Molecular diagnostics

Expert interviews—revolutionize patient care through clinically relevant molecular testing

Introduction

Laboratories around the world invested heavily in resources to support real-time PCR (qPCR)-based molecular testing during the COVID-19 pandemic. Molecular testing enables accurate and actionable results that can enhance the quality of patient care and shape the future of best practices in healthcare.

While traditional methods continue to have an important role in the diagnosis of infectious diseases and in other applications, qPCR technology has clinical evidence to support improved patient outcomes. The technology is substantial, enabling thousands of highly sensitive samples to be run with results that can be reported within the same day.

This e-book was designed to educate and inform about the role molecular testing can serve in patient management and its potential impact on global health care decisions. A compilation of informative interviews with key medical experts, this educational content is intended to aid lab professionals and clinicians working in all types of laboratories—commercial, reference, public health, health ministry, and hospital laboratories—to better understand and appreciate the **potential of molecular testing for infectious diseases and pharmacogenomics**.

These interviews originally ran in *Clinical Laboratory News* and are reprinted here with permission. Hopefully, you will find the provided educational information enlightening, instructive, and invaluable as you continue your molecular testing journey.

What the experts are saying

Molecular tests revolutionized diagnostic microbiology and infectious disease diagnosis, and overall disease management. They allow us to detect microbial pathogens that are not easily detectable by conventional methods.

— **Joseph D. Yao, MD**

What are you looking for when you're trying to make these types of decisions? It's utility and addressing patient needs.

— **Stella Antonara, PhD, D(ABMM)**

There are many advantages to molecular testing.

— **Salika Shakir, PhD, D(ABMM)**

Molecular tests can facilitate more rapid identification of potential outbreaks.

— **Davidson Hamer, MD**

Everybody benefits from a better turnaround time. Everybody benefits from a higher degree of sensitivity.

— **Nathan A. Ledeboer, PhD**

These technologies contribute in multiple ways, including that they enable high-throughput testing of clinically actionable variants.

— **Sherin Shaaban, MD, PhD**

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Chapter 1

Determining clinical utility for molecular testing: the laboratory medicine perspective

An interview with Joseph D. Yao, MD

Innovation in the clinical laboratory has enabled a seismic shift in how—and how quickly—patients are diagnosed and treated. But laboratory medicine professionals know well that an analytically perfect test is not automatically the best one to use: it's the impact on patient care that matters.

This fact has been a driving force in the movement to focus on laboratory stewardship, which combines the expertise lab experts bring about using the right test, at the right time, for the right patient—and combines that with awareness of financial and other responsibilities that define the full context of care for patients, institutions, and society.

We asked **Joseph D. Yao, MD, a consultant in the division of clinical microbiology and an associate professor of laboratory medicine at the Mayo Clinic Alix School of Medicine in Rochester, Minnesota**, about what role the laboratory plays in determining how tests are used in clinical practice, and how defining clinical utility fits in. Dr. Yao's research focuses on the development of new and improved clinical diagnostic tests for viral hepatitis, HIV infection, and transplant-associated viruses.

Medical professionals play a role in determining how molecular tests are used in clinical practice. ***(Stock image)***