

Mobile Ultrasound Project **Executive Summary**

MAROCCO



Executive Summary



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“Access to new wireless technology is not only cost efficient and time efficient, it also gives access to professional diagnosis expertise, improves medical quality and decreases the cost of medical coverage for pregnant women in rural areas.”

- Dr Chrit

The majority of childbearing related deaths occur in developing countries within rural areas and among poorer communities from complications that develop during pregnancy. Most of these deaths occur where ultrasound imaging during pregnancy and delivery is currently underutilized and financial constraints have been cited as the main reason. The healthcare solutions to prevent or manage pregnancy and childbirth complications are well known, making many maternal deaths avoidable. Advances in ultrasound technology - smaller ultrasound image-capturing devices, data encryption, data storage and Internet connectivity - enable ultrasound to be available in places not previously convenient or economically reasonable. The UN, WHO, UNICEF, UNFPA and others have developed initiatives to focus on addressing these underlying causes and examine possible solutions.

Maternal mortality is a priority for the Moroccan government as the population composition indicates particular vulnerability to this issue. In 2008 the Ministry of Health (MOH) developed specific actions in The Moroccan National Acceleration Plan for 2008-12 to hasten the reduction of maternal mortality. Furthermore, Morocco is one of 57 countries suffering from a severe lack of healthcare professionals and remains extremely vulnerable to their exodus to other countries. This lack of resources is exacerbated by unequal allocation of human health professionals between rural and urban areas and within the different regions of the Kingdom.

In support of the efforts of global initiatives and, specifically, the Moroccan Ministry of Health, The Mobile Ultrasound Patrol Project was created, financed and powered by a collaboration between Trice Imaging Inc., Qualcomm Wireless Reach, Sonosite Fuji Film and Sony. To test the technical capabilities of technological options for rural Morocco, these groups provided advanced wireless communication and collaboration technology supporting connected portable ultrasound devices and subsequent remote access to state-of-the-art imaging diagnostics in 3 small rural villages via mobile networking.

Time Efficiency

The Mobile Ultrasound Patrol Project showed that using wireless technology and a Cloud-based system would make a significant difference in medical care in a region like rural Morocco. These technologies not only help the image-capturing physician or midwife to quickly make appropriate decisions; they efficiently connect health houses to second opinion expertise at regional and University hospitals, all of which saves the patient time.

| Time scenario | Normal Scenario | Project Scenario |
|---|--------------------|------------------|
| 01 Transportation of data | 2 days to 2 weeks | <1 minute |
| 02 Transportation of patient for second ultrasound | 2 hours to 4 weeks | n/a |
| 03 Time to diagnostic response | 2 days to 2 weeks | < 24 hours |



Quality

From a medical perspective and due to the actual technical requirements and equipment, 80% of the images taken in health houses before IRB approval could not be used for professional diagnosis. During the trial, all 113 studies were evaluated on transmitted image quality for both technical and medical purposes. Of the images collected, 86% were considered “excellent” and 92% could be used for professional diagnosis.



Compared to traditional rural Moroccan health house methods, the wirelessly-transferred Mobile Ultrasound Patrol Project examination solution was everything the team had hoped it would prove to be: high quality, faster and less expensive. In addition to proving the viability of the technical solution, the outpouring of gratitude and enthusiasm from the medical professionals, health officers and families in Morocco confirms that the solution addresses the intangible powers of proper care that run deeper than an ultrasound exam.

Ultrasound has been described as a “sustainable technology” for developing and low-resource countries, because of its relatively low cost of purchase, low cost for maintenance and supplies, portability, and durability in comparison with all other imaging modalities (Goldberg, 2003).

The addition of technology solutions and proper training methods, like those used in the Mobile Ultrasound Patrol Project in Morocco, prove that the early detection and diagnostics that can ultimately reduce maternal and child deaths across the globe are possible now – in less time, at a high quality and lower cost than current methods.

Imaging what could be possible if they’re where global access to wirelessly connected mobile ultrasound?

Out of the 113 patients, 24 cases were diagnosed as risk pregnancies by the image capturer due to the ultrasound examination or patient history. For 17 patients (71%) out of those cases the responding time was less than 24 hours. For 7 patients (29%) more than 24 hours were needed.

70% of the 113 examinations were transferred within 1 minute to the wireless platform and from there to the referring physician for a second opinion. Another 26% of the transmitted examinations needed less than 2 minutes of transfer time.

The time it takes to get a second opinion using traditional procedures in this region could decrease from an average of 2 weeks to an average of 1 ½ days by using advanced wireless technologies.

Cost Efficiency

When women visit a Moroccan health house the cost for an ultrasound runs about \$40 USD. If it is determined that a patient requires a second opinion and ultrasound, they are transported via ambulance to the nearest regional hospital, which costs the government another \$40 USD for the transport and \$40 USD for the additional ultrasound. The Mobile Ultrasound Patrol Project showed how image management solutions, which transmit images to a referring physician via the Internet, instead of the patient, dramatically decreased traditional costs.

