



MOROCCO



2014 Statistics:

- » Life expectancy: 76 years
- » Population: 32.9 million (est.)
- » GDP per capita: US\$5,500 (2013 est.)
- » Mobile penetration: 130%

Sources: CIA World Factbook (<https://www.cia.gov/library/publications/the-world-factbook/index.html>); Mobile penetration data provided by Royamue du Maroc, Agence Nationale de Reglementation des Telecommunications de Morocco 2013.

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, Health Delegate, Province de Khemisset

Mobile Ultrasound Patrol: Early Detection Of At-Risk Pregnancies Through The Use Of 3G Technology

Every day, around the world, approximately 800 women die from preventable causes related to pregnancy and childbirth. Of those deaths, 40 percent are due to injuries or conditions related to placenta complications.¹ The only way of detecting abnormal placenta challenges is through an ultrasound. The Mobile Ultrasound Patrol is a project that seeks to improve care for women in developing countries through early detection and treatment of major causes of maternal mortality. The medical examinations took place in three villages in Morocco — Oulmes, Boulemane and Ribat el Kheir — with reading physicians providing diagnoses in city centers in Morocco and France.

Challenge

- » Every day, approximately 800 women globally die from preventable causes related to pregnancy and childbirth.
- » Maternal mortality rates are higher among women living in rural areas and among poorer communities.
- » Morocco is one of the nine countries in the World Health Organization Eastern Mediterranean Region to have adopted a national plan to accelerate progress on maternal and child health over the past year.²
- » One of the most common reasons for maternal deaths is postpartum hemorrhage due to retained placental fragments (women dying during or within hours of giving birth due to heavy bleeding caused by placenta complications).
- » Improving maternal health is one of the eight United Nations Millennium Development Goals (MDGs) adopted by the international community in 2000. Under MDG5, countries committed to reducing maternal mortality by three quarters by 2015.³

Solution

- » The Mobile Ultrasound Patrol project provides participating doctors and nurses with backpacks containing devices that are wirelessly connected to specialists in hospital clinics to ensure far reaching, high quality diagnostics.
- » Patients, nurses and doctors access the system via mobile devices such as smartphones and phablets (phone – tablet).
- » Images are captured with a Sonosite portable ultrasound device called the M-turbo.
- » The images are wirelessly transmitted via WiFi through a dongle to a wireless-enabled Sony smartphone or tablet with a pre-installed application for encryption of medical data called DICOM.
- » The images are transmitted from the mobile device via the 3G mobile network to a cloud-based image management platform provided by Trice Imaging Inc.
- » The images are made available on a secure Internet landing zone. A link to the images is automatically routed to the reviewing physician via an encrypted email.

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- » The reviewing physician logs into the system on a phablet to review the images and complete a report.
- » In the image management solution, the physicians on both ends review the images on a viewer, and collaborate, provide comments and pinpoint areas of interest.

Impact

- » A total of 575 exams including 3,108 images were wirelessly transmitted through 3G technology, with clinicians giving the ultrasounds a 98 percent perfect clarity rating.
- » 94 of the exams exposed potential at-risk pregnancies.
- » 158 patients were flagged for a second opinion.
- » The use of advanced wireless technology led to:
 - Shortened diagnostic review or second opinion time from two weeks to fewer than 24 hours.
 - Reduced cost of a medical diagnosis from \$80 to \$2 per patient.
 - Shortened transportation time of the medical data for review from four days to two seconds.
 - Increased medical practitioners' (midwives, nurses and general practitioners) skills to deliver ultrasounds from 20 percent sufficient for diagnostic purposes to 92 percent sufficient for diagnostic purposes.
- » Participating physicians also reported an increase in the number of patients seeking care at the health houses after the trial. The number of deliveries in these facilities increased, which is an important step in reducing the number of dangerous at-home births.

Project Stakeholders

- » Moroccan Ministère de la Santé (Ministry of Health) provided coordination with rural health clinics and guidance on engagement with nurses and doctors.
- » Qualcomm Wireless Reach provided funding in addition to technical and project management support.
- » Sonosite provided the M-turbo mobile ultrasound machines.
- » Sony provided Sony Xperia™ smartphones and tablets.
- » Trice Imaging provided the remote diagnostic software to share information via advanced wireless devices to doctors and specialists, as well as project implementation and reporting.



¹ WORLD HEALTH ORGANIZATION, CIA WORLD FACTBOOK 2013 AND ITU REPORT 2011 FACTS AND FIGURES, [HTTP://WWW.WHO.INT/MEDIACENTRE/FACTSHEETS/FS348/EN/](http://www.who.int/mediacentre/factsheets/fs348/en/)

² WORLD HEALTH ORGANIZATION, MOROCCO MATERNAL HEALTH REPORT [HTTP://WWW.WHO.INT/FEATURES/2014/MOROCCO-MATERNAL-HEALTH/EN/](http://www.who.int/features/2014/morocco-maternal-health/en/)

³ WORLD HEALTH ORGANIZATION, MATERNAL MORTALITY FACTSHEET [HTTP://WWW.WHO.INT/MEDIACENTRE/FACTSHEETS/FS348/EN/](http://www.who.int/mediacentre/factsheets/fs348/en/)

Qualcomm Wireless Reach™

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