

## Measure Background

Each year, over five million patients are admitted to intensive care units (ICUs) across the US.<sup>1</sup> 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.<sup>3</sup> Overall, over 200,000 patients die in US ICUs each year.<sup>2</sup> Given the high stakes involved, the quality of care delivered in ICUs is particularly important. Unfortunately, evidence suggests that quality varies widely across hospitals.<sup>4</sup>

## 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) how the staff is organized in the ICU. Intensivists are familiar with the complications that can occur in the ICU and, thus, are better equipped to minimize errors. The Leapfrog Group defines intensivists as **one** of the following:

1. Board-certified physicians who are additionally certified in the subspecialty of critical care medicine;
2. Physicians board-certified in medicine, anesthesiology, pediatrics, emergency medicine, or surgery, and who have:
  - Completed training prior to the availability of a subspecialty certification in critical care; and
  - Provided at least six weeks of full-time ICU care each year.

Neurointensivists are an approved alternative to intensivists in providing care in ICUs. The Leapfrog Group defines neurointensivists as one of the following:

1. Board-certified physicians who are additionally certified in the subspecialty of Neurocritical Care Medicine. Certification in Neurocritical Care Medicine is awarded by the United Council for Neurologic Subspecialties (UCNS) or through completion of the Society of Neurological Surgeon’s CAST fellowship, with subsequent passage of the associated ABNS exam.

2. Physicians board-certified in their specialty who have:
  - completed the CAST fellowship prior to the availability of the associated ABNS exam; and
  - provided at least six weeks of full-time ICU care annually.

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 of the ICU. Critical care specialists are often available to provide expertise on a consultation basis. In a closed system, patients are cared for by critical-care specialists or teams whose exclusive duty is to care for ICU patients.<sup>5</sup> Having intensivists available via telemedicine (or, teleintensivists) has also been shown to reduce mortality, but at a lower rate than a closed ICU unless accompanied by in-person intensivist coverage.

## IPS and Quality

Mortality rates are significantly lower in hospitals with closed ICUs managed exclusively by board certified intensivists. Dr. Peter Pronovost, a former intensivist at Johns Hopkins, conducted a systematic review of the existing literature regarding ICU physician staffing and quality.<sup>6</sup> 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.<sup>9</sup>

Evidence suggests that over 54,855 deaths that occur in the ICUs could be avoided if The Leapfrog Group’s IPS Safety Standard were implemented in all urban hospitals with ICUs across the US.<sup>2</sup> Studies have also demonstrated a reduced hospital and ICU length of stay with high intensity versus low intensity staffing.<sup>6,7</sup>

## The Leapfrog IPS Standard

The Leapfrog Group was advised by national experts in quality improvement to focus on IPS as one of its original Safety Standards because of the potential to benefit 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 more current data and input from the hospital and physician communities.<sup>8</sup> Recent research has shown that teleintensivist coverage, combined with some in-person intensivist coverage, can also significantly reduce mortality. Hospitals can earn partial credit for having 24-hour, 7 days per week coverage by a combination of teleintensivist and onsite intensivist with onsite care planning done by an intensivist, hospitalist, anesthesiologist, or a physician trained in emergency medicine. Recent evidence suggests that teleintensivist coverage can reduce ICU mortality by 15-30%;<sup>11,12</sup> however, the impact on patient care is not as significant as the reduction in mortality associated with on-site intensivist coverage. Thus, Leapfrog awards partial credit to hospitals with teleintensivist coverage.

Hospitals fully meeting 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, return notification alerts at least 95% of the time, (i) within five minutes and (ii) arrange for a physician, physician assistant, nurse practitioner, or a FCCS-certified nurse to reach ICU patients within five minutes.

These requirements are rooted in evidence from Dr. Pronovost's research. In the study, Dr. Pronovost interviewed the lead authors from the studies in his systematic review that demonstrated reduced mortality with IPS.<sup>6</sup> During the high intensity staffing phase of the interventions studied, all interventions met the pager response and most met the hour requirements for intensivist presence.<sup>7</sup>

Hospitals that operate adult or pediatric ICUs where intensivists (or teleintensivists) 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 Leapfrog Group's 2017 Hospital Survey results indicate that 56% of the responding hospitals fully meet The Leapfrog Group's IPS Standard. What are the challenges to meeting this standard?

- 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 reducing the supply of newly certified intensivists.
- Related to reimbursement issues, many board-certified intensivists are choosing not to work in the ICU.<sup>10</sup>
- 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 that are currently without it.

## Why Purchasers Need to Get Involved

Employers and purchasers can use marketplace incentives to encourage hospitals to implement IPS — particularly those that have an open model ICU by choice. Where appropriate, they can also promote consolidation of small ICU facilities, or investment in telemedicine intensivist services that meet The Leapfrog Group's criteria. By educating consumers and calling attention to the importance of the IPS Standard, purchasers may create greater demand for intensivists and encourage the growth of programs for filling this need.

## References

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