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A Review and Discussion of Full-Time Equivalency and Appropriate Compensation Models for an Adult Intensivist in the United States Across Various Base Specialties

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OBJECTIVES: Physicians with training in anesthesiology, emergency medicine, internal medicine, neurology, and surgery may gain board certification in critical care medicine upon completion of fellowship training. These clinicians often only spend a portion of their work effort in the ICU. Other work efforts that benefit an ICU infrastructure, but do not provide billing opportunities, include education, research, and administrative duties. For employed or contracted physicians, there is no singular definition of what constitutes an intensive care full-time equivalent (FTE). Nevertheless, hospitals often consider FTEs in assessing hiring needs, salary, and eligibility for benefits.

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CONCLUSIONS: Understanding how an FTE is calculated, and the fraction of an FTE to be assigned to a particular cost center, is therefore important for intensivists of different specialties, as many employment models assign salary and benefits to a base specialty department and not necessarily the ICU.

KEYWORDS: administration; full-time equivalent; intensive care unit; management; multidisciplinary

In the United States, physicians with training in anesthesiology, emergency medicine, internal medicine, neurology, and surgery may gain board certification in critical care medicine upon completion of fellowship training. Physicians trained in pediatrics can also complete critical care fellowships; however, this review will focus on adult ICU structures. As of 2015, there were approximately 28,808 privileged intensivists in the United States, equating to 19,996 full-time equivalent (FTE) intensivists (1). However, the definition of a FTE intensivist is unclear due to differences in specialty training, compensation, and overall workflow.

Critical care physicians often only spend a portion of their work effort in the ICU. In some institutions, intensivists include physicians in private practice who devote some of their time to the intensive care setting. An FTE is defined by the U.S. government as total hours worked or retained divided by the number of compensable hours applicable to a fiscal year. For employed or contracted physicians, there is no singular definition of what constitutes an intensive care FTE (2). Nevertheless, hospitals often consider FTEs in assessing hiring needs, salary, and eligibility for benefits.

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KEY POINTS

Question: How is a full-time equivalent (FTE) defined for intensive care physicians?

Findings: FTEs in the ICU are often defined using a combination of metrics including reimbursement, hours or shifts worked, and nonfinancial quality metrics. Each of these metrics alone is insufficient to adequately assess the nature of ICU work or an ICU physician's performance.

Meaning: An FTE in the ICU is ideally defined based on a physician's contribution to their health system's mission taking into consideration the burdensome nature of weekend, holiday, evening, and night coverage.

Understanding how an FTE is calculated, and the fraction of an FTE to be assigned to a particular cost center, is therefore important for intensivists of different specialties, as many employment models assign salary and benefits to a base specialty department and not necessarily the ICU. This was particularly important during the COVID-19 pandemic where the need to scale ICU care required effort from multiple intensivist specialties (3).

In the absence of a nationally standardized approach to an FTE, employers in the United States have developed several different ways to resolve staffing. This article reviews the strengths and weakness of different approaches to the definition of an FTE and considers billable relative value units (RVUs), time worked—including night and weekend hours, clinical shifts, and nonclinical considerations. It is important to note that while measurement of an FTE for accounting purposes may rely on a combination of these metrics, on their own they do not reflect physician performance, nor contributions to patient care or a health system's performance.

BASE SPECIALTY DEFINITIONS OF FTE AND ASSOCIATED COMPENSATION VARIANCES

Some ICUs blend intensivists of different base specialties into staffing and, therefore, require identical clinical work for intensivists in the same unit. Compensation is often indexed to a base specialty salary. This means that for identical effort in an ICU, intensivists of different base specialties earn different amounts for the same period of clinical work. There is considerable variability, however, in general, base specialty salary, ordered from highest to lowest is surgery, anesthesiology, emergency medicine, neurology, and internal medicine.

Another variation of critical care reimbursement sets a negotiated rate for ICU services that is applied to all intensivists who practice in the ICU. This pay is regardless of an intensivists base specialty or base salary. In this case, when not providing critical care services, an intensivists compensation may be enhanced or decreased. For example, a trauma surgeon operating in a high-volume center may have an enhanced compensation than when providing critical care. Alternatively, an internal medicine intensivist may experience decreased revenue by attending in clinic when not in the ICU.

Reimbursement for private practice critical care is often different from academic critical care (4). In a private practice financial model, it is recognized that some base specialty revenue generation is, at face value, more financially productive than critical care. This leads to disincentivization of private groups offering critical care services. Thus, critical care services in private practice are often financially supported by a hospital stipend in order to decrease the perceived financial loss (5). Alternatively, while private practice intensivists are usually employed by their private group for their base specialty services, those practicing critical care may be employed by the institution during their critical care time. This model requires private practice intensivists to be either part time for two employers or to only work critical care or during vacation time from their respective full-time position.

Should different providers be paid differently for similar work? The answer does not lend itself to a simple yes or no answer. The same-pay-for-same-effort model may seem appealing and simple, but it is only practical in ICUs staffed by a single specialty. Where multiple departments contribute to coverage in one unit, same-pay models introduce intraspecialty salary variability than can incentivize or penalize providers spending part of their time in the ICU. As specialty pay scales are products of training, demand and value to

an organization, physicians should expect a competitive salary and one that is on an equivalent scale within their practice.

Further, physician pay variability does exist based on years of experience, contribution to clinical, academic, and administrative missions, additional training, and certifications and incentives. Negotiation with the department leadership typically determines salaries. A specialist providing part of their FTE in the ICU should expect compensation based on the same considerations as the rest of their department.

Supply and demand of specialists changes with market conditions. In 2023, there was a relative shortage of anesthesiologists and an oversupply of emergency physicians. Because salaries are different between specialties doing identical ICU work, the costs to a system for ICU coverage may fluctuate based on intensivist availability.

Training and procedural skills associated with a base specialty often influence which ICU physicians manage. For instance, anesthesiology-trained intensivists tend to work primarily in cardiothoracic surgery or surgical ICUs, whereas those with base training in internal medicine tend to work in medical ICUs. The nature of a unit also influences RVUs, which, in some cases, are used to calculate an FTE. For instance, surgical ICUs tend to have a higher number of procedures. These particularities can lead to unit staffing structure and size considerations that influence the work performed by intensivists.

An intensivist may be able to cover a larger number of patients in a less complex, more stable cohort than someone managing high-turnover or high-acuity ICUs. The acuity level of a specific ICU influences not only the ability to generate revenue by a clinician but also the inherent stress and work load of a particular unit. As a result, high-acuity patient populations may lead to less reimbursement while concomitantly requiring more FTEs to provide coverage. Measures of work, therefore, should take into consideration acuity and patient care requirements based on an ICUs intended population.

Unlike the U.S. pay structure, which is typically tied to base specialty, in European countries, such as France, physicians working in public hospital have incomes based on a seniority salary structure, that is, independent of specialty training or board certification. The scales are legally issued and applicable nationwide (6). Furthermore, physicians also have a variable part on their salary for night shifts. In private practice settings, physicians can be paid on a fee-for-service basis (this billing is usually linked to social security reimbursement rates for each service but can be increased at the discretion of the physician) or paid as employee by a private institution (independent of the public salary-scale). The public system also has the ability to pay for extra shifts at a legally capped rate (1390€ gross for a 24-hr shift) (7).

CRITICAL CARE STAFFING AND EFFICIENCY DEFINITIONS OF FTE

Motivations for defining an FTE from a hospital perspective include budgeting the amount of work and ensuring efficient use of employees. The efficiency of an intensivist can be enhanced by several mechanisms, including adequate ancillary support such as nurse managers, respiratory therapists, physical therapists, bed-placement specialists, case managers, and others necessary to streamline the efficiency of care. Advanced skills and credentialling of nursing staff can greatly optimize patient care and allow for more patients to be seen by a physician.

Additionally, a complement of residents, fellows, and advanced practice providers can further enhance the efficiency of an intensivist, provided they are adequately trained to care for the patient population (8). Managing house staff who require high levels of supervision can make intensivists less productive if measured by revenue generation. All these additional roles are time and effort consuming and should be considered in calculating an FTE.

Physician salary costs are not the largest expense in running an ICU, but efficiency is critical to the overall success of the hospital or system enterprise, especially since many academic medical centers currently operate over capacity. Benefits of intensive care services to a healthcare organization cannot be adequately defined through FTE models that simply rely on financial metrics. There are positive value elements, both financial and nonfinancial, that intensivists provide to hospital operations, education, and research programs (9). In this regard, ICU care can be considered a cost of doing business, necessary for good outcomes and profitable service lines such as cardiovascular, orthopedic, spine, or neurosurgery, particularly in hospitals caring for complicated patients.

Many hospitals will subsidize nonreimbursed costs of providing intensive care because of the necessity to an organization's overall success. This fact is relevant in ensuring that calculation of an FTE includes nonfinancial metrics. In nonacademic practices, physician specialist groups providing some services in an ICU will need to negotiate for compensation based on value, and their need to hire and retain physicians to fill the institutional needs.

SPECIFIC METRICS USED TO DEFINE AN ICU FTE

Reimbursement—Relative Value Units

The calculation of RVUs ideally takes into consideration overhead costs, the acuity, and time spent caring for a patient. The acuity of critically ill patients is difficult to measure or quantify. While an extremely ill patient can require significant time, effort, skill, and mental prowess, this does not necessarily translate into gains in an RVU. Although RVUs quantify some aspects of physician work, they were never intended to measure physician performance; using them as a performance benchmark potentially creates perverse incentives favoring more highly reimbursed care (10).

Critical care RVUs are generated with the 99291 Common Procedural Terminology (CPT) code, previously beginning at 30 minutes of critical care time, and the 99292 CPT code for each 30-minute increment above the first 75 minutes (11, 12). Beginning in 2023, the Centers for Medicare & Medicaid Services (CMS) arbitrarily increased the time required before a 99292 charge can be generated to 104 minutes (**Table 1**) (12). Some commercial insurers still use 75 minutes as the time required before initiating 99292 billing, although commercial insurers have often followed CMS patterns of reimbursement.

TABLE 1.
Critical Care Medicare Reimbursement

Total Duration of Critical Care	Code(s)
< 30 min	Bill appropriate evaluation and management
30–104 min	99291 × 1
105–135 min	99291 × 1 and 99292 × 1
136–166 min	99291 × 1 and 99292 × 2
167–197 min	99291 × 1 and 99292 × 3
198–228 min	99291 × 1 and 99292 × 4

A reduction in RVUs that results from the recent CMS guidance makes a purely RVU-based model less relevant to the work intensivists perform. Another concern with RVU-based incentives is billing efficiency and the potential for incentivizing clinicians to focus on number of RVUs generated at the expense of patient care. If maximal RVU generation were the goal, the most efficient intensivist could technically bill for up to 24 patients during a 12-hour shift. However, a ratio of one intensivist for 24 patients is higher than generally recommended. With a focus on patient safety and intensivist well-being, the 2013 Society of Critical Care Medicine Taskforce on ICU staffing suggested the optimal intensivist-to-patient ratio should not extend beyond one intensivist for 14 patients (13).

In a survey of anesthesiology intensivists, the median number of beds covered by one intensivist was 14 beds during daytime hours and 26 beds overnight (14). One study cited a risk of death that doubled (95% CI, 1.2–3.2) during shifts covering more than 14 patients at a time (15). Decreased intensivist-to-patient ratios result in higher workload and have been associated with burnout, which, in turn, is strongly correlated with the intention to leave one's job (16). Ratios less than 1:14 have been shown to have a negative impact on education, staff well-being, and patient care. These studies reinforce why RVU generation is not an ideal metric by which to measure a physician's contribution to patient welfare.

Finally, the generation of RVU does not equate to compensation received by the health system since a large percentage of charges go unpaid. If health systems compensate physicians only based on collections, there would be a large deficit in the amount of revenue received relative to work performed, and salary would be influenced by insurance type and patient factors beyond the control of the physician. Nevertheless, well-trained intensivists contribute to the success of the overall enterprise and the underlying mission of saving and improving lives.

Time and Clinical Shifts

A survey by the Society of Critical Care Anesthesiologists describes recent anesthesiology critical care practice (14). Most respondents reported covering the ICU

10–15 weeks per year and averaged 60–90 hours per week during ICU weeks. Presumably, during non-ICU weeks, anesthesiologists performed other work-related activities.

A 2018 Medscape report found that medical intensivists most commonly averaged 30–45 hours per week caring for patients (17). These data were compared with anesthesiology intensivists, and emergency medicine intensivists who each averaged 30–55 hours per week caring for patients. Data from the same surveys demonstrated differences in reported hours spent on administrative time, from greater than 20 hours per week for medicine intensivists to 5–19 hours per week for anesthesiology intensivists, and 10–19 hours per week for emergency medicine intensivists. This survey and other surveys are limited in that self-reported data may be inaccurate and overstate nonclinical hours.

Although the Medscape data do not specify the proportion of less favorable patient care hours (e.g., weekends, holidays, evenings, and nights), the survey data suggest that in many situations these hours are valued differently than day shifts. For instance, a "nocturnist" is likely to be asked to work fewer hours or be paid at a higher rate than an intensivist who cares for patients only during the day.

Another survey of medical and surgical critical care physicians attempted to identify how many clinical days or weeks defined one critical care FTE (18). Most respondents in this survey worked in an urban setting and at a teaching hospital. Respondents identified that one FTE of critical care work totaled a median of 169 days per year (24.1 wk, 136–198 d). Physicians working in medical ICUs worked a median of 20 weekend days and zero in-house nights per year (interquartile range [IQR], 0–32), while those working in surgical ICUs worked a median 24 weekend days and 14 in-house night (IQR, 0–42) shifts per year.

Most models recognize the burdensome nature of overnight, weekend, holiday, and evening work and do not penalize physicians for lower RVU generation during these shifts. Several systems provide differential credit for these shifts compared with weekday work. Others compensate burdensome shifts with additional time off. Doing so effectively creates a market whereby the incentives of covering weekends, holidays, nights, and evenings is worth the burden to some clinicians, whereas others may prefer to work more total hours or shifts during regular weekdays. A relative value scale can create an economy that rewards, and potentially encourages the availability of physicians to cover weekends, holidays, evenings, and nights.

Inevitably, the FTE requirements to fill an ICU schedule will not perfectly fit the number of available physicians, leading to gaps in the coverage scheme. Solutions to address these gaps include "extra" compensated shifts, service obligations, or hybrid strategies. An institutional FTE definition makes it possible to determine when a shift would be additional and provide a framework for determining compensation (e.g., in time or money).

Some practices employ telemedicine in ICU coverage, both as a way to extend intensivist physician expertise over more patients, and as a solution to the coverage of less favorable shifts (19). In calculating an FTE in telemedicine ICU coverage, consideration should be given to factors that make it different from in-person models (i.e., coverage of more patients, fewer or no procedures), with the goals of fair market compensation and minimization of fatigue.

Nonfinancial and Nontime-Based Metrics

Physicians may be required to teach trainees, participate in continuing medical education, participate in administrative duties such as scheduling and coordination of care, engage in research and publications, participate in committees, and lead quality improvement tasks, among other roles. It is important to note that existing literature of intensive care physician work distribution often does not consider nonclinical duties that are important to quality, safety, end-of-life care, employee well-being, and mentoring future generations of clinicians (**Table 2**). Most intensivists would rather not complete these tasks during off-hours, nor is it optimal to complete such work while being responsible for critically ill patients. An intensivists FTE definition should account for the time required to accomplish these tasks (20).

Early studies suggested improved outcomes by intensivist staffed ICUs; however, there is controversy about the benefit of high intensity staffing models in more recent studies (21). In specialized settings like cardiothoracic surgery, intensivist staffing seems to be beneficial, although there are studies that question whether care can be equally well delivered by surgeons without critical care training (22–25). Older studies

TABLE 2.
Metrics That May Be Used to Define an Acute Care Specialist Full-Time Equivalent

Metric
Shifts worked
Hours worked
Calls taken
Relative value units generated
Acuity of ICU
Charges captured
Patient safety metrics
Efficiency improvements
ICU dollars saved
Research production
Administrative activities
Teaching responsibilities

estimated that if recommendations of 24/7 intensivist in-house coverage were adopted, hospitals could save millions of dollars per year due to decreased length of stay and avoidance of unnecessary tests, procedures, and consultations (26). Other reports identify that intensivist staffing significantly improves length of stay, and mortality in some settings (27).

The practice of staffing nighttime intensivists suggests that the value of "rescue" is recognized by health system administrators, even if it is not well compensated (28). There is not uniform evidence to support improved mortality by nighttime intensivist staffing (29–31).

Another quality metric that is not commonly measured when calculating FTE is end-of-life care. Intensity of care varies widely in the last weeks of life with little evidence of benefit, highlighting the potential value of intensivist triage and providing end-of life consultations.

Finally, any metric of work should balance system demands with adequate time for physician recovery and well-being. A significant cause of burnout among acute care physicians is "too many administrative tasks" and "too many hours worked" (16, 32, 33, 34). Patient-to-clinician ratios and the stress of teaching were also reported as sources of burnout. With more than 50% of acute care physicians reporting symptoms of burnout, a simplistic methodology that does not address these issues and focuses only on the quantity of work will not lead to a sustainable future for intensivists.

CONCLUSIONS

Given the multiple specialties with paths to board certification in critical care, a common understanding of an FTE is necessary to define work and to account for the costs of staffing an ICU. Interpreting staffing costs through the lens of the continuum of care and ancillary benefits to a hospital system is a practical approach when looking at FTE definitions. Shifts worked and RVUs generated tell a small portion of the role of an FTE.

Healthcare systems should look to novel solutions, likely encompassing the commonly used definitions discussed herein, to quantify the direct and indirect benefits of ICU care. Doing so ensures that hospitals appropriately recognize and subsidize the costs of non-revenue generating ICU activities including teaching, research, and administration.

Furthermore, the definition of an FTE in the ICU must take into consideration outcomes, patient safety. sustainability, costs, patient and physician satisfaction, professional development, and equity imperatives. Creating benchmarks that encompass all or many of these physician tasks will facilitate successful blended careers as intensivists.

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