

TECNICA OSPEDALIERA

Applied research
Better management

Certified solution Computerising the surgical track

The reorganisation of the Surgical Block implemented at the S. Croce e Carle Hospital, Cuneo, has provided the opportunity to completely review the in-house IT system of the Surgery and Cardiovascular Department, simplify clinical procedures, provide rapid and shared access to information, and improve management and control of healthcare and supportive activities.

Roberto Tognella

The S. Croce e Carle Hospital, Cuneo, is a highly specialised hospital, the landmark for heart surgery, neurosurgery, radiotherapy and nuclear medicine in the entire Piedmont province. The hospital's anagraphic records include over 1 million patients. Counting 2,356 employees (of which 413 doctors), 731 beds, 73 medical facilities, 35,282 admissions in 2010 (of which 24,494 ordinary and 10,788 at the day hospital), the hospital set in motion, in 2009, an overall reorganisation and rationalisation plan for the operating rooms by creating a single Surgical Block comprising 10 operating rooms, a recovery room and a room for the satellite pharmacy. The project provided the opportunity to fully review the in-house IT system of the Surgery Department, simplify clinical procedures, provide rapid and shared access to information, and improve management and control of healthcare and supportive activities. «The scope of the project was to computerise several activities (box on page ???) performed by the new Surgical Block on behalf of medical specialisations related to the Department of Surgery, Head and Neck and Neurological Sciences, and to the hospital's Cardiovascular Department, by integrating a new software with the existing IT system and feeding the hospital's electronic healthcare folder. This is implemented to rationalise and improve operative procedures, thus facilitating access to and the use of information, and cutting down the time spent on searching information, completing forms, fulfilling administrative duties and preparing materials,» says Dr. Maria Chiara Farinelli, Director of the hospital's IT Management System. «Computerisation makes healthcare data collected by various specialists (anaesthetist, surgeon, cardiologist, etc.) during the patient's visits prior to admission, during the stay in hospital and during the surgical phase easy to share and compare by creating a single database that contains the patient's medical history filed in a single medical repository that can be accessed by authorised healthcare staff. The use of an IT application in the Surgical Block allows to plan and monitor operating room activities, monitor consumption, determine the times of the various surgical phases, improve safety management in the operating room and in the Intensive Care Unit (traceability and retraceability of materials and persons), improve the duration of operating room activities, manage automatic reorganisation of supplies, and share patient data among the various hospital specialists.»

Global, modular and certified solution

Of the many IT systems that participated in the tender process, the S. Croce e Carle Hospital chose Digistat®, a modular data management software produced by UMS (United

Medical Software). «When we chose the most suitable software to meet our needs,» continues Dr. Farinelli, «an essential requisite considered was the IT system's classification as CE marked class I medical device, as also required by the existing legislation. This is an important guarantee, also taking into account the critical nature of the data processed. The choice of Digistat® was also influenced by its user-friendly configuration, which has been accepted by our healthcare staff, its reliability, easy and flexible online connections with other medical devices at the patient's bedside or in the operating room to automatically acquire all data provided by the medical devices. Last but not least, this platform offers a global and modular solution that covers extensive areas of the hospital's IT system, and is easily integrated into the hospital's IT system with procedures, such as Web services and HL7 messages, to manage bookings, admissions, the Emergency and Admissions Department, Analysis Laboratory, Radiology Department, Transfusion Centre and storerooms.»

Integration into the existing IT system

The S. Croce e Carle Hospital already had a hospital IT system that featured central anagraphic records, management of admissions to hospital and of the Emergency and Admissions Department, and the Bookings Centre. «From a clinical and administrative perspective,» says Dr. Francesco Lemut, Anaesthesia and Cardiovascular Intensive Care Unit, S. Croce and Carle Hospital, «the existing IT system manages bookings, admissions and pre-admissions, stays in hospital and, in the framework of the latter, requests for consultations, radiological investigations and laboratory tests, with an "embryo" of the medical record and a repository for documents. It must be said that the early computerisation phase especially focused on the administrative aspect of studying data flows. The current project is designed to adopt a balanced approach to the various administrative, managerial and clinical aspects to offer a solution that the system previously lacked. Hence, the "actors" were involved in the process to better assess the various needs.» The Digistat® software has been integrated into the existing IT system of the hospital to fully exploit all the patient data that is already available, and to allow anaesthesiological, surgical and nursing records to be drawn up. A record containing the medical, therapeutic and anaesthesiological data of the patient is completed during the phase prior to admission, the stay in hospital, surgery and after surgery, configured with data that is common to all inpatient facilities and with specific data for the various sectors and specialisations. The system also manages patient-related data (case history, physical examination, diseases, allergies, etc.), specific details of the disease and type of surgery, treatment-related information, nursing data and the clinical diary.

The computerised surgical track

The solution adopted for Operating Rooms envisages the use of various integrated modules of the Digistat® suite, namely to plan and schedule surgical lists, manage materials (interfaced with the Pharmacy and Storeroom), manage patient-related "events" (surgery, transits through the departments, etc.), acquire data from the display screen, ventilator, blood gas analysis, laboratory, heart-lung machine, infusion pumps, etc., balance fluids and blood, acquire and manage images and videos, record the anaesthesiological record, surgical register and ministerial checklists for Operating Room safety. The Smart Scheduler form enables surgical departments to book operations within the slots reserved for them, and to consult available slots on the calendars. The Block Scheduling Unit receives the requests, checks the availability of supplies, drugs, services required (intensive care, blood transfusion, etc.), instruments and, depending on the results, either confirms or changes the bookings.

The key moments of Operating Room activities are recorded starting from check-in to completion of the various surgical phases. «When the patient checks in to the Operating Room, he or she is identified with automatic reading devices. Each operating room has two work stations, one on the anaesthetist's side and the other on the side of the staff. Both are equipped with barcode readers,» says Dr. Lemut. «All the important clinical data are recorded during the performance of surgery, including those from vital parameter display screens and other devices, such as ventilators and other monitoring devices that are not continuously used. The information, converted into easily viewable formats, is then added to the patient's documents. All surgical times and phases are recorded. Moreover, the software calculates the mean duration of procedures for each type of surgery/team in order to ensure correct Operating Room scheduling. On completion of surgery, the software will manage the whole Recovery Room phase,» adds Dr. Giuseppe Coletta, Director of the Surgical Block.

DIGISTAT® SOFTWARE PROVIDES COMPUTERISED ACTIVITIES IN OPERATING ROOMS AND IN THE CARDIOVASCULAR DEPARTMENT

- . Surgical list management.
- . Completion of the Anaesthesiological and Surgical Record, which is created in the Day Service Unit and completed in the Operating Room.
- . Scheduling, management and recording of Operating Room activities.
- . Acquisition of clinical and diagnostic data (display screens, ventilators, ultrasound scanners, etc.).
- . Completion of the Surgical Register.
- . Recovery Room Management in the new Surgical Block.
- . Completion of the Intensive Care Record.
- . Supplies management for the Satellite Pharmacy of the Surgical Block and for the Operating Rooms.
- . Reports of visits and diagnostic investigations conducted in Surgical Outpatient Clinics and in Cardiovascular Department Outpatient Clinics.

Completion of the Cardiovascular Department's medical record, including drug prescriptions and delivery.

Supplies management

Another interesting feature developed by Digistat® software is the management of Pharmacy and Operating Room supplies. «The dedicated electronic form,» says Dr. Farinelli, «allows to efficiently and rationally manage the logistics of supplies, ensuring that the necessary supplies are present in the Operating Room, based on the surgical schedule, and also the acceptance of returned goods, precisely of unused supplies. To face unpredictable needs or sizes (e.g. gloves, prostheses...) that can only be assessed at the time of surgery, Operating Room cabinets, whose cancellation/entry of supplies is implemented with light pens, have been linked up to the IT system. The software guides Pharmacy staff when they prepare patient-specific kits. Moreover, it also manages "general kits" that are not associated with a certain patient but are specific for a type of surgery. This application has proven to be particularly useful when operations cannot always be scheduled, typically in the Heart Surgery Department. The use of the software and reorganisation of supplies management have considerably diminished Operating Room stocks.»

Conclusions

Used in the Surgical Block, Cardiovascular Department—which counts several specialisations, from heart surgery to vascular surgery, heart surgery intensive care—and Haemodynamic Department, Digistat® will probably find new application fields at the S. Croce e Carle Hospital in the future. «The positive results achieved to date,» says Dr. Farinelli, «make us hope for our hospital's computerisation process to progress further. The objective of creating a new management model on an IT platform has yielded excellent results. Now we must study future expansions and extensions to other departments.»