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Challenges and opportunities for laboratory testing

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It is undeniable that laboratory testing is vital for the diagnosis, prognostication and therapeutic monitoring of human disease. Despite the many advances made for achieving a high degree of quality and safety in the analytical part of diagnostic testing, many hurdles in the total testing process remain, for example in the preanalytical phase when it comes to ordering the right tests. Abbott's Diagnostics magazine "WIRED for transformation" talked to Prof. Ana-Maria Simundic about challenges and opportunities for the clinical laboratory.

According to your experience, what are the biggest challenges in today's clinical practice that keep laboratories from adding more value to their institutions and the patients' pathway?

In the past, laboratories have been sample-oriented and too much focused on analytical quality. Nowadays labs are still seen as "factories" which produce a great amount of data. What we need to aim for in the future is to become a patient-oriented partner in healthcare that is providing high quality information. In addition to our focus on high analytical quality we need to also focus on patient outcome. We should practice laboratory medicine as a clinical specialty rather than a number-generating system.

Why is this not happening yet worldwide?

Such a change requires a paradigm shift for the lab and for other stakeholders in healthcare like hospital managers, clinicians and nurses. We need to go out of our laboratories and take a responsible role within the total testing process. We need to engage in the pre-pre- and pre-analytical phase as well as in the post-analytical phase. This means engagement with our clinical colleagues in multidisciplinary teams. We have to eliminate silos and work together with clinicians on joint guidelines while respecting their clinical

autonomy but contributing our valuable knowledge about the testing process. Our primary focus should be areas of demand management and test interpretation. We should stand up and show that we are knowledgeable and competent to serve as consultants in test ordering and test interpretation.

Obviously, effective communication, shared vision and team work are the key in this process to overcome resistance to change which is one of the biggest barriers along the road.

What role can IT play in improving demand management and test interpretation?

Obviously, informatics has a key role here and the applications are unlimited. Test algorithms, panels and various gate-keeping strategies can be implemented into hospital information systems (HIS) and laboratory information systems (LIS) not only to automate test ordering and test interpretation, but also to complement the laboratory and clinicians' skills and enhance the quality of care provided.

Such systems can effectively support the diagnostic process, ensuring that patients are always receiving a standard level of care, while allowing exceptions and as respecting the autonomy of a clinician. Furthermore, laboratories are a kind of goldmine for data. The amount of data in healthcare doubles every 3–5 years and the role of IT is to analyze big data and use them to improve laboratory medicine.

Thus IT should be offering much more in the future. For example the LIS should be able to capture, store and analyze various lab related data, and even act upon these data. Artificial intelligence will certainly play a role as well. The laboratory of the future should operate as an information- driven business. We need to use information to improve all processes in the lab to increase our productivity, optimize efficiency and improve the quality of our service. Many would argue that our jobs might become redundant if we allow IT to take over tasks that were traditionally done by humans. I rather suggest to redefine our roles, learn how to use IT solutions and artificial intelligence and focus on areas where cognitively challenging actions are required.

How can associations like the European Federation of Laboratory Medicine (EFLM) help in creating a framework for the "next generation" laboratory?

Our mission at EFLM is to enhance patient care and improve outcomes by promoting and improving the scientific, professional and clinical aspects of clinical chemistry and laboratory medicine. EFLM has a great potential to take the lead in creating a framework for "next generation" laboratory medicine and is collaborating with other clinical organizations on the issues of mutual interest. Our association is developing standards, encouraging their implementation, and striving for harmonization of lab medicine across Europe.

We are aware of the importance of IT and other disruptive technologies in shaping our profession. These issues are key determinants of our long-term strategy. This year in June, EFLM has organized the second strategic conference in Mannheim, Germany, which has dealt with informatics and other disruptive technologies. As an outcome of this conference, EFLM has created several tasks and working groups which will focus on particular matters and take the work forward.

As an example, the working group for preanalytical phase (WG-PRE) has an ongoing project on demand management with the aim to understand the view of clinicians about the role of the laboratory in the demand management process. Hopefully, this project will help us to identify potential obstacles and barriers and tailor the best way to deal with clinicians in managing the test demand.

What were the first relevant steps you took in your working environment to overcome barriers and move towards value-added testing?

I have been working in the university hospital Sveti Duh for three years now. Since my arrival, I have been trying to engage with my clinical colleagues to address common problems together. So far, we have agreed on some successful gate-keeping strategies to reduce the over-utilization of thyroid, D-dimer and tumor marker testing. Recently, we have created a joint interdisciplinary team to implement algorithms for some most common emergency pathological conditions. It was hard work but there was a great enthusiasm

and mutual respect which was very important and motivating. By now, algorithms are created and the next step is now to implement it into the HIS. Of course, nothing goes easy, but the key is to take little steps. I was lucky for having a supportive hospital manager who fostered changes which may either improve the quality of the patient care or reduce overall costs. In institutions with less support and interest from management side, laboratories should step up and document implementation outcomes. Once the first objectives are reached, it is key to present results like savings, improvement of the patient safety and prestige to the hospital management.

I served as the president of the Croatian society for medical biochemistry and laboratory medicine from 2012 until 2018. In June last year, we launched a joint project with the Croatian medical society for emergency medicine. We have signed a memorandum of understanding and agreed on a project with the aim to produce diagnostic algorithms for the most common emergency conditions and provide assistance for nation-wide implementation. After the analysis of the current situation, the project is in its early phase but I hope we will be able to reach our goals. Again, IT solutions will play an important role in the implementation of national algorithms.

Find out more about Abbott here

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