Strategies to Decrease Pharmaceutical Waste

- **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 patient
- **Preventable/avoidable waste** is the drug drawn up, but not used during the case
- **Typical amounts of drug wasted**: 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.
- **Environmental cost**
  - Propofol is toxic to aquatic organisms, does not degrade in water, soil, or anaerobic conditions, and requires incineration > 1000°C for destruction
  - 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**

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<th>Individual</th>
<th>System</th>
<th>Education</th>
<th>Research/QI</th>
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<tr>
<td><strong>Plan ahead</strong> – draw up medications after seeing patient</td>
<td><strong>Form a multidisciplinary team</strong> to address medication waste</td>
<td><strong>Offer Decision making tools (links in the electronic ordering system, screensavers, laminated cards)</strong></td>
<td><strong>Study usage patterns</strong> across service lines and optimize medication supplies to individual areas</td>
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<td><strong>Return unused medications</strong> to pharmacy for recirculation</td>
<td><strong>Partner with pharmacy</strong> to learn about supply chain, product substitution, repackaging, regulatory hurdles</td>
<td><strong>Propofol volume prediction calculator</strong> to optimize syringe size (see QR code below)</td>
<td><strong>Cardiac ORs vs. General ORs vs. NORA suites</strong></td>
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<td><strong>Join your hospital’s P&amp;T committee</strong> and be a voice for sustainability in your institution!</td>
<td><strong>If possible, dispense less &amp; save more!</strong></td>
<td><strong>Develop curricula</strong> for trainees around pharmaceutical waste and engage in discussion during conferences</td>
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**References**