OR-09 Teaching the book: readability, pictures and the design of a manual for people who read little

HEALING after the FALL, research library, OR-09

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

How this document was made

This report rests on about 40 searches and fetches. Read in full or in large part: the 2024 front matter and chapter 8 of Where There Is No Doctor, chapters 2, 11, 12, 13, 16 and 20 of the 2026 online edition of Helping Health Workers Learn, McLaughlin's 1969 SMOG paper, Chowdhury's 1986 thesis on BRAC's oral rehydration programme, Babu and Eisenberg's 2010 audit manuscript, the Doak, Doak and Root instructions for the Suitability Assessment of Materials, Dowse and colleagues 2023, Abdu-Aguye and colleagues 2023, and Drake and colleagues 2019. Several key trials were read only as abstracts or secondary summaries, and the references say so.

It builds on five library reports and does not repeat them. FO-06 covers the history and accuracy of village manuals, the Babu and Eisenberg audit and the weak effect of printed material alone. SY-01 covers lay error, dosing error with household spoons and checklists. OR-01 covers training and the decay of hands-on skill. HY-03 and FO-04 cover the chemistry and the scale of BRAC's oral rehydration teaching. MA-07 covers the Integrated Management of Childhood Illness (IMCI) and its adherence record. The chapter plan for the book is left to SY-11 (forthcoming).

Three things are kept apart throughout: the claim (what an author or publisher says), the record (what was measured) and the inference (what this report concludes). Inferences of my own are marked [VERIFY].

1. Findings by section

1.1 Where There Is No Doctor: how a village book was made and changed

The claim. David Werner wrote Donde no hay doctor for the villages of the Sierra Madre in western Mexico, where the Piaxtla project at Ajoya, Sinaloa trained village health workers. The 2024 front matter dates the first English edition to October 1977 (Werner 2024). The brief gives the Spanish edition as 1973. Other sources give 1970 for a first mimeographed Spanish version. I did not see a primary record that settles this [VERIFY]. The front matter says the book was written "in fairly basic English" for readers with little schooling, and aims to be simple but not childish. Technical words are kept but explained, printed in italics at first use and gathered in a vocabulary list at the back.

What field testing changed. The front matter thanks four Piaxtla health workers by name, Martín Reyes, Miguel Angel Manjárrez, Miguel Angel Alvarez and Roberto Fajardo, for their part in the book (Werner 2024). The specific changes their testing produced are not documented in what I read. What the front matter does document is Werner's own verdict on the English edition: in becoming general enough for the whole world it lost much of the flavour and usefulness the Spanish original had for the villages it was written in. He asks every user group to adapt it, to add local leaflets or inserts, and he leaves blank spaces in the Green Pages (the drug pages) for local brand names and prices

(Werner 2024). This is the strongest single lesson of the book's history for HEALING after the FALL: the more general the book, the less it fits any one village.

What changed over time. The 2024 edition keeps its page numbers stable across revisions so that cross-references in Helping Health Workers Learn and in local teaching notes still point to the right page (Werner 2024). Advice has changed: cereal-based drinks were added for rehydration, and milk for stomach ulcers was withdrawn. After the 2010 audit several drug recommendations were corrected (THRIVING library, FO-06). The book also contains a page headed for persons who cannot read (p. 63 in the contents), and model patient report forms.

Dosing as printed in 2024. Chapter 8 defines a teaspoon as 5 mL and a tablespoon as 15 mL, warns that household spoons vary, and tells the reader to mark a home spoon at the level of 5 mL of water measured with a syringe (Werner 2024). It still gives children's doses as fractions of the adult dose by age (8 to 13 years one half, 4 to 7 years one quarter, 1 to 3 years one eighth, under 1 year the 1-year dose), now with approximate weights alongside. Babu and Eisenberg had criticised dosing by age where stunting is common (Babu and Eisenberg 2010, THRIVING library, FO-06). The inference is that even a well-funded, field-tested, much-revised book carried an age table into 2024 because it is easier to use than a weight table. HEALING after the FALL faces the same trade-off [OWNER].

Dosing for those who cannot read. Chapter 8 shows a dose note with drawn tablets under a sun and a moon, with halves drawn as half-tablets. It tells the health worker to explain the note, to have the patient repeat it back, and always to write the person's name, the medicine and its strength, what it is for and the dose, even when the person cannot read, because someone in the house may (Werner 2024). This is teach-back in 1977 dress, and the later trial evidence (section 1.4) supports it.

The book in use: the record. The book is said to be translated into more than 80 languages and used in over 100 countries (Werner 2024). Babu and Eisenberg give 90 languages (Babu and Eisenberg 2010). The brief's "about 100 languages" is a rounding of these claims. A user survey by Davis and Liut for Hesperian (2008, an NYU Wagner capstone) reportedly found that more than 90% of responding readers rated the book accurate and that some called it "the bible", and that the Prevention and First Aid chapters were rated most useful (as reported in Babu and Eisenberg 2010). I reached only the capstone's project page, which gives no numbers (NYU Wagner, undated). Hesperian has also claimed about 40 users per copy, attributed to Johns Hopkins and NYU research, in fundraising material [VERIFY]. These are evaluations by or for the publisher, of satisfied readers who answered a survey. No study was found that compares the health of communities with and without the book (THRIVING library, FO-06).

The book read through someone else. Helping Health Workers Learn tells of an old folk healer who could not read and who had her eight-year-old granddaughter read Where There Is No Doctor aloud while she studied the pictures (Werner and Bower 2026, ch. 20). This is the model for transmission when literacy falls: a non-reader with experience and a child reader with no experience, sharing one book. It is anecdote, but it is the one case in the record of how the book is used by someone who cannot read.

1.2 Helping Health Workers Learn: the teacher's half of the book

Helping Health Workers Learn (Werner and Bower 1982, online edition 2026) is the manual for teaching from the manual. It has no outcome data, but it records two decades of practice at Ajoya and in exchanges with programmes in Latin America, Africa and Asia.

Who the readers are. Village health workers in the programmes it describes had on average three to six years of school. People who cannot read often have unusually good memories but need different methods, not simpler content (Werner and Bower 2026, ch. 2). Ajoya's leaders began as health workers aged 13 to 16. OR-01 found that senior village health workers at Jamkhed averaged 1.6 years of schooling (THRIVING library, OR-01). The readers of HEALING after the FALL may be like these.

Pictures (chapter 12). The chapter is the most detailed practical guide to health pictures I found. Its rules, each

drawn from field experience: - Line drawings work better than photographs or shaded drawings. Shading confuses: viewers asked why a baby's neck was black. - Stylised drawings lose identification. A drawing must look like the thing. - An oversized drawing of a malaria mosquito was not recognised as a mosquito. The fix is to add an actual-size drawing, or show the real insect. - Faces and expressions carry the message. Draw whole people, do not cut off limbs at the frame, and show respect: a WHO manual picture drew parents without eyes. - Show the outside of the body as the helper will see it, not the inside. A breech birth is shown as the midwife sees it. - Draw organs on an outline of a body, or on a person, not floating alone. - Symbols work only where the object is known. An umbrella meant nothing in one Philippine village. Tablets drawn small were taken for bullets. - Cartoons suit social criticism. Lifelike drawings suit anything where detail matters. - Field test every picture: show it to a few people from the community and ask what they see before printing.

Many of the drawings were made by Pablo Chavez, a village health worker who taught himself to draw. The chapter teaches copying by a square-by-square grid (once drawn on an old X-ray plate cleaned with lye), by elastic string and by stencils (Werner and Bower 2026, ch. 12). For a book that must be recopied by hand for a century, this is directly useful.

Flannel boards, stories and role play (chapters 11 and 13). Each student makes a flannel board to take home. In the Guatemalan highlands a small board was passed round the group so that shy members could place pieces without standing in front of others. For people who cannot read, a story should start with pictures and carry only one or two points (Werner and Bower 2026, ch. 11 and 13).

Writing a manual (chapter 16). The rules come from the boys of the Barbiana school in Italy and from Hesperian's own work. Outsiders with little schooling read the draft aloud while the writers watch whether they understood. Content follows local need. Each problem is set out as signs, then treatment, then prevention. The language is spoken language, "press with your finger" rather than "apply digital pressure". Sentences are under 20 words. There are many headings, bold type and boxes for emphasis, and drawings placed beside the words they illustrate. Type is large, lines are no longer than about 60 letters, and words are not broken at line ends. The index is on coloured paper, pages carry a picture showing their subject, steps are numbered, and page edges can be cut as tabs (Werner and Bower 2026, ch. 16).

Use of the book (chapter 20). At Ajoya the two-month course held a class on "Use of the Book" twice a week throughout. Students learned what each chapter held, how to look things up rather than memorise, and then practised in role plays. Teachers checked early, and without shaming anyone, whether each student could read, use alphabetical order and do the arithmetic for doses, because index skills cannot be taken for granted. Some African programmes taught literacy and health together (Werner and Bower 2026, ch. 20). The cookbook danger, that a manual followed as a recipe book without judgement does more harm than good, is covered in FO-06 and not repeated here (THRIVING library, FO-06).

1.3 What pictures do: the trial evidence

The review. Houts and colleagues reviewed studies of pictures in health communication (Houts et al. 2006, abstract only). Pictures closely linked to written or spoken text markedly increased attention to, and recall of, health information. Gains in comprehension were largest for showing relationships and spatial arrangements. Emotional responses to pictures could push adherence either way. People with low literacy benefited most, and for very low literacy the authors recommend spoken directions with pictures to take home, or pictures with simple captions. They recommend minimal distracting detail, and that health professionals rather than artists plan the pictures, with users testing them.

Cartoon discharge instructions. In an emergency department trial of wound-care instructions, 234 patients were reached by telephone three days later, 105 who had cartoon-illustrated instructions and 129 who had standard text (Delp and Jones 1996, abstract only). With cartoons, 98% had read the instructions against 79%, 46% answered all questions correctly against 6%, and 77% reported daily wound care against 54%. The gain was larger among those with

less than a high-school education. A separate study of 101 laceration patients, whose authors I could not confirm, found 65% against 43% scoring five or more correct [VERIFY].

Pictograms on medicine labels in South Africa. This is the work closest to the setting of HEALING after the FALL. In a randomised study of 87 Xhosa-speaking patients with at most ten years of school, on short antibiotic courses, 41 got text labels and 46 got text plus locally designed pictograms (Dowse and Ehlers 2005, abstract only). Understanding was 70% against 95%. Adherence was 72% against 90%, and more than 90% adherence was reached by 54% of the pictogram group against 2% of the text group. In 304 low-literate respondents from eight South African language groups, correct interpretation of individual pictograms ranged from 14% to 97%. Only 2 of 23 United States Pharmacopeia (USP) pictograms met the 85% comprehension criterion of the American National Standards Institute (ANSI), against 12 of 23 locally designed ones. Schooling made a significant difference, language group did not (Dowse and Ehlers 2004, abstract and secondary summary).

The 2023 follow-up is the most instructive single paper for this book (Dowse et al. 2023, full text). Ninety isiXhosa-speaking adults with at most 12 years of school were shown ten redesigned pictograms for what a medicine is for. Only 15.6% had adequate health literacy. Eight of ten pictograms met the ISO threshold of 66.7% correct. Redesign made large differences: the fever pictogram rose from 17.5% correct in its 2012 version to 85.6%, and cough from 47.5% to 91.1%. Dizziness reached only 54.4% and body pain 51.1%. The misreadings matter more than the averages: a feverish person was read as someone being prayed for, stars round a head as migraine, a lightning bolt as arthritis or tuberculosis, a flame as a sore. Words placed inside the pictures were not understood. The authors conclude that pictograms are not a universal language.

Pictograms elsewhere in Africa. In Kaduna, Nigeria, 400 members of the public guessed the meaning of international pictograms (Abdu-Aguye et al. 2023, full text). Of 24 International Pharmaceutical Federation (FIP) pictograms, 11 met 67% and 6 met 85%. Of 22 USP pictograms, 13 met 67% and 6 met 85%. The worst were the FIP pictogram for "buccal" at 3.5%, "take 1 capsule every 6 hours" at 16.5%, and the USP "do not drink alcohol" at 28% and "may make you dizzy" at 27.5%. "Do not crush" reached 50%, "do not take when pregnant" 88.5%. Education was significantly associated with comprehension. The finding that a timed-dose pictogram was understood by one person in six is directly relevant: dose timing must not be carried by a picture alone.

Dosing liquid medicine. In a New York paediatric emergency department, 245 parents were randomised to a pictogram-based bundle (pictogram instructions, teach-back, a dosing log and a standard measuring tool) or usual care (Yin et al. 2008, secondary summary). In the control arm 83.5% made at least one dosing error and 29.3% a large error. The bundle reduced errors, but it was bundled and unblinded, so the share due to pictures alone is unknown. SY-01 covers the later Yin 2016 trial, in which cups carried 4.6 times the odds of error of oral syringes (THRIVING library, SY-01).

Reviews. A scoping review of 30 studies from 2000 to 2022 found improved comprehension in 87.5% of studies that measured it and improved adherence in 78.2% (Chanzu et al. 2023). Counting studies is weak evidence, and the review did not pool effects. A 2025 scoping review of 34 controlled studies of comics and graphic medicine found frequent gains in knowledge, some changes in behaviour, mixed results on anxiety and no improvement in clinical measures such as HbA1c. Many studies were small, short or self-reported (Febres-Cordero et al. 2025).

Inference. Pictures linked to words improve understanding, especially for people who read little, and locally designed and tested pictures beat imported ones by a wide margin. Pictures improve correct action less reliably than they improve understanding. A picture that tests below about 67% is worse than useless if it is the only carrier of the message, because a third of readers will act on a wrong meaning [VERIFY].

1.4 Readability formulae, and what they cannot measure

SMOG. McLaughlin's formula takes 30 sentences, ten each from the start, middle and end of a text, counts the words of three or more syllables, takes the square root of the nearest perfect square and adds 3 (McLaughlin 1969, full text).

The result is the school grade a reader needs for complete comprehension, calibrated against the McCall-Crabbs test lessons. Its standard error is about 1.5 grades, so it is right within 1.5 grades in about two cases of three. It takes about nine minutes for 600 words. It runs about two grades higher than the Dale-Chall formula, and the paper notes its main equation cannot predict below grade 6. The Flesch reading ease score (Flesch 1948, not read) works on sentence length and syllables per word in a similar spirit.

The limits. Redish summarises the case against relying on formulae (Redish 2000, abstract and bibliographic record). They were built on children's schoolbooks, measure only word and sentence length, ignore content, layout, pictures and the reader's purpose, and do worse than testing with users. Rewriting to lower a formula grade did not by itself improve comprehension in Kern's work (Kern 1980, as cited in Redish 2000). Doak, Doak and Root's Suitability Assessment of Materials (SAM) was designed to look past the grade (Doak et al. 1996). It scores 22 factors in six groups (content, literacy demand, graphics, layout and typography, learning stimulation, cultural appropriateness) at 2, 1 or 0. A total of 70% to 100% is superior, 40% to 69% adequate and below 40% not suitable. The authors treat a very high reading level and a culturally inappropriate portrayal as go or no-go signals regardless of the total. They note one exception: a text with a set of pictures that carries the whole message can succeed despite a high reading level.

Hesperian's target level. I found no published statement of the reading grade Hesperian aims at. The front matter says "fairly basic English", and chapter 16 of Helping Health Workers Learn gives sentence length, line length and the read-aloud test, but no grade [VERIFY]. The common advice to write health material at a sixth-grade level was not traced to a primary source in this search.

Inference. A formula is a quick screen for long words and long sentences, nothing more. For this book, which will be translated, recopied and read aloud, the test that counts is the read-aloud test with real readers, and the comprehension test for pictures (Protocol A). A page can score grade 4 and still be misread.

1.5 One-page algorithms: the IMCI chart and the Helping Babies Breathe action plan

IMCI. MA-07 covers the IMCI chart booklet and its outcome record (THRIVING library, MA-07). The design lesson here is narrower. The booklet's assess-and-classify tables have three coloured rows. Training material tells the worker to read from the top, pink (severe, refer urgently) then yellow (treat) then green (home care), and to stop at the first row whose signs are present, so that the most dangerous possibility is always checked first [VERIFY: secondary training summaries, booklet not read]. Even with this design, observed adherence was poor: in Malawi physical danger signs were checked in 37% of children and only 55% of children with a danger sign were referred (THRIVING library, MA-07). The chart fixes the order of thought, but it does not make people follow it. Supervision and practice do that.

Helping Babies Breathe (HBB). HBB teaches a single illustrated action plan built round the "Golden Minute": by one minute after birth a baby should be breathing well or receiving bag-and-mask ventilation. The 2nd edition plan uses a grey zone for preparation, a green zone for routine care and a yellow zone for the Golden Minute, and the facilitator flip chart uses the same illustrations and colours as the provider guide (AAP undated, search summary). Whether the first edition had a red zone for advanced care is not settled in what I read [VERIFY].

The outcome record is unusually good for a teaching tool. In eight Tanzanian hospitals, early neonatal deaths within 24 hours fell from 13.4 to 7.1 per 1,000 births (relative risk 0.53) and fresh stillbirths fell (relative risk 0.76), comparing 8,124 births before training with 78,500 after. Use of stimulation rose from 47% to 88% (Msemo et al. 2013, abstract). In Karnataka, India, after training 599 birth attendants, stillbirths fell from 3.0% to 2.3% but neonatal mortality did not change (1.9% against 1.8%), and the populations before and after may have differed (Goudar et al. 2013, secondary summary). Both are before-and-after studies, not trials.

Decay. In the national Tanzanian roll-out, 8,391 providers were tested by structured practical examination. Under the first approach, where trained staff were simply asked to pass skills on, mean scores fell from 80.5% after training to

70.7% at four to six weeks. With structured on-the-job practice and tools, scores fell only from 81.3% to 77.6% (Drake et al. 2019, full text). A further fall to 55.8% at four to six months is reported in a secondary summary [VERIFY]. The brief's lead "Msuya et al. 2017" on HBB retention was not found. OR-01 records the same pattern: hands forget before heads (THRIVING library, OR-01).

Inference. A one-page picture plan works when three conditions hold: it is short enough to hold in the head, it is practised on a manikin or doll until the hands know it, and practice is repeated within weeks, not years. The page is the anchor, not the teacher.

1.6 Oral teaching: what BRAC achieved without a book

HY-03 and FO-04 give the scale and chemistry of BRAC's Oral Therapy Extension Programme: about 12 to 13 million households taught house to house, the pinch of salt and fistful of gur in half a seer of water, 87% of solutions in the safe range, and the decline in safety one to two years later (THRIVING library, HY-03, FO-04). This section adds what Chowdhury's thesis shows about how the teaching was designed (Chowdhury 1986, full text).

From ten points to seven. The pilot taught "Ten Points to Remember". Some, such as how diarrhoea is transmitted, proved hard to remember, and the list was cut to seven. The seven, printed in the thesis appendix from Abed's 1983 account, cover what diarrhoea does, prevention (tubewell water, covered food, washing), why replacing water and salt is the treatment, the recipe (a three-finger pinch of salt and a fistful of gur in half a seer of water), giving it from the first loose motion, how much to give adults and children, and feeding during and after the illness. Each point is a short spoken paragraph, not a slogan. None is a list of danger signs: the only referral cue is that saline injection becomes necessary once dehydration sets in (Chowdhury 1986, appendix 2).

The session. Workers, women aged 20 to 50 who could read and write, taught one mother at a time in a session of 20 to 25 minutes, about eleven households a day. The session ended with the mother making the solution herself while the worker watched. Monitors revisited a 10% sample of households about a month later, graded each mother's knowledge and solution, and the worker's pay depended on the grades (THRIVING library, FO-04). In the pilot, 34% were graded A, 64% B, the rest C and none D.

What the field changed. The first recipe used a pinch and a scoop. Mothers confused "two scoops", and the measure was changed to a fistful of gur. The local volume measure, the seer, was remembered far better over time than the pinch or the fistful. Reinforcement after the visit was slight, and knowledge fell.

Print against people. BRAC also used leaflets, posters, calendars, flip charts, radio, television and billboards. Yet when mothers were asked where they first learned about the solution, 85.5% to 91.6% named the household worker, and radio or posters were named by 0% to 0.6% (Chowdhury 1986, table 10.3). The brief's lead "Chowdhury, Vaughan and Abed 1988, Health Policy and Planning" appears to be the paper with those authors in the International Journal of Epidemiology 1988, 17(3):655-665, on the use and safety of home-made solutions. I saw it only in a reference list (Chowdhury et al. 1988).

Inference. For people who read little, a teacher in the house who demonstrates, has the learner do it, and checks a month later far outperforms print and broadcast. A local measure the household already uses beats an invented one. Content must be cut to what can be remembered, about seven points. Teaching without later checks decays within a year or two. These are the design rules for the oral half of HEALING after the FALL.

1.7 Checklists, type and light

SY-01 covers the outcome evidence for checklists, including the null BetterBirth trial (THRIVING library, SY-01). For design, aviation is the best source. A checklist is either READ-DO (read each step, then do it) or DO-CONFIRM (do from memory, then confirm against the list). It has a defined pause point, holds about five to nine items at each pause, covers the steps most dangerous to skip, and should run in about 60 to 90 seconds (Gawande 2009, secondary

notes). Aviation guidance asks for headings of 14 point (at least 12), body text of 12 point (at least 10), sans-serif type, mainly lower case, and black on white or yellow. Retinal illumination roughly halves by age 50. An Air New Orleans checklist of 1987 used type 57% smaller than recommended, and one airline revised one checklist seven times in five months. Missed flap settings on take-off killed people at Detroit in 1987 and at Dallas Fort Worth in 1988 (AIN 2023, which draws on Degani and Wiener's NASA work).

Inference. Healers after the Fall will read by firelight or a lamp, often older, often frightened. The aviation type sizes are a floor, not a target. The red-flag page should be read-do and short.

1.8 Translation and numbers

In 2010, Sharif and Tse checked Spanish medicine labels from pharmacies in the Bronx. Most pharmacies used computer translation and very few used professional translators. About half the Spanish labels had errors, and many mixed English and Spanish. The English "once" (one time) reads as "eleven" in Spanish. A man took 11 tablets of each of two blood-pressure medicines (Sharif and Tse 2010, secondary summaries). The European Centre for Disease Prevention and Control argues that translation alone is not enough: materials must be culturally adapted and tested with end users (ECDC 2016, summary only). Hesperian's practice of adaptation, with local translators, clinicians and field testing in each language, is described on its site, but I found no published measure of error rates before and after [VERIFY].

Inference. In a translated or recopied book, every number is a point of failure. Numbers should be written as digits, never as words, and never as words that mean a different number in another language. Every copy should be checked number by number against the master.

1.9 The paper book over a century

Permanent paper under ISO 9706 must have an alkaline reserve (20 g/kg calcium carbonate), a cold-extract pH of 7.5 to 10 and limits on easily oxidised material, so that it does not become acidic (Library of Congress, undated, search summary). I found no source giving a guaranteed lifetime in years [VERIFY]. After the Fall, any printed stock will wear out, burn or drown, and new copies will be made by hand. The grid copying method, stable page numbers and a master copy kept dry make this possible (Werner and Bower 2026, ch. 12, Werner 2024). The inference is that the book must be designed to be copied: line drawings, not halftones, and pages whose layout survives a pencil copy [VERIFY].

2. Evidence grades

Practice	Claim	Record	Inference	Grade
Pictures linked to text	Better understanding	Houts review, Delp 46% vs 6% all correct, Dowse 70% vs 95%	Robust for comprehension, less for action	A (comprehension), B (adherence)
Locally designed and tested pictograms over imported ones	Understood better	12 of 23 local vs 2 of 23 USP met 85%	Test every picture locally	B
Imported pictogram used untested	Universal	3.5% to 97% correct, dose-timing 16.5%	Unsafe as sole carrier	X
Pictogram bundle with teach-back and a syringe	Fewer dose errors	Yin 2008, Yin 2016	Works, as a bundle	A

Practice	Claim	Record	Inference	Grade
Teach-back	Better recall and action	19 of 20 studies positive (Talevski et al. 2020), knowledge and adherence improved (Ha Dinh et al. 2016)	Cheap, should be routine	A (low to moderate certainty)
Readability formula as a test of a page	Measures understanding	Built on schoolbooks, SE about 1.5 grades, rewriting alone did not help	Screen only	X as a test, D as a screen
SAM checklist	Judges suitability	Widely used, scoring stated	Better than a formula, untested on outcomes	D
Field-testing drafts with readers (Hesperian, Barbiana)	Better books	Convergent practice	Plausible, untested on outcomes	C
One-page illustrated action plan with practice (HBB)	Saves newborns	Neonatal deaths RR 0.53 in Tanzania, null in India	Probable benefit with practice	B
Colour-row algorithm chart (IMCI)	Correct triage	Danger signs checked in 37%	Order is fixed, use is not	B (for design), see MA-07 for outcomes
Household oral teaching with demonstration and check (BRAC)	Safe solutions at scale	87% safe, about 90% learned from workers, under 1% from posters or radio	The strongest method for non-readers	B
Seven-point limit per lesson	Remembered	Ten points cut to seven in pilot	Plausible	C
Children's doses by age fraction	Simple	Still printed 2024, criticised 2010	Weight bands safer where children are small	X (by inference)
Drawn spoon as a dose	Easy	Spoons vary, cups 4.6 times the odds of error	Never	X
Computer or unchecked translation of numbers	Saves effort	About half of labels wrong, "once" read as eleven	Never	X
Child reading aloud to non-reader	Book reaches non-readers	One anecdote	Plausible, untested	D

3. Means ledger

The "remedy" here is the book and its teaching. Each rung lists what can be done and what it changes.

Rung	What can be done	What it changes
Hands	Seven points per danger taught by mouth, a song or count for the Golden Minute, the red-flag list by heart, teach-back with every instruction	Action without a book. Decays within a year without repetition
Hearth	One copy of the red-flag page and the numbers card on the wall in a waxed or oiled cloth cover. A syringe or a spoon marked at 5 mL with a measured volume. A dose note with sun and moon drawings	The household acts at night, alone, and doses by a known volume
Garden and still	Pages recopied by hand on a grid. Pictures drawn from local people, plants and pots. Beeswax or linseed oil to proof covers [VERIFY]. A marked measuring cup made at the forge or the pottery	Copies survive and fit the place. Measures become standard across the hamlet
Village dispensary (300)	The full book, one master copy kept dry. A healer who reads, and a child or second reader. Use-of-the-book drills twice a week during training. Picture testing with 20 or more villagers. Monthly practice of the action plans on a doll. A register of which page was used and what happened	The book is used, tested and corrected locally. Hands are refreshed within weeks
District infirmary (3,000)	An editorial group that holds the master, checks every copy number by number, back-translates, runs the BRAC-style 10% resample a month after teaching, issues dated correction slips and retrains healers	Errors are caught before they are copied. The book learns
Hospital before the Fall	Professional writers, illustrators, translators, usability testing, printed permanent paper, electronic updates, pharmacists' labels with tested pictograms	The reference. Even here dosing error is common without a syringe and teach-back

4. Harm test

A misread picture. How it harms: a reader acts on the wrong meaning. Record: a lightning bolt read as arthritis or tuberculosis, a feverish person read as one being prayed for, an oversized mosquito not recognised, small tablets taken for bullets, a "take every 6 hours" pictogram understood by 16.5% (Dowse et al. 2023, Abdu-Aguye et al. 2023,

Werner and Bower 2026). Who is most at risk: the least schooled, the old and those reading a picture without anyone explaining it. Signs it is going wrong: in testing, more than a third give a different answer, or any give the opposite answer. What to do: redraw, retest, and never let a picture alone carry a dose, a time or a "do not".

A drawn spoon as a dose. How it harms: household spoons vary widely, and a spoon drawn on a page has no size. SY-01 reports that large dosing errors are common with cups and spoons (THRIVING library, SY-01). Who must never be dosed by it: infants and small children, and any medicine with a narrow margin. What to do instead: give the dose in millilitres, measured with a syringe, or with a spoon or cup marked at a known volume and kept with the medicine (Werner 2024).

A translation or copying error. How it harms: a changed number, a lost decimal point, "once" read as eleven (Sharif and Tse 2010). One error in a master copy multiplies into every copy made from it. Signs: a dose that differs from the dose in another copy or another language. What to do: digits only, check every number against the master with two people, back-translate dose pages, and date each copy.

A cookbook used without judgement. Covered in FO-06. A protocol followed past its exits causes harm, and a reader who cannot find the exit cannot use it (THRIVING library, FO-06).

The age table. A child who is small for her age gets an adult fraction meant for a bigger child. Where stunting is common the risk is overdose. Weight bands with a simple scale are safer [VERIFY].

The unused book. How it harms: the household that owns the book does not open it in time, cannot find the page, or cannot read it. Record: Ajoya found that index skills cannot be taken for granted and built twice-weekly drills (Werner and Bower 2026, ch. 20). BRAC's posters and radio reached under 1% as a first source (Chowdhury 1986). Printed material alone changes practice by only a few percentage points (THRIVING library, FO-06, SY-01). What to do: teach the book as well as giving it, and put the few pages needed in a crisis on the wall.

The decayed skill. Skills from a one-page plan fell by about ten points in four to six weeks without structured practice (Drake et al. 2019). Signs: a healer who hesitates on the doll. What to do: monthly practice.

False confidence. A reader who has the book may believe the book makes them competent. The IMCI record shows that a chart in hand does not mean the chart is followed (THRIVING library, MA-07).

5. Red flags

These are the signs that a manual or its teaching is failing, in the order in which they should be checked. 1. A healer cannot find the right page from a symptom within about a minute in a drill [VERIFY]. 2. Fewer than two-thirds of test readers give the right meaning for a picture that carries a danger sign or a dose. 3. Any reader gives the opposite meaning for a "do not" picture. 4. A dose number differs between two copies. 5. On resampling a month after teaching, more than about one household in ten cannot make or measure the remedy correctly [VERIFY]. 6. A healer cannot perform an action plan on a doll within its time limit. 7. The book is kept wrapped and has not been opened since it was given.

For the patient, the book needs one red-flag page, separate from the rest, that lists the signs that mean "this person may die or be disabled without help the village cannot give" (THRIVING library, FO-06, MA-07). The design rules for that page are in Protocol C. When the red flag is raised and no help exists, the page must also say what to do anyway: keep warm, keep giving fluids if the person can swallow, stay with them, call the people they love. Comfort and company are actions, and the page should say so.

6. The case against

Too much for too few. Early WHO, UNICEF and Christian Medical Commission reviewers thought Where There Is No Doctor gave far too much information to people with little schooling (as reported in Babu and Eisenberg 2010).

A book of hundreds of pages, the argument goes, invites the unschooled to diagnose and treat beyond their skill. Werner's answer was that people were already treating themselves, badly, and were better off informed. Neither side measured outcomes.

The book contains errors. Babu and Eisenberg found considerable problems in its diagnostic and treatment advice and argued that its effectiveness had never been tested (Babu and Eisenberg 2010, THRIVING library, FO-06). A book used as the only authority spreads its errors to every reader.

Pictures are not a universal language. Dowse and colleagues, after two decades of testing, warn that pictograms must be designed and tested for each population (Dowse et al. 2023). The trial evidence for pictures comes from clinics and pharmacies, with an explainer present. A picture read alone at night is a different thing.

Readability numbers are false comfort. Redish argues that formulae measure the wrong things and that only testing with users tells whether a document works (Redish 2000).

Print barely moves practice. Systematic reviews of printed materials alone find gains of a few percentage points (THRIVING library, FO-06, SY-01). BRAC's own data show that its posters and broadcasts were the first source for almost no one (Chowdhury 1986). On this view a book is a reference for teachers, not a teacher.

Checklists and algorithms do not enforce themselves. The IMCI adherence record and the null BetterBirth trial show that a good chart does not guarantee good care (THRIVING library, MA-07, SY-01).

Teaching decays. BRAC's safe-solution rates and HBB scores both fell within months to years (THRIVING library, HY-03, Drake et al. 2019).

The honest answer. These criticisms are mostly right about a book left alone. They argue for the book as one part of a system: a teacher, a demonstration, a check a month later, practice within weeks, a corrected master and a red-flag page on the wall. That system is what BRAC and HBB built, and it is what worked.

7. 10-line summary

1. Pictures linked to words improve understanding most for people who read little (Houts et al. 2006, Delp and Jones 1996).
2. Locally drawn and tested pictures far outperform imported ones: 12 of 23 against 2 of 23 met 85% in South Africa.
3. Untested pictures fail badly: a dose-timing pictogram was understood by 16.5% in Nigeria.
4. Text plus tested pictograms raised understanding from 70% to 95% and adherence from 72% to 90% in a small trial.
5. Readability formulae screen for long words and sentences but do not measure understanding. Test with readers.
6. BRAC's household teaching, with demonstration and a check a month later, gave 87% safe solutions, and almost no one learned it first from posters or radio.
7. Lessons were cut to seven points because more could not be remembered.
8. One-page action plans with practice can save lives (HBB, neonatal deaths RR 0.53), but skills fall within weeks without practice.
9. Doses must be given by volume with a syringe or marked measure, never as a drawn spoon, and numbers must be checked in every copy.
10. Where There Is No Doctor's own author said the general edition lost usefulness. A book must be adapted, taught and checked locally.

8. Open questions

- What did the Davis and Liut 2008 survey and the NYU Wagner capstone actually find, and how representative were the respondents?
- What specific changes did the Ajoya field testing make to the 1970s drafts? The early Spanish editions and Werner's papers might show this.
- What reading grade, if any, does Hesperian target, and has it measured comprehension of its pages directly?
- Is there any trial comparing weight-band dosing tables with age-fraction tables in lay hands?
- How well does a picture work when read alone, at night, without an explainer? Almost all trials had someone explaining.
- What is the shelf life of a hand-copied book, and how often do copying errors enter numbers? No measurement was found.
- Does a child reading aloud to an experienced adult improve that adult's correct action? Only anecdote exists.
- Did BRAC's mothers who were graded A at one month still make safe solutions years later, and did refreshers help? HY-03 gives part of this.
- Should the book carry age tables at all [OWNER]?

9. Sources to read in full

1. Werner and Bower, Helping Health Workers Learn, chapters 11 to 13, 16 and 20 (free online).
2. Werner, Where There Is No Doctor, 2024 front matter and chapter 8 (free online).
3. Chowdhury 1986, the LSHTM thesis on BRAC's oral rehydration programme (free online).
4. Dowse et al. 2023 on indication pictograms, for the method of testing and the misreadings.
5. Abdu-Aguye et al. 2023, for the comprehension of international pictograms in a West African public.
6. Houts et al. 2006, the review of pictures in health communication (full text not reached here).
7. Drake et al. 2019, on skill decay and on-the-job practice after HBB.
8. Doak, Doak and Root 1996, Teaching Patients with Low Literacy Skills (the SAM chapter is free online).
9. Babu and Eisenberg 2010, the audit manuscript, for its method of checking a manual.

10. At the bedside after the Fall

Household. - Minimum version: the red-flag page and the numbers card on the wall, in a waxed or oiled cover. One marked measure for liquid doses. Every adult and every child old enough taught by mouth the seven points for the commonest dangers (diarrhoea, fever in a baby, bleeding, breathing), and each able to show the oral rehydration solution with their own hands. - What it needs to start: one copy of the two pages, a syringe or a spoon marked against a known volume, one person in the house who can read numbers, and a teacher's visit of about 20 to 25 minutes. - First failure to expect: the page is on the wall but nobody reads it in the crisis, or the measure is lost and an ordinary spoon is used.

Village of 300. - Minimum version: one master copy of the full book kept dry, a healer trained in using it, and a second reader (often a child). Use-of-the-book drills twice a week during training and monthly afterwards. Every new picture tested on 20 or more villagers before it goes in. Monthly practice of the action plans on a doll. Household teaching by the BRAC method, with a revisit a month later to a tenth of the households. - What it needs to start: the book, paper, pencils, a grid for copying, a doll or rolled-cloth manikin, a register, and a healer who can read and do dose arithmetic. Whether the healer must read, or may be a non-reader paired with a reader, is a village rule [OWNER]. - First failure to expect: the healer stops practising after the first months, and the second reader leaves or is not trained.

District of 3,000. - Minimum version: an editorial group of two or three people who keep the master, check every copy number by number, run picture tests, back-translate dose pages into each language spoken, issue dated correction slips, run refresher days and audit the village registers. - What it needs to start: the master, permanent paper or

the best paper available, an illustrator who can copy by grid, readers in each language, and a route to every village. - First failure to expect: a copying error in a dose that reaches several villages before it is caught, or a correction that reaches some copies and not others.

11. Protocols

Protocol A. Testing a picture before it enters the book

1. Draw the picture as a line drawing, with whole people, real-size objects where size matters, and no words inside the frame.
2. Choose at least 20 people from the readers it is meant for, including the least schooled and at least five over 50 years old [VERIFY].
3. Show the picture alone, without any caption. Ask: "What does this picture tell you to do?" Write down the answer in the person's words.
4. Score each answer as correct, partly correct, wrong, or opposite (a "do" read as "do not", or the reverse).
5. Accept the picture if at least 67% are correct for an ordinary picture, or at least 85% for any picture that shows a danger sign, a dose or a "do not". Reject any picture that one person reads as the opposite [VERIFY].
6. If it fails, ask the people who misread it what they saw, redraw, and test again with new people.
7. Even a passing picture always goes beside words, and someone explains it the first time.
8. Record the result, the date and the testers' names in the register.

Protocol B. Writing a page

1. One page, one problem. Order: what you see, what to do, when to send for help, how to prevent it.
2. Spoken words. Sentences under 20 words. Lines under about 60 letters.
3. Body type at least 12 point, headings at least 14 point, in a plain upright typeface. Black on white or pale yellow.
4. Numbers as digits, never as words. Doses in millilitres, grams, or number of tablets, never in "spoons".
5. A picture beside the words it illustrates, and a small picture in the page corner showing the subject.
6. A box at the foot of the page headed with the red-flag sign, telling the reader when to turn to the red-flag page.
7. Read aloud by a person with little schooling while the writer watches. Rewrite every sentence that stops them.
8. Run Protocol A on each picture.
9. Keep the page number. If the page changes, date it and issue a correction slip for every copy.

Protocol C. The red-flag page

1. One page, kept on the wall and at the front of the book. Read-do: the reader reads each line and acts.
2. No more than nine signs, each with a picture tested at 85% or better.
3. Each sign written in fewer than ten words.
4. Under each group of signs, one action, written as an order ("Lay the child on her side").
5. A final line: what to do when no help can come, including comfort and company.
6. Type at least 14 point. Red border or red mark at the top so it can be found in poor light [VERIFY].
7. Practised in drills: a healer must find and read it within about a minute.

Protocol D. Dose tables and measures

1. Dose by weight band where the medicine allows. Print the table in rows: weight band, then the dose in digits, then the number of times a day, then the number of days.
2. If an age column is also printed, put it after the weight column and label it "only if no scale" [OWNER].
3. Liquid doses in millilitres. Give the household a syringe or a measure marked at the dose.

4. To mark a spoon or cup: measure 5 mL of water with a syringe, pour it into the spoon, and mark the level by notch or paint (Werner 2024). Check the mark twice.
5. Write a dose note for every medicine given: the person's name, the medicine and its strength, what it is for, and the dose. Add sun and moon drawings with tablets or halves drawn under them for people who cannot read (Werner 2024).
6. Have the person or carer show the dose back with the measure before they leave (teach-back).
7. Tolerance: a measured dose should be within about one tenth of the stated volume. A dose off by a fifth or more is a large error and must be corrected [VERIFY].

Protocol E. Teaching a household (after BRAC)

1. Visit one household at a time. Allow 20 to 25 minutes.
2. Teach no more than seven points.
3. Use the household's own measures (the pot, the cup, the hand) wherever they can be made reliable.
4. Show it, then have the learner do it while you watch. Correct the learner's hands, not their words.
5. Ask the learner to tell back the danger signs and when to send for help.
6. Leave the dose note or the page, but do not rely on it.
7. Return to one household in ten about a month later. Grade the result A to D. Retrain every C and D, and the teacher whose households score low.
8. Repeat the visit within one to two years, because the pinch and the fistful are forgotten.

Protocol F. Use-of-the-book training

1. In the first week, check without shame whether each learner can read, use alphabetical order and do the dose arithmetic.
2. Twice a week throughout training, one class on the book: what each part holds, how to find a page from a symptom, and how to read the dose tables.
3. Drill: call out a symptom and time how long it takes to reach the page. Aim for under a minute [VERIFY].
4. Role plays in which one learner is the patient and one uses the book aloud.
5. Pair each non-reading healer with a reader, often a child, and train the pair together.
6. After training, practise action plans on a doll monthly, and repeat the drills at least four times a year [VERIFY].

Protocol G. Copying and translating the book

1. Copy from the master only, never from a copy.
2. Draw pictures by grid: rule the master in squares, rule the new page in the same number of squares, and copy one square at a time.
3. Write every number as digits. After copying, two people read every number aloud, one from the master and one from the copy.
4. Translate dose pages and the red-flag page, then have a second person who has not seen the original translate them back. Compare every number and every "do not".
5. Test the translated red-flag page with Protocol A in the new language.
6. Date each copy and record who made and checked it.

12. Numbers to carry

1. **67% and 85%.** A picture must be understood by at least two-thirds of test readers, and by 85% if it shows danger, dose or "do not".
2. **5 mL.** A teaspoon by definition. Mark your own measure against a syringe, because real spoons vary.
3. **7 points.** The most a household lesson should carry.

4. **20 to 25 minutes.** One household lesson, ending with the learner doing it.
5. **1 in 10, at 1 month.** Revisit one household in ten a month after teaching.
6. **5 to 9 items.** The most a checklist or red-flag page should hold at one pause.
7. **20 words, 60 letters.** The longest sentence and the longest line.
8. **1 minute.** The Golden Minute after birth, and the time to find the red-flag page.
9. **4 to 6 weeks.** The time in which an untrained hand loses about ten points of skill. Practise monthly.

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