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Message from CEO
‘Save Lives Every Mile – Every Minute’
Growing use of Telemedicine in Ambulances is saving lives around the world

Transportation has been recognized as one of the key barriers to receiving quality healthcare in both rural and urban communities where distances, traffic congestion, and demand for emergency transport have become a growing problem for health systems. Emergency Medical Services (EMS) and other ambulance services often become the transportation mode for rural populations. Many times these modes of transportation are not equipped with the required expertise to manage patients during transportation or preparing the hospitals in advance, thus failing to save severe morbidity and death.

Telemedicine technology is meant to connect patients and rural health workers to specialist healthcare practitioners through technology. Using Telemedicine would allow ambulance-based health workers to manage non-emergency conditions by getting the patients triaged and treated remotely without bringing them to hospitals, and get live advice for patients with severe injury, illness, or significant trauma. With the help of specialist health providers, acutely ill patients can get rapid assessment of severity, timely stabilization of vital signs, and prompt hospital treatment. In particular, timely identification and intervention of stroke, heart attack, and many maternal emergencies is essential for saving lives. Also, proper evaluation of high-risk surgical candidates using telemedicine would help facilitate surgical decision-making and care management plans.

Ambulance Telemedicine requires proper telemedicine systems and devices installed in the ambulances along with uninterrupted internet connectivity. These equipment should allow transmitting patient’s vital signs, images, and video clips to the hospital location without delay, while also connecting for a live consultation and treatment in case of need. On the hospital side, there is a need for arrangements to collect and observe patient’s data and make it part of patient’s health record. The specialist health workers should be able to conduct a live consultation, and if needed, demonstrate how to carry out different procedures to save lives.

Ambulance Telemedicine supports the following functions:

1. Specialist triage and referral services for non-emergency conditions that can be dealt outside hospitals and without needing emergency care services.
2. Continuous patient monitoring of patient vitals and other critical information while transporting the patient to the hospital.
3. Live consultations to better manage patients during transportation and making critical examination and treatment decisions in collaboration with the ambulance health workers.
4. Trauma care and procedures that may save lives even before the patients could reach hospitals. This may save lives in conditions like trauma, maternal care, stroke and myocardial infarctions.
5. Hospital preparation, especially for surgical cases, to take the patients directly to operating rooms or radiology rooms for critical scanning.
6. Combined EMR to maintain patient’s health records from the time they leave home rather than the time when they reach the hospital.

Tech4Life Enterprises makes highly innovative telemedicine kits for ambulances that can save lives during transportation and ensure that patients receive the best possible care every mile and every minute of their journey to the hospital.

- By Dr. Shariq Khoja, CEO - Tech4Life Enterprises.

Emergency Telemedicine
Expanding the limits of hospitals for timely care to patients

Use of telemedicine is growing in all areas of health care. Emergency departments (EDs) are one of the most critical sections of the hospital receiving all kinds of severe and life-threatening cases, which need urgent management. Functioning of the EDs can have a considerable effect on other sections and patient satisfaction. Most health systems deal with over-crowded and poorly managed EDs, resulting in long-patient wait times, over-burdened staff, unsatisfied patients and attendants, and poor patient outcomes affecting the performance of the ED and the entire hospital.

Emergency Telemedicine is a growing field which tends to be effective in many aspects through various approaches. For example, it can help to avoid unnecessary transfers from rural locations to central hospitals. Since the severity of the injury can be estimated using telemedicine consultation, not every potential patient transfer will need to take place. Furthermore, due to the high accuracy of telemedicine diagnosis either in an ambulance or on the scene, the patient’s treatment time also seems to be considerably shorter.

Several studies have been published on Emergency Telemedicine from around the world. These studies have shown that telemedicine for emergency settings carries much potential. Many outcomes have been reported, such as cost reduction, improved quality of care, decreased patient transfer rate, reduced mortality rate, and treatment time. Thus, implementing telemedicine can be beneficial for both organizations and patients.

Some of the key functions of Emergency Telemedicine are as follows:

1. **Improved Coordination in Care:** Emergency-Telemedicine connects different units within and outside the hospitals for better services. These include Emergency transportation, Radiology, Labs, critical care units, operating rooms and trauma care. All the departments can share the information in real-time to make fast and coordinated decisions in the interest of the patient.
2. **Remote Telemedicine-consultations:** Key health providers not available at the hospital EDs or busy with other patients can be immediately consulted to share patient information and get the best advice.
3. **Early Triaging of patients:** Early triage uses telemedicine to supplement or replace elements of the patient interaction for screening patients remotely and to determine the patient's condition and the care needed.
4. **Improved Follow-up care:** Telemedicine is being used to provide follow-up care for patients who were either seen at the hospital ot triaged but not sent to the emergency department.

Tech4Life Enterprises provides highly innovative telemedicine solutions and carts for use in Emergency departments. These kits can improve the efficiency of EDs and improve satisfaction for both patients and health providers.

- By Dr. Shariq Khoja, CEO - Tech4Life Enterprises.

Sojro Ambulance Telemedicine Kit

Sojro Ambulance Telemedicine Kit is a lifesaving technology for first responders and patients alike. This compact, portable telemedicine kit ensures real-time monitoring and transfer of vital signs from the ambulance to the hospital, enhancing patient care and saving lives. Ideal for emergency and ambulatory care, the kit includes essential devices such as eSteth Lite - Digital stethoscope, Iris scope, Dermascope, ENT Scope, and Vital Signs Monitor with 3-lead ECG. Furthermore, Sojro Ambulance Telemedicine Kit comes with Bluetooth connectivity, power bank, sturdy case, and background noise cancellation features to ensure seamless and clear communication. With all the unique features, Sojro Ambulance Telemedicine Kit is a must-have for on-the-go medical emergencies.

- By Mubashir Ahmed, Manager Innovations - Tech4Life Enterprises.

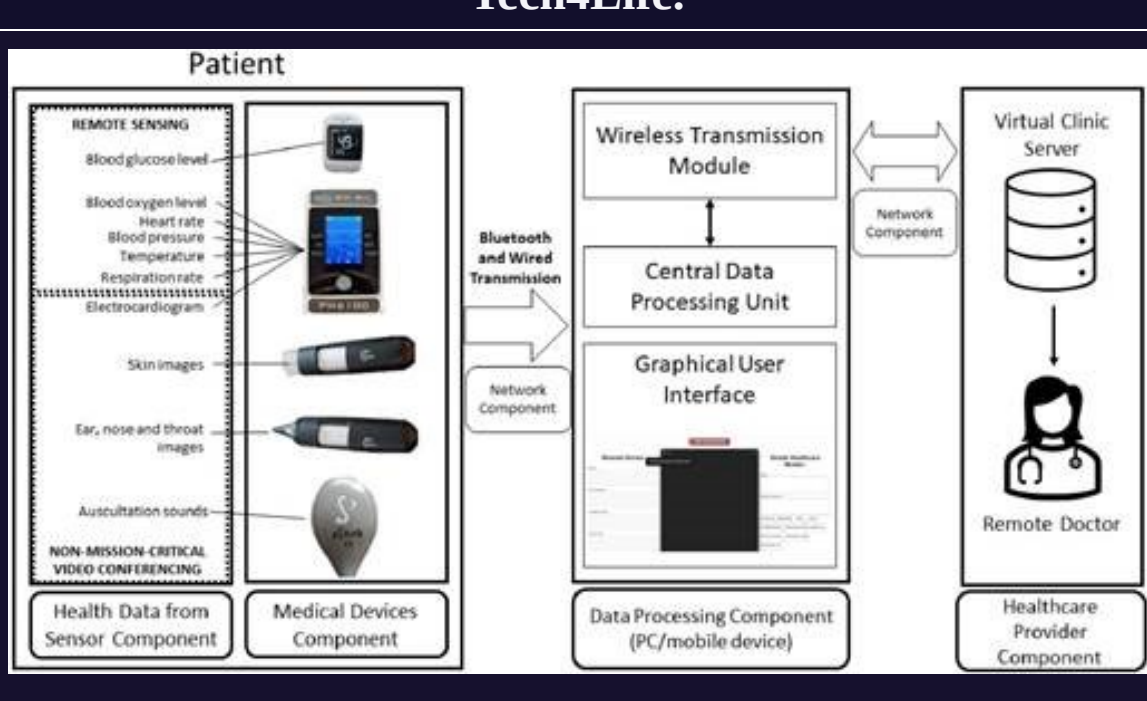
Tech4Life Regulatory Approvals Update:
CE Audit Completed

Recently, Tech4Life completed its annual CE audit successfully. Based on the assessment outcome, the assessment team recommended ISO 13485:2016 continued certification of Tech4Life Enterprises Canada Inc. for the agreed scope. The final report suggested that overall the QMS continues to be implemented effectively to ensure compliance with the appropriate standards and regulations; performance of risk assessment was also found to be effective. Furthermore, QMS effectiveness was evidenced by comparing actual performance against target performance metrics.

Tech4Life Enterprises Canada Inc. has also adopted the general HIPAA Compliance Policy to recognize the requirement to comply with the Health Insurance Portability and Accountability Act (HIPAA), as amended by the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009 and the HIPAA Omnibus Final Rule.

- By Ehsan Khan, Quality & Regulatory Officer - Tech4Life Enterprises.

Bridging the Digital Divide:
Researchers from University of Cape Town test the impact of innovative Telemedicine solutions designed by Tech4Life.



The University of Cape Town (UCT) is leading the way in developing innovative telemedicine solutions, aimed at improving healthcare access, particularly in underserved communities. Dr. Bessie Malila, a Junior Research Fellow at UCT, shares insights into their innovative virtual clinic system designed to deliver quality healthcare remotely.

The system utilizes Tech4Life’s Telemedicine Kits and leverages the power of medical connectivity to provide health services to rural communities in South Africa. "We have developed our own software and use the connectivity capabilities of the medical devices of Tech4Life’s Telemedicine Kits to connect to a laptop or tablet to access the software," explains Dr. Malila. The researchers at UCT have created a user-friendly software solution that integrates seamlessly with Tech4Life’s telemedicine kit. The solution design and development is informed by usability tests conducted as part of the user-centered design of the virtual clinic system. The system is accessible via a laptop or tablet, with the medical devices, which include vital signs monitor, connecting via USB, thus offering a streamlined and accessible approach to virtual consultations.

Dr. Malila emphasizes the system's adaptability: "We've already integrated diabetes testing into the system, and we're actively exploring ways to incorporate other medical devices. Our goal is to create a flexible and scalable platform that meets diverse healthcare needs."

Dr. Malila's commitment to improving healthcare access extends beyond physical ailments. She recently secured a research grant from the Worldwide Universities Network (WUN) to develop a similar tele-mental health system specifically designed for rural, remote, and underserved communities. The upcoming clinical trials, scheduled for August/September 2024, will provide valuable data on the system's effectiveness and impact. Tech4Life’s Telemedicine Solutions and UCT's innovative telemedicine project is a testament to the power of research and collaboration in driving positive change. By harnessing technology and prioritizing user-centered design, UCT is not only bridging the digital divide but also creating a brighter future for healthcare access in South Africa and beyond.

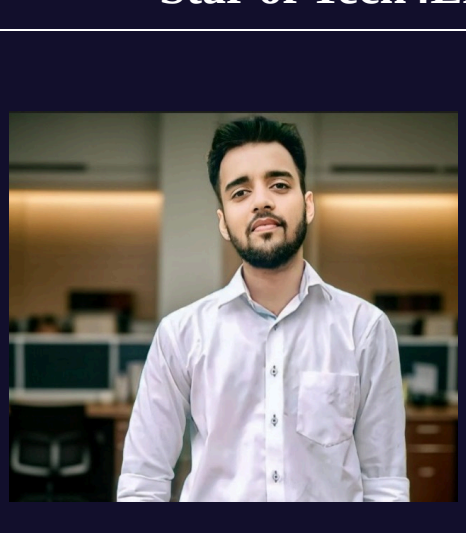
Figure 1. UCT’s Virtual Clinic utilizing Tech4Life’s digital devices (Blocker et al., 2024)

References:

Blocker, A., Datay, M. I., Mwangama, J., & Malila, B. (2024). Development of a telemedicine virtual clinic system for remote, rural, and underserved areas using user-centered design methods. Digital health, 10, 20552076241256752. https://doi.org/10.1177/20552076241256752

- By Ahsan Abbas, Head of Global Sales - Tech4Life Enterprises.

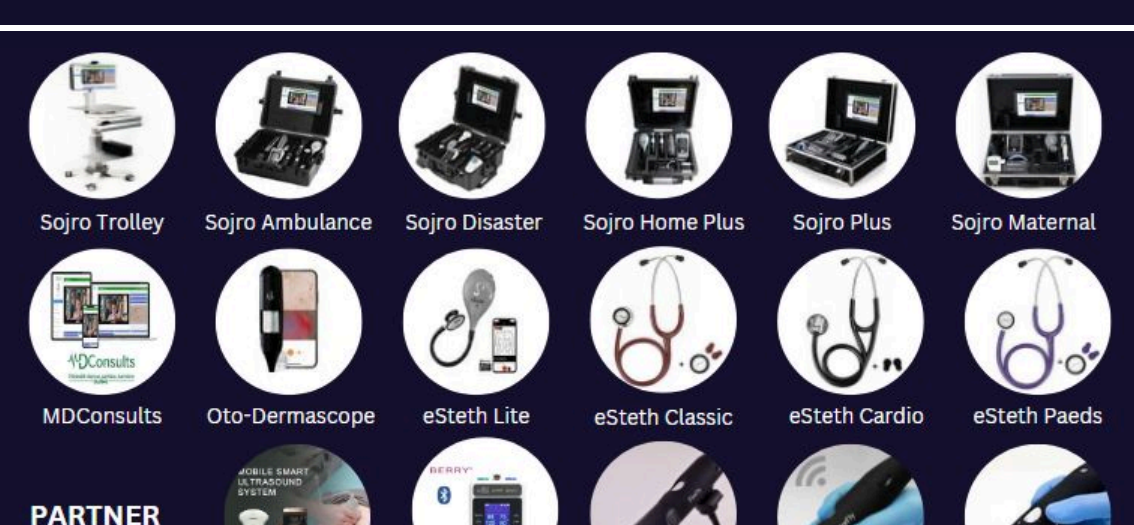
Star of Tech4Life - Mr. Osama Siddiqui



Osama Siddiqui is a Biomedical engineer and an aspiring researcher with a keen interest in Bio-Instrumentation and Applied Artificial Intelligence. Currently serving as the Assistant Manager in the Biomedical department at Tech4Life Enterprises, Osama is primarily responsible for the design, advancement, and troubleshooting of non-invasive hemoglobin technology.

His innovative contributions include developing a smart stick for the visually impaired and enhancing healthcare technology integration. Osama's prior work at Aga Khan University Hospital involved significant biochemical analysis and automation projects, reflecting his dedication to advancing research and development in the healthcare sector. Currently, Osama is determined to take the non-invasive hemoglobin monitor to completion and commercialization before the end of this year.

- By Osama Siddiqui, Assistant Manager Biomedical - Tech4Life Enterprises



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