Episode #53: Don’t Wait for the Wake-Up Call

Josh Casey: Hi, I'm Josh Casey. Welcome to *QuidelOrtho Science Bytes*, your trusted source for diagnostic insights and innovations. Diabetes is a global health challenge. It affects more than 400 million people worldwide, many of whom are unaware they have it. That's because it's often diagnosed only after serious complications like heart disease or kidney damage have already developed. This makes early detection of diabetes especially important. It gives patients a chance to take control of their health before irreversible harm occurs. And for healthcare providers and labs, early testing is a powerful tool that supports preventive care, improves outcomes and helps reduce long-term costs. In a system where efficiency and accuracy matter more than ever, early detection isn't just beneficial, it's essential. Today, we're speaking with Dr. Qian Ding, a distinguished MD and PhD scientist with a unique blend of clinical and laboratory medicine expertise. Dr. Ding brings extensive experience in hospital laboratory and in vitro diagnostics with a strong command of healthcare information systems and data analytics. With a comprehensive background in microbiology, immunology, molecular genetics and healthcare business intelligence, Dr. Ding is also an accomplished researcher with an established record of publications in reputable peer-reviewed scientific journals. She's also recognized as a leader at the intersection of science, technology and healthcare. Welcome, Qian. Thank you for joining us.

Qian Ding: Thank you for having me, Josh, and for the introduction. I'm happy to be here and looking forward for the discussion.

Josh Casey: Great, let's get started with our first question then. Why is early detection of diabetes considered a clinical priority?

Qian Ding: Early detection is a clinical priority because diabetes often develops silently. Many people live with elevated glucose levels for years without obvious symptoms. And by the time it is diagnosed, complications such as cardiovascular disease, kidney disease or nerve damage may have already begun. Identifying diabetes early allows clinicians to intervene before irreversible harm occurs, and it gives patients the opportunity to make lifestyle changes, address metabolic risk factors and prevent progression from pre-diabetes to diabetes.

Josh Casey: So then how does early detection influence the trajectory of disease progression?

Qian Ding: Early testing changes the trajectory of diabetes by shifting care from reactive to proactive. When we detect metabolic changes early through the fasting glucose, HbA1c or other biomarkers, clinicians can personalize care plans to restore balance and maintain insulin sensitivity. For patients, that means more years of healthy metabolism and fewer complications down the road. For clinicians, it creates the opportunity to monitor trends, find new interventions and prevent escalation to insulin dependence or organ damage. In short, early detecting, early testing, do not just find diabetes sooner. It helps rewrite the patient's long-term health story.

Josh Casey: Those all sound like tremendous benefits, but what are maybe some of the limitations of traditional diagnostic criteria?

Qian Ding: Traditional diagnostic criteria such as fasting glucose, OGTT and HbA1c have been essential in defining diabetes, but they only tell part of the story. They give us a snapshot of time rather than a full picture of a patient's metabolism. In glucose and HbA1c,

levels can fluctuate with things like stress, illness or red blood cell turnover. So a single test result may not fully represent a person's long-term risk. Another limitation is timing. The markers usually pick up diabetes after major metabolic changes have already happened when insulin resistance and beta-cell decline are well underway, by that point we have missed the chance to intervene early.

Josh Casey: That's really interesting. Are there any emerging biomarkers being explored for earlier detection?

Qian Ding: Yes, there is a growing interest in C-peptide and pro-insulin as indicators of the insulin production, adiponectin as a marker of insulin sensitivity, and other inflammatory markers such as CRP or interleukins. They are not replacements for standard diagnostic criteria, but they can prevent a more comprehensive view of metabolic health, often revealing subtle changes well before glucose levels become measurable.

Josh Casey: Okay, thinking now of the clinical lab, what is the role of lab-based diagnostics in diabetes care today?

Qian Ding: They're really the backbone of diabetes care. Labs provide objective, quantitative data that clinicians rely on to diagnose diabetes, stratify risk and monitor disease over time. Beyond confirming hyperglycemia, assays like HbA1c, insulin, C-peptide and ketones help differentiate diabetes types, assess beta-cell function, and detect acute metabolic issues. Additionally, modern lab platforms also give a broader view of metabolic health. They measure lipids, kidney markers – all critical for spotting complications before they advance. In summary, lab testing allows clinicians to personalize care, adjust treatment quickly and make diabetes management truly data-driven.

Josh Casey: Great, so how are modern laboratory platforms advancing early diabetes detection?

Qian Ding: In short, they help us get reliable answers faster. Today's lab platforms are much smarter. They use things like variant-resistant assays, built-in quality checks and automation-ready workflows. All of that means labs can deliver high-quality results with very little hands-on time. These innovations really simplify the process, they reduce pre-analytical complexity, eliminate common interferences and support random-access testing. So clinicians can act on trustworthy data more quickly. The end result is a more efficient lab environment that makes early intervention and personalized care possible on a much larger scale.

Josh Casey: We talked about the influences and limitations of early detection in general, but what are maybe some of the economic impacts of early detection on healthcare systems?

Qian Ding: Let's say when we prevent complications through early diagnosis, we can avoid costly interventions down the road like dialysis, amputations or cardiovascular procedures. It also fits perfectly with the value-based care models, where the goal is better outcomes at a much lower cost. In that sense, early testing is really a high-return investment for the healthcare systems.

Josh Casey: That makes sense. Thank you for the explanation. Now, considering the range of needs for the community at large, why is it important to tailor testing strategies to diverse populations?

Qian Ding: That is a great question. Diabetes doesn't look the same in everyone. Genetics, lifestyle, diet and even access to care all influence how the disease develops and how it is detected. For example, for some populations, they may develop diabetes at a much lower BMI threshold or show a different HbA1c pattern, which means one size fits all testing approach can miss early disease in certain groups. That's also why tailoring testing strategy is so important. It can mean adjusting reference intervals or medical decision cutoffs based on the populations you serve and making sure the method the lab is using, or approach, when hemoglobin variants are common, or providing culture-relevant education and community-based screening. At the end of the day, it is about meeting people where they are and making sure early diagnosis and treatment are accurate and accessible for everyone, not just those who face the average profile from traditional studies.

Josh Casey: Thinking about all the testing advancements and opportunities we discussed today, how can labs and healthcare professionals collaborate to improve early detection?

Qian Ding: Early detection really depends on the teamwork. Labs generate the data, but that data only drives better outcome when it is connected to what happens in the clinic. Collaboration starts from communication, sharing the testing, and also the testing trends, flagging subtle changes, and also give the clinicians a context they need to act early. It also means co-developing a screening protocol, aligning all cutoffs and making sure testing strategies fit the population being served. When labs and providers work as one team, they can close the loop between the diagnostics and the care, catching the disease earlier, personalizing the treatment and ultimately improving patients' outcomes.

Josh Casey: As clinical labs face ever-growing demands for speed, accuracy and adaptability in testing, early detection of chronic conditions like diabetes is more than a clinical goal, it's a strategic imperative. From streamlining workflows to supporting preventive care, diagnostic platforms help labs deliver timely insights that empower better clinical decisions and healthier outcomes for patients. Thanks again, Qian, for sharing your perspective and helping us explore how early testing is shaping the future of chronic disease management.

Qian Ding: It was great to be here today, thank you.

Josh Casey: That's all the time we have. We appreciate the thoughtful insights shared today, and we hope everyone found the conversation valuable. Please be sure to review the sections and links within the podcast description. You can always go back and listen again if you'd like more details. Thank you all so much for listening. Please subscribe if you haven't already to join us each month for the podcast brought to you by QuidelOrtho Corporation, where we are advancing the power of diagnostics for a healthier future for all. Until next time, take care, everyone.