one size doesn't fit all. I think the dividing line may depend on whether the technology is intended for the general population or for an individual.

Q6 Looking across the discussions at the ERS Congress this year, what development in sustainable respiratory care do you think is most likely to influence clinical practice?

The development that will have the greatest influence, or that I most hope will have an influence

is, again, working together. Of course, there are many different themes this year across the posters, sessions, and scientific work. For scientists, the important thing now is learning how to work together and trying to understand how other people think when speaking to them.

If there is one message I hope everyone takes away, it is this: when we talk to people, we should not simply hear what they say, but truly listen and understand. That is the development I would like to see. I hope we can bring everyone's thinking into this setting.