

## CLÍNIC INNOVATIONS

The Hospital Clínic de Barcelona, not only has the latest advances in robotic and hybrid surgery or 3D endoscopy but does so in a newly constructed operating theaters designed to accommodate the most innovative solutions; both those available in the market and those specifically developed in-house by its own teams of architects and biomedical engineers after countless prototypes and proofs of concept, either jointly with companies or only counting with the institution's own resources. All this innovative activity coexists with the most advanced electromedical equipment on the market, for the best safety and confort of our patients and professionals.



#### Double laminar flows in the same operating theater when requested

This allows differentiating two areas when two simultaneous surgical fields are needed, for example, during live donor organ transplantations. Plenum structure is integrated with the hospital's HVAC system ducting. Included into the plenum are the surgical lights, web cam, surgical camera, microphones and sensors.



### Customizable light scenarios using the latest innovations in RGB LED technology

This technology offers a wide range of possibilities regarding surgical procedure enhancement reducing visual fatigue in endoscopic procedures using blue light or other advantages involving patient wellness. The complete spectrum of hue, saturation, and luminosity values can be selected via tablet control interface. RGB LED backlighting creates a glow effect through the translucent panels, and provides a sense of calm for both the patient and staff.







#### Central audiovisual station

Full audio and video routing remotely managed through a central audiovisual station. HD cameras are installed at the lamps and at the endoscopic equipment. This technology allow us to record and/ or broadcast the surgeries on live streaming, for academic and educational uses.



#### Ozone sterilization

One of our surgical theatres employs ozone total room sterilization once a week. Ozone is at the top of the pyramid of free radical generators, and kills not only bacteria, but also fungal spores and viruses.



#### Patients tracking during the surgery by EstimTrack

EstimTrack is an app that provides an intelligent set of tools to schedule and track the patient and the other involved personnel in surgical procedures.



#### Robotic surgical lamps with auto tracking functionalities

Ceiling-mounted robotic LED lights provide shadow-free, variable intensity, and continuously variable color temperature (3200K–6800K), as well as variable focus and spot size (down to 5 inches).



#### Intelligent fungible closets, used to optimize fungible supply management

Real-time search and pass-through architecture allow for tremendous reduction in time-to-find (a major efficiency parameter in operating rooms), and reduction of non-essential traffic of personnel in and out of the operating room.



### Last technologies in temperature monitoring and controlling through the surgical table

Prevent patient core temperature drop during surgeries. This helps reduce the time-to-wake from general anaesthesia and the risk of surgical site infections, having significant impact both on efficiency and safety.



#### Photocatallitic antimicrobial materials

Walls and coatings with photocatalytic properties, used for antimicrobial purposes, in order to ensure maximum sterility in the surgery theater.



### Real-time patients and assets tracking using RFID technology and specific applications

Ensures patient's localization and clinical status during the staying at the hospital. This technology gives us more control and personalization of patient follow-up.



#### Infrastructures for the best clinical professional ergonomics

Oversized pendants, wall embebed monitors, table and elevable floor pods,... enhancing clinical professional ergonomics



#### Innovative anti-legionella OR blocks

OR block sinks with innovative anti-legionella mechanism which ensures that no water is remaining on the waterways and can be a potential environment for bacterial proliferation.





#### Integrated technical panels in surgical environments

These panels allow the surgical team to control all the domotic functionalities (light, music), image presentation (TC,RNM and live endoscopic images) and technical aspects like climate control, electrical leaks alarms.... All this functionalities managed through an unique station.





#### **ICU area** The best safety measures to our patients and professionals

The same cutting-edge scenario can be found in the hospital's ICU units with the aim of offering the best possible safety measures to our patients and professionals



#### Hands hygiene control

Hands hygiene control, using disinfectant dispensers linked to automatic doors using RFID technology.



#### **HD cameras in all our boxes, used for active video surveillance** Using ROIs, the cameras can predict patient's movements; send alarms and therefore anticipate incidents such as bed falls

#### Differential pressure controllers

Differential pressure controllers, used to under pressure monitoring and controlling in boxes which are used in potentious infectious situations

#### Electro polarized glasses

Electro polarized glasses, used to guarantee patients and families' privacy.

#### Remote alarm controllers

All the data collected by the hemodynamic monitor, the infusion pumps, the bed, the ventilator... are sent through standard protocols to a shared platform which integrates all the information and shows it dynamically and intuitively in to the clinical staff mobile devices.

### ICU area - The best safety measures to our patients and professionals

We use tablets for the handling of domotic features. Some of these functionalities are developed thinking in our patients and some of them are for our professionals.

#### Patients view:



#### Adaptive room environment

Depending on the patient clinical status and on the people who comes into the room, the environment responds. For example, when blue code is activated due to cardio respiratory failure, all the lights turn on, a blue light is showed in the nurse station and on the top of the box.



#### Adaptive lights

Lights modulate its intensity depending on the circadian cycle.

#### Monitors information adapted for the patient

The monitors show images and information depending on patient demands and psychological state, and/ or depending on the person who comes into the room.



#### Music and colors creates healing environment

Professionals view:



#### Information offered depending on the type of professional

Depending on the type of professional (nurse, physician, cleaning staff...) who comes into the room, information related to them appear in the monitors, showing useful information.

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