MA-01 Normal birth and the attendant: where and how birth goes well

HEALING after the FALL, research library, MA-01

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

How to read this report

This report asks what a village of about 300 people, or a district of about 3,000, can do to make normal birth go well with no hospital, theatre, blood bank or ambulance. A village of 300 sees roughly 8 to 12 births a year [VERIFY: own inference from crude birth rates of 25 to 40 per 1,000], and a district about one birth every three or four days.

Most modern evidence on birth outside hospital comes from places where a hospital was about 30 minutes away. That is the most important fact about it. The record from before 1937, with no antibiotic, no transfusion and almost no safe caesarean, is in some ways the better guide to the world after the Fall. Both are used. Maternal deaths before 1937 were counted per 1,000 births, modern ones per 100,000 live births, so 450 per 100,000 is 4.5 per 1,000.

1. The historical record: what killed mothers, and what stopped it

1.1 The long plateau

In England and Wales maternal mortality was 4.6 per 1,000 births in 1856 to 1860, 4.6 in 1896 to 1900 and 4.6 again in 1930 to 1934 (Loudon 1986). For eighty years, while infant and general mortality fell, the death rate of mothers stayed between 4 and 5 per 1,000. Fox gives 4.9 for 1851 to 1855 and 4.3 for 1931 to 1935 (Fox 1991). Taylor and Dauncey called 1937 "the first year of sustained decline" (cited in Loudon 1986). Today the lifetime risk of maternal death is about 1 in 30,000 in Northern Europe, against about 1 in 6 in the poorest regions in 2006 (Ronsmans and Graham 2006).

1.2 Causes, ranked

Puerperal sepsis, childbed fever, caused about half of maternal deaths in England and Wales and stayed the commonest cause until 1937. Haemorrhage and toxaemia (now eclampsia and pre-eclampsia) together made up a little over a quarter. Most septic deaths followed normal labours without interference (Loudon 1986). In Sweden sepsis caused 54% of maternal deaths in 1861 to 1900 (Högberg 2004). With antibiotics the modern ranking differs: haemorrhage 27.1%, hypertensive disorders 14.0%, sepsis 10.7%, abortion 7.9%, embolism 3.2%, other direct causes 9.6%, indirect causes 27.5% (Say 2014). Deaths cluster around labour and the first hours after birth (Ronsmans and Graham 2006). After the Fall, sepsis will climb back towards the top, with haemorrhage close behind. Bleeding after birth is the subject of MA-02.

1.3 The attendant was the main variable

Loudon's central finding is that the standard of care by the birth attendant mattered more than poverty, housing or diet (Loudon 2000, abstract only). The proof is a reversed class gradient. In Leeds in 1920 to 1929 maternal

mortality was 4.49 per 1,000 for the city, 5.93 in middle-class areas and 3.01 in working-class areas (Loudon 1986). Social classes I and II died more often than class V, especially of sepsis, which Loudon links to home delivery by general practitioners who used forceps and examined often, carrying infection from other patients.

The Queen's Institute nurse-midwives, trained and supervised district midwives, had a maternal mortality about half the national rate between 1905 and 1925, and the East End Lying-in Home recorded 0.67 deaths per 1,000 deliveries (Fox 1991, citing Fairbairn 1927). In Rochdale, Andrew Topping, Medical Officer of Health, took the rate from just under 9 per 1,000 in 1928 to 1931 to 3 per 1,000 in 1932 to 1935 by reorganising antenatal care and attendance, before any antibiotic existed (Fox 1991).

The Ministry of Health's Departmental Committee examined 5,805 maternal deaths from November 1928 to July 1932. Of 1,286 analysed in detail, 626 had a "primary avoidable cause": faulty antenatal care 36.2%, error of judgement by the attendant 35.7%, negligence of the patient or her friends 17.9%, lack of reasonable facilities 10.2%. The Committee judged the rate could have been halved (Fox 1991).

Loudon concludes that deaths "could be substantially reduced much more by simple routine good practice than by highly skilled manoeuvres", and that stopping unnecessary interference, such as stretching the cervix by hand, mattered as much as teaching good practice. He judged Thomas Denman's 1786 account of normal labour fit, with small changes, to stand as a modern text (Loudon 1986).

1.4 What happens with no attendant

From the Westminster General Dispensary records of 1819, which state how many women were delivered "by nature alone", Loudon estimated that 97 to 97.5% of women would survive an unattended labour, a death rate of 25 to 30 per 1,000, a figure he says may "verge on the side of pessimism". As a yardstick, an attendant at 30 per 1,000 or more was adding risk, one at 15 helped, and one under 10 gave worthwhile care (Loudon 1986). This is a rough estimate from two small reports.

A modern natural experiment points the same way. Members of the Faith Assembly church in Indiana, 1975 to 1982, had no antenatal care and gave birth at home without trained attendants. Perinatal mortality was about 45 per 1,000 against 18 for the state. Maternal mortality was 872 per 100,000 live births in the two counties studied against 9 for Indiana, about 90 times higher. All six maternal deaths in the church were from haemorrhage (four) or infection (two) (Kaunitz 1984, abstract and indexer's summary only). The maternal rate rests on few deaths, but these were well-fed, educated women in the 1970s. Wealth did not protect them.

1.5 Sweden: the midwife as the means

Swedish maternal mortality was about 900 per 100,000 in 1751 and about 230 in 1900 to 1904, against about 440 in England and Wales and 520 to 850 in the United States (Högberg 2004). By 1900, 78% of Swedish births had a licensed midwife. A rural midwife averaged 37 deliveries a year and used forceps in about 1 in 133 to 180. Antisepsis became compulsory for rural midwives in 1881. For 1861 to 1900 Högberg attributes a 49% fall in septic mortality to antisepsis and a 46% fall in non-septic mortality to midwifery, which fell from 414 to 122 per 100,000 as rural midwife attendance rose from 30% to 70% (Högberg 2004, read through a summary). Of 651 maternal deaths in 1751, 400 were judged avoidable with enough midwives (De Brouwere 2012).

Summarising Loudon's 1992 book, De Brouwere places Sweden, Norway, the Netherlands and Denmark at 230 to 290 per 100,000 between 1900 and 1937, against about 600 in Belgium, Australia, New Zealand and Paris and nearly 700 in the United States. Before the seventeenth century, estimates run from 1,200 to 2,500 (De Brouwere 2012, citing Loudon 1992). Countries with trained midwives and home birth did best before the drugs came.

1.6 Why it fell after 1937

The fall from 1936 was at first almost entirely in puerperal fever. Prontosil, the first sulphonamide, came into clinical use in 1935, and Colebrook and Kenny reported mortality of 4% in treated against about 20% in untreated cases of streptococcal puerperal fever (Colebrook and Kenny 1936, cited in Loudon 1986). Deaths from haemorrhage and other "accidents of childbirth" began falling from about 1939, which Loudon credits to transfusion, antibiotics, better training, cooperation between general practitioners, midwives and consultants, antenatal care and wartime nutrition (Loudon 1986). Rates are now one fortieth to one fiftieth of the 1930s level (Loudon 2000).

Two lessons follow. The rate a village can reach without drugs is set by its attendants, and the best pre-1937 practice reached about 3 per 1,000 against an untended 25 to 30. The gap from there to 0.1 per 1,000 is antibiotics, transfusion and the operating theatre.

2. Modern cohorts of planned birth outside hospital

2.1 The Farm, Tennessee

The Farm was a commune in rural Tennessee where lay midwives led by Ina May Gaskin attended births from 1971. Durand compared 1,707 women who enrolled for care with the Farm midwives between 1971 and 1989 with 14,033 physician-attended hospital births from the 1980 US National Natality and Fetal Mortality Survey, on perinatal death, low 5-minute Apgar, a composite of labour complications and assisted delivery. He concluded that home birth with lay midwives could be "as safely as, and with less intervention than" hospital birth under certain conditions (Durand 1992, abstract only, indexed as "Duran").

The full paper, with the transfer rate and outcomes by risk group, could not be read. Secondary sources put the Farm's caesarean rate at about 2% [VERIFY: not read in Durand]. The women were screened and healthy, with a hospital within reach [VERIFY: distance not read], and the comparison group was not matched for risk. Gaskin's books, describing a culture of calm, humour, privacy and patience, are a tradition source, not evidence of outcome.

2.2 The Netherlands: home birth inside a referral system

De Jonge and colleagues studied 529,688 low-risk women in primary midwife-led care over seven years: 321,307 (60.7%) planned home birth and 163,261 (30.8%) planned hospital birth, all at 37 to 42 weeks with one baby lying head down. Adjusted relative risks for planned home birth were 0.97 (0.69 to 1.37) for intrapartum death, 1.02 (0.77 to 1.36) for death within 24 hours, 1.00 (0.78 to 1.27) within 7 days and 1.00 (0.86 to 1.16) for neonatal intensive care (de Jonge 2009, abstract only). The authors stressed that this holds only with well-trained midwives and working transport and referral. A merged study of 743,070 births found death to 28 days of 1.02 per 1,000 for planned home and 1.09 for planned hospital birth in first-time mothers (adjusted odds ratio 0.99), and 0.59 against 0.58 in other mothers (1.16) (de Jonge 2015, abstract only).

The price is referral. Referrals from midwife to obstetrician during pregnancy and labour rose from 36.9% to 51.4% between 1988 and 2004, mainly for failure to progress and fetal distress in first-time mothers, with meconium and pain relief driving the rise (Amelink-Verburg 2009, abstract only). The list of conditions requiring obstetric care grew from 39 in 1958 to 143 in 2003 (Amelink-Verburg and Buitendijk 2010, abstract only). From 2000 to 2008, non-urgent first-stage referral rose from 28.7% to 40.7% in first-time mothers and 10.5% to 16.5% in others, while perinatal mortality was 0.9 and 0.6 per 1,000 (Offerhaus 2013, abstract only) [VERIFY: the abstract's figures of 52.6% to 42.6% and 83.2% to 76.7% are probably the shares not referred, wording ambiguous]. Referral varied between practices from 9.7% to 63.7%, and from 13.8% to 78.1% in first-time mothers, while spontaneous vaginal birth ranged only from 72.0% to 77.3% across practices grouped into thirds by referral rate (Offerhaus 2015a, abstract only). Caesarean in women starting labour in primary care was 6.2% to 8.3% in first-time and 0.8% to 1.1% in other mothers (Offerhaus 2015b, abstract only).

The challenge came from Evers and colleagues, who followed 37,735 term babies in the Utrecht region. Overall perinatal death was 2.62 per 1,000. Babies of low-risk women starting labour under a midwife had a higher risk of delivery-related death than babies of high-risk women under an obstetrician (relative risk 2.33, 1.12 to 4.83), and babies of women referred in labour had the highest (3.66, 1.58 to 8.46) (Evers 2010, abstract only). The data were aggregated without adjustment for confounders, and deaths were few. The point that referral in labour is the dangerous moment applies directly after the Fall, when referral means a long journey or none.

2.3 Birthplace in England 2011

Birthplace followed 64,538 low-risk women in England from April 2008 to April 2010 (Birthplace in England Collaborative Group 2011, full text read). The primary outcome combined intrapartum stillbirth, early neonatal death, encephalopathy, meconium aspiration, brachial plexus injury and fractured humerus or clavicle. There were 250 events, 4.3 per 1,000: deaths 13%, encephalopathy 46%, meconium aspiration 30%, brachial plexus injury 8%, fractures 4%.

For first-time mothers, adverse outcomes per 1,000 were 5.3 for planned obstetric unit birth, 4.5 for a freestanding midwifery unit, 4.7 for an alongside midwifery unit and 9.3 for planned home birth (adjusted odds ratio 1.75, 1.07 to 2.86). Among women with no complicating conditions at the start of labour care, home was 9.5 against 3.5 (2.80, 1.59 to 4.92). For women who had given birth before, rates were 3.3, 2.7, 2.4 and 2.3 (home 0.72), so no excess. Transfer was 45.0% from home, 36.3% from freestanding units and 40.2% from alongside units in first-time mothers, against 12.0%, 9.4% and 12.5% in others.

For the mother, planned home against obstetric unit gave spontaneous vaginal birth 92.8% against 73.8%, intrapartum caesarean 2.8% against 11.1%, ventouse 2.0% against 8.1%, forceps 2.1% against 6.8%, oxytocin augmentation 5.4% against 23.5%, third- or fourth-degree tear 1.9% against 3.2%, and transfusion 0.6% against 1.2% (Birthplace 2011).

For a village: a healthy woman having her second or later baby at term, head down, does well outside hospital. The first-time mother is the one at risk. Almost half needed a hospital, and her baby's risk of harm nearly doubled.

2.4 North America and the critics' numbers

Of 5,418 women planning home birth with certified professional midwives in North America in 2000, 12.1% were transferred, caesarean was 3.7% and forceps 1.0%. Intrapartum and neonatal mortality in women at low risk at the start of labour, excluding fatal anomalies, was 1.7 per 1,000, and no mother died (Johnson and Daviss 2005, abstract only). In Oregon in 2012 and 2013, where birth certificates separated transferred home births, perinatal death was 3.9 per 1,000 for planned out-of-hospital birth against 1.8 for planned hospital birth (adjusted odds ratio 2.43, 1.37 to 4.30), while unassisted vaginal birth was 93.8% against 71.9% (Snowden 2015, abstract only). Wax and colleagues concluded that less intervention at planned home birth was "associated with a tripling of the neonatal mortality rate" (Wax 2010, abstract only), a meta-analysis widely criticised for its choice of studies [VERIFY: criticism not read]. Hutton and colleagues, pooling 14 studies with about 500,000 intended home births, found no difference where home birth was well integrated (first-time mothers odds ratio 1.07, 0.70 to 1.65) but wide, uncertain estimates where it was not (3.17, 0.73 to 13.76) (Hutton 2019, abstract only).

Where midwives are trained, women screened and transfer quick, home birth for low-risk women is about as safe for the baby as hospital and safer for the mother's body. Where any of those is missing, excess risk appears, mostly for the first-time mother's baby.

2.5 Midwife-led continuity

The Cochrane review of midwife-led continuity, where a known midwife or small team cares for a woman throughout, found in 2016 (15 trials, 17,674 women) fewer instrumental births (relative risk 0.90), preterm births (0.76) and

episiotomies (0.84), and less fetal loss and neonatal death (0.84, 0.71 to 0.99) (Sandall 2016, abstract only). The 2024 update (17 trials, 18,533 women) confirmed more spontaneous vaginal birth (66% to 70%) and fewer caesareans (16% to 15%, 0.91), but fetal loss after 24 weeks (1.24, 0.73 to 2.13) and neonatal death (0.85, 0.43 to 1.71) were now of very low certainty (Sandall 2024, abstract only). The mortality benefit is no longer secure. The lower intervention is. All trials were in high-income countries with hospitals behind them.

3. The attendant: training, presence and the clean birth

3.1 Continuous support

In 26 trials and 15,858 women, continuous one-to-one support in labour increased spontaneous vaginal birth (relative risk 1.08), reduced caesarean (0.75, 0.64 to 0.88), shortened labour by about 0.69 hours, reduced low 5-minute Apgar scores (0.62) and negative feelings about the birth (0.69), with no harm found (Bohren 2017, abstract only). WHO recommends a companion of choice for every labour (WHO 2018, recommendation 3).

3.2 Training traditional attendants

In Larkana district, Pakistan, a cluster trial trained traditional birth attendants, supplied clean delivery kits and linked them to Lady Health Workers and outreach. Among 10,114 intervention and 9,443 control women, perinatal death fell (odds ratio 0.70, 0.59 to 0.82) and maternal death fell non-significantly (0.74, 0.45 to 1.23) (Jokhio 2005, abstract only). In Lufwanyama, Zambia, 127 attendants trained in newborn resuscitation, amoxicillin for suspected infection and referral cut neonatal mortality by 45% (relative risk 0.55, 0.33 to 0.90). First-day deaths were 7.8 against 19.9 per 1,000, and control attendants also had clean kits (Gill 2011, abstract only). The Cochrane review judged the evidence promising but insufficient overall (Sibley 2012, abstract only).

3.3 Clean hands, clean blade, clean cord

In Sarlahi, Nepal, among 23,662 newborns, handwashing by the birth attendant was associated with 19% lower neonatal mortality (relative risk 0.81, 0.66 to 0.99) and by the mother with 44% lower, but no trial of handwashing against maternal sepsis exists (THRIVING library, HY-01). Clean birth kit packages were associated with less newborn death, cord infection and puerperal sepsis, but the kit could not be separated from the training around it (Hundley 2012, abstract only). Chlorhexidine on the cord cut community newborn mortality (relative risk 0.77, 0.63 to 0.94) but will not exist at village level (Imdad 2013, abstract only). The practical rule is a clean, dry cord with nothing put on it, never dung (Hesperian, Help the mother give birth).

4. Practices tested against the evidence

4.1 Position in the second stage

In 30 analysed trials and 9,015 women without an epidural, upright positions reduced assisted delivery (relative risk 0.75, 0.66 to 0.86, moderate quality) and episiotomy (0.75) and halved abnormal fetal heart patterns (0.46). They slightly increased second-degree tears (1.20) and increased blood loss over 500 mL (1.48, 1.10 to 1.98, moderate quality). A 6-minute shortening of the second stage rested on very low quality evidence and vanished in sensitivity analysis (Gupta 2017, abstract only). WHO recommends the woman's choice of position, including upright (WHO 2018, recommendation 34). Where there is no transfusion the extra bleeding must be expected and managed (MA-02).

4.2 Protecting the perineum

In 22 trials and 15,181 women, warm compresses on the perineum reduced third- and fourth-degree tears (relative risk 0.46, 0.27 to 0.79, moderate quality) and second-stage massage increased intact perineum (1.74) and reduced severe tears (0.49). "Hands off" against "hands on" made no clear difference to tears but gave fewer episiotomies

(0.58) (Aasheim 2017, abstract only). WHO recommends massage, warm compresses and guarding of the perineum, and no routine episiotomy (WHO 2018, recommendations 38 and 39). Hesperian's method: cloths in water boiled 2 minutes and cooled to warm, and slowing the head so that it moves no more than 1 cm with each small push, the mother blowing rather than pushing as it crowns (Hesperian, Help the mother give birth).

4.3 When and how to push, and for how long

Spontaneous pushing against directed breath-holding made no clear difference in eight trials with 884 women (Lemos 2017, abstract only), and WHO recommends that women follow their own urge (WHO 2018, recommendation 36).

On duration, WHO says the second stage is usually complete within 3 hours in first labours and 2 hours in later ones (WHO 2018, recommendation 33). NICE expects the same limits, with review at 1 hour of active pushing and referral at 2 hours in a first-time mother, and review at 30 minutes and referral at 1 hour in others (NICE 2023, 1.9.25 and 1.9.26). Hesperian says first babies may need 2 or even 3 hours of pushing, later babies usually under 1 hour, and help is needed if the head has not moved down after 1 hour of good pushing (Hesperian, Watch for warning signs). The three agree on 3 and 2 hours as outer limits and reassessment at about 1 hour.

In 4,126 first-time mothers, spontaneous birth fell from 85% when the second stage lasted under 1 hour to 9% at 5 hours or more, and each added hour raised the odds of uterine infection, severe tears and a slack bleeding womb 1.3 to 1.8 times (Rouse 2009, abstract only). After the Fall, a long second stage cannot be ended by forceps or caesarean, so its use is as a signal to call help early.

4.4 Cord clamping

In 15 trials and 3,911 pairs, later clamping did not change haemorrhage (relative risk 1.04 for severe bleeding) or newborn death. It raised birthweight by 101 g and haemoglobin at 24 to 48 hours by 1.49 g/dL, and early clamping more than doubled iron deficiency at 3 to 6 months (2.65). Later clamping slightly increased jaundice needing light treatment (McDonald 2013, abstract only). WHO recommends clamping no earlier than 1 minute (WHO 2018, recommendation 44). Hesperian advises waiting until the cord is thin, white and not pulsing, often about 3 minutes, then tying it 2 finger-widths from the belly with a square knot, adding a second tie and cutting between with a sterile blade (Hesperian, Help the mother give birth). Waiting is free, and iron will matter more after the Fall. A baby who is not breathing needs help at once (MA-03).

4.5 The partograph and how long labour really lasts

Philpott and Castle, working with first-time mothers in what was then Rhodesia, published the cervicograph in 1972, with an "alert line" and an "action line" (Philpott and Castle 1972a, 1972b, titles only). The alert line, at 1 cm an hour, is based on the slowest 10% of first-time mothers' labours, and the action line is usually 2 or 4 hours to its right (Lavender 2018, abstract only). Its purpose was to tell a rural attendant when to send a woman to a distant hospital [VERIFY: from general knowledge].

The WHO multicentre study in South East Asia introduced the partograph in 35,484 women. Prolonged labour fell from 6.4% to 3.4%, augmentation from 20.7% to 9.1%, emergency caesarean from 9.9% to 8.3% and intrapartum stillbirth from 0.5% to 0.3% (WHO 1994, abstract only), but it compared periods before and after, not randomised groups [VERIFY: design from general knowledge]. The 2018 Cochrane review of 11 studies and 9,475 women found no certain effect of partograph use on caesarean (relative risk 0.77, 0.40 to 1.46, very low quality). A 2-hour action line led to more oxytocin than a 4-hour line (2.44) without fewer caesareans, and a 3-hour line to more caesareans than a 4-hour line (1.70) (Lavender 2018, abstract only). In Norway, 7,277 first-time mothers had the same intrapartum caesarean rate under the WHO partograph (5.9%) and Zhang's newer guideline (6.8%) (Bernitz 2019, abstract only).

Normal labour is slower than the 1 cm an hour rule. In 62,415 American women, 4 to 5 cm could take over 6 hours and 5 to 6 cm over 3 hours (Zhang 2010, abstract only). In 5,606 women in Nigeria and Uganda, the median was

over 1 hour per centimetre until 5 cm, and for first-time mothers admitted at 4, 5 and 6 cm the 95th percentile to full dilatation was 14, 11 and 9 hours (Oladapo 2018, abstract only). Across 37 studies and 208,000 women, the median active first stage from 5 cm in first-time mothers was 3.8 to 4.3 hours, 95th percentile 11.3 to 12.7 hours. The median second stage was 14 to 66 minutes in first-time mothers (95th percentile 65 to 138) and 6 to 12 minutes in others (95th percentile 58 to 76) (Abalos 2018, abstract only).

WHO now calls the 1 cm an hour alert line "inaccurate" for identifying women at risk. In the largest accuracy study (8,489 women) crossing it had a sensitivity of 56.7% and specificity of 51.1%. WHO starts the active first stage at 5 cm and says it usually lasts no more than 12 hours in first labours and 10 in later ones (WHO 2018, recommendations 5 to 9). But WHO adds an exception that fits a village after the Fall: where augmentation and caesarean are unavailable and referral is hard to reach, "the alert line could still be used for triaging women", plotted from 5 cm (WHO 2018, remarks on recommendation 7). The lines are weak as a rule. The written record, of dilatation, fetal heart, maternal pulse and temperature, waters and contractions at set times, is a strong discipline. That part should be kept.

4.6 Listening to the baby's heart

WHO recommends intermittent listening with a Pinard horn or Doppler rather than continuous monitoring: every 15 to 30 minutes in the active first stage and every 5 minutes in the second stage, for at least 1 full minute, during a contraction and for at least 30 seconds after it, normal baseline 110 to 160, and over at least three contractions if abnormal (WHO 2018, recommendations 17 and 18). Hesperian, written for lay midwives, asks for the heartbeat about hourly in early labour, gives normal as 120 to 160, accepts 100 to 180 briefly if it recovers, calls under 100, or under 120 for several minutes, too slow, and over 180 for 20 minutes (about 5 contractions) too fast (Hesperian, Signs to check in stage 1). The sources differ on the lower limit (110 against 120) and on frequency. The protocol below uses WHO's frequencies and treats 110 to 120 as a reason to listen more closely. A Pinard horn is a hollow wooden or metal trumpet about 15 to 20 cm long [VERIFY: dimensions from general knowledge] and can be turned at the hearth rung. Counting needs a watch with a second hand or a sand-glass of one minute.

5. Tradition: what it says it does

Birth stools and chairs appear in Babylonian records from about 2000 BC and in Egyptian sources, and medieval European texts assume a woman labours upright. The shift to lying on the back is usually traced to the French obstetricians Jacques Guillemeau and François Mauriceau in the late sixteenth and seventeenth centuries (Dundes 1987, read only through a search summary [VERIFY]). Tradition says upright birth is easier and faster. Trials show fewer assisted births, somewhat more blood loss and no clear shortening (Gupta 2017).

The Trotula, three twelfth-century texts from Salerno edited and translated by Monica Green, recommends for a difficult birth a bath in water in which mallow (Malva sylvestris), fenugreek (Trigonella foenum-graecum), linseed (Linum usitatissimum) and barley (Hordeum vulgare) have been cooked, anointing with oils, and walking the woman slowly about the house. It also offers coral amulets, a charm written on cheese or butter for her to eat, and a prayer when the cord is cut (Green 2001, read only through a review and a search summary). Warmth, movement, upright posture and company are consistent with what trials support. The herbs have no trial evidence (grade D). The charms are harmless if they do not delay help.

The Farm tradition stresses privacy, calm, touch, humour, a relaxed mouth and patience, and the all-fours position when shoulders stick. In a registry of 82 consecutive shoulder dystocias (incidence 1.8%), the all-fours manoeuvre delivered 83% with no further manoeuvre, at a mean of 2.3 minutes (range 1 to 6). There were no deaths, and newborn injury (4.9%) occurred only in babies over 4,500 g (Bruner 1998, abstract only, Gaskin a co-author). This is a single uncontrolled series, but the best evidence for a technique needing no equipment. Hesperian also puts hands-and-knees first, counting to 30 on each attempt, and warns of brain injury after about 5 minutes (Hesperian, Help the mother give birth).

6. Referral thresholds and the three delays with nowhere to go

6.1 The three delays

Thaddeus and Maine described delay in deciding to seek care, delay in reaching a facility, and delay in receiving adequate care there, and argued that most obstetric emergencies end well if treatment is prompt and adequate (Thaddeus and Maine 1994, abstract only). After the Fall the third delay is total for some problems, because no village or district can safely do a caesarean with the means this book assumes [VERIFY: to be tested in MA-03 and the surgery reports]. National caesarean rates up to about 19 per 100 births go with lower maternal and newborn mortality (Molina 2015, abstract only), which suggests that something like one birth in ten to twenty may at times need an operation that will not be there [VERIFY: own inference from an ecological study].

What remains is to shrink the first two delays and redefine referral. In a village with nowhere to send, referral means calling the most skilled attendant in the district, starting any journey early enough to be made, and preparing the household for a bad outcome. A woman to be carried two hours on a cart must leave when progress first slows, not when the baby's heart has slowed.

6.2 Thresholds, from two or more sources each

- Prolonged first stage. WHO: active first stage (from 5 cm) usually not beyond 12 hours in first labours and 10 in later ones (WHO 2018). NICE: less than 2 cm in 4 hours is delay (NICE 2023, 1.8.42). Hesperian: strong labour over 12 hours, no progress for 8 to 12 hours, or contractions stopping for over an hour (Hesperian, Signs to check in stage 1).
- Prolonged second stage. Outer limits 3 hours (first birth) and 2 hours (later births), reassessment at 1 hour of good pushing (section 4.3).
- Fever. NICE: 38°C once, or 37.5°C on two readings an hour apart (NICE 2023, 1.8.11). Hesperian: 38°C is fever, 37 to 38°C may be dehydration. A glass thermometer needs 3 to 4 minutes and the armpit reads a little low (THRIVING library, FO-07).
- Mother's pulse. NICE: over 120 twice, 15 to 30 minutes apart. Hesperian: normal 60 to 100, over 100 with fever means infection.
- Blood pressure. NICE: diastolic 110 or systolic 160 once, or 90 or 140 twice 15 to 30 minutes apart. Hesperian: 140/90 recheck every 30 minutes, 150/90 with protein is pre-eclampsia, 150/110 needs immediate help, and a fall in diastolic of 15 or more may mean hidden bleeding.
- Bleeding. Fresh bleeding beyond a show, or blood-stained waters (NICE 2023, Hesperian). Heavy bleeding also forbids a vaginal examination (Hesperian).
- Meconium. NICE treats significant meconium as a transfer reason and asks for the baby to be watched at 1 and 2 hours, then every 2 hours to 12 hours. Hesperian accepts light green waters with no other warning sign but wants help for dark, thick meconium. Meconium aspiration was 30% of serious outcomes in Birthplace.
- Waters broken without labour. NICE: about 60% labour within 24 hours, transfer if broken over 24 hours before labour. Hesperian: labour should start within 12 hours and the baby be born within 24. Without antibiotics, the stricter figure is used below.
- Slow fetal heart. Under 110 (WHO), or under 100, or under 120 for several minutes (Hesperian). Hesperian's first step is left side or knee-chest position, then listen again.
- Other NICE triggers usable in a village: breathing under 9 or over 21 twice, a head not engaged (4/5 or 5/5 palpable) in a first-time mother, a baby not head down, cord presentation, reduced movements in the last 24 hours, and pain the woman calls unusual (NICE 2023, 1.8.11).

Evidence grades

"Says" is the tradition's claim, "showed" what the record shows it did, "infers" what modern evidence concludes.

Practice	Says	Showed	Infers	Grade
Trained attendant at every birth	Skill saves lives	Sweden halved non-septic deaths as midwife coverage rose, Queen's nurses at half the national rate	Trained lay attendants with kits cut perinatal death 30% and neonatal death 45%	A (trials), B (record)
Continuous support	Comfort	Universal in tradition	Fewer caesareans, better Apgar, no harm	A
Clean hands, blade, cord	Purity rules	Antisepsis cut Swedish septic deaths 49%	Handwashing linked to 19% fewer newborn deaths	B for mother, A to B for baby
Not interfering with normal labour	Patience	Interfering doctors raised sepsis deaths	Less intervention, more spontaneous births, no harm in low-risk women	B
Upright second stage	Easier, faster	Near universal before the 1600s	Fewer assisted births, more blood loss, no clear shortening	A
Warm compress, perineal massage	Comfort, stretching	Trotula's warm bath	About half the severe tears	A (moderate)
Hands off the perineum	Let nature act	Not recorded	No clear difference, fewer episiotomies	A (low)
Spontaneous pushing	Follow the body	Tradition	Same as directed pushing	A
Delayed cord clamping	Let blood return	Common	More iron and weight, a little more jaundice	A
Partograph lines as a rule	Detect slow labour	WHO 1994 before-and-after gains	Lines inaccurate, triage use allowed where no referral	A against lines as a rule, B for the record
Intermittent auscultation	Hear the baby	Pinard horn since the 19th century	Recommended over continuous monitoring	A as recommendation, C for village outcomes
All-fours for stuck shoulders	Gaskin manoeuvre	Farm practice	83% born without further manoeuvre	B
Trotula herb bath	Eases birth	Medieval use	No trial	D
Amulets, charms	Protect	Widespread	None, harmless without delay	D
Unattended birth	Nature suffices	25 to 30 per 1,000 maternal deaths estimated, Faith Assembly 872 per 100,000	Clearly worse	X
Stretching the cervix, fundal pressure	Speed birth	Loudon names cervical stretching as harmful	WHO advises against fundal pressure	X

Practice	Says	Showed	Infers	Grade
Dung, mud or ash on the cord	Heals	Common in places	Linked to tetanus and cord infection	X

Means ledger

Rung	What it adds	What it cannot do
Hands and knowledge alone	A companion who stays. Patience. Positions of choice. Hands-and-knees for stuck shoulders. Slowing the head. Waiting for the cord. Drying, skin-to-skin, a covered head. Counting the mother's pulse. Knowing the warning signs	Measure temperature or pressure, hear the baby reliably without a horn [VERIFY], cut a cord cleanly, stop serious bleeding
Hearth	Boiled water, string and blade. Soap from fat and ash (HY-02). Boiled, sun-dried cloths. Warm compresses. Food and drink. A warm room. A wooden Pinard horn. A sand-glass for minutes	Antisepsis beyond boiling, medicines
Garden and still	Alcohol for hands and instruments. Clean plant oil for massage. Paper records	Reliable uterotonics, antibiotics
Village dispensary (300)	Trained attendant and helper at every birth. Birth kits in stock. Thermometer, salvaged blood pressure cuff, watch. Record sheets and a births register. Salvaged bag and mask (MA-03). Any stored uterotonic (MA-02)	Operative delivery, transfusion, caesarean
District infirmary (3,000)	Most experienced midwife on call. A lying-in room for women from remote farms. A transport rota of cart, stretcher and bearers. Training of village attendants. Review of every maternal and newborn death	Safe caesarean or blood bank [VERIFY: to be tested in the surgery and blood reports]
Hospital before the Fall (reference)	Caesarean within 30 minutes, instruments, oxytocin, transfusion, antibiotics, neonatal intensive care	Nothing above, but at the cost of more intervention in low-risk women (caesarean 11.1% against 2.8% at home, Birthplace)

Harm test

Interference is the classic harm. Frequent vaginal examinations carried infection before antibiotics, as the class gradient shows (Loudon 1986). Examine no more than every 4 hours unless there is a reason (WHO 2018, recom-

mendation 16), with washed hands and a new or boiled glove, never during a contraction or with heavy bleeding (Hesperian).

Pushing before full dilatation, fundal pressure and stretching the cervix cause tears and bleeding and are not to be done (WHO 2018, recommendation 40, Loudon 1986, Hesperian).

Upright birth brings more blood loss over 500 mL (Gupta 2017). Without transfusion this is a real cost, but fewer assisted births matter more where there are no forceps. Be ready for bleeding after any upright birth (MA-02).

Delayed clamping brings a little more jaundice (McDonald 2013). Without light therapy, early and frequent breast-feeding is the main defence [VERIFY: for a newborn report]. The iron gain is larger.

Herbs or drugs to speed labour are dangerous. Hesperian warns never to give oxytocin or misoprostol at home to speed labour, because a womb driven hard against an obstruction can rupture (Hesperian, Signs to check in stage 1). Plant preparations of unknown strength are worse. None is recommended here.

The largest avoidable harm is a first-time mother giving birth without skilled help. Every source agrees her risk is higher.

Red flags

Call the most skilled attendant at once, and move the woman if any move is possible, if:

- Bleeding beyond a show, or blood-stained waters.
- The baby's heart under 110 (WHO) or 100 (Hesperian), or under 120 for several minutes, over 160 to 180 for 20 minutes, or slowing after contractions and not recovering.
- Thick, dark green or brown waters.
- Temperature 38°C or more, or a pulse over 100 to 120 with fever.
- Blood pressure 150/110 or more, headache, blurred vision, pain under the ribs, or fits.
- Waters broken over 12 hours with no labour, or over 24 hours with no birth.
- Active labour over 12 hours in a first birth or 10 in a later one, or no change in dilatation for 4 hours.
- Pushing over 1 hour with no descent, or 2 hours (first birth) or 1 hour (later births) with birth not close.
- Cord seen or felt before the baby, or a baby not head down.
- A head not engaged in a first-time mother in labour.
- Contractions that stop, or constant pain of a different kind.

Honest comfort. Most births go well. In Birthplace, 99.1% of babies of first-time mothers planning home birth and 99.8% of babies of other mothers had none of the serious outcomes measured (own arithmetic from 9.3 and 2.3 per 1,000, Birthplace 2011). Long labours are common: the 95th percentile for a first labour from 5 cm is 11 to 13 hours (Abalos 2018), and 2 hours of pushing in a first birth is within normal. Light meconium with a good heart rate is usually harmless. Before antibiotics, one London lying-in home recorded 0.67 maternal deaths per 1,000 deliveries (Fox 1991). What helps most, a calm companion, clean hands, patience and close watching, needs no factory.

The case against

Against village and home birth. The authors of the Wax meta-analysis (Wax 2010) and the Oregon study (Snowden 2015) find two to three times the newborn death rate with planned birth outside hospital in the United States. Evers and colleagues (Evers 2010) found more delivery-related deaths in low-risk Dutch women in midwife care than in high-risk women under obstetricians. Birthplace found nearly double the serious harm for first-time mothers at home (Birthplace 2011). These critics are right that home birth's safety depends on the hospital behind it. After the Fall there is none, so every birth falls in Hutton's "poorly integrated" group, where the estimate for first-time mothers widens to an odds ratio of about 3 (Hutton 2019). The modern home birth data are an optimistic bound.

Against the advocates. Durand's Farm study compared a screened, motivated commune with an unmatched national sample (Durand 1992). Hutton's review was partly funded by the Association of Ontario Midwives (Hutton 2019). Gaskin's books are testimony. Sandall's 2016 mortality benefit did not survive the 2024 update (Sandall 2024). Advocates treat low intervention as a good in itself, but after the Fall a caesarean is not something to avoid, it is something that does not exist.

Against the partograph. The Cochrane review and WHO both say its lines do not reliably pick out women who will have a bad outcome (Lavender 2018, WHO 2018), and Bernitz found no difference between two progress rules (Bernitz 2019). The reply here is that after the Fall its value is as a record and a timer, not a predictor.

Against Loudon. Högberg argues that poverty and living conditions mattered more than Loudon allows (Högberg 2004), and Pantin is reported to have challenged his treatment of social class [VERIFY: secondary only]. Aberdeen in the 1920s showed no link with housing (Loudon 1986). Food, water and spacing of births matter, but they did not protect the Faith Assembly women (Kaunitz 1984).

Today against after the Fall. Today a low-risk woman can choose home or a midwife unit knowing a theatre is 30 minutes away. After the Fall the comparison is not home against hospital but a skilled, clean, watchful attendant against an unskilled or absent one. On that, every source agrees.

10-line summary

1. Before 1937, maternal death in England and Wales stayed at 4 to 5 per 1,000 births for eighty years, about half from childbed fever.
2. Attendants were the main variable: good practice reached about 3 per 1,000, unattended birth perhaps 25 to 30.
3. Interference carried infection, so wealthier women attended by doctors died more often.
4. Sweden halved deaths with trained rural midwives and compulsory antisepsis, before any antibiotic.
5. Modern home birth for low-risk women is about as safe as hospital where transfer is quick, less so where it is not.
6. First-time mothers carry the risk: nearly half needed transfer in England, and their babies' harm rate nearly doubled.
7. A companion who stays, clean hands, upright positions, warm compresses and delayed cord clamping are supported by trials.
8. Labour is slower than the old 1 cm an hour rule, the partograph's lines are weak, but the written record is worth keeping.
9. Outer limits: about 12 hours of active first stage, 3 hours of second stage in a first birth and 2 in later births.
10. With nowhere to refer, act early, call the most skilled help, and move a woman while she can still be moved.

Open questions

- The Farm's transfer rate and outcomes by risk group (full Durand paper not read).
- How far was the receiving hospital, in practice, for Farm and Dutch home births, and how often did transfer take over an hour?
- What did trained midwives achieve in remote places with no surgical backup, such as the Frontier Nursing Service in Kentucky from 1925, at a scale of 300 to 3,000 people?
- Can a district of 3,000 sustain a safe caesarean at all?
- How accurate is a lay attendant with a wooden horn against a Doppler?
- Does the extra blood loss in upright birth hold when blood is measured the same way in both groups?
- Which herbs are still used to hasten labour in living traditions, and what harm do they do?

Sources to read in full

1. Loudon I. Death in Childbirth (1992), for the international comparison.
2. Durand AM. The Farm study (1992), for transfers and outcomes by risk group.
3. Loudon I. The transformation of maternal mortality, BMJ (1992).
4. Högberg U. The decline in maternal mortality in Sweden (2004).
5. Philpott RH and Castle WM. Cervicographs I and II (1972), for the rural-referral reasoning.
6. Hesperian. A Book for Midwives, the whole book.
7. Green MH. The Trotula (2001), the labour chapters.

At the bedside after the Fall

A woman in labour needs, in order: someone who stays with her throughout, an attendant with washed hands and a clean kit, warmth, water and food, and freedom to move and choose her position.

Before labour, the attendant needs to know three things: is this a first birth, is the baby head down, and how would she be moved, by whom and how long would it take. Hesperian puts the transport plan first among the most important things (Hesperian, What to bring to a birth). After the Fall that plan is a cart or stretcher, four bearers and a named person who knows the way to the district midwife.

A first-time mother should have the district's most experienced attendant at the birth, or move closer to her in the last weeks. This is the clearest lesson of Birthplace and the Dutch data.

In labour, listen to the baby's heart at the set times, write it down, and act on a slow rate that does not recover. Expect a first labour to take many hours. Never push before full dilatation, press on the belly or stretch the cervix. Examine inside rarely.

At the birth, use warm compresses, slow the head, and let her push with her own urge in her chosen position. Keep hands-and-knees in mind for stuck shoulders. Dry the baby, lay it skin to skin, cover its head, and wait for the cord to stop pulsing before tying and cutting with a boiled blade. Watch the mother's bleeding and womb for at least two hours (MA-02).

Afterwards, keep the cord clean and dry and write down the birth. If a mother or baby dies, the village and district should go over what happened and change practice, as Topping did in Rochdale, taking deaths from 9 to 3 per 1,000.

Protocols

Protocol 1. The normal-birth protocol

Eligibility for birth in the village with the local attendant [VERIFY: assembled from NICE 2023 and Hesperian, not a validated list]:

- ☐ Term, roughly 37 to 42 weeks by dates or size.
- ☐ One baby, head down.
- ☐ No bleeding in pregnancy beyond spotting.
- ☐ Blood pressure under 140/90 at the last check.
- ☐ No previous caesarean or heavy bleeding after birth (if either, the district attendant attends).
- ☐ First birth: the district attendant is told when labour starts.

Early labour (cervix under 5 cm):

- ☐ Companion present. Light food and drink to thirst (WHO 2018, recommendation 24). Walk, rest, any position.
- ☐ Baby's heart and mother's pulse every hour. Temperature and blood pressure every 4 hours.

☐ No pushing. No herbs or drugs to speed labour.

Active first stage (from about 5 cm, strong regular contractions):

☐ Baby's heart every 15 to 30 minutes, for a full minute, from during a contraction to at least 30 seconds after. Normal 110 to 160.
☐ Contractions every 30 minutes: number in 10 minutes and length in seconds.
☐ Mother's pulse every hour. Temperature and blood pressure every 4 hours.
☐ Vaginal examination every 4 hours, hands washed to the elbow with soap and nail brush for at least 60 seconds (THRIVING library, HY-01), glove if any. Not during a contraction or with bleeding.
☐ Bladder emptied every 2 hours [VERIFY: interval from general knowledge].
☐ Colour of waters recorded.
☐ Plot dilatation from 5 cm. If less than 2 cm in 4 hours, or the plot falls right of a 1 cm an hour line from 5 cm, send for the district attendant and plan the journey.
☐ Active stage at 12 hours (first birth) or 10 hours (later birth): move if moving is possible.

Second stage (full dilatation, urge to push):

☐ Push with her own urge, in her chosen position.
☐ Baby's heart every 5 minutes, after each contraction.
☐ Mother's pulse every 15 minutes [VERIFY: interval not from a source read].
☐ Warm compresses (water boiled 2 minutes, cooled to hand-warm) on the perineum.
☐ As the head crowns: blow, not push. Head to move no more than about 1 cm per push.
☐ Cord round the neck: if loose, slip over the head. If tight, let the body be born through it.
☐ Shoulders stuck (body does not follow with the next contraction): hands and knees at once, try again, count to 30 per attempt. Brain injury likely after about 5 minutes.
☐ No descent after 1 hour of good pushing: send for help. Outer limits 3 hours (first birth), 2 hours (later).

Baby born:

☐ Dry with a warm cloth, remove the wet cloth, skin to skin on the mother's chest, head covered.
☐ Not breathing after drying: MA-03 at once.
☐ Wait at least 1 minute, better until the cord stops pulsing (often about 3 minutes).
☐ Tie with boiled string 2 finger-widths from the belly, square knot. Second tie further out [VERIFY: distance]. Cut between with a boiled blade.
☐ Skin to skin at least 1 hour. Breastfeed in the first hour. No bath before 6 hours, better 24 (WHO 2018, recommendation 51).
☐ Placenta, bleeding and the womb: MA-02. Feel the womb every 15 minutes for 2 hours [VERIFY: check against MA-02].
☐ Newborn at 1 hour: breathing under 60 a minute, no grunting, warm, pink lips (THRIVING library, FO-07).

Protocol 2. The kit list

Per birth, assembled before the last month, wrapped and dry:

☐ 1 bar of soap and 1 nail brush.
☐ At least 6 clean cloths, boiled and sun-dried.
☐ 2 cotton cord ties about 15 cm long, boiled and wrapped [VERIFY: length].
☐ 1 new or boiled razor blade, or boiled scissors.
☐ 2 pairs of gloves, or clean plastic bags if nothing else.
☐ A waterproof sheet about 1 m by 1 m.
☐ A pot for boiling, a bowl, and at least 5 litres of boiled water kept covered [VERIFY: quantity].

- ☐ A warm cloth and cap for the baby.
- ☐ At least 10 pads for the mother.
- ☐ Food and drink for the mother.

Attendant's kit (village dispensary):

- ☐ Pinard horn or salvaged fetal stethoscope.
- ☐ Watch with second hand, or a 1-minute sand-glass.
- ☐ Glass thermometer.
- ☐ Blood pressure cuff and stethoscope if salvaged.
- ☐ Record sheets (Protocol 3) and pencil.
- ☐ Lamp or torch.
- ☐ Mucus trap or bulb. Suction no deeper than 10 cm (Hesperian).
- ☐ 2 clamps or 4 spare boiled ties.
- ☐ Tape measure and hanging scale.
- ☐ Bag and mask if salvaged (MA-03).
- ☐ Any stored medicine for bleeding, with its own protocol (MA-02).

Hesperian's "most important" items are a transport plan, clean water, soap, alcohol and brush, sterile string, a sterile blade, clean gloves or plastic bags, a mucus trap and medicine for bleeding (Hesperian, What to bring to a birth). HY-01's village kit is nail brush, soap, boiled water, clean cloth, clean blade and cord ties (THRIVING library, HY-01). The list above joins both.

Protocol 3. The hour-by-hour record

One sheet per labour. Write the time of every entry. A blank means not checked.

Header: name, age, previous births and problems, time labour began, time waters broke and colour, attendant, companion, how she would be moved and how long it would take.

Time	Baby's heart per minute	Contractions in 10 min / seconds	Mother's pulse	Temp °C	BP	Dilatation cm	Head above pelvis (fifths)	Waters	Urine	Food, drink	Notes and action
hour 0											
hour 1											
hour 2											

Tolerances: baby's heart every 15 to 30 minutes in active labour (over 30 minutes counts as missed), every 5 minutes when pushing. Contractions every 30 minutes. Mother's pulse hourly. Temperature, blood pressure and dilatation every 4 hours and whenever anything changes.

Action column: for any red flag, the time, what was seen, who was sent for and when they left. This column is what the village reviews after a bad outcome.

Second-stage section: time of full dilatation, time pushing began, baby's heart every 5 minutes, time of birth, sex, weight, time cord cut, time placenta delivered, estimated blood loss, perineum, state of mother and baby at 1 and 2 hours.

Numbers to carry

- Maternal deaths, England and Wales 1850 to 1935: 4 to 5 per 1,000 births. Unattended labour (rough estimate): 25 to 30. Best pre-antibiotic practice: about 3, and 0.67 in one London lying-in home.
- Before antibiotics about half of maternal deaths were sepsis. Today: haemorrhage 27%, hypertension 14%, sepsis 11%.
- First-time mothers planning home birth in England: 45% transferred, serious harm to the baby 9.3 per 1,000 against 5.3. Other mothers: 12% transferred, no excess.
- Continuous support: 25% fewer caesareans.
- Warm compress: half the severe tears. Upright birth: 25% fewer assisted births, 48% more blood loss over 500 mL.
- Cord: wait at least 1 minute, ideally about 3.
- Active labour from about 5 cm, outer limit about 12 hours (first birth) and 10 (later). Under 2 cm in 4 hours is slow.
- Second stage: reassess at 1 hour of pushing, outer limits 3 hours (first) and 2 (later).
- Baby's heart: 110 to 160 (WHO), 120 to 160 (Hesperian). Every 15 to 30 minutes in labour, every 5 minutes when pushing, a full minute each time.
- Fever: 38°C once, or 37.5°C twice an hour apart. Mother's pulse over 100 to 120 is a warning.
- Blood pressure: 140/90 recheck, 150/110 urgent.
- Waters broken without labour: worry at 12 hours, act by 24.
- Stuck shoulders: hands and knees first, harm likely after about 5 minutes.
- Skin to skin at least 1 hour. Bath not before 6 hours, better 24.
- Handwashing before a birth: soap, nail brush, to the elbow, at least 60 seconds.

References

1. Loudon I. 1986. Deaths in childbed from the eighteenth century to 1935. Medical History 30(1):1-41. https://doi.org/10.1017/S0025727300045014 (full text read)
2. Fox E. 1991. Powers of life and death: aspects of maternal welfare in England and Wales between the wars. Medical History 35(3):328-352. https://doi.org/10.1017/S0025727300053825 (full text read)
3. Högberg U. 2004. The decline in maternal mortality in Sweden: the role of community midwifery. American Journal of Public Health 94(8):1312-1320. https://pmc.ncbi.nlm.nih.gov/articles/PMC1448444/ (read only through an automated summary of the full text)
4. De Brouwere V. 2012. La professionnalisation des soins à l'accouchement dans l'histoire des pays occidentaux. Académie royale des sciences d'outre-mer, Bulletin des séances 57-58 (2011-2012). https://www.kaowarsom.be/documents/57-58%282011-2012%29/DEBROUWERE.pdf (full text read)
5. Loudon I. 2000. Maternal mortality in the past and its relevance to developing countries today. American Journal of Clinical Nutrition 72(1 Suppl):241S-246S. https://pubmed.ncbi.nlm.nih.gov/10871589/ (abstract only)
6. Loudon I. 1992. Death in Childbirth: An International Study of Maternal Care and Maternal Mortality 1800-1950. Oxford, Clarendon Press. (not read, figures taken from De Brouwere 2012)
7. Colebrook L, Kenny M. 1936. Paper on prontosil in puerperal fever, Lancet. (not read, figures taken from Loudon 1986 [VERIFY: exact title, volume and pages])
8. Kaunitz AM, Spence C, Danielson TS, Rochat RW, Grimes DA. 1984. Perinatal and maternal mortality in a religious group avoiding obstetric care. American Journal of Obstetrics and Gynecology 150(7):826-831. https://pubmed.ncbi.nlm.nih.gov/6507508/ (abstract and indexer's summary only)
9. Durand AM. 1992. The safety of home birth: the Farm study. American Journal of Public Health 82(3):450-453. https://pubmed.ncbi.nlm.nih.gov/1536368/ (abstract only)
10. de Jonge A, van der Goes BY, Ravelli AC, et al. 2009. Perinatal mortality and morbidity in a na-

tionwide cohort of 529,688 low-risk planned home and hospital births. BJOG 116(9):1177-1184. https://pubmed.ncbi.nlm.nih.gov/19624439/ (abstract only)
11. de Jonge A, Geerts CC, van der Goes BY, et al. 2015. Perinatal mortality and morbidity up to 28 days after birth among 743 070 low-risk planned home and hospital births: a cohort study based on three merged national perinatal databases. BJOG 122(5):720-728. https://pubmed.ncbi.nlm.nih.gov/25204886/ (abstract only)
12. Evers AC, Brouwers HA, Hukkelhoven CW, et al. 2010. Perinatal mortality and severe morbidity in low and high risk term pregnancies in the Netherlands: prospective cohort study. BMJ 341:c5639. https://pubmed.ncbi.nlm.nih.gov/21045050/ (abstract only)
13. Amelink-Verburg MP, Rijnders ME, Buitendijk SE. 2009. A trend analysis in referrals during pregnancy and labour in Dutch midwifery care 1988-2004. BJOG 116(7):923-932. https://pubmed.ncbi.nlm.nih.gov/19522796/ (abstract only)
14. Amelink-Verburg MP, Buitendijk SE. 2010. Pregnancy and labour in the Dutch maternity care system: what is normal? The role division between midwives and obstetricians. Journal of Midwifery and Women's Health 55(3):216-225. https://pubmed.ncbi.nlm.nih.gov/20434081/ (abstract only)
15. Offerhaus PM, Hukkelhoven CW, de Jonge A, et al. 2013. Persisting rise in referrals during labor in primary midwife-led care in the Netherlands. Birth 40(3):192-201. https://pubmed.ncbi.nlm.nih.gov/24635504/ (abstract only)
16. Offerhaus PM, Geerts C, de Jonge A, et al. 2015a. Variation in referrals to secondary obstetrician-led care among primary midwifery care practices in the Netherlands: a nationwide cohort study. BMC Pregnancy and Childbirth 15:42. https://pubmed.ncbi.nlm.nih.gov/25885706/ (abstract only)
17. Offerhaus PM, de Jonge A, van der Pal-de Bruin KM, et al. 2015b. Change in primary midwife-led care in the Netherlands in 2000-2008: a descriptive study of caesarean sections and other interventions among 807,437 low-risk births. Midwifery 31(6):648-654. https://pubmed.ncbi.nlm.nih.gov/26203475/ (abstract only)
18. Birthplace in England Collaborative Group. 2011. Perinatal and maternal outcomes by planned place of birth for healthy women with low risk pregnancies: the Birthplace in England national prospective cohort study. BMJ 343:d7400. https://openaccess.city.ac.uk/id/eprint/893/ (full text read)
19. Hutton EK, Reitsma A, Simioni J, Brunton G, Kaufman K. 2019. Perinatal or neonatal mortality among women who intend at the onset of labour to give birth at home compared to women of low obstetrical risk who intend to give birth in hospital: a systematic review and meta-analyses. EClinicalMedicine 14:59-70. https://pubmed.ncbi.nlm.nih.gov/31709403/ (abstract only)
20. Johnson KC, Daviss BA. 2005. Outcomes of planned home births with certified professional midwives: large prospective study in North America. BMJ 330(7505):1416. https://pubmed.ncbi.nlm.nih.gov/15961814/ (abstract only)
21. Wax JR, Lucas FL, Lamont M, et al. 2010. Maternal and newborn outcomes in planned home birth vs planned hospital births: a metaanalysis. American Journal of Obstetrics and Gynecology 203(3):243.e1-8. https://pubmed.ncbi.nlm.nih.gov/20598284/ (abstract only)
22. Snowden JM, Tilden EL, Snyder J, et al. 2015. Planned out-of-hospital birth and birth outcomes. New England Journal of Medicine 373(27):2642-2653. https://pubmed.ncbi.nlm.nih.gov/26716916/ (abstract only)
23. Sandall J, Soltani H, Gates S, Shennan A, Devane D. 2016. Midwife-led continuity models versus other models of care for childbearing women. Cochrane Database of Systematic Reviews CD004667.pub5. https://pubmed.ncbi.nlm.nih.gov/27121907/ (abstract only)
24. Sandall J, Fernandez Turienzo C, Devane D, et al. 2024. Midwife continuity of care models versus other models of care for childbearing women. Cochrane Database of Systematic Reviews CD004667.pub6. https://pubmed.ncbi.nlm.nih.gov/38597126/ (abstract only)
25. Bohren MA, Hofmeyr GJ, Sakala C, Fukuzawa RK, Cuthbert A. 2017. Continuous support for women during childbirth. Cochrane Database of Systematic Reviews CD003766. https://pubmed.ncbi.nlm.nih.gov/28681500/ (abstract only)
26. Jokhio AH, Winter HR, Cheng KK. 2005. An intervention involving traditional birth attendants and

perinatal and maternal mortality in Pakistan. New England Journal of Medicine 352(20):2091-2099. https://pubmed.ncbi.nlm.nih.gov/15901862/ (abstract only)
27. Gill CJ, Phiri-Mazala G, Guerina NG, et al. 2011. Effect of training traditional birth attendants on neonatal mortality (Lufwanyama Neonatal Survival Project): randomised controlled study. BMJ 342:d346. https://pubmed.ncbi.nlm.nih.gov/21292711/ (abstract only)
28. Sibley LM, Sipe TA, Barry D. 2012. Traditional birth attendant training for improving health behaviours and pregnancy outcomes. Cochrane Database of Systematic Reviews CD005460.pub3. https://pubmed.ncbi.nlm.nih.gov/22895949/ (abstract only)
29. Hundley VA, Avan BI, Braunholtz D, Graham WJ. 2012. Are birth kits a good idea? A systematic review of the evidence. Midwifery 28(2):204-215. https://pubmed.ncbi.nlm.nih.gov/21561691/ (abstract only)
30. Imdad A, Bautista RM, Senen KA, et al. 2013. Umbilical cord antiseptics for preventing sepsis and death among newborns. Cochrane Database of Systematic Reviews CD008635.pub2. https://pubmed.ncbi.nlm.nih.gov/23728678/ (abstract only)
31. Gupta JK, Sood A, Hofmeyr GJ, Vogel JP. 2017. Position in the second stage of labour for women without epidural anaesthesia. Cochrane Database of Systematic Reviews CD002006.pub4. https://pubmed.ncbi.nlm.nih.gov/28539008/ (abstract only)
32. Aasheim V, Nilsen ABV, Reinar LM, Lukasse M. 2017. Perineal techniques during the second stage of labour for reducing perineal trauma. Cochrane Database of Systematic Reviews CD006672.pub3. https://pubmed.ncbi.nlm.nih.gov/28608597/ (abstract only)
33. Lemos A, Amorim MM, Dornelas de Andrade A, et al. 2017. Pushing/bearing down methods for the second stage of labour. Cochrane Database of Systematic Reviews CD009124.pub3. https://pubmed.ncbi.nlm.nih.gov/28349526/ (abstract only)
34. McDonald SJ, Middleton P, Dowswell T, Morris PS. 2013. Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes. Cochrane Database of Systematic Reviews CD004074.pub3. https://pubmed.ncbi.nlm.nih.gov/23843134/ (abstract only)
35. Lavender T, Cuthbert A, Smyth RM. 2018. Effect of partograph use on outcomes for women in spontaneous labour at term and their babies. Cochrane Database of Systematic Reviews CD005461.pub5. https://pubmed.ncbi.nlm.nih.gov/30080256/ (abstract only)
36. World Health Organization Maternal Health and Safe Motherhood Programme. 1994. World Health Organization partograph in management of labour. Lancet 343(8910):1399-1404. https://pubmed.ncbi.nlm.nih.gov/7910888/ (abstract only)
37. Philpott RH, Castle WM. 1972a. Cervicographs in the management of labour in primigravidae. I. The alert line for detecting abnormal labour. Journal of Obstetrics and Gynaecology of the British Commonwealth 79(7):592-598. https://pubmed.ncbi.nlm.nih.gov/5043422/ (title only)
38. Philpott RH, Castle WM. 1972b. Cervicographs in the management of labour in primigravidae. II. The action line and treatment of abnormal labour. Journal of Obstetrics and Gynaecology of the British Commonwealth 79(7):599-602. https://pubmed.ncbi.nlm.nih.gov/5043423/ (title only)
39. Zhang J, Landy HJ, Branch DW, et al. 2010. Contemporary patterns of spontaneous labor with normal neonatal outcomes. Obstetrics and Gynecology 116(6):1281-1287. https://pubmed.ncbi.nlm.nih.gov/21099592/ (abstract only)
40. Oladapo OT, Souza JP, Fawole B, et al. 2018. Progression of the first stage of spontaneous labour: a prospective cohort study in two sub-Saharan African countries. PLoS Medicine 15(1):e1002492. https://pubmed.ncbi.nlm.nih.gov/29338000/ (abstract only)
41. Abalos E, Oladapo OT, Chamillard M, et al. 2018. Duration of spontaneous labour in 'low-risk' women with 'normal' perinatal outcomes: a systematic review. European Journal of Obstetrics and Gynecology and Reproductive Biology 223:123-132. https://pubmed.ncbi.nlm.nih.gov/29518643/ (abstract only)
42. Rouse DJ, Weiner SJ, Bloom SL, et al. 2009. Second-stage labor duration in nulliparous women: relationship to maternal and perinatal outcomes. American Journal of Obstetrics and Gynecology 201(4):357.e1-7.

https://pubmed.ncbi.nlm.nih.gov/19788967/ (abstract only)
43. Bernitz S, Dalbye R, Zhang J, et al. 2019. The frequency of intrapartum caesarean section use with the WHO partograph versus Zhang's guideline in the Labour Progression Study (LaPS): a multicentre, cluster-randomised controlled trial. Lancet 393(10169):340-348. https://pubmed.ncbi.nlm.nih.gov/30581039/ (abstract only)
44. Bruner JP, Drummond SB, Meenan AL, Gaskin IM. 1998. All-fours maneuver for reducing shoulder dystocia during labor. Journal of Reproductive Medicine 43(5):439-443. https://pubmed.ncbi.nlm.nih.gov/9610468/ (abstract only)
45. Thaddeus S, Maine D. 1994. Too far to walk: maternal mortality in context. Social Science and Medicine 38(8):1091-1110. https://pubmed.ncbi.nlm.nih.gov/8042057/ (abstract only)
46. Ronsmans C, Graham WJ. 2006. Maternal mortality: who, when, where, and why. Lancet 368(9542):1189-1200. https://pubmed.ncbi.nlm.nih.gov/17011946/ (abstract only)
47. Say L, Chou D, Gemmill A, et al. 2014. Global causes of maternal death: a WHO systematic analysis. Lancet Global Health 2(6):e323-e333. https://pubmed.ncbi.nlm.nih.gov/25103301/ (abstract only)
48. Molina G, Weiser TG, Lipsitz SR, et al. 2015. Relationship between cesarean delivery rate and maternal and neonatal mortality. JAMA 314(21):2263-2270. https://pubmed.ncbi.nlm.nih.gov/26624825/ (abstract only)
49. World Health Organization. 2018. WHO recommendations: intrapartum care for a positive childbirth experience. Geneva, WHO. ISBN 9789241550215. https://iris.who.int/server/api/core/bitstreams/ba043cf7-cba4-484d-bf7e-ec79c4102d54/content (full text read)
50. National Institute for Health and Care Excellence. 2023, updated 2026. Intrapartum care. NICE guideline NG235, Recommendations. https://www.nice.org.uk/guidance/ng235/chapter/Recommendations (recommendations page read in full)
51. Klein S, Miller S, Thomson F. A Book for Midwives, online edition. Berkeley, Hesperian Health Guides. Pages read in full: Signs for the midwife to check in stage 1 (https://en.hesperian.org/hhg/A_Book_for_Midwives:Signs_for_the_midwife_to_check_in_stage_1), Help the mother give birth (https://en.hesperian.org/hhg/A_Book_for_Midwives:Help_the_mother_give_birth), Watch for warning signs, and What to bring to a birth, on the same site. Cited in the text as (Hesperian, page title). Edition year [VERIFY].
52. Green MH, editor and translator. 2001. The Trotula: A Medieval Compendium of Women's Medicine. Philadelphia, University of Pennsylvania Press. Read only through a review (https://rakinglight.co.uk/book-reviews/the-trotula-a-medieval-compendium-of-womens-medicine/) and a search summary.
53. Dundes L. 1987. The evolution of maternal birthing position. American Journal of Public Health 77(5):636-641. https://pubmed.ncbi.nlm.nih.gov/3551639/ (title only, content known through a search summary)
54. THRIVING library, HY-01. Clean hands. THRIVING after the FALL research library, out/HY-01.md (read in full)
55. THRIVING library, FO-07. Diagnosis by hand, eye, ear and nose. THRIVING after the FALL research library, out/FO-07.md (read in full)