

Decreasing Pharmaceutical Waste



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- **Pharmaceutical waste** is defined as un-utilized medication leftover from case preparation or management and includes medication left in syringes and opened containers.
 - Common in pediatric anesthesia
- **Routine/unavoidable waste** is the drug left over after the administration of the required dose to the patient¹.
- **Preventable/avoidable waste** is the drug drawn up, but not used during the case¹.
- **Typical amounts of drug wasted²**: adrenaline (100%), lidocaine (94%), atropine (70%), succinylcholine (66%), midazolam (64%), morphine (57%), and propofol (55%).
- **Cost of waste** = amount of wasted drug x unit price.
 - Affected by unit price, availability, packaging/pre-administration cost, prevalence of use, shelf-life.³
- **Environmental cost**
 - Propofol is toxic to aquatic organisms, does not degrade in water, soil, or anaerobic conditions, and requires incineration > 1000°C for destruction^{4,5}
 - EPA's Sewer Ban (Aug '19) requires controlled substances to be disposed via incineration as flushing of controlled substances is now illegal in states that have implemented the rule.

Strategies to Decrease Pharmaceutical Waste

Individual	<ul style="list-style-type: none"> ● Plan ahead – draw up medications after seeing patient ● Return unused medications to pharmacy for recirculation ● Join your hospital's P&T committee and be a voice for sustainability in your institution!
System	<ul style="list-style-type: none"> ● Form a multidisciplinary team to address medication waste ● Partner with pharmacy to learn about supply chain, product substitution, repackaging, regulatory hurdles ● If possible, dispense less & save more! ● Coordinate with pharmacy to aliquot multiple doses for multiple patients in sterile fashion (<i>e.g., dexmedetomidine, bupivacaine</i>) ● Stock prefilled syringes over vials for emergency rescue drugs (<i>e.g., succinylcholine, atropine, epinephrine, and phenylephrine</i>) ● Restrict or decrease usage of expensive drugs⁷: tweak the workspace (<i>e.g., move the drug away from the OR</i>), make it harder to order the drug (<i>e.g., add steps in EHR, multiple clicks, pre-approvals, etc.</i>) ● Implement convenient environmentally appropriate disposal bins around the OR/Facility⁸
Education	<ul style="list-style-type: none"> ● Offer Decision making tools (<i>links in the electronic ordering system, screensavers, laminated cards</i>) <ul style="list-style-type: none"> ○ Propofol volume prediction calculator⁹ to optimize syringe size (<i>see QR code below</i>) ● Develop curricula for trainees around pharmaceutical waste and engage in discussion during conferences
Research/ QI	<ul style="list-style-type: none"> ● Study usage patterns across service lines and optimize medication supplies to individual areas <ul style="list-style-type: none"> ○ Cardiac ORs vs. General ORs vs. NORA suites

How much Propofol do I need for this infusion?



References

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