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SEHA Virtual Hospital, the world's largest such network, brings together 170 hospitals and around 600 primary healthcare centers in Saudi Arabia. As the organisation's CEO Eng. Mona Sahman Al-Subaie explains, SEHA provides a wide range of virtual medical services from critical care to specialised clinics, aimed at increasing the accessibility of healthcare, as well as increasing efficiency and reducing costs, across the country.

What is the SEHA Virtual Hospital?

SEHA, which means "well-being" in Arabic, is a virtual hospital that delivers specialized services remotely to patients by leveraging cutting-edge technologies. We are connected to a network of 170 hospitals and around 600 primary healthcare centers across the kingdom. Our services span critical care, including virtual-ICU, Virtual cardiology, Virtual stroke, Virtual- EEG as well as medical support services like tele radiology and specialized clinics. We also facilitate outpatient department services for referred patients nationwide, covering a wide range of specialties and rare subspecialties such as Psychiatry, Genetics, and Nephrology.

Additionally, we offer home healthcare services including remote monitoring for heart failure patients in their own homes. We operate multidisciplinary committees for cardiology and have virtual national committees for tumor and cardiac care. Our pool of experts in various specialties and subspecialties provide specialized consultations and support to our connected facilities whenever needed. SEHA Virtual Hospital is globally recognized as the largest of its kind and the first in the Middle East and North Africa. We have achieved Canadian accreditation at the diamond level, distinguishing us as the first virtual hospital worldwide to receive such recognition. What sets us apart from traditional hospitals is that we lack a physical space for patient admissions; instead, our providers operate from dedicated facilities equipped with advanced technologies, ensuring patients receive care comfortably at home or within their local hospitals.

One more important point, SEHA Virtual Hospital not only delivers healthcare services but also acts as a regulatory sandbox, providing a secure environment to nurture innovative and provide early access emerging technologies. We actively welcome minimum viable products from global and local sources to incubate these solutions, evaluate their efficacy, and assist vendors and entrepreneurs in navigating the approval processes, including those with the Saudi FDA.

What was the genesis of the SEHA Virtual Hospital project? How long has it been in development, and what problem was it aiming to solve?

The SEHA Virtual Hospital project began its journey with the official launch in February 2022, following initial preparations starting in June 2021. The genesis of this initiative predates the COVID-19 pandemic, but the global health crisis accelerated its expansion and adoption. Before COVID-19, there were barriers slowing investment in virtual healthcare technologies. The pandemic compelled healthcare providers to quickly adopt virtual solutions, shifting from traditional patient visits to virtual consultations. This transition facilitated approximately 10 million virtual appointments across the Kingdom and led to a significant 33 percent transfer in healthcare delivery method from physical to virtual healthcare within the Saudi Ministry of Health. SEHA Virtual Hospital specifically aims to enhance patient well-being, increase engagement, and improve care outcomes by leveraging technology to overcome healthcare sector challenges like high costs and accessibility to specialized care.

When envisioning the SEHA Virtual Hospital project, did you draw inspiration from other sectors or countries where similar initiatives were already in place?

Our journey with SEHA Virtual Hospital was informed by global precedents and best practices. While Mercy Virtual Hospital in the USA was a pioneering example, our approach in Saudi Arabia stemmed primarily from local needs and opportunities. We innovated with new services tailored to our context, setting benchmarks within our region. Today, we serve as a model for others, with countries eager to replicate and learn from our experiences. This leadership role motivates us to continually set clear KPIs and benchmarks to navigate the complexities of integrating cutting-edge technology into healthcare effectively.

At SEHA Virtual Hospital, what are your key performance indicators? What metrics are most crucial for measuring success?

Having clear KPIs is essential for tracking our progress and guiding our future steps. Firstly, we have significantly expanded our network from 30 hospitals in June 2021 to over 170 hospitals and 600 primary healthcare centers today, including partnerships across four countries. Secondly, we have

served more than 130,000 patients since our inception. Thirdly, from three specialties, we now offer 29 specialties and 73 subspecialties, a testament to our goal of improving healthcare accessibility and addressing sector gaps. Lastly, data integration is pivotal for seamless care coordination and secure information sharing between our virtual hospital and partner facilities, supporting initiatives like clinical trials and real-world evidence studies.

Can you elaborate on your goals regarding data generation and utilization?

Data plays a pivotal role in our strategy, particularly in enhancing artificial intelligence models. By collecting data from the extensive services we provide across our network of hospitals, we can analyze it to improve our processes and protocols. This not only helps in identifying areas needing intervention but also in developing AI models that prioritize cases and enable early risk detection, leading to timely and informed decision-making. For instance, our decision to launch neonatal intensive care unit (NICU) services was driven by data showing high bed utilization in a hospital in southern Saudi Arabia lacking NICU consultants. By connecting them virtually with our NICU specialists at SEHA Virtual Hospital, we managed to discharge 13 cases within the first four days through tele-rounds and optimized treatment plans.

Personalization in healthcare is crucial, especially amidst digital advancements. How does SEHA Virtual Hospital ensure that patient care remains personalized and centered around individual needs?

Maintaining a personalized approach in healthcare amidst digital transformation is indeed a significant challenge. Particularly for patients with chronic conditions like diabetes, personalized care plans and continuous monitoring are essential. Recently, we launched a new wellness and prevention service that serves as a hub for personalized health insights. This service integrates data from our unified app, Sehhaty, and wearable devices used by patients. The goal is to analyze this data and engage with patients to provide tailored coaching and guidance. If we detect any indicators or risks, we guide them towards appropriate pathways based on their specific health situations. This ensures that despite the digital tools, our approach remains patient-centered and responsive to individual needs.

In what ways does this project ensure inclusivity, especially for segments of the population, such as elderly individuals, who may be less technologically adept and hesitant to use technological tools for healthcare?

This is indeed one of our primary challenges. We recognize the diversity of our population and the varying levels of comfort with technology. From the outset, we have implemented several strategies to address these concerns. For instance, for elderly patients who may not have smartphones or reliable internet connectivity, we have a robust business continuity plan in place. If necessary, we revert to traditional phone calls to ensure continuous care. Moreover, we have developed protocols to handle privacy concerns that some patients have about virtual care. Our practitioners undergo rigorous training to emphasize patient confidentiality and cybersecurity measures are strictly followed.

An example that highlights our commitment to accessibility is our initiative to provide hemodialysis services closer to patients' homes, especially in remote villages where connectivity is often

limited. Recognizing these challenges, we have established local centers equipped with necessary technology and support staff to assist patients with accessing our services. This approach ensures that regardless of their location or technological proficiency, all patients receive the care they need.

How are you ensuring that healthcare professionals of all ages and backgrounds are fully engaged with this project?

Ensuring engagement across a diverse spectrum of healthcare professionals is crucial for the success of our initiative. While it is true that a significant portion of the population in the Kingdom is young and tech-savvy, we also acknowledge the presence of older healthcare providers who may be less familiar with digital tools. To address this diversity, we have implemented a comprehensive training framework tailored to different proficiency levels.

Firstly, we offer structured training sessions and workshops that not only focus on mastering new technologies and applications but also emphasize essential protocols for delivering virtual care. These protocols include effective communication strategies with patients, ensuring clarity about treatment plans, and addressing patient concerns throughout the interaction.

Moreover, we incentivize participation in these training programs by issuing certificates upon completion, which directly impact professional evaluations. This approach not only enhances technological skills but also reinforces the importance of patient-centric care delivery.

Additionally, we have integrated feedback mechanisms into our virtual care services. After each appointment through our unified app, Sehhaty, patients are invited to provide feedback via surveys. This feedback undergoes thorough quarterly analysis to identify areas for improvement. This process not only guides technological enhancements but also identifies the need for further training and infrastructure improvements in collaborating hospitals.

Ultimately, our goal is to foster a culture of continuous improvement and inclusivity within the healthcare system, ensuring that every healthcare professional, regardless of age or digital proficiency, feels empowered and equipped to deliver high-quality virtual care.

How would you summarize the goals and impact of SEHA Virtual Hospital for our international audience, particularly decision-makers involved in healthcare?

SEHA Virtual Hospital is deeply integrated with Saudi Arabia's Vision 2030 and the health sector transformation program. Our primary objective is to enhance healthcare access universally, ensuring timely interventions regardless of geographical or temporal constraints. We also strive to improve efficiency by reducing costs, enhancing quality, and mitigating health risks. Embracing new technologies, we aim to empower sustainability in the healthcare sector.

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