In the past few years, the field of critical care has increasingly explored its role in disaster preparedness and its ability to respond to the needs of patients caught in a pandemic or those of mass casualties from natural disasters or acts of terrorism. Such considerations have required the field to discuss different models of ethical triage, their usefulness and implications for critical care. As such triage models have been developed, they, in turn, invited deeper reflection of ethical and legal values and how they are used in clinical practice. Indeed, pandemic planning has stimulated some of the most fascinating discussions of values, beliefs, liberty, professionalism, worth and the role of individualism in multicultural societies. Most of us have been fortunate that a full-blown pandemic and the mass disaster that comes with it has not hit us... yet. Therefore, it has not been possible to rigorously validate such models. Are we ready? What have we learned from all these discussions, debates, and the near overwhelming of our ICU systems? What questions remain? Where are the new frontiers?

Triage Models

Critical Care triage models for pandemics have been developed over time, in stages, as various threats, either actual or perceived, have arisen. Most have turned initially to the ethical concept of utilitarianism, the survival of the greatest number, as their fundamental guiding principle (Christian et al. 2006; Powell et al. 2008; Hick et al. 2007; Devereaux 2008; Frolic et al. 2009). While the concept seems reasonable even in multicultural societies where beliefs regarding the use of life support, quality of life, and death may differ, questions have arisen over whether utilitarianism is sufficient ground in and of itself upon which to base such high-stakes decisions. Furthermore, how this maximal survival can and should best be achieved still remains controversial. Initial triage models combined utilitarianism with accountability for reasonableness and military triage schemes in their quest for a robust yet practical model (Christian et al. 2006).

These models sought to incorporate justice and fairness in the allocation of scarce resources by considering scientific criteria that reasonable minded people could agree with, by making such plans public, making them clear and easy to use in practice and by building in enforcement, accountability, and reassessments as the situation evolved. It is important to note that the scientific criteria were harshly based on medical criteria (Christian et al. 2006; Ministry of Health and Long-Term Care 2008; Utah Pandemic Influenza Hospital and ICU Triage Guidelines 2009). Exclusion criteria incorporated patients with Do Not Resuscitate orders, those with permanent irreversible cognitive impairment, incurable metastatic malignancy, severe burns, severe trauma, cardiac arrest, and presence of advanced disease with expected less than six month survival, endstage organ failure. Triage was based on current medical population survival models e.g. SOFA scores and
did not consider individual beliefs, values or patients' perception of quality of life. In contrast, in current daily practice, how much consideration to give to "medical criteria" as compared to patients' wishes is often hotly contested. However critical care is a resource that should be used wisely all the time: it is expensive and its use has broad implications for the healthcare system as a whole and for the development and access to other important social programmes to help the most vulnerable in any given society. The creation of these triage models begs the question of why we cannot balance patients' wishes for life support with some arguably much less ruthless, yet still medical considerations of the likelihood of life support improving or slowing the deterioration in a patient's condition and/or well-being, whether the benefit the patient is expected to achieve will outweigh the harms and whether a less intrusive treatment may achieve the same result, in all decisions to initiate or continue life support. Are such considerations not crucial to good decision-making and to high quality patient-centered care?

Complex Decisions

As the threat of H1N1 influenza arose, many different groups rightly pointed out that existing triage schemes were still pretty "primitive" and that in practice further details would be required. For example what would happen if an ICU had five patients with the same level of priority for mechanical ventilation and only two ventilators? Secondary ethical criteria such as:

- Individual worth (e.g. importance to society, caregiver status, heroism, healthcare worker; workplace exposure; the concept of reciprocity; the existence of a multiplier effect - i.e. if you save the life of one person, he/she could save many others);
- Lottery (e.g. asking patients to choose a number from a hat);
- Fair innings (priority given to those who have not yet had opportunity for full lifespan);
- Rule of rescue (priority to those most in need);
- Conservation of resources; and
- First come, first served (priority based on arrival times) were then debated (NYS Workgroup on Ventilator Allocation in an Influenza Pandemic. 2007; The Pandemic Influenza Ethics Initiative Workgroup 2008; Frolic et al. 2009; Tabery et al. 2008; Vawter et al. 2009).

Interestingly, different groups have proposed different answers with some emphasising that importance to society in particular to maintaining government, law and order, healthcare, caregiver status, workplace exposure, fair innings, and multiplier effect must be taken into account somehow (Frolic et al. 2009; Vawter et al. 2009). The "how" remains elusive. How many in each group would need to be saved and who decides also remains generally obscure. Others have repudiated such claims and have said that the only secondary criteria that are justifiable, fair and amenable to use in the clinical setting is a lottery approach (e.g. flipping a coin). Still others have suggested a "first come first serve" response. Government and healthcare workers could be divided into shifts, similar to current military models, with a group of reserves that could be brought to active duty when needed. Yet is this thinking naïve? Can society really survive and overcome such a disaster if it does not maintain a number of key people in critical areas? Or would this create a new society with different values than we had before? Perhaps, the new society, if we are lucky and learn from the experiences, would ultimately be a more peaceful, compassionate and caring one.

From Paper to Practice

While a change to a utilitarianism foundation may not seem, in principle, to be difficult to describe on paper, the decisions it would mandate in actual practice would be drastically different. This is a crucial point to grasp as such a philosophy asks that a detail-driven, intensely individual and patient-specific field, in which substantial human and technological resources are invested to save the life of one patient (especially when odds of survival are slim) – to shift its goals to societal or group survival. In other words, instead of directing the most energy to those in greatest need, such a focus would direct energy and resources to those who need our help the least. Such triage asks ICU teams to appreciate their own values and culture, and then to radically alter who they are at their core as professionals, as well as adjust their roles and responsibilities to their critically ill patients. One of the most important, yet unresolved questions is: Can frontline ICU teams truly accomplish such a shift in their habitual mindset? (Rottman et al. 2010) Can they perform mass triage effectively over potentially long periods of time? Decisions will result in life or death — literally and more acutely than in normal daily practice. Triage schemes have also asked us to confront who we are as individual healthcare professionals (Ruderman et
al. 2006; Sokol 2006; Barr et al. 2008; Balicer et al. 2006), by reflecting on the extent of our duty to care and whether such a duty changes if we are married or single, a caregiver for relatives, pregnant or ill ourselves (Ruderman et al. 2006; Sokol 2006), etc... While the questions have not been easy to answer, it is to be hoped that the journey has helped us to learn about ourselves—the good and the bad—and to accept that limits exist, and it is necessary to define standards of professionalism in modern times.

Triage Teams?

To try to ensure such a shift to utilitarianism is achievable and decision-making consistent, some triage plans invoke the use of triage officers or teams who would be specially trained to make decisions to initiate, continue or withhold/withdraw life support. Yet little attention has been focused on who such people would be, whether they would need to have a healthcare background, what training, emotional and psychological supports they would need. How would such officers be held accountable for their decisions and how would consistency in decision-making be ensured? (Christian et al. 2006; The Pandemic Influenza Ethics Initiative Workgroup 2008) How would their personal safety be protected in an era of increasing violence towards healthcare workers? Another issue that hasn't been extensively discussed is how would such officers gain and maintain the trust of individual ICU teams and the public especially as the basis of decision making is expected to evolve as more is learned regarding the nature of the illness, its course and response to treatments. Finally, how appeals regarding decisions could be made in a timely manner and to who have not been addressed. If in fact it is not possible to have an appeal or review of individual patients' care until after the pandemic has resolved, this would be poor consolation if the decision resulted in the loss of a loved one.

Communication and Role of the Media

Consistency, transparency and open communication regarding decisions are key to triage yet no attention has been paid to how these can be accomplished. Certainly, the worldwide media is very attuned to stories about potential and real pandemics. The degree of sensationalism we have seen in such reporting does not lead to faith in the media as means of accurate communication in times of greatest need. The role of ICU teams, hospital public relations and public health systems in messaging the public has become a little clearer over the past few years. Their integration regionally and worldwide is extraordinarily challenging and it is clear that the release of consistent messages will be crucial. The development of triage plans has highlighted the need to involve the media before any such situations arise. In this way, channels of communication can be formed and challenges anticipated and resolved. Both fields can provide valuable guidance on how they can help, and reflect on what standards of professionalism are required for its members in order not to engender fear or panic among the public.

Conclusion

Perhaps the most important thing triage planning has taught us is the need for integration like no other. In clinical practice we see the inter-relationships of human physiology and organ systems and what happens when one falls apart. Triage planning brings this imagery home for the healthcare system as a whole. From exploring surge capacity and needs through to actual triage, meeting the needs of patients cannot be done well unless the system functions with cooperation, goodwill and without silos. During the H1N1 pandemic, examples of unprecedented sharing and cooperation were plentiful. However work is still needed to ensure triage plans (from critical care through to public healthcare systems and palliative care) exist, that they make inherent sense, and that they all align (i.e. reflect same considerations of principles and values) on a hospital basis, regionally and globally. Triage planning has shown us what we can achieve with initiative, leadership and global cooperation—setting egos aside. Whether a pandemic hits or not, the challenge for everyone in healthcare is to never forget these broader principles and capabilities.