SY-03 The case against allopathy: iatrogenesis, overtreatment and the McKeown thesis

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

How to read this document

This report puts modern Western medicine on trial and then cross-examines the prosecution. It asks how much of the fall in mortality since 1750 came from medicine, what harm medicine does, and which practices a household, a village of 300 and a district of 3,000 can drop without loss.

Three kinds of evidence are kept apart: what the critics said (McKeown, Illich, Welch, Prasad and Cifu, Makary), what the record showed (registration data, trials, case series, natural experiments), and what later analysts inferred (decompositions, meta-analyses and models, several since corrected).

This is a synthesis paper, not a remedy paper. It assesses no plant remedy, so no Latin binomials appear. Its "remedies" are practices: antisepsis, antibiotic restraint, tapering, watchful waiting, and the few modern interventions with no substitute. Companion reports are FO-01 (what people die of when systems fail), FO-05, SY-02, ME-10, IN-05 and SY-05.

The short answer: bedside medicine did little for population mortality before about 1935. Clean water, sanitation, food and smallpox vaccination did more. From 1935 a small set of tools (sulphonamides, penicillin, streptomycin, insulin, uterotonics, safe surgery, blood, vaccines) saved very large numbers from specific causes. Around that core sits a large penumbra of overdiagnosis, overtreatment and reversed practice that a post-Fall community will not miss. The trouble is that core and penumbra came in the same building, and the Fall removes both.

1. Findings by section

1.1 The McKeown thesis

Thomas McKeown, professor of social medicine at Birmingham, argued in *The Modern Rise of Population* (1976) and *The Role of Medicine* (1976) that population grew from the eighteenth century because deaths from infection fell, and that this was due mainly to better nutrition, later to hygiene, and only marginally and late to medicine (Colgrove 2002, Mackenbach 1996). I did not read his books. His argument is known here through summarisers and critics.

His method was elimination. Using cause-specific death registration for England and Wales from 1838, he showed that 74 per cent of the fall in mortality from 1848 to 1854 through 1971 came from conditions caused by micro-organisms (Mackenbach 1996), and that most of these declined before any effective drug or vaccine. He then ruled out medicine by timing and changes in microbes as implausible, leaving living standards, above all food.

Tuberculosis was the centre of the case. A 1979 letter in the *New York Review of Books*, whose author I could not confirm, sets out McKeown's figures: 57 per cent of the fall in respiratory tuberculosis deaths had happened by 1900

and 90 per cent before chemotherapy. The rate was about 800 per million in 1925, a fifth of its 1838 value, and about 400 per million by 1948 (NYRB 1979).

John and Sonja McKinlay (1977) applied the same logic to the United States. Medical measures against five infections (influenza, pneumonia, diphtheria, whooping cough and polio) accounted for about 3.5 per cent of the fall in total mortality since 1900 (McKinlay and McKinlay 1977, quoted by Kindig 2020). A lower bound of 1 per cent, often quoted with it, could not be confirmed.

Even McKeown conceded one exception: smallpox vaccination reduced smallpox deaths (Davenport et al. 2011).

1.2 The critics of McKeown

Szreter (1988) argued that McKeown's evidence could not carry his conclusion and that his focus on nutrition left no room for organised human action. He put preventive public health and the response of local authorities to urban crowding, from about 1850 to 1914, in its place (abstract read). In a later reply to Guha he noted that London real wages showed no net rise from the 1740s to the 1840s, and that the fall in respiratory tuberculosis did not begin until 1867, which fits poorly with a story of food (Szreter 1994, secondary summary only [VERIFY]).

Harris (2004) reached a qualified defence: nutrition was one of a "battery of factors" with a key role, but not the only one.

Colgrove (2002) concluded that later research largely undercut McKeown, who had questioned even sanitary reform, vaccination and quarantine. The thesis endures, he argued, because it frames a real policy choice between targeted interventions and broad redistribution.

Mackenbach (1996) found that in the Netherlands infections explained 47 per cent of the fall in male and 45 per cent of female mortality from 1875 to 1879 through 1970, a smaller infectious share than McKeown's. I could not read Mackenbach's own estimate of medicine's share.

Bowden and Sadler (2015) add that interwar observers already credited clean water and tuberculosis dispensaries.

Smallpox. Davenport, Schwarz and Boulton (2011) found vaccination crucial to the decline of smallpox from early in the nineteenth century, by which time it was becoming a minor cause of death. Its case fatality is itself under revision: 40 to 53 per cent where adults and children were all susceptible and 8 to 10 per cent where it was endemic in children (Schneider and Davenport 2025, working paper).

1.3 How large were the parts?

Clean water. Cutler and Miller (2005) used the staggered arrival of filtration and chlorination in American cities from 1900 to 1936. They first credited clean water with nearly half the fall in urban mortality, three quarters of the infant fall and two thirds of the child fall. After an erratum they revised the total share to 38 per cent. Anderson, Charles and Rees re-examined the data. Correcting infant death counts cut the infant effect from 43 to 13 log points. Their published estimate (2022) is an 11 to 12 per cent fall in infant mortality from filtration, with no detectable effect from sewage treatment or milk standards, and an "extremely fragile" effect on total mortality. The direction holds. The size is contested by a factor of two to three.

Sulphonamides. Jayachandran, Lleras-Muney and Smith (2010) used the arrival of sulpha drugs in 1937, with untreatable diseases as controls. From 1937 to 1943 sulpha cut maternal mortality by 24 to 36 per cent, pneumonia by 17 to 32 per cent and scarlet fever by 52 to 65 per cent. Total mortality fell 2 to 3 per cent, worth 0.4 to 0.7 years of life expectancy, from one drug class in six years.

Income. Preston (1975) found that income growth explained only 10 to 25 per cent of the world gain in life expectancy from the 1930s to the 1960s. Income alone would have raised it by 2.5 years, against the 12.2 years observed. That is a direct blow to McKeown's story for the twentieth century, though not for the nineteenth.

Medicine's account. Bunker, Frazier and Mosteller (1994) credited medical care with about five of the roughly thirty years of American life expectancy gained in the twentieth century, with two more available from better use of known treatments. Bunker later put the share at about three of the seven years gained since 1950 (Bunker 2001, secondary summary [VERIFY]).

Vaccination. Shattock and colleagues (2024) modelled fifty years of the Expanded Programme on Immunization: about 154 million deaths averted since 1974, 146 million of them in children under five. Vaccination explains about 40 per cent of the fall in global infant mortality, 52 per cent in Africa, and measles vaccine gives about 60 per cent of the benefit. This is a model, not a count.

Tuberculosis at the bedside. Untreated smear-positive tuberculosis killed 53 to 86 per cent of patients within ten years, weighted mean 70 per cent, and smear-negative disease about 20 per cent (Tiemersma et al. 2011). A *Thorax* review reports case fatality falling from about 50 per cent before chemotherapy to under 10 per cent after it [VERIFY]. Both facts hold: tuberculosis fell for a century before streptomycin, and drugs still turned a death sentence into a cure for the person who had it.

Verdict. McKeown was right that bedside medicine did little for population mortality before about 1935. He was wrong to dismiss sanitation and smallpox vaccination, and wrong if read as saying medicine contributes little now. His data were English, mostly pre-antibiotic and built on death certificates of uncertain accuracy.

1.4 Illich and the three iatrogeneses

Ivan Illich's *Medical Nemesis* (1975, later *Limits to Medicine*, 1976) opens with the claim that the medical establishment had become a major threat to health. He named three layers of harm (Illich 1976, read through summaries):

- **Clinical iatrogenesis.** Direct injury by drugs, procedures and hospital infection, and the failure to reduce illness at all.
- **Social iatrogenesis.** Birth, ageing, grief and dying are turned into medical events needing professional management.
- **Cultural iatrogenesis.** Traditional ways of bearing pain and caring for the sick and dying at home are destroyed.

A 1977 review in *Reason* called his analysis ingenious but wrong while granting it had to be taken seriously. For this book the third layer matters most. Households that handed birth, nursing and dying to institutions for three generations meet the Fall without the skills their great-grandparents had. It is the one form of iatrogenesis the Fall reverses whether people want it or not.

1.5 Four historical harms

Washington, December 1799. For a severe throat infection, George Washington's physicians bled him of 20, 20, 40 and 32 ounces, after 12 to 14 ounces taken the night before (Vadakan). Totals in different accounts run from 80 to 124 ounces, several litres in under a day [VERIFY]. He died. Bloodletting is the model of a confident, universal, harmful practice.

Vienna, 1846 to 1848. In 1846 the doctors' obstetric clinic lost 459 of 4,010 mothers (11.4 per cent) to puerperal fever, against 2.8 per cent in the midwives' clinic. Semmelweis required hand washing in chlorinated lime from 1847. Mortality in the doctors' clinic fell to 1.27 per cent in 1848, from 18.27 per cent in 1847 by one secondary source (Semmelweis clinic statistics). Doctors carrying matter from the dissecting room had been killing about one mother in ten. The cure was a basin.

Glasgow, 1864 to 1870. Lister reported 16 deaths in 35 amputations before his carbolic system (about 45 per cent) and 6 in 40 after it (15 per cent) (Lister 1870). He conceded the numbers were small, and historians have questioned his selection.

Thalidomide, 1957 to 1961. Sold as a sedative and taken for morning sickness, it caused severe malformations in more than 10,000 children (Vargesson 2015). About 40 per cent died as newborns (McBride 2002, German data). Lenz presented the link in November 1961.

1.6 How many deaths does medical care cause?

The estimates span an order of magnitude.

Study	Setting	Counted	Result
Brennan et al. 1991	30,121 records, 51 New York hospitals, 1984	Adverse events	3.7% of admissions, 27.6% of them negligent, 13.6% fatal
Institute of Medicine 1999	US, extrapolated	Deaths from preventable error	44,000 to 98,000 a year
Lazarou et al. 1998	Meta-analysis	Adverse drug reactions in hospital	Serious 6.7%, fatal 0.32%, projected 106,000 US deaths
Makary and Daniel 2016	Pooled rates applied to 2013	Deaths from medical error	251,454 a year, "third leading cause"
Hogan et al. 2012	1,000 deaths, 10 English hospitals	Deaths more likely than not preventable	5.2%, about 11,859 a year in England
Rodwin et al. 2020	8 studies, 12,503 deaths	Preventable hospital deaths	3.1%, about 22,165 US deaths a year, 7,150 with over three months to live
Panagioti et al. 2019	70 studies, 337,025 patients	Preventable harm, all settings	6% of patients, 12% of that severe or fatal

Why they differ. Lazarou's pooled hospitals were probably unrepresentative (accompanying editorial, as reported), and an Ontario analysis did not place adverse drug reactions among the top causes of death. Makary and Daniel combined rates without formal synthesis. Shojania and Dixon-Woods (2017) judged the result very likely wrong and warned that inflated figures could harm the patient-safety cause. Hogan and Rodwin instead had doctors review each death and judge whether error caused it. Most preventable deaths were in patients expected to live less than a year.

The honest reading. About 3 to 5 per cent of hospital deaths are preventable, roughly 22,000 a year in the United States. Makary's figure is about eleven times higher. Medical harm is common and mostly non-fatal: about one patient in twenty meets preventable harm. It is not the third leading cause of death.

Hospital infection. About 4 per cent of American inpatients had a health-care-associated infection in 2011, extrapolated to 721,800 infections in 648,000 patients (Magill et al. 2014). Secondary sources attach about 75,000 deaths among them, which is not the same as deaths caused [VERIFY]. By 2015 prevalence had fallen to 3.2 per cent (Magill et al. 2018). In low and middle-income countries pooled prevalence was 10.1 per cent, and 15.5 per cent in the better studies, against 7.1 in Europe and 4.5 in the United States (Allegranzi et al. 2011). The post-Fall district infirmary will resemble the poor hospital, not the rich one.

Doctors' strikes. Cunningham and colleagues (2008) reviewed five strikes from 1976 to 2003, lasting nine days to seventeen weeks. In every one, death rates held or fell, probably because elective surgery stopped. Emergency care continued throughout. The lesson is narrow: much routine activity can pause for weeks without measurable deaths, provided the emergency core keeps working.

1.7 Overdiagnosis and screening

Welch, Schwartz and Woloshin made the case in *Overdiagnosed* (2011, not read). Welch and Black (2010) estimated that 25 per cent of breast cancers found by mammography, 60 per cent of prostate cancers found by PSA testing and 50 per cent of lung cancers found by chest X-ray and sputum screening were overdiagnosed: they would never have caused symptoms or death.

In Korea, cheap thyroid ultrasound added to a national screening programme raised thyroid cancer diagnoses fifteen-fold from 1993 while mortality stayed flat (Ahn et al. 2014 [VERIFY]).

The Cochrane review of mammography (Gøtzsche and Jørgensen 2013) found about a 19 per cent fall in breast cancer deaths across all trials and no significant fall in the best ones. Its illustration: of 2,000 women invited for ten years, one avoids death from breast cancer, ten are treated unnecessarily and more than 200 suffer distress from false alarms. In the European prostate trial, 1,410 men had to be invited and 48 extra cancers diagnosed to prevent one death at nine years, and 781 and 27 at thirteen years (Schröder et al. 2009, 2014).

Screening the well for small cancers is the clearest case of real but tiny benefit with real harm. After the Fall it is also impossible. It belongs on the list not to mourn.

1.8 Reversals and low-value care

Prasad and colleagues (2013) reviewed 1,344 articles in the *New England Journal of Medicine* from 2001 to 2010. Of 363 that tested an established practice, 146 (40.2 per cent) reversed it and 138 (38 per cent) reaffirmed it. Popular accounts say "40 per cent of medicine is wrong". The finding is 40 per cent of the established practices someone thought doubtful enough to test. Herrera-Perez and colleagues (2019) found 396 reversals among more than 3,000 trials in three journals from 2003 to 2017. 92 per cent were in high-income countries and a third concerned drugs.

Three reversals had deaths attached:

- **CAST (1989).** After heart attack, suppressing extra heartbeats seemed logical. 56 of 730 patients on encainide or flecainide died against 22 of 725 on placebo (7.7 against 3.0 per cent).
- **Women's Health Initiative (2002).** In 16,608 healthy women, oestrogen plus progestin caused, per 10,000 woman-years, 7 more coronary events, 8 more strokes, 8 more pulmonary emboli and 8 more breast cancers, against 6 fewer colorectal cancers and 5 fewer hip fractures.
- **Knee arthroscopy.** In 180 patients with osteoarthritis, real arthroscopic surgery did no better than a sham operation over two years (Moseley et al. 2002).

Schwartz and colleagues (2014) found that 25 to 42 per cent of 1.36 million Medicare beneficiaries received at least one of 26 low-value services in a year, at 0.6 to 2.7 per cent of spending. Shrank and colleagues (2019) put American health-care waste at 760 to 935 billion dollars a year, about a quarter of spending, but only 76 to 101 billion of it was overtreatment. Most was administration and pricing, which do not injure bodies. Choosing Wisely, launched by the ABIM Foundation in 2012, had 17 societies naming 90 practices to question by February 2013. Five advise against imaging non-specific low back pain.

None of the reversals I found concerned antibiotics for bacterial sepsis, insulin, surgery for obstruction or measles vaccine. Reversal lists cover the margins, not the core.

1.9 Antibiotic overuse and resistance

Fleming-Dutra and colleagues (2016) found 506 outpatient antibiotic prescriptions per 1,000 Americans a year, of which only 353 were appropriate. About 30 per cent were unnecessary, mostly for colds, bronchitis, sinus and ear complaints, about 47 million a year. Food animals took an estimated 63,151 tonnes in 2010, projected to reach

105,596 tonnes by 2030 (Van Boeckel et al. 2015). A common claim that 73 per cent of all antimicrobials go to animals could not be confirmed [VERIFY].

The cost arrived. In 2019, 1.27 million deaths were directly attributable to bacterial resistance and 4.95 million associated with it, with the highest rate in western sub-Saharan Africa (Murray et al. 2022).

Two trials show waste even where antibiotics were needed. In the PTC trial, adults with moderate pneumonia who were stable after three days of a beta-lactam did as well stopping as continuing for five more days, with cure in 77 against 68 per cent (Dinh et al. 2021). In CODA, seven in ten adults with appendicitis treated by antibiotics avoided surgery for ninety days. But 41 per cent of those with an appendicolith needed surgery, and their complication rate was 20 per cent against 3.6 per cent with early operation (CODA Collaborative 2020).

After the Fall every dose spent on a cold is a dose missing for puerperal fever, and in a closed village a resistant strain stays.

1.10 The dependence the system creates

In England in 2016, 48 per cent of adults had taken a prescribed medicine in the past week and 24 per cent three or more, rising to over 90 per cent at age 75 and over. Blood pressure and lipid-lowering drugs led (Health Survey for England 2016). In Tayside by 2010, 20.8 per cent of adults were dispensed five or more drug classes and 5.8 per cent ten or more, including a quarter of those over 80. One adult in eight received a potentially serious interaction, and 80.8 per cent of those on fifteen or more drugs (Guthrie et al. 2015).

Most such drugs prevent events years away. FO-01 covers those whose loss kills fast. But some drugs harm when stopped suddenly, and that harm comes in the first week:

- **Glucocorticoids** (prednisolone and similar) above replacement dose for more than three to four weeks suppress the adrenal glands (MJA 2023 review). After stopping, adrenal insufficiency was estimated in 46 to 100 per cent at 24 hours and 26 to 49 per cent at about a week (Dinsen et al. 2013). Withdrawal must be gradual, though no schedule is agreed. In illness the dose should be tripled.
- **Benzodiazepines.** Seizures can follow abrupt withdrawal from about 24 hours with short-acting drugs. High dose, short half-life and abrupt stopping raise the risk (Pharmacopsychiatry 1995).
- **Beta-blockers.** Rebound after abrupt stopping is warned of, but trials disagree (MILIS, REBOOT and ABYSS analyses).

Social dependence is measurable in birth. Caesarean rates up to about 10 per cent of births are linked with lower maternal and newborn mortality, but rates above that are not (Betran et al. 2016), though a later analysis placed the threshold nearer 19 per cent. Many countries are far above it, and many women and midwives no longer know an unaided normal birth.

1.11 The counter-case: what nothing else does

Condition	Without	With	Source
Pneumococcal pneumonia	About 30% died	Large fall with sulpha and penicillin	Bullowa 1937, via Shlaes and Bradford 2018
Bacteraemic pneumococcal pneumonia	70 to 90% died	17% with penicillin	Austrian and Gold 1964
Bacteraemia from skin infection	Up to 15%	About 2% with sulphonamides	Shlaes and Bradford 2018
Infective endocarditis	Uniformly fatal	About 20%	Shlaes and Bradford 2018

Condition	Without	With	Source
Bacterial meningitis	70 to 100% by organism	Large fall	JPMA review
Smear-positive tuberculosis	70% dead in ten years	Under 10%	Tiemersma et al. 2011
Childhood (type 1) diabetes	Months, about 18 at best on starvation diet	Years to decades with insulin	Mazur 2011
Diphtheria	About 30% before 1894	12 to 25% in early antitoxin series	BMJ reports 1895 to 1897
Puerperal fever, Vienna doctors' ward	11 to 18% of mothers	1.3% with hand antisepsis	Semmelweis clinic statistics
Postpartum blood loss of 500 ml or more	239 per 1,000 births	122 per 1,000 with oxytocin	Salati et al. 2019
Births with no obstetric care	About 872 maternal deaths per 100,000, about 100 times the state rate	State rate	Kaunitz et al. 1984
Surgically treatable conditions, 2010	16.9 million deaths, 32.9% of all deaths	Not stated	Meara et al. 2015

Septic shock. In 2,731 patients, survival was 79.9 per cent when an effective antibiotic was given within the first hour of low blood pressure, and fell an average 7.6 per cent for each hour of delay over the next six (Kumar et al. 2006). This was observational. A 2017 study found smaller effects: 0.3 per cent more deaths per hour of delay in sepsis and 1.8 per cent in shock (Liu et al. 2017). The direction is consistent and the effect is largest in the sickest.

Population effect. Spellberg estimated that antibiotics cut American infectious deaths by about 220 per 100,000 in fifteen years, while all advances in the next 45 years removed about 20 more (Foreign Policy 2011 [VERIFY]).

Maternal mortality. In England and Wales it was 4.9 per 1,000 births in 1851 to 1855 and still 4.3 per 1,000 in 1931 to 1935 (Fox 1993). Eighty years of rising wages and sanitation barely moved it. It fell from about 1935, first with sulphonamides against puerperal infection, later with ergometrine, transfusion and safer caesarean section (Loudon 1992). This is where McKeown's story fails most clearly.

Insulin. Leonard Thompson, aged 14 and about 65 pounds, was treated in Toronto in late 1921 and early 1922. Elizabeth Hughes fell from 75 to 45 pounds on a starvation diet before insulin reached her (Toronto insulin collection). Some patients on such diets starved to death (Mazur 2011). With insulin, both lived for years. Nothing in the garden or the still replaces it.

Surgery. Appendicitis carried about 10 per cent mortality when early operation began in the late 1880s. A Cook County series from 1912 to 1916 lost 58 of 822 (7 per cent). Deaths fell steeply in 1940 to 1942, which Wangensteen credited to sulphonamides, anaesthesia and fluids. Today death after appendectomy is 0.8 per 1,000 without perforation and 5.1 with it (appendicitis history review 2019). I found no reliable figure for untreated appendicitis [VERIFY]. Obstructed labour, strangulated hernia and bowel obstruction are in the same class: mechanical problems that kill unless someone opens the body. About five billion people lack safe surgery and anaesthesia (Meara et al. 2015).

Anaesthesia and blood. I found no clean estimate of what either adds alone. Their value is mainly as enablers of surgery and haemorrhage care [VERIFY, see ME-10 and IN-05].

1.12 The honest ledger

Modern practices not to mourn. Their loss costs few lives and spares harm.

- Screening the well for small cancers: mammography, PSA, thyroid ultrasound, chest X-ray for lung cancer.
- The reversed practices: arrhythmia suppression of harmless beats, hormone therapy for the heart, arthroscopy for arthritic knees, imaging of simple back pain.
- Antibiotics for colds, bronchitis and most sore throats, ears and sinuses, and long courses where short ones work.
- Polypharmacy beyond a core of drugs with large near-term benefit.
- Elective procedures of marginal benefit.
- Caesarean section far beyond need, and the medicalisation of normal birth and dying.

Cheap old practices to keep at all costs. These came before industrial medicine and save many lives: hand antisepsis before births and wounds, boiled instruments, clean water and separated sewage, oral rehydration and nursing (FO-01), isolation of the infectious, and restraint.

Practices that need substitutes at any cost. Their effect is beyond doubt and no household can make them:

- Antibiotics for bacterial pneumonia, sepsis, meningitis, puerperal fever and infected wounds.
- Vaccination, above all against measles.
- Surgery for obstruction of bowel, labour or hernia, with anaesthesia.
- Uterotonics and blood for postpartum haemorrhage.
- Insulin for type 1 diabetes, for which no substitute exists (FO-01).
- Tuberculosis chemotherapy.

The cruel arithmetic is that the first list is large in activity and small in lives, and the last is small in activity and very large in lives.

2. Evidence grades

A: trials or systematic reviews. B: consistent observational or clinical series, including the pre-antibiotic record. C: convergent tradition with plausible mechanism. D: single tradition, anecdote or theory. X: shown ineffective or harmful.

Practice or claim	What advocates said	What the record shows	What science infers	Grade
Medicine did little before 1935	McKeown	Mortality fell before effective therapy	Largely right	B
Nutrition as the main cause	McKeown	No London wage rise 1740s to 1840s	One cause among several	D
Clean water and sanitation	Szreter	City effects, revised down	Real, size contested	B
Smallpox vaccination	Saves lives	Smallpox minor by mid-1800s	Large for one disease	B
Mass immunisation	Saves children	154 million deaths averted (model)	Largest medical gain since 1974	A for vaccines, B for the total
Sulphonamides	Cure streptococcal infection	Maternal deaths down 24 to 36%	Large, specific	B
Antibiotics for bacteraemia, meningitis	Cure	70 to 90% fatality to 17%	Beyond doubt	B
Early antibiotic in septic shock	Each hour counts	7.6% per hour (one study)	Earlier is better, size uncertain	B

Practice or claim	What advocates said	What the record shows	What science infers	Grade
Three-day course for stable pneumonia	As good as eight	Non-inferior in PTC	Stop when stable	A (single trial)
Antibiotics first for appendicitis	Avoids surgery	70% avoid surgery at 90 days	Option with known failure rate	A
No antibiotic for viral illness	Waste avoided	30% of prescriptions unnecessary	Safe to withhold	A
Hand antisepsis at births and wounds	Prevents childbed fever	Vienna 11 to 18% to 1.3%	Beyond doubt	B
Prophylactic oxytocin	Prevents haemorrhage	RR 0.51 for 500 ml loss	Effective, low-quality trials	A
Insulin for type 1 diabetes	Life-saving	Months to decades	Beyond doubt	B
Tuberculosis chemotherapy	Cures	70% to under 10%	Beyond doubt	B
Mammography, average risk	Saves lives	1 death avoided per 2,000 in 10 years	Small benefit, real harm	A
PSA screening	Saves lives	1 per 781 invited, 27 overdiagnosed	Small benefit, much overdiagnosis	A
Thyroid ultrasound screening	Finds cancer early	Fifteenfold diagnoses, flat deaths	Overdiagnosis	X
Suppressing beats after heart attack	Prevents sudden death	7.7% against 3.0% died	Harmful	X
Hormone therapy for the heart	Protects	More strokes, emboli, coronary events	Harmful for that use	X
Arthroscopy for knee arthritis	Relieves pain	No better than sham	Ineffective	X
Bloodletting for infection	Removes bad humours	Centuries of use, Washington 1799	Harmful	X
Starvation diet for diabetes	Prolongs life	Some reached insulin, some starved	Marginal or harmful	D
Abrupt stop of long-term steroids	None	Adrenal suppression common	Dangerous	X
Gradual taper of steroids, benzodiazepines	Safer	Clinical consensus	No agreed schedule	B
251,454 deaths from error	Third leading cause	Case reviews find about a tenth	Overestimate	D
Illich: harms exceed benefits	Social and cultural costs	True at the margins, false for the core	Partly right	D overall

3. Means ledger

Antisepsis and infection control

Rung	What can be done	What it adds
Hands alone	Wash before births, wounds and newborns. Never go from a corpse or a festering wound to a birth. Keep the sick apart	Most of Semmelweis's effect, which was behaviour
Hearth	Boiled water, soap, boiled cloth, knife and needle	Clean births and wound care
Garden and still	Ethanol hand rub at 80 per cent (Protocol 3), alcohol for instruments	Antisepsis without water
Village dispensary	Separate birth room, one instrument set per patient, infection log	Finds outbreaks and the healer's own harm
District infirmary	Pressure-cooker or autoclave sterilisation, spaced beds, isolation	Approaches 1940s standards
Pre-Fall hospital	Full infection control and surveillance	3.2 to 4% inpatients infected in the US, more in poor hospitals

Antibiotics from salvaged stock

Rung	What can be done	What it adds
Hands alone	Recognise viral illness and red flags	Saves doses, avoids harm
Hearth	Fluids, warmth, nursing	Supports survival, cannot cure bacteraemia
Garden and still	No reliable antibiotic. Honey and alcohol are topical only (IN-05)	Limited
Village dispensary	Central logged stock, first dose fast for sepsis, short courses, microscope if trained	Most lives per dose
District infirmary	Injectable antibiotics, a lab bench, perhaps small-scale production (SY-05)	Treats meningitis and shock
Pre-Fall hospital	Cultures, full range, intensive care	79.9% survival with first-hour treatment in shock

Medicines people already take

Rung	What can be done	What it adds
Hands alone	Know which drugs must never stop suddenly. List who takes what	Prevents first-week withdrawal deaths
Hearth	Split tablets to taper, ration lifelong drugs	Buys time
Village dispensary	Register of every dependent person and run-out date	Planning and honest conversations
District infirmary	Pool stock across 3,000 people	Fewer deaths from mismatch

Rung	What can be done	What it adds
Pre-Fall hospital	Continuous supply	Polypharmacy, one in eight exposed to serious interactions

Surgery, haemorrhage, vaccines and insulin. Below the district rung, the household and village can only recognise the rigid abdomen, obstructed labour and heavy bleeding, give fluids, rub up the uterus, use salvaged uterotonics (which halve 500 ml blood loss) and antibiotics (which spare seven in ten appendicitis patients from surgery in trial conditions), and move the patient early. Only the district infirmary, with a sterile room, a trained operator and salvaged anaesthetic, can do caesarean section and laparotomy. Vaccines and insulin cannot be made at any rung on the evidence I found. Every rung gives only what was salvaged, plus recognition, isolation and comfort (FO-05, SY-05).

4. Harm test

Here the iatrogenesis literature is turned on the village healer, who can repeat every error in this report.

Doing too much. The modern harm is treatment without need. The village version is antibiotics for colds and "something" given because the family expects it. Warning signs: stock falling faster than serious cases justify, rashes and diarrhoea after antibiotics, resistant infections later. Remedy: written rules, a log, and a second opinion before any course outside the rules.

Harm with confidence. Bloodletting, arrhythmia suppression and hormone therapy all made physiological sense. The defence is to count outcomes (Protocol 5). A common harm can show in a village register within a year or two. Rare harms cannot be seen at village scale.

Carrying infection. The healer's hands are the most dangerous object in the village. Most at risk: women in labour and after birth, newborns, open wounds. The error: moving from a sick or dead person to a clean one without washing. Signs: fever two to three days after birth or surgery, especially in clusters. Remedy: stop, wash, separate, find the common link.

The infirmary ward. Hospitals in poor settings infect 10 to 15 per cent of patients (Allegranzi et al. 2011). Space beds, isolate fever and diarrhoea, use hand rub between patients, count infections.

Stopping drugs suddenly. At risk: anyone on steroids above replacement dose for over three to four weeks, anyone on regular benzodiazepines (especially for epilepsy), and less certainly beta-blockers after heart disease. Signs of adrenal crisis: weakness, vomiting, low blood pressure, confusion, collapse, often during infection [VERIFY]. Signs of benzodiazepine withdrawal: anxiety, tremor and sleeplessness, then seizures. Remedy: return to the last dose if stock allows, then taper more slowly.

Screening without action. Do not examine the well for disease you cannot treat. It produces false alarms (more than 200 per 2,000 women over ten years of mammography) and no benefit.

Withholding what works. The opposite error is the romance of the natural. A religious group in Indiana that refused obstetric care lost mothers at about 100 times the state rate (Kaunitz et al. 1984, CDC 1984). Withholding a salvaged antibiotic from a child with meningitis, or a uterotonic from a bleeding mother, is iatrogenesis by omission. Illich himself counted the failure to reduce illness as clinical iatrogenesis.

Pregnancy and the old. Thalidomide is the warning: no drug in early pregnancy without strong reason [VERIFY, see ME prompts]. The old carry most polypharmacy and are harmed most by both abrupt withdrawal and overtreatment.

5. Red flags

Signs that a patient will probably die or be disabled without something only the last list can give, and what to do anyway.

- **Septic shock.** Fever or low temperature, fast breathing, cold mottled limbs, weak fast pulse, confusion, little urine. Give the first dose of any suitable salvaged antibiotic at once. Fluids by mouth if awake, warmth, lie flat.
- **Bacteraemic pneumonia or meningitis.** Rigors, chest pain on breathing, or headache, stiff neck, a rash that does not fade under pressure, drowsiness. Before antibiotics most died. Antibiotic if any, fluids, nursing, isolation.
- **Childhood diabetes.** Thirst, frequent urination, weight loss, then vomiting, deep sighing breaths, drowsiness. Without insulin, death within weeks to months. Fluids and salt, honesty with the family, comfort (FO-01).
- **The rigid abdomen.** Pain that moved from the navel, or pain everywhere, with a board-hard belly and fever. Antibiotics if any, nothing by mouth if vomiting, move to the district if it has a surgeon.
- **Obstructed labour.** Labour that does not progress despite strong contractions [VERIFY, see ME prompts]. Move early to wherever caesarean is possible.
- **Postpartum haemorrhage.** Bleeding that soaks measured cloths, a soft uterus, fast pulse, pallor. Rub up the uterus, baby to breast, uterotonic if any, fluids, legs raised.
- **Tuberculosis.** Months of cough, weight loss, blood in sputum. Separate sleeping space, ventilation, food, covered coughs, protect children.
- **Withdrawal.** Collapse or seizures in someone whose steroid or benzodiazepine just ran out. Any remaining dose, then a slower taper.

For some of these the village has nothing. The book should say so. Pain relief, warmth, company, a family told the truth and a death not hidden in an institution are what remains, and are also, as Illich noted, what medicine took away.

6. The case against

Against the case against medicine. Szreter (1988) and Colgrove (2002) showed that McKeown's method could not prove nutrition and that he underrated public health. Preston (1975) found income explained only a tenth to a quarter of twentieth-century gains. Jayachandran and colleagues (2010) showed one drug class moving national mortality in six years. English maternal mortality stayed flat through eighty years of growth and fell when sulpha arrived. Shojania and Dixon-Woods (2017), Hogan (2012) and Rodwin (2020) showed the largest iatrogenic death estimates to be about ten times too high. The *Reason* review of Illich (1977) judged him wrong on balance, and the 40 per cent reversal rate applies only to a selected set of doubtful practices.

Against the case for medicine. Famous public-health numbers shrink on re-analysis (Anderson et al. 2022). When doctors strike, deaths hold or fall (Cunningham et al. 2008). A quarter of American health spending is waste (Shrank et al. 2019). One patient in twenty meets preventable harm (Panagioti et al. 2019). Poor hospitals infect one patient in seven to ten. The antibiotic era bred 1.27 million resistance deaths a year (Murray et al. 2022).

What survives both. The romance of the hospital fails on overdiagnosis, reversal, infection and waste. The romance of the herbal fails on the Faith Assembly, Washington's bleeding, the starvation diet and the pre-antibiotic tables. Old does not mean safe and modern does not mean replaceable. What counts is the specific practice and its measured effect.

Today and after the Fall. Today a reader can decline low-value screening, ask for short courses and refuse antibiotics for colds while keeping the core. After the Fall the core is mostly gone and the margins go with it. This report's practical value then lies in the cheap old practices and in stewardship of whatever remains of the core.

7. Ten-line summary of robust findings

1. Bedside medicine did little for population mortality before about 1935 (McKeown 1976, McKinlay and McKinlay 1977).
2. Sanitation and smallpox vaccination mattered more than McKeown allowed, and income explained only 10 to 25 per cent of twentieth-century gains (Szreter 1988, Davenport et al. 2011, Preston 1975).
3. From 1935, sulphonamides, penicillin, insulin, uterotonics, surgery and vaccines halved or better the deaths from specific causes (Jayachandran et al. 2010, Shlaes and Bradford 2018).
4. Medical care added about five of thirty years of American life expectancy in the twentieth century (Bunker et al. 1994).
5. Vaccination explains about 40 per cent of the fall in global infant mortality since 1974 (Shattock et al. 2024).
6. About 3 to 5 per cent of hospital deaths are preventable, a tenth of the famous 251,454 estimate (Hogan et al. 2012, Rodwin et al. 2020).
7. About 40 per cent of the doubtful established practices that were tested were reversed, all at the margins (Prasad et al. 2013).
8. Screening the well for small cancers yields much overdiagnosis and very little mortality benefit (Welch and Black 2010, Gøtzsche and Jørgensen 2013).
9. About 30 per cent of outpatient antibiotics are unnecessary, and resistance caused 1.27 million deaths in 2019 (Fleming-Dutra et al. 2016, Murray et al. 2022).
10. Hand antisepsis, restraint and short courses are cheap and life-saving. Antibiotics, vaccines, surgery, uterotonics and insulin are irreplaceable.

8. Open questions

- How large was the clean-water effect: 11 per cent of infant mortality or nearly half of all urban mortality?
- How much did nutrition matter in the nineteenth century?
- What was the true case fatality of smallpox: 8 or 53 per cent?
- How many deaths does medical harm cause outside hospitals?
- How fast does septic shock kill per hour of delay: 7.6 or 1.8 per cent?
- What is the untreated mortality of appendicitis?
- What do anaesthesia and blood add, each on its own?
- How dangerous is abrupt beta-blocker withdrawal?
- Is the three-day rule safe for severe pneumonia, which the PTC trial excluded?
- How fast can a community recover the skills Illich said medicine took away?

9. Sources to read in full

1. Colgrove (2002), the best short map of the McKeown debate.
2. Szreter (1988), the public-health counter-case.
3. Bunker, Frazier and Mosteller (1994), the ledger of what medicine adds.
4. Jayachandran, Lleras-Muney and Smith (2010), the cleanest natural experiment on a drug class.
5. Anderson, Charles and Rees (2022), on how famous numbers shrink.
6. Rodwin et al. (2020) and Hogan et al. (2012), the sober estimates of preventable death.
7. Illich (1976), *Limits to Medicine*, for cultural iatrogenesis.
8. Prasad and Cifu (2015), *Ending Medical Reversal*.
9. Welch, Schwartz and Woloshin (2011), *Overdiagnosed*.
10. Shlaes and Bradford (2018), for the pre-antibiotic mortality record.

At the bedside after the Fall

The household. The minimum is a habit and a list. The habit: wash hands with soap and boiled water before touching a wound, a birth or a newborn, and never go from a sick person to a clean wound. The list: every medicine each member takes, the dose, the stock left and whether it may be stopped suddenly. To start: soap, boiled water, clean cloth, a notebook, and the red flags in section 5. First failure to expect: someone on long-term prednisolone or a benzodiazepine runs out, stops overnight and falls ill within days.

The village of 300. The minimum is a dispensary holding salvaged drugs centrally and a healer keeping two registers, one of dependent people and their stock, one of every treatment and its outcome. Rules: no antibiotic for colds without red flags, the first dose fast for suspected sepsis, short courses, hand rub between patients, a separate place for births. To start: a locked box, a balance, a ledger, a still, glycerol and hydrogen peroxide for hand rub, and one or two people trained in the red flags. First failure to expect: the antibiotic stock is spent in the first winter on coughs and there is none in spring for a mother with fever after birth.

The district of 3,000. The minimum is an infirmary that does only what it alone can: surgery for obstruction and obstructed labour, injectable antibiotics, uterotonics and blood from family donors, tuberculosis and vaccination programmes if stock exists, and pooling of chronic medicines. It counts its ward infections and does not screen the well. To start: a sterile room, pressure-cooker or autoclave sterilisation, a trained operator, salvaged anaesthetic and antibiotics, a microscope, records. First failure to expect: a cluster of wound and birth infections in the ward within months.

Protocols

Disease-specific detail is in the IN, ME and HY series. These protocols cover what this report can support.

Protocol 1. First-week medicine audit (household and village)

1. List everyone on a regular prescribed medicine: drug, strength, daily dose, tablets left, days of supply (tablets left divided by tablets a day).
2. Sort each drug into one of three classes:
    - **Never stop suddenly.** Glucocorticoids above replacement dose for more than 3 to 4 weeks. Regular benzodiazepines. Beta-blockers after heart disease (uncertain, treat as never). Anti-epileptic drugs and long-term opioids [VERIFY].
    - **Life-sustaining, no substitute.** Insulin and the others in FO-01.
    - **Preventive.** Most blood pressure tablets, statins and acid suppressants. These can stop when stock runs out [VERIFY drug by drug, see ME-10].
3. Plan each taper now, while stock remains, not at the last tablet.
4. Steroids: reduce gradually over weeks, more slowly near replacement dose [VERIFY steps]. During fever, vomiting or injury, triple the current daily dose for the length of the illness (MJA 2023 review, single source [VERIFY]).
5. Benzodiazepines: NHS Scotland suggests cutting the equivalent of 10 mg diazepam a day every 2 to 4 weeks down to 50 mg a day, then smaller steps. A second-hand account of Ashton's method gives about 10 per cent every 1 to 2 weeks [VERIFY both]. Slower is safer. Never stop one in a person with epilepsy.
6. Write the schedule on paper, one copy for the patient and one for the dispensary.
7. Review weekly. If withdrawal signs appear, go back to the previous dose for two weeks before trying again [VERIFY interval].

Protocol 2. Antibiotic stewardship (village dispensary)

1. Keep all antibiotics in one place, logged by drug, strength, count and expiry.

2. Give none for colds, coughs or sore throats without red flags, most ear and sinus pain, or diarrhoea without blood and fever [VERIFY diarrhoea rule, see HY prompts]. These made up most of the 30 per cent of unnecessary modern prescriptions (Fleming-Dutra et al. 2016).
3. For any red flag in section 5, give the first dose at once, not in the morning (Kumar et al. 2006).
4. Pneumonia in an adult who is not severely ill: check daily. If stable after 3 days of a beta-lactam (temperature normal, breathing and pulse settling, eating and alert), stop. The PTC trial used amoxicillin 1 g with clavulanate 125 mg three times a day (Dinh et al. 2021, single trial in hospital patients [VERIFY stability criteria]).
5. Suspected appendicitis with no surgeon in reach: antibiotics alone spared about 7 in 10 trial patients from surgery at 90 days, fewer with an appendicolith (CODA Collaborative 2020). Watch for worsening and move the patient if possible.
6. Log every course: patient, reason, drug, dose, days, outcome at day 7 and day 30.
7. Every three months count courses by reason. If more than a few fall outside the rules, retrain [VERIFY threshold, my inference].

Protocol 3. Alcohol hand rub at the still (WHO Formulation 1)

Two WHO-derived sources give the same recipe (WHO 2010).

1. For 1 litre, measure into a clean vessel 833.3 ml ethanol at 96 per cent, 41.7 ml hydrogen peroxide at 3 per cent, 14.5 ml glycerol at 98 per cent, and boiled cooled water to exactly 1,000 ml.
2. For 10 litres: 8,333 ml ethanol, 417 ml peroxide, 145 ml glycerol, water to 10 litres. No batch above 50 litres.
3. Final strengths: ethanol 80 per cent by volume (tolerance 75 to 85, checked with an alcoholmeter), glycerol 1.45 per cent, hydrogen peroxide 0.125 per cent.
4. If the still gives weaker ethanol, measure it and scale the volume so the final strength is still 80 per cent, with a second person checking the sums [VERIFY].
5. Bottle at once and keep closed for 72 hours before use so the peroxide kills spores.
6. Use enough to wet both hands completely and rub until dry, before and after every patient. It does not clean visibly dirty hands, which need soap and water first.
7. Keep away from flame.

Protocol 4. The "do I need to treat?" check

Before any treatment, answer aloud or on paper:

1. What do I think this is, and how sure am I?
2. Will it likely get better on its own? If so, can I safely watch for 24 to 72 hours with clear return signs [VERIFY interval by condition]?
3. Is there a red flag? If so, act now.
4. What harm can my treatment do, and to whom: pregnancy, infants, the old, the dehydrated, people on other drugs?
5. How will I know in 2 to 3 days whether it worked? Write down what I expect.

Protocol 5. The healer's outcome register

1. One line per encounter: date, name, age, complaint, what was done, what was expected.
2. Follow up at 7 and 30 days: better, same, worse, dead.
3. Every three months, count outcomes for each common treatment and for untreated people with the same complaint.
4. If a treatment does no better than none over 20 or more uses, stop it or test it more carefully [VERIFY, 20 is a working minimum, not a statistical rule].

5. Count infections after births, wounds and surgery separately. Two in a month in a village is a cluster: look for the shared hands, instrument or room.
6. Keep the register for the next healer.

Protocol 6. Birth and wound antisepsis

1. Before touching a woman in labour, a newborn or an open wound, wash with soap and water, then apply hand rub if available [VERIFY washing time].
2. Never go from a dead body, a festering wound or a person with fever and diarrhoea to a birth or a clean wound without washing and changing outer clothing.
3. Boil instruments, cord ties and cloths for at least 10 minutes and let them cool covered [VERIFY, see HY prompts].
4. One instrument set per patient until boiled again.
5. Record any fever after a birth or wound. A second case within a month means stop and look for the shared source.

Numbers to carry

1. **About 5 of 30 years.** What medical care added to American life expectancy in the twentieth century (Bunker et al. 1994).
2. **18 to 1.3 per cent.** Puerperal fever deaths in the Vienna doctors' clinic before and after hand washing, 1847 to 1848.
3. **70 to 90 per cent to 17 per cent.** Deaths from bacteraemic pneumonia before and after penicillin (Austrian and Gold 1964).
4. **7.6 per cent an hour.** Survival lost per hour of antibiotic delay in septic shock in one large study (Kumar et al. 2006). Give the first dose now.
5. **3 days.** Enough beta-lactam for a stable adult with moderate pneumonia in one trial (Dinh et al. 2021).
6. **30 per cent.** Share of outpatient antibiotics that were unnecessary (Fleming-Dutra et al. 2016).
7. **Halved.** Prophylactic oxytocin halves the risk of losing 500 ml after birth, from about 24 to 12 per cent (Salati et al. 2019).
8. **70 per cent.** Ten-year death rate of untreated smear-positive tuberculosis (Tiemersma et al. 2011).
9. **3 to 4 weeks.** Steroids taken above replacement dose for longer must be tapered, never stopped, and tripled during illness (MJA 2023 review).
10. **3 per cent.** Share of hospital deaths that are preventable, a tenth of the famous estimate (Rodwin et al. 2020).

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