

Opinion

ICU resource allocation: life in the fast lane

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Introduction: what's the speed limit?

In 1973, the then United States President, Jimmy Carter, addressed the issue of declining petroleum resources and increasing automobile traffic by the institution of a rationing plan that mandated decreasing consumption fairly and equitably across the entire population of consumers. The national speed limit (NSL) decreased from 70 to 55 miles per hour, and, according to experts, constituted the perfect rationing plan [1]. It affected only those who used a scarce resource (gasoline) and it applied to all equally. In a perfect world, it should have been an extremely effective conservation method.

However, many motorists in the USA were not eager to participate in this utopian plan designed to rescue the whole. American motorists traditionally drive at a speed that is comfortable for them, considering the surrounding circumstances regardless of a posted limit. The Federal Government assigning a speed that did not feel comfortable to the average motorist virtually guaranteed eventual noncompliance [2]. This otherwise fair rationing plan set the stage for a roadway game of evasion, detection, and escalating technology supporting both sides [3]. The law was eventually repealed because it could not be enforced [4].

As a practical matter, motorists who would comply with the law would not exceed 55 miles per hour regardless of the NSL. Motorists who, for whatever reason choose to exceed the speed limits, will always try to stack the deck in their favor when dealing with speed limit enforcement. As technology for detecting speeders improved, so did the

technology for detecting detectors [5]. And so a fair and equitable rationing plan designed to benefit the whole at the cost of minimal individual conformation failed because the administrative cost of enforcing individual compliance effaced the advantage [6].

Medical economics and speed limits

Two and a half decades later we find ourselves in a similar situation for medical economics, searching for a speed limit that will restrict excessive and capricious allocation of scarce healthcare resources. Distributive or social justice with regard to healthcare is particularly difficult given the Western mentality that healthcare, from immunizations to experimental fertility treatment, is a basic human right; a right sacrosanct from the clutches of rationing, the very antithesis of democracy as we know it. If, however, we continue to ignore the increasing speeds in the allocation highway consumers have come to enjoy, we have the potential to compromise all levels of healthcare. The paradigm of a democratic nation might be obliterated with a bankrupt healthcare system as its decrepit beacon.

Traditionally, Americans are staunchly opposed to rationing, or any other impingement on intrinsic moral rights, but unlimited demand for scarce resources quickly depletes the available supply. Therefore, even though unpopular, the need for resource allocation management eschews the explicit need to ration, or at least diffuses the dastardly word into an acceptable method. While Americans may not be ready to ration their resources, some kind of rational management to protect the whole is justifiable. Toward that end, it is regrettably necessary to wade into the swamp of semantical contradictions tended by Health Maintenance Organizations and a veritable slew of their various predacious counterparts.

But the signpost says: 'speeding encouraged'

Based on Employee Benefit Research Institute (EBRI) analysis of the March 1998 Current Population Survey [7], private or public health insurance, or both, covered 81.7% of Americans (193.1 million). Seventy-one per cent of the nonelderly population had private insurance, 64.2% through an employment-based plan. All these agencies are sensitive to sociopolitical pressures. The same political bodies that find political favor with voters by telling them healthcare is a basic right cannot go to that same population and advise them that their services must now be

limited in order to make them affordable. Accordingly, healthcare consumers are told to consume as much as they desire, then rationing occurs at the level of providers. Reimbursement is denied prospectively on the basis of administrative, not medical issues. So in the end, consumers have a maximum incentive to consume, providers must allocate scarce resources on demand rather than need, and no prospective planning can take place because of retroactive denial of payment for services already expended.

Prospective intensive care unit (ICU) patients suffer no liability for demanding as much critical care service as they desire. If an ICU patient appears to be unsalvageable, the popular media tells them that moribund patients sometimes awaken after years of coma. If a physician advises against further aggressive care, the trial lawyer industry tells them physicians' opinions cannot be trusted. Once they land in an ICU bed, the time-honored principles of triage evaporate into an antipaternalistic haze and occupants own that bed as long as they desire it. Threats of lawsuits for physician and hospital noncompliance with patient wishes are taken seriously following Consolidated Omnibus Budget Reconciliation Act (COBRA; of 1985) legislation [8] and current legal precedent [9].

If some consumers are allowed to use resources in such a manner, adopting the Jimmy Carter model by setting a NSL for critical care healthcare provision would conserve scarce resources [10]. Such a limit would require those desiring to use excessive speeds for selfish purposes to simply slow down, extending resource availability for everyone else using the road, and allow those who understand the cost versus benefit of critical care services to enforce the restriction.

Slow down: speed limits save lives!

Examples of the relationship between resource utilization conservation and potential benefit abound in the literature. Hiatt [11] states that 'as we develop more and more practices that may be beneficial to the individual, but not to the interests of society as a whole, we risk reaching a point where marginal gain to individuals threaten the welfare of the whole.' In a Health Technology Case Study [12] a congressional report stated 'the best responders are patients with acute reversible illnesses without significant underlying disease. The worst responders are patients with exacerbations of chronic conditions for which there is no definitive therapy.' Scheffler [13] found a non-linear, 'U' shaped relationship between use of resources and probability of survival. At one end of the spectrum, an increasing amount of therapeutic intervention generated a decreasing mortality rate. At the other end, 40% of resources were used to temporarily prolong life in 9% of the patient population, and the mortality increased with the number of therapeutic interventions. Detsky [14] found that patients having the highest per capita hospital

expenses fell into two groups: (1) survivors who had been predicted to have a poor chance of survival on admission; and (2) nonsurvivors who had been predicted to have a good chance of survival on admission.

Patients having the lowest per capita charges were found to be: (1) nonsurvivors who were predicted not to survive on admission; and (2) survivors who were predicted to survive on admission.

There does not seem to be any difficulty identifying which patient population can be predicted to benefit from the allocation of scarce resources. The problem is how to effectively divert the allocation of resources away from patients predicted to do poorly, and toward those predicted to do well.

Gaming the system: radar detection

But Americans hate speed limits. They drive at any speed they desire, and go out of their way to avoid detection by creative and innovative methods. Such maneuvers to set aside an otherwise fair apportionment plan sets the stage for hospital to hospital combat characterized by evasion, detection, and escalating gaming of the system supporting both sides. ICU admission effectively becomes a first-come, first-served contest. Families threaten to sue if their wishes are not explicitly followed. Futility is defined only as an inability to support vital signs. Unsalvageable patients can only die undergoing every conceivable aggressive measure thought of by the patient or their families. Physicians and nurses practice 'slow codes and surreptitious euthanasia', but there is no germinal law to repeal. It is an ongoing contest between those with an incentive to consume and no liability if they do not, and those with an incentive to conserve but much liability if they try to implement it.

Continued usage of scarce resources on the basis of desire rather than on established need will eventually seal the impending demise of the current system if change is not forthcoming. Reimbursers have effectively served notice that they will continue to ration at a level that will not generate adverse political consequences for them. Politically correct budgeting schemes such as 'rationing by inconvenience' [15] and retroactive denial of reimbursement after services have been rendered [16] must surely fail because they simply act to diminish quality of care and do not directly address the issue of unrestricted demand. There is only one way to avert disaster and that is by effectively macro-managing consumer demand [17].

A cop behind every sign board

High quality critical care in the USA controlled by ICU directors improves the health of its citizens [18,19] and the results of that care can be quantified [20]. We cannot, however, maximize cost benefit in critical care within the

current sociopolitical framework where consumer desire supersedes realistic need. Daniels [21] studied the difference between allocation of scarce resources in the UK and in the USA. The British spend less than half our yearly expenditures on medical care, but provide universal access to the system for all citizens, and all know in advance what limitations are in effect. Advanced planning is not only possible, it is mandatory. Since all patients have equal access within this 'closed system', resources must be allocated with judgment as to which needs are most beneficial for the entire group. Introduction of beneficial new procedures must be weighed against the benefits of alternatives. Although an added service or procedure might help one group of patients, its cost might be high enough to deny other patients services.

In such a system, physicians do not directly or indirectly benefit from delivering care at lower cost, avoiding potential conflicts of interest. Since distributing the resources most equitably within the system provides optimal care for all, saying 'yes' instead of 'no' might be unjust. This approach espoused by the British is representative of a Rawlsian concept of 'justice as fairness' [22]. 'The higher expectations of those better situated are just if and only if they work as part of a scheme which improves the expectations of the least advantaged members of society'.

Conversely, medical care in the USA is an 'open system.' We make no prospective medical budget determinations, or estimates of cost effectiveness. All varieties of medical care are equally funded in theory, but with a catch 22. Instead of determining how much should be allotted services, the USA prospectively allows all services, then retrospectively denies reimbursement for some after they have been rendered. Care givers are placed in the position of expending resources, which may not be replenished according to the whims of gatekeepers and technicalities. There is no real way to determine whether resources expended will be replenished until after the fact thus making resource allocation planning difficult if not impossible.

Furthermore, cost containment measures in the USA reward institutions and individuals for delivering care at a lower cost. Hospitals who deliver care for less than the diagnostic related group (DRG) allowance may pocket the difference. Individual physicians within the Health Maintenance Organization (HMO) system profit directly for cutting costs; thus the patient may be regarded as the proverbial enemy. Since there are no specific priorities for resource utilization, saying 'no' in the USA does not necessarily result in savings which benefit other patients within the system. Saying 'no' to some procedures carries no assurance that we are concurrently saying 'yes' to other more beneficial ones. Savings gained may be reinvested in some other procedure, which may benefit even fewer patients, or it may be returned to investors, as in the case of 'for profit' hospitals.

As patients put the gas pedal to the metal, two primary identification and allocation issues result that must be addressed expeditiously if critical care medicine as we know it is to survive. Those issues are bed allocation control and the working definition of futility.

Warning: more than one occupant illegal

Legal precedents involving ICU bed allocation are scarce but ominous. The Von Stetina case [23] involved a previously healthy 27-year-old woman injured in a motor vehicle accident. She was taken to a hospital where emergency surgery was performed, following which she was admitted to the hospital's ICU. Initially, she seemed to be recovering, but had been paralyzed and sedated for hemodynamic reasons. She accidentally became disconnected from her ventilator and its alarm had been defeated. After she ultimately became bradycardic from hypoxemia, the heart rhythm alarm sounded and she was promptly resuscitated. Unfortunately, the cerebral anoxic insult was sufficient enough to render her in a persistent vegetative state, with no hope of recovery. During the trial for malpractice, it was established that at the time of Ms Von Stetina's admission to the ICU, there were a total of seven patients in the ICU, cared for by three Registered Nurses and one Licensed Practical Nurse. This staffing was considered to be adequate.

However, five more patients were admitted to the unit from midnight to 0600h, and the number of nurses remained the same. There was no ICU director in evidence to direct admissions or deal with bed occupancy problems. It was alleged that there were too many patients for the number of nurses present to care for adequately. Ostensibly, Ms Von Stetina's technological hardware failed because her nurse was too busy to observe and monitor her adequately. The question arose, what were the available nurses doing that night? One patient in the ICU at the time of the bed occupancy crisis was close to passing brain death criteria and, in fact, was declared dead the next day. Another patient was considered terminal, and did, in fact, expire the next day also. It was further established that there were three other hospitals in the area with vacant beds and a quorum of nurses that could have taken transfers. It was ultimately established that the facility, which held itself out to be a critical care unit, did not, in fact, provide that service due to staff/patient disproportion. The hospital was found liable for a judgment of US\$12 470 000.

The Von Stetina case illustrates a moral issue that has not been effectively dealt with to date. Does occupancy of a critical care bed guarantee possession thereof indefinitely until death or full resolution of admission illness? The 'temporary lottery' for ICU beds may make hospitals liable for damages if 'good prognosis' patients are denied the benefit of critical care resources because nursing care

is stretched too thin on patients with a poor prognosis [24]. The Von Stetina cases suggests a legal obligation to discharge patients with only a borderline possibility of benefiting from an ICU treatment so as to maintain good standards of care for those patients remaining. If 'early arrivals' have no special rights to an ICU bed just by being early arrivers, then patients deriving marginal benefit from those beds can be moved to make room for those having a better prognosis.

What's the top end on that ventilator?

If decision-makers for moribund patients choose to define futility in terms of vital sign support, then virtually every ICU treatment plan is fair game. Futility exists only if ICU technology cannot sustain a blood pressure or heart rate. Under such a stringent definition, virtually any life support system is fair game even if it prolongs inevitable death. However, if current concepts of futility are redefined in terms of organ system failure, more flexibility is possible in the determination of inappropriate care plans [25]. If, instead of using the archaic term 'futile', we advocate the option of 'not medically indicated' as a viable reason to limit life support, assessments of viability under sophisticated life support systems would be rendered more accurate. Moribund states that render a fallacious appearance of viability can be identified [26].

Under the auspices of an 'inappropriate care' speed limit, patients in a persistent vegetative state could not be transferred to the ICU nor could they receive prolonged mechanical ventilation and indefinite preservation in the ICU. Intensive care admissions could be curtailed for patients with end-stage dementia and they would be treated palliatively when they become acutely ill or offered hospice. There would be no compelling reasons to start long-term enteral tube feedings for patients with end-stage dementia. Cardiopulmonary resuscitation would not be provided to chronically ill patients who are near death. The speed limit would be posted at frequent intervals along the traveled route for all to see. Open lines of communication between the physician and patient as well as documentation of patient wishes in the form of advance directives would squash many of the conflicts that present when end of life treatment decisions are held in question.

Critical care physicians with cop hats?

The current trend of increasing demand, decreasing supply, and retroactive denial of payment for services previously rendered will do little other than decrease quality of care and increase administrative costs of healthcare provision. Consumers on the medical services highway speed with impunity because they have no incentive not to. Cops assigned to patrol the highway have an incentive to wink at speeders. The chances of getting caught are so remote as to foster apathy and even antipathy toward the need for speeding laws. The effective speed limit is simply whatever the traffic will bear.

The only way to preserve the availability of needed and necessary critical care services is to titrate demand-to-need at its most sensitive level: the bedside. A bedside modulated by a trained and experienced critical physician with a jurisdictional authority to 'say no' to demands for capricious treatment not supported by evidence-based clinical literature [27,28]. Every time consumers stomp on the gas pedal, there is an ICU physician there to adjust their speed to a cost-benefit ratio adjudicated by righteous and reproducible clinical evidence. If we continue to allow unrestrained desire out of proportion to clinical reality to rule, our only option will be utilizing ICU's for warehousing warm cadavers [29].

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