

Introduction

- Patient-controlled analgesia (PCA) pumps enhance patient satisfaction by reducing anxiety about pain control wait times.^{1,2}
- Various electronic and physical safety mechanisms exist to prevent medication delivery errors (e.g., hard/soft electronic stops, physical doors/locks).
- PCA pumps offer advantages in efficacy and safety, but vigilance is necessary to avoid over-reliance on physical security.³
- This is the first report on overcoming the physical safety mechanism of a commonly used PCA pump.



Case Report

- Anesthesia trainees reported using hardware to bypass locks on PCA machines for quicker delivery system changes.
- The Inpatient Pain Team at Children's Hospital Los Angeles confirmed this by locating low-cost hardware.
- We successfully bypassed security on our PCA pump, gaining unrestricted access to the syringe; no tampering was found by biomedical engineering.
- Close examination of the interrogation logs revealed timestamps of access.
- The manufacturer is aware of the issue and is seeking legal action against retailers; they plan to improve security in future models.

References

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- 3-Faerber J, Zhong W, Dai D, Baehr A, Maxwell LG, Kraemer FW, Feudtner C. Comparative Safety of Morphine Delivered via Intravenous Route vs. Patient-Controlled Analgesia Device for Pediatric Inpatients. *J Pain Symptom Manage*. 2017 May;53(5):842-850. doi: 10.1016/j.jpainsymman.2016.12.328. Epub 2017 Jan 3. PMID: 28062336.

Discussion

- PCA pumps are essential for patient care, but some models can have their security easily bypassed with common hardware.
- Providers should be aware of this risk to prevent safety issues and investigate any discrepancies thoroughly.
- All PCA pump discrepancies should be carefully investigated, using corroborative information like video feeds.
- In adverse events, prioritize patient safety; once stabilized, quarantine the PCA pump for examination by biomedical engineering.
- The interrogation report should detail button presses, door status, and infusion volumes. These can be confirmed with video or nursing documentation/logs.
- Short-term prevention strategies may include tamper-evident devices like stickers, zip ties, or locks.