PHILIPS

Informed Perspectives

A discussion with Dr. Pieter Postmus

Dr. Pieter Postmus is a chest physician. He's been working in the area of lung cancer for more than 40 years. Currently, he is head of department and professor of pulmonology in Leiden University Medical Centre in the Netherlands. He has previously worked as head of department in Liverpool and in Amsterdam as well.

Q: What do operationally and clinically efficient workflows mean to you?

Dr. Postmus: Efficiently running workflows for me means that when I see a patient, I need to have all the information that is available within a few seconds on my screen, preferably on a double screen, so if I want to look at a letter of a referring physician or a colleague from the hospital, and I want to look at the same time at the imaging that is available already and to pick up the results of pathology, to see what kind of lab things there are available.

Those are necessary to come to, at first impression of what kind of problem you're dealing with before you go into the more details of what would be the problem. That would be my part in playing a role in, what could be, the further diagnosis that is needed, or the further information I need from other people to finally come to a plan.

The plan includes, quite often, that we need to discuss it in a multidisciplinary setting. Is everything available for those who are participating in that multidisciplinary setting? Would it then be possible to come to a plan for what kind of therapy, if any, a patient needs?

Q: What area of workflow has traditionally posed the greatest challenge for you or your teams?

Dr. Postmus: The challenges that we are facing today are that there is so much information now that it makes it complicated to get the condensed information on a patient coming from all kinds of specialists, all kinds of different imaging techniques in a way that you can oversee that. In the past we had condensed information, but we couldn't get it in time at the right place. Now we have so much information at the right time, but it's too much. That's the main challenge. If we want to discuss something among colleagues or within a multidisciplinary team, the problem usually is, is what we need really available?

Q: How has your department or programs workflow changed in response to COVID-19?

Dr. Postmus: Within the university setting, we are the referral center, and the backup center for a number of hospitals in the area. If the flow in the other hospitals is getting too big, they will send their patients to the Leiden University Medical Center. For that reason, we have the ICU pretty much enlarged during the last six months to cope with all the patients.

That is not my responsibility, fortunately. That is done by the intensive care unit. All the other patients that were not in a state that they needed to go to the ICU, they were in the department of pulmonary diseases or under the responsibility of the department of pulmonary diseases. That affected quite a lot of the workload of the people that are in my staff and that are within the hospital from other workflows coming from patients that were in the outpatient clinics.

The emergency department, the A&E, was very complicated because the process was quite a lot disturbed certainly in the beginning by those who might have been infected by COVID-19 by being a threat for those who were in the waiting rooms or in the area where A&E patients come in, as well as where people work. The first thing was to separate the currents of patients into those who might be infected versus those who are certainly not infected, and to be certain that someone is not infected is not an easy thing.

Q: Have you identified new workflow priorities as a result of the COVID-19 pandemic?

Dr. Postmus: New workflow priorities after the start of COVID are in place now. What we had to set up is a post-COVID, or outpatient clinic, in which patients who had been in either the ICU or on the ward for a serious COVID infection, to see how they evolve, what their disease is, and how it is recovering. Are they coping well with what they've gone through? That outpatient clinic had to be set up. That's a joint clinic between cardiology, psychology, chest physicians, and, rehabilitation. All of these aspects are looked at in a joint session at the outpatient clinic, which is pretty big because there were quite large number of cases.

Another thing we had to start up is those who are infected, but not seriously ill, were sent home, but they needed to be taken care of from a distance. For that, we have developed the "COVID box," which includes literally a box. Within it there is a blood pressure facility, a oxygen saturation facility, digital method to measure temperature, and all of these patients were called every day, seven days a week to report all the values they had written down, and that was before it was available to be put in a digital way in the system. That was continued until they were either getting worse and needed to go to the A&E department, or until they recovered and then the box was taken in again and used for another patient.

What we did for chemotherapy and radiotherapy, and especially for immunotherapy, is we tried to reduce the visits to the clinic for getting the infusions with the drugs to a minimum. The period between the administrations was doubled and the dose was doubled as well. So three weeks became six weeks. Two weeks became four weeks. For the patients who were on chemotherapy as well, a much more liberal use of supportive care things were put in place, meaning that patients who are at risk to develop neutropenia were treated with a stimulating factor and also a blood transfusion, which would take another bed for half a day.

Those were the main things within the workflow and quite a lot of the consultations were done over the phone or through a video system.

Q: As we think about healthcare more broadly, COVID-19 represents a defining moment. What do you think is pivotal to turn this defining moment into a change for the better?

Dr. Postmus: I think quite a lot of things can be done differently. So what we do within my department, all patients that are now referred by a GP for a consultation in the operation clinic, they undergo a telephone screening prior to coming to the hospital. Based on their telephone screening we already plan the necessary investigations, such as pulmonary function testing, lab testing, chest x-ray, and sometimes a chest CT. All the things that come up from what the patient tells us and what the information is from the referring physician. Sometimes it's necessary to already ask before consultation for the imaging from what was done in another hospital or another lab or what has been written down in letters from other physicians about a comorbid condition of that patient.

The patient is much more prepared before the patient comes to the hospital door. I think that is a thing I'm happy to hold on and not to lose it because that speeds up the process and uses the facility much more efficiently, and also makes it possible for patients not to come too often to the hospital.

Q: How can health technology help you standardize and improve the quality of care across your practice and your hospital?

Dr. Postmus: My part of oncology is thoracic oncology. The technology which we need for that and what is necessary or already in place, are rather multifactorial. Comparing images is one thing - before therapy, after two months or three months of therapy to define is there any progress or any improvement, are there new things. That is a thing that is needs to be standardized and it needs to be standardized in a way that if you refer a patient from one hospital to another, that the imaging technique used should be comparable in its result.

Q: How did the AI and deep data integrations specifically help in oncology, or radiation oncology from a diagnosis, clear pathway decision making and therapy planning delivery perspective?

Dr. Postmus: That is a difficult question to answer because on the one hand, we have what we want to describe as personalized medicine, so the treatment is tailored to what is found in the patient. On the other hand, we want to, more or less, generalize how to use therapy in a group of patients.

So what is certainly needed is big data for answering questions that are related to things that are pretty rare - specific mutations for which therapy is available, in combination with other mutations that might be found as well by, for instance, next generation of whole genome sequencing. How are these things related? That is only possible if we have really big numbers to find out.

What kind of patterns do we see in response of patients on a certain therapy? Are these patterns uniform or are they different depending on what kind of therapy we have for that. You need much more data than you can get from a registration trial, but the numbers compared to what can be done by AI, are rather small. That is likely very helpful in defining and understanding what you see in patients.

Q: How do you see care virtualization, whether that's telehealth, remote work, remote visiting, case reviews, remote consultations, etc. impacting the future of healthcare?

Dr. Postmus: Since the introduction of immunotherapy, the workload on the departments where drugs are administered has exploded because these patients are treated, and fortunately most of them go well. The workload has tripled and maybe even become tenfold higher than it was before. The number of beds or chairs needed are lacking. That is not only for Leiden University Hospital, but also in other hospitals and that is probably a worldwide problem. That is due to the fact that the therapy, if it is successful, they'll be given it for about two years, which is a very long time. If you have to come every three weeks, even if you have to come every six weeks it's still a lot of work. It is much more work than four cycles of chemotherapy and then only now and then coming back in the outpatient clinic to check up on how you're doing.

This type of care is given in a hospital, but it is very questionable whether it should be given in a hospital. Maybe it can be given much closer to where a patient lives. What we're currently doing, and has started about two years ago, is we have a facility in a village not too far from Leiden in which there is a dialysis center. The upper floor of the building is still available and not in use. So we said, "Okay, we're going to set up our unit to give immunotherapy there for all the patients that are referred to Leiden University Medical Centre for immunotherapy for lung cancer and melanoma as well, and all the other indications that are coming up."

That unit is now already too small. So it's going to be open tomorrow for five days a week. It was two days a week, and the unit has been enlarged. That's only the first step because if patients are treated there, they still need to go somewhere which is a bit away from the hospital, but still for a lot of them, not home. They still have to discuss the findings of the results either by phone, which is current practice, but in the past they came to the hospital, and to see if that will be possible to give the next cycle of therapy.

Now, what we are planning is to set up and train nurses from organizations that work in the field close to where GPs work and ask them to administer the immunotherapy in either the home or in a room next to the healthcare center within a village. We train these nurses for that and then hopefully that will evolve.

What the aim in the end is that we want to see patients only once every three months in hospital, so do the blood checks also at a distance. They go to donate their blood sample to a facility near the GP or in the village and the outcome of that will be sent into our electronic file of the patient. We're going to build an app for the patient to use on an iPhone or an Android device and the app will be consisting of a kind of questionnaire in which they have to answer the specific questions on toxicity, which you can only ask for if you ask the patient. That will be sent in as well and put into the electronic file.

Then from inside the hospital, one of the specialist nurses will go over the results of these patients, and if nothing is wrong, then she or he will order the next administration, which will then be given by someone from an organization that is not working within Leiden University, but a separate organization. If that works, then we could have all these patients that are on maintenance therapy coming only into hospital to discuss results of the therapy and nothing else anymore. That will be a reduction of, I think, fivefold visits to the hospital.

Q: What solutions would you like to see that can help you navigate the additional complexities of combination therapies both by making decisions and then in the delivery stages?

Dr. Postmus: Making decisions on combination therapy is a complex thing by itself because it is combination therapy and combinations always mean that you have to look into interactions between what is in the combination. Then the combination is administered to someone who is by itself already a combination a lot of things and quite often has comorbid conditions for which therapy is given as well.

All kinds of drugs that are potentially interacting with each other are then all of a sudden combined in one patient. Then, specific side effects or threats from the combination therapy are not the same from patient to patient.

For instance, if you have a transplant patients after a kidney transplant or a liver transplant and you want to give immunotherapy, you are really ending up in a problematic situation if you continue that without any reflection or discussion with the doctors responsible for the transplant part of the patient. Quite often you are not able to administer immunotherapy. The same holds for all kinds of autoimmune diseases. Is it possible to combine therapies and pneumotherapy is for that a good example. Is it possible to give it?

It has become much more complex. Getting the warning signs on what you are doing in a system that both tells you about interaction between drugs, but also about interactions between drugs and already present diseases or situations of a patient is a thing that is absolutely needed because it's now really the skill of the doctor that is taking care of it. Now and then you fail.

For instance, this morning I discovered that one of my staff had prescribed drugs and did not look into the file and the patient was a kidney transplantation, planned to have immunotherapy for lung cancer, which was not a good idea by itself. This should come up as a warning in an electronic system to enhance or make it easier to prevent doctors to make mistakes.

Q: What does the future of healthcare look like specifically in oncology?

Dr. Postmus: I think a lot of it will be much more through current modern techniques of e-health - donating your results into a much larger system. Which could be an anonymous if not retractable way to find out through artificial intelligence interactions between findings in patients between treatments.

Also, in the daily care of patients, the interaction between patient and physician and nurses as well will be different. The now living generations, younger generations, are so used to working with devices that they will use those devices as well in a situation where they are dependent on caregivers. And that makes the stream of information much easier, and also, it's much easier for a patient to have control by him or herself in what is currently going on. Patients will know about the interactions simply because they can look it up as well. With drugs, for instance, or interactions of specific diseases and challenges of new drugs for those diseases.

The information that is available is so much larger that it will definitely improve the way we are dealing with patients. On the other hand, it makes it all much more complex. For that, technical solutions are definitely needed just to create the enormous stream of information and canalize it in a way that it is dealable with.

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