

ANNUAL MEETING OF THE SWISS SOCIETY OF NEONATOLOGY / 19.05.2026

Pascale van Kleef (APN PPC), Erika Süess (Dr. med., Schwerpunkt PPC)

Comfort of the baby: pharmacological strategies... ... and non-pharmacological strategies

- Introduction
- Non-pharmacological strategies (in general)
- Relief hunger/thirst
- Pain and distress
- Dyspnoea
- Secretion
- Sedation
- Palliative Care in the delivery room
- General informations

Introduction

What is Pediatric Palliative Care (PPC)?

Definition

« Pediatric palliative care is the comprehensive and holistic care of premature and newborn infants, children and adolescents, as well as severely disabled children suffering from a life-limiting or life-threatening illness. »

(Ziegler & Laubereau, 2023)

Background

- A small part of our work involves end-of-life care
- The focus is
 - on care during life
 - the quality of life of the child and the whole family

Groups of life-limiting and life-threatening conditions (together for short lives)

Category 1	Life-threatening conditions for which curative treatment may be feasible but can fail, where access to palliative care services may be necessary when treatment fails, irrespective of the duration of that threat to life. On reaching long-term remission or following successful curative treatment there is no longer a need for palliative care services. <i>Examples: cancer, organ failures of heart, liver, kidney, transplant and children on long-term ventilation.</i>
Category 2	Conditions where premature death is inevitable, these may involve long periods of intensive disease-directed treatment aimed at prolonging life and allowing participation in normal activities. Children and young people in this category may be significantly disabled but have long periods of relatively good health. <i>Examples: cystic fibrosis, Duchenne muscular dystrophy and SMA Type 1.</i>
Category 3	Progressive conditions without curative treatment options, where treatment is exclusively palliative and may commonly extend over many years. <i>Examples: Batten disease, mucopolysaccharidoses and other severe metabolic conditions.</i>
Category 4	Irreversible but non-progressive conditions causing severe disability leading to susceptibility to health complications and likelihood of premature death. Palliative care may be required at any stage and there may be unpredictable and periodic episodes of care. <i>Examples: severe cerebral palsy, complex disabilities such as following brain or spinal cord injury.</i>
Category 5	Unborn children, newborns, infants Prematurti, malformations, birth complications

Infant mortality Switzerland (bfs)

	2024
Deaths of children in the first year of life	259
Deaths of children 0-14	359

Anzahl Todesfälle nach Todesursachen in der Schweiz, Kinder 0 bis 14 Jahre, nach Geschlecht
2024

T 14.03.04.01.09

Knaben	Altersgruppen								Total
	Tage				Jahre				
	0	1-6	7-27	28-364	0	1-4	5-9	10-14	
Alle Todesursachen	85	11	14	24	134	21	22	14	191

Mädchen	Altersgruppen								Total
	Tage				Jahre				
	0	1-6	7-27	28-364	0	1-4	5-9	10-14	
Alle Todesursachen	76	21	8	20	125	19	19	5	168

- Medically complex neonates with life-threatening conditions are a unique patient population
- There is little research on end-of-life symptom assessment and management
- Most commonly acknowledged manifestations at end-of-life: pain, dyspnea, agitation, secretions
- In palliative care any medication should be administered in the simplest, safest, most effective and least unpleasant way
- In the absence of data and established guidelines, there is variability in their clinical management but one of the most important topic is comfort care

Meaning of COMFORT

- The word **comfort** derives from the Latin roots **cum** (= with) and **fortis** (= strong)
→ the meaning suggests a relationship that provides strength
- The fulfillment of the patient's basic physiologic and psychosocial needs - such as
 - bonding
 - safety
 - maintaining body temperature
 - relieving hunger and thirst
 - alleviating distress and painis achieved through relationship-based strategies involving the infant, the family, and the medical team.

Non-pharmacological strategies

Why non-pharmacological interventions?

Why we use non-pharmacological interventions in End-of-Life Care (Neonates)

- First-line approach for gentle, comfort-focused care
- Minimizes drug exposure and potential side effects
- Supports bonding and parental involvement
- Improved comfort through touch, positioning, and environment
- Opioids considered if pain is not adequately relieved

An overview

- Many non-pharmacological interventions can reduce stress reactions in acute procedural pain
- The **combination of several non-pharmacological interventions** is superior to the isolated use of non-pharmacological interventions with regard to the pain modulating effect
- Non-pharmacological interventions are part of the daily care of newborns receiving palliative care
- Within the framework of non-pharmacological interventions, there is a valuable opportunity to actively **involve parents** in a central and essential aspect of their infant's care, namely pain and distress management

General concept: Optimal care

- Optimal care or optimal handling is guided exclusively by the infant's individual needs
- Focus on comfort, responsiveness and individualized support
- Promote closeness and basic comfort needs
- Minimize discomfort and avoid unnecessary interventions

General interventions (1)

Calm enviroment

Minimise noise, harsh lightning and unnecessary stimulation



Non-nutritive sucking



General interventions (2)

Gentle touch, sound and swaddeling

Use gentle touch, swaddling, facilitated tucking, cuddles, massage and soothing voices or music therapy as calming interventions

Skin-to-skin contact

Encourage skin-to-skin contact between baby and parent (reduces pain, improves breathing, fosters bonding, and supports psychological well-being)



Picture: Magnific

Bonding in the delivery room

- The infant is placed on the mother's chest as soon as possible after birth
- Skin-to-skin contact (cheek-to-cheek) is encouraged to allow the mother to see, hear, smell, and touch her infant
- Time and privacy are ensured to support bonding and a calm, dignified environment



Picture: iStock

Body temperature and warming

- Maintaining body temperature supports comfort and well-being
- Keep the baby warm and dry as part of comfort-focused care
- Encourage skin-to-skin holding by mother or father
- Provide additional heat when needed (heated towels, radiant heaters)
- Gentle bathing may be considered if the infant's condition allows it



Picture: pixbay

Positioning strategies

- Choose positions that **enhance comfort and alleviate symptoms** (respiratory distress or secretion-related discomfort)
- Use supportive positions such as **prone or side-lying with comfort holds**
- Ensure the child can **adjust their position independently** to maintain a sense of control and comfort
- Promote **muscle relaxation**, as this can help reduce pain
- **Relieve pressure on painful or vulnerable areas**
- Avoid **unnecessary repositioning**, while still ensuring adequate **pressure relief to prevent pressure ulcers**



Picture: Kantonsspital Graubünden

- At the very latest during the dying phase, any stressful invasive procedures, diagnostic tests and monitoring should be consistently avoided or be reconsidered
- A monitor often draws the attention of parents and healthcare professionals to the device and can thus interfere with direct attention to the child
- Reducing painful and stressful procedures and care interventions is currently the most effective strategy for alleviating pain and discomfort in a critically ill newborn

Hearing familiar voices or melodies

Parents' audition

Treatment by music therapists

Effects of music therapy:

- Reduction of stress responses
- Improved oxygen saturation
- Improved respiratory rate
- Reduction of maternal anxiety and stress
- Promotion of bonding and attachment

<https://www.musiktherapie.de/arbeitsfelder/neonatologie/>

Application:

- at a low volume, to avoid sensory overload
- should be limited in duration

- Preparing families for the dying process helps reduce parental anxiety
- Clear, honest, and empathetic communication supports the parental role
- Families need different levels of information about physiological changes at end of life
- Understanding expected changes (gasping, color changes) can reduce distress
- Parental perception of suffering strongly influences grief and may prolong or complicate bereavement
- Lack of preparation is associated with more severe grief outcomes

Relief of hunger/thirst

Nutrition & Hydration - Principles

- Goal of care: comfort, not nutrition or growth
- Feeding is a basic need, but focus shifts to comfort
- Continue feeding if tolerated and guided by infant cues
- Withhold feeding only if it causes pain or distress
- Parental experience matters: feeding (breast/bottle) can be meaningful
- Open communication with parents is essential for decision-making



Picture: iStock

- Adjust feeding as needed (reduce volume if vomiting occurs)
- Use assistive devices (nasogastric tube) when appropriate → balance comfort and safety
- Breastfeeding or suckling may provide comfort
- If death is imminent: consider stopping feeds/IV fluids if distressing
- Plan care for home/hospice and support parents accordingly

Mouth care

- Maintain oral comfort and hygiene
- Mouth care
 - with moist sterile water swabs or
 - Expressed breast milk/colostrum or
 - Formula or Tea
- Prevent lips from drying and cracking
 - Sanddorn skin balm
- Non-nutritive sucking can provide oral comfort and stimulation



Picture: <https://www.stillen-institut.com/de/fruehgeborene-und-stillen.html>

Assessment of pain and distress

- Considering the clinical circumstances surrounding death, neonates may not be able to mount the normal physiologic response to pain that is seen in older populations
- All symptoms of distress and/or pain should be assessed regularly - ideally by means of a suitable and validated assessment scale
- Note: no neonatal pain score has been explicitly validated for use in patients under palliative neonatal care
- Symptom assessment is based on clinical judgment and family input, supported by shared interpretation of assessment tools

While usual pain scores not specific to End-of-life care, it is pertinent that providers utilize a neonatal specific pain assessment tool

Pain scores for prolonged/chronic pain

- N-PAS scale (Neonatal Pain, Agitation and Sedation Scale)
- COMFORTneo scale
- EDIN-Skala (Echelle Douleur Inconfort Nouveau Né)

Pain Score for acute pain

- Neonatal Infant Pain Scale (NIPS)
- Premature Infant Pain Profile (PIPP)

Pain/distress: Non-pharmacological strategies



swaddeling



facilitated tucking



Kangaroo care or
skin-to-skin care



breastfeeding



non-nutritive
sucking



with or without
oral sucrose

Pain/distress: Pharmacological strategies

- No analgesics with proven efficacy and safety other than opioids are currently available for the systemic treatment of severe pain in neonates
- In newborn infants, there is a high intra- and inter-individual variability in the metabolism of most opioids
 - no general or weight-related standard and/or maximum dosages
 - titration
 - tolerance → adjustment

- Acute, painful procedures such as capillary blood collection are not treated sufficiently by opioids in preterm infants
 - Apply non-pharmacological measures in combination with oral sucrose as a supplement to treat procedural pain, even during on-going continuous opioid infusion!

- Advantage:
 - rapid onset of the analgesic effect
 - simple dosage titration at the beginning of long-term therapy
 - high and uniform bioavailability
- To be considered:
 - Prolonged pain should be treated by continuous intravenous opioid infusion to ensure stable plasma levels and avoid under- or overtreatment due to fluctuating plasma levels
 - Bolus injections only at the beginning of long-term therapy (initial loading) and for the treatment of breakthrough pain
 - Bolus injections as a short infusion over 5–10 min to prevent adverse effects (severe arterial hypotension (especially in premature infants), laryngospasm, severe thoracic rigidity)

Routes of opioid administration: subcutaneous

- As bolus for acute pain and as continuous infusion for prolonged/chronic pain
- A commercially available intravenous cannula (24 or better 26 G) or a special subcutaneous cannula can be used for infusion access
- The subcutaneous access should be exchanged every 48–72 h



Routes of opioid administration: oral

- As an alternative if no venous access is in place
- Morphine has a significant first-pass effect in the liver
→ oral-to-parental potency ratio of ~ 3:1

Routes of opioid administration: Fentanyl intranasal (off-label use)

- Fast onset of action and efficacy of intranasal administration due to high lipophilicity
- No first-pass effect
- Does not cause histamine release → decreased vasomotor center activity → less hypotension than morphine
- Non-soluble or poorly fat-soluble opioids such as morphine are not suitable for intranasal administration!
- Intranasal fentanyl appears to be particularly suitable for symptom control in newborns cared for under palliative care immediately after birth in the delivery room

Fentanyl intranasal

- Recommended single doses are 1–3 µg/kg → therapeutic effect within 5–10 min
- The standard fentanyl injection solution (0.1 mg/2 ml) can be used
- Application by means of a MAD (mucosal atomisation device) may not be practicable for preterms as the volumes applied are too small (a sensible minimum amount per spray is usually around 0.1mL per nostril) → direct application



Recommendation Fentanyl intranasal

- Recommendation:
 - withdrawing 2 mL (100 µg) of fentanyl solution
 - adding 8 mL of normal saline (= final concentration of 10 µg/ml)
 - administering 1–3 µg/kg = 0.1–0.3 ml/kg intranasally via a 1 ml tuberculin syringe
- For optimal absorption, the total targeted bolus can be divided into two doses, one dose given in each nostril

Routes of opioid administration: rectal

- Caution: high variability of rectal absorption
- May be useful in the home care of the dying infant when no other route is available

- Fentanyl or buprenorphine transdermal in chronic and stable pain conditions is increasingly used in ppc, no reports in newborns
- In the experience of Dr. med. Lars Garten, Charité, the use of an opioid patch is feasible in neonates in selected individual cases when considering the following aspects:
 - Opioid patches should only be used when symptoms of pain are stable
 - Possible pain peaks are not covered by the opioid patch → necessitating additional measures
 - Use of the smallest fentanyl patch size (12 µg/h):
 - 3 kg: 1/2 patch (fentanyl patches can be cut!) = 6 µg/h (or in this case 2 µg/kg/h)

Routes of opioid administration: transdermal

- Fentanyl blood levels rise slowly
- Adequate analgesia can be achieved after 12–24 h, a steady state is reached 24–72 h after application of the patch
- After removal of the patch, the effect fades slowly (~12–18 h after removal)
- The skin area employed should remain free of new patches for 7 days afterwards

- Clinically significant side effects of opioids in newborns under palliative care:
 - inhibition of intestinal motility via peripheral μ -receptors
 - urinary retention
- Minor roll in the palliative context:
 - respiratory depression, thoracic rigidity, laryngospasm, hypotension, bradycardia
- No sufficient study data are available for the neonatal age for prophylaxis and treatment of side effects under opioid therapy (adult patients naloxone and methylnaltrexone)

Non-opioid analgesics

- Currently, there is insufficient scientific evidence on analgesic efficacy or safety for the use of
 - acetaminophen
 - non-steroidal anti-inflammatory drugs (NSAID)
 - ketamine
 - transdermally administered local anaesthetics

- Ketamine is an N-methyl-D-aspartate (NMDA)-receptor antagonist used to decrease central sensitization to painful stimuli and perception of pain
- Ketamine has proven effective in neonates for peri-procedural sedation and analgesia with a short duration of action
- It should only be used in combination with a sedative medication due to hallucination risk. Adjunct dose to consider is 0.5–2 mg/kg/dose intravenous although use at end of life is not well-studied
- PPC: Esketamine can be helpful in individual patients with pain that has responded poorly to the usual measures of opioid dose escalation and other adjuvants

- Can also be administered orally, subcutaneously, rectally and intranasally in the palliative care setting
- Oral:
 - Bioavailability very low at 15–20% (first-pass effect)
 - Therapeutic plasma levels being reached after 20–30 min
- Subcutaneous bolus:
 - injections as short infusions (danger of pain and tissue damage)
 - Subcutaneous longterm therapy using an infusion pump
- Intranasal application only for bolus administration (start of anaesthesia ~ 5–10 min)

Dyspnoea

Non pharmacological strategies

- Upper Body Elevation
- Positioning side-lying or prone
- Repositioning
- Skin to skin care
- Use a fan with air movement
- Use of oxygen is not beneficial for respiratory distress for most patients at End-of-life care



Pictures: Kantonsspital Graubünden

Pharmacological strategies

- Opioids: $\frac{1}{2}$ of the target pain dose

Secretion

- Inability to swallow saliva may lead to pooling in the posterior pharynx and noisy breathing
- Normally for older humans we think that the secretion is not distressing
- Anticipatory guidance with the family should be based around treating only if symptoms becomes distressing to the neonate

Non pharmacological strategies

- Decreasing or discontinuing hydrating fluids to decrease secretion production
- Elevating the head of the bed
- Positioning side-lying or prone to allow gravity to drain secretions
- Repositioning
- Gentle suction with a soft catheter as needed
- Physiotherapy for intervention for non-invasive secretion clearance techniques



Pharmacological strategies: Atropine

- Atropine 1% ophthalmic solution may be given sublingually 1–2 drops every 1–6 h as needed
- Atropine inhibits local salivation via anticholinergic activity
- Atropine sublingual drops have shown reasonable effect in reduction of terminal respiratory secretions while not showing cardiac or central nervous system symptoms
- Most evidence is adult based at this time

Pharmacological strategies: Scopolamine

- Scopolamine transdermal patches show no increased effectiveness in secretion management and **are usually avoided** in neonates due to risk of central side effects from crossing the blood brain barrier

Sedation: Pharmacological strategies

- The targeted level of sedation should be the lowest that relieves distress
- Conscious sedation, where the infant is calm and able to interact with his parents, is often considered the ideal level of sedation
- In case of intense distress, severely refractory symptoms, or anticipated death within hours, continuous deep sedation may be indicated
- No controlled trials evaluation: the drug choice is largely empirical

- Medications widely used to deliver sedation in palliative neonatal care are:
 - Opioids
 - Benzodiazepines
 - Barbiturates
 - Alpha2-adrenoreceptor agonists

While opioids are often used expressly for their sedating properties in acute neonatal intensive care situations (e.g. in postoperative care), they are not very effective in producing reliable, prolonged sedation in severely distressed infants under palliative care → combining opioids with specific sedatives such as benzodiazepines!

- Rapid onset and short duration of action
- Parental sedation with midazolam is recommended
 - to start with a loading dose of 0.05–0.1 mg/kg
 - followed by continuous infusion of 0.1–0.2 mg/kg/h
- Oral, rectal, intranasal, or subcutaneous application of midazolam may be indicated (out of hospital)

- This barbiturate has sedative and anxiolytic effects without analgesia via its inhibition of the central nervous system through augmenting the GABA system
- In the context of sedation in palliative neonatal care: preferably orally (5 mg/kg/d), as absorption is slow, severe side effects are not to be expected

Alpha2-adrenoreceptor agonists (Clonidine, Dexmedetomidine)

- Very little data is available on the use of alpha2-adrenoreceptor agonists in neonates
- The studies available so far prove a sedative effect also in newborns
- Clonidine and dexmedetomidine are thought to be safer than opioids with regard to their acute side effect profile
- In distressed, agitated newborns treatment with clonidine or dexmedetomidine can therefore be considered in individual cases
- Side effects of alpha2-adrenoreceptor agonists:
 - bradycardia, hypotension and oliguria/anuria caused by a decrease in renal perfusion

- Agitation and pain can significantly increase the work of breathing after mechanical ventilation and compassionate extubation
 - consistent analgesia and sedation therefore have the highest priority before withdrawal of mechanical ventilation
- Opioids and benzodiazepines appear paradoxically to not hasten inevitable death after ventilator withdrawal

Palliative Care in the Delivery Room: Challenges and Recommendations

(Lars Garten, Kerstin v.d. Hude)

PRIMARY PALLIATIVE CARE IN THE DELIVERY ROOM



Symptoms of Distress

extremely rare **Dyspnea**
almost always primary or secondary central apnea, especially in
extremely small premature infants

extremely rare **Disease-Associated Pain or Distress**
distress possible in cases of pulmonary or cardiac insufficiency

absent **Distress of Iatrogenic Origin**
by prearranged abstention from invasive diagnostics and therapy

Pain Modulation / Analgesia

1. non-pharmacological measures for pain modulation
primary physical contact, ideally with parents



2. physiological analgesia
• high vasopressin levels immediately postnatal
• hypercapnia
• hypoxia



3. pharmacological analgesia - rarely necessary
agent of first choice: fentanyl intranasal



END OF LIFE CARE IN THE NEONATAL INTENSIVE CARE UNIT



Symptoms of Distress

almost always **Disease-Associated Pain or Distress.**
Pain: may be due to disease pathology such as necrotizing enterocolitis,
capillary leak syndrome, increased intracranial pressure, etc.
Distress: may be due to dyspnea in respiratory or cardiac insufficiency,
lack of physical contact, etc.



commonly **Procedural Pain or Distress**
may be a component of various medical procedures such as invasive
diagnostics, mechanical ventilation, surgery, etc.

Pain Modulation / Analgesia

1. pharmacological analgesia - almost always necessary.
agent of first choice: opioids, supplemented if needed by benzodiazepines



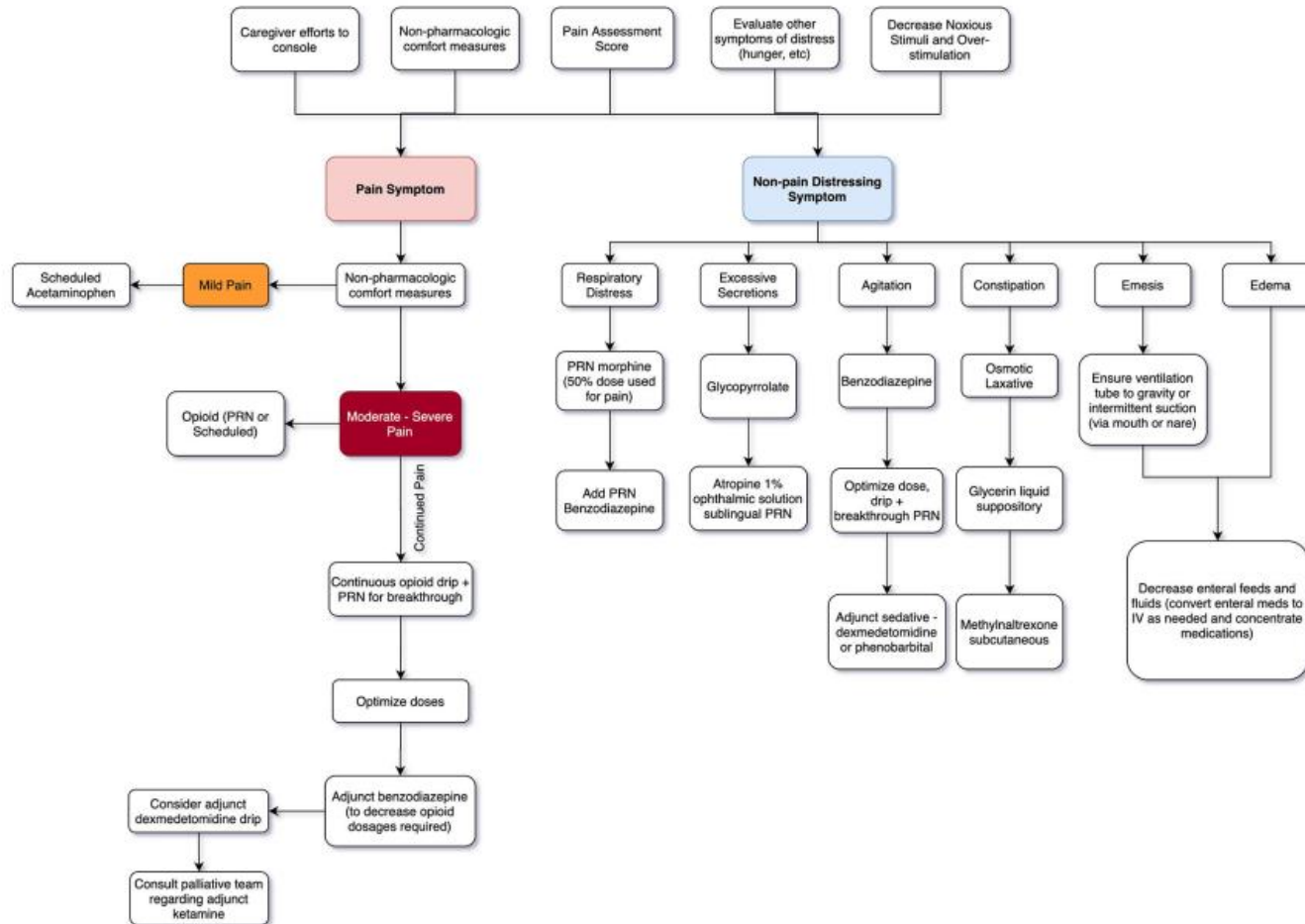
2. non-pharmacological measures for pain modulation
primarily physical contact, ideally with parents



3. physiological analgesia
at times, hypercapnia and/or hypoxia.



General information



19.05.2026 **FIGURE 1** | Neonatal EOL Symptom Algorithm.

End-of-Life Care for
Neonates, S. Haug et
al.)

Dosing regime and route of administration of drugs used in neonatal palliative care (Pain and distress management in palliative neonatal care, L. Garten, C. Bühler)

Garten, C. Bühler)

	IV bolus	IV continuous	subcutaneous	oral	per rectum	intranasal	buccal
Morphine	0.05–0.1 mg/kg every 3–6 h	loading dose: 0.05–0.1 mg/kg starting dose: 0.01–0.02 mg/kg/h	For bolus und continuous infusion: see IV dosing regime	0.1–0.2 mg/kg every 3–6 h	0.1–0.2 mg/kg every 3–6 h	–	0.1–0.2 mg/kg every 3–6 h
Fentanyl	2–3 µg/kg every 1–4 h	loading dose: 2–3 µg/kg starting dose: 1–2 µg/kg/h	For bolus und continuous infusion: see IV dosing regime	–	–	1–2 µg/kg every 1–4 h	1–2 µg/kg every 1–4 h
N-Methylnaltrexone	0.15 mg/kg every (12-) 24 h	–	0.15 mg/kg every (12-) 24 h	–	–	–	–
Acetaminophen	7.5 mg/kg every 6 h	–	–	–	–	–	–
Esketamine	0.5–1 mg/kg* (e.g. for breakthrough pain)	loading dose: 1 ml/kg starting dose: 0.2–0.5 mg/kg/h	For bolus und continuous infusion: see IV dosing regime	2–4 mg/kg* (e.g. for breakthrough pain)	2–4 mg/kg* (e.g. for breakthrough pain)	2–4 mg/kg* (e.g. for breakthrough pain)	2–4 mg/kg* (e.g. for breakthrough pain)
Midazolam	0.05–0.1 mg/kg every 2–4 h	loading dose: 0.05–0.1 mg/kg starting dose: 0.1–0.2 mg/kg	For bolus und continuous infusion: see IV dosing regime	0.1–0.3 mg/kg every 2–4 h	0.1–0.3 mg/kg every 2–4 h	0.1–0.3 mg/kg every 2–4 h	0.1–0.3 mg/kg every 2–4 h
Phenobarbital	5 mg/kg every 24 h	–	–	5 mg/kg every 24 h	5 mg/kg every 24 h	–	–
Clonidine	–	0.5–2.5 µg/kg/h	–	2–4 µg/kg every 4–6 h	–	–	–
Dexmedetomidine	–	loading dose: 0.5 µg/kg starting dose: 0.3–1.0 µg/kg/h	–	–	–	–	–

The Association for Paediatric Palliative Medicine



Formulary
6th edition
2024

Free download:
www.appm.org.uk

Danka!

- AG Pallitiv- und Trauerbegleitung in der Neonatologie (PaluTin). (2018). *Leitsätze für Palliativversorgung und Trauerbegleitung in der Peri- und Neonatologie*. Bundesverband „Das frühgeborene Kind“ e.V.
- Ceelie, I., de Wildt, S. N., van Dijk, M., van den Berg, M. M. J., van den Bosch, G. E., Duivenvoorden, H. J., de Leeuw, T. G., Mathôt, R., Knibbe, C. A. J., & Tibboel, D. (2013). Effect of Intravenous Paracetamol on Postoperative Morphine Requirements in Neonates and Infants Undergoing Major Noncardiac Surgery: A Randomized Controlled Trial. *JAMA*, 309(2), 149–154. <https://doi.org/10.1001/jama.2012.148050>
- Cortezzo, D. E., & Meyer, M. (2020). Neonatal End-of-Life Symptom Management. *Frontiers in Pediatrics*, 8. <https://doi.org/10.3389/fped.2020.574121>
- Garten, L., & Bühner, C. (2019). Pain and distress management in palliative neonatal care. *Seminars in Fetal and Neonatal Medicine*, 24(4). <https://doi.org/10.1016/j.siny.2019.04.008>
- Garten, L., & Von Der Hude, K. (Hrsg.). (2019). *Palliativversorgung und Trauerbegleitung in der Neonatologie*. Springer. <https://doi.org/10.1007/978-3-662-58945-8>
- Härmä, A., Aikio, O., Hallman, M., & Saarela, T. (2016). Intravenous Paracetamol Decreases Requirements of Morphine in Very Preterm Infants. *The Journal of Pediatrics*, 168, 36–40. <https://doi.org/10.1016/j.jpeds.2015.08.003>
- Haug, S., Dye, A., & Durrani, S. (2020). End-of-Life Care for Neonates: Assessing and Addressing Pain and Distressing Symptoms. *Frontiers in Pediatrics*, 8. <https://doi.org/10.3389/fped.2020.574180>
- Kirov, U. (2013). Optimal Handling auf der Neonatologie. *Lebensqualität die Zeitschrift für Kinaesthetics*, (02), 14–19.
- McCarthy, F. T., Kenis, A., & Parravicini, E. (2023). Perinatal palliative care: Focus on comfort. *Frontiers in Pediatrics*, 11. <https://doi.org/10.3389/fped.2023.1258285>
- Queensland Health. (2026). *Guideline: Palliative and end-of-life care for babies*. https://www.health.qld.gov.au/__data/assets/pdf_file/0027/1487160/g-neonatal-palliative.pdf
- Shahintab, S., Nourian, M., Rassouli, M., & Pourhoseingholi, M. A. (2022). Palliative care nurse: A quantitative study of caring for neonates at end-of-life stage. *Annals of Medicine and Surgery*, 82, 104729. <https://doi.org/10.1016/j.amsu.2022.104729>
- Together for Short Lives (TfSL). (2018). *A Guide to Children's Palliative Care. Supporting babies, children and young people with life-limiting an life-threatening conditions and their families*. <https://www.togetherforshortlives.org.uk/app/uploads/2018/03/TfSL-A-Guide-to-Children's-Palliative-Care-Fourth-Edition-5.pdf>
- Uthaya, S., Mancini, A., Beardsley, C., Wood, D., Ranmal, R., & Modi, N. (2014). Managing palliation in the neonatal unit. *Archives of Disease in Childhood. Fetal and Neonatal Edition*, 99(5), F349–F352. <https://doi.org/10.1136/archdischild-2013-305845>
- Ziegler, S., & Laubereau, B. (2023). *Vertiefte Abklärungen zum Pädiatrischen Palliative-Care-Bedarf in der Schweiz*. INTERFACE Politikstudien im Auftrag Bundesamt für Gesundheit BAG.

Slide Pain/distress Non-pharmacological strategies:

<https://bloominglittles.com/>

<https://babynews.de/baby/gesundheit-pflege/baby-pucken-anleitung/>

<https://kinderklinik.insel.ch/de/unser-angebot/pflege/nihtmedikamentoesemassnahmen-zur-angst-und-schmerzminderung/massnahmen-fuer-neugeborene>

<https://www.nmselpa.lv/en/product/algopedol-24-sucrose-solution/>

Shutterstock

Herzlichen Dank

Dr. med. E. Süess

P. van Kleef

Kantonsspital Graubünden

Loëstrasse 170

7000 Chur

www.ksgr.ch



www.ksgr.ch