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### Anaesthesiology and Critical Care Medicine



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## Interview with Professor Sharon Einav

Professor Sharon Einav is Chair of the [Intensive Care Medicine Subcommittee](#) of the [European Society of Anaesthesiology](#). She is Professor of Intensive Care, Hebrew University Faculty of Medicine, Director of Surgical Intensive Care and Chair of the Resuscitation Committee at [Shaare Zedek Medical Center](#), Jerusalem, Israel. Prof. Einav is the Israel country representative for the [European Society of Intensive Care Medicine](#), and is a member of the Steering Committee, [Disaster Response Network](#), [American College of Chest Physicians](#). *ICU Management & Practice* spoke to Prof. Einav about the anaesthesiology/ intensive care medicine interface, mass casualty events, monitoring, the key points of airway management and more in advance of the [European Society of Anaesthesiology's](#) annual congress, which will be held [28-30 May in London, UK](#).

### What can anaesthesiologists bring to the multidisciplinary intensive care team?

Anaesthesiologists induce critical physiological dysbalance on a daily basis (often with the aid of our surgical counterparts). We then rapidly counterbalance the physiological derangement by providing appropriate support. In other words anaesthesiology training involves the management of an individual patient at a time of crisis. One learns to handle respiratory crises (e.g. hypoxia, apnoea), cardiovascular crises (sepsis, haemorrhage), neurological crises (spinal hypotension, loss of consciousness, arousal restlessness) and more.

This experience with 'extreme physiology'—live, at the bedside, and in the most difficult of situations—we carry over into the ICU. This includes familiarity with drugs that increase and decrease blood pressure or heart rate within minutes, familiarity with the fine balance between analgesia, amnesia, anaesthesia and muscle relaxation (if and when these are required), familiarity with the nuances of airway management in complex patients and a knowledge of the abilities and limitations of the devices that can be used for monitoring and support during these crises.

### What are the advantages of training in both anaesthesiology and intensive care medicine?

First and foremost the ability to speak a common language. This can be very important for ensuring continuity of care in the perioperative period. Imagine two cooks baking a single cake: the first prepares the dough and places the cake in the oven. The second takes the cake out of the oven and makes the topping of the cake. Just as there is no single ideal baking technique, there is also rarely a single 'correct' way to manage a complex patient. Clearly this requires close collaboration. Ideally, the two would sit together and make a common plan. Alternatively they should have similar training and speak the same language. Sometimes, even if they do speak a common language, they may prefer different ingredients and have incompatible techniques.

The second advantage of training in both anaesthesiology and intensive care is the difference in perspective. Seeing the patient from only one perspective is like having two-dimensional vision. Seeing both perspectives gives the clinical picture a third dimension. Anaesthesia is directed by production pressure and patient safety, is very practical and looks at immediate results. Anaesthesiologists often lack information regarding the long-term implications of their practice, and in some places even perceive themselves solely as providers of a service. Intensive care doctors not only see the long-term implications of various practices but also view themselves as primary care physicians. On the other hand we do like theorising quite a bit...

### What are the main challenges for anaesthesiologists working in intensive care?

Anaesthesiologists are accustomed to working alone (or in pairs, at most) and are rarely called upon to discuss their plans or impart information. Although we work with surgeons and operating room nurses, communication is minimal. So much so in fact that the 'time-out' was instituted to

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ensure that this small team has similar plans for their single patient.

In the ICU teamwork is the name of the game. One must develop excellent communication skills in order to share ideas, intentions and concerns with our colleagues, our peers and our nurses in a manner that is conducive to collaboration. One must also learn to conduct a formal learning/teaching round and deliver bad news to families.

### **You have researched critical care response to mass casualty incidents. What are the challenges for intensivists and anaesthiologists?**

Triage is traditionally considered the responsibility of the surgeon in the emergency room. However, in a mass casualty event an experienced anaesthesiologist or intensivist may sway the decision of a surgeon with less trauma experience regarding expectant care. This triage process does not end at the door of the emergency room (ER), but extends to the question of whether we should discharge one ICU patient in order to admit another. In a series of interviews we conducted on management of mass casualty events this was often cited as one of the most troubling aspects of patient care in such events (Einav et al. 2006).

Another major challenge is the need to separate politics from medicine. In this we are no different from our surgical colleagues. The care delivered to the patients must remain independent of our personal sentiments, opinions, preferences and value judgements. We must remain committed to the best interest of our patients regardless of whether they are perpetrator or victim and irrespective of the political and/or religious gulf that may lie between us.

Finally there is the issue of long-term ICU medical care. Long after the media have turned to new topics of interest and the surgeons have finished extolling the lifesaving heroic feats they performed in the operating rooms, intensivists are still caring for these patients and their families in the ICU. The fact that a patient has survived a mass casualty event does not mean he/she has gone home intact. Many of these patients suffer long-term sequelae. The realisation that their lives have probably been changed forever dawns on both the patient and their families during their ICU stay. And when they go through this process we go through it with them. By this time, there are no heroics and the glory of saving lives is all gone. All that remains is hard work and the challenge of continuing to hope for more improvement.

### **What can delegates expect from the intensive care track in the 2016 Euroanaesthesia congress?**

The programme for the 2016 Euroanaesthesia congress was crafted to cover multiple aspects of intensive care as well as some general topics of interest. Some lectures are intended to provide practical tools for management of common clinical situations: septic shock, acute respiratory failure and antibiotic therapy. Other sessions cover more theoretical knowledge. For example, "Affairs of the Heart" will touch upon the interactions of the heart with the lungs and the brain and how these may affect outcomes. We also provide interest for those who wish to focus on research in a session with prominent "out of the box" speakers who will share their insights on the last decades of intensive care research with the audience ("Science, research, and intensive care"). We expect heated discussion when education and politics are intertwined in the session on "Anesthesia and intensive care - a love-hate relationship?". For those fond of technological tools we provide a glimpse into the future in the session "How can our computers serve us". The panel on "Oxygen!" will include much of the controversy surrounding oxygen administration in recent years. Finally, those who want an update on the most important publications in intensive care in the last year are welcome to join the "Best of Intensive Care" session.

### **You are making a presentation at Euroanaesthesia 2016 on "Diagnosing death by resuscitation?" Please share your key points.**

In-hospital cardiac arrest is often preceded by signs and symptoms of impending collapse that could be identified by professionals. It is expected that medical professionals would be able to recognise patient deterioration at an early stage. In reality, predicting the limits of patient tolerance represents one of the most challenging issues within hospitals in general and within critical care medicine in particular. Although approximately 60% of cardiac arrest events have at least one documented antecedent the medical response often occurs too late. Medical training and experience, it would seem, do not make the practitioner more sensitive to the nuances of physiological change prior to patient collapse. There are multiple causes for this phenomenon, some of which are discussed.

In addition, the ability to provide an effective response hinges not only on situation recognition but also on willingness and ability to respond. It is assumed that hospital staff are all willing and capable of performing cardiopulmonary resuscitation. However, there is very little data to prove the former and an accumulating amount of data suggesting quite the opposite regarding the latter. Despite extensive investment in staff training and introduction of standardised defibrillation equipment into most hospital wards, which should theoretically lead to excellent performance during resuscitations, performance remains poor and multiple errors occur. Almost a quarter of the cases entered into the American Heart Association (AHA)'s Get with the Guidelines National Registry of CPR (<https://iii.hm/35g>) reported some mistake occurring during resuscitation; during airway management, during defibrillation and certainly during administration of medication. Poor performance of chest compression is common and prolonged hands-off time occurs in more than a quarter of the patients. We are seeking a way to improve but things are more complicated than they seem. My talk will be accompanied by recordings of real resuscitations.

### **What are the key points in managing difficult airways? What are the most promising developments?**

The last few decades have seen significant changes in airway management. The first occurred when anaesthesiologists recognised the risk of entrenchment in a specific airway management technique when it may not be appropriate. As a result all anaesthesiologists are expected to know the action flowchart, which includes the option of moving from one management option to another and one managing person to another. In terms of device development, there have been two major leaps forward—the first was the use of laryngeal mask airways and the second was the use of fibre-optic laryngoscopes.

Airway management of a patient with compromised gas exchange is an even greater challenge than airway management for surgery; when the patient has little reserve there is no place for indecision. With time, I believe we will continue to learn to use less and less invasive airway management.

However, until then, the key points of airway management in the ICU are:

- (A) Do not let the patient take the lead. It is better to intubate before collapse occurs.
- (B) Always have options B and C ready and make sure everybody on the team knows what they are.
- (C) "Failure to intubate" is only failure if you have lost the airway. If you let someone else try and they succeed—you may have saved the patient's life by not giving in to your ego.
- (D) Do not hesitate to demand that the conditions for intubation be optimal (e.g. preoxygenation, patient position, depth of sedation, monitoring).

### **What role can anaesthesiologists take in pain management in the ICU?**

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Critically ill patients suffer a great degree of pain and discomfort: they are immobilised, they undergo multiple procedures and operations, they are invasively monitored and more. Not all anaesthesiologists are experts in pain management. However, anaesthesiologists are very experienced with drugs that provide analgesia through a variety of effects, some of which are better than others for specific situations (e.g. organ failure, respiratory, haemodynamic or neurological compromise). Anaesthesia training also includes the use of local and regional pain management techniques and modes of patient-controlled analgesia. These too can be put to good use to ease patient discomfort.

#### **What are the most promising developments in invasive monitoring of critically ill patients?**

This is very much a matter of personal opinion, but to my eyes noninvasive monitoring is much more promising than invasive monitoring. It carries less danger and discomfort for the patient and the data we can get with such methods is far from negligible. I cannot think of an invasive monitor that has led to the revolutions in clinical care that have resulted from the use of electrocardiography, pulse oximetry, capnography and echocardiography. The most exciting project that I am currently working on is with partners in the Department of Applied Physics in my university, the Hebrew University of Jerusalem, who have discovered that the human body emits a signal that we have been unaware of thus far. We are now attempting to correlate it with the physiological information we suspect it reflects. If we prove right the findings may well be revolutionary (Kurzweil-Segev 2014; Safrai et al. 2014).

#### **What is the role of capnography in the ICU? Should it be routinely used?**

At the very least capnography should be used to monitor patients as they are monitored in the operating room. It seems odd that when the patient moves from the OR to the ICU, where there is less individual supervision, there would be a step down in monitoring. This rarely occurs with other types of monitors, but occurs routinely with capnographs.

The American Society of Anesthesiologists (ASA)'s closed claims analysis ( [asaclosedclaims.org](http://asaclosedclaims.org)) has demonstrated a high proportion of cases with liability due to airway management problems that resulted in severe neurological injury. Introduction of mandatory capnography decreased the proportion of such cases significantly. Critically ill patients have more complications during intubation than do elective anaesthesia cases. Some studies have shown a complication rate exceeding 10% in ICU patients. Many of these can be prevented with appropriate airway monitoring.

Last but not least is the issue of blood sampling. Any tool that can be used to decrease the number of blood samples we take from our patient benefits them. Many practitioners hesitate to rely on capnography because of the arterial–alveolar gradient in CO<sub>2</sub>. However the rules for that are simple: End tidal CO<sub>2</sub> is always lower than PaCO<sub>2</sub>. An end tidal to arterial CO<sub>2</sub> difference of 2-5 mmHg is normal. If the gradient broadens your patient needs additional workup, since for some reason CO<sub>2</sub> removal (i.e. ventilation) is no longer keeping up with CO<sub>2</sub> production (i.e. metabolism). If the cause of the increased gradient is known, you can follow the gradient trend as an indirect indicator of response to treatment.

#### **This interview will be published in *ICU Management and Practice's* issue with a cover story on Safety. Anaesthesiologists have been at the forefront in patient safety in healthcare. What still needs to be done in patient safety?**

There is a need to standardise patient care across the operating room (OR) and ICU. For example, the use of similar syringe pumps would allow a simple exchange of pumps rather than transfer of a critical drug from one pump to another, which may result in inadvertent drug delivery changes. Similarly, standardisation of treatment plans across the board would result in fewer redundant procedures and drugs. A classic example is the insertion of a dedicated total parental nutrition (TPN) line in the OR when there is no intention of initiating TPN for the next week, or alternatively neglecting to insert a feeding jejunostomy in the OR during surgery of a malnourished patient.

#### **Further Reading**

Prof. Einav's Zoom On profile is published on the *ICU Management & Practice* website [https:// iii.hm/35z](https://iii.hm/35z)

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