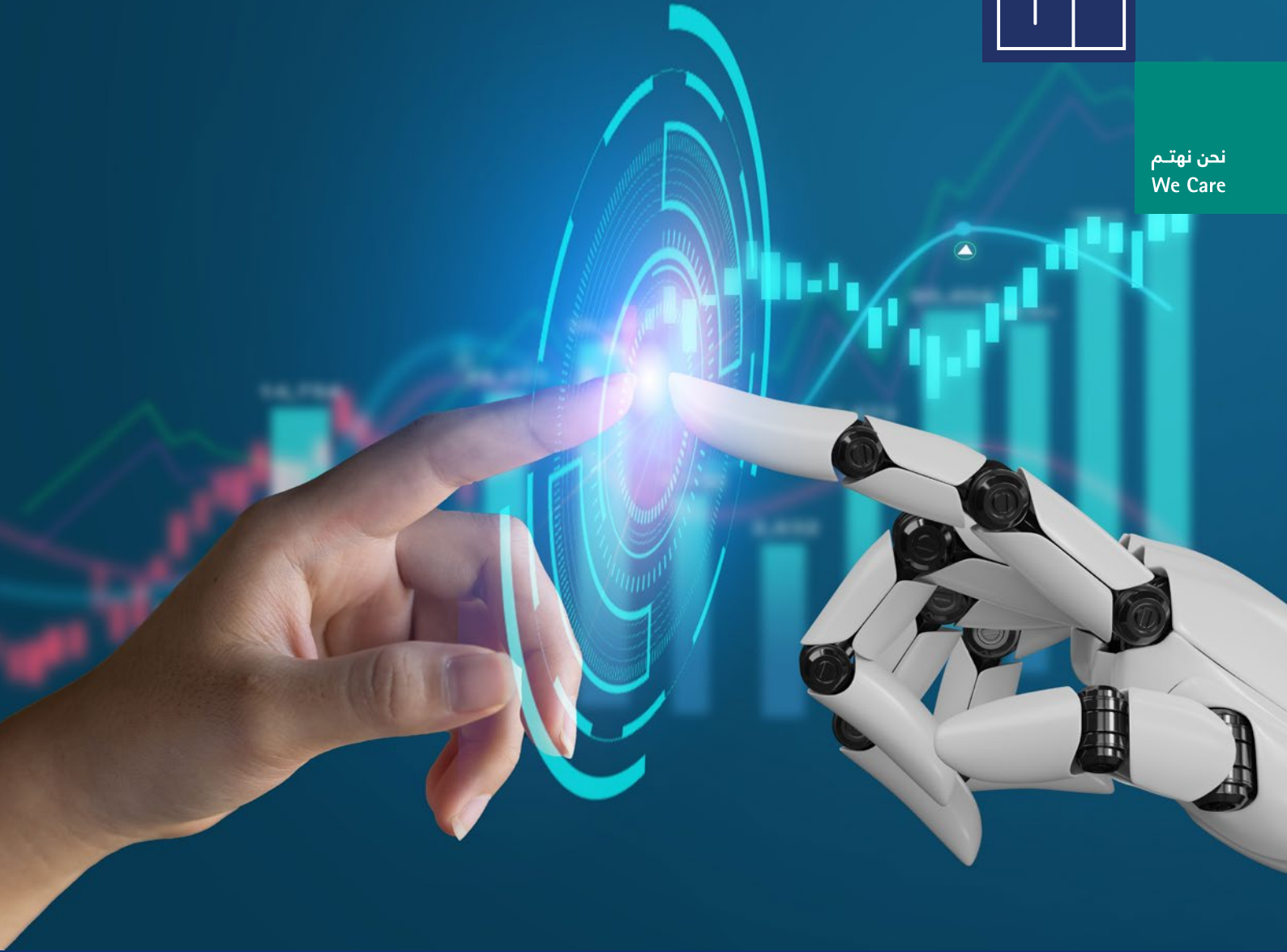Case Study 01: HORIZON SCAN

Scanning the horizon for healthcare innovations

JHAH's five-year Clinical Services Plan
Transformation Project 4

Project Champion
Dr. Tamara Sunbul

Clinical Services Plan

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Johns Hopkins
Aramco Healthcare

Scanning the horizon for healthcare innovations

Project Details

The Objective

- To prepare a report that identifies innovations (both diagnostic and therapeutic), involving new healthcare practices and technologies.

The Priorities

- Research healthcare innovations based on existing research and insight.

- Review use cases to understand implications.

- Prioritize insight and cascade to JHAH leadership so opportunities can be identified.

- Embed horizon scanning insight into how we operate.

The Timeline

- **Project kick-off:** January 2023.

- **Project closure:** October 2023.

The Project Team

Champion:

- Dr. Tamara Sunbul

Team member:

- Ibtihal Attallah

For more information

tamara.sunbul@jhah.com

About the Clinical Services Plan

Johns Hopkins Aramco Healthcare (JHAH) serves more than 140,000 Aramco employees, their relatives and retirees with a comprehensive range of inpatient and outpatient services. JHAH has carried forward the legacy set by Saudi Aramco of healthcare for all, putting caring for its community at the heart of everything it does.

In 2023, JHAH launched its five-year Clinical Services Plan (CSP). The CSP was developed in response to changing patient expectations and the realization that JHAH must evolve if it is to survive and thrive. The Plan's vision is that JHAH will become the Kingdom's first choice for outstanding integrated healthcare.

The CSP contains 16 strategic objectives to deliver against five goals (service excellence, access, people, sustainability and reliability), and is supported by four delivery principles (accountability, pace, pragmatism and outcomes).

The 'Horizon Scan' was Objective #4 in the CSP.

Project Background

Digital healthcare technologies have been steadily rising in prominence for decades. Almost overnight, with the onset of pandemic restrictions in early 2020, their adoption accelerated, touching all aspects of health service delivery. This is where they have remained ever since.

In 2023 the market value of the global health tech sector is $350-410 billion, according to a study by McKinsey, encompassing a broad range of innovations from access and information tools (apps, telehealth), to diagnostics (virtual reality and AI), to the 3D printing of replacement body parts. Any healthcare provider wishing to offer the best-quality care to its patients over the coming years needs to be aware of these innovations, and be able to adopt them into its processes once their efficacy is clear.

For decades, JHAH has been at the forefront of identifying new healthcare technologies which should be introduced into the Kingdom's healthcare ecosystem. To build on this legacy, JHAH decided that a refreshed horizon scan should be an early deliverable in the CSP program. This work would enable it to identify and prioritize the most relevant and beneficial technologies for JHAH to adopt over the next five to ten years.

Importantly, this horizon scan would enable JHAH to embrace innovations in its planned cancer center of excellence. In a highly competitive environment, ensuring JHAH is ahead in adopting new clinical practices will help deliver its aspiration to be the first choice for healthcare for all those living and working in the Eastern Region, supporting the vision of opening to the public.

Dr. Tamara Sunbul, Head of JHAH's Health Informatics Department, and her team were tasked with leading this project, working closely with Johns Hopkins Medicine.

Dr. Sunbul said: "Innovation has to be embedded in any plan otherwise it's easy to be left behind. At the same time, you do not want to be an early adopter until you have verified the effectiveness of a given innovation.

"In the healthcare sector, it rightly takes time to assess whether innovative technologies are fit for purpose. You need to undertake robust studies and digest and evaluate all the empirical evidence. That is why this project has given us a competitive and clinical advantage in embracing new healthcare tech."

Project Delivery

The project team focused on diagnostic and therapeutic innovations that could offer specific benefits: increasing capacity, addressing delays or gaps in service availability, enhancing outcomes where possible, and improving cancer screening for at-risk patients. Shortlisted innovations also needed to be aligned with the existing service development strategy.

Digital therapeutics, digital diagnostics and gene editing were of particular interest.

Dr. Sunbul and her team drew on their combined years of knowledge gained from attending healthcare tech conferences, visiting world-class hospitals, and reviewing peer reviewed literature.

Sharing ideas and insights with their peers at world-class hospitals in the Gulf Cooperation Council (GCC) region, the United States, and Europe and Asia Pacific proved to be one of the most fertile sources.

Having identified a long list of opportunities (see Figure One), the project team engaged with the champions of other CSP initiatives to discuss their views on the projected benefits and potential implementation. This was to ensure that any emerging recommendations enjoyed widespread support.

The team prioritized the innovations identified based on maturity, relevance to the problems they were trying

Figure One: Horizon scan – innovations affecting care support, population health, core care and care operations

Source: JHAH and Boston Consulting Group collaborative discussions.
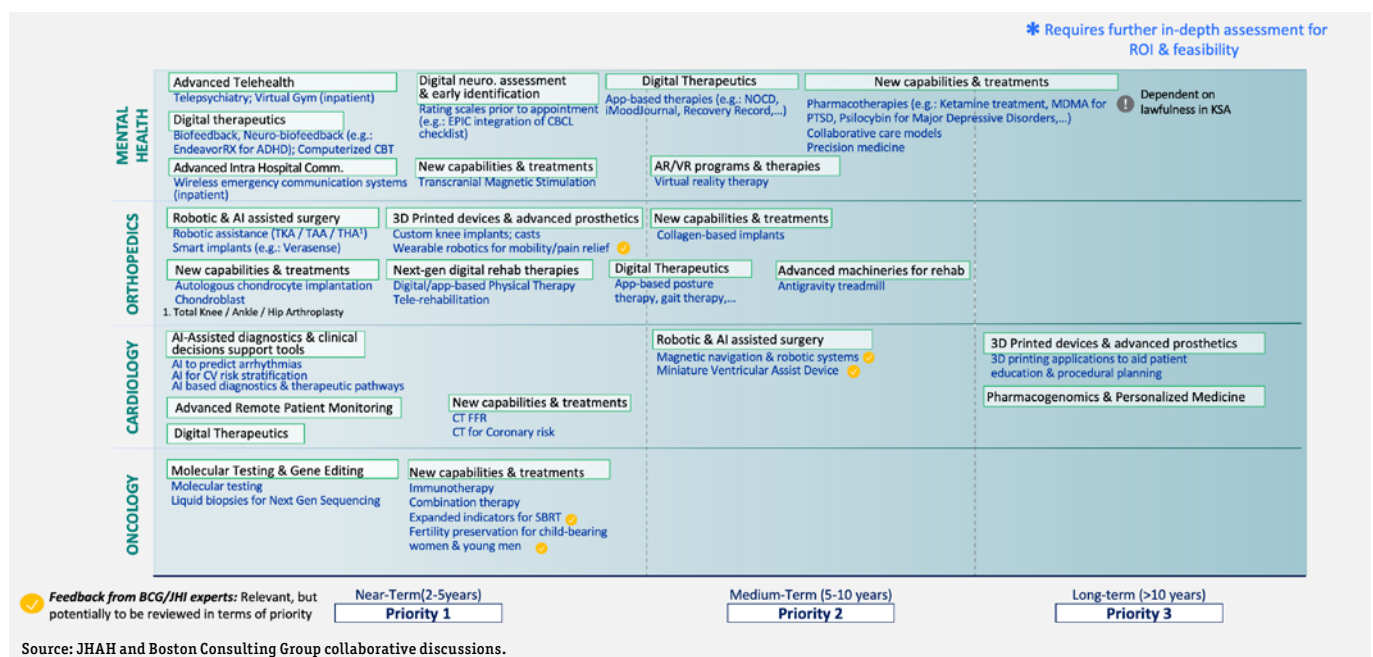
to solve, viability, future-proofing and alignment with JHAH's strategy and CSP. This resulted in a shortlist that was shared with healthcare practitioners in the relevant specialties for a final evaluation against frontline patient experience and operational considerations. The important point was not just focusing on the 'now' but being alert for how the technologies could be leveraged during the next decade.

Lessons Learned

The success of the project was dependent on many elements – of which practitioner involvement was possibly the most crucial. Dr. Sunbul was keen that themes such as AI were not accepted at face value just because they were hot topics, but were subject to rigorous scrutiny.

"A particular algorithm may work in the US and UK really well because they are based on specific datasets and don't include data from our population," Dr. Sunbul explained. "Take breast cancer, for example. In the UK and US, it is more common in women over the age of 40. However, in Saudi Arabia, it is more aggressive and prevalent in women in their 30s."

Other lessons learned during the project include:

- Alignment of people, processes and technology (which Dr. Sunbul termed the "three-legged tool").

- Assembling a multidisciplinary team.
- Marshalling the enthusiasm of physicians to continually re-evaluate and improve how they deliver care.
- Building sustainability design and data management from the outset.
- Embedding horizon scanning into "how we do business", rather than putting it into a silo as a once-and-done project.

The Outcome

The project deliverable was a report called *Healthcare Horizon Scans* containing detailed information on a range of cutting-edge approaches such as the use of virtual reality for treating phobias and disorders, and AI to help detect heart arrhythmias. It also included innovations that are extensions of existing technologies in use at JHAH, such as the da Vinci robotic surgical system, which allows surgeons to exercise more precision when conducting minimally invasive surgeries (see Figure Two).

"The ideas in the final report had many origins," explained Dr. Sunbul. "Some have been on our watchlist for some time. Others were uncovered as a result of primary research performed or undertaken specifically for this exercise."

Figure Two: Horizon scan – desired innovations mapped against perceived priorities

Source: JHAH and Boston Consulting Group collaborative discussions.
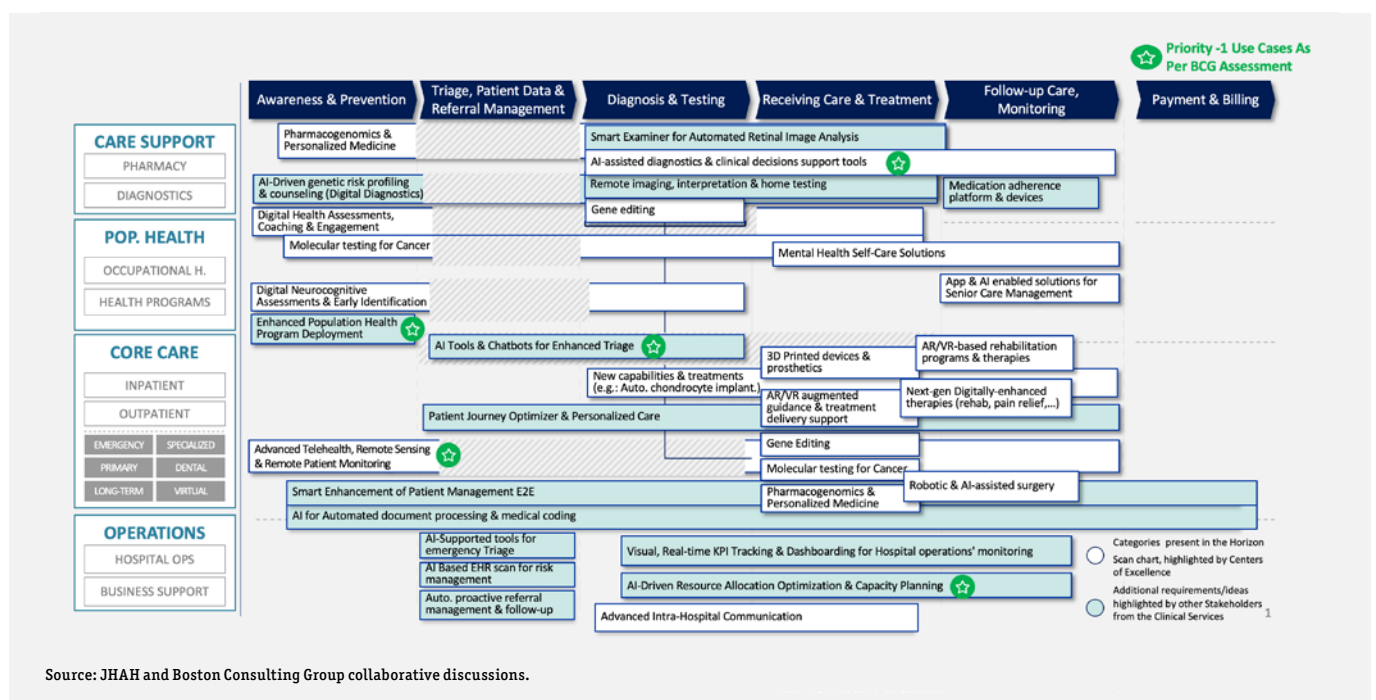
The most eye-catching innovations in the Horizon Scan report included:

Orthopedics

- Integration of robot-assisted surgery with the existing surgical techniques and technologies currently used at JHAH.

- Wearables for collecting real-time patient data and identifying health conditions.

- 3D printing to create tailored, high-quality prosthetics.

- Collagen and cartilage-based implants for enhanced recovery.

- Augmented reality tools to enhance surgical training and patient rehabilitation.

- Regenerative medicine such as stem cell transplants.

- Telemedicine and virtual care integrated with wearables.

Mental Health

- Teletherapy and virtual health services like video conferencing, calls and chat-based messaging.

- Digital and augmented treatments to treat specific phobias and disorders.

- Novel therapies such as Transcranial Direct Stimulation (TDCS), which uses electrical pulses to the brain and Transcranial Magnetic Stimulation (TMS), to stimulate nerve cells in the brain to improve symptoms of major depression.

- AI-driven speech analysis to monitor mood and detect early signs of specific health conditions.

- Development of personalized medicine such as treatment and diagnosis based on a patient's genetics.

Cardiology

- Novel techniques and therapies that evolve existing treatments to make them less invasive and use more sophisticated instruments and devices for better diagnostics, surgery and post-op rehab.

- 3D printing of a patient's heart and augmented reality-based training and tools to help better plan with simulation of surgical procedures for patients.

- AI to identify patterns and make predictions or diagnoses based on large datasets using ECG readings, genomics, and early diagnostics and treatment.

- Digital therapies and remote monitoring such as mobile apps and wearables used to remotely monitor, manage and guide patients to improve their condition pre- and post-op.

Cancer Treatment

- Genetic testing to identify increased risk or whether patients are prone to certain cancers as well as diagnosis, prognosis, precision medicine and planning for personalized treatments, detection of tumor biomarkers in blood and other fluids such as saliva for use in early cancer detection.

- Identification of molecular markers of treatment response and resistance and disease progression.

- Expanding Stereotactic Body Radiation Therapy (SBRT), which specifically targets tumors.

- Fertility storage for younger patients such as freezing eggs or embryos.

- Immunotherapy and combination-therapy.

The project concluded with the compilation of the report. However, the team recognizes that horizon scanning is not something to be approached occasionally or as a one-off exercise; it needs to be embedded in the culture of any organization seeking to ensure it is fit and ready for the challenges ahead. So while there will be formal, regular updates to the horizon scan analysis, the main legacy from this project is that leaders throughout JHAH are becoming more strategic and future-orientated in their planning activities. The proof point will be, during the years ahead, that more of the global leaders in healthcare innovation choose to work with JHAH as a preferred partner in realizing the benefits of emerging diagnoses, technologies and treatments.

About the Project Champion

Dr. Tamara Sunbul

Dr. Tamara is Medical Director of Clinical Informatics at Johns Hopkins Aramco Healthcare.

She was educated at King Faisal University (MBBS in Medicine and Surgery), the Isenberg School of Management (Master of Business Administration with a Medical Management focus) and is a Certified Professional in Health Information Management Systems.

Before taking up her current role at JHAH, she was a Clinic Unit Head, a Primary Care physician and a Strategy and Risk Management Consultant.

She also serves as Chair of the Healthcare Information & Management Systems Society (HIMSS) Middle East Community Steering Committee; Chair of the Evidence and Evaluation Committee, Global Digital Health Platform (GDHP) and is co-founder of the International Digital Health Workforce Development Association (ZIMAM).

Also Available

Case Study #02:
THE BACK REFERRAL PROGRAM

Enhancing access to JHAH for non-registered Saudi Aramco EMRs

Case Study #03:
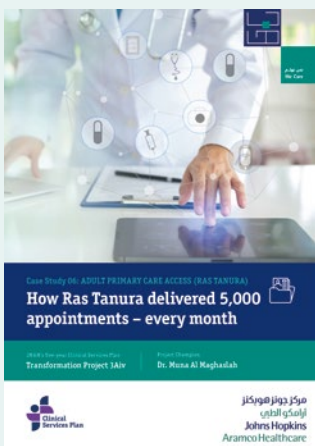### ENDOSCOPY

Endoscopy waiting times cut from months to weeks

Case Study #04:
OPERATING ROOMS

Faster access to surgery

Case Study #05:
ADULT PRIMARY CARE ACCESS (DHAHRAN)

The doctor will see you now

Case Study #06:
ADULT PRIMARY CARE ACCESS (RAS TANURA)

How Ras Tanura delivered 5,000 appointments – every month
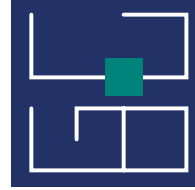

Case Study #07:
REFERRALS

Twenty-six referral pathways under the microscope

Case Study #08:
CATH LAB

Tackling the bed crunch

Note: Additional CSP case studies are constantly under development. Please email or call your JHAH contact for information on future editions.

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