Welcome to the 42nd ISICEM!

We’re really pleased to welcome you to Brussels for the 2023 edition of the International Symposium on Intensive Care and Emergency Medicine. It’s fantastic to see all of you in person to share in this global exploration of cutting-edge topics, new developments, and the latest guidelines and expert opinion within our field. Face-to-face meetings are so important for the spontaneous personal interaction and exchange that they offer, providing an environment for collaboration, conversation, and connection that just can’t be achieved online.

With a packed four-day program spanning 10 rooms and more than 600 individual presentations, there will be plenty of opportunities to interact with our international faculty and share insight and expertise across the full, multidisciplinary range of intensive care and emergency medicine topics. Alongside our more standard formats of lectures, round tables, tutorials, meet-the-expert sessions, and pro-con debates, we are increasingly providing more practical experiences, and this year have a special Training Village full of demonstrations, clinical challenges, case discussions, and simulation sessions. These provide an ideal way of putting theory into practice by learning from real-life scenarios, with experts always on hand to offer support and advice!

During the Opening session, the initial findings of our pre-symposium Round Table on ICU populations: from syndromes to phenotypes will be shared by the chairpersons, Drs. Carolyn Calfee and Anthony Gordon. As we move gradually away from treatment of syndromes toward more personalized strategies, these discussions help focus what direction we should be moving in to facilitate this transition. We are also privileged during this session to be given the first glimpse of important new results from several clinical studies, which will be published in leading medical journals, some simultaneously with the presentation.

With the COVID pandemic still fresh in our minds, the effects of therapeutic-dose heparin and of the complement inhibitor, ravulizumab, in patients with COVID-19 will be presented. Findings from a randomized study of hydrocortisone administration in severe community acquired pneumonia, from two studies concerning the management of metabolic disorders associated with critical illness, and from another considering the use of prothrombin complex concentrate in trauma patients will complete the podium of new results during the Opening session.

The rest of the week’s program is going to be rich with other highly topical subjects, including the place of modern technology and artificial intelligence, how to manage the ever-rising costs of intensive care and make best use of our available resources, and what important lessons we have learned from COVID that can be taken forward into daily patient management, and in order to be prepared for the next pandemic. We will of course also have lots of essential updates on the management of more “everyday” aspects of intensive care, including cardiac arrest, respiratory failure, heart failure, acute renal and hepatic failure, and much more. There is really something for everyone!

As always, we encourage you to take the time to head down to the exhibition hall to catch up with our valued industry partners and view the latest research on the ePoster screens. You’ll notice that we have a new piazza area this year, in the center of the exhibition area, where you can sit and share impressions and highlights, chat with colleagues and friends, and even enjoy a Belgian waffle or ice cream!

For the rest of the week, ISICEM News will bring you just a few of the daily highlights of this year’s Symposium, with previews of exciting talks to come, and summaries of talks you may have missed.

On behalf of the entire ISICEM team, we wish you a fruitful and productive educational experience over the next four days, and a very pleasant stay here in our beautiful Belgian capital.

Don’t forget to share your favorite sessions and content on social media! #ISICEM23

Jean-Louis Vincent
ISICEM Co-chair

Fabio S. Taccone
ISICEM Co-chair
Let’s get strategic about ICU burnout

Stress, anxiety, and burnout will be the topic of a presentation this afternoon by Michelle S. Chew, a professor of anesthesiology, intensive care, and acute medicine care at Linköping University hospital (Linköping, Sweden), and Deputy Editor-in-Chief of the European Journal of Anaesthesiology. Raising awareness of ICU burnout and healthcare professionals’ wellbeing in Scandinavia is very important, Professor Chew told ISICEM News. To that end, her group recently conducted a study on perceived and physiological stress, anxiety, and burnout among ICU staff in an area that encompasses around two million inhabitants. This detailed observational study of staff focused on those within two major hospitals that admitted COVID-19 patients into the ICU. “We were the probably the third largest region in terms of COVID-19 admissions during the first year of the pandemic,” she said.

At the time, Professor Chew felt the department had a strong strategic response. Yet, the sudden upsurge of patients affected everyone. “In the aftermath, we had a lot of people who were stressed. Patients were stressed, relatives were stressed – not least because of the huge number of patients,” she said.

As such, Professor Chew and her team decided to measure stress using the Perceived Stress Scale (PSS), a questionnaire validated in the Swedish language. “There are nuances when talking about stress, which is a highly subjective experience, so you need a language- and context-validated questionnaire,” she said. They also measured anxiety using the Hospital Anxiety and Depression Scale, and burnout using the Maslach Burnout Inventory, also validated in Swedish.

Despite the use of validated assessments, it is still a difficult process measuring stress. “Again, stress is a subjective experience, so we also wanted to measure physiological stress,” said Professor Chew. Therefore, her researchers collaborated with the university to develop a way to measure the stress hormone cortisol in hair. “The advantage of measuring hair is that you avoid diurnal variations, and you also can measure it over a longer period of time. One centimetre of hair is equivalent to approximately one month, so you can measure chronic stress.”

At ISICEM, Professor Chew plans to share some data ahead of publication. She hopes it will illustrate just how much the COVID-19 pandemic has brought the wellbeing of healthcare professionals into the public consciousness. “But intensive care has been suffering for many, many years,” she added.

Indeed, there is an abundance of data already documenting the high prevalence of stress, anxiety, and burnout among ICU nurses and physicians. “The popular press and media are replete with stories about how healthcare workers have suffered during, and now after, the pandemic,” said Professor Chew. “While there was much public sympathy/empathy during those initial months, healthcare workers seem to have been forgotten.”

A pressing issue too, is the scale of healthcare professional shortages. “Widespread shortages in personnel remain perhaps the greatest threat to healthcare right now, with no relief in sight. This applies across the world.”

Professor Chew will outline what is already known, but hopes to impart a message of solidarity. “Right now, everybody is just trying to survive,” she commented. “However, no profession can do this on their own.” She cites politicians, journalists, and decision-makers as potential collaborators to help raise awareness and prevent stress, anxiety, and burnout.

So, Professor Chew suggests a move away from focusing on how much burnout and stress exists:

“This is old news in my opinion, and has negative connotations – my proposal is to focus on what we should and can do. How do we identify the groups most at risk? Can we apply preemptive strategies? Are there policy and regulatory barriers that we can remove?”

For example, the US National Academy of Medicine last year published the National Plan for Health Workforce Well-Being,1 which provides a blueprint for improving multimodal workplace wellbeing. It highlighted seven areas, including prioritizing and investing in efforts to optimize environments that prevent or reduce burnout. “I think it’s probably the first document that is proactive and says, ‘this is what we need’ explained Professor Chew, who noted that the blueprint has not been replicated elsewhere. “I am not aware of any national strategies in Europe, so I would like to hear from the audience.”

One of the important aspects of the blueprint, continued Professor Chew, is a call for federal research funding to gather evidence on which areas need the most focus. For example, which groups are particularly affected within the ICU? “Is it the family? Is it middle managers? Is it the nurse’s aides or high-level consultants?” she said, also pondering on what the most potent drivers are: “Is it shift work? Is it the exposure to grief? We still don’t know because there is no evidence for the focus areas in which we should be improving.”

Research too also shows that women healthcare workers have been disproportionally affected by the pandemic. “Is this true across all countries and professions?” asked Professor Chew. Importantly, research shouldn’t just be carried out at university level, it should be coordinated, and backed by federal funding, she added.

Ideally, then, Professor Chew would like to see the creation of a national strategic plan for improving healthcare professionals’ wellbeing, as well as sufficient research funding focusing on the workforce and their environment. Finally, she would like to see an increased focus on healthcare managers, and the organizational prerequisites needed to cope with crises. In other words, there must be a committed change of focus. “We need to think beyond a confrontation that stress, anxiety, and burnout are important barriers to good and effective patient care. We need to look and say, OK, what can we do now?”

References

Hematology-oncology and ICU collaborations can help outcomes

Research opportunities to improve treatment for hematology-oncology patients in the ICU will be placed under the spotlight tomorrow by Élie Azoulay of the University of Paris-Diderot, Sorbonne Paris-Cité and Faculty of Medicine at the Saint Louis Hospital, Paris, France. Professor Azoulay is a specialist in intensive care medicine, leading a group of researchers that are interested in advancing outcomes in patients with cancer. He will talk about ways hematology and oncology can collaborate with the ICU for the good of the patient, given advances made in all the specialties in recent years. “I would say that experienced centers have the expertise for doing a great many things,” Professor Azoulay said in conversation with ISICEM News. “But at the general ICU level, we are not there yet – we just need to spread the knowledge.”

Professor Azoulay’s research agenda is actually divided into three segments. The first seeks to apply advances made in general ICU patients to those critically ill with cancer. The second relates to specific advances in patients with cancer in the ICU, and consists of elements that really only apply to cancer patients. The last element is focused on collaborations between oncologists, hematologists, and the ICU. “We want to make sure knowledge transfer will work both ways,” he commented. “ICU specialists could learn from hematologists and oncologists, but oncologists and hematologists could also learn the strategies that we are implementing in the ICU, which are life saving.”

Recent advances for general ICU patients could certainly benefit cancer patients in the ICU. “For example, protective lung ventilation, or fluid volume in patients with shock, cardiac assessment for patients with sepsis, and source control for patients with septic shock,” commented Professor Azoulay. “And this is one of the main reasons cancer patients should be managed by people trained in the general ICU. The competencies that we gain when we are trained in the general ICU should benefit cancer patients when they are critically ill.”

The research agenda for the second group, however, is very different. It concerns elements that would apply to patients with cancer specifically, but not general ICU patients. “For example, we always refer to invasive or non-invasive diagnostic strategies, and the diagnostic yield of those procedures are very different across groups of patients,” said Professor Azoulay. “Cancer patients see the most benefit from non-invasive diagnostic strategies.”

In addition, it’s also about a shift in treatment that incorporates cancer treatments. “While patients are critically ill for a long time, we have traditionally thought that we should deal with chemotherapy, biotherapy, and targeted therapies only when the critical situation begins to improve,” he said. “But we now know patients will not improve if we are not dealing with everything at the same time.”

That’s because in recent years there has been a lot more understanding that sometimes critical care situations are also the result of a tumoral burden that can be either cytokine related, or down to other mediators of inflammation. “I want to emphasize that we are now providing cancer chemotherapy, targeted therapy or even...”
Continued from page 3

biotherapy for a large number of patients at the same time as we’re providing mechanical ventilation, vasopressors or renal replacement therapy,” said Professor Azoulay.

In addition, there is also the issue of toxicity from cell therapy. “We have learned a lot over the last few years – particularly that when patients receive cell therapy, they may require ICU admission for cytokine release syndrome for neurotoxicity or sepsis,” explained Professor Azoulay. Indeed, an international, multicenter, observational cohort study in 21 intensive care units, carried out by Professor Azoulay and his team, found that chimeric antigen receptor T-cell therapy can induce side-effects such as cytokine release syndrome and immune effector cell-associated neurotoxicity syndrome, which often require ICU admission. “We have learned how to manage these patients by introducing cytokine blockade or steroids or advanced treatments very, very, early when they are critically ill, instead of waiting like we were doing a few years ago,” he said.

The final element of the research agenda is to understand new advances in many different disease outcomes that have changed over time. “We know, for example, survival for almost all disease outcomes that have changed over time. “We have learned how to manage these patients by introducing cytokine blockade or steroids or advanced treatments very, very, early when they are critically ill, instead of waiting like we were doing a few years ago,” said Professor Azoulay, who noted this is based on the latest research.”

“So we need to understand the implications of that by having these interactions between ICU specialists, oncologists and hematologists. We, at the ICU, can learn from them. “From such discussions, it can be possible to work out new therapeutic targets or new toxicities, for example. “What are the new outcome variables? Because I would say many of the predictors of mortality that were valid 10 years ago are not relevant anymore,” said Professor Azoulay. “We really need to adapt that to the reality of what diseases are becoming, and that outcomes are constantly evolving. It’s really a dynamic approach for patients.”

On the other hand, oncologists and hematologists must understand that a delay in ICU admission, or being too invasive, also reduces the chances for survival in very frail patients. “This is something we need to avoid,” emphasized Professor Azoulay, adding that this is why communication is essential, especially ahead of certain treatments. “For patients who are not yet critically ill, we like to obtain any available information that could help us assist them as we decide the optimal timing for ICU admission,” he said.

Such communication should extend to the patient, and even to the family. “That way we are really able to provide care that is consistent with a patient’s preferences and values,” he said. “And in cancer – much more than in any other disease – this is something really paramount.”

In conclusion, Professor Azoulay encapsulated the need for better disease understanding, therapeutic targets, and the ways in which outcomes can be improved from both hematology-oncology and ICU perspectives. “This is an exchange that should be made on a daily basis between both specialisms. It is a really good way to improve outcomes.”

References


Intracranial Hypertension

Silver Hall  Tuesday  11:00

Time to individualize treatment after ICP monitoring?

One of the largest observational trials looking at intracranial pressure (ICP) monitoring and treatment will be presented today by Giuseppe Citerio of the Milano Bicocca University, School of Medicine and Surgery (Milan, Italy). He is also the director of the Neuroscience Department and of Anesthesia and Neurosurgical Intensive Care at at IRCCS Foundazione San Gerardo dei Tintori (Monza, Italy).1

SYNAPSE-ICU looked at current ICP monitoring practices in acute brain injury in more than 2,000 patients at 146 ICUs across 42 countries to assess variations in indications for ICP monitoring and interventions, and their association with long-term patient outcomes. Specifically, this prospective, observational cohort study looked at admissions to the ICU with either acute brain injury due to primary hemorrhagic stroke (including intracranial hemorrhage or subarachnoid hemorrhage) or traumatic brain injury. “We also tried to capture what the doctor did after recording the ICP, i.e., which treatment was connected to the monitoring,” explained Professor Citerio, who likens ICP monitoring to a speedometer in a car. In other words, a speedometer provides information about the speed of a car, but what happens next depends upon what a driver does after getting the information. “Similarly, if we measure ICP, it doesn’t necessarily mean anything changes for the patient. We need to measure and then do something about it,” he noted.

“In more severe patients, treatment guided by ICP yields a much better outcome compared to the patient whose ICP was not monitored.”

GIUSEPPE CITERIO
severe patients, treatment guided by ICP yields a much better outcome compared to the patient whose ICP was not monitored,” said Professor Citerio.

For less severe cases, however, the data was less revealing. Indeed, the relationship between ICP monitoring and the choice of treatment has not been explored deeply, said Professor Citerio. There has been one trial comparing two different strategies guided by ICP monitoring: first, guidelines-based management in which a protocol for monitoring intraparenchymal intracranial pressure was used (pressure-monitoring group); and second, a protocol in which treatment was based on imaging and clinical examination (imaging-clinical-examination group). The primary outcome was a composite of survival time, impaired consciousness, and functional status at 3- and 6 months, and neuropsychological status at 6 months. Neuropsychological status was assessed by an examiner who was unaware of protocol assignment.

Framing the results, Professor Citerio commented: “They were not able to find any difference in the composite outcome, and the mortality was 5%. The real point is that if you treat the patient guided by ICP, you can obtain a better long-term outcome in this population. If you don’t do it, the outcome could be poor.”

Professor Citerio underlined that more granular detail is required about exactly which populations might benefit from ICP monitoring. “We don’t have such a clear indication about which category or subset of patient is more suited to have an ICP device.” The fact is that further analysis of his multicenter study demonstrated that the centers do not all apply the same strategies globally around the world, so there appears to be a need for better guidance too.

The next step would be to understand how to tailor the different strategies and different therapies to patients, perhaps by using physio-pathological parameters to guide treatments, said Professor Citerio. Today, approaches in these populations usually entail giving the same therapies in the same order, depending on patient response at each stage. “So, if a patient doesn’t have an adequate response to the first therapy, we go to a higher-level therapy, and then a third-tier approach with the so-called extreme therapies, but this sequence applies to everyone,” he explained.

This is unlike other diseases, he underlined. For example, tumors are often investigated for biomarkers, certain receptors, or other kinds of information – even using artificial intelligence – which is then used to indicate a more individualized treatment from the beginning. “We are managing in a protocolized way, which is better than nothing, but we are using the same therapy for every patient,” he said.

To that end, Professor Citerio’s group has been looking at comparative effectiveness research of treatments in different populations to identify which strategies effect different responses. While the work is in its early stages, it is part of the journey in finding more strategies to individualize treatment. Establishing the potential of non-invasive ICP monitoring is important too, he added.

“We still have a lot of work to do in defining better indications and treatments for each patient,” Professor Citerio said in closing.

References

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GIUSEPPE CITERIO
Fasting not starvation could be key to better outcomes

Although underfeeding has been linked with poor outcomes in the ICU, early feeding strategies have not proven beneficial, even showing harm. Possible answers to this counterintuitive dilemma will be addressed today by Jan Gunst, intensivist at UZ Leuven, Belgium. "Traditionally, it has been assumed that early feeding of patients in the ICU would reduce muscle wasting and weakness," Professor Gunst told ISICEM News.

During his presentation, he will outline observational and randomized controlled trials that have investigated the effects of early feeding. "Although numerous observational studies have associated underfeeding with poorer outcomes, this does not necessarily imply causality, since less sick patients tolerate feeding better."

Professor Gunst highlighted two important, large, randomized controlled trials – EPaNIC and PEPaNIC, looking at adults and children respectively – which showed that early feeding was harmful.1,2 "Early parenteral nutrition supplementing insufficient enteral nutrition increased the duration of dependency on intensive care with more prolonged organ dysfunction, more infections, and even more muscle weakness," said Professor Gunst. Such findings were unexpected because it had always been assumed that early feeding would be beneficial.

Since then, trials have tried to establish whether harm by early parenteral nutrition is due to the parenteral feeding route, and/or the feeding composition and dose. Randomized controlled trials comparing enteral versus parenteral nutrition (with the same dose) found no harm by feeding parenterally, said Professor Gunst. Furthermore, contrary to the assumption that large feeding studies may have administered too low doses of amino acids, earlier this year, researchers found that administering higher protein doses to critically ill patients did not prevent muscle loss. As such, there is no harm by feeding parenterally, Professor Gunst suggested an evolution to intermittent feeding, while avoiding starvation.

In today’s session, Professor Gunst will look at potential explanations for this phenomenon. His research group has focused on three mechanisms that may be key to understanding what is happening: anabolic resistance, and suppression of autophagy and ketogenesis. "Early feeding, especially with higher doses of amino acids, significantly increased ureagenesis, and did not prevent muscle loss. As such, there is no suppression of muscle catabolism," he said.

Crucially, he suggests two mechanisms that could explain not only why early feeding doesn’t work, but why it is harmful. "Feeding actually suppresses autophagy and ketogenesis," said Professor Gunst, noting that the former is a housekeeping mechanism powerfully activated by fasting. "It is necessary in normal physiology, because it is able to remove cellular damage," he said. In other words, autophagy is a process that can remove damaged organelles, such as mitochondria, so that the cell can become healthy again. When there’s macromolecular damage, like large damage to organelles, autophagy is in fact the only process that can remove that damage. "Lack of any autophagic damage removal is incompatible with life," added Professor Gunst.

Interestingly, autophagy is not just activated by fasting, but by stress signals. Early feeding undermines that process. "Feeding is a powerful suppressor of autophagy, which is in fact a key repair process of the cell," continued Professor Gunst. "Patients who are really severely ill of course have cellular damage because they’re overwhelmed with variety of stressors including metabolic stress, inflammatory stress, toxins, and bacteria."

Apart from activating autophagy, studies have implicated a beneficial role of fasting-induced ketogenesis in critical illness. "Ketones are an energy substrate during fasting, and a stimulator of autophagy, but they have also been implicated in muscle regeneration pathways," said Professor Gunst. "Therefore, augmenting ketones may be beneficial."

If autophagy and ketogenesis are really in play, the next step would be to ask what could be done differently to escape the negative effects of feeding, while avoiding starvation. Professor Gunst suggests an evolution to intermittent feeding might make for valuable research. "The current practice of feeding is, in effect, providing nutrients as if it’s an intravenous fluid," he said. "This is not how we naturally eat – we eat intermittently, and during the night we fast for a prolonged time, activating autophagy."

Some trials have already investigated whether intermittent feeding is superior to continuous feeding, which mainly focused on gastrointestinal tolerance. One group looked at whether intermittent enteral feeding could reduce muscle wasting compared with continuous feeding in critically ill patients.4 Yet, overall, results have been mixed. Apart from a lack of power, this may be because the fasting intervals were relatively short, mostly four to six hours. "This may be too short to really activate a fasting response," said Professor Gunst, who was one of the principal investigators of a trial into the optimal timing to stimulate autophagy.5 More intermittent feeding studies are therefore indicated, he positioned.

Ketogenic diets or ketone supplements might also be beneficial, said Professor Gunst, as could autophagy inducers or drugs with autophagy-stimulating potential – at least in theory. However, autophagy activators may have a risk of overstimulation, which is also unwanted.

"The process needs to be fine-tuned," said Professor Gunst, whose research included studies on the metabolic response to early parenteral nutrition, including the role of autophagy and ketogenesis in patient and animal studies, and how long patients should fast before a fasting response develops.

So, if the potential harm of early feeding may be explained by the inability to suppress catabolism, and by suppression of autophagy and ketogenesis, there is plenty of research to be done going forward, concluded Professor Gunst. "Future research should focus on how to activate autophagy and ketogenesis by fasting-mimicking strategies in critical illness, to avoid the harm associated with continuous feeding. We need to exploit the benefits of fasting, while avoiding prolonged starvation."

"We need to exploit the benefits of fasting, while avoiding prolonged starvation." JAN GUNST

References

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Immune profiling tests positive in COVID-19 research

Immune profiling could hold the key in identifying the severity of COVID-19 infection, Nuala J. Meyer – an associate professor of medicine at the University of Pennsylvania Perelman School of Medicine, PA, USA – will state as she steps up to the podium this afternoon at ISICEM.

Dr. Meyer is a critical care physician scientist who performs translational work in sepsis and acute respiratory distress syndrome. "I direct a large prospective cohort of patients with sepsis who we phenotype for infection, organ injury, and a broad array of molecular readouts," Dr. Meyer told ISICEM News. "During the pandemic, we enrolled many subjects with sepsis due to COVID-19, and then performed high dimensional immune profiling of their blood."

Dr. Meyer will be reviewing work published by her own group in collaboration with several leading immunologists at University of Pennsylvania: E. John Wherry, chair of the Department of Systems Pharmacology and Translational Therapeutics; Michael Betts, a professor of microbiology; and Eline T. Luning Prak, a professor of pathology and laboratory medicine. The group demonstrated that among hospitalized patients with COVID-19, there is significant heterogeneity in the host immune response.1,2 "We identified three general patterns of immune response," said Dr. Meyer. The most critically ill demonstrated an ‘immunotype’ characterized by significant T-cell activation, a high proportion of plasmablasts, and altered follicular helper T cells. The second immunotype was perhaps more balanced, with more effector T cells, and proliferating memory B cells.

"Finally, a small portion of hospitalized patients demonstrated almost no T- or B-cell activation, despite manifesting pneumonia," she said. "We concluded that the heterogeneity may be important as we think about the best strategies to modify immune hyperactivation during severe COVID-19."

Dr. Meyer will also describe how the immunotype complements information from subjects’ plasma protein analysis. She will discuss the complexity of interactions between protein expression, changing cellular dynamics, and potential signals of autoimmunity.3,4

Work by the UK RECOVERY group and the global REMAP-CAP groups has also been informative, she said. "The speed at which RECOVERY, REMAP-CAP, ACCT/ACTIV, and other trials conducted highly impactful clinical trials during the pandemic is remarkable," said Dr. Meyer. "For the first time in a specific sepsis subtype, we have multiple immune pharmacotherapy options with a proven mortality benefit."

Those trials relied on easily obtained clinical information to determine eligibility, not complex immunotypes. "However, it may be that over the next few years we can demonstrate which are the key features that indicate a dysregulated response to COVID-19," she said. "And we could then test what is modified by treatment."

Cytometric immune profiling has not been used at the bedside for COVID-19, said Dr. Meyer. "Though we often do observe clinical variables like a high neutrophil-to-lymphocyte ratio in the blood as a prognostic indicator of severity," she added. It isn’t widely used because it isn’t yet known if a certain immunotype would behave differently to specific therapies, so it’s premature to use these markers to tailor response. "Our group is working with the I-SPY COVID-19 clinical trial to better understand the effect of specific treatments on these immune features," she commented.

"I think we need to better understand what a regulated and dysregulated response is in this virus, if we are to keep evolving to more safe and effective therapy targeted to patients who are most likely to benefit."  

NUALA MEYER
can at least retroactively test for heterogeneous responses and try to find the molecular traits that best indicate a favorable therapeutic response,” she said.

COVID-19 accelerated multiple forms of research and highlighted immune heterogeneity, even among patients affected by the same pathogen. “It is a huge credit to the intensive care community that not only did we care for so many critically ill patients, but we conducted impactful clinical and translational research during the most chaotic time. This research has now given the world treatments that improve COVID-19 survival, and have deepened our understanding of why patients behave differently,” Dr. Meyer concluded.

“It is a huge credit to the intensive care community that not only did we care for so many critically ill patients, but we conducted impactful clinical and translational research during the most chaotic time.”

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References
Are our syndromes still useful? Copper Hall Wednesday 09:45

ARDS and sepsis consensus panels could learn from psychology

It is time to abandon consensus definitions of acute respiratory distress syndrome (ARDS) and sepsis? Gordon Rubenfeld, a critical care physician and a professor at the University of Toronto, Canada, will consider this provocative question in tomorrow morning’s session ‘Are our syndromes still useful?’.

Yet, the question is less provocative than at first it might seem, not least because Professor Rubenfeld believes it is still necessary to define these syndromes. “If you’re doing research in England on ARDS, and I’m doing research in Canada on ARDS, we should have the idea that you and I are both enrolling and studying the same patients for both of these entities,” said Professor Rubenfeld. “We have to agree that we’re studying the same people, so we need the rules.”

Professor Rubenfeld won’t be challenging the very concept of ARDS and sepsis as umbrella terms – that is a separate, spirited, and ongoing discussion that will be picked up at ISICEM this year – nor will he question various groups that are suggesting changes to these definitions. For example, new approaches to defining ARDS as a result of the pandemic, will be addressed in tomorrow’s session by V. Marco Ranieri of Policlinico di Sant’Orsola, Bologna, Italy. “If there’s the framework for proposing the scientific studies, then yes of course these should allow the definition to be tweaked to accommodate some of the things that have happened during COVID-19,” he said.

Rather, Professor Rubenfeld is questioning the very process by which these definitions are agreed. “The way consensus has been done, which is what we’ve been doing for the last 30 years, is basically via people negotiating the definition, rather than thinking about the scientific process for doing it,” he explained.

Today, the process can be positively unscientific, he argues: “The definition process can be, in a way, a political process.” Traditionally, professional societies have been involved in supporting, discussing, and endorsing a given definition, the next step then being the selection of individual people for the consensus. “In the past, this has been problematic because it’s basically a bunch of friends inviting other friends to engage in this process,” said Professor Rubenfeld.

Even without a ‘who you know’-style selection process to the consensus panels, Professor Rubenfeld questions what happens when any group of people sit down and make decisions. “How do they decide what are going to be the cut-offs for different components?” he questioned. “How do they decide whether to include this test and not that test? How are they looking at the literature and making these decisions? They don’t really sit down and say, ‘here are the rules we’re working by, and here’s how we’re going to make these decisions.’”

That’s problematic, said Professor Rubenfeld, who has written on this issue with colleagues Professor Ranieri and Arthur Slutsky (University of Toronto). “Basically, it really is people just sitting down and talking at each other. Whoever wins is not down to scientific, legal, or other rules that apply to this process. It is randomness of consensus, and that doesn’t feel very scientific to us.”

Therefore, what is required is a set of rules, or a scientifically based framework, to which the consensus panel adheres, said Professor Rubenfeld. This has been well established in other fields. “Mostly this has all been developed and worked through in psychiatry because they deal with so many syndromes,” he explained.

“What we try to point out is that there are syndrome-defining bodies in other fields that actually work by scientific rules. In critical care we have done a remarkably bad job of proposing and following a scientific framework for consensus definitions.

“We are saying that if we’re going to work by developing consensus definitions for syndromes, we should look at fields that follow rules, and our consensus bodies should sit down, propose, and follow the scientific process for syndrome definition.”

With all this in mind, Professor Rubenfeld struggles to see how there might be pushback to his argument. “To anybody who comes from either a psychological or sociological background – fields where syndromes are thought about carefully – this discussion is self-evident. I think people in those other fields would ask, ‘how else are you going to do it?!’”

Rethinking ARDS after COVID-19

The marked increase in acute respiratory distress syndrome (ARDS) during the COVID-19 pandemic means new approaches to defining ARDS are crucial, according to V. Marco Ranieri (Department of Emergency and Intensive Care Medicine Policlinico di Sant’Orsola, and Alma Mater Studiorum University of Bologna, Italy), who will be relaying his latest work on the topic tomorrow morning.

The Berlin definition of ARDS was originally developed by psychologists and social scientists, said Professor Ranieri. “There is nothing inherently wrong in the Berlin definition, but all definitions need to be re-evaluated over time due to an evolution of knowledge in pathophysiology, new treatments, and other factors,” he said.

At the moment, relatively new treatment modalities do not fit neatly with the definition. That is because the current definition of ARDS includes only patients who are ventilated either invasively or non-invasively. Importantly, said Professor Ranieri, it excludes patients on high-flow nasal oxygen (HFNO). “With COVID-19
patients receiving HFNO. With this in mind, there has been a paucity of empirical data to broadly be evaluated. Therefore, to date, however, there has been a paucity of empirical data to fully support such proposals, for example patients receiving HFNO. With this in mind, new studies looking at the case for additional criteria will be discussed within the session. One study compares the proportion of patients fulfilling ARDS criteria during HFNO and soon after intubation, and 28-day mortality between patients treated exclusively with HFNO vs. patients transitioned from HFNO to invasive mechanical ventilation (IMV).2

A Swedish study3 assessed the ratio of partial pressure of arterial oxygen to inspired oxygen fraction (PaO2/FIO2) during IMV – a criteria that might be used to grade the severity of respiratory failure in ARDS. During the COVID pandemic, this ratio was increasingly used in noninvasive respiratory support such as high-flow nasal cannula (HFNC) and non-invasive ventilation (NIV). A single-center prospective observational study of patients admitted to ICU at Uppsala University Hospital looked at whether this ratio changed when switching between MV, NIV, and HFNC in critically ill patients with COVID-19. In other words, said Professor Ranieri, an ongoing upgrade of the current definition of ARDS is taking into consideration four distinct elements: that ARDS can be diagnosed also during HFNO; the lack of any need for minimal PEEP; infiltrates diagnosed using lung echographs; an SaO2/FIO2 ≤ 315. “Recent data from the studies I’ll discuss suggest these criteria may select a very non-homogeneous patient population characterized by very different degrees of severity and mortality,” he said.

What’s important, too, is that any new definition should be very focused. “We believe a definition should be based on a formal methodology for developing the proposed definition, with explicit elucidation of rationale, framework, and methods of evaluating,” he added. “The validation process should begin with the hypothesis that patients with ARDS should have ‘X’; and patients without ARDS should not have ‘X’; and the panel should define the variables that would be persuasive in a validation study.”

Professor Ranieri added that it is important to recognize that there are different kinds of ARDS on the basis of clinical and/or physiological characteristics, such as responsiveness to PEEP, and biological characteristics. “Hierarchical approaches could be used starting with the acute hypoxemic respiratory failure phenotype, on the basis of a simple cluster of feasible and reliable observable characteristics, and then carve out different endotypes from this phenotype,” he added.

Very recently, Matthay et al.4 have proposed an expanded definition of ARDS that includes not only HFNO, but lung ultrasound, and the ratio of oxygen saturation as measured by pulse oximetry to FIO2. An international consensus conference group will soon make formal recommendations for expanding the definition of ARDS.

References

“ARDS is a disease, it’s a syndrome. So, it is seen as an intellectual creation rather than a real clinical identity.”

V. MARCO RANIERI

“Proposing criteria for defining ARDS should be broadened, therefore. To date, however, there has been a paucity of empirical data to fully support such proposals, for example patients receiving HFNO. With this in mind, we learned that some of these patients may be classified as having ARDS even during spontaneous modes of respiratory support such as HFNO,” he said.

The current definition also makes it difficult diagnosis to ARDS in resource-limited settings. There is a requirement for chest X-ray and arterial blood gases in any ARDS diagnosis, but lung echographs and oxygen saturation are more likely to be used, especially in low-resource areas. It is also important to note that while the use of lung ultrasound rises, chest X-ray use has dropped. Similarly, arterial blood gas analysis has dropped with increasing use of arterial O2 saturation, and the role of standardized ventilator settings should also be evaluated.

In actuality, ARDS discussions center around two very distinct issues with the definition, Professor Ranieri underlined. “ARDS is not a disease, it’s a syndrome,” he stressed. “So, it is seen as an intellectual creation rather than a real clinical identity.”

Secondly, the definition as it stands does not actually help the clinicians at the bedside as much as it could, said Professor Ranieri. Yet clinical medicine is full of examples of syndromes that have a solid and empirically validated definition process. “This means a clear clinical entity can be rapidly identified and efficiently treated if there is a valid definition,” he explained.

Proposing criteria for defining ARDS should be broadened, therefore. To date, however, there has been a paucity of empirical data to fully support such proposals, for example patients receiving HFNO. With this in mind, new studies looking at the case for additional criteria will be discussed within the session. One study compares the proportion of patients fulfilling ARDS criteria during HFNO and soon after intubation, and 28-day mortality between patients treated exclusively with HFNO vs. patients transitioned from HFNO to invasive mechanical ventilation (IMV).2

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In other words, said Professor Ranieri, an ongoing upgrade of the current definition of
MANAGING SEPTIC PATIENTS FROM ED ADMISSION TO ICU DISCHARGE

IDENTIFYING AND TREATING THE SEPSIS PATIENT IN ED
CHAIR: Elisabeth De Waele
Brussels, Belgium

Early Detection of the Sepsis Patient in the ED: Why and How?
Djillali Annane
Garches, France

Management of the Sepsis Patient in the ED: Right Intervention, Right Time.
Olfa Hamzaoui
Paris, France

Tuesday, March 21st
12:30-13:30 CET | Hall 100

HANDLING MULTI-ORGAN FAILURE IN THE CRITICALLY ILL
CHAIR: Elisabeth De Waele
Brussels, Belgium

John Prowle
London, UK

Should Extracorporeal Blood Purification be Considered?
Rinaldo Bellomo
Melbourne, Australia

Wednesday, March 22nd
12:30-13:30 CET | ARC room

CONTROVERSIES IN NUTRITION SUPPORT & IV FLUIDS IN THE ICU
CHAIR: Elisabeth De Waele
Brussels, Belgium

Nutrition Support Optimization in the ICU: The Role of Parenteral Nutrition and Indirect Calorimetry.
Pierre Singer
Tel Aviv, Israel

Fluid Choice: What is the (New) Evidence?
Manu Malbrain
Lublin, Poland & Geel, Belgium

Thursday, March 23rd
12:30-13:30 CET | Hall 100

PRISMAX DEMO
SEPTIC SHOCK RESUSCITATION
Visit us at Demo Box 2 where Xavier Monnet of France will focus on septic shock resuscitation for AKI patients.
Xavier Monnet
Paris, France

Thursday, March 23rd
12:00-12:30 CET | Demo Box 2

STARLING DEMO
PASSIVE LEG RAISE ANALYSIS
Each day, we’ll be examining how to identify and predict fluid responsiveness in patients.

Tuesday, March 21st
12:30 CET | 18:00 CET | 19:00 CET

Q-NRG+ DEMO
PERSONALIZED INDIRECT CALORIMETRY MEASUREMENT
Experience how the Q-NRG+ Metabolic Monitor works in real-time.

Thursday, March 23rd
12:30-13:30 CET | Hall 100

Visit the Baxter booth, 2.29-2.32 for more information

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