FO-08 Triage and the ethics of scarcity: who gets the last dose

HEALING after the FALL, research library, FO-08

Researched 10 October 2026 by Claude Opus agent for THRIVING after the FALL, Book Four. Library document, unverified.

Scope and how to read this

This report covers how care has been sorted and rationed when there was not enough, from Larrey's flying ambulances to the ventilator rules of 2020, and what a village of 300 can fix in advance so that the person holding the last vial does not decide alone. The machinery for making and enforcing the village rule belongs to GOVERNING after the FALL. Specific drugs and doses belong to their own briefs (OR-08, IN-05, ME-09, NU-06, SY-07, and FO-11 for humanitarian medicine). Where a dose is needed this report says so and does not invent one.

Three warnings run through everything below. Almost all triage literature assumes that the patient sorted now will reach a hospital later, and after the Fall there is no later. Every framework carries the assumptions of its own culture and law. And the evidence is thin: Jenkins and colleagues found in 2008 that no mass-casualty triage system had been validated against outcomes in real incidents (Jenkins 2008).

1. Where triage came from: Larrey, Pirogov and the battlefield

Larrey. Dominique Jean Larrey (1766 to 1842), surgeon to Napoleon's armies, is usually named as the founder of battlefield triage. His light "flying ambulances" were first used at Metz in 1793 to bring the wounded off the field during the fighting (Wikipedia: Larrey). His *Mémoires de chirurgie militaire, et campagnes* appeared in Paris between 1812 and 1817. Iserson and Moskop quote him from the 1812 Russian campaign: "Those who are dangerously wounded should receive the first attention, without regard to rank or distinction" (Iserson 2007). He treated enemy wounded too, including Mamluks in Egypt in 1798, but in practice he did not spend scarce time on the clearly hopeless, so "most dangerous first" was already bounded by a judgement of who could be helped (Pearce 2022). After Bautzen in 1813 he moved about 150 wounded by wheelbarrow, and survival after amputation in his era ranged from about 5% to 65% depending on the surgeon (Pearce 2022). I could not check the French original [VERIFY].

After Larrey. In 1846 John Wilson of the Royal Navy advised treating first those who need immediate care and are likely to benefit, and deferring both the minor and the probably fatal (Iserson 2007). That three-way split is the real ancestor of modern triage. Walt Whitman, nursing in the American Civil War, described first come, first served (Iserson 2007).

Pirogov at Sevastopol. Nikolay Pirogov reached Sevastopol in late 1854 (Wikipedia: Pirogov). Pearce gives four groups: the hopeless, sent to the Sisters of Mercy and the priests, the urgent, operated on at once in the Assembly of Nobles, the less serious, operated on next day, and the lightly wounded, treated and returned (Pearce 2022). Wikipedia describes five groups. Both agree that the hopeless went to nursing and spiritual care, not to the surgeon. Pearce reports up to ten major amputations an hour with three teams (Pearce 2022). Pirogov is the clearest early case of an explicit expectant category with care attached.

The world wars. A First World War manual warned that a clearing hospital of 300 to 400 beds might receive 1,000 or more cases and that "the greatest good of the greatest number must be the rule" (Iserson 2007). Some triage in both wars aimed at conserving fighting strength. Iserson and Moskop repeat Henry Beecher's account that in North Africa in 1943 the first penicillin went to soldiers with gonorrhoea, who could return to duty, rather than to men with infected wounds (Iserson 2007). The historian Sheena Eagan argued in December 2024 that this story is a misreading (Eagan 2024). I read only her presentation summary, so the story is contested [VERIFY].

Evacuation time. The time from wounding to definitive care fell from 12 to 18 hours in the Second World War to under 2 hours in Vietnam (Iserson 2007). Modern triage grew up in that world. A village after the Fall is back in Larrey's.

Principles. Iserson and Moskop state three conditions for triage: scarcity, an assessor, and criteria (Iserson 2007). In disaster the aim shifts from the best for each patient to the best for the group, serving life, health, efficiency and fairness at the expense of autonomy and the clinician's fidelity to one patient. Failing to act from moral uncertainty is itself unacceptable (Moskop 2007).

2. Mass-casualty sorting: START, SALT and how well they sort

START. Simple Triage and Rapid Treatment was developed in 1983 by the Newport Beach Fire and Marine Department with Hoag Hospital in California, to take about 30 seconds per patient (CHEMM START, Iserson 2007). The rules, identical in the US health department's version (CHEMM START) and in Wikipedia (Wikipedia: START), are:

- Anyone who can walk is sent to one place and tagged green (minor).
- For the rest, check breathing. If not breathing, reposition the airway once. If still not breathing, tag black (dead or expectant). If breathing restarts, tag red.
- Breathing rate over 30 a minute: red.
- No radial pulse, or capillary refill over 2 seconds: red. Benson and colleagues in 1996 preferred the radial pulse because cold delays capillary refill (Wikipedia: START).
- Cannot follow simple commands: red.
- Otherwise yellow (delayed).

The mnemonic is "30, 2, can do" (Wikipedia: START).

How well START sorts. Kahn and colleagues reviewed 148 patients from 14 hospitals after a 2008 train crash in California (Kahn 2009, abstract only). 79 (53%) were overtriaged, 3 undertriaged and 66 matched. Red sensitivity was 100%, but with a confidence interval of 16% to 100% because few were truly critical. A systematic review reports START undertriage of 2.73% to 20% and overtriage of 2% to 53% (Purwadi 2021, secondary). Both agree that START rarely misses the critical and heavily overtriages.

Does overtriage matter? Frykberg and Tepas reviewed 220 bombings with 3,357 casualties from Belfast to Beirut (Frykberg 1988). Mean overtriage was 59%, and critical mortality rose in a straight line with it ($r^2 = 0.845$). Every non-critical patient sent to the surgeon delays a critical one. A simulation by Hupert and colleagues found the effect real but nonlinear, appearing when non-critical casualties swamp capacity (Hupert 2007, abstract only). Sending everyone to the healer is not the safe choice.

SALT. In 2008 a US workgroup led by E. Brooke Lerner proposed SALT (sort, assess, life-saving interventions, treatment and/or transport) (Lerner 2008). I could not open the original, so details come from secondary summaries (WikEM, Lerner 2009). A voice sort sends walkers to one place, assesses those who wave next, and those who do not move first. Before categorising, four life-saving steps are done if needed: control major bleeding, open the airway, decompress the chest, give an antidote auto-injector. The categories are immediate (red), delayed (yellow), minimal (green), expectant (grey) and dead (black). The expectant are those unlikely to survive *given current resources*, to

receive comfort care and be reassessed if resources change (WikEM). That phrase is the key idea of this report: "expectant" describes the resources, not the patient.

SALT was endorsed by the major US emergency, trauma and EMS bodies. The authors of the rival Sacco method replied that it is "model uniform core criteria", not a tested system (Lerner 2009).

Can lay people do it? A 2025 scoping review of 23 studies found moderate bystander accuracy with frequent overtriage (Russam 2025). In it, Nordberg's 2016 study of untrained bystanders found 52% triaged all three cases correctly and 98.5% identified the most severely injured, with 6.3% undertriage and 12.5% overtriage. In 2019, 104 school staff given a 30-minute SALT lecture reached 79.2% accuracy, and 92.3% passed a tourniquet test (School SALT 2019, secondary). These are exercises, not incidents, but they suggest a village can train sorters in an afternoon, and that the main error will be sending too many to the healer.

3. The ICRC's four categories and the explicit expectant

The ICRC manual *War Surgery*, volume 1, by Christos Giannou and Marco Baldan (Giannou 2010), is the most useful source for a village because it is written for surgeons with limited means and slow evacuation. Its rule is "do the best for the most", not "everything for everyone". Its categories were revised at a Master Surgeons Workshop in Geneva in 2002.

- **Category I.** Resuscitation and immediate surgery with a good chance: airway obstruction, tension pneumothorax, internal bleeding, major vessel injury, traumatic amputation.
- **Category II.** Surgery that can wait: stable penetrating abdominal wounds, head wounds with a Glasgow Coma Scale above 8, most compound fractures, major soft-tissue wounds.
- **Category III.** The walking wounded.
- **Category IV.** Unlikely to survive, or to survive only with very poor quality of life, given supportive treatment only: penetrating head wounds with a Glasgow Coma Scale below 8, quadriplegia, burns over 50% of body surface, massive blood loss with no blood to give.

The extracted text of the PDF is partly garbled and the inequality signs for the coma scale and the burn threshold had to be reconstructed [VERIFY]. A secondary source on the New York ventilator rules uses 40% burns as an exclusion, which shows that the threshold is set by resources and differs between documents (ACEP 2020).

The *sift* takes no more than 30 seconds per patient, the *sort* orders category I, and every patient is re-examined repeatedly (Giannou 2010). The triage officer wears an armband and does not treat, beyond opening an airway. Decisions are "dictatorial" on the night with a democratic debrief afterwards. Patients are tagged, and a minimum record is kept: name, age, sex, time and cause of injury, first aid, admission time, vital signs, wound diagram, category and orders.

The manual names the hardest part: accepting that some will receive only analgesia and be moved to a quiet place to die in comfort and dignity. Category IV is re-examined once the priority patients are dealt with, because some prove saveable. It also records an exception made under force, a gunman demanding treatment for his comrade, which a village should expect too (Giannou 2010).

In Kisangani in June 2000, 2,393 wounded were registered and only a fraction (the garbled text appears to say 25%) needed hospital care [VERIFY]. In Monrovia between June and August 2003, 2,567 patients were triaged at JFK Memorial Hospital (2,588 in another passage of the same manual), 1,015 (40%) were admitted and 718 of those (71%) needed surgery (Giannou 2010). Most of the wounded did not need the scarce surgeon.

4. Natural triage: what happens when there is no evacuation

The ICRC manual reports mortality in its hospitals between 1991 and 1993 by the time between wounding and arrival (Giannou 2010):

Time to arrival	Patients	Hospital mortality
Under 6 hours	3,114	5.5%
6 to 24 hours	3,588	3.9%
24 to 72 hours	1,668	2.8%
Over 72 hours	2,430	2.3%

Peshawar in 1990 to 1991 showed the same: 6.3%, 3.0%, 2.4% and 1.5% (Giannou 2010). Mortality *falls* with delay because the most severely injured die before they arrive. The ICRC calls this natural triage. The manual adds that patients triaged expectant count among the died of wounds, whose share rose from about 12% in the Second World War and Vietnam to 23% in Iraq and Afghanistan as faster evacuation brought more of the dying to hospital.

For a village, a patient who has survived a day without care is on average more likely to survive than one brought in at once, so a late arrival is not automatically low priority. And the expectant category will be larger than any modern guideline expects [VERIFY: my inference].

5. The last ventilator: frameworks of 2020 and what the data showed

The principles before 2020. Persad, Wertheimer and Emanuel reviewed eight allocation principles in four groups: equal treatment (lottery, first come, first served), favouring the worst off (sickest first, youngest first), maximising benefit (most lives, most life-years, prognosis) and social usefulness (instrumental value, reciprocity) (Persad 2009, abstract only). No single principle suffices. Their "complete lives system" combines a modified youngest first, prognosis, most lives, lottery and instrumental value. They rejected first come, first served because the well connected reach the front, and sickest first because it ignores whether treatment will work. Kerstein and Bognar replied that the age principle lacks a secure moral basis and in effect favours people aged about 15 to 40 (Kerstein 2010, secondary).

Emanuel and colleagues, March 2020. Published on 23 March 2020, this paper (Emanuel 2020, read through a secondary summary because the journal blocked access) recommended maximising lives and life-years saved, priority for front-line health workers on grounds of instrumental value and never for the rich or powerful, a lottery among patients with similar prognoses rather than first come, first served, which "could encourage crowding and violence", rules specific to each intervention, and no difference between COVID and other patients. It advised triage officers separate from treating teams, and held that withdrawing a ventilator for a patient with a better prognosis is justifiable if patients are told on admission.

Truog, Mitchell and Daley, March 2020. "The Toughest Triage" (Truog 2020, read in full) described the New York State Ventilator Allocation Guidelines of 2015: a triage officer or committee with no clinical responsibility for the patient applies exclusion criteria, ranks by the SOFA organ-failure score, and reassesses at intervals, given in secondary sources as 48 and 120 hours (ACEP 2020). The authors noted that withdrawing a ventilator from a patient who wants it is neither consented nor futile, and that calling it futile is false. They reported Italian physicians "weeping in the hospital hallways". A committee shields clinicians and carries the news to families, a separate team with palliative skill should withdraw, and these patients "deserve the best that palliative care can provide". The US then had about 62,000 full-featured ventilators, 98,000 basic ones and 8,900 in the stockpile (Truog 2020). The New York rules were never formally activated, and one Buffalo system's 2020 version dropped the 48-hour check (Catholic Health 2020, secondary).

What the data showed.

- Wunsch and colleagues applied two rule sets to 40,439 ventilated patients in 291 intensive care units (Wunsch 2020, read in full). The New York criteria put 8.9% in the lowest priority group, and 38.6% of these survived to leave hospital with full care. A lives and life-years rule put 4.3% lowest, and 56.2% of these survived. Agreement was poor (kappa 0.20) and only 655 patients (1.6%) were lowest under both.

- Raschke and colleagues tested SOFA in 675 ventilated COVID patients (Raschke 2021, read in full). It predicted death (area under the curve 0.59, 95% CI 0.55 to 0.63) worse than age alone (0.66). They called it inadequate for ventilator triage.
- Ashana and colleagues studied 113,158 patients at 27 hospitals (Ashana 2021, abstract only). SOFA reached 0.68 and a more detailed score 0.76. SOFA overestimated mortality in Black patients and would have wrongly moved 9.4% of them out of the top priority group.

The best available score was weak and biased, and two reasonable rule sets disagreed about who was hopeless. A village has no score, only the healer's judgement, which will be worse. Its rule must therefore reassess and never withdraw on a single judgement.

Italy, Alabama and the disability challenge. On 6 March 2020 the Italian anaesthetists' society SIAARTI included age among its criteria for intensive care and was widely criticised as ageist (Medicina e Morale 2020, secondary). Alabama's 2010 ventilator criteria allowed exclusion of people with "profound mental retardation" and moderate to severe dementia. Disability groups complained on 24 March 2020, and on 8 April the federal Office for Civil Rights announced that the criteria had been withdrawn, holding that decisions must rest on individual assessment, not stereotypes or judgements of worth (HHS 2020). Ari Ne'eman argued for first come, first served as less discriminatory than prognosis scores [VERIFY: search summary only].

The weighted lottery. From May to July 2020 the University of Pittsburgh Medical Center allocated scarce remdesivir by a lottery designed by Douglas White and Derek Angus, across 21 or 23 hospitals (sources differ) (Healio 2021, Respiratory Therapy 2021). Odds rose 25% for essential workers and for residents of the most deprived areas, fell 50% for those with over 50% chance of dying within a year of another condition, and later rose in pregnancy. A team drew daily with a random number generator. In one round 93 patients were eligible for 55 courses. 61% of the drug went to the favoured groups, who were 56% of patients. It is the only working weighted lottery I found. No outcome study exists.

Public preferences. Huseynov, Palma and Nayga found the US public allocated ventilators towards people under 40 and away from those over 60 (Huseynov 2020). A UK survey by Wilkinson and colleagues reportedly found most people chose the patient with better survival, longer life expectancy, shorter treatment or younger age, chose a coin toss when differences were small, and would favour health workers and parents of young children [VERIFY: search summary only]. Veatch, as summarised by Moskop and Iserson, argued that professionals favour saving the most lives and the public leans towards sickest first (Moskop 2007).

The rule of rescue. Albert Jonsen named in 1986 the urge to rescue the identifiable person whatever the cost to unseen others (Kohn 2011). Asked who should get the last intensive care bed, 45.9% of physicians and 32.6% of nurses gave it to the gravely ill patient in front of them, mostly citing obligation to the identifiable patient (Kohn 2011, abstract only, sample given as 684 or 648 [VERIFY]). In a village the patient will be a neighbour, and the urge stronger.

Idaho. Idaho ran statewide crisis standards from 16 September to 22 November 2021, 67 days (Idaho Capital Sun 2021). I found no study of patient outcomes.

6. Seattle 1962: the committee that chose by worth

Belding Scribner's shunt made long-term dialysis possible. The Seattle Artificial Kidney Center at Swedish Hospital opened with three beds, and dialysis cost about $15,000 per patient per year (Alexander 1962). The King County Medical Society appointed an Admissions and Policies Committee of seven anonymous, unpaid lay people: a lawyer, a minister, a banker, a housewife, a state official, a labour leader and a surgeon. Physicians screened out the medically unsuitable, and the rules excluded non-residents of Washington, people over 45 and children. The committee then weighed age, sex, marital status, dependants, income, net worth, emotional stability, education, occupation, past

performance and potential, and references. Shana Alexander's *Life* article of 9 November 1962, "They Decide Who Lives, Who Dies", made it famous.

Christopher Blagg estimated that from 1962 to 1967 the committee reviewed 80 medically suitable candidates, accepted 60 and rejected 20, and defended it as unavoidable given cost and few machines (UW Magazine). Ethicists criticised it for letting middle-class members choose people like themselves. Sanders and Dukeminier attacked it in the *UCLA Law Review* in 1968, but their much-quoted line about a Thoreau with bad kidneys could not be confirmed in a source I could open [VERIFY]. Such committees disappeared after Medicare began paying for dialysis in 1972 (UW Magazine).

Seattle shows that lay committees can be set up quickly, drift towards their own values unless criteria are fixed in advance, and hide bias behind anonymity. The problem ended through more supply, not better ethics.

7. WHO and ICRC ethics guidance

WHO 2016. The *Guidance for managing ethical issues in infectious disease outbreaks* (WHO 2016, read in full) names justice (fair distribution and fair process), beneficence, utility, respect for persons, liberty, reciprocity (a "fitting and proportional return" to those who carry burdens) and solidarity. On allocation it balances utility, measured by health outcomes, against equity. It allows priority for people essential to the response but not for social value unrelated to critical services. It requires supportive and palliative care so that "no patients are abandoned", like cases treated alike, impartial review of disputes, guards against bribery, and decisions by clinicians with no reason to advocate for one patient, all set up in advance. It also records that the Ebola epidemic raised deaths from tuberculosis, HIV and malaria by diverting care.

ICRC and partners. The *Ethical principles of health care in times of armed conflict and other emergencies*, agreed by the ICRC, the World Medical Association and other bodies, adopted in Durban in October 2014 and launched in 2015, allow no distinction between patients except on clinical need and available resources (ICRC 2015, secondary). This echoes the Geneva Conventions: only urgent medical reasons justify priority.

WHO 2018 on palliative care. The WHO guide to palliative care in humanitarian crises, coordinated by Eric Krakauer (WHO 2018, read in full), says the standard triage table neglects the expectant and recommends marking them blue, with palliative care starting at once. Failing to relieve their suffering is abandonment, and there must never be an intention to hasten death. Comfort care can demand an intensity "that rivals critical care". It asks for a quiet, private place with family present, gentle exploration of what patient and family understand, local ways of giving bad news, psychological first aid, spiritual support, and bereavement support, some of it by community health workers. Undertreating pain in red and yellow patients is substandard. Its essential package centres on oral and injectable morphine with naloxone, plus paracetamol, ibuprofen, haloperidol, hyoscine butylbromide, anti-sickness and bowel medicines, oxygen, lockable opioid boxes, torches, catheters and pressure-relieving mattresses. The only dose detail I found was the morphine ampoule strength (10 mg in 1 ml), so doses must come from the analgesia and palliative briefs.

8. Blockade and shortage: insulin, antibiotics and anaesthesia

Antibiotics. Albert Alexander, an Oxford police constable, received the first therapeutic penicillin at the Radcliffe Infirmary on 12 February 1941 and improved, but the supply ran out despite recovering the drug from his urine, and he died on 15 March 1941 (Wikipedia: Alexander, The Conversation 2022). Four of five other early patients recovered. A village with one course should give the whole course to one patient rather than half courses to two [VERIFY: inference from this case, check against the antibiotic briefs].

From July 1943 Chester Keefer controlled US civilian penicillin for about eight months (Wikipedia: Keefer). Sources differ on his criteria: severe infections resistant to sulphonamides where cure could be expected, or cases where all else had failed. Both are the same clinical rule: give the scarce drug where it decides between death and life. He also made

an exception after a plea from Eleanor Roosevelt. In December 1943, when Winston Churchill had pneumonia, the pathologist Robert Pulvertaft did not have enough penicillin he could trust to risk treating him (HistoryNet).

Insulin. In Toronto, 14-year-old Leonard Thompson received insulin on 11 and 23 January 1922 (University of Toronto). In May 1922 most of the tiny output went to one American, James Havens of Rochester, New York, because his physician had pleaded so eloquently (University of Toronto). It is an early case of priority won by advocacy rather than need.

In Tigray under siege, Gebrekidan and colleagues compared children with diabetes admitted to Ayder hospital in Mekelle (Gebrekidan 2024, abstract only). Before the war there were 56 admissions and no deaths. From September 2021 to August 2022 there were 87 admissions, a case fatality of 9%, and ketoacidosis made up 90% of admissions against 75% before. Running out of medicines was cited in 24%. In October 2022 the region reportedly had about a week of insulin left (Bhekisisa 2022). In Sarajevo a study of 279 people with type 2 diabetes found that 55 no longer needed their usual treatment, with an average weight loss of 11.7 kg (Sanderson, abstract only). I found no insulin mortality data for Sarajevo and nothing for Leningrad. Hunger changes who needs the drug, so rules must be revisited as conditions change.

Anaesthesia. In Gaza from October 2023, news reports quoted WHO and the UN Secretary-General on operations, including amputations on children, done without anaesthesia [VERIFY: news only], and in July 2024 Médecins Sans Frontières warned it was changing dressings every four days instead of two for lack of supplies (al-Monitor 2024). I found no study of how anaesthetics were allocated in any blockade. Ketamine anaesthesia for limited settings is covered by the ICRC manual (Giannou 2010) and belongs to the surgery briefs.

9. Clinical rules and social rules, one by one

Clinical rules ask who will benefit most from the scarce thing. Social rules decide when clinical benefit does not, or override it for a social reason. A village needs both and must keep them apart.

Clinical rules

- *Benefit difference.* Give the scarce thing to those who will die or be badly harmed without it and are likely to live with it. This is Wilson's rule, Keefer's penicillin rule and ICRC category I. Broad ethical support (WHO 2016, ICRC 2015), and triage on benefit lowers critical mortality when it stops overtriage (Frykberg 1988). Its weakness is that predicting death is hard (Wunsch 2020, Raschke 2021).
- *Sickest first.* Larrey's rule, favoured by the public (Moskop 2007) but rejected by Persad and colleagues because it ignores whether treatment works (Persad 2009). Right inside category I, wrong when it pulls resources to category IV.
- *Most lives saved.* Where one patient would use what could save several, save the several (Emanuel 2020, Giannou 2010).
- *Least resource per life.* Prefer the patient who needs one dose over the one who needs ten. The ICRC uses resource use within category IV ("no blood available"). It is the most practical clinical rule for a fixed stock.
- *Reassessment and time-limited trials.* A correction for error rather than a principle, essential given how poorly prognosis is predicted.

Social rules

- *Lottery.* Equal chances. Supported when clinical differences are small (Emanuel 2020, Persad 2009), used with weights in 2020 (Healio 2021), and endorsed by the court in *US v Holmes* (1842). A public draw cannot be captured by the powerful. It can feel like abandoning judgement.
- *First come, first served.* Rewards proximity and connection, rejected as encouraging crowding and violence (Emanuel 2020, Persad 2009), defended by some disability advocates as less biased than scores. After the Fall it favours those who live nearest the healer.

- *Youngest first.* Supported by the life-years argument and by surveys (Huseynov 2020), central to the complete lives system, but criticised as ageist and disputed in its moral basis (Kerstein 2010). In a village, children are the future and the old may hold knowledge no one else has.
- *The healer first.* Supported as instrumental value and reciprocity (Emanuel 2020, WHO 2016): if the only healer dies, everyone loses care. Legitimate only when the healer will return to work and only for what lets them do so. It is the classic route to abuse. In 2014 the MSF and WHO team treating the Sierra Leonean physician Sheik Umar Khan for Ebola decided not to give him the single available dose of the experimental drug ZMapp, citing fairness to others and the risk to public trust, and he died on 29 July (Reuters 2014).
- *The useful first.* Social worth beyond the critical response is rejected by WHO 2016, HHS 2020 and nearly every modern framework. Seattle is the warning.
- *Reciprocity.* Priority for those who took risks for others (WHO 2016), excluded by Persad 2009. A village will feel it strongly, for instance towards someone injured fighting a fire.

Taurek and the numbers. John Taurek argued in 1977 that we need not save the many over the few and should toss a coin, and Frances Kamm replied in 1985 that numbers count (both summarised by Moskop 2007). In practice frameworks use the lottery where Taurek would, among equals, and count lives elsewhere.

10. Capture and abuse in the record

Memorial Medical Center, New Orleans, 2005. After Hurricane Katrina, with no power and temperatures inside above 100 °F (about 38 °C), 45 bodies were recovered from the hospital on 11 September 2005, about five of people who had died before the storm (Wikipedia: Memorial). Patients of the LifeCare unit on the seventh floor had been placed last for evacuation. Of 41 bodies tested, 23 had morphine and/or midazolam in their tissue. The physician Anna Pou and two nurses were arrested in July 2006, and in 2007 a grand jury declined to indict. Sheri Fink's reporting documented how an evacuation order that put the sickest and those with do-not-resuscitate orders last ended in the deaths of patients who had been alive and conscious (Wikipedia: Memorial). Memorial is the clearest modern case of the expectant label applied to people who were not dying, and of the slide from comfort care to hastened death.

Vacunagate and Spain, 2021. In Peru 487 people, including former president Martín Vizcarra, were secretly vaccinated with 3,200 Sinopharm doses supplied beyond those for 12,000 trial volunteers. More than 40 officials resigned, and Vizcarra was banned from office for 10 years (Wikipedia: Vacunagate). In Spain in January 2021 the chief of the defence staff, General Miguel Ángel Villarroya, resigned for jumping the vaccine queue, as did the Murcia health minister (Anadolu 2021).

Advocacy and hidden bias. Havens' insulin (1922) and Eleanor Roosevelt's penicillin plea (1943) show access following advocacy. Seattle shows capture by the committee's class, Alabama by assumptions about disability, and Ashana capture hidden in a neutral-looking score.

The lifeboat. When the ship *William Brown* was lost, crew in the longboat threw 14 to 16 passengers overboard without drawing lots (the ship carried 17 crew and 65 passengers). The seaman Alexander Holmes was convicted of manslaughter in Philadelphia in 1842 and sentenced to six months and a $20 fine. The court held that sailors beyond those needed to work the boat share the common lot, and that lots should be drawn (US v Holmes, Encyclopedia.com). It is the oldest legal support I found for the lottery, and for the principle that those in charge do not save themselves first.

Biafra. During the Nigerian civil war a head nurse at Queen Elizabeth Hospital, Umuahia, told the Associated Press that of 144 children admitted in one month 40 died, and that staff tried to take only cases with a chance (Michigan Daily, AP). In 1969 S. P. F. Hughes reported one doctor, four nurses and two relief workers serving about 150,000 people near Udi, with about 8,000 patients a week (Hughes 1969, search summary only). I found no written selection criteria.

11. Deciding in advance: what a village can fix before the night

WHO, the ICRC and the 2020 frameworks agree: decide the rules before the crisis, in public, and separate the person who applies them from the person who treats (WHO 2016, Giannou 2010, Truog 2020). The forum, the officer and the appeal belong to GOVERNING after the FALL. The medical content of the rule is:

1. **List the scarce things in advance.** Antibiotic courses, insulin, any strong analgesic, blood, oxygen, the healer's hours, a bed by the fire, clean dressings, food in a famine. Count them every month.
2. **State the clinical rule first.** Who benefits most: would die or be disabled without it, likely to recover with it, and the smallest amount needed to get there.
3. **State the tiebreaker.** A public lottery among patients whose expected benefit is similar. The draw is witnessed and recorded.
4. **State the healer exception exactly.** The healer (and a named deputy) gets priority for the scarce thing only if the healer is expected to return to work and the community would otherwise lose care. This is written down and limited.
5. **State the forbidden reasons.** Wealth, kinship to the decider, status, past favours, disability as such, and ordinary age differences among adults, unless the village has openly decided otherwise.
6. **Separate the decider from the carer.** Following the ICRC triage officer and the New York triage committee, the person who allocates should not be the one treating the patient, and should not be a close relative.
7. **Use time-limited trials.** Give the scarce thing for a stated period, reassess against stated signs, and continue or stop by the rule.
8. **Guarantee comfort care.** Everyone not chosen is cared for, never abandoned (WHO 2016, WHO 2018).
9. **Keep a log.** Who asked, what was decided, why, who decided, the outcome. Review it after every event and at least yearly.
10. **Allow appeal afterwards, not during.** The ICRC model: obey on the night, debate in the morning.

12. What is owed to the not-chosen

The record is consistent: the not-chosen are owed care, company and honesty. Pirogov sent them to nurses and priests, the ICRC gives analgesia in a quiet place and re-examines, SALT tags them for comfort and reassessment, WHO 2018 calls failure to relieve their suffering abandonment, and Truog asks for the best palliative care available. They are not owed a hastened death, and Memorial shows how hard that line is to see from inside.

In practice: review every expectant label once the immediate patients are dealt with, let family stay, and say plainly, in the local way, that the cause is "we do not have enough", not "nothing can be done".

Evidence grades

Practice	What the tradition or doctrine says	What the record shows	What modern science infers	Grade
START sift (walk, breathe, RR over 30, radial pulse, obeys commands)	Sorts adults in 30 seconds	One real incident, 148 patients, 53% overtriage, few undertriaged (Kahn 2009)	Safe for catching the critical, wasteful in overtriage, never validated against outcomes (Jenkins 2008)	B (weak)

Practice	What the tradition or doctrine says	What the record shows	What modern science infers	Grade
SALT sort with life-saving interventions	Single national standard	Endorsed by consensus, lay teachers reached 79% accuracy in exercises	Not validated in real incidents	C to D
ICRC four categories including IV	"Best for the most", explicit care of the dying	Used across ICRC hospitals for decades with large series	No trials, plausible and consistent	B
Natural triage (late arrivals survive more)	ICRC observation	Over 10,000 patients, mortality 5.5% to 2.3% by delay	Survivor selection	B
Avoiding overtriage	Send only the critical to the surgeon	Critical mortality rises with overtriage (Frykberg 1988)	Confirmed in simulation, nonlinear (Hupert 2007)	B
SOFA or similar score to deny ventilators	Objective prognosis	Never fully used, 38.6% of "lowest priority" survived (Wunsch 2020)	Discrimination 0.59, worse than age, racially biased	X for deciding alone
Benefit difference (would die without, live with)	Wilson 1846, Keefer 1943, ICRC	Underlies every successful triage system	Ethically supported, prediction imperfect	B
Lottery among equals	Holmes 1842, Emanuel 2020	Used once at scale with weights (UPMC 2020)	Fair by design, no outcome data	D (outcome), ethically strong
First come, first served	Whitman's ward, default in ordinary life	Favours the near and the connected	Rejected by most frameworks	D
Youngest first	Complete lives system	Public surveys favour it	Contested, culturally variable	D
Healer first (instrumental value)	Emanuel 2020, WHO 2016	ZMapp team declined it for one of its own	Defensible only if narrow	D
Social worth committee	Seattle 1962	Bias toward the committee's class	Rejected	X
Separation of decider and carer	ICRC triage officer, New York committee	Reduces clinician distress (Truog 2020)	Plausible, not tested	D
Palliative care for the expectant	Pirogov, ICRC, WHO 2018	Standard in humanitarian guidance	Pain relief effective (see analgesia briefs), protects trust	B to C
Hastening death of the expectant	None of the sources endorse it	Memorial 2005	Forbidden	X

Means ledger

Rung	Sorting casualties	Allocating a scarce dose	Care of the not-chosen	What this rung changes
Hands and knowledge	Ask who can walk, count breaths, feel the wrist pulse, ask for a hand squeeze, press on bleeding	Apply the agreed rule from memory, draw lots with stones or straws	Stay, hold a hand, keep warm and dry, wet the mouth, speak honestly	Most of the benefit of triage is in sending the walking away and finding the few who will die without help
Hearth	Coloured cloth strips as tags, charcoal for writing on cloth, a watch or counting	A written rule pinned up, a tally of stock	Clean bedding, warm drinks if able to swallow, lip care with fat	Tags and a written rule reduce confusion and capture
Garden and still	Ethanol for hand cleaning, labelled stores	A scale to measure stock	Local analgesics only as the analgesia briefs direct. *Papaver somniferum* (opium poppy, latex of the unripe capsule) is the only plant source of morphine, not to be confused with the corn poppy *Papaver rhoeas* [VERIFY]. Preparation and dosing are dangerous and not covered here	Comfort becomes partly possible
Village dispensary (300)	A trained sorter and a separate treater, tourniquets, a triage book	The village rule, a stock ledger, a witness and a lottery, a deputy healer	Salvaged analgesics under lock, a quiet room, a named carer for the dying	The rule can be applied by someone other than the healer, and records allow review
District infirmary (3,000)	Triage officer with armband, ICRC category I to IV, re-examination rounds	A small committee, reassessment at fixed intervals, appeal afterwards	Palliative package as WHO 2018, bereavement support	Surgery and blood change who is expectant. More patients move from IV to I
Hospital before the Fall	START or SALT in the field, evacuation in hours, intensive care	Crisis standards of care, scores, committees, lottery for drugs	Palliative care teams	Evacuation and supply abolish most triage. That is the outcome difference the village cannot buy

Harm test

How triage kills or maims when done wrong.

- *Undertriage.* A critical patient is tagged as able to wait and dies of bleeding or a blocked airway (START undertriage 2.7% to 20%, Purwadi 2021).
- *Overtriage.* Too many sent to the healer, so the critical wait and die (Frykberg 1988).
- *Expectant applied to the saveable.* The most serious error. 38.6% of New York's lowest-priority patients survived with full care (Wunsch 2020), and Memorial shows the extreme. Without reassessment the label fulfils itself.
- *Bias in the predictor.* SOFA mis-sorted Black patients (Ashana 2021). A healer's sense of who looks hopeless carries the healer's biases about age, disability, kin and class.
- *Capture.* The rule bends to the powerful, the decider's kin or the persistent (Havens, Vacunagate).
- *Withdrawal from the unwilling.* Distresses patient, family and carer and can provoke violence (Truog 2020).
- *Hastened death.* Using comfort drugs with intent to shorten life (Memorial).
- *Partial courses.* Splitting a course of a drug so that no one is cured (inference from Albert Alexander) [VERIFY].
- *Paralysis.* Failing to decide, so that the dose expires or everyone gets too little (Moskop 2007).
- *Moral injury and loss of trust.* A decision seen as unfair can break trust in the healer and the rule.

Who must never be labelled expectant without reassessment. Children, whose signs differ and who collapse suddenly [VERIFY: paediatric triage not researched here, check a JumpSTART source]. The cold, because cold delays capillary refill (Wikipedia: START). The drunk or concussed, who may fail to obey commands for passing reasons. Anyone the decider knows personally.

Signs that it is going wrong. The green area is empty and the healer's queue is long. No one has been re-examined in the last hour. The log has gaps. The decider is also treating. Someone is arguing that the rule does not apply this time. Patients tagged expectant are left alone.

What to do then. Stop and re-sort, send the walking away, re-examine the expectant, hand the decision to the deputy, and write down what was done. The historical cases of harm are Memorial, Seattle, the Alabama criteria, Vacunagate, the *William Brown* and the overtriaged bombings reviewed by Frykberg.

Red flags

These signs mean likely death or grave disability without what a village cannot give. In ICRC practice they put a patient in category IV when means are short, though with surgery and blood some move back to category I (Giannou 2010).

- Not breathing after the airway is opened once (START black).
- Penetrating head wound with deep unconsciousness (Glasgow Coma Scale below about 8) [VERIFY threshold].
- Burns over about half of the body surface [VERIFY threshold, 40% in other documents].
- Massive internal bleeding (no wrist pulse, swelling belly, pale and cold) when there is no surgeon and no blood.
- Spinal injury with paralysis of all four limbs.
- In the diabetic without insulin: deep sighing breathing, vomiting, drowsiness (diabetic ketoacidosis) [VERIFY: clinical signs from the diabetes brief, not from the sources above].
- In spreading infection without an effective antibiotic: confusion, falling pressure, mottled skin [VERIFY: from the sepsis brief].

What to do anyway: move to a quiet place, stop the bleeding you can, relieve pain and breathlessness with what the village holds, keep the family near, re-examine later, record time and reason, and tell the truth gently: the cause is lack of means, not the patient's worth.

The process has its own red flags. The rule is being changed on the night. The decider is a relative or the patient is powerful. The decision is being kept secret. A patient is being moved to "comfort only" without a second person agreeing.

The case against

Against counting lives at all. John Taurek (1977) argued that each person's loss is a loss to that person, and that we should give each an equal chance by coin toss rather than save the greater number (Moskop 2007). Few follow him fully, but his argument is why the lottery among equals is in every framework.

Against prognosis scores. SOFA predicted death worse than age (Raschke 2021), carried racial bias (Ashana 2021), and two rule sets barely agreed on who was hopeless (Wunsch 2020). Ari Ne'eman, with Samuel Bagenstos, pressed the disability-rights case against prognosis rules and preferred first come, first served [VERIFY: search summary only]. For a village the critique bites harder, because the healer's judgement is less calibrated than any score.

Against age. Kerstein and Bognar argued that youngest first has no secure foundation (Kerstein 2010), and SIAARTI was attacked as ageist (Medicina e Morale 2020). Many cultures give the old a priority Western frameworks deny, which shows these frameworks are culturally specific.

Against the triage evidence itself. Jenkins and colleagues found no validated mass-casualty triage system (Jenkins 2008). The Sacco authors said SALT is a set of criteria, not a tested tool (Lerner 2009). The accuracy figures for lay sorters come from exercises.

Against the founding stories. Eagan argues that the North African penicillin story is a misreading (Eagan 2024), and Larrey's "most dangerous first" was always bounded by who could be helped (Pearce 2022).

Against the romance of the hospital. The 2020 frameworks were never fully used, Idaho produced no outcome study, and the New York rules would have denied ventilators to many who lived. Modern does not mean right.

Against the romance of the community. Seattle was a community committee and chose people like itself. Rules made in public can still encode prejudice, so the forbidden reasons must be written down.

Feasible today versus after the Fall. Today triage bridges to evacuation and supply, and crisis standards last weeks (Idaho, 67 days). After the Fall scarcity is permanent and evacuation absent, so the expectant category grows. Lotteries, logs, separation of roles and comfort care survive the Fall. Prognosis scores and time-limited intensive care do not.

10-line summary

1. Triage means doing the best for the most, not everything for everyone, and it began with Larrey, Wilson and Pirogov.
2. The safest clinical rule is benefit difference: give the scarce thing to those who will die without it and live with it.
3. Simple sorting (walk, breathe, wrist pulse, obey commands) catches nearly all the critical but overtriages about half.
4. Overtriage kills the critical by delay, so sending everyone to the healer is not the safe choice.
5. "Expectant" means unlikely to survive with the resources at hand, and must be reassessed.
6. The best 2020 prognosis scores were weak and biased: 38.6% of New York's lowest-priority group would have lived.
7. A public lottery is the fairest tiebreaker among similar patients, and has legal roots back to 1842.
8. Social worth, wealth and kinship must be excluded in writing, because Seattle, Memorial and Vacunagate show the capture.
9. Healer priority is legitimate only when narrow, stated in advance and tied to returning to work.

10. The not-chosen are owed comfort, company and honesty, never abandonment and never a hastened death.

Open questions

- How often are patients triaged as expectant in real incidents wrongly so? I found no outcome study of expectant patients.
- Which tiebreaker do villages actually accept in practice, and does a lottery hold when the losers are known neighbours?
- Does separating the decider from the carer reduce errors or only distress? No data.
- How should insulin be shared when it will run out regardless: one patient fully or several partly? No study found for Tigray, Sarajevo or Leningrad.
- How was anaesthesia allocated in blockades? Only news reports exist.
- Was the North African penicillin really given to soldiers with gonorrhoea first? Contested (Eagan 2024).
- What expectant thresholds (burns, coma, blood loss) fit a village with no surgery? The ICRC figures assume a surgical hospital.
- How should cultures that honour age weigh it against life-years? Public surveys differ by country.

Sources to read in full

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2. WHO 2018, palliative care in humanitarian emergencies. What is owed to the expectant.
3. Iserson and Moskop 2007, parts I and II. History and principles.
4. WHO 2016, ethics in infectious disease outbreaks. Allocation principles and process.
5. Truog, Mitchell and Daley 2020, "The Toughest Triage". Separation of roles and withdrawal.
6. Wunsch and colleagues 2020. How badly reasonable rules disagree.
7. Persad, Wertheimer and Emanuel 2009. The map of principles (I read only the abstract).
8. Alexander 1962, *Life*. The Seattle committee in its own words.
9. Sheri Fink 2013, *Five Days at Memorial*. Not read here, but the fullest account of triage abuse in a modern hospital [VERIFY].

At the bedside after the Fall

Household. Minimum: every adult knows the four questions (can you walk, are you breathing, is there a wrist pulse, can you squeeze my hand), how to press on bleeding, the village rule and who applies it. Materials: coloured cloth in five colours, pencil and paper. First failure to expect: the household carries its own injured straight to the healer and demands priority, the rule of rescue at its strongest.

Village of 300. Minimum: a written allocation rule adopted in public, a named sorter and deputy who are not the healer, a monthly stock ledger, a practised lottery, a quiet room for the dying, and a log book. Skills: an afternoon of START or SALT training with a yearly drill (lay accuracy of 52% to 79% in exercises). No plant replaces a missing drug. First failure to expect: on the first night the healer is also the decider, overtriages, and is too exhausted to re-examine the expectant. The second is a relative of the healer or a leader receiving the last dose outside the rule.

District of 3,000. Minimum: a triage officer using the ICRC categories, a small allocation committee with a reassessment schedule, a palliative carer, a stock ledger shared with the villages, and appeals heard afterwards. First failure to expect: villages sending everyone to the infirmary, then disputes over who controls the district stock (a matter for GOVERNING after the FALL).

Protocols

Protocol 1. The village sift (adapted from START and SALT, for adults)

Time per patient: no more than 30 seconds. Tolerance: if you have spent a minute, tag and move on.

- ☐ Shout: "Anyone who can walk, go to the green cloth by [named place]." Tag them all green later. Tell one person to watch them.
- ☐ Shout: "If you can hear me, raise an arm." Go first to those who do not move, then to those who wave.
- ☐ For each patient, in order:
  - ☐ Stop major bleeding with direct pressure or a tourniquet. This is the one treatment the sorter gives.
  - ☐ Breathing? If not, open the airway once (tilt the head, lift the chin). If still not breathing, tag black and move on. If breathing restarts, tag red.
  - ☐ Count breaths for 15 seconds and multiply by 4. Over 30 a minute: red.
  - ☐ Feel the wrist pulse. Absent: red. (Capillary refill over 2 seconds also means red, but is unreliable in the cold.)
  - ☐ Ask the patient to squeeze your hand. Cannot: red.
  - ☐ Otherwise: yellow.
- ☐ Tie the coloured cloth to the wrist and write the time on it.
- ☐ Send the reds to the healer in the order you found them, unless the healer's sorter changes the order.
- ☐ Return to every yellow and every blue or black within 30 to 60 minutes and repeat the sift [VERIFY: interval is my inference, the ICRC says only "repeatedly"].

Protocol 2. The infirmary sort (ICRC categories, district level)

- ☐ Appoint the triage officer. Armband on. The triage officer does not treat.
- ☐ Sift every arrival into I, II, III or IV in no more than 30 seconds each.
- ☐ Within category I, sort by urgency: airway first, then breathing, then bleeding.
- ☐ Category IV: move to the quiet place, start comfort care at once (Protocol 4), write the reason and time.
- ☐ When all category I patients are under treatment, re-examine every category IV patient. Move any who could now be saved.
- ☐ Re-examine category II at regular intervals, because they deteriorate.
- ☐ Keep the minimum record for every patient: name, age, sex, time and cause of injury, first aid, admission time, vital signs, wound diagram, category, orders.
- ☐ Decisions on the night are final. Debate them at the debrief (Protocol 6).

Protocol 3. The last dose (village rule, applied by the allocator, not the healer)

- ☐ Confirm the stock: how many complete courses or doses exist, and their expiry.
- ☐ List every patient asking for it. Write each name in the log with the time.
- ☐ For each, the healer answers three questions in writing: Will this patient likely die or be gravely harmed without it? Will this patient likely recover with it? How much of the stock will this patient need?
- ☐ Exclude those who will recover without it and those who will not recover with it. Move the second group to comfort care.
- ☐ Among the rest, prefer those who need the least of the stock to recover. Give whole courses, never split courses [VERIFY against the drug briefs].
- ☐ Apply the healer exception only if it is written in the village rule, only to the healer and named deputy, and only if they are expected to return to work.
- ☐ If two or more remain with similar benefit, draw lots in front of a witness from outside both families. Record the draw.

- ☐ Set a review time for the chosen patient (for example, after a stated number of days) and the signs that would mean stopping [VERIFY: review interval depends on the drug, see the drug briefs].
- ☐ Never use: wealth, kinship to the decider, status, past favours, disability as such.
- ☐ Tell the families of all patients the decision and the reason in plain words, the same day.
- ☐ Start comfort care for those not chosen (Protocol 4).

Protocol 4. Care of the not-chosen

- ☐ Move to a quiet, sheltered place. Allow family to stay.
- ☐ Name one carer responsible for this patient at all times.
- ☐ Relieve pain and breathlessness with what the village holds, at doses from the analgesia and palliative briefs. Do not give any drug with the intent to shorten life.
- ☐ Keep warm, dry and clean. Turn every 2 hours if the patient cannot move [VERIFY: standard nursing interval, not from the sources above]. Moisten the mouth and lips.
- ☐ Ask what the patient and family understand. Tell the truth gently, in the local way. Say that the cause is lack of means.
- ☐ Offer spiritual support from whoever the patient wishes.
- ☐ Offer to write down last wishes or a message.
- ☐ Re-examine when the immediate patients are dealt with. If the patient could now be saved, move them.
- ☐ After death, care for the body and the family. Record the death in the log.

Protocol 5. Writing the village rule in advance

- ☐ Adopt the ten points of section 11 through the process set out in GOVERNING after the FALL.
- ☐ Name the allocator, a deputy (neither the healer) and the keeper of the stock ledger.
- ☐ Write the rule down, read it aloud, post it where the stock is kept.
- ☐ Rehearse a sift drill and a last-dose drill at least yearly, and review the rule after each use [VERIFY: frequency is my suggestion].

Protocol 6. The debrief

- ☐ Within 3 days of the event [VERIFY: interval is my suggestion].
- ☐ Read the log aloud. For each decision: what was known, what was decided, what happened.
- ☐ Ask the decider, the healer, the carers and the families.
- ☐ Note every departure from the rule and why.
- ☐ Change the rule if needed, through the governing process.
- ☐ Care for the carers. Truog's weeping clinicians are a warning, not a weakness.

Numbers to carry

1. **30 seconds** per patient to sift (START, ICRC).
2. **30 breaths a minute** or more, no wrist pulse, or cannot obey: red.
3. **About half** of START patients are overtriaged (79 of 148 in the 2008 train crash).
4. **Overtriage kills**: in 220 bombings, critical mortality rose with overtriage ($r^2 = 0.845$).
5. **38.6%** of patients put lowest priority by New York's rules survived with full care.
6. **0.59 versus 0.66**: the SOFA score predicted death worse than age alone.
7. **5.5% to 2.3%**: hospital mortality falls with delay because the sickest die on the way (natural triage).
8. **Burns over about 50%** of the body, deep coma after a penetrating head wound, massive bleeding without blood: ICRC category IV when means are short [VERIFY thresholds].
9. **48 and 120 hours**: New York's reassessment points for a time-limited trial.

10. **Never abandoned**: everyone not chosen gets comfort care at once.

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