Point: Should tele-ICU services be eligible for professional fee billing? Yes. Tele-ICUs and the triple aim.

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Point: Should Tele-ICU Services Be Eligible for Professional Fee Billing? Yes. Tele-ICUs and the Triple Aim

Abbreviations: ARDSNet = ARDS Network; CMS = Centers for Medicare & Medicaid Services; CPT = Current Procedural Terminology; EGDT = early goal-directed therapy; LOS = length of stay; tele-ICU = ICU telemedicine

Nearly 540,000 patients die in ICUs each year, and the total cost of ICU care in the United States exceeds $107 billion annually.[1,2] Only 10% to 20% of hospitals have dedicated critical care staffing, and <1% have dedicated intensivists on site at night.[3] By 2020, there will be a 35% shortage of intensivists.[3-5] At the same time, research has shown that a dedicated, on-site intensivist managing or comanaging patients reduces length of stay (LOS) by 30% and ICU mortality by 40%.[6] In the United States, this staffing model could save as many as 53,000 lives per year and $5.4 billion annually.[7,8] The question is: How do we extend the limited supply of intensivists to provide better care for the increasing number of critically ill patients? The answer is clear: Expand the use of ICU telemedicine (tele-ICU) to address these shortages, lessen mortality, and improve outcomes while potentially decreasing ICU costs.[2,9] The results of expanded access to critical care through tele-ICUs would be consistent with the goals of Donald Berwick's "triple aim": improved experience of care, improved health, and reduced per-capita costs.[10]

The beginning of the new millennia was ushered in with three significant publications showing improvements in mortality in the field of critical care medicine. In 2000, the ARDS Network (ARDSNet) showed that ventilating patients with acute lung injury and ARDS with lower tidal volumes was associated with an 8.8% decrease in mortality.[11] In 2001, early goal-directed therapy (EGDT) given to patients experiencing septic shock was found to have a 16% reduction in mortality.[12] These two studies received a great deal of attention, and the findings were easy to apply, required relatively little change in existing critical care infrastructure and culture, and needed almost no additional capital expenditures. As a result, the findings of these studies were widely implemented by the critical care community, and many lives were saved.

The third article published at that time was equally significant, but less well known. In December 2000, Rosenfeld and colleagues[13] at Johns Hopkins published the first tele-ICU study showing a significant reduction in mortality, LOS, and costs when using a tele-ICU to provide care at an affiliated community hospital. Although protocols for ARDSNet ventilation and EGDT were quickly implemented, tele-ICU adoption has occurred much more slowly. Since the Rosenfeld et al[13] publication, 41 tele-ICU programs, covering only 10% of all US adult ICU beds, have been established.[2] Unlike the application of ARDSNet ventilation and EGDT, establishing a new tele-ICU is a complex undertaking requiring significant capital and a change to the critical care and institutional culture. In addition, many institutions were unwilling to establish tele-ICUs with only one study as supporting evidence.

Since the original tele-ICU study was released, 10 additional studies[2,9,14-21] examining the associations among various tele-ICU arrangements and patient outcomes, such as mortality and LOS, have been published. Eight of the trials showed lower mortality with the use of tele-ICUs.[2,9,14-19] The largest study to date, reported in 2009, evaluated 28,429 patients receiving care in 26 ICUs with varying degrees of supporting technology and tele-ICU involvement.[9] This report showed improvements in LOS and mortality. In 2010, two more tele-ICU programs[2,19] released outcome data that showed absolute reductions in mortality of 6.7% and 1.9% and relative risk reductions in mortality of 30% and 20%, respectively. These two tele-ICUs achieved positive outcomes by overcoming the barriers to adoption, such as high initial capital expenses and resistance to using the tele-ICU by existing providers. Two studies did not show improvement in mortality, but they had varying degrees of involvement of the tele-ICU in the care of ICU patients.[20,21] In one of these studies,[20] almost two-thirds of the patients in the ICU had minimal exposure to the tele-ICU, which could explain the absence of a mortality benefit.

When the results of the eight trials that showed lower mortality[2,9,14-19] are combined with the initial report from Rosenfeld and colleagues,[13] a mortality benefit from tele-ICU adoption seems consistent. In addition to the reductions in mortality shown in these studies, seven other studies have shown tele-ICU benefits for patients with specific conditions such as sepsis, ventilator-associated pneumonia, and CPR.[22-27]

In response to a request for new Current Procedural Terminology (CPT) codes to report tele-ICU services, the American College of Chest Physicians, American Thoracic Society, and the Society of Critical Care Medicine were asked in January 2008 to collect data to determine the pattern of usage for tele-ICU codes. For 106 days during the fall of 2008, data were collected by the American College of Chest Physicians and the National Association for Medical Direction of Respiratory Care at eight existing tele-ICU programs. These centers were monitoring patients in academic and community hospitals in urban, suburban, and rural settings.[28] The survey found that the average number of tele-ICU encounters per site per 12-h shift that could have been billed as critical care (CPT code 99291) if they had been provided in person was 1.75 (range, 0.16-2.62).[28] The majority of tele-ICU patient encounters involved teleintensivists guiding patient care through nurses and other providers at the bedside and required far less than the 30 min required for a potentially billable encounter. If CPT codes for tele-ICU encounters of ≥30 min were eligible for payment, the estimated ~134,000 tele-ICU encounters in the survey would cost the Centers for Medicare & Medicaid Services $30 million—only 0.04% of the $82 billion in payments under the Medicare physician fee schedule. These additional payments would not affect the payment rates for the existing critical care codes, and they seem inexpensive considering the mortality and other benefits associated with tele-ICUs.[2,9,13-19,22-27] Unfortunately, CPT codes for tele-ICU encounters that would be eligible for payment in the way that the existing CPT codes for critical care are eligible for payment do not exist. This problem has contributed to slow tele-ICU adoption.

Reimbursement for many tele-health services (eg, tele-psychiatry, tele-dermatology, tele-stroke) is not new. Medicare started reimbursing for such services in 1999 after enactment of the Balanced Budget Act of 1997.[29] In addition, Medicaid programs in 39 states now pay for tele-health services in some fashion, and at least a dozen states have passed legislation requiring commercial insurance carriers to reimburse for tele-health services.[30] Unfortunately, the tele-ICU codes were assigned to category 3 of CPT. Consequently, the Centers for Medicare & Medicaid Services has not assigned them and any relative value units, and many payers do not recognize them as valid for payment purposes.

Tele-ICU services should not be thought of as a surrogate for in-person care but rather as an enhanced level of care that augments in-person care, increases quality, enhances patient safety, and saves lives. A decade of tele-ICU program development has shown that a well-designed tele-ICU program produces a significant mortality benefit and, if adopted nationwide, could save tens of thousands of additional lives per year.[2,9,13-19] When combined with the potential for reduced costs, the opportunity for achieving the goals of Berwick's triple aim is significant. Therefore, it is time for the professional associations to develop baseline operational and clinical standards and for payers to establish equitable reimbursement so that tele-ICU access to important critical care services can be expanded.

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Counterpoint: Should Tele-ICU Services Be Eligible for Professional Fee Billing? No

Remote monitoring of ICU patients through ICU telemedicine (tele-ICU) has increasingly gained a foothold in the United States. Most of these tele-ICUs consist of a facility-based central hub that contracts with individual hospitals to remotely cover their ICUs. These facility-based hubs then contract with physicians to enable them to provide remote coverage to the hospital. Physicians spend their shift in the "command center" and receive a direct payment from the facility (rate reported, $160-$200/h in 2007)[1] independent of the type of services rendered (surveillance or intervention) to the patients being monitored. The physician is providing a service to the facility that benefits both the facility and the patients. Fundamentally, the physician is reimbursed for work by the facility (in a sense, Medicare Part A dollars) instead of by the patients (Medicare Part B dollars). This is similar to a number of physician reimbursement models that exists across the health-care system (employed model,