Newborn Assessment: Observation Chart and Early Warning Score

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Risk of non-compliance	may result in significant harm to the patient/DHB
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• Organisation(s)	Auckland District Health Board
• Directorate(s)	Women's Health, Child Health
• Department(s)	Maternity, Neonatal Intensive Care Unit, Newborn Services
• Used for which patients?	All neonates born at Auckland DHB, Newborns born outside Auckland DHB but transferred to Auckland DHB within the first 24 hours.
• Used by which staff?	All clinicians in maternity and neonatal care including Access Holder Lead Maternity Carers (LMCs)
• Excluded	
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1. Purpose of policy

The purpose of this policy is to clearly define:

- Who is responsible for performing the newborn examination and risk assessment following birth using the Newborn Early Warning Score chart.
- Explain the use of the Newborn Observation Chart (NOC) and Newborn Early Warning Score (NEWS) chart
- Describe when to use the Newborn Early Warning Score Escalation pathway
- Identify babies that are suitable for early transfer/discharge to a primary unit or home.

2. Definitions

Term	Definition
Newborn or Neonate	A baby from birth up to and including 28 days of age
NOC	Newborn Observation Chart
NEWS	Newborn Early Warning Score
AC	Before feed (ante cibum)

3. Introduction

The newborn examination is defined as the routine 24-48 hour assessment of the neonate (as per the Well Child Tamariki Ora assessment). The newborn examination is essential to assess the integrity of various organ systems and successful adaptation of the newborn to extra-uterine life. It may also identify congenital defects, which require appropriate referral and treatment. All newborn examinations should be clearly documented on the National Women's Newborn Record (CR3731), in the Well Child Tamariki Ora My Health Book and on Heathware. Responsibilities for newborn examination will differ, depending on the level of care required at birth (see appendix 1)

The Newborn Observation Chart (NOC) is a vital signs chart, which has been developed to standardise the initial assessment, and care of newborn babies in New Zealand. The NOC will also provide a single view of clinical information and assist in recognising future trends, which may indicate a baby's condition, has deviated from that expected of a newborn. The Newborn Early Warning Score (NEWS) has been developed to assist with the early recognition of clinical deterioration of the infants who are at risk, with the aim of improving outcomes for these infants.

4. Policy statements

- It is the **LMC's responsibility** to ensure the newborn assessment and examination is completed and documented on the Newborn record (CR3731) and in the Well Child Tamariki Ora, My Health Book. The newborn assessment undertaken 0-2 hours is detailed in the Tamariki Ora Well Child assessment schedule.
- For women for whom Auckland DHB is the primary maternity care provider, the responsibility for the newborn assessment and examination falls to the core midwifery staff within Women's

health unless the baby is admitted to Neonatal Intensive Care Unit (NICU) immediately after birth.

- Midwives undertaking the full neonatal examination must have a full New Zealand (NZ) Annual Practicing Certificate (APC) without limitations for examination of the newborn. Those who have joined the workforce from overseas and have not yet completed the examination of the newborn paper successfully; must be supervised by a midwife who is NZ qualified or who has completed the overseas competency requirement for the examination of a newborn.
- The Newborn Observation chart will be used for all newborn babies who are 35 weeks gestation and over excluding those admitted to NICU. In all babies, it is to be completed at the initial newborn assessment (0-2 hours following birth), on the day following the birth and if there are any concerns about baby's wellbeing.
- After birth, the baby's will have their risk category reviewed and documented by the midwife where appropriate in consultation with members of the Neonatal team and a plan for care developed including requirements for NEWS observations, blood glucose monitoring etc.
- All babies admitted to the postnatal ward will have a NOC commenced in the place of birth if born at Auckland DHB or on admission if born elsewhere.
- Where required, follow up referral and/or consultation will be arranged prior to discharge.

5. Rationale for Newborn Observations Chart

- The chart records the initial newborn assessment (at 0-2 hours after birth) and the 24-hour newborn wellbeing assessment.
- Placing all observations on the one chart supports consistency, provides a baseline and enables greater visibility of trends, which can identify if a baby is becoming unwell.
- The chart enables easy identification of any deviations from normal ranges and earlier identification of a deteriorating baby.
- The early warning system, which works with the chart, supports timely escalation (referral and treatment) for babies becoming unwell.
- The chart identifies risk factors with recommendations for additional health assessments dependent on these factors.
- The chart can support the clinician to identify which babies (born in secondary/tertiary units) can be safely transferred to a primary unit or be discharged home following birth.
- The key risk factors for new-born's needing higher levels of observation and care include:

    - Late preterm infants: born at 35 and 36 weeks gestation
    - Babies with risk factors for sepsis at any gestation
    - Babies at risk for hypoglycaemia including babies: who are small for gestation age, weight < 10th centile, babies born to mothers with diabetes', those babies large for dates, > 95th centile.
    - Babies who experience fetal distress or intrapartum compromise (including cord lactate > 5.8)
    - Babies whose mother had opioid analgesics during labour, particularly if less than four hours prior to the birth
    - Babies who have experienced in-utero growth restriction
    - Babies of mothers on beta blockers
    - Babies following instrumental birth.

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5.1. Use of Newborn Observation Chart (NOC) and Newborn Early Warning Score (NEWS)

Newborn Observation Chart is used for:

- Newborn babies who are 35 weeks gestation and over
- For all babies for the initial newborn assessment (0-2 hours following birth) and for the second detailed newborn assessment (within 24 hours of the birth).

Newborn Early Warning Score is used for:

- At any time if there are, concerns related to the newborn's health.

At risk babies – identified following birth using the risk assessment tool (see page 6) will:

- Require more frequent assessment and additional observations
- May require observations for longer than 24 hours
- If NEWS score is still not normal at 24 hours or there are any ongoing concerns then observations will continue.

The following risk assessment tool has been developed to assist with the early recognition of clinical deterioration of infants who are at risk, with the aim of improving outcomes for these neonates.

COMPLETE RISK ASSESSMENT BELOW FOR ALL BABIES

RISK ASSESSMENT	OBSERVATION REQUIREMENTS			
RISK Mark with a X all boxes ☐ that apply	MINIMUM REQUIRED NEWS OBSERVATIONS (respiratory rate, work of breathing, temperature, heart rate, colour, behaviour, feeding)		OXYGEN SATS MONITORING To be performed on either foot until stable	BLOOD GLUCOSE MONITORING
☐ All babies	• At 0-2 and 24 hours post birth • At any time you or parent are concerned about baby		• Perform if concerned about baby or as per DHB policy	• Perform if signs or symptoms of hypoglycaemia apparent
NOTE: prior to transfer (to a primary unit before 24 hours) a baby with risk factors must have a repeat NEWS of 0				
☐ Intrapartum IV/IM opioid analgesia or general anaesthesia	• At 1 and 4 hours post birth		• At 1 and 4 hours with NEWS observations	• Perform if signs or symptoms of hypoglycaemia apparent
☐ Maternal GBS/PROM with or without intrapartum antibiotics, or other sepsis risk (suspected or clinical chorioamnionitis, maternal temperature greater than 38°C, previous GBS baby)	• At 1 and 4 hours post birth Then • 4 hourly for 24 hours	+ if birth less than 4 hours post intrapartum antibiotics, stay for 6 hours		
☐ Meconium exposure: • all thick, OR • thin, only if Apgar less than 9 at 5 minutes or resus needed				
☐ Severe intrapartum fetal compromise, eg. one or all of: • pH less than 7.1 • IPPV greater than 5 mins or resus greater than 10 mins • Apgar less than 7 @ 5 mins • cord lactate greater than 6 mmol/L	• At 1 and 3-4 hours post birth Then • 4 hourly for 24 hours	• If repeat lactate greater than 3 mmol/L not for transfer	• At 1 and 3-4 hours with NEWS observations	• Repeat lactate with pre-feed blood glucose at 3-4 hours postpartum • If glucose 2.6 mmol/L or above and lactate is below 3 stop monitoring blood glucose
☐ Less than 37+0 weeks	• At 1, 4, 12, 24 hours post birth			
☐ Below 10th centile weight on growth chart or GROW ☐ Above 95 centile weight on growth chart or GROW ☐ Maternal diabetes (infant of)	• At 1, 4, 24 hours post birth		• Once between 12 and 24 hours	• Perform at 60-120 minutes of age then • 3 hourly before feeds until a total of 3 consecutive results are 2.6 mmol/L or above
☐ Other risks/concerns *eg. limited antenatal care, feeding concerns*	Observations required: ☐ NEWS, frequency: ..... ☐ Other (specify):		☐ O_2 sats, frequency: ..... frequency:	
Instrumental birth – vacuum and/or forceps, including forceps during caesarean section (risk for Subgaleal Haemorrhage)				
☐ Any of the following: • Total vacuum extraction time less than 20 minutes • Up to 3 pulls • No or 1 cup detachment • Attemped instrumental birth	• At 1 and 4 hours post birth • Head circumference at birth and repeat if head swelling occurs		• Perform at 4 hours	
☐ Any of the following • Total vacuum extraction time more than 20 minutes • More than 3 pulls • 2 or more cup detachments • Apgar < 7 @ 5 mins ☐ At clinician's request Signature: Pager:	• At 1, 2, 4, 6, 8, 12 hours post birth • Head circumference at birth and repeat if head swelling occurs • For IMMEDIATE Neonatal Team review if: – HR > 160 bpm – Resp > 60 or ↑ WOB		• Perform at 2 and 4 hours or if concerned about baby	

5.2. Recording observations and calculation of NEWS

- Core vital signs (6+1) included in the newborn observation chart for all babies are:
  - Respiratory rate
  - Work of breathing
  - Temperature heart rate
  - Colour (including jaundice)
  - Behaviour (including feeding behaviour)
  - Parents can express any change or concerns (+1).

- These observations will generate a subtotal, which may suffice for babies not identified with a risk factor. All of these 6+1 vital signs must be recorded each time to generate a newborn early warning score.

- Plot temperature, heart rate and respiratory rate using a X record actual number in colour zone.
- For colour, tone, work of breathing tick the box which best describes the baby's condition.
- If oxygen saturations or blood glucose monitoring is required as per the risk assessment, write the actual result/s within the appropriate range box.
- Use the total NEWS score when activating the escalation pathway.
- Record all communication/escalation of care in the newborn clinical records.

REMEMBER if condition deteriorates rapidly, call for help via local emergency procedures		Date:						SCORE KEY					
		Time:											
Respiratory rate (min)		80s						2					
		70s											
		61-69						1					
		50-60						0					
		40s											
		30s						1					
		20s											
Work of breathing (WOB)	Increased WOB/recession							2					
	Noisy breathing/grunting												
	Nasal flare							1					
	Normal breathing in air							0					
Temperature °C *If temperature 36.4° and below or 37.6° and above with no other abnormal findings adjust environmental factors and repeat in 1 hour. If still abnormal escalate care.*		≥ 38.1						2					
		37.6-38						1					
		37-37.5						0					
		36.5-36.9											
		36-36.4						1					
		≤ 35.9						2					
Heart Rate (bpm)		180s						2					
		170s						1					
		160s											
		150s						0					
		140s											
		130s											
		120s											
		110s											
		100s											
		90s						1					
		80s											
		70s						2					
		60s						3					
Colour	Jaundice (under 24 hours)							3					
	Jaundice above phototherapy line							2					
	Mild jaundice below phototherapy line							0					
	Pink/well perfused							0					
	Mottled/dusky/pale/blue *– perform O_2 saturation*							2					
Behaviour /Feeding	Low tone/floppy/lethargic							2					
	Jittery/irritable							1					
	Normal behaviour							0					
	Feeding concerns *(refer to feeding chart)*							1a					
Parent expresses change/concern								2					

Additional observation for at risk babies include:

- Oxygen saturation in air
- Blood glucose monitoring (mmol/L)
- Repeat lactate (mmol/L)
- Newborn scalp check.

These are performed as determined by a risk assessment at birth or in response to deviation from normal in other vital signs. If another risk category is identified which is not currently recognised on the NOC/NEWS chart, this can be added. Examples of other risk factors include; limited antenatal care, infectious disease, babies of mothers on beta blockers.

	ALL BABIES NEWS SUBTOTAL												
FOR AT RISK BABIES AS INDICATED	**O_2 saturation in air**	≥ 95%						0					
		90-94%						1					
		≤ 89%						2					
	Blood glucose mmol/L *Record actual result in appropriate range box* Follow hypoglycaemia guideline	≥ 7.0						2					
		2.6-6.9						0					
		2.0-2.5						2					
		≤ 1.9						3					
	Blood glucose taken pre or post feed?												
	Repeat lactate (mmol/L) *Record actual result in appropriate range box*	≥ 3.1						2					
		≤ 3.0						0					
	Complete if vacuum, forceps or unsuccessful instrumental birth. Inspect and palpate the scalp.								**Head circumference (HC) at birth:**				cm
	Newborn Scalp check	No new bruising/swelling						0					
		Increasing swelling						2					
		Fluctuant boggy mass						3					
		Repeat HC if required	cm	cm	cm	cm	cm	2	cm	cm	cm	cm	cm
	TOTAL NEWS												
	Staff initials												

5.3. Escalation pathway for NEWS at Auckland City Hospital

Newborn Early Warning Score (NEWS) – ESCALATION PATHWAY		
1 1a	• Repeat in 1 hour, if unchanged notify person in-charge, e.g. CCM/Shift Coordinator • Reassess feeding as per feeding chart and discuss with person in charge, e.g. CCM/ Shift Coordinator	**Neonatal Team Phone:29598**
2	Requires review by Neonatal Team member within 30 minutes	
3+	Requires <u>immediate</u> Neonatal Team review → **Consider Neonatal Code Blue, call 777**	

If the person in charge e.g. Charge Nurse Midwife (CCM) or Shift coordinator is providing care to the baby then they need to notify another senior midwife.

5.4. Using the Modification box on the NOC/NEWS chart

There may be situations where clinically stable neonates have vital signs in the abnormal zone. The NEWS score for a vital sign can be modified to avoid an unnecessary escalation. The user completing the NEWS score should review any modifications before calculating the total NEWS score.

Example:
A baby has jaundice that measures above the phototherapy line, which scores 2 on NEWS and would trigger within 30 minutes. However, the baby is already undergoing phototherapy and is going to have another Serum Bilirubin (SBR) in four hours.

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A modification is made with clear instructions to when it was commenced and when it should be discontinued, prompting a return to the regular escalation pathway for this vital sign at an appropriate time.

A Neonatal registrar, Neonatal Nurse Practitioner (NNP) or Senior Medical Officer (SMO), should only complete the modification box

MODIFICATIONS *(completed by Neonatal team only)*

Vital sign use abbreviation	Accepted values and modified NEWS	Date and time	Duration hours	Initial/surname /contact details
Reason:				
Reason:				
Reason:				

6. NOC/NEWS use in Post Anaesthetic Care Unit including escalation and transfer of babies

All babies will have the NOC/NEWS Risk Assessment completed by the midwife and/or Neonatal team member present at the birth before the baby is transferred from theatre to Post Anaesthetic Care Unit (PACU).

- The midwife will undertake and document the 0-2 hour's observations before handover of the baby to the PACU staff.
- The NEWS escalation pathway will be followed for all scores ≥ 1.
- Score 1 or 1a:
  - Acute Caesarean section or instrumental births contact the Clinical Charge Midwife (CCM) Labour and Birth Suite
  - Elective Caesarean contact the CCM of the allocated ward
- Score 2: Contact the neonatal team, the baby is for review within 30 minutes. Mother and baby remain in PACU and the dyad are not transferred until the Neonatal team has reviewed the baby and a plan documented. The baby will either be transferred to inpatient ward with the mother or be admitted to NICU. This is to ensure that unwell babies are not put at risk during the transfer and the mother and baby dyad remain together where possible.
- Score 3: requires immediate Neonatal team review, consider Neonatal Code Blue

7. Newborn assessment 0-2 hours

- It is the midwife responsible for the baby's care in the first two hours' responsibility to ensure the newborn assessment /examination is completed and appropriately documented on the Newborn record (CR3731) and in the Well Child Tamariki Ora My Health Book.
- The newborn assessment/examination assesses cardio respiratory stability and transition from intrauterine life. This includes:
  - Respiratory rate (counting for a full minute)
  - Breathing effort
  - Heart rate
  - Central colour and perfusion
  - Temperature
  - Inspection/review of major anomalies such as cleft palate, anal atresia, syndromes from another assessment component.
- After birth, the baby needs their risk category to be reviewed and documented. This will dictate when they require NEWS observations and if additional monitoring such as oxygen saturations and blood glucose monitoring are needed.
- The Ministry of Health consensus statement on Observation of the Mother Baby (2012) immediately after birth also includes;
  - Reviewing tone and activity
  - Observing ability to breastfeed/feed
  - Active and on-going assessment where the mother and baby should not be left alone (even for a short time) for a minimum of one hour.

8. Newborn assessment 2-24 hours

- A full newborn examination should take place in the first 48 hours, usually from 24 hours of age, see Appendix 2: Hints for newborn examination, provides examination prompts.
- This examination should occur in the presence of the mother so a history can be obtained and any concerns addressed.
- The full history includes: a review of the maternal clinical records to check blood and scan results and taking a history from the mother to check for any concerns in pregnancy, family history of newborn problems (heart, hips, kidney diseases.)
- The Red Eye Reflex is performed and the result is documented on the Coding Front Sheet (CR0100), in the newborn clinical records and the Well Child Tamariki Ora, My Health Book. Referrals made if required.
- The pulse oximetry screening completed after two hours of age as per the Pulse Oximetry screening in the newborn policy (see Associated documents). Result recorded on the Pulse Oximetry Screening form (CR9149) and the newborn clinical records. Referrals made if required
- Completion of Heathware with labour and birth information for woman and baby (including the newborn check) needs to occur; ideally this is completed at the time of examination by the person undertaking the examination, however if this does not occur the LMC or midwife responsible for the baby's care while in hospital must take responsibility to ensure that it is completed and correct.

- Well Child Tamariki Ora, My Health Book should be completed and signed by the person undertaking the newborn assessment.
- Another newborn check should also occur in the first week as described in the Well Child Tamariki Ora Assessment Schedule.

9. Early discharges or transfers (> 2 hours - ≤ 6 hours)

For this to occur the following needs to be clarified:

- The NEWS score has been completed by the midwife, which does not identify any concerns to be addressed before considering transfer/discharge (NEWS score 0)
- The baby is ≥ 37 weeks gestation
- The initial check has been completed and documented by the LMC or midwife
- The baby has had a normal temperature (36.5° – 37.5°) recorded between 1-4 hours of age
- The baby has fed well on one occasion, as this is a good sign of wellness
- The baby has been reviewed to ensure that the cardiorespiratory status is stable and the baby has transitioned normally
- Pulse oximetry monitoring has occurred and the result is ≥ 95%.

10. Discharges or transfers > 6 hours

The following babies are not suitable for early discharge or transfer, as they require observations at one, four and six hours with possible neonatal team review prior to considering discharge from Auckland DHB:

- Maternal Group B Streptococcus (GBS) or Premature rupture of membranes (PROM) and intrapartum antibiotics given < 4 hours before delivery
- Thick meconium or thin meconium with Apgar's at five minutes < 9.
- Babies for whom mother has received intrapartum opioid analgesia who required naloxon at birth.
- Weight > 95th% with no maternal diabetes require two consecutive normal before feed (AC) blood sugars before transfer.
- The baby of a diabetic mother as they require two consecutive normal AC blood sugars before transfer.
- Babies who have experienced an instrumental delivery.

11. Discharge or transfers after 48 hours of age

The following babies are also not suitable for early discharge or transfer due to clinical risk and the need for additional neonatal team reviews in the first 48 hours:

- < 37 weeks gestation
- Severe fetal distress
- Weight < 10th% or ≤ 2.5kg.

12. Discharge to a primary maternity unit

All babies discharged to a primary maternity unit will have the most recent full set of observations recorded on an additional NOC/NEWS chart, which will be sent with the parents. The additional NOC/NEWS chart will also have the 'risk assessment' copied on to it. This enables continuity of care for the baby especially those babies that have identified risk factors.

13. All discharges

- A copy of the Healthware 'Labour and Birth report (incl. immed. P/N admission) report' will also be given to the parents on discharge and this action is documented in the newborn clinical notes.
- If the baby has been admitted under the Newborn services, the parents may receive an additional discharge letter from the Neonatal team.

14. Supporting evidence

- Accident Compensation Commission. (2020) Newborn Observation Chart (NOC) incorporating the Newborn Early Warning score (NEWS). https://www.cdhb.health.nz/wp-content/uploads/135a9334-newborn-observation-chart-noc-incorporating-the-newborn-early-warning-score-news.pdf
- Ministry of Health. (2014). Well Child / Tamariki Ora My Health Book. Revised 2014. Wellington: Ministry of Health
- Ministry of Health. 2014. Well Child / Tamariki Ora Programme Practitioner Handbook: Supporting families and whānau to promote their child's health and development. Revised 2014. Wellington: Ministry of Health.
- Ministry of Health. (2012). Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines). Wellington: Ministry of Health.
- Ministry of Health (2012) Observations of mother and baby in the immediate postnatal period: consensus statements guiding practice.

Other

- Christchurch Women's Hospital (2020) Neonatal Unit Handbook

Forms

- CR3731: National Women's Newborn Record
- CR0100: Coding Front Sheet
- CR9149: Pulse Oximetry Screening Form

15. Legislation

- Maternity Services notice pursuant to Section 88 of the New Zealand Public Health and Disability Act 2000, Issue No.41, 12 April 2007.

16.Associated documents

Auckland DHB Policies and guidelines

- The Paediatrics & Child Health Division (Starship). (2019) The Royal Australasian College of Physicians guidance for the minimum standards required for the examination of well newborn infants. https://media.starship.org.nz/racp-examination-of-the-newborn/examinationofthenewborn.pdf
- The Paediatrics & Child Health Division (Starship). (2018) Pulse Oximetry screening in the newborn. https://www.starship.org.nz/guidelines/pulse-oximetry-screening-in-the-newborn/

17. Disclaimer

No guideline can cover all variations required for specific circumstances. It is the responsibility of the health care practitioners using this Auckland DHB guideline to adapt it for safe use within their own institution, recognise the need for specialist help, and call for it without delay, when an individual patient falls outside of the boundaries of this guideline.

18. Corrections and amendments

The next scheduled review of this document is as per the document classification table (page 1). However, if the reader notices any errors or believes that the document should be reviewed ***before*** the scheduled date, they should contact the owner or Document Control without delay.

19. Appendix 1: Defining responsibility for the newborn examination and assessment

Newborn	Person responsible for newborn examination/assessment	Transfer to LMC/Midwife care
Born with LMC in attendance and with no Neonatal team in attendance	LMC or DHB midwife by negotiation	N/A
Born with LMC and Neonatal Team in attendance	LMC in discussion with Neonatal Team present	If admitted under Neonatal/Paediatric Team responsibly remains with that team until documented in clinical notes for transfer back to LMC/midwifery care
Born with Auckland DHB as LMC with no Neonatal Team in attendance	Core hospital midwife	N/A
Born with Auckland DHB as LMC with Neonatal Team in attendance	Core Midwife following discussion with Neonatal Team members	If admitted under, remains under Neonatal/Paediatric team and remains their responsibly until communicated and documented in the clinical notes for transfer back to LMC/routine postnatal midwifery care

20. Appendix 2: Hints for newborn examination

Head
- Size and shape
- Cephalhaematoma or caput
- Fontanelle – size and feel
- Facial features – any dysmorphism
- Ears – not low set or malformed
- Nose – patent nostrils
- Eyes – red reflex, pupil shape normal

Abdomen
- Shape
- Distension
- Umbilical cord healthy
- No umbilical hernia
- Any masses
- Femoral pulses – can be hard to feel, be persistent, easier when baby is quiet
- Testes – descended, undescended, hydrocoele
- Presence of inguinal hernia – rare at newborn exam

Limbs
- All present and correct
- Correct number digits
- Polydactyly, syndactyly
- Palmar creases
- Talipes
- Hips – dislocatable or dislocated

Trunk
- Shape
- Spacing of nipples
- Respiratory distress
- Back

Back
- Spine
- Skin intact
- Any pits or tufts of skin over the spine

Other
- Tone
- Moro reflex
- Cry
- Irritable/Lethargic

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