

MANAGEMENT OF PAIN AND ANXIETY IN PEDIATRIC BURN PATIENTS

Terri Ware, BSN, BSRS, RN; Selina Vite Martin, BSN, RN; Emily Davies, DO; Anna Ledesma, AND, RN



BACKGROUND

- Burn injuries are among the five most common causes of non-fatal pediatric injuries worldwide (Shiferaw et al., 2022)
- The care of pediatric patients with burn injuries is complicated by frequent procedures, frequent dressing changes, and long hospital stays (Preston & Ambardekar, 2020)
- The pain and anxiety associated with pediatric injuries can lead to acute stress, PTSD, psychological sequelae, or chronic pain (Fagan & Palmieri, 2017) (Shiferaw et al., 2022).
- In a survey of accredited ABA Burn centers, opioids were used by 100% of providers surveyed byt adjunctive methods of pain control were used less than half the time (Hansen et al., 2019).
- Pain and anxiety can be managed via multiple modalities such sedation, distraction, play therapy, virtual reality, and integration of child life specialists (Shiferaw et al., 2022) (Farzan et al, 2023).
- In one systematic review, incorporating non-pharmacologic therapies in management of acute pain in pediatric burn patients reduced mid-procedure pain by 19.7% and post-procedure pain by 20.1% (Gillum et al, 2022)
- Utilizing both nonpharmacological and pharmacological strategies can reduce the total amounts of drugs administered, thereby reducing risk, improve patient participation and satisfaction, and optimize recovery time (Bayat et al., 2010).
- **To optimize treatment of pain and anxiety and minimize long-term sequelae, providers should utilize both pharmacological and non-pharmacological methods during burn dressing changes in pediatric patients.**

PURPOSE

Our goal is to describe the pharmacologic and non-pharmacologic methods used in managing pain and anxiety during burn dressing changes in children at UMC.

METHODS

Our experience and literature review recommend non-pharmacological techniques to be used as a supplementation to pharmacological techniques to effectively treat children's pain and anxiety during burn dressing changes.

Non-pharmacological Supplementation For Burn Pain Management

- Non-invasive Cognitive Distraction – reduces pain through manipulation of the perception of pain. Such as video watching like a tablet, VR goggles, live or recorded music.
- Communication- reorientation, reassurance, and allow participation with their care allowing them to feel they have control of what is happening
- Support Person – helps them feel as if they are not alone thus decreasing their anxiety. This includes presence of relatives or child life.
- Sleep Promotion – eye-masks, noise reduction, ear plugs and dim lights thus promoting time to rest and sleep to maintain a circadian orientation and improve comfort

Pharmacologic Pain Management: Analgesia-Sedation - lowest dose of drug with a highest therapeutic index for procedures should be administered.

Analgesic

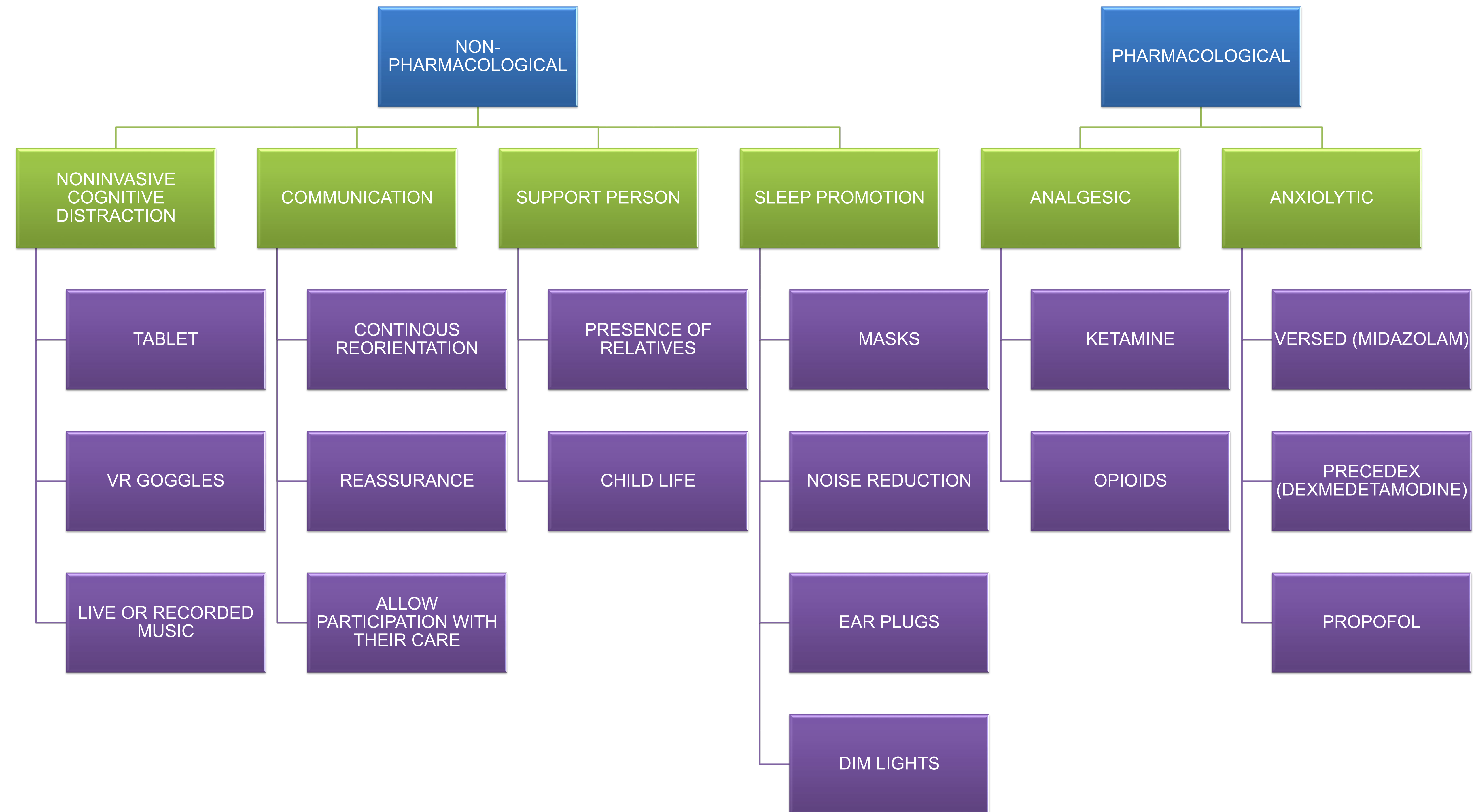
- Ketamine – Produces analgesia, sedation, and amnesia. Ketamine is a great analgesic with a low threshold for respiratory depression. Patients also report less pain status post recovery.

Anxiolytic/Sedative

- Versed (Midazolam) – this is first line of treatment for reducing fear and anxiety for burn patients. It increases the effects of Gaba in the brain to produce a calming effect.
- Precedex (Dexmedetomidine) – it is an anxiolytic and analgesic that induces "arousable sedation." This medication also reduces memory of unpleasant procedures for pediatric patients.
- Propofol – has a rapid onset within 30-40 seconds of induction. It invokes unconsciousness by disrupting the brains balance between stability and excitability. It also produces an antiemetic effect in the brain which helps to reduce nausea and vomiting.

- Pain is assessed using FLACC, Revised FLACC, Wong-Baker Faces Scale, or Numerical Rating Scale in pediatric patients.
- Pain is assessed pre-, intra-, and post-procedure to ensure adequate pain control.

METHODS: AVAILABLE MODALITIES TO MANAGE PAIN AND ANXIETY



RESULTS & CONCLUSION

- Pain and anxiety can be well managed in pediatric burn patients when sedation teams utilize multimodal pharmacologic sedation and non-pharmacologic therapies during dressing changes.
- Improving management of pain can reduce overall stress and minimize anxiety regarding future dressing changes, which has the potential to significantly reduce the overall pharmacologic burden of a prolonged hospital stay for a child with a burn injury.

REFERENCES

- Bayat, A., Ramaiah, R., & Bhananker, S. M. (2010). Analgesia and sedation for children undergoing burn wound care. *Expert Review of Neurotherapeutics*, 10(11), 1747–1759. <https://doi.org/10.1586/ern.10.158>
- Fagin, A., & Palmieri, T. L. (2017). Considerations for pediatric burn sedation and analgesia. *Burns & trauma*, 5, 28. <https://doi.org/10.1186/s41038-017-0094-8>
- Farzan, R., Parvizi, A., Haddadi, S., Sadeh Tabarian, M., Jamshidbeigi, A., Samidoust, P., Ghorbani Vajargah, P., Mollaei, A., Takasi, P., Karkhah, S., Firooz, M., & Hosseini, S. J. (2023). Effects of non-pharmacological interventions on pain intensity of children with burns: A systematic review and meta-analysis. *International wound journal*, 20(7), 2898–2913. <https://doi.org/10.1111/iwj.14134>
- Gillum, M., Huang, S., Kuromaru, Y., Dang, J., Yenikomshian, H. A., & Gillenwater, T. J. (2022). Nonpharmacologic Management of Procedural Pain in Pediatric Burn Patients: A Systematic Review of Randomized Controlled Trials. *Journal of burn care & research* : official publication of the American Burn Association, 43(2), 368–373. <https://doi.org/10.1093/jbcr/irab167>
- Hansen, J. K., Voss, J., Ganatra, H., Langner, T., Chalise, P., Stokes, S., Bhavsar, D., & Kovac, A. L. (2019). Sedation and Analgesia During Pediatric Burn Dressing Change: A Survey of American Burn Association Centers. *Journal of burn care & research* : official publication of the American Burn Association, 40(3), 287–293. <https://doi.org/10.1093/jbcr/irz023>
- Preston, D., & Ambardekar, A. (2020). The Pediatric Burn: Current Trends and Future Directions. *Anesthesiology clinics*, 38(3), 517–530. <https://doi.org/10.1016/j.anclin.2020.05.003>
- Shiferaw, A., Mola, S., Amanu, G., & Sintayehu, A. (2022). Evidence-based practical guideline for procedural pain management and sedation for burn pediatrics patients undergoing wound care procedures. *Annals of Medicine & Surgery* 83. DOI: 10.1016/j.amsu.2022.104756
- Stern, J., & Pozun, A. (2023, May 22) Pediatric procedural sedation. *StatPearls* [Internet]. <https://www.ncbi.nlm.nih.gov/books/NBK572100/>

