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ALEX MAIERSPERGER: How many AI platforms does it take to have your doctor surface the right information exactly when you need it? Today's hospitals and health systems have an overwhelming amount of data-- hundreds of different systems, standards, and practices. Today, you'll hear some insights into how decisions are made to leverage the latest technology to get to truly personalized care and the flexibility it's going to take to succeed.

There's so much complexity in delivering health care that to understand it well, we'd have to call in someone with clinical expertise-- a physician, nurse, clinician. We'd have to call in someone with an operational background and then someone who knows technology. I'm your host, Alex MAIERSPERGER, and today on the Health Pulse podcast, we could invite all of these experts in, or we could just speak to today's guest, Dr. Michael Von Wagner, chief medical information officer of Frankfurt University Hospital. Welcome, Dr. Von Wagner.

MICHAEL VON WAGERN: Nice to meet you.

ALEX MAIERSPERGER: This is wonderful. As I alluded to, you have a clinical, operational, and technology blend of experiences. What led you to accept this leadership position at the crossroads of medicine and data.

MICHAEL VON WAGERN: So, as it is in the life, I was, in the beginning, in a classical role of a physician. So I started my time here 20 years ago at the Frankfurt University Hospital in a clinical trial, ambulance outpatient clinic with a lot of clinical trials on hepatitis C and also some scientific projects on hepatitis C. And so you can see from the beginning of my career, I was working with data and trying to improve patient outcome based on clinical trial data and the experiences we could draw out of these data.

And I had a first impression how important it is to develop good clinical data quality to be able to improve patients' treatment. And based on that, during all the time, during my time in the clinic, I learned more and more how important it is to collect these data in a central platform to get these data available and to learn more and more out of our own work.

ALEX MAIERSPERGER: On the data theme, interoperability is a big topic. Each piece and component of the health care puzzle often keeps their share of data. So we're all very often operating a little bit constrained with important pieces of data that are missing in our own decisions within a department or a division or a hospital within the district. Can you tell me a little bit about interoperability at your hospital and maybe across the country?

MICHAEL VON WAGERN: Although we have one major leading health information system, which is ORBIS by Dedalus, which we use as the electronic health record, we have beside that up to 300 other subsystems which are collaborating and are connected to this system. And every time, it is a challenge to get these subsystems in a way connected to the leading system that the data are exchanged bi-directional in a real time manner. And so this is just the case for one university hospital.

But for Germany, I can say you have almost 2,000 different hospitals, all developed their own health information system. And sometimes, I would say it's like a fingerprint. If you take a look on these HIS, all of them are grown up and have the same difficulties in interoperability, especially if you say I would like to

get a blueprint for a good solution for my own hospital by another one. It is difficult to get this blueprint. The last years coming from the federal government, we developed more and more national standards in interoperability.

These are following the international standards and HL7-- so, FHIR standard, IHE standard for documents. And based on that, it was also developed a so-called telematic infrastructure which should later connect all health care partners in Germany based on these standards. So we just started to get to a more standardized interoperability to get the opportunity to make blueprints for others to make platforms available, for instance, for clinical decision support solutions. But today, we are still in the beginning of this development.

ALEX MAIERSPERGER: Sounds like there's a lot of promise for the future. I love the analogy of the fingerprint and the uniqueness behind each system as it is and that move towards standardization. Excited to continue to follow the progress there. In my research for this conversation, I came across a project called Susan that you are involved in. Can you tell me a little bit more about the Susan project?

MICHAEL VON WAGERN: The Susan project has the topic of antibiotic stewardship, which is not just in Germany but worldwide of enormous importance. We have these wonderful agents, antibiotics, in the treatment of infectious diseases. However, as all we know, we are losing more and more potency of these medications by resistance. And we know that optimal treatment reduces the risk of this resistance development. So it is up to us to optimize treatment with antibiotics in outpatient as well as in patient health care.

And for our hospital, we have a big antibiotic stewardship team guided by a consultant for infectious diseases as well as a consultant for microbiology. And these were asking for years now for a good dashboard system in the beginning to get a better overview about the current situation as well as the history of treatment in the past years in our hospital to better understand the development of resistances in parts of the hospital. And we were able in this project first to get all these data summarized in a middle layer.

So we draw these data from the different data resources. I talked about the electronic health record, Orbis. But we have also subsystems for the lab, for microbiology.

We have different data sources for the medication of patients. And to get these data just summarized and standardized in one layer, it was possible to get a better overview about the current situation and the development of resistances here in the hospital. And this was possible in the Susan project based on the SAS Viya platform.

ALEX MAIERSPERGER: That's really meaningful work in antibiotic stewardship. Like you mentioned, it's a worldwide issue. And so I'm excited to follow the progress there.

You talked about 300 platforms, and maybe you've worked across 300 different departments within the hospital. So you've got a wide range of expertise. Can you tell me about other projects that you're excited about that you've been involved with?

MICHAEL VON WAGERN: So what we already started years before was not scientifically but really in health care to develop and introduce a new communication server which is able to connect subsystems of different levels of HL7 standard and to get these connected in a real time between these different standards so that we can use our new messenger tool which is already just using the so-called FHIR standard, which is the newest one, the most modern, to get connected to our classical HIS systems, which are using older HL7 standards.

By this, it was possible to get these data flowing and also to keep the one EHR as the single point of truth. And even if we use other subsystems like a messenger tool or a patient portal tool, we are able to collect all these data in the EHR, which means that the physician can be sure, if he takes a look in the EHR of a patient, all information is collected there. There is no other pool of information he has also to take a look.

This is one project. The other project what we are currently developing is an artificial intelligence algorithms platform where we use three different types of AI-- the classical rule-based one, classical machine learning, and case-based reasoning. And in this project called Saturn, we want to support not our own physicians but GPs outside of the hospitals in the diagnosis of rare diseases so that we can give them a first hint for patients where they have no idea what the diagnosis could be and what could be the next step for health care in these patients.

Even before they have to call an expert at the university hospital or anywhere else to get connected to them, they can get a first advice. And this platform is also of interest because it is the first where we use different algorithms on one data model using data from two different university hospitals, Frankfurt and Dresden, which are collaborating in this project. And what we also do is we already involved the later users, the GPs, in the development of the user interface in a user-centered design. And so we are able really to bring all stakeholders of such a solution in one project and also to develop the opportunity to later involve further algorithms on a standardized platform.

ALEX MAIERSPERGER: You mentioned AI, and it's certainly the word of the day, and you mentioned platforms. And then you've talked about all of the different projects, the digital projects helping individual physicians across different divisions within the hospital. How do you envision AI or an AI platform being helpful in replicating these projects across the entirety of the hospital?

MICHAEL VON WAGERN: I think the most important question we have first to ask is how much our workload we are able to deal with in the development and implementation of small algorithms in the future. So the best algorithms, usually at least today, are narrow. They have a very specific question which they can answer perfectly. But you have to ask how many patients can be better treated by these algorithms and how much work does it do to develop and implement this.

So, sooner or later, we have to discuss about marketplaces platforms on which we are able to develop and implement these algorithms without always changing the platform character, the standards. We always need again and again the hospital IT. So it has to become really easy to implement these algorithms which are usually also not of a long term lifetime. Usually they are not up to date anymore after two or three years.

So it's a really short time we can use them perfectly. And so we really need efficient implementation. And so in the first, we have to talk about standardization of our data.

Then we have to talk about standardized platforms, which are generic to a lot of open questions we have. And then we have to talk about the governance for all the algorithms we want to use on this, and this governance should also be more generic, not specific for every algorithm itself. And if we can develop such platforms and such generic governance, then we are able really to get the best out of this evolution we currently see in AI.

ALEX MAIERSPERGER: That's a very helpful approach and a very measured approach, I think very thoughtful to think through how you go about implementing and implementing it at scale. I appreciate that.

I know you like to visit health leaders in hospital systems around the world, and you were recently here in the US. What are some innovative approaches you've discovered that other CMIOs need to know about?
MICHAEL VON WAGERN: Was fascinated that we, at the end, even if the US is some years in front of us in the question of digitization, we more or less discussed the same questions. And one first question is, how do we keep flexible? We see such a lot of changes and opportunities at the horizon and what we can expect in the next years.
And we have to keep to be flexible, and we have to learn to develop our health information systems more modular and exchangeable that we can introduce such new developments in our systems. So I think the most impressive or the most important topic I took with me from my trip to Duke University, for instance, was that we discussed the same question. How do we get so flexible that we can deal with all these opportunities in the future? And I think this should be one of the goals or aims we have in the future to get more flexible based on the standardization we just talked about so that we come into a future we know from our private computer world as plug and play so that we can easily introduce new solutions in an ecosystem of flexible modular HIS.
ALEX MAIERSPERGER: Incredible. Glad to be learning from you on your world travels. There's a lot of challenges in health care that are easy to name. I think you've mentioned a few-- from some of the disparate systems to the quality of the data or the timing to some of the governance challenges. What's something that makes you optimistic that we will have a healthier future? And importantly, what role do CMIOs play in that future?
MICHAEL VON WAGERN: I think in the past two or three years, we've learned that the capacity of computers was such developing that we today know these new generic AI solutions we all know from the newspapers, with large language models able to use big, really big, big data out of the internet, for instance. And based on that, I think we will become more efficient if these solutions can support us in understanding our patients. Today, we have to face an enormous increase in information every day. We have to deal with information about our single patient and information coming out of the science-- new pharmaceuticals, new diagnostics, new aspects we have to keep in mind if we do decisions in our clinical practice.
And it will become more and more difficult to keep all this together for a single physician. And I think that the new solutions will support us in picking out the most important information out of this big information overflow we have for our individual patient. This will lead us into a more individualized treatment for each of our patients based on the newest evidence and best evidence in science. So this makes me really optimistic for the future even if we know all these challenges we are facing in more and more patients we will have just because of the older population.
The role of CMIOs I see is really to now think about this future and adapt our way of working into this new world and keeping also the risks in mind, like the risk that we switch off our own thinking, that we just base our decisions on these new solutions. We have to deal with that also like we had with former new diagnostics like CAT scan or our new lab values which were developed. We have to learn the pros and cons of the new solutions and to bring in in a new way of working.
ALEX MAIERSPERGER: My physician equipped with the latest information and clinical guidelines and the best information for me at exactly the right time sounds like the exact type of future that I want to subscribe to. So thank you for laying that out so boldly and incredibly. Dr. Von Wagner, thank you so much for joining The Health Pulse today.

MICHAEL VON WAGERN: Thank you.

ALEX MAIERSPERGER: And to our listeners and viewers, thank you. We know that you have infinite options to spend your time. And so thank you for spending a little bit of it with us today. If you'd like to join in the conversation or as a guest, please reach out to us-- thehealthpulsepodcast@sas.com. We're rooting for you always.