NU-08 Pain relief by non-drug means: heat, cold, position, touch, distraction, acupuncture, hypnosis

HEALING after the FALL, research library, NU-08

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How to read this report

This report covers the acute and procedural pain of everyday care: the burned child's dressing change, the labouring woman, the broken bone, the needle, the injured ankle and the dying person, and it sets each non-drug means against the evidence and against its harms. Chronic back pain, arthritis and neuropathy programmes are in CH-05, the placebo and ritual evidence in FO-10, the massage, bonesetting and water traditions in TR-12, acupuncture's tradition and its full trial record in TR-03, Esdaile's mesmeric surgery and cold anaesthesia in WO-11, burn care in WO-04, fracture care and the Thomas splint in WO-05, palliative care in NU-06, the mirror in NU-04, capsaicin and the plant analgesics in ME-06 and labour companionship in MA-01. They are cited, not repeated. A grep of the library found no report that covers labour pain relief (MA-02 and MA-03 deal with haemorrhage and obstruction), so labour is treated here. Most trials were read as abstracts, and the references say so. Grades follow the frame: A trials or systematic reviews, B consistent clinical series, C convergent tradition with plausible mechanism, D single tradition or anecdote, X ineffective or harmful.

1. Findings

1.1 How these means work, and how to read the numbers

The mechanisms. Ronald Melzack and Patrick Wall proposed in 1965 that signals from touch and pressure fibres can close a "gate" in the spinal cord against pain signals (Melzack and Wall 1965, title and citation only). Rubbing a bumped shin, pressing a contraction, warming a back and pricking a needle all feed that gate. Attention is a second channel: pain needs to be attended to, and a mind held elsewhere feels less of it. Expectation and meaning are a third, and FO-10 sets out their size: about 0.28 standard deviations for pain against no treatment, larger when warmth, confidence and ritual are added (THRIVING library, FO-10). Every means in this report works through some mixture of the three, and the trials rarely separate them.

Reading an effect size. Most results here are standardised mean differences (SMD), the difference between groups divided by the spread of scores. One anchor makes them readable: Madsen, Gøtzsche and Hróbjartsson found that an SMD of 0.17 corresponded to 4 mm on a 100 mm pain scale (Madsen 2009, abstract). By that ratio an SMD of 0.5 is about 12 mm, 1.0 about 23 mm and 1.4 about 33 mm [VERIFY, my arithmetic, the ratio varies with the spread in each trial]. A change of 10 to 15 mm is usually the smallest a patient notices (THRIVING library, CH-05).

The drug benchmark. The Oxford league table expresses analgesics as the number needed to treat (NNT) for one extra patient to get at least half relief over four to six hours in single-dose trials against placebo: intramuscular morphine 10 mg, NNT 2.9 (946 patients, half of them relieved), oral ibuprofen 400 mg, NNT 2.5, oral paracetamol 1

g, NNT 3.8 (Oxford league table 2007). No non-drug means has been tested in this format, so a true NNT cannot be given for any of them. Where head-to-head trials exist they are named below: heat against ibuprofen and paracetamol, hypnosis against patient-controlled opioid, TENS against standard care.

1.2 Heat

The tradition. Warm stones, heated bran and salt bags, hot fomentations, the hot water bottle and the warm bath are used on every continent for the aching back, the cramping womb and the cold sick body. Nightingale warmed a chilled patient with bottles, bricks and flannels (THRIVING library, NU-03). Kneipp's and Priessnitz's water cures and the Unani bath are in TR-12 and TR-04. The tradition holds that heat draws out cold, loosens what is stiff and comforts.

The record. For low back pain, Simon French and colleagues found nine trials with 1,117 people. In two trials of 258 people with acute and subacute pain, a heat wrap reduced pain at five days by 1.06 points on a 0 to 5 scale (0.68 to 1.45) against an oral placebo, about 21 points on 100 by my conversion [VERIFY]. A heated blanket cut acute pain by 32 points on 100 immediately. Adding exercise to the wrap helped more. The evidence was moderate and the effect short-term (French 2006, Cochrane abstract and Spine abstract). In a head-to-head trial, Scott Nadler and colleagues randomised 371 people with acute back pain: a wrap at 40 °C for 8 hours a day gave more day-1 relief (mean 2.0) than ibuprofen 1,200 mg a day (1.51) or paracetamol 4 g a day (1.32), and more on days 3 to 4 (Nadler 2002, abstract). For period pain, Akin and colleagues found a heated abdominal patch for about 12 hours a day as effective as ibuprofen 400 mg three times a day (pain relief 3.27 against 3.07, placebo 1.95, 81 women) (Akin 2001, abstract). MA-11 reports a 2025 pooling of 57 trials in which heat matched or slightly beat NSAIDs for period pain (THRIVING library, MA-11). Both head-to-head trials tested the same commercial wrap and share four authors (Weingand, Hengehold, Goodale and Hinkle), whom I take to be employees of its maker [VERIFY, affiliations not read].

In labour, warm packs reduced pain in the first stage (SMD -0.59, three trials, 191 women) and the second stage (SMD -1.49, two trials, 128 women), on very low certainty evidence (Smith 2018, abstract). A warm compress on the perineum during the second stage halved third- and fourth-degree tears (RR 0.46, 0.27 to 0.79, four trials, 1,799 women, moderate quality) (Aasheim 2017, abstract), a benefit beyond pain.

The inference. Heat is the one non-drug means with a randomised win over common drugs, for two pains: acute back pain and period pain. Its effect is roughly that of a dose of ibuprofen. It works at 40 °C, which is warm, not hot. Section 4 shows why that number matters.

1.3 Cold

The tradition. Cold water, snow, wet cloths and cold metal are used for sprains, bruises, burns and headaches across cultures. Larrey's observation of numbed limbs in the Napoleonic retreats and Arnott's ice and salt anaesthesia of 1848 are in WO-11. The tradition holds that cold stops swelling and bleeding and numbs.

The record. Chris Bleakley, Suzanne McDonough and Domhnall MacAuley reviewed 22 trials of ice for acute soft-tissue injury. Their mean quality was 3.4 out of 10. There was marginal evidence that ice plus exercise helped after ankle sprain and surgery, little that adding ice to compression did anything, and no evidence for an optimal mode or duration (Bleakley 2004, abstract). A later review of rest, ice, compression and elevation for ankle sprain (11 trials, 868 patients) found insufficient evidence for any of the four (van den Bekerom 2012, abstract). In their own trial of 89 sprains, Bleakley's group found that intermittent icing gave less pain on activity in the first week than a standard 20-minute protocol, with no difference by one week in swelling or function (Bleakley 2006, abstract). The intermittent protocol is described as 10 minutes on, 10 off and 10 on, every two hours (Bleakley 2006, secondary summary and later trial registration, methods not read [VERIFY]). French found too little evidence to judge cold for back pain (French 2006).

Cold does help some acute pain. After childbirth, an ice pack or cold gel pad reduced perineal pain within four to six hours by 4.46 points on 10 in one trial of 100 women, very low certainty, and pain at 24 to 48 hours (RR 0.73, one trial, 316 women), with no clear effect on healing (East 2020, abstract). Cold before a needle gives a small benefit in adults (THRIVING library, WO-11). Cool running water is the first treatment of a burn (THRIVING library, WO-04).

The inference. Ice relieves pain for an hour or two. It probably does not speed healing. The acronym RICE was built on custom, not trials, and what the trials support is cold for short relief plus early movement as pain allows.

1.4 Position, splinting and traction

The tradition. Every bonesetting tradition binds the broken limb, and every midwifery tradition moves the labouring woman (THRIVING library, TR-12, WO-05). Holding still is the oldest analgesic for a fracture: the bone ends stop grinding.

The record for fractures. The strongest historical evidence is Gray's First World War series, in which traction splinting at the front with surgery at clearing stations accompanied a fall in recorded mortality from gunshot fracture of the femur from "about 80 per cent" at one time to 15.6% in 1,009 cases at Arras in 1917. WO-05 explains why the comparison is not like-for-like (THRIVING library, WO-05). Gray's record measures death, not pain. For pain I found only modern hospital data. In 120 trauma patients, a distal femoral traction pin gave 1.9 points less pain on 10 during immobilisation than a long-leg splint (Bumpass 2015, abstract). For hip fracture, by contrast, five trials found that skin traction before surgery does not reduce pain or analgesic use (Sammut 2021, abstract), and one trial of 68 found a simple position splint better than skin traction (Tosun 2018, abstract). FO-09 reports a 2023 review finding no clear advantage of traction over simple splints before hospital (THRIVING library, FO-09). I could not find the ICRC's own wording on immobilisation as analgesia, and it is not quoted [VERIFY].

The record for labour. In 25 trials with 5,218 women, upright and mobile positions in the first stage shortened it by about 1 hour 22 minutes, reduced caesarean section (RR 0.71) and epidural use (RR 0.81), with no harm shown (Lawrence 2013, abstract). Upright positions are a pain intervention measured by what women chose not to need.

The inference. For a long-bone fracture, a padded splint across the joints above and below, and traction for the femur, are the main analgesics a village has. For the hip of an old person, comfortable positioning with pillows does as well as traction. The dying person's positions for breathlessness are in NU-06.

1.5 Touch and massage

TR-12 holds the massage traditions on their own terms (*nuad Thai*, *hilot*, *mirimiri* and *romiromi*) and the Cochrane review of massage for low back pain: SMD -0.75 against inactive controls in the short term, low certainty, fading by six to twelve months (THRIVING library, TR-12). This section adds the acute uses.

Cancer pain. Lee and colleagues pooled 12 studies with 559 patients and found massage reduced cancer pain against no massage or usual care (SMD -1.25, -1.63 to -0.87), most for pain after surgery, with foot reflexology doing better than body or aroma massage (Lee 2015, abstract). The trials were small and unblinded. Moyer's pooling found the strongest effect of massage on anxiety (THRIVING library, TR-12).

Labour. Massage reduced pain in the first stage (SMD -0.81, six trials, 362 women, low quality) but did not clearly reduce drug use (Smith 2018, abstract). Continuous one-to-one support, which is mostly presence, touch and words, reduced the use of any analgesia (RR 0.90, 15 trials, 12,433 women) and caesarean section (RR 0.75) (Bohren 2017, abstract, also THRIVING library, MA-01).

Newborns. Holding the baby skin to skin during a heel prick kept the heart rate about 11 beats a minute lower during the procedure (five studies, 161 infants) and shortened crying after a heel lance by 34 seconds (two small studies) (Johnston 2017, abstract, 25 studies, 2,001 infants). Breastfeeding during the procedure reduced crying

against no intervention (Shah 2023, abstract). Sugar is a food, not a drug: 0.5 to 2 ml of 24% sucrose on the tongue reduced pain scores in high-quality trials (Stevens 2016, abstract, 74 studies, 7,049 infants). WO-11 holds sucrose for infants too (THRIVING library, WO-11).

The inference. Touch relieves acute pain moderately, relieves fear more, and is the one means that every household can give at every bedside.

1.6 Distraction, breathing, music and words

Children's needles. Kathryn Birnie and colleagues reviewed 59 trials with 5,550 children aged 2 to 19 (Birnie 2018, abstract): - distraction reduced self-reported pain (SMD -0.56, 30 trials, 2,802 children) and distress (SMD -0.82) - breathing exercises reduced pain (SMD -1.04, four trials, 298 children) - hypnosis reduced pain (SMD -1.40, five trials, 176 children) and distress (SMD -2.53) - preparation and information alone, and suggestion alone, showed no effect - the evidence was low to very low quality

Burn dressings. Virtual reality, which is distraction in a headset, reduced children's pain during burn wound care (SMD -1.44, 15 trials, 622 children) (Lou 2025, abstract) and adults' pain (SMD -0.62, 15 studies) (Senol Celik 2024, abstract). No headset exists after the Fall. The evidence matters because it shows that burn dressing pain, the worst pain most families will meet, responds to absorbed attention. A story, a song, a game or a counted breath must do the headset's work.

Music. Jenny Hole and colleagues pooled 73 trials of music around surgery: pain SMD -0.77, anxiety -0.68, analgesic use -0.37, and the choice of music and its timing made little difference (Hole 2015, abstract).

Words. Elvira Lang's group reviewed 159 videotaped procedures: warning patients in terms of pain ("this will sting") produced more pain and anxiety than not doing so (Lang 2005, abstract). Christine McMurtry and colleagues found that parental reassurance ("it's okay, it's okay") during children's immunisations is linked with more child distress, not less (McMurtry 2006, title, and 2007, abstract). FO-10 holds the nocebo evidence (THRIVING library, FO-10).

Preparing for labour. Grantly Dick-Read named "natural childbirth" in 1933 and taught that fear, tension and pain feed one another. Soviet obstetricians built psychoprophylaxis on Pavlov's conditioned reflexes, the state decreed it for every maternity unit in 1951, and Anatoly Nikolaev's Paris lecture of June 1951 brought it to Fernand Lamaze. Paula Michaels ties the Soviet decree partly to a shortage of pain medication (Michaels 2014, read through a lecture abstract and two reviews, secondary). The method was born in a world short of drugs, which is this book's world. Its trial evidence sits under relaxation and hypnosis, which "may work" for labour pain on limited evidence (Jones 2012, abstract).

The inference. Distraction works for short procedures. It works less well as pain rises and lasts, and it does nothing for the cause. Preparation alone does not help a child. What the healer says during the procedure does.

1.7 Hypnosis

The tradition. Mesmerism treated the body as moved by a fluid that a magnetiser could direct. Its surgical record, from Wellow in 1842 to Esdaile's 73 painless operations in Bengal by January 1846, with failures, is in WO-11 (THRIVING library, WO-11). Modern hypnosis drops the fluid and keeps the method: focused attention, absorption and suggestion.

The record. Guy Montgomery and colleagues pooled 18 studies and found a moderate to large analgesic effect, equal for clinical and laboratory pain (Montgomery 2000, abstract). A later review reports the effect as d = 0.67 (secondary, search summary). In Lang's Lancet trial of 241 patients having vascular and kidney procedures, pain rose through the procedure with standard care and stayed flat with self-hypnotic relaxation. The standard group used 1.9 units of patient-controlled fentanyl and midazolam, the hypnosis group 0.9. One hypnosis patient became haemodynamically

unstable against 12 with standard care, and procedures took 61 against 78 minutes (Lang 2000, abstract). Hypnosis halved drug use while giving flatter pain, which is the closest comparison with an opioid in this report.

For burns, David Patterson's group found that 30 patients given hypnosis before a debridement reported less pain than those given attention or nothing, confirmed by nurses' ratings (Patterson 1992, abstract). In a larger trial of 61 burn patients, hypnosis helped only those with high baseline pain (Patterson and Ptacek 1997, abstract). A trial of 32 patients found no added effect, attributed to low baseline pain under good opioid care (Everett 1993, abstract). Patterson and Mark Jensen concluded that randomised trials show a reliable effect on acute procedural pain (Patterson and Jensen 2003, abstract).

Who responds. Trevor Thompson and colleagues pooled 85 laboratory trials with 3,632 people. Hypnosis with direct analgesic suggestion gave clinically meaningful relief to 42% of highly suggestible and 29% of medium suggestible people, and minimal benefit to the low (Thompson 2019, abstract). I could not find a reliable figure for the share of an unselected village that is highly suggestible [VERIFY].

Labour. In nine trials with 2,954 women, hypnosis reduced the use of pharmacological pain relief (RR 0.73, eight trials, 2,916 women, very low quality), with no clear difference in the sense of coping or in spontaneous birth (Madden 2016, abstract).

The inference. Hypnosis is the strongest of the talking methods, roughly halves procedural drug need in responsive adults, and helps most where pain is worst. It fails in perhaps half of people and must never be the only plan.

1.8 Acupuncture and acupressure

The tradition. In Chinese medicine pain is obstruction: *qi* and blood do not flow along the channels, and "where there is obstruction there is pain". Needles, pressure and moxa at named points restore the flow. TR-03 gives the tradition and its texts on their own terms (THRIVING library, TR-03).

The record. Andrew Vickers and the Acupuncture Trialists' Collaboration pooled individual data from 39 trials and 20,827 patients with chronic musculoskeletal pain, osteoarthritis, headache and shoulder pain. Acupuncture beat no acupuncture by about 0.5 standard deviations and sham by about 0.2, with about 15% decay at a year. Effects were smaller where the sham used a penetrating needle (Vickers 2018, abstract, journal confirmed as Journal of Pain 19:455). By the Madsen anchor, 0.2 SD over sham is about 5 mm on 100 [VERIFY, my arithmetic]. Madsen's own review of 13 three-armed trials (3,025 patients) found acupuncture beat placebo acupuncture by 4 mm on 100, while placebo acupuncture beat no acupuncture by a moderate SMD of 0.42, and judged the needle's specific effect clinically irrelevant and not clearly distinguishable from bias (Madsen 2009, abstract).

For labour, acupuncture against sham made little or no difference to pain intensity but probably reduced drug use (RR 0.75, two trials, 261 women, moderate certainty). Acupressure against sham may reduce pain (MD -1.93, six trials, 472 women, very low certainty) and probably reduced caesarean section (RR 0.44, four trials, 313 women, moderate certainty) (Smith 2020, abstract). For nausea, PC6 pressure is the best result in the field and TR-03 gives the protocol (THRIVING library, TR-03).

The inference. For acute pain acupuncture adds little beyond a well-run ritual, and the ritual can be had without a needle. Acupressure, which carries no risk of puncture or infection, keeps most of whatever acupuncture offers in labour.

1.9 TENS, the salvage machine

A TENS unit passes a mild pulsed current through skin pads. William Gibson and colleagues reviewed nine Cochrane reviews of TENS for chronic pain (51 trials, 2,895 participants) and found the evidence very low quality throughout, so that they could not say whether TENS helps or harms (Gibson 2019, abstract). The meta-TENS study by Mark Johnson and colleagues, 381 trials and 24,532 people, found pain lower during or immediately after TENS than

with placebo (SMD -0.96, moderate certainty) and than with standard care (SMD -0.72, low certainty), with mild adverse events (Johnson 2022, abstract). In labour, 19 trials with 1,671 women showed little difference in pain ratings overall, though TENS at acupuncture points reduced reports of severe pain (RR 0.41), and most women would use it again (Dowswell 2009, abstract). A salvaged unit with charged batteries is worth using during a dressing change or a contraction. It is not worth a trade.

1.10 Counter-irritation, ritual and the mirror

Counter-irritation. The mustard plaster, the nettle sting, the blister and the moxa burn rest on one old observation, that a second pain dims the first. Capsaicin cream, the one counter-irritant with trials (NNT 5.7 to 8.1 for neuropathic and muscle pain), and its dose are in ME-06 (THRIVING library, ME-06). The mustard plaster's traditional recipe is equal parts flour and mustard powder on doubled cloth for at most 15 minutes, and a case report describes a second-degree burn when mustard seed was left on an arthritic knee (Yabanoglu 2012, case report). Grade C for counter-irritation as an idea, X for any counter-irritant that breaks skin.

Prayer and ritual. FO-10 finds that a warm, confident presence and an honest ritual reduce pain modestly, and that no ritual changes an objective outcome (THRIVING library, FO-10). Prayer at a dressing change works, by that evidence, as attention, meaning and company.

The mirror. For phantom limb pain, watching the intact limb in a mirror for 5 to 15 minutes a day reduced pain in two small trials (THRIVING library, NU-04).

1.11 Which pains respond, and which do not

Pain	Responds well	Responds a little	Does not respond
Needle, heel prick	Distraction, breathing, sucrose, skin to skin, breastfeeding, cold	Music	Information alone
Burn dressing	Hypnosis in high pain, absorbed distraction, non-sticking dressing	Music, presence	Words of warning
Labour	Companion, upright positions, warm packs, massage, water	Hypnosis, acupressure, TENS	Nothing makes obstructed labour painless
Fracture	Splinting, traction for the femur	Cold, elevation	Distraction alone
Acute back pain, period pain	Heat	Massage	Bed rest (X, CH-05)
Sprain	Cold for an hour or two	Early movement	Rest for days
Cancer pain, dying	Touch, massage, positioning, presence	Music, heat with care	Any of these for pain from a growing tumour at night, which needs opium (THRIVING library, NU-06)
Surgery or reduction	Hypnosis as adjunct	Music	Any non-drug means as sole anaesthetic for most patients (THRIVING library, WO-11)

The pattern is consistent across the trials: these means work best for brief, predictable, expected pain, and least for severe, prolonged or rising pain, which is the pain that most needs drugs.

2. Evidence grades

Means	Grade	Tradition says	Record shows	Science infers
Heat wrap, acute back pain	A	Draws out cold	1.06 on 5 at day 5, beat ibuprofen and paracetamol (French 2006, Nadler 2002)	Real, short-term
Heat, period pain	A	Comforts the womb	Equal to ibuprofen (Akin 2001)	Real
Warm packs and compress, labour	A, very low certainty	Eases birth	Less pain, half the severe tears (Smith 2018, Aasheim 2017)	Probably real
Ice, acute sprain	A for short relief, C for healing	Stops swelling	Weak trials, no proof of faster healing (Bleakley 2004)	Pain relief only
Cold, perineal pain after birth	A, very low certainty	Not applicable	One trial, 4.5 on 10 (East 2020)	Short relief
Splint, long-bone fracture	B	Binding heals	Gray's series, traction pin better than splint (Bumpass 2015)	Main analgesic
Skin traction, hip fracture	X for pain	Pulls bone straight	No pain benefit (Sammut 2021)	Use pillows
Upright positions, labour	A	Women walk	Shorter labour, fewer epidurals (Lawrence 2013)	Real
Massage, cancer pain	A, low quality	Moves blocked wind	SMD -1.25 (Lee 2015)	Real, small trials
Massage, labour	A, low quality	Midwife's hands	SMD -0.81 (Smith 2018)	Real
Continuous support, labour	A	Women attend women	Less analgesia, fewer caesareans (Bohren 2017)	Real
Skin to skin, sucrose, breastfeeding, newborn procedures	A	Mother soothes	Less crying and pain scores (Johnston 2017, Stevens 2016, Shah 2023)	Real
Distraction, children's procedures	A, low quality	Not applicable	SMD -0.56 (Birnie 2018)	Real
Music around surgery	A	Song heals	SMD -0.77 (Hole 2015)	Real

Means	Grade	Tradition says	Record shows	Science infers
Hypnosis as adjunct	A	Magnetic fluid	Drug use halved (Lang 2000), works in high pain (Patterson 1997)	Real in responders
Hypnosis as sole anaesthetic	B and D	Painless surgery	Esdaile's series with failures (THRIVING library, WO-11)	Minority only
Acupuncture, chronic pain	A for a small effect	Unblocks qi	0.2 SD over sham (Vickers 2018)	Mostly ritual
Acupressure, labour	A, very low certainty	Unblocks qi	Less pain against sham (Smith 2020)	Uncertain
TENS, acute and chronic pain	A, contested	Not applicable	SMD -0.96 (Johnson 2022), very low in Cochrane (Gibson 2019)	Uncertain
Mustard plaster	C, X if it blisters	Draws out pain	No trials, burns reported	Counter-irritation
Warning words before pain	X	Honesty	More pain (Lang 2005)	Nocebo

3. Means ledger

Means	Hands and knowledge	Hearth	Garden and still	Village dispensary (300)	District infirmary (3,000)	Hospital before the Fall
Heat	Body warmth, hands on the back	Warm water bottle in a cloth, heated bran or salt bag, warm bath	Beeswax and oil heat packs, a thermometer if salvaged	Thermometer to check water at 40 °C, rules for the numb	Same, plus burn care when it fails	Heat wraps, physiotherapy
Cold	Snow, cold stream	Wet cloth, cold water, cold stone in cloth	Ice house in winter	Ice if stored, timed protocols	Same	Gel packs, cryotherapy units
Position and splint	Holding still, upright labour, pillows	Padded board, sling, rolled blanket	Forge-made Thomas splint (THRIVING library, WO-05)	Splint stock, traction, daily checks	Skeletal traction, reduction	Fixation, theatre

Means	Hands and knowledge	Hearth	Garden and still	Village dispensary (300)	District infirmary (3,000)	Hospital before the Fall
Touch	Massage, holding, skin to skin	Warm oil	Pressed oil	Taught to every family	Part of nursing	Massage therapists
Distraction and words	Story, song, counting, breath	Toys, bubbles	Same	A trained talker at every procedure	Same	Virtual reality, play specialists
Hypnosis	Scripted talk, learned	Same	Same	Lay healer trained and practised [OWNER]	Same	Clinical hypnotists, rare
Acupressure	Thumb on named points	Same	Same	Taught for labour and nausea	Same	Rarely offered
Acupuncture	None	None	Forge needles only if boiled per patient	Only with sterile single-use needles [OWNER]	Same	Licensed acupuncturists
TENS	None	None	None	Salvaged unit while batteries last	Same	Standard

What each rung changes: the hearth adds the warm bottle, the cold cloth and the board splint, which carry most of the benefit in this report. The village adds training and rules: the talker for every procedure, the thermometer that keeps heat below 44 °C, and the daily splint check. The district adds traction and someone to recognise the pain these means must not hide. The hospital adds drugs and anaesthesia, which is the real gap, since these means rarely relieve severe pain on their own.

4. Harm test

Heat burns. Skin burns at surprisingly low temperatures if contact is long. Moritz and Henriques found the lowest burning surface temperature in human skin to be 44 °C for six hours, with the time to damage halving for each degree above 44 °C up to about 51 °C (Moritz and Henriques 1947, via Safety Research and Strategies 2018, secondary). Japan's product safety agency gives 3 to 4 hours at 44 °C, 30 minutes to an hour at 46 °C and 2 to 3 minutes at 50 °C, and warns that the skin feels comfortably warm while it burns (NITE 2009). The two sources differ on the time at 44 °C (three to six hours) and agree on the shape. A hot water bottle stays above 50 °C for at least three hours (Goltsman 2015, abstract). The therapeutic wraps in the trials ran at 40 °C (Nadler 2002).

The record of harm: - England and Wales recorded 5,944 hot water bottle burns from 2014 to 2023, about 594 a year, and 43% more in the winter of 2022 when fuel became dear, with the largest rises in children and people over 65 (Chu 2024, abstract). - In a London burns unit, 85 hot water bottle burns over nine years were 48% from spontaneous rupture, 33% from spilling and 19% from contact, and 8% needed grafting (Jabir 2013, abstract). In Sydney, 155 presentations led to 41 admissions and 24 grafts, most from rupture during use for pain (Goltsman 2015, abstract). - An integrative review of 1,343 patients burned by heating devices found that 15% to 87% of hot water bottle burns needed surgery (Kornhaber 2020, abstract). - In Rotterdam, six diabetic men with foot burns

from heat, all with severe loss of heat and pain sensation, arrived a median of 27 days after injury and five lost part of a foot or leg (Dijkstra 1997, abstract). A British report describes deep foot burns from hot water bottles in neuropathic diabetic patients (Jose 2005, title only). - Three patients were burned to full thickness by hot water bottles on skin left numb by abdominoplasty (Syras 2024, abstract). A 26-year-old man with psychiatric illness and substance use suffered deep partial-thickness burns of the back from prolonged heating pad use, with muscle breakdown and kidney failure needing dialysis (Kurup 2026, abstract).

Who must never have unattended heat: the sleeping, the drunk or sedated, the numb (diabetic feet, paralysis, leprosy, scars, after surgery), the confused or demented, infants, and anyone who cannot move away. Signs: redness that stays, blistering, white or grey skin. Remove the heat, cool with water, treat as a burn (THRIVING library, WO-04).

Cold injury. Ice on thin skin over a nerve can stop it working: six athletes had nerve palsies after ice, all recovering (Bassett 1992, abstract). Newborns given ice packs on the face for a fast heart rhythm developed cold panniculitis, hardened red patches of fat (Bolotin 2011, Malia 2019, abstracts). A toddler with heat stroke had ice packs laid directly on the thighs and needed grafts for full-thickness frostbite (Rittblat 2025, abstract). Adults using ice packs daily for back pain developed a chronic cold skin injury (West 2013, abstract). Rules: always a wet cloth between ice and skin, never ice laid directly on an infant's skin [VERIFY, my inference from the case reports], never ice and salt mixtures on skin, and no more than 10 to 20 minutes at a time (Bleakley 2006). For heat stroke, cool by immersion in cool water as HY-11 sets out, not with ice packs laid on bare skin (THRIVING library, HY-11, Rittblat 2025).

Rubbing that harms. Massage rarely harms healthy skin, but it does harm in several settings. Rubbing reddened skin over a bony point risks deepening a pressure sore, and the guideline tradition says not to massage it, though I found no trial behind that rule (Clinician.com undated, a secondary summary of the AHCPR guideline [VERIFY]). Frostbitten skin is blotted dry, not rubbed (AAFP 2020 summary of the Wilderness Medical Society guideline). Deep massage of a swollen calf can dislodge a clot, and massage has torn arteries in the neck (THRIVING library, TR-12). Coining and scraping leave marks that can be mistaken for abuse (THRIVING library, TR-12). Rubbing a burn or a fresh wound opens it.

Acupuncture. In 229,230 German patients treated by doctors, 8.6% reported an adverse effect, mostly bruising, and two had a pneumothorax, about 1 in 115,000 patients (Witt 2009, abstract, my arithmetic). Ernst collected 86 deaths worldwide, pneumothorax the commonest cause, and shared or soaked needles have spread hepatitis B (THRIVING library, TR-03). Never needle over the chest, upper back or above the collarbone, and never reuse a needle that has not been boiled.

Hypnosis. Serious adverse events attributable to hypnosis in registered trials were 0%, other adverse events 0.47% (Bollinger 2018, abstract). The danger is failure: the patient wakes, as three of Esdaile's 17 did, and false confidence delays real analgesia (THRIVING library, WO-11).

TENS. Mild skin irritation. Never over the front of the neck, the eyes, broken skin or an implanted heart device [VERIFY, standard device labelling, not read].

Distraction and words. "This will hurt" and "it's okay, it's okay" increase distress (Lang 2005, McMurtry 2006). Deceiving a child that a procedure will not hurt destroys trust for the next one [VERIFY, clinical consensus not read].

Relief that hides a red flag. The worst harm in this report is pain relieved while its cause progresses. Michael Ashby described five cancer patients whose mottled heat rash (erythema ab igne) from months of hot water bottles lay over metastases, and warned that this rash anywhere but the shins of the old is very suggestive of a serious cause (Ashby 1985, abstract). Two more such patients were reported in Pain in 2000 (Hale 2000, abstract). Opioids given for acute abdominal pain do not increase diagnostic error (Manterola 2011, abstract, eight trials), so the danger is not relief itself but relief that stops the family seeking help. A splint that relieves pain must not hide the pain of a tight splint (THRIVING library, WO-05).

5. Red flags

These signs mean the pain is a warning the village cannot answer with heat, touch or talk. 1. Pain out of proportion, rising, or pain on stretching the fingers or toes under a splint or cast: compartment syndrome or a binding too tight. Cut the binding off at once (THRIVING library, WO-05). 2. Belly pain that settles with heat but returns, or pain with fever, vomiting, a rigid belly or pain moving to the lower right: appendicitis or worse. Heat is not a test. Refer. 3. Back pain with numbness between the legs, loss of bladder or bowel control, or leg weakness (THRIVING library, CH-05). 4. Pain at night that heat cannot ease, with weight loss or a mottled heat rash on the trunk (Ashby 1985). 5. Chest pain or breathlessness after acupuncture or neck massage (THRIVING library, TR-03, TR-12). 6. In labour: pain that is constant rather than in waves, bleeding, a hard tender womb or labour that stops progressing (THRIVING library, MA-02, MA-03). 7. A burn on numb skin found days late, with smell or spreading redness (Dijkstra 1997). 8. A child who stops crying and becomes limp or grey during a procedure. Stop at once.

Honest comfort when nothing more exists: stay, hold, warm the room, keep the voice low and certain, give whatever drug there is, and say truthfully that the pain will be eased as far as it can be. NU-06 holds the words for the end of life.

6. The case against

Against acupuncture. David Colquhoun and Steven Novella argued that acupuncture is "theatrical placebo", its benefit too small and too transient to matter, and that the Vickers results look like Madsen's: a specific effect of about 4 mm on 100 that cannot be distinguished from bias (Colquhoun and Novella 2013, title read, argument via Colquhoun 2013 blog). Edzard Ernst made the case on harms (THRIVING library, TR-03). Vickers answers that 0.2 SD across 20,000 patients is real and persists. Both are right, and for a village the conclusion is the same: keep the ritual, drop the needle unless it can be sterile.

Against hypnosis. The trials are small, the evidence for children very low quality, and Esdaile's own series included patients who woke (THRIVING library, WO-11). Enthusiasts report effects that independent trials halve. The best trial (Lang 2000) was done by its developer.

Against heat and massage trials. The heat-versus-drug trials were run with one maker's product, and massage trials cannot be blinded. French judged the whole heat evidence "limited" (French 2006).

Against RICE and against the splint as analgesic. The ice trials averaged 3.4 out of 10 for quality (Bleakley 2004), and traction for the hip does not relieve pain at all (Sammut 2021). Traditional wisdom about cold and binding outran its evidence.

Against the whole report. The strongest case is about size. Every means here works best for mild, brief, expected pain, and the pains that most need relief, a femur, a burn over a fifth of the body, an obstructed labour, a cancer in the bone, need drugs that these means only spare. A household that believes in breathing exercises instead of morphine will let people suffer. The romance of the gentle method is as dangerous as the romance of the hospital. The honest position is that these means cut drug need by a third to a half where they work (Lang 2000, Madden 2016, Bohren 2017) and that this saving is what makes scarce opium last.

7. 10-line summary

1. Heat at 40 °C relieves acute back pain and period pain about as well as ibuprofen (Nadler 2002, Akin 2001).
2. Skin burns from 44 °C over hours and from 50 °C in minutes, and the numb, sleeping and young cannot feel it (Moritz 1947, NITE 2009).
3. Ice gives an hour or two of relief, not faster healing, and RICE rests on weak trials (Bleakley 2004).
4. A splint across the joints is a fracture's first analgesic, traction for the femur, not for the hip (Bumpass 2015, Sammut 2021).

5. Companionship, upright positions, water, warmth and massage each reduce labour pain or drug need (Bohren 2017, Lawrence 2013, Cluett 2018, Smith 2018).
6. Distraction, breathing and hypnosis reduce children's needle pain, hypnosis most (Birnie 2018).
7. Hypnosis halved drug use during procedures and helps most when burn pain is worst (Lang 2000, Patterson 1997).
8. Acupuncture beats sham by about 5 mm on 100, and acupressure keeps most of the benefit without the needle (Vickers 2018, Madsen 2009, Smith 2020).
9. Telling a patient "this will hurt" makes it hurt more (Lang 2005).
10. The worst harm is relief that hides a cause, as with the heat rash over a cancer (Ashby 1985).

8. Open questions

- What share of an unselected village responds to hypnosis well enough for a dressing change?
- Does story and song distraction, without screens, match virtual reality for a burned child?
- Do these means keep working on the fifth and tenth dressing change, or does fear accumulate?
- Is TENS's effect real (Johnson 2022) or very uncertain (Gibson 2019)?
- Would the heat-versus-drug trials replicate without the manufacturer?
- How often do non-drug means delay recognition of a surgical belly or a tight splint after the Fall? No study counts it.
- The ICRC's own words on immobilisation as analgesia were not found.

9. Sources to read in full

1. French SD et al. 2006, Superficial heat or cold for low back pain (Cochrane).
2. Birnie KA et al. 2018, Psychological interventions for needle-related procedural pain (Cochrane).
3. Lang EV et al. 2000, Adjunctive non-pharmacological analgesia (Lancet), and Lang 2005, Can words hurt? (Pain).
4. Patterson DR and Jensen MP 2003, Hypnosis and clinical pain (Psychological Bulletin).
5. Vickers AJ et al. 2018 (Journal of Pain) with Madsen MV et al. 2009 (BMJ), read side by side.
6. Bohren MA et al. 2017, Continuous support for women during childbirth (Cochrane).
7. Bleakley C et al. 2004, The use of ice in acute soft-tissue injury (AJSM).
8. Goltsman D et al. 2015 and Chu MH et al. 2024, on hot water bottle burns (Burns).
9. Esdaile J 1846, Mesmerism in India (via WO-11).

10. At the bedside after the Fall

Household. Minimum version: a warm bottle wrapped in cloth for back and period pain, never in the bed of a sleeper, a baby or anyone with numb feet. A wet cloth round ice or snow for a sprain, ten minutes at a time. A padded board splint. Hands for massage, a lap for skin to skin, a voice for stories and slow breathing. Sugar water for a baby's needle. Needs: a stoppered bottle or a bag of heated bran or salt, cloths, boards and padding, and two scripts learned by heart (the dressing-change script and the labour script, Protocols 1 and 2). First failure to expect: a hot bottle left in the bed of an old diabetic, found days later as a black heel.

Village of 300. Minimum version: one trained talker who attends every painful procedure, practises hypnotic and distraction scripts weekly and keeps a pain record of 0 to 10 before and during each one. A midwife who keeps the woman upright, companioned and warm. A salvaged thermometer to set heat at 40 °C. A splint store checked by the bonesetter (THRIVING library, TR-12). Rules [OWNER]: no heat source in a bed overnight, no needles unless boiled and single-patient, no rubbing of red skin over bones. Needs: the scripts, a record book, a thermometer, splints, a salvaged TENS unit if any. First failure to expect: the talker believes the method replaces the drug and withholds the last of the opium from a burned child.

District of 3,000. Minimum version: a nurse who teaches the scripts, audits the pain records, decides which pains get scarce drugs (THRIVING library, CH-05, NU-06) [OWNER], and runs traction for femoral fractures. Needs: traction equipment, a burns room, a register of burns from heat sources. First failure to expect: scarce drugs spent on pain that heat or a splint would have managed, leaving none for the dressing change on day three.

11. Protocols

Protocol 1. A burned child's dressing change

- ☐ Give any available pain drug 30 to 60 minutes before (THRIVING library, WO-04). Non-drug means add to it, never replace it.
- ☐ Choose the calmest time of day. Warm the room. Have everything ready so the wound is open for the shortest time.
- ☐ One parent sits with the child, holding a hand or the child on the lap. The parent's job is to distract, not to reassure. No "it's okay, it's okay" (McMurtry 2006).
- ☐ Agree a stop signal (a raised hand). Honour it every time, for 10 to 20 seconds.
- ☐ Give the child a job: count, blow bubbles or a feather, squeeze a hand, choose the story.
- ☐ Older child: slow breathing, in for 3 counts, out for 6, through the whole change (Birnie 2018) [VERIFY, counts are my choice]. Then the safe-place talk (Protocol 5).
- ☐ Soak stuck dressings off with comfortably warm boiled water, never pull (THRIVING library, WO-04). Use non-sticking dressings such as banana leaf prepared as WO-04 describes, which hurt far less to remove (THRIVING library, WO-04).
- ☐ Words: describe what you do in neutral terms ("now cool water, now the soft leaf"). Never "this will hurt" (Lang 2005).
- ☐ Score pain 0 to 10 (faces for under 7s) before, during and after. Record it. If pain during is above 7 despite all this, the next change needs more drug [OWNER].
- ☐ Afterwards: praise, comfort, a treat. Tell the child what went well.

Protocol 2. A labouring woman

- ☐ One companion of her choosing stays throughout (Bohren 2017, THRIVING library, MA-01).
- ☐ Keep her upright and moving in the first stage: walking, standing, kneeling, sitting on a stool, leaning on the companion (Lawrence 2013).
- ☐ Warm packs to the lower back or belly between and during contractions, checked against your wrist, cloth between pack and skin, moved every 20 minutes [VERIFY interval, my judgement].
- ☐ Massage of the lower back and sacrum with firm, slow pressure during contractions, as she directs (Smith 2018).
- ☐ Warm water: a tub or bath at a temperature comfortable to the wrist, if available and clean, in the first stage (Cluett 2018) [VERIFY, water temperature not in the abstract read].
- ☐ Breath: slow, long out-breaths, the companion breathing with her.
- ☐ Acupressure if taught: firm thumb pressure on points she finds helpful [VERIFY, specific points not established by the review].
- ☐ Warm compress on the perineum as the head crowns (Aasheim 2017).
- ☐ Cold pack in a cloth on the perineum afterwards, 10 to 20 minutes (East 2020).
- ☐ Watch for the red flags in section 5. Constant pain, bleeding or no progress is not a pain problem.

Protocol 3. A broken limb

- ☐ Look for an open wound, a cold or pale hand or foot, and numbness. Record them.

- ☐ Hold the limb still. Pull gently in line only to straighten a grossly bent limb for splinting (THRIVING library, WO-05).
- ☐ Splint with padded boards across the joint above and below. Pad every bony point. Loose enough to slip a finger under.
- ☐ Femur: traction splint (THRIVING library, WO-05). Hip in the old: pillows and a comfortable position, not traction (Sammut 2021).
- ☐ Raise the limb on a pillow [VERIFY, elevation evidence not read].
- ☐ Cold in a wet cloth for 10 to 20 minutes, every 2 hours, the first 2 days, never on numb skin.
- ☐ Talk and breathing during any movement.
- ☐ Check colour, warmth, feeling and movement of the fingers or toes every hour for the first day. Pain on stretching them, or rising pain: cut the binding at once.

Protocol 4. A dying person in pain

- ☐ Give the opium or other drug by the clock if there is any (THRIVING library, NU-06).
- ☐ Turn and position every two hours or as they wish, supported with pillows (THRIVING library, NU-06).
- ☐ Hands: slow, light massage of hands, feet and back, 10 to 20 minutes, as wanted (Lee 2015).
- ☐ Warmth: a warm cloth or bottle only while someone sits beside them, checked every 10 minutes, never on thin, numb or swollen skin, never left while they sleep.
- ☐ Music or singing they know (Hole 2015, THRIVING library, NU-06). Prayer if it is theirs (THRIVING library, FO-10).
- ☐ Never deep pressure on a swollen leg or near a tumour.

Protocol 5. Talking a patient through a procedure

WO-11 Protocol 8 gives the outline. Add: - [ ] Ask the patient to fix their eyes on one point and breathe slowly. - [ ] Suggest heaviness and warmth in each part of the body in turn, then a safe place described in detail by the patient. - [ ] Give a direct suggestion: “the arm can feel numb, as if it belonged to someone else” (Thompson 2019 found direct analgesic suggestion worked best). - [ ] Keep the voice slow and certain throughout. Narrate in neutral words. - [ ] Expect it to work well in perhaps a third, partly in another third, and little in the rest (Thompson 2019) [VERIFY, my rounding of 42% and 29% among high and medium suggestibles]. Never begin a painful procedure without the drug ready.

Protocol 6. Safe heat

- ☐ Water for a bottle or pack: hand-hot only. If you have a thermometer, 40 to 42 °C at the skin (Nadler 2002 used 40 °C).
- ☐ Always a cloth between. Check the skin every 10 minutes.
- ☐ No heat while asleep, drunk, sedated, confused or numb. No bottle in an infant’s bed, ever [OWNER].
- ☐ Check stoppers and bottles for cracks every time. Fill away from the body, never with boiling water (Jabir 2013).
- ☐ Stop and cool at any lasting redness or blister.

Protocol 7. Safe cold

- ☐ Ice, snow or cold water in a bag, wrapped in a wet cloth.
- ☐ 10 to 20 minutes, then off for at least 10 (Bleakley 2006).
- ☐ Not over the outer knee or elbow where nerves lie close (Bassett 1992).
- ☐ Never on an infant’s face or chest for pain. Never salt and ice on skin.
- ☐ Stop at white, hard or numb skin.

12. Numbers to carry

1. **40 °C** is therapeutic heat. **44 °C** burns in hours, **46 °C** in under an hour, **50 °C** in two or three minutes.
2. A hot water bottle stays above **50 °C** for **3 hours**.
3. Ice **10 to 20 minutes** at a time, through a wet cloth.
4. Splint the joint **above and below**. Check fingers and toes **hourly** the first day.
5. Morphine 10 mg by injection: **NNT 2.9**. No non-drug means has matched it for severe pain.
6. Hypnosis halved procedural drug use (**1.9 to 0.9 units**).
7. Distraction SMD **0.56**, hypnosis **1.40** for children's needles.
8. Acupuncture beats sham by about **4 to 5 mm on 100**.
9. Continuous support in labour: **10% less** analgesia, **25% fewer** caesareans.
10. **0.5 to 2 ml of 24% sugar water** on a baby's tongue before a needle.

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