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IMPROVING HCV/HBV DIAGNOSIS

95%

Percent of HCV/HBV patients subsequently linked to care after testing in the ED.

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Unified Collaborations Power Better Healthcare Across the Globe

BY KIMBERLY SCOTT

Laboratory data is helping reduce mortality rates and increase longevity as part of a growing number of patient-centric initiatives focused on new approaches that identify illnesses earlier. Increasingly, such projects leverage expertise and data from the clinical laboratory to not only improve interventions but also measure results, enhancing patient care and saving lives.

A number of interdisciplinary teams taking this approach have been recognized with distinction or achievement by AACC, Abbott, and other leading healthcare organizations through the UNIVANTS of Healthcare Excellence program. From identifying people with familial hypercholesterolemia to improving treatment of hepatitis C (HCV) and hepatitis B (HBV) to increasing blood donations, the initiatives profiled below have achieved measurable, innovative impact within their healthcare systems.

Reducing Mortality Through Early Identification of FH

While individuals with familial hypercholesterolemia (FH) have high premature mortality rates, they often go undiagnosed. On average, untreated patients can lose up to 21 years of life. SYNLAB, the largest laboratory in Europe, and AMGEN, a biotechnology company, joined forces in spring of 2018 to implement an FH alert to automatically notify physicians when additional testing might be needed, particularly if cholesterol levels exceeded thresholds in patients up to 60 years old.

FH is a genetic disorder caused by a defect on chromosome 19. This defect makes the body unable to remove low density lipoprotein (LDL) cholesterol from the blood, which results in high LDL levels. Experts estimate that without treatment, a man with FH has a 50% chance of having a myocardial infarction (MI) by age 50 and a woman has a 30% chance by age 60. Because FH is not linked to diet or weight, the condition is often undiagnosed until there is a cardiac event.

Aiming to improve FH diagnosis, SYNLAB Germany initiated the FH alert in March 2018 in the Upper Palatinate, one of the administrative districts of Bavaria. Working with its information technology department, the lab created an automatic alert so that every patient undergoing lipid testing would automatically be flagged for further testing if they had high LDL levels. The goal of the initiative was to identify high-risk patients with undetected FH who would benefit from therapeutic treatment.

Primary care physicians who sent specimens to SYNLAB were alerted to the new process. If they received an alert about a patient, they were instructed to go to a website to calculate the probability that their patient had FH and could then order a

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–WINFRIED MÄRZ

genetic test or refer the patient to a local specialist. Physicians could choose to opt out of the new process (14% chose to do so, primarily over concerns about increased paperwork).

In the first 3 months of implementation, 3,512 patients (almost 5% of total cholesterol examinations) were identified as being high-risk for FH through the automated alert. Of the 462 physicians who received FH risk reports for their patients, 101 (21.9%) subsequently visited the directed website to help educate patients and 26 genetic testing sets were ordered. Of these, 13 tested positive for FH.

Winfried März, MD, director of the SYNLAB Academy, a division of SYNLAB, was somewhat surprised by the results. "During the initial period, 5% of the samples analyzed were above the alert threshold. I would have expected that more than 26 genetic tests would be ordered," he said. "That tells us there is room for improving awareness for FH and the potential of making a definite diagnosis by genetic testing."

While 23% of physicians surveyed had no strong feelings about the alert, 70% were strongly positive, said Felix Fath, MSc, a care coordinator involved in the initiative. "We have made modifications since to minimize paperwork," he explained. "My guess is that we will see the number of genetic tests ordered increase by two or threefold."

The initiative has subsequently been expanded to two other areas in Germany and results are now being analyzed. März hopes the initiative will eventually include the entire country and perhaps even expand to other countries in Europe.

While it's difficult to quantify the monetary savings associated with the FH alert in the short term, it's clear the initiative, which was recognized with distinction by the UNIVANTS of Healthcare Excellence program, is helping to save lives, and the laboratory is playing a large part in that, März said.

"The laboratory is now taking a more active role in the diagnostic process," he explained. "We really have become part of the team. There may be many further applications where the lab can get involved and make a real difference."

Improving Diagnosis of HCV/HBV in the Emergency Department

In an effort to improve treatment of HCV and HBV, an interdisciplinary team at Guy's and St Thomas' National Health Service Trust in London in 2017 began screening all emergency department (ED) patients for both diseases.

Patients seeking care at St Thomas's Hospital, which houses the emergency department, were asked for verbal consent to be tested for both HCV and HBV, and all ED blood orders were modified to include an HCV/HBV screen by default. Those who tested positive were then connected with care.

"In London we have a large homeless population, and many of them receive care through the ED," explained Samuel Douthwaite, MD, a consultant in infectious diseases in the trust's department of virology. "The ED already had a successful program for HIV testing and intervention. It just made sense for us to use the existing infrastructure to add on testing for HCV and HBV."

Through the initiative, diagnosis of HBV increased by 26% and diagnosis of HCV increased by 15%. Of the newly diagnosed patients, 95% of HBV patients and 71% of HCV patients were linked to care. The disparity, said Douthwaite, was largely due to differences in population groups.

"HBV, which is transmitted primarily through childbirth, occurs largely in the city's West African population, which comprises people who have addresses and phone numbers," he explained. "HCV is spread primarily through sharing of needles, and the HCV cohort is predominately homeless people or people with substance abuse problems. They tend to be harder to track down to link with care."

About 70% of ED patients opted to undergo the HCV/HBV screening, which resulted in about 1,000 people each week being screened. The prevalence of HBV was 0.5% and the prevalence of HCV was 1%. Of contactable patients, 44% of HBV and 28% of HCV patients had not received a diagnosis previously. Patients with a new diagnosis and those who had disengaged from healthcare were offered a convenient tailored pathway to access care.

Of those who opted out of screening, some people said it was because they already knew their diagnosis or had recently been tested. Others declined the testing due to anxiety, said Douthwaite.

Not only did the initiative help save lives, but it also reduced disease progression and terminal stage expenses, resulting in savings of about 33% annually per patient with acute infections.

In addition to increasing diagnosis of HBV among the West African population and HCV among homeless people and those who use drugs, the initiative also increased diagnosis of HCV among people who had used drugs when they were younger but had since stopped.

"That was the group we were able to engage most successfully," said Douthwaite. "Many of them had never been tested and did not know they were positive."

The screening initiative is highly scalable, and any ED with a high HCV/HBV prevalence population could implement it, Douthwaite said. "The first step for some hospitals is to get HIV testing going," he explained. "And then they can add on HCV and HBV testing."

Increasing Blood Donations in Dubai

The Dubai Health Authority (DHA) recognizes the importance of having blood and blood products for life-saving efforts of patients undergoing transfusion. Achieving 36,000 donations in 2015 was excellent but still short of demands. The Dubai Blood Donation Center, which provides blood to four governmental and 30 private hospitals in Dubai, recognized an opportunity to increase population engagement, particularly among donors ages of 17 to 25.

In 2016, an integrated care team implemented a media strategy, "BE THE ONE," to attract new blood donors, especially from the younger population. The campaign included marketing messages displayed on all DHA buildings, cars, and buses, as well as special supplements within newspapers. The blood donation center also encouraged universities and schools to help spread the word and developed a mobile app for both Apple and Android mobile devices. The Dammi blood donation app educates potential donors about blood donation and allows them to register through the app to donate blood.

In the 12 months following implementation of the campaign, the DHA experienced a 37% increase in donations of all blood products (whole blood, plasma, red blood cells, and platelets) over the previous year. Almost 10% of the donations came from people age 18 to 21, which increased the total number of potential donations per person across the donor population. The availability of rare blood types, such as O negative, increased by 2.8%. The numbers continued to increase in subsequent years. In 2017, the Dubai Blood Donation Center received almost 65,000 blood donations, and in 2018 it received about 64,000 donations.

"Through this campaign we have achieved a positive influence on the young generation to be regular, voluntary blood donors, which is the basis for a sustainable and safe national blood program," said May Raouf, MD, medical director of the Dubai Blood Donation Center.

At one hospital in Dubai, which operates the largest Thalassemia center in the country, the increase in donations reduced the hospital's gap in supply by 8.9%, allowing it to meet requests for blood 99.2% of the time.

An added benefit of the increase in blood donations is that a small percentage of new donors were diagnosed with undetected infectious diseases, which enabled early treatment and reduced the likelihood of transmission.

"When screening blood donors for infectious diseases, those with positive test results receive medical counseling to prevent the spread of the infectious disease to their family members and the community," explained Raouf. "Proper guidance for disease management is offered by our medical counseling team. Earlier detection of infectious diseases enables better clinical outcomes and reduces the risk of infectious diseases spread in the community."

The extraordinary results achieved by the DHA were recognized with achievement by the 2019 UNIVANTS of Healthcare Excellence program. The DHA program is considered highly scalable and could be expanded to other countries, according to Raouf. In 2017 the Dubai government recognized the project with the Sheikh Hamdan Smart Government Award as one of the eight best "smart initiatives."

Working Across Disciplines to Make a Difference

Each of these initiatives demonstrates how clinical laboratories can leverage their unique insights and capabilities to empower larger teams that improve patient care and outcomes. Beyond simply providing test results, clinical laboratorians are taking an active role in helping diagnose health conditions earlier when they can be treated most effectively, thus reducing mortality and improving population health.

To learn about other UNIVANTS winners, go to univantshce.com.

Kimberly Scott is a freelance writer who lives in Lewes, Delaware.
+EMAIL: kmscott2@verizon.net

INTEGRATED TEAMS PROFILED IN THIS ISSUE

The UNIVANTS of Healthcare Excellence Award recognizes teams who collaborate across disciplines to transform healthcare delivery and patient care.

In its inaugural year, the award spotlighted teams from seven countries around the globe. To learn more about all the teams being recognized, including those in this issue, visit univantshce.com.

» **Identifying Untreated Hepatitis B and Hepatitis C via Opt-out Screening Program in Urban ED Settings, Guy's and St Thomas' NHS Foundation Trust and Viapath Pathology Analytics,** London, United Kingdom
- Sam Douthwaite *(cover, row 1, column 1)*
- Gaia Nebbia *(cover, row 1, column 2)*
- Laura Hunter *(cover, row 1, column 3)*
- Jane Mullen *(cover, row 1, column 4)*
- Terrence Wong *(cover, row 2, column 1)*

» **Increased Population Engagement, Enhanced Patient Experience, and Safe Blood Donations Through Strategic Partnerships and Targeted Media Campaigns, Dubai Health Authority,** Dubai, United Arab Emirates
- May Raouf *(cover, row 2, column 3)*
- Sawsan Trabously *(cover, row 2, column 4)*
- Humaid Al Qatami *(cover, row 3, column 1)*
- Ranjita Sharma *(cover, row 3, column 2)*

» **FH Alert: Identification of Patients With Familial Hypercholesterolemia Using the Expertise and Resources of the Clinical Laboratory, SYNLAB Holding Deutschland GmbH,** Mannheim, Germany
- Winfried März *(cover, row 3, column 4)*
- Felix Fath *(cover, row 4, column 1)*
- Mathias Barresi *(cover, row 4, column 2)*
- Adrienne Schmittat *(cover, row 4, column 3)*
- Uwe Fraass *(cover, row 4, column 4)*