

ICU Physician Staffing (IPS)

Key Facts about Intensive Care Units

More than two million patients are admitted to urban intensive care units (ICUs) each year in the US.¹ An ICU is a consolidated area of a hospital where patients with acutely life-threatening illnesses or injuries receive around the clock specialized medical and nursing care, such as mechanical ventilation and invasive cardiac monitoring. Mortality rates in patients admitted to the ICU average 10-20% in most hospitals.² Overall, approximately 200,000 patients die in U.S. ICUs each year.¹ Given the high stakes involved, quality of care in ICUs is particularly important. Unfortunately, evidence suggests that quality varies widely across hospitals.³

ICU Physician Staffing (IPS)

A growing body of scientific evidence suggests that quality of care in hospital ICUs is strongly influenced by (i) whether “intensivists” are providing care and (ii) the staff organization in the ICU. Intensivists are familiar with the complications that can occur in the ICU and, thus, are better equipped to minimize errors. Leapfrog defines intensivists as either:

1. Board-certified physicians who are additionally certified in the subspecialty of critical care medicine, or
2. Physicians board-certified in emergency medicine who have completed a critical care fellowship in an AGGME accredited training program, or
3. Physicians board-certified in Medicine, Anesthesiology, Pediatrics or Surgery who completed training prior to the availability of subspecialty certification in critical care and who have provided at least six weeks of full-time ICU care annually since 1987.

Neurointensivists are an approved alternative to intensivists in providing care in neuro ICUs. Neurointensivists are classified as neurologists and neurosurgeons who are board-certified in their primary specialty and who have completed an United Council for Neurologic Subspecialties (UCNS) certified fellowship training program in neurocritical care, or a physician who is board certified in neurocritical care. Existing physicians must obtain certification using the grandfathering process established by UNCS to be considered a neurointensivist.

Staff organization in the ICU is also important. In general, hospitals have either “open” or “closed” ICUs. In an open system, patients receive care primarily from physicians with responsibilities outside the ICU. Critical care specialists are often available to provide expertise on a consultation basis. In a closed system, patients are cared for exclusively by critical-care specialists or teams that are closer on hand for both fine-tuning routine care and dealing with emergencies.⁴

IPS and Quality

Mortality rates are significantly lower in hospitals with closed ICUs managed exclusively by board certified intensivists. Dr. Peter Pronovost, an intensivist at the Johns Hopkins Medical Institutions, conducted a systematic review of the existing literature regarding ICU physician staffing and quality.⁵ He found that high intensity staffing (ICUs where intensivists manage or co-manage all patients) versus low intensity staffing (where intensivists manage or co-manage some or none of the patients) is associated with a 30% reduction in hospital mortality and a 40% reduction in ICU mortality.

This data suggests that over 54,133 deaths that occur in the ICU could be avoided if The Leapfrog Group IPS Safety Standard were implemented in all urban hospitals with ICUs across the US.¹ Studies have also demonstrated a reduced hospital and ICU length of stay with high intensity versus low intensity staffing.^{5,6}

The Leapfrog IPS Safety Standard

National experts in quality improvement advised The Leapfrog Group to focus on IPS as one of its Safety Standards because of the potential benefits for patients. The IPS Standard was established after review of published research in the field and consultation with leading experts in intensive care. This standard has since been reviewed and revised, incorporating even more current data and input from the hospital and physician communities.⁷

ICU Physician Staffing

Hospitals fulfilling the IPS Standard will operate adult or pediatric general medical and/or surgical ICUs and neuro ICUs that are managed or co-managed by intensivists who:

1. Are present during daytime hours and provide clinical care exclusively in the ICU and,
2. When not present on site or via telemedicine, returns pages at least 95% of the time, (i) within five minutes and (ii) arranges for a FCCS-certified physician or physician extender to reach ICU patients within five minutes. These requirements are rooted in evidence. Dr. Pronovost interviewed the lead authors from the studies in his systematic review that demonstrated reduced mortality with IPS.⁵ During the high intensity staffing phase of the interventions studied, all interventions met the pager response and most met the hour requirements for an intensivist presence.⁶

The Leapfrog Group, working in partnership with Thomson Healthcare, invites hospitals with adult or pediatric ICUs to respond to the Leapfrog Group voluntary online survey (<https://leapfrog.medstat.com>) and share their progress toward meeting Leapfrog's standard for this practice. Hospitals providing care for Leapfrog purchasers and their enrollees will be recognized and rewarded for meeting the IPS Standard. Hospitals that operate adult or pediatric ICUs where intensivists manage all cases when present and lead daily, multi-disciplinary team rounds or make admission and discharge decisions on weekdays will earn partial recognition. The IPS Standard does not apply to hospitals that do not operate adult or pediatric ICUs.

Challenges to IPS Implementation

The 2007 Leapfrog survey reflects that 30% of responding hospitals fully meet Leapfrog's IPS Standard. But, in some hospitals without IPS, non-intensivist physicians may be simply unwilling to relinquish care of their patients in the ICU to intensivists. Alternatively, hospitals may be unable to hire intensivists because of a shortage of available trained personnel. Many teaching hospitals have decreased the size of their fellowship programs in critical care for financial reasons, thus limiting the supply of new certified intensivists. Also, related to reimbursement issues, many board-certified intensivists are choosing not to work in the ICU.¹⁰ In addition, hospitals with small units may lack the economies of scale necessary to support full-time intensivists for their ICUs. Thus, implementing IPS broadly may require consolidating ICU care into larger hospitals, or implementing telemedicine IPS at all hospitals currently without it.

Why Purchasers Need to Get Involved

Given these obstacles, hospitals are unlikely to meet the Leapfrog IPS Standard without help from the outside. Leapfrog purchasers can use marketplace incentives to encourage hospitals to implement IPS — particularly those that have open model ICUs by choice. Where appropriate, they can also promote consolidation of small ICU facilities, or investment in telemedicine intensivist services that meet Leapfrog criteria. By educating consumers and calling attention to the importance of IPS, purchasers may create greater demand for intensivists and encourage the growth of programs for filling this need.

References

- ¹ Birkmeyer JD, Dimmick, JB. The Leapfrog Group's patient safety practices, 2003: The potential benefits of universal adoption, February 2004.
- ² Zimmerman JE, Wagner DP, Draper EA, Wright L, Alzola C, Knaus WA. Evaluation of acute physiology and chronic health evaluation III predictions of hospital mortality in an independent database. *Crit Care Med.* 1998; 26:1317-26.
- ³ Knaus WA, Wagner DP, Zimmerman JE, Draper EA. Variations in mortality and length of stay in intensive care units. *Ann Int Med.* 1993;118:753-61.
- ⁴ Carson SS, Stocking C, Podsadecki T, et al. Effects of Organizational Change in the Medical Intensive Care Unit of a Teaching Hospital. *JAMA.* 1996; 276:322-8.
- ⁵ Pronovost PJ, Angus DC, Dorman T, Robinson KA, Dremsizov TT, Young TL. Physician staffing patterns and clinical outcomes in critically ill patients: a systematic review. *JAMA.* 2002; 288:2151-62.
- ⁶ Pronovost PJ, Jenckes MW, Dorman T, Garrett E, Breslow MJ, Rosenfeld BA, Lipsett PA, Bass E. Organizational Characteristics of Intensive Care Units Related to Outcomes of Abdominal Aortic Surgery. *JAMA.* 1999;281:1310-7.
- ⁷ Rockey Moore MB, Holzmueller CG, Milstein A, Dorman T, Pronovost PJ. Updating the leapfrog group intensive care unit physician staffing standard. *J Clin Outcomes Manage.* 2003; Jan;10(1):31-37
- ⁸ Pronovost PJ, Young T, Dorman T, Robinson K, Angus DC. Association between ICU physician staffing and outcomes: a systematic review. *Crit Care Med.* 1999 ;27:A43.
- ⁹ Pollack MM, et al. Improving the outcome and efficiency of intensive care: The impact of an intensivist. *Crit Care Med.* 1988; 16:11-7.
- ¹⁰ Angus DC, Kelly M, Schmitz R, White A, Popovich J. Current and projected workforce requirements for care of the critically ill and patients with pulmonary disease: Can we meet the requirements of an aging population? *JAMA.* 2000; 284:2762-2770.

ICU Physician Staffing

Contacts

Peter Pronovost MD PhD, Professor Departments of Anesthesiology and Critical Care, Surgery, and Health Policy and Management Director, Johns Hopkins Quality & Safety Research Group, Medical Director, Center for Innovations in Quality Patient Care, The Johns Hopkins University School of Medicine, ppronovo@jhmi.edu

Thomas G. Rainey MD FCCM; President, CriticalMed Inc.; Director, Critical Care, Suburban Hospital, Bethesda MD; Chairman, Coalition of Critical Care Excellence; 301-365-4153; tomrainey@criticalmed.com

The Society for Critical Care Medicine (www.sccm.org)

John D. Birkmeyer MD, GD Zuidema Professor of Surgery University of Michigan, 2920 Taubman Center, 1500 E Medical Center Drive, Ann Arbor, MI 48109, 734-615-1600; 734-936-5830 (fax), jbirkmey@med.umich.edu