

ROBUST HANDHELD COMPUTERS USED OVER LONG DISTANCES FOR LARGE SCALE REMOTE HIV DATA MANAGEMENT IN THE FREE STATE

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OBJECTIVES: Implement a sustainable e-health information system for the ART rollout in the Free State province.

METHODS: Paper-based structured clinical records are widely used for monitoring and evaluating the public sector HIV anti-retroviral treatment (ART) programme in South Africa. Handheld computers (PDAs) were used during the first 18 months of the ART programme in the Free State province of South Africa to collect data from paper records at urban and rural sites. A commercial online computer system (Meditech) has replaced the handheld system. Microsoft SQL Server 2000 and Microsoft Data Transformation Services (DTS) were used to develop a data warehouse for integrating the data from both systems. The data warehouse was used to compile monthly and quarterly reports, National department of Health indicators, and quality control routines. External data from laboratories and home affairs data has also been integrated and is particularly useful for performing reliable survival analysis. Portal technology is used to deploy reports and quality control routines for data capturers, ART district coordinators, data quality managers and health care workers. Currently 28 000 patients are registered on the system, 4 500 patients are on ART, and 157 837 forms have been captured.

RESULTS: PDAs compare favourably with online systems for data collection from remote rural and urban sites and are useful where online systems or connectivity are lacking. Electronic systems have the advantage of a centralized data base and to be able to fix data at source (data cleaning) but could suffer from low bandwidth and slow systems. Dimensional data modeling and data warehousing techniques are fundamental for creating databases that are optimal for querying, aggregated reporting, longitudinal analysis and research.

CONCLUSION: Data quality remains the most challenging aspect of information systems for monitoring and evaluation of the ART rollout programme. It is important to be able to feed information back to users, to show them how the data is used and to empower them to use this information.

The next phase of this project is to improve the feedback systems and to evaluate if the information that is fed back to health care workers improves their workflow. Patient summary reports with patient specific reminders will be developed and implemented.