OR-05 Records, surveillance and noticing the outbreak: the village register

HEALING after the FALL, research library, OR-05

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

Findings by section

1. What this report is for, and what it leaves to others

A village notices an outbreak, a starving child or a labour going wrong only if somebody writes things down and somebody reads them. This report asks which records worked, what they predicted, what they cost in hours, who should hold them and how they can be turned against the people they count.

It builds on its neighbours. FO-01 gives the expected deaths in a village of 300 (about 3 to 4 a year) and the doubling rule (THRIVING library, FO-01). IN-13 gives the line list and case definitions once an outbreak is suspected (THRIVING library, IN-13). OR-06 sets the rhythm of the stock count and leaves the form of the register here (THRIVING library, OR-06), as NU-07 does the burial register (THRIVING library, NU-07). OR-03 asks for a chronic-drug register (THRIVING library, OR-03), OR-08 sets the keys (THRIVING library, OR-08) and MA-01 covers the partograph (THRIVING library, MA-01). This report gives the routine registers that come before all of those, thresholds a village of 300 can use, and templates.

Three voices are kept apart throughout: what the record keepers claimed, what the record shows the record did, and what I infer. My own arithmetic is marked [VERIFY].

2. Counting the dead: the searchers and the Bills of Mortality

The claim. London's parish clerks compiled weekly Bills of Mortality from about 1592, sold as broadsides for a penny, with a plague column printed at the foot (Public Domain Review n.d.). The bills were meant as a warning. Parish officials used the plague counts to track the disease and to shut up infected houses, and the totals were posted in public (Brewminate n.d., search summary only).

Who counted. Causes were reported by "searchers of the dead", usually poor, elderly, untrained women paid per body (Public Domain Review n.d.). John Graunt used twenty years of bills in *Natural and Political Observations* (1662) and suspected that searchers, swayed by a cup of ale and a small fee, under-reported venereal disease (Wikipedia, John Graunt, Linda Hall Library n.d.). I did not read Graunt himself.

What the record shows. The bills were read and acted on. Samuel Pepys followed the weekly counts in 1665, doubted them, and still avoided districts where they rose (Accounting History study reported in Archaeology Magazine 2026, search summary only). The peak bill, for 19 to 26 September 1665, recorded 7,165 plague deaths in 126 parishes (Public Domain Review n.d.). It was an undercount. The Anglican clerks did not count Quakers, Anabaptists, Jews or the very poor (Public Domain Review n.d.). The official plague total of about 68,600 is usually set

against an estimate of 100,000 (search summaries, figures differ). Families hid plague deaths because a plague death meant a shut-up house, and clerks connived in it (Brewminate n.d., search summary only).

What I infer. A weekly count read in public changes behaviour even when people know it is wrong. Untrained counters can show a trend. And a count that triggers punishment will be falsified.

3. Farr and Snow: the register that asks one more question

Farr's claim. William Farr's letter of 6 May 1839 to the Registrar-General summarised the causes of 141,607 deaths registered in the second half of 1837 and argued that a uniform nomenclature mattered as much as weights and measures (UCLA Department of Epidemiology, search summaries of the First Annual Report). One account says his nosology gave registrars 27 fatal disease categories. I read only secondary summaries.

What the record shows. The register mattered most when somebody added a question. In August 1854, at Farr's suggestion, the registrars of the south London districts were asked to record which water company supplied each house where a cholera death occurred, and the results ran in the Weekly Return of 14 October 1854 (Snow 1856 and the Matrix Snow project, search summaries). John Snow's own count over seven weeks gave 1,263 cholera deaths in 40,046 houses supplied by the Southwark and Vauxhall Company, which drew water below the sewage outfalls, and 98 deaths in 26,107 houses supplied by Lambeth, which drew from upriver. That is 315 against 37 deaths per 10,000 houses, about eight and a half times the risk (Snow 1855, Table IX, via Adhikari and DeNero n.d.).

The Broad Street lesson. The Soho outbreak began on 31 August 1854. The pump handle was removed on 8 September. Snow himself wrote that the attacks had so far diminished before the water was stopped that he could not say whether the well still held poison (Wikipedia, 1854 Broad Street cholera outbreak). The map came after the peak. A register usually explains an epidemic rather than stopping it, and its value is for the next one.

What I infer. The village register should carry one column for a shared exposure: the water source, the household, the gathering. It costs nothing to write and is the most useful single fact in an outbreak (THRIVING library, IN-13).

4. The parish register and the mortality crisis

The form. Thomas Cromwell's injunction of 5 September 1538 ordered every parish in England and Wales to record baptisms, marriages and burials. The book was kept in a chest with two locks, one key with the priest and one with the churchwardens. Many parishes ignored the order because they believed it presaged a new tax. In 1597 and 1598 the registers had to be kept on parchment, the old paper books copied into them, and copies sent each year to the bishop's registrar as "bishop's transcripts" (Wikipedia, Parish register, search summary). Those two rules, two keys and a copy kept elsewhere, are why English parish registers survive in such numbers.

How historians read a crisis. Wrigley and Schofield's *Population History of England 1541 to 1871* (1981) rests on monthly totals from 404 parishes (UK Data Service, search summary). One summary of their reconstruction reports eleven national crises at about 30% above trend, all before 1750 (Cambridge chapter, search summary). For single parishes, historians use several definitions. A review in *Anthropological Review* (2022) lists a moving-average rule (Schofield 1972, Appleby 1978, Hinde 2010) under which burials rise 1.5 to 3 times above a baseline taken over 9 to 25 years, and Goubert's older rule of a doubling of deaths against the previous 12 months with conceptions falling by a third. It found Goubert's rule the least sensitive in small rural populations. The brief's lead, that Wrigley and Schofield defined a crisis as a doubling of burials, is consistent with this family of rules, but I could not read their own definition [VERIFY].

What the record shows. The parish register was never a warning system. Crises were found by historians centuries later. Its value to a village after the Fall is the baseline: a village that knows its normal burials by month can see a doubling as it happens (THRIVING library, FO-01).

5. Syndromic surveillance by hand: IDSR and the emergency networks

The design. Integrated Disease Surveillance and Response (IDSR) is the African region's framework, revised in a third edition in 2019 by WHO AFRO with CDC review. I read Liberia's national adaptation (Ministry of Health and NPHIL Liberia 2021). It sets two kinds of threshold. An alert threshold calls for investigation: one suspected case of an epidemic-prone or eradication-target disease, or an unexplained increase in a weekly or monthly count. An action or epidemic threshold triggers a response.

The single-case list. In the Liberian annex, one suspected case is an alert for cholera, measles, acute flaccid paralysis, viral haemorrhagic fever, Lassa fever, dengue, rabies, mpox, neonatal tetanus, a maternal death, a neonatal death, an unexplained cluster of illness and an unexplained cluster of deaths. The cluster of deaths is defined as two or more people in the same community who die suddenly of unknown or infectious cause after similar symptoms. For measles the epidemic threshold is 5 or more suspected or 3 or more confirmed cases in a district in a month. Bloody diarrhoea alerts at 5 suspected cases. Meningitis alerts at 2 suspected cases in a district in a week, with action at 15 per 100,000 per week for populations of 30,000 to 100,000 (10 when risk is high) and, for populations under 30,000, at 5 cases in a week or a doubling over three weeks (Liberia IDSR 2021, annex 4 and section 11). The brief asked me to verify the meningitis figures. Other sources give 3 and 10 per 100,000 for the same populations (a CDC MMWR table of WHO guidance and an IFRC document, search summaries), so the numbers differ between editions and countries.

Community definitions. The most useful finding for this book is that IDSR writes community case definitions in plain words. Cholera is "any person passing three or more water pu-pu a day". A maternal death is a "big belly death". Neonatal tetanus is the "jerking sickness" of a baby who sucked normally for two days and then could not. Haemorrhagic fever is fever with two other symptoms, or a death after serious sickness with fever or bleeding (Liberia IDSR 2021, annex 4). A healer can teach these in an afternoon.

Emergency networks. UNHCR's surveillance thresholds list cholera, measles, polio, yellow fever and haemorrhagic fever as diseases where a single case may mean an outbreak. Watery diarrhoea and malaria alert at 1.5 times the average of the previous three weeks, bloody diarrhoea at 5 cases in one place in a day, and meningitis at 2 suspected cases a week in a population under 30,000 (UNHCR 2026). Connolly's WHO field manual (2005) is the standard text for these networks, but the WHO server refused every download and I could not read its thresholds.

What the networks found. After the Pakistan floods of 2010, the Disease Early Warning System raised 130 alerts in seven weeks, 115 of them for acute watery diarrhoea. The thresholds were one case for watery diarrhoea with severe dehydration, and twice the mean of the previous three weeks for respiratory infection and malaria. Of the watery diarrhoea alerts with a sample, 67% grew *Vibrio cholerae*. Forms and case definitions varied by province, and analysis below national level was rare (Sabatinelli et al. 2012). In Sierra Leone in 2015, 7,416 community health monitors made 12,126 reports in seven months. Only 287 met the suspected Ebola definition and 16 were confirmed, a positive predictive value of 6%, and the system found 30% of all cases. Where it worked, it found cases one to three days after onset against five to seven days for the rest of the surveillance system (Ratnayake et al. 2016).

What I infer. Community surveillance finds outbreaks days earlier, but raises many false alarms and misses most cases.

6. Thresholds for 300 people: why district rules fail, and what to use

The size problem. Thresholds written for districts of 30,000 to 100,000 fail in a village of 300 in two opposite ways. A rate threshold such as 15 per 100,000 a week means 0.045 cases a week in a village: any case crosses it. A ratio rule such as "twice the average of the last three weeks" fires constantly on small numbers. I simulated it [VERIFY, my own arithmetic]. With a true weekly average of one case and no outbreak at all, the doubling rule sounds a false alarm in about one week in five, roughly 11 times a year. With an average of 3 a week it still fires about 6 times a year. Only at an average of about 20 cases a week does it fall below one false alarm a year. Doubling is a district rule.

What a village of 300 should expect to count. Diarrhoea in children under five runs at about 2.7 episodes per child per year worldwide, 3.3 in Africa and 2.8 in Europe, and childhood pneumonia at 0.27 per child-year in Africa against 0.03 in Europe (Fischer Walker et al. 2013, table 1). In the British community, infectious intestinal disease in all ages ran at 274 cases per 1,000 person-years, and for every case reported to national surveillance there were 147 in the community (Tam et al. 2012). The village sees what the state never saw.

Village of 300	Under-fives [VERIFY]	Child diarrhoea a week	Child pneumonia a year	All-age diarrhoea a week
Tropical	about 45	about 3	about 12	not measured
Temperate	about 15	about 1	under 1	about 1.6

These are my own arithmetic from the published rates. Not every episode will reach the healer, so the village's own count after eight weeks is the real baseline.

The rule I propose. For any syndrome, take the usual weekly count from the village's own book: the average of the last eight ordinary weeks, or the same month last year. Then:

- **Watch** when a week's count reaches twice the usual plus two. The healer visits the households concerned.
- **Alarm** when a week's count reaches twice the usual plus three, or the watch level is reached two weeks running. The healer calls the meeting and tells the district.

Against a Poisson model these approximate the 5% and 1% upper limits of an ordinary week. For a usual count of one a week, watch is 4 and alarm is 5. For two a week, 6 and 7. For three a week, 8 and 9 [VERIFY, my arithmetic]. False alarms fall to well under one a year.

The price of that rule. A count rule this strict finds only big jumps. If an outbreak triples a usual count of three a week, the alarm sounds in the first week about half the time and within two weeks almost always. If it only doubles a usual count of one a week, the count rule will probably miss it [VERIFY, my arithmetic]. In a village of 300, small outbreaks are found by place and person, not by totals: two cases in one house, three on one water source, two deaths alike. That is why the alerts in Protocol 2 come first and the count rule second.

Lead time. No study I found measured how many days a village tally gains. Sierra Leone's one to three days against five to seven is the nearest (Ratnayake et al. 2016). In eastern Nigeria in December 1966, missionaries reported smallpox by radio at 7 each evening, runners searched villages next day, and the outbreak was contained with only 7 to 8% of the population vaccinated (Lasker Foundation n.d.). Speed of reporting, not completeness, did that.

Malaria thresholds show the trap of borrowed rules. In the western Kenyan highlands, the WHO upper-quartile rule flagged 31 to 43% of all months as epidemic, the mean plus two standard deviations rule caught every true epidemic year but with many false alarms, and the authors concluded that none was operationally robust (Hay et al. 2002).

7. Registers of the living: the census, the at-risk list and the growth chart

Community diagnosis. At Pholela in rural Natal from 1940, Sidney and Emily Kark trained local health assistants who mapped the homes around the health centre and took the area's first census, of 887 people in 130 homes. A yearly household health census followed. Crude mortality fell from 38.3 per 1,000 in 1942 to 13.6 in 1950, and infant mortality from 275 to 100 per 1,000 (Kark and Cassel 1952, via Global Health Watch 5 2017, Brown and Fee 2002). The Karks called the approach community-oriented primary care, with community epidemiology as its base. At Jamkhed in Maharashtra from 1970, farmers' clubs ran baseline and follow-up surveys of child deaths, malnourished children and households without clean water, and village health workers registered pregnancies, births, birth outcomes and deaths as they happened. The findings were shared with the whole village to set priorities (Center for

High Impact Philanthropy 2012). Infant mortality fell from 176 to 24 per 1,000 by the project's own figures, uncontrolled (THRIVING library, FO-04). Both are uncontrolled and both projects did much more than count, but they show that a village can know itself on paper, in public. I could not find the phrase "community diagnosis" in the text of the Alma-Ata Declaration (1978) itself, which speaks of full community participation and self-reliance.

The at-risk list. The barefoot doctors' registers and mission station books were named as leads. I found no primary source describing either and say so. This report folds FO-01's lists of dependents and the old living alone, MI-13's census of the isolated (THRIVING library, MI-13) and OR-03's chronic-drug register into one watch list (Protocol 5).

The growth chart. David Morley designed the parent-held road-to-health chart in Nigeria, where he worked at Ilesha from 1956, and because mothers could not write he attached a device to the scale that marked the weight on the card directly (Wikipedia, David Morley). His *Paediatric Priorities in the Developing World* followed in 1973. Growth monitoring became the G of UNICEF's GOBI package (THRIVING library, FO-04). The evidence that weighing and charting changes outcomes is weak. Cochrane concluded in 1999 that there was insufficient evidence for growth monitoring (Panpanich 1999, cited in Taylor et al. 2023). The 2023 update found six studies in poor rural settings. Growth monitoring with supplementary feeding made little or no difference to weight-for-age at 12 months (mean difference -0.07) or height-for-age (-0.15, low certainty), no study reported growth under monitoring alone, and the authors judged the evidence limited and uncertain (Taylor et al. 2023). A chart does not feed the child.

MUAC. The arm tape predicts death better than weight-for-height, and the library has its cut-offs: under 115 mm severe, 115 to 125 mm moderate, oedema of both feet severe whatever the arm (THRIVING library, FO-07, HY-09). Two newer findings bear on the register. A pooled analysis of twelve prospective studies found that sensitivity of MUAC under 115 mm for death was 49% higher at one month's follow-up than at six months, with false positives rising by 3% or less, and recommended monthly screening where resources allow (Briend et al. 2023, via ENN summary). And in Mirriah district, Niger, from 2013 to 2014, 12,893 mothers trained to measure their own children's arms agreed with the health centre 75.4% of the time against 40.1% for community health workers. Their children were admitted with arms 1.6 mm larger, and only 0.70% needed inpatient care against 7.75% (Alé et al. 2016, non-randomised). Measure monthly, and let the mother measure.

8. The death register and verbal autopsy

What the register must hold. A death register after the Fall serves four purposes: it counts against the baseline (FO-01), it identifies the dead for burial (NU-07), it triggers single-case alerts (a maternal death, a newborn death, two deaths alike), and it lets the village learn what it dies of.

Verbal autopsy's accuracy. The WHO verbal autopsy is a structured interview with the family about the illness before death. In the largest validation, 24 physicians read 12,542 interviews whose cause was known from hospital diagnosis. Chance-corrected concordance was 29.7% for adults, 36.3% for children and 27.6% for neonates, rising to 44.6%, 47.8% and 33.3% when the family's account of health care was included. Injuries, bites, drownings, maternal deaths and stillbirths were identified well. Pneumonia in children stayed below 33%, and neonatal sepsis, meningitis and malformations were identified very poorly (Lozano et al. 2011a). The computer method InterVA did worse, at 24.2%, 24.9% and 6.3% (Lozano et al. 2011b, search summary). A systematic review of 19 comparisons found sensitivity varied widely by cause while specificity was consistently high (Leitao et al. 2014, search summary). At population level the cause fractions were more accurate than the individual labels (Lozano et al. 2011a).

What I infer. A village healer will do no better than these physicians. The register should record the family's story and a few plain facts (days ill, fever, cough, diarrhoea, bleeding, pregnancy, injury), not a diagnosis, so the village counts patterns honestly rather than inventing causes. IN-01 notes the same problem in the nineteenth-century registers, where "convulsions" and "teething" hid diarrhoea and pneumonia (THRIVING library, IN-01).

9. The labour record

Philpott and Castle's 1972 cervicograph and its successors are covered in MA-01, and I agree with its reading. The 2018 Cochrane review found no certain effect of partograph use on caesarean section, and WHO now calls the 1 cm an hour alert line inaccurate, while allowing it for triage where referral is hard (THRIVING library, MA-01). Two further findings concern the paper itself. At Mulago Hospital in Uganda, about 61% of 355 partographs had incomplete fetal, maternal or progress entries, blamed on workload (BMC Health Services Research 2019, search summary). A Ghanaian trial protocol reports that in more than 60% of deliveries the partograph was completed after the birth, as a record and not a monitor (Korle-Bu trial protocol, search summary, unverified). A chart filled in afterwards is worse than none, because it gives false assurance to whoever reads it later. The village labour sheet in Protocol 4 is therefore short, timed and written at the bedside, and its one hard rule is the clock.

10. The dispensary ledger and the poisons book

OR-06 sets the stock card, the monthly second count and the annual independent count, and OR-08 the two keys (THRIVING library, OR-06, OR-08). The historical form of the poisons book comes from Britain. The Arsenic Act of 1851 required a register of every sale, a buyer known to the seller or a witness who knew the buyer, and colouring of the arsenic. The Pharmacy Act of 1868 required each sale of a scheduled poison to be entered in a book with the buyer's name and the seller's (Pharmaceutical Journal 2018 and Wikipedia, Pharmacy Act 1868, search summaries). Ships kept a bound controlled-drug register with every receipt and issue (THRIVING library, OR-06). Royal Navy surgeons' journals from 1793 to 1880 usually held a copy of the daily sick list, statistical abstracts of disease and comments on the crew's health (National Archives, ADM 101 catalogue, search summary). That is the closest historical model for the village daybook: a sick list, a tally and a narrative, kept by one person, inspected by another. Protocol 5 merges them.

11. Case notes by hand

Lawrence Weed's "Medical records that guide and teach" (NEJM 1968) proposed organising each patient's record around a numbered problem list, with each note tied to a problem (Weed 1968, title and secondary sources). The SOAP note (what the patient says, what is found, the assessment, the plan) is credited to his problem-oriented record, though I could not confirm that the 1968 paper used the term (Wikipedia, Lawrence Weed). I found no trial showing that problem-oriented records change outcomes. For a village, two parts are worth keeping: a short problem list at the front of the book for each chronically ill person, so that a deputy can take over, and a single line per visit in the daybook with a return date.

12. Who keeps the register, who reads it, and capture

The case for keeping it close. Population registers have been turned against the people in them. Seltzer and Anderson (2001) documented the use of censuses and registers to target groups by race, national origin, language and class (title and secondary summary only). In the occupied Netherlands, where the population register was thorough, up to 75% of 140,000 Jews died, against about 40% in Belgium, where registration was far less systematic, and about a quarter in France (EHRI n.d., search summary). Registration was one cause among several. In Rwanda, identity cards naming Hutu, Tutsi or Twa were introduced by the Belgian administration in 1933 and were checked at roadblocks in 1994 (University of KwaZulu-Natal thesis, search summary). On a smaller scale, fear of a register deters those who most need care. In a 1999 study, 63% of high-risk HIV testers said they would not test under name reporting, though a CDC study later found the effect small (California Healthline, search summaries).

The case for opening it. Jamkhed and Pholela made their counts public as part of the method. A register only the healer reads is one only the healer can misuse. OR-08 reads the dispensary counts aloud at the assembly, and GOVERNING owns the sanctions (THRIVING library, OR-08).

What I propose. Split each register by what it reveals. Counts without names are read aloud weekly. Births and deaths are public events and the book is open, as parish registers always were. The daybook and the sensitive columns of the watch list (pregnancy before it is announced, mental illness, a suicide attempt, a sexually transmitted infection, an abortion) are closed to everyone but the healer and a named deputy. The district receives counts, alerts and deaths, never the daybook. These are owner's decisions [OWNER].

13. Paper, ink and the healer's hours

Hours. In the Mitanin programme in Chhattisgarh, India, 660 rural community health workers spent about 25 hours a week on health work, of which about 6 hours, a quarter, went on data collection and reporting (Garg et al. 2022, search summary). That is the drowning the brief warns of. My estimate for the five registers in Protocol 1 is about an hour a week of pure writing in an ordinary week, plus a monthly MUAC morning, because the daybook line is written during the consultation and everything else is summed from it [VERIFY, my estimate].

Task	Time	How often
Daybook line per patient	1 minute	1 to 4 patients a day
Weekly sum, chart and reading aloud	20 minutes	weekly
Birth or death entry with verbal autopsy	30 to 45 minutes	about 6 to 13 a year (FO-01)
Watch list review	30 minutes	monthly
MUAC round, 45 children, or checking mothers' cards	2 to 3 hours	monthly
Labour sheet	written while attending	each birth
Stock card entries and monthly count	per OR-06	per OR-06

Paper. A village uses roughly 300 pages a year, a district about ten times that [VERIFY, my estimate].

Ink and survival. Iron gall ink, the ink of most surviving registers, etches into the page and resists washing, but its excess iron and acid slowly embrittle paper until the written lines crumble (Banik 1998). Carbon ink is chemically stable but smudges and lifts in damp (American Philosophical Society n.d., search summary). Graphite does not fade in light but smears (Conservation DistList 2008). Mould risk rises from about 65% relative humidity (Strebel n.d., search summary), and archives aim at 45 to 60% and 16 to 19°C (Staffordshire Archives, search summary). The parish register's two rules are the best guide: keep the book in a dry, locked chest, and send a copy each year to another place.

Evidence grades

Practice	What the tradition claims	What the record shows	Grade
Weekly death count read in public	Warns of epidemics	Bills of Mortality changed behaviour though under-counted (1665)	B
One added exposure column (water, house)	Finds the source	Farr and Snow 1854, 315 against 37 per 10,000 houses	B

Practice	What the tradition claims	What the record shows	Grade
Single-case alerts for cholera, measles, paralysis, haemorrhagic fever, maternal and newborn death	Early warning	IDSR standard, Pakistan 2010 alerts mostly confirmed cholera	B
Community event-based surveillance	Finds cases early	Sierra Leone 2015: 30% sensitivity, 6% PPV, 1 to 3 days faster	B
"Twice the three-week average" at village scale	Detects rises	About 6 to 13 false alarms a year in small counts (my simulation)	X at village scale, B at district
Fixed watch and alarm counts from the village's own baseline	Detects rises with few false alarms	My Poisson arithmetic only, untested	D
Household census and community diagnosis	Sets priorities	Pholela and Jamkhed, large falls in mortality, uncontrolled and multi-component	B
Growth chart and weighing alone	Prevents malnutrition	Cochrane 1999 and 2023: limited, uncertain, no proven benefit	A against routine use as an intervention
Monthly MUAC, by mothers	Finds the child at risk of death early	Briend 2023, Alé 2016	B
Verbal autopsy for an individual's cause	Names the cause	28 to 48% concordance, good for injury and maternal death, poor for pneumonia and sepsis	X for specific cause, B for broad patterns
Partograph lines as a rule	Predicts obstructed labour	Cochrane 2018 null, WHO calls the line inaccurate (MA-01)	A against lines as a rule, B for the timed record
Stock card, two-person count, poisons book	Prevents loss and poisoning	Ship and pharmacy practice, OR-06 theft figures	B
Problem-oriented record	Better care	No trial found	D
Duplicate copy kept elsewhere	Records survive	English parish registers since 1598	B

Means ledger

Rung	What can be kept	What it changes
Hands and knowledge	The single-case alerts memorised. Counting deaths and births by memory and telling the healer the same day	Same-day warning of cholera, measles, maternal death. No trend, no baseline

Rung	What can be kept	What it changes
Hearth	A household card per child with monthly arm measurements by the mother, a marked string at 115 and 125 mm	Earlier detection of wasting (Alé 2016). Families own their record
Garden and still	One literate keeper, an exercise book, carbon ink or pencil, a weekly tally sheet, a clock for labour	Baseline in eight weeks. Watch and alarm counts possible. Outbreak line list ready (IN-13)
Village dispensary (300)	The five registers of Protocol 1, a locked dry chest, a deputy, an annual copy, MUAC tapes, a thermometer, a scale	Routine detection, watch list, stock control. Weekly counts read aloud. About an hour a week of writing
District infirmary (3,000)	Village counts pooled weekly, a district death register, a microscope to confirm malaria or cholera, a second copy of every village book	Rate thresholds start to work at this size. Confirmation turns alerts into action. Village verbal autopsies pooled into cause fractions
Pre-Fall hospital	Laboratory confirmation, electronic surveillance, death certification by doctors	Confirms rather than guesses. Its counting is no better than a careful village book, and it sees 1 in 147 community cases of gut infection

Harm test

The register that drives the sick into hiding. Plague families hid deaths in 1665, Sierra Leone's fines led to hidden burials (THRIVING library, IN-13), and name reporting deterred some from HIV testing. Sign: a household gone from the daybook, or a death reported only at burial. Remedy: no punishment attached to any entry, and food on the doorstep for anyone isolated.

Stigma by list. A named list of the malnourished, the mentally ill or the infected becomes gossip and then exclusion (THRIVING library, MI-13). Remedy: counts without names in public, closed columns for the sensitive, the healer's oath of silence [OWNER].

Capture. The register as an instrument of the strong, as in the Netherlands and Rwanda. Signs: anyone asking for names who does not need them to give care, a new column for religion, origin or debt, or a register used to allocate food or punishment. Remedy: no column without a treatment behind it, and GOVERNING's rules on who may demand the book. Who must never be recorded by name in any shared book: anyone whose entry could expose them to violence [OWNER].

False alarms and alarm fatigue. Ninety-four of every hundred Sierra Leone alerts were false. Borrowed doubling rules would sound a dozen alarms a year in a village. Sign: people stop coming to the meeting. Remedy: the watch level costs only a home visit, the alarm level is rare by design, and every alarm is closed in writing with its outcome.

False reassurance. A strict count misses small outbreaks. Sign: two cases in one house, or three on one well, with a "normal" weekly total. Remedy: cluster alerts override totals.

Paper that displaces care. The Mitanin workers spent a quarter of their time on data. Sign: the healer writing while a patient waits, or a week's entries made at one sitting. Remedy: the one-hour rule, and fewer columns each year, not more.

Wrong labels. Verbal autopsy is wrong more often than right about an individual's cause. Sign: a cause of death

that serves a family's or a faction's interest, such as witchcraft or poison. Remedy: record the story, not a verdict, and never use the death register to accuse.

Loss. Fire, damp, mould and theft. Remedy: a dry chest, carbon ink, an annual copy elsewhere.

Red flags

These are the signals in the books that a death or disability is coming. What the register can do is show them early. What saves life is the action in the other reports.

1. **A death from watery diarrhoea in anyone aged five or over, or severe dehydration in an adult.** Possible cholera. Open the cholera bed and protect the water the same day (FO-01, IN-13).
2. **Two deaths alike in a fortnight, or three people ill alike.** The unexplained cluster. Start IN-13's line list.
3. **Fever with rash, fever with bleeding, sudden weakness of the legs, or a newborn who stops sucking and stiffens.** One case is an alert.
4. **A big belly death or a newborn death.** Review it within a week, with the family, without blame.
5. **A child's arm under 115 mm, swelling of both feet, or an arm falling two months running.** Feed now (HY-09).
6. **A labour past 12 hours of active first stage in a first birth, or 10 in a later one, written on the sheet.** Act on MA-01's referral and bleeding rules now, not at the next entry.
7. **The weekly count at alarm, or at watch two weeks running.**
8. **Silence.** A week with no entries in a season that always has them, or a household that has vanished from the daybook. Silence is not health. Visit.
9. **A stock count that is wrong twice running.** OR-06's sign of theft.

Honest comfort. The register will sometimes show a death coming that the village cannot stop. Say so to the family, plainly. A written record of what was done, and when, also protects the healer from blame that is not hers.

The case against

Counting is not curing. The growth chart is the plainest example: forty years of weighing with no proven benefit unless food follows (Taylor et al. 2023). The partograph shows the same, and so does the Broad Street map, drawn after the epidemic had turned. Illich's broader charge, that professional control of health disables self-care, applies to paperwork too (THRIVING library, OR-08). My answer is that the register's value is conditional on an action written beside every threshold. A threshold with no action should be struck out.

Small numbers are noise. In 300 people, weekly totals rarely show anything a watchful healer would not already know. I accept this. The baseline, the single-case alerts and clustering by place carry the weight, and those work at any size.

Paper serves the state, not the village. James C. Scott's *Seeing Like a State* (1998) argues that states make populations legible, through cadastral maps, censuses and fixed surnames, in order to tax and conscript, and that the simplifications they impose make local life brittle (secondary summaries only). The Netherlands and Rwanda are the extreme cases. My answer is to keep the village's books in the village, with counts going out and names staying in, and to let the assembly see every book that holds no secret.

Volunteers produce bad data. Graunt said so of the searchers in 1662, and the Sierra Leone system missed 70% of cases. The reply is Alé's mothers, who measured more accurately than paid workers. Quality depends on whether the counter counts her own people for her own purposes.

Verbal autopsy is guesswork. For an individual, yes. Hence stories and symptoms, not causes.

10-line summary

1. A weekly count read aloud changed behaviour in London in 1665 even when people knew it under-counted.
2. One extra column, the water source, turned Farr's registrations into Snow's proof: 315 against 37 deaths per 10,000 houses.
3. Single cases of cholera, measles, paralysis, haemorrhagic fever, maternal death and newborn death are alerts in every surveillance system read.
4. Two or more deaths alike in one community is the IDSR cluster alert, the rule of two.
5. District rules fail in a village: doubling the three-week average would give about a dozen false alarms a year.
6. Community surveillance finds cases days earlier but most alerts are false (Sierra Leone: 6% PPV, 30% sensitivity).
7. Weighing and charting alone has no proven benefit. Monthly MUAC by mothers detects wasting earlier.
8. Verbal autopsy identifies under half of individual causes and fails worst for pneumonia and sepsis.
9. Registers have been used to target people for death. Counts go out, names stay in.
10. Five registers can be kept in about an hour a week and 300 pages a year.

Open questions

- What exactly did Wrigley and Schofield define as a local mortality crisis, and how often would that definition have flagged a crisis in a single parish in time to act?
- What thresholds does Connolly's 2005 manual give? I could not read it.
- How many days does a village tally gain over memory and gossip alone? No study measures it.
- Did the barefoot doctors keep registers of disease, and what happened to them? I found no primary source.
- Do mother-held MUAC cards reduce deaths, or only admissions? Alé's study was not randomised and measured admissions.
- Can a village make a lasting ink from soot and gum or oak galls? I found no tested recipe from two sources and give none.

Sources to read in full

1. Liberia IDSR (2021), annex 4, for community case definitions.
2. Ratnayake et al. (2016), on what community surveillance yielded.
3. Lozano et al. (2011a), on verbal autopsy accuracy.
4. Taylor et al. (2023), Cochrane on growth monitoring.
5. Alé et al. (2016), mothers measuring arms.
6. Snow (1855), Part 3, for how a register becomes an experiment (not read in full).
7. Graunt (1662), the first critique of lay counters (not read).
8. Seltzer and Anderson (2001) on registers and abuse (not read).
9. Kark and Cassel (1952) on Pholela (not read).
10. Connolly (2005), WHO field manual (download refused).

At the bedside after the Fall

The household. Minimum: each child's card with name, birth date and a monthly arm measurement taken by the mother with a marked string. Tell the healer the same day of any death, any birth, and any of the alert signs. Needs: a card, a string marked at 115 and 125 mm, a pencil. First failure to expect: the card is lost or the measurement drifts because the string stretches. Use a non-stretch cord and check it against a ruler each season.

The village of 300. Minimum: the five registers of Protocol 1 kept by the healer and a named deputy, a dry chest with two locks, the alert list painted on the dispensary wall, the weekly count read aloud. Needs: three exercise books

a year, carbon ink or pencils, a clock, MUAC tapes or marked strings, a thermometer. First failure to expect: the healer stops writing in the third month because nothing has happened. Next: a false alarm the village laughs at, so the next real one is ignored. Close every alarm in writing, aloud.

The district of 3,000. Minimum: village counts collected weekly by a runner, a district death register, a second copy of each village's births and deaths book, a microscope, and somebody who can calculate rates. At 3,000 people, the IDSR population thresholds start to make sense, and doubling rules start to work for the commoner syndromes. The first failure to expect is that the village counts arrive late and incomplete, so that the district learns of the outbreak from a traveller. A runner with a fixed day and a fixed route is the cure.

Protocols

Protocol 1. The five registers

Keep five books, no more. One keeper, the healer, and one deputy who can take over [OWNER].

1. **The daybook and weekly tally.** One line per patient during the visit. The tally is summed from it each week.
2. **The book of births and deaths.** One page per event, open to the village.
3. **The watch list.** Everyone the village must not lose sight of, reviewed monthly.
4. **The labour sheets.** One sheet per birth, written at the bedside, filed in the births book.
5. **The ledger and poisons book.** Stock cards per OR-06, and the inner register per OR-08.

Rules for all five: - [ ] Write at the time, never afterwards. If an entry is late, write "late" and the date written. - [ ] Write in carbon ink or pencil. Never correct by erasing. Strike once and write beside it. - [ ] Every entry has a date. Every alert has a time. - [ ] Keep the books in a dry chest off the floor, away from the hearth, with two locks [OWNER]. - [ ] Once a year, after harvest, copy the births and deaths book and send the copy to the district or to a second house [OWNER]. - [ ] Each year, the assembly may strike out any column that led to no action. No column may be added without an action written beside it [OWNER].

Protocol 2. The alert list (paint it on the wall)

Any one of these goes to the healer the same day and to the district within a day.

- ☐ Three or more watery stools in a day with severe weakness or dehydration in anyone aged five or over, or any death after watery diarrhoea.
- ☐ Fever with rash.
- ☐ Fever with bleeding from gums, nose, eyes or anywhere, or death after fever with bleeding.
- ☐ Fever with stiff neck.
- ☐ Sudden weakness of the legs or arms in a child or adult who could walk.
- ☐ A newborn who sucked well for two days and then cannot suck, and stiffens or jerks.
- ☐ A big belly death: a woman who dies while pregnant or within six weeks of the birth.
- ☐ A newborn death within 28 days.
- ☐ Two or more people in the village who die suddenly after similar illness, within two weeks.
- ☐ Three or more people ill alike in two weeks, in one house, on one water source or after one gathering.
- ☐ Any illness among people at the same time as animals are sick or dying.
- ☐ A traveller who arrives sick or falls sick soon after arriving.
- ☐ Bloody diarrhoea: two cases in one house or three in the village in one week [VERIFY, my village scaling of the IDSR district threshold of 5].

These follow Liberia IDSR 2021, annex 4, and IN-13. Do not require fever for any of them (THRIVING library, IN-13).

Protocol 3. The daybook and weekly tally

Daybook line (one per visit). Columns:

Date	Name	House	Age	Sex	Complaint in their words	Syndrome code	What was found	What was done	Return date

Syndrome codes: **D** watery diarrhoea, **B** bloody diarrhoea, **F** fever without cough or diarrhoea, **C** cough with fast breathing or chest indrawing, **L** cough for more than two weeks, **R** fever with rash, **J** yellow eyes, **X** anything on the alert list, **O** other. Write the breath count, temperature or arm measurement where taken (FO-07).

Weekly tally (one page per week, Monday to Sunday).

Code	Under 5	5 and over	Usual this season	Watch at	Alarm at	Houses or water source if more than one case
D						
B						
F						
C						
L						
R and X				any	any	
Deaths						

Steps: - [ ] Each Sunday, count the codes from the week's daybook lines. 15 minutes. - [ ] For the first eight weeks, write the counts and set no rule. The "usual" is the average of those eight weeks. After the first year, use the same month last year. - [ ] Watch at twice the usual plus two. Alarm at twice the usual plus three, or watch two weeks running. Quick table: usual 0 to 0.5, watch 3, alarm 4. Usual 1, watch 4, alarm 5. Usual 2, watch 6, alarm 7. Usual 3, watch 8, alarm 9 [VERIFY, my arithmetic]. - [ ] Watch: visit every house with a case within two days. Look at the water and the latrine. - [ ] Alarm: call the meeting, start IN-13's line list, send word to the district. - [ ] Write the outcome of every watch and alarm on the tally page within two weeks: "cleared" or "outbreak". - [ ] Read the counts aloud at the weekly gathering, without names. - [ ] Draw the counts as a row of marks across the bottom of the page each week, so that a rising row can be seen at a glance. - [ ] Tolerance: a count may be wrong by one either way. Missing a whole week is not tolerable. Write "no visits" if there were none.

Protocol 4. The book of births and deaths

Birth page. Date and hour. Mother's name, house, age, number of the birth. Attendant. Sex, alive or stillborn, breathing at once or not, weight if a scale exists. Breastfed within the hour (yes or no). Mother's condition at 6 hours and at 6 days. Labour sheet attached.

Death page. - [ ] Name, house, age, sex, date and hour of death, date of burial, place of grave (row and number) and who washed the body (NU-07). - [ ] Pregnant or within six weeks of a birth: yes or no. - [ ] The story in the family's words: when the illness began, what it looked like, what was done, where they went for help. - [ ] Tick each that applies: fever, cough, fast or hard breathing, diarrhoea, blood in stool, vomiting, rash, bleeding, fits, stiff neck, swelling, wasting, injury, poisoning, bite. - [ ] Days ill. Was the person on a daily medicine (OR-03 register)? - [ ] The

healer's best grouping, in plain words, marked "probable": "fever and cough a week", "diarrhoea", "after childbirth", "injury", "old age and cold", "unknown". - [ ] Never write a cause that accuses a person. - [ ] Ask the questions 2 to 4 weeks after the death, gently, after the burial rites (MI-03), with one family member who nursed the person. 30 to 45 minutes.

Monthly check. Count deaths in the month. A village of 300 expects about one death every three or four months (FO-01). Two deaths in a month is a watch. Three is an alarm, and so is any month at twice the same month's average over past years [VERIFY, my scaling of FO-01's doubling rule].

Protocol 5. The watch list

One page per category, reviewed on the first day of each month.

Category	Who	What is recorded	Check
Pregnant	every known pregnancy	expected month, visits, danger signs, planned attendant	monthly visit, weekly in the last month
Under-fives	every child	birth date, monthly arm measurement, oedema, vaccines if any	monthly MUAC, by the mother where trained
Drug dependent	everyone on a daily medicine	drug, dose, days left, what happens if it stops	monthly, with OR-03 and OR-06
Old and alone	over 70 or frail, living alone	who visits, fuel, food	weekly, daily in frost (FO-01, MI-13)
Chronically ill	tuberculosis cough, epilepsy, heart failure, disability	problem list, last visit	monthly
Under watch	after a suicide attempt, a loss, a crisis	closed section: name kept only in the healer's book	per MI-08

- ☐ Arm measurement, for children aged 6 months to 5 years: under 115 mm or swelling of both feet, act the same day. 115 to 125 mm, feed and remeasure in two weeks. Falling two months running at any level, visit and feed (FO-07, HY-09).
- ☐ Count by presence, not membership. Anyone sleeping in the village is on the list (MI-13) [OWNER].
- ☐ Strike off nobody without a dated reason: moved, died, recovered.

Protocol 6. The labour sheet

One sheet per birth. Times by the clock.

- ☐ At the start of active labour (regular strong contractions, or the cervix at 5 cm if examined, per MA-01): write the time.
- ☐ Every 30 minutes: baby's heartbeat if it can be heard, contractions in 10 minutes [VERIFY intervals against MA-01].
- ☐ Every 4 hours: mother's pulse, temperature, urine passed, and cervix if a trained attendant examines.
- ☐ Waters: time broken, colour (clear, green, bloody).
- ☐ Hard limits written at the top of the sheet: 12 hours from the start of active labour in a first birth, 10 in a later one (WHO 2018 via MA-01). At the limit, act on MA-01's rules. Do not wait for the next entry.
- ☐ After the birth: time of birth, time placenta delivered, estimated blood loss, mother's pulse at 1 hour.
- ☐ Never fill the sheet afterwards from memory. If it was not written, write "not recorded".

Protocol 7. The ledger and poisons book

Stock card (one per item, kept with the item). Columns: date, received from or issued to, quantity in, quantity out, balance, expiry, initials. Count rhythm per OR-06 Protocol 4.

Inner register (poisons and controlled drugs). Columns: date and hour, drug and strength, quantity, patient name and house, reason, prescribing healer, both key holders' signatures, balance after. Count after every issue (OR-08 Protocol B).

Sale or gift of household poisons from the village store (lye, rat poison, pesticides, methanol). Date, substance, quantity, person receiving, purpose, a witness who knows the person, signature. No poison to a child, to a person under watch (Protocol 5), or to a stranger with no witness (after the Arsenic Act 1851) [OWNER].

Protocol 8. Who may read what [OWNER]

- ☐ Weekly counts by code: read aloud, posted on the wall.
- ☐ Births and deaths book: open to any household in daylight, in the healer's presence.
- ☐ Ledger and inner register: open at the monthly assembly count (OR-08).
- ☐ Daybook and watch list: the healer and the deputy only. The closed section of the watch list: the healer alone.
- ☐ The district receives: weekly counts, every alert, every death page, the annual copy. Never the daybook.
- ☐ No book is copied, lent or removed for any purpose but care, and no column is added for religion, origin, debt or loyalty.
- ☐ A person may read their own entries and ask for a correction to be written beside them.

Numbers to carry

1. **One.** One case of cholera with severe dehydration, measles, paralysis, haemorrhagic fever, a maternal death or a newborn death is an alert.
2. **Two.** Two deaths alike in a fortnight is a cluster. Act.
3. **Three.** Three or more watery stools in a day is the cholera definition, and three people ill alike in two weeks is a cluster.
4. **Twice the usual plus three.** The village alarm count for any weekly tally. Twice plus two is the watch.
5. **115 mm.** Arm measurement below which a child is severely wasted. Measure monthly.
6. **12 and 10 hours.** Limits of the active first stage of labour in a first and later birth.
7. **About one death in three or four months.** The normal for a village of 300. Three in a month is an alarm.
8. **One hour a week.** The writing budget. If the registers take more, strike a column.
9. **147.** Community cases of gut infection for every one the state counted (Tam et al. 2012). The village sees what the state never did.
10. **65%.** The humidity above which paper grows mould. Keep the chest dry, and send a copy away each year.

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