Anesthesia Information Management System in Cardiac Surgery

Mario Cossu*, Pier Antonio Furfori, Alessandro Taddei, Maurizio Mangione and Paolo Del Sarto

MASSA, MS, Italy

A new Anesthesia Information Management System has been developed at Heart Hospital of G.Monasterio CNR Tuscany Region Foundation in Massa. It is specialized in recording anesthesia-related perioperative patient data during cardiac surgery on either adult or pediatric patients. The system was aimed at integrating patient data (clinical, instrumental and administrative) partly filled in by operator (anesthetist or anesthesia technician) through the Graphical User Interface, partly SQL-retrieved from Hospital Information System (Oracle), repository of patient electronic medical records, and partly gathered, by HL7, from Operating Room instrumentation (monitors, anesthetic machine and blood gas analyzer). Software was developed in Java, achieving reliability and cross-platform capability. First, it was crucial to define requirements by interaction with anesthetists and later by cycles of test, revising and correction. GUI, designed to better ergonomics, was divided into modules, each one corresponding to a task or phase of anesthesia procedures. Specific forms are provided for documentation of induction phase, for recording staff, drug administrations (bolus or drip), fluid or blood administrations or losses, and any event of interest, for displaying physiological parameters, for echocardiography reporting. List of anesthesia-related information, fluid balance, lists or trends of physiologic, blood, ventilation, coagulation or monitoring parameters are represented. Counters for timing of main phases (e.g. anesthesia, surgery, ECC) are provided. Operation reports for surgeons convenience are automatically created in the HIS medical record at start of surgery. HTML reports are created, retrieving data from anesthesia database (Oracle), and printed out: the anesthesia report, i.e. the medical and legal document, and the ICU report addressed to personnel taking care of operated patient. AIMS was introduced in ORs since March 2011, using medical-grade computers close to patient bed. This system, adopting advanced IT solutions (Java, HL7, database relational), could be potentially deployed to other institutions, not limiting to cardiac interventions.