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An Interview with Professor Antonio Artigas

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Professor Antonio Artigas describes the design and operation of the Critical Care Centre at Sabadell Hospital, his management experiences and strategic aims for improving intensive care.

Professor A. Artigas has organized 20 scientific meetings, published 15 books, more than 120 papers in international scientific journals, and is a board member and peer reviewer for numerous critical care journals. Research activities have included Eurosepsis, RCT new pharmacological treatments, APC, TFPI, AT III, the development of the new severity scores SAPS II, SAPS III and MPM II, ALI ARDS consensus conferences for North America and Europe, and epidemiologic studies on incidence, outcome and risk factors.

Since 1988, Professor Artigas has been managing the Critical Care Centre at Sabadell hospital in Sabadell, Barcelona. The hospital has 660 acute care beds. The ICU part of the Critical Care Centre has 16 beds and the intermediate ICU 10 beds, with 12 medical staff, 6 residents and 40 nurses. Managing 2500 patients per year, the nurse to patient ratio is around 1:3 (1:2.3 in the ICU and 1:1.5 in the intermediate ICU). ICU beds cost three times the cost of other hospital beds and the critical care centre accounts for 15% of the hospital budget. Mortality rates are 16.5% for the ICU and 1.1% for the intermediate ICU.

Describe the Organization of Your Unit

All rooms are fully equipped with mechanical ventilators and monitoring equipment, and the unit is a closed ICU with open visiting hours. Single visiting family members can stay for as long as they wish between 13:00 and 22:00 hours. A second visitor or friend may stay for half an hour at scheduled times. This requires flexibility on the part of the staff, although often they find families keen to participate in care of the patients. The centre is currently researching the feelings of families in ICU as a special quality control analysis. The atmosphere in the unit is pleasant, with relaxing, grey and pink colour schemes. Televisions are available for entertainment or informative programs on the patient's illness or the ICU.The ICU design, built 14 years ago, lends itself to the maintenance of a clean ICU, with cleaning stations and the laboratory conveniently located on the same floor (see figure 1), and stratified levels of care managed in separate ICUs.

Highly invasive treatments for the more severely ill patients are managed in the ICU and non invasive treatments and monitoring in the intermediate ICU (see figure 1). We are also responsible for pre-hospital care of critically ill patients for a population of 600,000. We're called out by phone and the ambulance which goes to the patient has a physician, nurse and driver/technician. Patients are given early treatment in the ambulance and come straight to the ICU. There's a flow of 7% patients who worsen and move to the ICU from the intermediate ICU, and 40% of patients from the ICU move to the intermediate ICU for non invasive treatment and monitoring. It's probably due to this stratified system that the readmission rate is only 1.29% and the occult mortality in the ward is only 2.25%.

The Critical Care Centre handles medical and surgical patients. The same staff serves pre-hospital care and in both intensive care units. Staff comprise intensivists, one anaesthesiologist for 24 hour cover, who links with the operating room, and consultants from various specialties such as cardiology, neurology etc. who dedicate 25% of their time to critical care. The critical care team can also be consulted for any patient with vital risk criteria in the hospital. Physicians and nurses from the critical care centre go to the ward to check the patient. A senior is responsible for triage and optimising bed use in the critical care centre, taking the surgery schedule into account. For severely ill patients who stay for longer than 2 weeks, e.g. sepsis patients, ARDS patients etc. the physician also follows up for the first three or four days after the patient has been transferred to the ward, to monitor for complications and prevent respiratory or cardiac arrest.

What are the Main Directives of Your Role?

I would estimate that my time is divided between 30% teaching, 40% research and 30% clinical care. We are also heavily involved in designing

quality control strategies and promoting discussion for improvement. We monitor and analyse internal data annually. Every 5 years, we present the results and propose improvement plans to the hospital management. We are also responsible for the critical care department donor organs, and pacemaker and cardiac arrest programmes.

The centre has different working groups for infections, severity scores, management of acute respiratory failure, renal failure, trauma and sedation etc. Each group has a member of staff as leader and two nurses from the critical care centre, and consultants or physicians from other departments e.g. for infections we have a microbiologist and someone from infectious diseases. We meet daily to learn about new cultures, for example The idea is to bring people from the critical care centre together with experts from all these specialty areas. The working groups are responsible to develop guidelines, treatment and diagnostics, to provide annual reports on quality control, and to design the teaching activities and research programmes in their specialty areas. The working groups meet monthly and provide a multidisciplinary platform for critical care, presenting their work annually to the centre for discussion.

What Skills are Essential in ICU Management?

I believe experience is an essential component to training in management. In addition to this, I attended an MSc programme with the University of Jerusalem. I had to study week-ends for two years to achieve this. The course was designed to train people in how to promote improvements in hospitals and act as facilitators. Our Professor flew from Israel every week-end and we worked together for one and half days. We also had to complete homework in groups. These were projects to improve care in the hospital or healthcare system, using the same methodologies as commercial companies. For example, one problem to be addressed was the relationship between primary care and hospitals. We presented our solution as a contract to the hospital management for approval, thus treating the hospital as a company. I apply many of the things I learnt on this course in my practice. An example in intensive care is the admission of stroke patients, for which there is a competence mismatch between the neurologist and intensivist. Working together with the objective to detect and start treatment within 3 hours, we defined the needs and a protocol, according to the available resources. The result is that neurosurgeons and radiologists are now happy to work with us. In this way, we detect problems, consider the opinions of everyone and encourage people to find solutions.

Describe Your Best and Toughest Experiences

It's been especially wonderful to have the opportunity of working with our new organizational design. A very special experience, though, was the treatment of a young lady who arrived in the ICU with severe ARDS many years back. She was treated with mechanical ventilation for a month, and survived. I followed her progress for a year afterwards and was eventually invited to her wedding. I have a fantastic relationship with this family and I'm now Godfather of her 16 year old child. This family have shown enormous appreciation. Human relationships have no price.

I've also had two very sad experiences. My sister suffered a car accident on holiday a few years ago and died within two days.The resources were simply not in place to support her care in the ICU she was taken to; I couldn't help her. Also in our own critical care centre, a young male nurse died of cancer and this was a very difficult year for all of us.

On a day to day basis in intensive care, it's sometimes very difficult to explain to administration the special difficulties of our work; it takes a long time to gain the support we need.

How Would You Improve Intensive Care?

We're addressing several areas to improve intensive care more generally:

- We're using new technologies to explore the potential of monitoring and advising in smaller hospitals using telemedicine. We can also manage patients in ambulances in this way. This may avoid unnecessary transfers in the next few years;
- E-consultation, improved numbers of ICU beds, and good coordination of existing facilities are all potential solutions to improving intensive care in regions such as Catalonia, for example;
- We're also working towards earlier care, pre-hospital and in the emergency area, and towards supporting the crucial follow-up after discharge;
- We believe in the value of stratifying care according to severity e.g. with the intensive care unit and intermediate intensive care unit in our centre;
- Another important area is prevention of adverse events to improve short and long term outcomes.

What are Your Personnel Management Strategies?

We practise a human management style, considering the expectations of colleagues, talking with them and prioritising what they want to do, to keep them motivated. We've had the same staff for 14 years, except for one colleague, who recently moved to a more senior position in another hospital. The head of nursing staff has changed more regularly (four times in six years), but on the whole, we're more like a family.

Thank you, Professor Antonio Artigas.

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