



42nd Critical Care Congress Review

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CE/CME Enduring Material
Release Date: June 2013
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Learning Objectives

At the conclusion of this activity participants should be able to:

- Discuss approaches to screen for delirium and consider both pharmacologic and nonpharmacologic approaches to prevention and management
- Minimize the development of malnutrition through goal-directed therapy combining the use of enteral and parenteral nutrition
- Recognize new therapies for sepsis in the intensive care unit and the limitations of current research for better translation of evidence to the bedside

Type of Activity

This activity was designed as an evidenced based forum to review expert opinions of various topics in critical care. This activity will focus on increasing knowledge and its application to practice.

Competencies

SCCM supports recommendations that will promote life-long learning through continuing education. SCCM promotes activities that encourage the highest quality in education that will enhance knowledge, competence or performance in critical care practice. This activity will meet the following:

- Patient- and Family-Centered Care
- Practice Applications
- Quality Improvement
- Multiprofessionalism

Target Audience

This continuing medical education offering is intended to meet the needs of all physicians, nurses, pharmacists, respiratory therapists and other providers who care for critically ill patients.

Physicians

Accreditation Statement

The Society of Critical Care Medicine (SCCM) is accredited by the Accreditation Council for Continuing Medical Education (ACCMCE) to provide continuing medical education for physicians.

Designation Statement

SCCM designates this home study educational activity for a maximum of 1 AMA PRA Category 1 credits™. Each physician should claim only those hours of credit that he/she actually spent in the educational activity.

Nurses

SCCM is approved by the California Board of Registered Nursing, Provider No. 8181 and approves this panel for 1 contact hour.

Pharmacists



The Society is accredited by the Accreditation Council for Pharmacy Education (ACPE) as a provider of continuing pharmaceutical education. This monograph will provide 1 continuing education hour. (0236-0000-13-469-H01-P) SCCM reports to a continuing pharmacy education (CPE) tracking service, CPE Monitor that will authenticate and store data for completed CPE units received by pharmacists and pharmacy technicians. The tracking system will make CPE data for each participant available to the state boards of pharmacy where the participant is licensed or registered. After CPE units are processed by ACPE and NABP, pharmacists and pharmacy technicians will be able to login to a comprehensive electronic profile to access information about their completed CPE.

Obtaining Credit

To claim credit, a learner must purchase the free course via the SCCM store at www.sccm.org/CongressReview13. There is no cost for this transaction.

Upon completion of this free purchase and the complete review of the material, please login to www.mysccm.org with your SCCM Customer ID and password. In the My Learning section of MySCCM.org, links will appear for this activity's post-test and evaluation under Congress Review. After earning a passing score of 70% or higher on the posttest, you will be able to claim credit for this activity.

Disclosures

The content of this activity has been peer reviewed and has been approved for compliance. The activity planners, SCCM staff member Adair Andrews and other employees of SCCM, have no financial relationships to disclose. The faculty and contributors have indicated the following financial relationships, which have been resolved through an established conflict of interest resolution process and have stated that these reported relationships will not have any impact on their ability to provide unbiased content.

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Post-Intensive Care Syndrome: Improving the Future of ICU Patients

As more patients survive their intensive care unit (ICU) stays, strategies are needed to prevent post-intensive care syndrome (PICS) – a recently termed entity that encompasses new or worsening impairments in physical, cognitive or mental status arising after critical illness and persisting beyond acute care hospitalization. Every intensivist today should become familiar with the work of the Society of Critical Care Medicine’s (SCCM) task force on PICS, and should start weighing what is most important to patients and families after ICU discharge.

What Can We Do Better to Improve Patient Outcomes?

Describing his experience with an ICU patient who survived 3 days of acute illness that included sepsis and delirium, Theodore J. Iwashyna, MD, PhD, recounted a conversation with the patient’s husband. While thanking the physician for helping his wife, the husband said she was “not quite right” and asked Iwashyna what her life would be like once she left the ICU.

“I was unable to give him a sufficiently concrete answer,” recalls Iwashyna. “That doesn’t undercut the fact that this patient was a ‘success’ for us – she came to the ICU with an acute problem, we got her through that, and she did well,” he said. “Clearly, this is a desirable outcome, but we also need to consider what life is like for our patients after they survive the ICU.”

Drawing from the oncology literature, Iwashyna noted that survival is a useful concept to apply to patients discharged from the ICU. He defines survivorship of critical illness as “the complex burdens and legacies of surviving a potentially fatal disease, often after harsh and painful treatment” (Iwashyna TJ. *Ann Intern Med.* 2010;153:204-205).

“Survivorship of critical illness is a fundamental problem, not just a ‘niche’ experience,” stated Iwashyna. “We need to be thinking about the majority of our patients who are going to survive.” Evidence shows that mechanical ventilation and severe sepsis are common, and ICU survival is increasing. For example, most of the estimated 790,000 patients survived their hospitalization for mechanical ventilation in 2005 (Wunsch H, et al. *Crit Care Med.* 2010;38:1947-1953). Hospitalization for severe sepsis has also risen, more than doubling from 1996 to 2008 among older Americans (Iwashyna TJ, et al. *J Am Geriatr Soc.* 2012; 60:1070-1077). By 2008, there were over 1 million hospitalizations per year with severe sepsis in Medicare alone. During that same time frame, sepsis survivorship also increased, with the annual number of new three-year survivors of severe sepsis increasing 119%, increasing to the same scale as such recognized public health problems as breast cancer survivorship (Figure 1).

“Clinicians need to address survivorship from critical illness, especially in light of the substantial impairments that are at least partially attributable to the critical illness,” Iwashyna said. He explained that other fields, such as oncology, have strong organizational infrastructure to support patients and families through the challenges of survivorship. The National Cancer Institute has a formal Office of Cancer Survivorship, as does the Centers for Disease Control and Prevention’s Division of Cancer Prevention and Control. The Institute of Medicine has conducted an important study of cancer survivors. “We can learn from the way these organizations have built structures to improve care for survivors,” he said.

Attention to ICU survival has begun to take place, starting with SCCM’s 2010 conference on improving long-term outcomes after critical illness for patients and families (Needham DM, et al. *Crit Care Med.* 2012;40:502-509). An important outgrowth of this conference was the development of the PICS model, which describes the potential problems that patients and families experience after ICU discharge. “According to the PICS model, we need to think about at least three classes of sequelae among patients – mental health problems, cognitive

Presented by Theodore J. Iwashyna, MD, PhD, an Assistant Professor of Internal Medicine at the University of Michigan, and a Research Scientist at the Ann Arbor VA Center for Clinical Management Research in Ann Arbor, Michigan, USA. He is also a member of SCCM’s Post-Intensive Care Syndrome Task Force.



impairments and physical dysfunction – as well as mental health issues among family members,” explained Iwashyna. The literature highlights these common consequences of surviving critical illness.

Long-term functional disability was reported in a seminal study of 109 survivors (mean age, 45 years) of acute respiratory distress syndrome (ARDS), who had a median 25-day ICU stay (Herridge MS, et al. *N Engl J Med.* 2011;364:1293-1304). Five years after discharge, the median 6-minute walk distance was 436 m (76% of predicted distance), and patients had persistently low scores on the physical component of the Medical Outcomes Study 36-Item Short-Form Health Survey. Other physical and psychological problems developed or persisted in patients and family caregivers for up to five years. Thirty-three percent of patients had not returned to work even five years later.

Depression is also common in ICU survivors. A systematic review of 14 studies involving 1,213 ICU survivors found that the median point prevalence of clinically significant depressive symptoms was 28%, and post-ICU depressive symptoms were associated with substantially lower health-related quality of life scores (Davydow D, et al. *Intensive Care Med.* 2009;35:796-809).

In addition, research points to cognitive impairment following ICU stays. Investigators of a study of 66 ARDS survivors found that those patients who underwent brain imaging had cognitive impairments, significant brain atrophy and ventricular enlargement, and 53% had atrophy or lesions detected by radiologic studies (Hopkins RO, et al. *Brain Inj.* 2006;20:263-271).

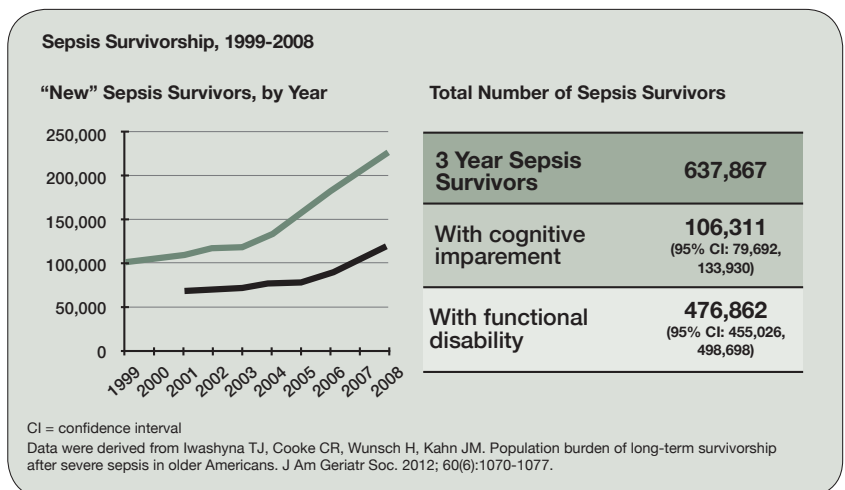


Figure 1.

Iwashyna reported on his own investigation using pre- and post-ICU cognitive screening in patients who had sepsis (Iwashyna TJ, et al. *JAMA*. 2010;304:1787-1794). The results revealed that the prevalence of moderate to severe cognitive impairment increased from 6.1% before severe sepsis to 16.7% after the first survey after severe sepsis, and the impairment persisted for at least three to five years after sepsis. “This is a devastating level of neurologic injury, leading us to reframe the way we think about intensive care,” said Iwashyna. “Critical illness is a life-changing event. Our study showed that 59% of sepsis survivors had worse disability or cognitive impairment after the illness.”

To improve this situation, a portfolio of interventions is needed. Iwashyna described such a portfolio that involves minimizing the extent of critical illness, protecting survivors from new problems, strengthening

those who have been weakened by critical illness, providing assistance for ongoing problems, and building on the resiliency and strengths of survivors.

“Critical care medicine needs to do more to address how to prevent and remediate PICS,” said Iwashyna. “We recognize that novel solutions are necessary to improve the lives of survivors. We have an ambitious research agenda, which requires an ambitious organizational infrastructure that we’re in the process of building. I hope intensivists will think of this as an opportunity to do more. I’m not presenting you with finished science to implement; I’m presenting to you an invitation to join us in inventing new ways to make our patients’ and their families’ lives better.”

Improving the Family ICU Experience



Presented by Judy E. Davidson, DNP, RN, FCCM, Director of Research Integration and Management at the Scripps Clinical Research Center in La Jolla, California, USA. She is also a co-chair of the SCCM Post-Intensive Care Syndrome Task Force.

The model depicting PICS (Figure 2) clearly shows that PICS affects both the patient and the patient’s family. To illustrate this point, Judy E. Davidson, DNP, RN, FCCM, described the ordeal of a young woman who survived 6 months in the ICU and recalled one night in particular: her mother, who visited her daily, was asked by the night shift to go home. The patient was frightened to be alone, unable to move or care for herself. The mother feared her daughter would die in the night alone. “Five years later, both of these women are tortured by that night,” said Davidson. “They still see a psychiatrist to help them through the trauma. Both tell me it wasn’t the near-death status that they have nightmares about,” Davidson continued. “It wasn’t the traumatic injury that gave them posttraumatic stress, but rather, the ICU itself.”

Davidson’s interest in family-centered care goes back to her work

on the 2007 guidelines on family-centered care developed by SCCM’s American College of Critical Care Medicine (ACCM). “At that time there were 66 articles relating to family coping,” reported Davidson. “Since then, at least 50 additional studies have been published that support these guidelines. We now know that the problem of family response to critical illness – which includes anxiety, depression and posttraumatic stress – is recognized in studies worldwide.”

Evidence shows that anxiety decreases but does not disappear after ICU discharge. At least one third of family members have symptoms of posttraumatic stress disorder (PTSD) at 90 days (Azoulay E, et al. *Crit Care Med*. 2005;171:987-994; Jones C, et al. *Intensive Care Med*. 2004; 30:456-460; Anderson WG, et al. *J Gen Intern Med*. 2008; 23:1871-1876; Gries CJ, et al. *Chest*. 2010; 137:280-287; Lautrette A, et al. *N Engl J Med*. 2007; 356:469-478). One third of bereaved family members develop at least one psychological illness that is present for at least 90 days following death; this is more likely to occur in cases where the physician was not perceived to be comforting (Siegel MD. *Clin Chest Med*. 2009; 30:181-194). “I’m sure this finding does not just apply to physicians,” added Davidson. “If nurses and other staff are not perceived to be comforting, this can result in long-term mental health problems for the family later on. Communication with the family needs to be early, often, understandable, complete, and especially caring to minimize the common stress disorders following exposure to critical illness.”

Family participation can reduce length of stay. Research in preterm infants revealed positive outcomes when families were taught to participate in care at the bedside (Melnik BM, et al. *Res Nurs Health*. 2001; 24:373-389; Melnyk BM, et al. *Nurs Res*. 2008; 57:383-394; Melnyk BM, et al. *Pediatrics*. 2006; 118:e1414-e1427). “Family participation also improves the long-term mental health of the family,” said Davidson. Several other in-hospital family interventions have also been shown to have a favorable effect, including use of nurse- or family-completed diaries, structured communication in end-of-life conferences, structured decision-making, and provision of multimodal information (e.g., audiotape, written activity book, personal instruction) to families.

Davidson also described the Facilitated Sensemaking model, a program of family-centered care she developed to help nurses keep families engaged in the care of critically ill adults. “I theorize that this method of providing families with a structured approach to participating in care at the bedside, coupled with providing adequate information is brain-protective for families because it helps block the limbic system response to crisis,” she explained. “I did not test it on long-term outcomes, and I invite researchers to do that.” Davidson has found that families

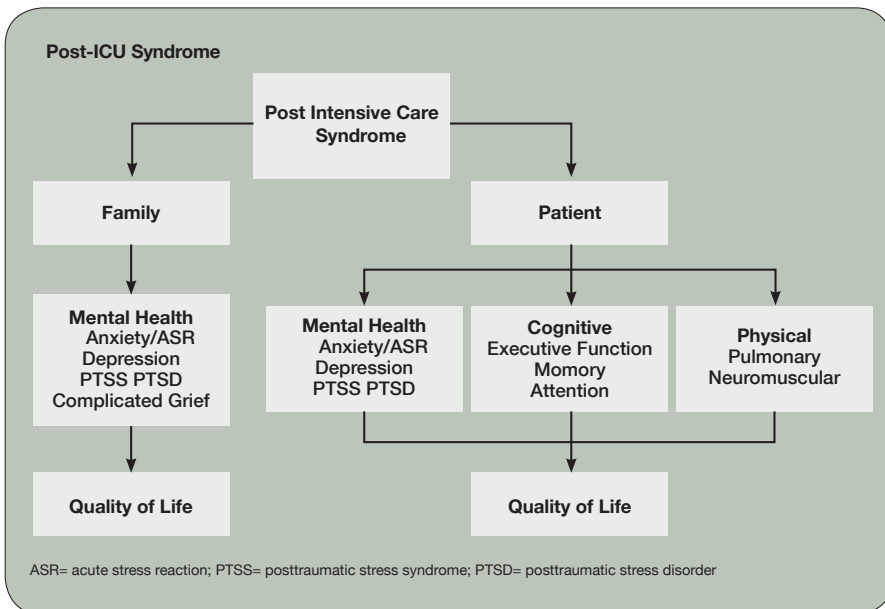


Figure 2.

embrace this program, which gives them purpose in crisis. “By using nail files, lip balm, hand lotion, and passive range of motion exercises, family members can keep their prefrontal cortex occupied with known activities and minimize the fight versus flight response during stress. I call it facilitated sensemaking because it teaches the family to make sense of the situation and then use meaningful activities to make sense out of their new role as caregiver.”

A comprehensive strategy to minimize the incidence of PICS is the implementation of **ABCDE** interventions combined with **FGH** strategies (Table 1). The **ABCDE** bundle relates to the 2013 SCCM/ACCM guidelines on pain, agitation and delirium (PAD) for adults in

Table 1.

Strategies to Minimize PICS

- Awakening
- Breathing
- Coordination
- Delirium assessment/monitoring
- Early mobility
- Family inclusion, follow-up referrals
- Good hand-off communication, good family communication
- Hand family written information

the ICU (Barr J, et al. *Crit Care Med.* 2013;41:263-306). “The PICS task force proposes adding **FGH** to these interventions to better meet the needs of the family as well as the patient,” said Davidson.

Davidson also proposed intersecting the principles of family-centered care with the 2013 PAD guidelines. “In family-centered care, we promote open, flexible visiting so that families can be present and participate in care,” she said. “Family-centered care also calls for family presence during bedside rounds and family participation in shared decision making. The literature tells us that family members need proximity and information. They have a need to safeguard the patient, and this can be protective for them in reducing stress disorders and increasing satisfaction.”

How does family-centered care relate to the new PAD guidelines? Some of the goals of the guidelines are to improve pain management, increase early mobility and keep patients lightly sedated. Davidson notes: “If you allow flexible, open visiting, family members can keep the lightly sedated patient occupied. They can also help with passive range of motion exercise and early mobility, and can help in reporting pain.”

The family’s presence on rounds also enables family members to convey information on the patient’s baseline functional, physical and psychological status. “This helps move the treatment plan forward,” noted Davidson. “As for the value of shared decision making, it allows for clarifying the role of the family, which might include coaching the patient during early mobility, providing bedside cognitive exercises and reporting incidents of pain, agitation and/or delirium.”

The SCCM PICS Initiative

“Because decreased mortality among critically ill patients has resulted in increased survival and post-ICU morbidities, our success can no longer be measured by mortality,” stated Ramona O. Hopkins, PhD. “Patients and families measure success by the return to pre-ICU functional abilities, and it’s important that we do the same.”

The recent focus on PICS reflects an important recognition of ICU survivors. To address issues relating to this survival, SCCM assembled the Long-Term Consequences of Critical Illness Task Force, which convened its first conference in 2010 for researchers and stakeholders in critical care medicine and long-term care. “We assembled representatives from 14 organizations to conduct a state-of-the-science review of patient and family outcomes, and then brainstormed for next steps,” said Hopkins, who serves as co-chair on the task force.

The conference set out to understand the long-term outcomes of ICU patients and their families as well as to identify gaps in research, identify and engage stakeholders in sharing perspectives, identify strategies and funding sources to better meet patient and family needs, and explore how stakeholders can contribute to improving patient and family outcomes after hospital discharge. In addition to coining the term PICS, conference attendees are developing annotated bibliographies and fact sheets, and have created subgroups on education and awareness, research, and barriers. Ten peer review journal articles that discuss PICS have been published since the 2010 conference.

“The task force reconvened in 2012, garnering representation from 34 organizations as well as ICU survivors and families,” said Hopkins. “It was important to have ICU survivors at the meeting.

Presented by Ramona O. Hopkins, PhD, is a Clinical Research Investigator at Intermountain Medical Center in Murray, Utah, USA. She is also a co-chair of SCCM’s Post-Intensive Care Syndrome Task Force.



They were involved in all three task groups, and they provided valuable information that helped direct where the PICS task force is headed.”

During this second conference, a plan was developed to increase education on PICS for clinicians, patients and families through enhanced offerings, videos and a brochure. The conference also solidified plans to promote collaboration of an integrated team of multidisciplinary experts to work on improving patient-centered outcomes following critical illness. “We are also working on developing outcome measurements and reporting systems that will lessen variability in the delivery of care, thereby reducing errors,” said Hopkins.

Providers can help prevent long-term impairments after discharge by minimizing or preventing a patient’s risk factors in the ICU. Other preventive strategies may include reducing the use of sedatives and allowing patients to be more alert; beginning active or passive exercise as soon as possible after ICU admission; working with physical and occupational therapists to help patients achieve early mobility and therapy; and helping families keep an ICU diary for the patient. “Working with everyone involved in the patient’s care is crucial,” said Hopkins. “It is impossible to provide the kind of care and resources our patients need if we are not involving other providers within the continuum of care.”

One in-home intervention reported in the literature is a multicomponent tele-rehabilitation program using social workers and psychology technicians to improve outcomes for ICU survivors (Jackson JC, et al. *Crit Care Med.* 2012;40:1088-1097). The program, which combines cognitive, physical and functional training, was found to improve cognitive performance and functional outcomes in just three months. Further investigations are needed to build on this pilot feasibility study and confirm these results.

“This type of intervention shows us that we need to be thinking outside the box,” urged Hopkins. “What can we do that differs from what we’ve been doing, both within and outside the ICU? And how do we partner with those individuals who are not accustomed to thinking about our patients as prime candidates for rehabilitation?” Hopkins delineated a number of research gaps that have been identified by the task force, including examination of the mechanisms of PICS, risk factors, interventions, outcome measures, and sleep issues.

The task force has also proposed developing within SCCM the capacity to actively support and help organize peer-led support mechanisms at local institutions and on the Internet. Such mechanisms would provide a key service to local survivors, develop a nationwide network for survivors to connect and learn from each other, and enable ICU survivors to become partners in improving critical care. Hopkins

concluded her talk with this reminder: “We need to keep in mind that survival of the ICU is not the endpoint for our patients. Returning to the highest quality of life is the endpoint they want.”

Continuing Education Self-Assessment

Post-Intensive Care Syndrome (PICS): Improving the Future of ICU Patients

3. Which of the following was a result of a follow-up study of 109 ARDS survivors at 5 years after discharge?
 - a. Normal scores in physical function were achieved by 77% of survivors.
 - b. About one third of survivors had not returned to work.
 - c. The median 6-minute walk distance was 85% of the predicted distance.
 - d. Cognition was severely impaired in 66% of survivors.

4. Family participation in bedside care has been shown to:
 - a. Reduce length of stay
 - b. Increase use of pain medication
 - c. Reduce risk of mortality
 - d. Increase risk of anxiety