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ANALYTIC SERVICES

WEBINAR SUMMARY

Digital Diagnostics Transformation

What's Next?

Featuring Alex Clemente, William Morice II, MD, PhD, and Nick de Pennington

Sponsored by Roche

Digital Diagnostics Transformation

What's Next?

PRESENTERS:
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Overview

Harvard Business Review Analytic Services (HBRAS) recently conducted a global survey of senior health care leaders sponsored by Roche. It found that senior leaders in health care worldwide recognized that advanced use of data has tremendous potential to improve health outcomes and improve the efficiency and cost-effectiveness of health care. However, many health care organizations are struggling to unlock the full power of data to drive decision making and improve performance. To become more data driven, organizations must overcome structural, process, cultural, and technological issues.

About 15% of health care organizations are leaders that are accessing, integrating, and analyzing data from diverse sources to make informed decisions quickly. These leading organizations are:

- Using data and tools more expansively
- Working collaboratively (not in silos)
- Better prepared to make a cultural shift to become a data-driven organization

Leaders overcome barriers and change mindsets about the importance of data by:

- Articulating a clear vision
- Engaging stakeholders
- Showing that the benefits of being data driven exceed the risks

A recent discussion with two health care leaders from the survey highlighted that now—due to the COVID-19 pandemic—it appears that digital transformation in health care has accelerated. The current situation is leading to new technology investments and is changing the conversation and attitudes about data, among both patients and providers. Because of the pandemic, there has been rapid and widespread adoption of telemedicine and greater efforts to aggregate and use health data and other sources of data for more informed decisions.

Survey Summary

Alex Clemente summarized the HBRAS survey findings about data-driven diagnostics in health care. HBRAS conducted this survey among 742 health care industry leaders from across the globe. The majority were senior health care leaders, most from large organizations. Respondents' involvement in health data and digital technology decisions included being:

- Decision makers (29%)
- Decision influencers (60%)
- Implementers (37%)
- End users (38%)

The study's objectives were to understand the role of data-driven diagnostics, how organizations approach data-driven care, and barriers to successful execution.

Key Survey Findings

1. Most organizations believe managing data across care settings is important, but few do it well.

It is very important to manage data across care settings, replied 95% of respondents. Yet only 19% believe their organization successfully manages clinical data and only 16% believe their organization effectively manages operational data.

2. There are major differences between leaders and laggards.

HBRAS segmented respondents based on their organization's analytical maturity, adoption of data-driven practices, and ability to make data-driven decisions.

SEGMENT	% OF RESPONDENTS	DESCRIPTION
Leaders	15%	Access, integrate, and analyze data from diverse sources, and make informed decisions quickly
Followers	52%	Most data are digital, but workflow gaps slow diagnosis and decision making
Laggards	33%	Some tech used to collect/manage data but not easy to identify/pull together relevant data quickly

Among the behaviors and characteristics that differentiate leaders from laggards are:

- **Leaders demonstrate more expansive use of data and tools.** While use of electronic medical records (EMRs) is similar *within* institutions, leaders are far more likely than laggards to use digital tools for clinical decision support, use EMRs *across* institutions, use digital tools to manage operations, and use patient-reported outcomes tools.
- **Leaders are more collaborative.** While 75% of leaders are collaborative and work cross-functionally, only 24% of laggards do so. In contrast, 61% of laggards see their organization as siloed versus only 17% of leaders.
- **Leaders are better prepared to change their culture.** A key part of becoming more data driven is a cultural shift. Leaders are much more likely than laggards to be prepared for this shift while most laggards are unprepared.

3. Barriers to becoming more data driven are cultural and technological.

As shown below, there are two sets of barriers to becoming data driven.

PEOPLE & CULTURE BARRIERS	TECHNOLOGY & DATA BARRIERS
• Organizational silos (41%) • Insufficient funding (36%) • Lack of analytic skills (29%) • Lack of leadership (29%)	• Incompatible data systems (37%) • Lack tech infrastructure (33%) • Concerns about security (33%)

4. Five practices can facilitate transformation.

- Communication from top management (71%)
- Process redesign (70%)
- Formal training for new ways of working (54%)
- Investing in new collaboration tools (51%)
- Formal change management (41%)

5. The survey's conclusions highlight the importance of data in health care and the need to overcome barriers. The main conclusions are:

- Use of data has great potential to improve health outcomes and the efficiency of operations.
- While the majority of respondents (95%) say it is very important to manage clinical data across care settings, only a fifth (19%) are doing it.
- Similarly, 84% say managing *operational data* across settings is essential, but only 16% are doing so.

- Health care leaders must invest in tools, data, and skills, and effectively manage culture change to lead their organizations into the future.
- This approach can lead to faster, more effective delivery of better outcomes while creating a more supportive, less stressful experience for patients.

Discussion – Key Takeaways

Following presentation of the survey findings, William Morice of Mayo Clinic and Nick de Pennington of Oxford University Hospitals in the UK shared their perspectives about digital transformation in health care, barriers that must be overcome, and the impact of COVID-19.

Lack of infrastructure and silos are key barriers to digital transformation.

Morice concurred with the survey results in stating, "In health care, we can see the possibilities for using data in new ways, but a lot of the infrastructure that we have does not support our vision for where we want to go."

Health care structures and infrastructure were developed to support a siloed environment. Even when digital tools are adopted, they were often developed for the previous environment and are used within silos. For example, lab informatics systems are very insular and don't tend to talk to other databases. This means information is not flowing to where it needs to flow so it can be easily and quickly utilized. Results include a lack of interoperability and lack of a single source of data, which requires having to access many different data sources in manual ways, and then filter and translate the data.

> "A lot of our digital architecture [in health care] was not designed to be interoperable."
>
> —William Morice, Mayo Clinic

The lack of interoperability also applies in the UK. De Pennington said people often believe that because the UK has a national health system (NHS), it is a single provider of care and its data is unified—which is not the case. There are about 300 health institutions and 8,000 primary care practices, which often operate in silos.

NHS digital initiatives are underway to try to integrate data from across all parts of the health care system. Some of these projects have worked relatively well among some of the UK's top performing hospitals, with efforts to extend this success more broadly.

De Pennington believes that silos result because "people create processes." The problem is that most of the people within health care have similar experiences and expertise. He termed health care an "insular world" with little churn and infusion of ideas from other industries. This prevents exposure to new ways of thinking and operating. The result is remaining stuck in silos, with lack of impetus for change.

Moving to data-driven decisions requires showing that the benefits exceed the risks. Leaders must articulate a clear vision and engage stakeholders.

In de Pennington's experience, "People have traditionally been a little bit skeptical of digital programs." This skepticism has come both from people within the health care industry and from citizens/patients.

- **Skepticism from within health care:** People sitting within the silos of the health care system have been reluctant to share data. They see costs of doing so and are unsure of the benefits of data sharing and data-driven decisions. In addition, through the years people within health care have heard a great deal of hype about "data" and "digital." But the reality has often been that the costs have been higher than expected and what has been delivered has been less than what was promised.

> "For people who sit in existing siloed health care organizations, they perceive the risks of data sharing against benefits that they are not quite sure are going to materialize in the short term."
>
> —Nick de Pennington, Oxford University Hospitals

- **Skepticism among citizens/patients.** Individuals are often hesitant to share their data due to concerns about privacy and uncertainty about the benefits of doing so.

> "The opportunities that are created [though data sharing] are not as visible to people as the risks . . . privacy is undoubtedly the biggest concern."
>
> —Nick de Pennington, Oxford University Hospitals

The way to close the gap between what is possible with health data and where we are today is to articulate a clear and compelling vision about how health data can be used to make a positive difference in people's lives.

Use cases need to be described and benefits presented to each stakeholder group. Specifically, providers need to understand the ROI that can be achieved from data-driven decisions so they will invest in modern data infrastructures. Patients need to understand the potential for improved health outcomes so they will be more open to sharing their data. And all parties need to understand the risks associated with *not* becoming more data driven.

> "Create that compelling vision and then engage various stakeholders."
>
> —William Morice, Mayo Clinic

Morice shared a real-world example of changing mindsets at Mayo Clinic to make ordering laboratory tests more data driven.

- Evidence has shown that 20% to 40% of Mayo Clinic's lab tests are inappropriately ordered. This is bad for patients and creates waste in the system.
- Mayo Clinic looked at different use cases for laboratory tests and then created data showing ordering patterns. This data was analyzed to look for opportunities for improvement.
- The data was presented back to the key stakeholder, who in this instance is the order physician.
- Physicians saw data that certain tests were dramatically over-ordered, which actually was related to suboptimal patient outcomes.
- The data was used to created rules indicating when tests should be ordered.
- These rules have been incorporated into decision support tools and are presented to providers in real time in the appropriate context.

This example began with a vision for improving lab tests, involved engaging the key stakeholders, and used data to improve processes, improve patient outcomes, and reduce costs.

To create data-driven organizations, people in health care need greater data literacy.
Many people within health care aren't comfortable with data, aren't able to use data effectively, and don't know how to ask the right questions from data.

> "The problem is we haven't historically trained the majority of people working in health care to have a comfort around the use of data and an ability and a desire to use it."
>
> —Nick de Pennington, Oxford University Hospitals

Greater training is required among everyone in health care, including providers, managers, and administrators. People need to understand how to query data to answer questions and how to use data and decision support tools at the point of care. There are initiatives in the UK and elsewhere to dramatically upskill the digital capabilities of the health care workforce.

The COVID-19 pandemic may be a tipping point for digital transformation.
In rapidly responding to the pandemic, digitization has become the norm. Instead of making slow incremental changes and investments, many organizations—out of necessity—have been forced to make significant changes and major digital investments seemingly overnight.

> "We were looking at very small increments of infrastructure investment to get to a future state. Now [due to COVID-19] . . . we're going to see a lot more of the architectural elements needed for a digital environment in place."
>
> —William Morice, Mayo Clinic

Foremost among these changes is rapid adoption of "virtual visits" (i.e. telemedicine). Mayo Clinic is now doing more virtual visits in one day than in all of 2019. The institution was forced to rapidly implement this technology and patients were pushed to overcome their privacy concerns and be more comfortable and accepting of digital technology.

> "I think coming out of COVID-19, people are going to be much more accepting of virtual care as an option for them."
>
> —William Morice, Mayo Clinic

Also, for those in health care using analytics to create data models, the pandemic has increased use of incorporating non-traditional data sources—like Google searches—into the data model. For example, Google searches or other non-traditional data sources might provide lead indicators of where a region could be facing problems or a spike in COVID-19 cases. This change is opening people's eyes to the opportunity to use different types of data in more creative ways.

Dr. William G. Morice is the Chair of the Department of Laboratory Medicine and Pathology at Mayo Clinic in Rochester, MN and the President of Mayo Medical Laboratories. Dr. Morice is also a Consultant in the Division of Hematopathology and served as the Chair of this Division from 2009 to 2015. He holds the academic rank of Professor of Laboratory Medicine and Pathology.

As an expert in diagnostic hematopathology, flow cytometry, and T and NK cell biology, among other topics, Dr. Morice is sought after as a national and international lecturer and visiting professor. Additionally, as an active educator and mentor, Dr. Morice teaches residents, fellows, and allied health staff the analytic approach to the diagnosis of benign and malignant hematolymphoid disorders.

Dr. Morice has written more than 160 peer-reviewed articles, book chapters, and abstracts. He received his Bachelor of Science degree in Biochemistry from Indiana University and earned his MD/PhD (Immunology) degrees from the Mayo Clinic Graduate School. Dr. Morice completed a preliminary residency year in internal medicine, a combined residency program in anatomic pathology and clinical pathology, and fellowships in surgical pathology and hematopathology; all at Mayo Graduate School of Medicine.

Nick de Pennington is a clinical leader who trained at Cambridge and Oxford Universities. He spent 10 years as a frontline neurosurgeon, but following completion of training he saw the opportunities to deliver better value healthcare through digital health and moved into the senior management team of OUH NHS Trust. He co-founded a digital health innovation program that is funded by the EU and is founder of Ufonia, a digital health start-up supported by Innovate UK and the Science and Technology Facilities Council. In his NHS role he is responsible for developing the Trust's digital health innovation pathways, as well as implementation of Oxfordshire's digital population health solutions that will deliver more integrated patient-centered care.

Alex Clemente is the founding managing director of Harvard Business Review Analytic Services, an independent research unit within Harvard Business Review Group, that conducts research and comparative analysis on management challenges and emerging business opportunities for corporate sponsors.

Clemente is a senior global publishing executive, with 30+ years-experience in digital and print content sponsorship and advertising markets worldwide, having developed business content for sponsors on six continents.

He was previously the associate publisher of Harvard Business Review in charge of global commercial operations and sales, and prior to that, senior VP of sales and marketing for CFO Magazine/The Economist Group based in New York, and senior director of international advertising for USA Today, also based in New York.

He is a member of the Harvard Analytics Staff Consortium, a former board member of the International Advertising Association of New York and the Newspaper Advertising Sales Association of New York.

Angelia Herrin is editor for research and special projects at the *Harvard Business Review*. Her journalism experience spans twenty-five years in newspapers, magazines and online. She worked as *USA Today's* Washington editor, heading political coverage and served as editorial director of womenConnect.com and Women's Political Hotline.

At HBR, she has directed editorial content and development of a wide range of products that include newsletters, research and audio/video webinars. She is a frequent moderator at conferences around the world.

She was a Knight Fellow in journalism at Stanford University and currently teaches journalism at Harvard and the University of North Carolina at Chapel Hill.

Digital technologies are accelerating change in healthcare... Meeting the future together through dialogue and partnership.

The transformation of healthcare, especially in diagnostics, is accelerating rapidly in every way imaginable, worldwide, in part due to the application and use of new and emerging digital technologies.

Roche sponsored the **"Digital Diagnostics Transformation: What's Next?"** webinar to underscore our continued interest and long-term commitment to dialogue and partnership with others who also aim to innovate and improve healthcare for patients. The topic here was inspired by the results of last year's sponsored study: "Leading a New Era in Healthcare: Innovation through Data-Driven Diagnostics" and a wish to review those results in the context of today's global healthcare challenges, which include, but are not limited to, tackling Covid-19.

Recent events remind us that for better clinical and patient care the full potential of data analytics, machine learning, and other digital-based technologies—*coupled with automation*—is yet to be fully understood and valued in many places. Every lab and hospital has commonalities of purpose and values, which we share, and includes a desire to deliver clinical quality and precision (for meaningful decision-making) and speed and operational efficiencies (for better, improved patient care).

Yet we recognize that each lab and hospital also faces its own particular set of challenges and opportunities both to serve the healthcare needs of its community and to operate effectively within its particular healthcare system and market.

From experience, we also know that finding the right solutions for a lab, hospital, or network of labs or hospitals today is not straightforward. It needs a unique personalized approach and a holistic understanding of healthcare practices. Finally, it also requires a partnership-based approach to innovation: everyone working together as one to find the right solutions for patients.

At Roche, we remain committed to delivering pioneering advances in diagnostics, medicines, and personalized healthcare, and already have a long, proven record of accomplishments in science, healthcare, and lab automation here. Still future possibilities for improvement of healthcare remain. That is why we continue to ask our partners and ourselves: "Is there a better way?" How can we apply our healthcare knowledge to technology and thereby advance science and patient care?

We know that transformative progress in healthcare will be unlocked when we can combine understanding of diagnostics and healthcare with the power of new technologies and data insights across the system—from the hospital and the lab to the clinician, patient, and community. At Roche Diagnostics, we already offer and continue to explore digital-based solutions in many areas including clinical testing, clinical decision-making, integrated automation, lab and point-of-care software, data analytics, and customer services.

By working together with others in an open, partnership-based approach, we can combine the tools of digitalization and automation with the latest world healthcare practices and our collective experience to deliver new advances and better healthcare for every patient everywhere.

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