Strengthening healthcare in rural South Africa through mobility and ICT interventions communication

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BACKGROUND

Service delivery such as quality healthcare in rural South Africa is fraught with deep-rooted challenges, many of which entail access problems emanating, in part, from the remoteness and spatial dispersion of rural communities (Mashiri *et al.*, 2008). To speed up and equate healthcare delivery for all, healthcare was decentralised by the post-1994 government (SADOH, 2004). Poor transport remains a challenge faced by most of these organisations, therefore exacerbating access difficulties. Access to information communications technology (ICT) and systems is cross-cutting through most of these challenges. This poster presents a platform to highlight how ICT systems could be used as viable solutions to reduce transport and communication burdens of healthcare workers and to strengthen the decentralised healthcare system. The poster looks at the impacts of the prototype of a healthcare patient-monitoring ICT system, which is the result of a joint research programme between the Dutch University of Technology Delft (TU Delft) and the CSIR

OBJECTIVE AND APPROACH

The primary objective of this project was to demonstrate how ICT interventions can be used to support and strengthen the decentralised healthcare system by empowering the home-based care and the primary healthcare institutions in the demonstration project area. A case study demonstration developmental approach, combined with a studio methodology, was used to collect data for the development of prototypes. The area inhabited by the Leroro communities (near Graskop in Mpumalanga, with approximately 40 000 residents) served as the research and test areas for this project.

EFFECTIVENESS OF THE SYSTEM

The district health system is a self-contained system in which primary healthcare (PHC) is the core intervention area (Haynes & Hall, 2002). To overcome clinical shortcomings, a strong tradition of informal healthcare has become increasingly important. If a patient with a chronic disease is discharged from the hospital, he or she can make use of the home-based care (HBC) organisation, which allocates a caregiver to the patient. In the Leroro communities, about 1 000 patients make use of the HBC system. The caregiver works on a voluntary basis and visits the patient daily to weekly. The main tasks of the caregiver consist of providing basic medical assistance, preparing food and helping in the household.

Since the caregiver acts as the direct link between the patient and the clinic, it is of great importance that the caregiver can inform the clinic sister about the health condition of the patients. At present such information can hardly be provided. Walking distances are far and the caregivers are not equipped with instruments to take the vital signs of patients. This lack of patient information at the clinic means that the patient cannot be monitored properly and that the Sister cannot take timely action.

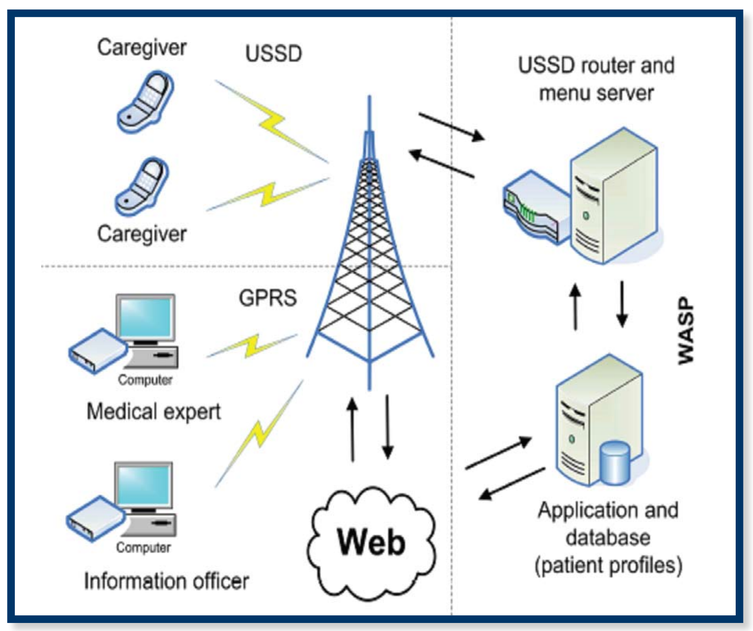
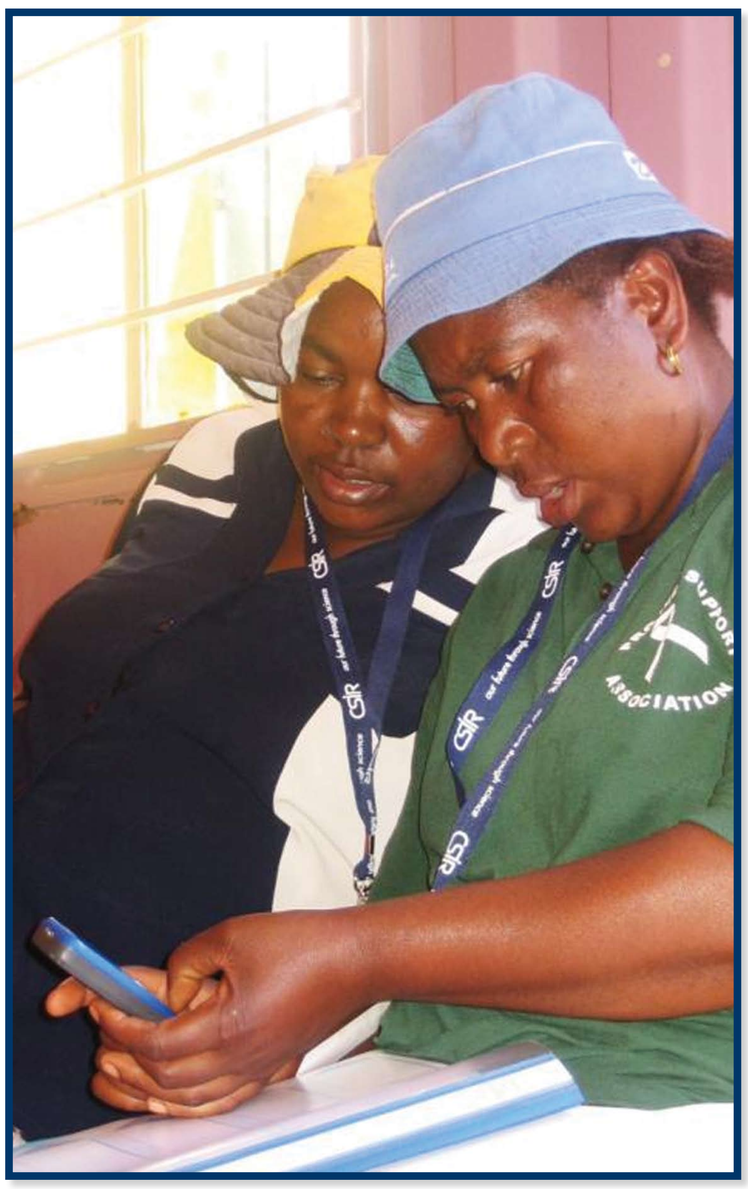


Figure 1: Architectural design of the patient monitoring system

ICT INTERVENTIONS

Alternative interventions based on ICT hold potential impact to strengthen the healthcare system. ICTs can be viewed or understood as means and technologies that facilitate information flow, sharing and management across space and time. Providing the Sister with readings of a patient's vital signs after every visit, can result in early diagnosis, avoidance of unnecessary patient transport and a reduction of the heavy workload for the caregiver and the Sister.



Caregivers entering and submitting data

USER PERCEPTIONS

Results following the implementation of the patient monitoring system confirmed that the exercise was a success (Wouters *et al.*, 2009).

> Since I started using this system I am able to see a lot of patients. Today I managed to see 14 patients, which is the highest record for me, and the day has not finished yet. Previously, I used to spare some time for walking to the centre and the clinic to submit the reports but now that I no longer have to physically submit the reports, I can spend the entire day with patients.
> ***(Interview transcript of caregiver 1004, Moremela village, 25 March 2010)***

> I am so happy to work with patients using this new system. It saves me time for handing in reports to the clinic and at the centre. The new BP machine is very quick. It saves me time at the patient's home because it is automatic. When the machine is busy taking the blood pressure I can do other things at the same time such as taking temperature or weight of the patient. The equipments are so accurate that I do not suspect any errors and thus do not have to redo measurements; this saves time.
> ***(Interview transcript of caregiver 3002, Matibidi A village, 25 April 2010)***

CONCLUSION

ICT interventions can thus be used to support and ease the delivery of healthcare in rural and remote areas.

An ICT-based patient monitoring system assists with decentralised healthcare in rural areas.

REFERENCES

1 HAYNES, R. & HALL, W. 2002. *District Health Systems and Local Government Developments*. Health Systems Trust, Durban.
2 MASHIRI, M., MADZIKIGWA B., CHAKWIZIRA, J., NYONI, P. and MAKGALEMANE, M. 2008. *Integrated rural mobility and access: ainstreaming Environmental Issues In Community Transport Project Planning And Construction*, SATC, 2008, Pretoria South Africa.
3 South African Department of Health (SADOH 2004). *The district health system in South Africa: progress made and next steps.* (Article accessed November 2008 on: http://www.doh.gov.za/docs/policy/dhsystem.html).
4 WOUTERS, B., BARJIS, J., MAPONYA, G., MARITZ, J. & MASHIRI, M. 2009. *Supporting home-based care using USSD technology*. Proceedings of the Fifteenth Americas Conference on Information Systems, San Francisco, California, August 6th – 9th 2009.

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