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Free text messages save lives in Malawi

A simple SMS system is revolutionising medical care in Malawi, where scarce resources and a skeleton hospital staff must serve thousands of people spread over hundred of square miles

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When Josh Nesbit first visited St Gabriel's hospital in the town of Namitete, Malawi, he was shocked by what he saw.

The 22-year-old was prepared for a lack of resources – his parents work in medical charities – and knew that the hospital ran on a skeleton staff: just two doctors and a handful of other clinic workers.

But he wasn't ready for the realisation of how difficult it was for those health workers to connect with their patients. With a catchment covering 250,000 people over hundreds of square miles, St Gabriel's has to rely on a network of 450 volunteers across 700 villages, who keep tabs on the population and report back to the hospital. But since even the volunteers had difficulties in communicating their findings, that was not a real solution.

"I basically realised that they were just as disconnected from the hospital and its resources as the patients were," says Nesbit. "They were literally walking 60, 80, 100 miles just to be in contact with hospital staff."

Faced with this apparent impasse, Nesbit, an undergraduate at Stanford University in California – the birthplace of Silicon Valley powerhouses such as Hewlett-Packard, Cisco and Google – decided to try applying a simple technology, the text message, to see what benefits could be reaped.

Teaming up with Ken Banks, the founder of Cambridge-based FrontlineSMS – free text message software aimed at charities and NGOs – Nesbit and his friends came up with a system that would allow mobile technology to bridge the gap.

The result, FrontlineSMS:Medic, is relatively straightforward and, apparently, effective.

Community health workers, most of whom had never seen a mobile phone, let alone owned one, were trained to send text messages containing medical information back to the hospital staff.

If health workers sent a drug name in a text, the system would automatically respond with information on dosages and usage. Health workers can also give status updates on particular patients or make a call for further medical information to help them treat cases on the go. It is particularly important in a country where HIV and Aids are rife – with infection rates as high as 70% in some areas.

"If you ask the community health workers why they are doing their work, it's because friends and family were literally dropping dead around them and they wanted to do what they could to help," says Nesbit. "Basically they had all of the ethos, but didn't have the connection to the real resources at the hospital."

The pilot project, which has been running for five months, has already had a significant impact: as well as getting emergency medical attention for 130 people who would have otherwise gone unseen, it has allowed the hospital's tuberculosis officer to treat twice as many people because his time can now be more used more efficiently.

The system, which costs around \$500 (£349) to operate, has also had a financial benefit, which is particularly important in a place where resources are severely strained. Two members of staff estimate that they will each save around \$5,000 a year in fuel costs alone.

"Instead of reinventing the wheel and trying to dominate a market for profit, we're partnering with other open-source, grassroots-driven technology groups," says Lucky Gunasekara, a graduate student at Stanford Medical School who joined Nesbit to push the scheme forward.

"When people hear our proposal they think it's going to cost millions of dollars. Compared with programs that cost millions of dollars ... we're looking, for this program, at one-10th the cost."

The team themselves plan to closely monitor the scheme, starting with a 500,000 patient study in Bangladesh which will be conducted next year in cooperation with development charity Brac, Stanford Medical School, Independent University, Bangladesh, and other partners.

The project has already attracted interest from a number of prominent individuals. Nathan Wolfe, a leading virologist and epidemiologist based at UCLA, has started discussing the prospect of using the system to track the emergence of epidemics.

"Obviously St Gabriel's is not the only hospital dealing with a rural catchment area and a community health network," says Nesbit. "So we're basically working to roll out the current build at 30 sites in 20 countries over the next six months."

That includes plans for Bangladesh and Sri Lanka. Nesbit will now go to Uganda to set up two new networks covering 800,000 people as part of a deal brokered by Dr Elioda Tumweigwe, chairman of the Ugandan parliament's HIV committee.

Gunasekara, meanwhile, has received support from Bill Clinton's Clinton Global Initiative to develop a low-cost HIV test that he hopes to incorporate into the text message system.

The team also hopes to develop the software further through help from the open source community.

"The dream within two years is that you can be on a website, you can download our software, you can apply to get our hardware and you decide what to do with it," says Gunasekara.

"You the patient, you the health worker, you the clinician, who's on the front lines

fighting this battle, you decide how it's used. That's a really exciting proposition."

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