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Value-Based Radiology: View from Europe



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What does value-based healthcare and value-based radiology mean to you as a Radiology Director?

Value-based healthcare as a whole is an issue beyond the radiology department. For the time being, in Germany, it is more of a general trend. The insurance and the reimbursement systems haven't really implemented the value-based reimbursement of services. For me, it's more something that we want to move towards, because this is an important concept for the future of radiology. I don't think that the general approach of generating more exams or more reports in less time is useful in translating innovation and it is of limited benefit to the patients and clinical practice.

The general idea of value-based radiology is very important. It implies that we are performing appropriate quality examinations in terms of precision and personalised medicine. We will come back to other questions important for the future of radiology, because the simple reporting volume of radiology examinations will be supported to a substantial degree by machines in the future.

Referring to the talk you will be giving at the European Congress of Radiology 2017 about clinical decision support, what is the difference between basic and advanced decision support?

I consider basic a clinical decision support (CDS) system that is more educational to referring physicians than aiming to change and improve the workflow of the radiology department. The basic clinical decision support system will check whether the modality of the examination requested is appropriate with regard to guidelines that are the basis of a CDS system. It will give a response whether MR or CT, with contrast or without, is the most appropriate imaging modality to answer the clinical question. This implies that more information will be made available in the request to the radiology department than is normally encountered nowadays. In many situations, especially with regard to outpatients, the information that comes with the request for the radiological examination is minimal. And so, because with minimal information the CDS is not going to work, it will ensure that the request of the referring physician will provide more information or that the system can access data from the electronic health record of these patients in order to make the recommendation regarding the appropriate radiological examination for the clinical question.

This would be the basic clinical decision support from a data specialist point of view. Up to 20% of requests are not appropriate in that you can't get the answer that you need, or you can get the answer cheaper or faster depending on age and gender. Or a non-ionising radiation exam could be more appropriate, for example. These are the simple issues for CDS in my view.

As for advanced CDS, it would improve the workflow in the radiology department in order to generate more value so that we not only pick the appropriate modality, but we also pick appropriate protocol, examination lane, dose, dose of contrast, number of phases, additional sequences in MR to really answer and solve the diagnostic question. Normally in the out-patient setting, we very often don't invest enough to really solve the issue, whereas in the university setting, we do too much in situations where the clinical question is straightforward. So the CDS could be used to tailor the examination protocol in a personalised way and make not only the modality appropriate but also exposure and the report.

What are your thoughts on sustainability and value for radiology?

Well I think we can only be sustainable when we generate value and prove that we generate value that cannot be generated by a machine. At the same time, there are machines out there that are already at a pretty high level, and there will be very fast progress. I think we should use them in supporting us in generating structured personalised reports. The role of the radiologist is really to generate value for the whole process of imaging and diagnostics. I think for quite a number of years we will still need a radiologist to find and to generate value in terms of "this is what we feel the diagnosis is" and "this is what we recommend". So that's why the general shift from volume to value-based radiology is very important. Volume-based processes will be taken over by the machines and the interpretation might even be shared with other disciplines. Radiology will survive and will be even more important in the future of imaging. It is about the discipline of radiology and its roles as gate-keeper, communicator and diagnostician.

In reference to the German National Cohort Study (nako.de), you lead the whole body MR imaging part. How do you see that research contributing to the future of radiology?

This is taking us to the "Image wisely, diagnose wisely" activities. Because imaging has become so important and so good that we are detecting thousands of abnormalities, we have to find an appropriate way to deal with them and communicate them. There are so many abnormalities that are not going to mean anything to the health and to the survival of the patient. From the National Cohort we will identify what is normal, what level of "abnormalities" - is normal. We feel that we know the normal size and signal of the liver, but there is no big current database, to support many of these "normal" values. They have been determined one hundred years ago by autopsy studies - not by modern imaging. Also the population is changing; lifestyles are changing. We will learn what type of sub-clinical changes might predispose to the risk of developing disease in the future. Already we have more than ten thousand examinations performed in our study. It is a cross-sectional study currently. The cross-sectional part, including more than 30,000 exams will be done by the end of 2018 / beginning of 2019. We will adjust the time following the funding period in order to have a repetition of MRI examinations around five years later.

In this move to value-based radiology, do you feel that education and training of radiologists is sufficient for making this transition?

I think we have to educate and train our radiologist differently for the future because the approach that we use nowadays is that you're in the reading room, you go through 25 different sequences and then you write your reports or you use speech recognition to dictate your report. I think this has to change and this will be changed as a part of everyday radiology. I think that structured reporting is becoming a must in value-based radiology.

Are you implementing structured reporting in your department?

We identified the first set of structured reporting templates, and we are implementing it more and more. We are teaching our residents about the benefits of structured reporting. It's quite a shift, but after a short period of time, the residents recognise the value of what they have to learn about the patient and patient history before getting the report done. The information in the report is quickly available for the referring physician, who doesn't have to read a whole paragraph of prose. Everything is changing in radiology in the last 50 or 100 years except the report, so we have to take the lead and change the report too. We use automatic templates. Two or more steps in, you have an automatic system providing inputs into these templates for a radiologist to report. This will certainly be a big contribution to value-based radiology in future. We started with a single template using images from a single scanner as a pilot. The first two were so successful that we are now expanding to more scanners and indications.

Following the publication of the white paper on lung cancer screening in 2015 (Kauczor et al. 2015), what development has there been?

There is a lot of interest from many researchers, politicians and policymakers in many European countries. I am very optimistic that we have clear evidence and data that CT lung cancer screening is of benefit to smokers. We are working on many activities to have this established in quite a number of European countries. We have additional applications for EU funding in this field for additional studies of combining lung CT screening with novel software analysis tools, biomarkers, exhalation markers and so on.

In time might we expect programmes at the level of mammographic screening programmes?

Yes, I think it will take some time and certainly depend on the country. There is a lot of interest in this field. There are many countries that already have established a programme, like the USA, or are in the process of implementing a programme like this, such as Korea.

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