Health information technologies and stressors: how to measure and eliminate them

M. Fleury, L. Bouchoud, P. Bonnabry
Pharmacy, Geneva University Hospitals (HUG) / School of pharmaceutical sciences, University of Lausanne, Geneva, Switzerland

Background
Hospital personnel’s daily tasks are regularly interrupted. Unexpected breaks in work patterns act as supplementary cognitive burdens to health workers (hence the term stressors) and can lead to errors because they break up the logical flow of clinical tasks.

Purpose
This study aimed to examine whether the introduction of a Health Information Technology (HIT) (CytoAdmin - a scanning system for matching patients to their chemotherapy treatment protocols) into a cancer outpatient unit had any immediate influence on stressors, with the broader aim of reducing their types and frequency.

Materials and Methods
Based on techniques drawn from the field of Human Factors and Ergonomics (HF&E), we established a protocol for carrying out ergonomic evaluation and measuring stressors. The System Engineering Initiative for Patient Safety model was our guiding principle.

The protocol covered all tasks in the unit and included field observations, listing stressors (number, type) observed during the introduction of the HIT, and process redesign methodologies.

Results
During the first 6 days of CytoAdmin’s introduction, we carried out 31½ hours of observation for stressors and identified 89 different types (2.7 stressors/hour)

The HIT itself generated 21 new stressors (24% of total)  
Technical hardware problems: 5x  
Insufficient number of computers needed to complete tasks: 8x  
Inclusion of scanning in a well-established daily care routine: 8x

21 other major stressors were telephone calls (13 types of stressors, 15%), followed by consulting a physician (9 types, 10%)

Conclusions
The introduction of this HIT increased the number of stressors by creating new ones. The HF&E system developed was efficient at detecting new stressors, redesigning the process and eliminating them. Although these methodologies are time-consuming, ergonomic evaluations are essential for the satisfactory and safe use of a newly introduced HIT.