Project ELEOS: a barcode/handheld-computer based solution for Ebola Management Centres

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Background
Data collection and transfer out of the high-risk zone of an Ebola Management Centre (EMC) are challenging because, for infection control reasons, you cannot take anything out that cannot be sterilised. Initially, during the Ebola outbreak in West Africa, information on patient location and clinical status was captured either by shouting over the fence or by scanning a laminated form. Both approaches were time consuming (clinical staff were limited to 1 hour maximum inside the high-risk zone wearing full personal protective equipment) and prone to errors. MSF and Zetes developed a system, ELEOS (Ebola Link Emergency Operational Support), with the aim of improving the efficiency and quality of the collection, integration, and diffusion of clinical and logistical data.

Project
MSF developed front-end software and Zetes provided a mobile application and PDAs (personal digital assistants). Development started in October 2014 and the system was piloted in November at ELWA3 EMC (Monrovia, Liberia). The system cost approximately 80,000 euros. Patients were given a unique identifier and a barcoded bracelet at triage; beds were also barcoded. Clinicians identified patients and beds by scanning barcodes using the PDAs, into which they entered clinical (status, movement capabilities, pain, intake, symptomatology, drugs, and laboratory test request) and logistical (bed status, bed cleanliness) data. This information was transmitted via wifi in real-time to the nursing stations and project management office. PDAs were chosen for their robustness, reliability, and ease of use while wearing three pairs of gloves.

Outcomes/lessons learned
Data entry took 1 to 2 minutes per patient, which was quicker than the previous systems. Clinicians were satisfied with the usability of the PDAs; however, there were connectivity issues with the server. ELEOS provided a significant management advantage in situations with more than 20 inpatients. Deploying technology, unaccompanied, in emergencies, is challenging. Project management and technical support on the ground are key to success.

Conclusions
Systems using handheld devices such as PDAs have potential to streamline MSF field operations, in particular, epidemics and nutritional emergencies. With this in mind, the ELEOS team is currently presenting lessons learnt and opportunities to interlocutors across MSF.