

NEONATAL CALCULATOR REPLAY AND CORD GAS CHECK

SYN-88390, infant born March 22, 2026 at 22:41

Prepared for counsel. Subject to review and verification by retaining counsel and the retained expert.

SYNTHETIC SAMPLE. The mother, infant, hospital and every record are invented. The calculators, tables and equations are real and are cited with their versions. Every cite below is a live link to a bundled page at the back of this file.

What this does

The chart's own values are run through the published newborn tools, in each version that could have applied on the date of care: the Kaiser Permanente early-onset sepsis calculator (2017 and 2024 models) and the AAP 2022 bilirubin threshold tables. The cord gas values are recomputed and checked against a published pairing rule. The output reports what each tool returns for the cited inputs. What that meant for care is for the expert.

Sepsis calculator inputs, each from the chart

Input	Value entered	Where it comes from
Incidence of early-onset sepsis	0.5/1000 (labelled "CDC national incidence" on the calculator)	Not in the chart. The hospital's setting is a discovery question; other settings are on the workbook.
Gestational age	38 weeks 1 day	SYN-LDN000001, p.4
Highest maternal temperature	38.7 C = 101.7 F	SYN-LDN000007, p.6
Rupture of membranes	19.5 hours (03:10 to 22:41)	SYN-LDN000007, p.6
Maternal GBS status	Unknown	SYN-LDN000007, p.6
Intrapartum antibiotics	Broad-spectrum 2 to 3.9 h before birth (ampicillin 19:50, gentamicin 20:05; 2.9 h)	SYN-LDN000005, p.5
Clinical exam category	Equivocal: respiratory rate over 60 charted from 23:30 to 04:30 (5 hours)	SYN-LDN000008, p.7

What the tools return for these inputs

Calculator version	Risk at birth (per 1,000)	Risk after exam (per 1,000)	Published recommendation band for that result
Original (2017)	1.14	5.67	Composite 3 or more: empiric antibiotics, vitals per NICU
Updated (2024)	1.93	7.01	Composite 3 or more: empiric antibiotics, vitals per NICU

What was charted: blood culture drawn at 01:10 ([NB-701, p.8](#)); no antibiotics, per the pediatric note at 07:40 ([MD-902, p.8](#)). Results come from Kaiser Permanente's published model equations and coefficients. The calculator also runs live on Kaiser's site; the expert can enter the same inputs there and should get the same figures to rounding.

Bilirubin against the AAP 2022 tables

TSB	Collected (hours of age)	Phototherapy threshold, no risk factor	With a risk factor	Exchange threshold, no / any risk factor	Escalation of care (exchange less 2)	Rate since prior	Cite
7.9	03/23 18:41 (20.0 h)	11.6 (-3.7)	9.9 (-2.0)	20.8 / 17.2	18.8 / 15.2		NB-702, p.8
12.4	03/24 14:41 (40.0 h)	14.8 (-2.4)	12.9 (-0.5)	23.2 / 19.4	21.2 / 17.4	0.225 mg/dL per h	NB-703, p.8
16.9	03/25 12:41 (62.0 h)	17.7 (-0.8)	15.6 (+1.3)	25.2 / 21.3	23.2 / 19.3	0.205 mg/dL per h	NB-704, p.8

Gestational age 38 weeks, so the 38-week sections of Supplemental Tables 1 to 4 apply. The record documents no neurotoxicity risk factor; whether one existed (for example sepsis) is for the expert, so both columns are shown. At 62.0 hours the TSB of 16.9 is -0.8 from the no-risk-factor threshold and +1.3 from the risk-factor threshold. Phototherapy was ordered at 16:15 and started at 16:30 on 03/25, 65.8 hours of age ([NN-901, p.8](#)). The guideline treats a rise of 0.2 mg/dL per hour or more after 24 hours as "exceptional" (KAS 7); the computed rates are in the last column.

The 2004 AAP guideline published its thresholds as curves only (Figs 3 and 4), with no hour-by-hour tables. A 2004 replay would require reading values off the published curves, which is the expert's call, so it is not computed here.

Cord gases

Sample, as labeled	pH	pCO2	Base excess (analyzer, as charted)	Base excess, ECF (Siggaard-Andersen)	Cite
Umbilical artery (as labeled)	7.24	58	-4.0	-2.1 (bicarbonate 24.6)	DL-601, p.6
Umbilical vein (as labeled)	7.21	63	-4.6	-2.2 (bicarbonate 24.9)	DL-602, p.6

Pairing check. The sample labeled arterial has the higher pH (7.24 against 7.21) and the lower pCO2 (58 against 63). Armstrong and Stenson (2007), reporting Westgate's criteria, say a venous pH lower than arterial, or a venous pCO2 higher than arterial, suggests the samples were mixed up. These values fit that description. Whether the labels are reversed, and what either value means, is for the expert.

Base excess depends on the equation the analyzer uses (Mokarami 2012). The ECF value here uses the published Siggaard-Andersen equation so the arithmetic can be checked by hand; it does not replace the analyzer's printed value.

Tools and rules used, and their versions

Tool	Source as published
KP EOS	Kaiser Permanente Division of Research. Neonatal Early-Onset Sepsis Calculator, Original (2017) and Updated (2024) models; equations from the site FAQ pages. Link
KP EOS 2024	Kuzniewicz MW, et al. Update to the Neonatal Early-Onset Sepsis Calculator Utilizing a Contemporary Cohort. Pediatrics 2024;154(4):e2023065267. Link
AAP 2022	Kemper AR, et al. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation. Pediatrics 2022;150(3):e2022058859. Supplemental Tables 1-4. Link
AAP 2004	AAP Subcommittee on Hyperbilirubinemia. Pediatrics 2004;114(1):297-316. Figs 3 and 4 (curves only; no hour-specific tables published). Link
BEecf	Siggaard-Andersen O. Anthology on Base Excess (rev. 2004-01-25), Van Slyke equation, extracellular-fluid form (ctHb 3 mmol/L). Link
Cord pair	Armstrong L, Stenson BJ. Use of umbilical cord blood gas analysis in the assessment of the newborn. Arch Dis Child Fetal Neonatal Ed 2007;92(6):F430-F434 (reporting Westgate 1994 criteria). Link
BD analyzers	Mokarami P, Wiberg N, Olofsson P. Blood gas analyzers calculate base deficit differently. Acta Obstet Gynecol Scand 2012;91(5):574-579. Link

What this is not

No clinical recommendation and no view on what care required. Calculator outputs are reported as the published tools return them for the cited inputs. Inputs that are not in the chart (the incidence setting) are named as such. Which version and which risk-factor column applied is for the expert.

Index of bundled pages

Page	Source
p.4	SYN-LDN000001 Admission
p.5	SYN-LDN000005 Maternal labs and medications
p.6	SYN-LDN000007 Delivery record and cord gases
p.7	SYN-LDN000008 Nursery vital signs
p.8	SYN-LDN000009 Newborn labs, orders, notes

OB ADMISSION

Entry ID: OA-101 | Author: Nurse U Example, RN (SYN) | Date of service: 03/22/2026 0730

G1P0 at 38w1d (SYNTHETIC) for induction, preeclampsia without severe features. Spontaneous rupture of membranes at 0310 today, clear fluid. GBS culture: not resulted. Allergies: none known.

MATERNAL LABS AND MEDICATION ADMINISTRATION

As documented.

Test	Result	Units	Collected	Resulted	Entry ID
WBC	17.8	x10^3/uL	03/22 1945	03/22 2020	ML-201

Given	Medication	Dose / route	Entry ID
03/22 1531	Labetalol	20 mg IV	MM-501
03/22 1950	Ampicillin	2 g IV	MM-502
03/22 2005	Gentamicin	360 mg IV	MM-503

DELIVERY RECORD

Entry ID: DR-1101 | Author: Obstetrician X Example, MD (SYN) | Date of service: 03/22/2026

Item	As recorded			
Birth	03/22 2241			
Mode	Spontaneous vaginal			
Rupture of membranes	03/22 0310, spontaneous			
Highest maternal temperature before delivery	38.7 C (101.7 F) at 2015			
GBS status	Unknown (culture not resulted at delivery)			
Intrapartum antibiotics	Ampicillin 2 g IV 1950; gentamicin IV 2005			
Apgar 1 / 5 min	7 / 8			

Sample (label as charted)	pH	pCO2 (mmHg)	Base excess (analyzer)	Entry ID
Umbilical artery (as labeled)	7.24	58	-4.0	DL-601
Umbilical vein (as labeled)	7.21	63	-4.6	DL-602

NEWBORN NURSERY FLOWSHEET

Infant: SAMPLE, BABY GIRL D (SYNTHETIC) | Born 03/22/2026 2241 | Gestational age 38w1d

Time	Temp C	HR	RR	Entry ID
03/22 2300	37.2	148	58	NV-5101
03/22 2330	37.3	152	64	NV-5102
03/23 0030	37.4	156	68	NV-5103
03/23 0130	37.5	158	72	NV-5104
03/23 0230	37.4	154	70	NV-5105
03/23 0330	37.3	150	66	NV-5106
03/23 0430	37.2	146	62	NV-5107
03/23 0530	37.1	142	56	NV-5108
03/23 0730	37.0	138	52	NV-5109

NEWBORN LABS, ORDERS AND NOTES

Infant: SAMPLE, BABY GIRL D (SYNTHETIC)

Test	Result	Collected	Resulted	Entry ID
Blood culture	Drawn; final no growth at 48 h	03/23 0110	03/25 0110	NB-701
Total serum bilirubin	7.9	03/23 1841	03/23 1930	NB-702
Total serum bilirubin	12.4	03/24 1441	03/24 1520	NB-703
Total serum bilirubin	16.9	03/25 1241	03/25 1325	NB-704
Direct bilirubin	0.4	03/25 1241	03/25 1325	NB-705

Ordered	By	Entry ID	Order
03/23 0050	Pediatrician Y Sample, MD (SYN)	OR-601	Blood culture. CBC. Vital signs every hour. Observe for signs of sepsis.
03/25 1615	Pediatrician Y Sample, MD (SYN)	OR-602	Phototherapy. Repeat TSB in 6 hours.

Entry ID: NN-901 | Author: Nurse Z Example, RN (SYN) | Date of service: 03/25 1630
Phototherapy started 1630.

Entry ID: MD-902 | Author: Pediatrician Y Sample, MD (SYN) | Date of service: 03/23 0740
Tachypnea since about 2330, now resolving. Well appearing otherwise. Culture drawn. No antibiotics at this time. Maternal fever and chorio noted.