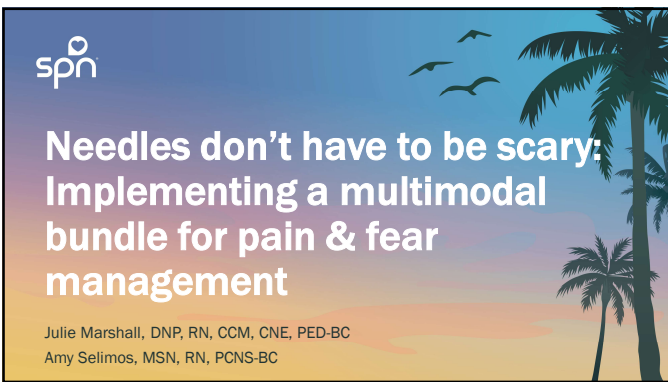




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Disclosures

- Speaker affiliations: Children's Hospital Colorado
- I have no relevant financial relationships or conflicts of interest to disclose.
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3

Learner Objectives



- Identify evidence-based strategies for pediatric needle pain mitigation bundle and describe how these interventions reduce pain, anxiety, and long-term distress in children undergoing needle-related procedures.

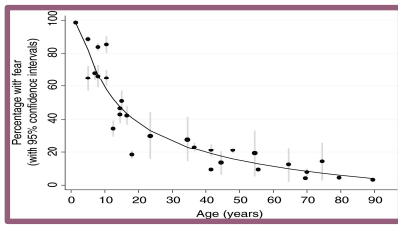
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Needle Pain

5

The fear of needles: A systematic review and meta-analysis



2018

6

Impact of Harm



- Increased pain sensitivity
- Changes in brain development
- Decreased cooperation with clinicians
- Anxiety/needle phobia
- Vaccine hesitancy
- Long-term healthcare avoidance



7

Children's Hospital Colorado Opportunity



- Over 1 million pokes/year
 - 50,000 vaccines
 - 40,000 PIV starts
 - >1million phlebotomy
 - Countless other procedures



8

Do Better



- No standardized needle pain mitigation
- No guideline
- Disparities across the organization
 - Moral distress
 - Pt/family experience



9

Small Team, Big Dreams

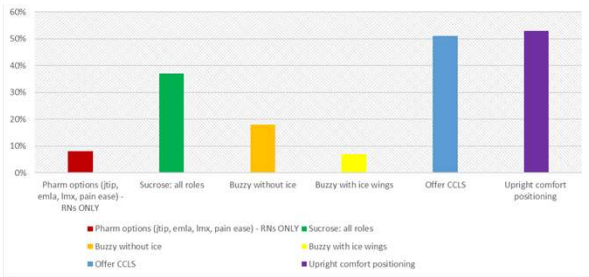


- Team
 - CPS/CNS
 - CLS
 - PharmD
 - Bedside RN
 - Leader Support



10

Baseline Survey



11


Baseline Survey




YIKES

12

Menti-Time!




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13

Addressing Root Causes




<p>Availability/Education/Culture</p> <ul style="list-style-type: none"> Supply chain Medication availability Education <ul style="list-style-type: none"> • Devices • Meds • non-pharms/positioning/onevoice Debunking myths 	<p>Root Cause: EMR, Guideline/policy</p> <ul style="list-style-type: none"> Medication orders Documentation of interventions Executive support/sponsorship Project management team
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14


Together with PM & Models



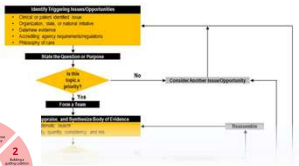
- Kotter's change model
- IOWA Model for EBP
- IHI Framework for Bundles




**Institute for
Healthcare
Improvement**




The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care




15

Literature & Practice Review: 

- Needle pain mitigation in pediatrics
- Many different tools/meds/non-pharm options
- Patient/family dependent
- Procedural dependent
- Many have system-wide "bundles"
 - Benchmarking



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Meet PANDA UP
A Bundled Approach to Needle Pain

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PANDA UP [©] 

P = Prepare Consult Child Life, prep supplies and treatment room, educate family

A = Anxiety Reduction Implement developmental considerations from Child Life

N = Numb Lidocaine creams, buffered lidocaine, coolant spray; use sucrose for infants

D = Distract Apply methods such as vibration with ice and alternative focus

A = Attitude Maintain a calm, positive attitude


U = Use One Voice Understand everyone's role

P = Position Use comfort positioning




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Pilot Interventions:




- 1 Bundle creation (PANDA UP)
- 2 Education & training (open houses)
- 3 Supply orders & storage
- 4 EMR aligned
- 5 Standing orders



20

System-wide PANDA

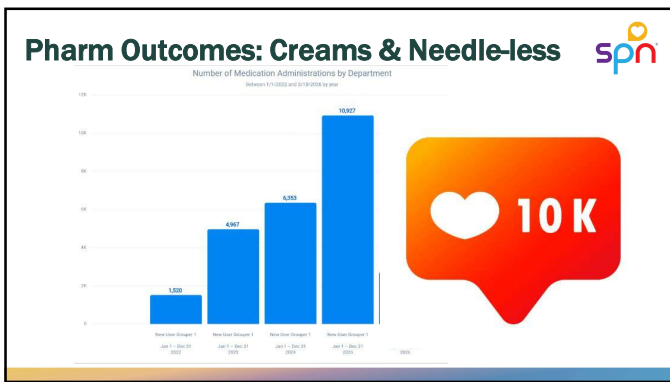


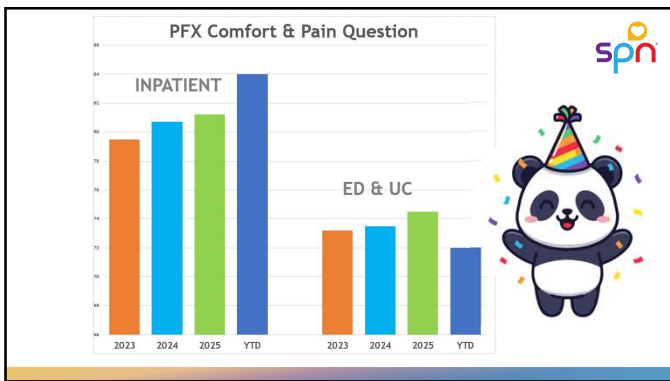
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PANDA UP

Now what?

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Now What?




Needle Pain Mitigation Council

- Reports to Pain Steering
- Follows Framework of ChildKind
- Reps from all over (IP/OP)

Education

- All clinicians upon hire
- Guideline
- SharePoint site
- Standing orders

Pain Steering Support

- Anesthesia support
- Executive support
- Reporting deviations
- Analytics

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Needle Pain Mitigation Council



Mission:
To ensure *“Every child, every poke, every time”* receives evidence-based needle pain mitigation strategies.




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Goals 


<p>Process</p> <p>Increase adherence to needle pain guidelines through documented interventions by 10% more in 2026.</p> <p>Increase use of pharmaceuticals per needle procedure by 10% by end of 2026.</p>	<p>Outcome</p> <p>Maintain/increase patient/family experience scores on comfort and/or pain related questions.</p> <p>Continue to identify and reduce disparities in needle pain outcomes among different patient population.</p>
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Disparity 

Analytics support


- Identified areas/deps with disparity
- Barriers were identified and removed
- Report of disparity areas = RESOLVED (People don't know what they don't know)



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PANDA UP 

[Video](#)




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References



Birnie, K. A., Noel, M., Chambers, C. T., Uman, L. S., & Parker, J. A. (2018). Psychological interventions for needle-related procedural pain and distress in children and adolescents. *Cochrane Database of Systematic Reviews*, 10. <https://doi.org/10.1002/14691998.cd005179.pub4>

Bradford, J. Y., Stapleton, S. J., Horgan, A., Barnason, S., Foley, A., Johnson, M., Kaleser, J., Killian, M., MacPherson-Dias, R., Proehl, J. A., Reeve, N. E., Slivinski, A., Vanhoy, M. A., Zaleski, M. E., Gillespie, G., Proehl, J. A., Bishop-Royse, J., Wolf, L., Delao, A., & Gates, L. (2019). Clinical practice guideline: Needle-related or minor procedural pain in pediatric patients. *Journal of Emergency Nursing*, 45(4), 437.e1–437.e32. <https://doi.org/10.1016/j.jen.2019.06.015>

Chambers, C. T., Taddio, A., Uman, L. S., & McMurtry, C. Meghan. (2009). Psychological interventions for reducing pain and distress during routine childhood immunizations: A systematic review. *Clinical Therapeutics*, 31, 577–5103. <https://doi.org/10.1016/j.clinthera.2009.07.023>

Cooke, M., Lillman, A. J., Ray-Baruel, G., Wallis, M., Corley, A., & Rickard, C. M. (2016). Not "just" an intravenous line: Consumer perspectives on peripheral intravenous cannulation (PVC). An international cross-sectional survey of 25 countries. *PLOS ONE*, 13(2), e0193436. <https://doi.org/10.1371/journal.pone.0193436>

Dinc, C., Gereckler, G. O., & Kalkanli, O. (2025). The effect of the Shotblocker® and breastfeeding on pain and comfort level during heel lance procedures in newborns: Randomized controlled trial. *Intensive and Critical Care Nursing*, 91. <https://doi.org/10.1016/j.iccn.2025.104164>

Farrel, M. A., Parrish, K., Ziemer, K., Scarlett W.G., Parker, S., Martin, K.J., & Ahmed M.I. (2013). The effects of child life intervention on reducing pediatric patients' anxiety and increasing cooperation in perioperative settings. *Child Life Focus*, 31 (2), 1-8.

Friedrichsdorf, S. J., Eull, D., Weidner, C., & Postier, A. (2018). A hospital-wide initiative to eliminate or reduce needle pain in children using lean methodology. *PAIN Reports*, 3, e671. <https://doi.org/10.1097/pr9.0000000000000571>

Goyal, M. K., Kuppermann, N., Cleary, S. D., Teach, S. J., & Chamberlain, J. M. (2015). Racial disparities in pain management of children with appendicitis in emergency departments. *JAMA Pediatrics*, 169(11). doi:10.1001/jamapediatrics.2015.1915

Guedj, R., Marini, M., Kosowsky, J., Berde, C., Mateo, C., & Fleegler, E. W. (2021). Explicit and implicit bias based on race, ethnicity, and weight among pediatric emergency physicians. *Academic Emergency Medicine*, 28(9), p. 1073-1076. <https://doi.org/10.1111/acem.14501>

32

References



Harrington, J. W., Logan, S., Harwell, C., Gardner, J., Swingle, J., McGuire, E., & Santos, R. (2012). Effective Analgesia Using Physical Interventions for Infant Immunizations. *PEDIATRICS*, 129(5), 815–822. <https://doi.org/10.1542/peds.2011-1607>

Loeffen, E. A., Mulder, R. L., Font-Gonzalez, A., Leroy, P. L. M., Dick, B. D., Taddio, A., Ljungman, G., Jibb, L. A., Tutelman, P. R., Liossi, C., Twycross, A., Positano, K., Knops, R. R., Wijnen, M., van de Wetering, M. D., Kremer, L. C. M., Dupuis, L. L., Campbell, F., & Tissing, W. J. E. (2020). Reducing pain and distress related to needle procedures in children with cancer: A clinical practice guideline. *European Journal of Cancer*, 131, 53-67. <https://doi.org/10.1016/j.ejca.2020.02.039>

Luigi, A., Burrai, F., Sellami, S., Brioni, E., & McCheluzzi, V. (2025, July 14). Effectiveness of Buzzy on pain and anxiety in children and adolescents undergoing needle procedures: A meta-analysis. *Holistic Nursing Practice*. <https://doi.org/10.1097/HNP.000000000000076>

McLenon, J., & Rogers, M. A. M. (2019). The fear of needles: A systematic review and meta-analysis. *Journal of Advanced Nursing*, 75(1), 30–42. <https://doi.org/10.1111/jan.13818>

Neto, J., Fernandes, R., Andrade, L., Fernandes, L., Martins, T., Barbieri-Figueiredo, Carvalho, F., & Lima, L. (2025). Invasive procedures and traumatic care in pediatric nursing practices: Nurses' perceptions. *Frontiers in Pediatrics*, 13, 1543138. <https://doi.org/10.3389/fped.2025.1543138>

Payson, A., Pulido, A., Martin, S. S., Garlesky, C., Garcia, E., Reyes, C., Reyes, M., & Leyenaar, J. (2022). Inequalities in pain assessment and care of hospitalized children with limited English proficiency. *Hospital Pediatrics*, 12(6), 561-568. <https://doi.org/10.1542/hpeds.2021-006445>

Peachman, R. R. (2022). *Pain in children is often ignored. For children of color, it's even worse.* New York Times. <https://www.nytimes.com/2022/08/15/well/pain-management-children-race.html>

Postier, A., Eull, D., Schulz, C., Fitzgerald, M., Symalla, B., Watson, D., Goertzen, L., & Friedrichsdorf, S. (2018). Pain experience in a US children's hospital: A point prevalence survey undertaken after the implementation of a system-wide protocol to eliminate or decrease pain caused by needles. *Hospital Pediatrics*, 8(9), 515-523. <https://doi.org/10.1542/hpeds.2018-0039>

Sorelle, R. (2012). Breaking news: Like adults, black children receive less pain relief. *Emergency Medicine News*, 34(9). <https://doi.org/10.1097/01.EMN.0000419511.43102.c2>

Taddio, A., Ito, M., Thivakaran, S., Jamal, A., Parikh, C., Smart, S., Sovran, J., Stephens, D., & Katz, J. (2012). Survey of the prevalence of immunization non-compliance due to needle fears in children and adults. *Vaccine*, 30(32), 4807–4812. <https://doi.org/10.1016/j.vaccine.2012.05.011>

33

References



Taddio, A., Ieraci, A. L., Igo, M., Kikuta, A., & Shah, V. (2009). Physical interventions and injection techniques for reducing injection pain during routine childhood immunizations: Systematic review of randomized controlled trials and quasi-randomized controlled trials. *Clinical Therapeutics*, 31, S48-S76. <https://doi.org/10.1016/j.clinthera.2009.07.024>

Verriotis, M., Fabrizi, L., Lee, A., Ledwidge, S., Meek, J., & Fitzgerald, M. (2015). Cortical activity evoked by inoculation needle prick in infants up to one-year old. *Pain*, 156(2), 222-230. <https://doi.org/10.1097/01.pain.0000460302.96323.0c>

Yadav, A., Bhalieu, S. A., Bhatnagar, A., & Roy, M. (2024). Evaluation of the effect of essential oil aromatherapy on anxiety and pain during administration of local anesthesia in children: A randomized clinical trial. *Journal of Dental Anesthesia and Pain Medicine*, 24(6), 395-406. <https://doi.org/10.17245/jdapm.2024.24.6.395>
