The National Academies of Sciences, Engineering, and Medicine Committee on Implications of Discarded Weight-Based Drugs

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- >12 million members (patients)
- 70 ambulatory infusion centers
- ~2400 infusions per business day
- ~ Two-thirds of infusions are cytotoxics



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- Trastuzumab (Herceptin) Vial Size
- July 7, 2017 440-mg MDV discontinued
- Move from 440-mg MDVs to 150-mg SDVs resulted in significant additional cost

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	440-mg Vial	150-mg Vial
Drug	Lyophilized sterile powder	Lyophilized sterile powder
Diluent	20 mL Bacteriostatic water for Injection (BWFI) - SUPPLIED	7.4 mL Sterile Water for Injection (SWFI) – NOT SUPPLIED
Concentration	21 mg/mL	21 mg/mL
Vial type	MDV (1.1% benzyl alcohol as preservative)	SDV (no preservative)
Vial expiration	28 days	6 hours
Storage	Refrigerate (2°C to 8°C)	Refrigerate (2°C to 8°C)

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- Dose rounding has shown opportunity to reduce drug waste and impact cost savings^{1,2}
- Dose Rounding of Biologic and Cytotoxic Anticancer Agents (HOPA)³
 - Monoclonal antibodies and other biologic agents dose rounded to the nearest vial size within 10% of the prescribed dose
 - Cytotoxic agents dose rounded within 10% of the prescribed dose
 - Use the same threshold for palliative and curative treatment

^{1.} Vandyke TH (2017) Cost avoidance from dose rounding biologic and cytotoxic antineoplastics. <u>J Oncol Pharm Pract.</u> 2017 Jul;23(5):379-383

^{2.} Chillari KA (2018) Assessment of the potential impact of dose rounding parenteral chemotherapy agents on cost savings and drug waste minimization. <u>J Oncol Pharm Pract.</u> 2018 Oct;24(7):507-510.

^{3.} Hematology/Oncology Pharmacy Association (HOPA). 2017. <u>https://www.nccn.org/professionals/OrderTemplates/PDF/HOPA.pdf</u>

- Dose round cytotoxics and monoclonal antibodies up to 10% for all palliative patients
- Approved by the Interregional Chiefs of Oncology and Pharmacy and Therapeutics Committees
- Dose rounding protocols with pharmacist collaborative practice agreements in most KP regions
- Exploring opportunities for dose rounding in curative patients



England

- Individualized patient doses are rounded to a predetermined banded dose
- Utilized by the National Health Service (United Kingdom)
- Potential to improve patient safety and increase drug cost savings¹

National Dose Banding Drug Summary Drug and concentration list as at 20 June 2019.

Always check the website for the most up-to-date version of the drug tables. https://www.england.nhs.uk/commissioning/spec-services/npc-crg/group-b/b02/

<u>Notes:</u> NS = non-standard bands (i.e. individual table for this drug only) PM = pick and mix style table

Conc. (mg/ml)	Drug List	Wave	Current Version	Amendment History
5	Amsacrine	2	3	V2 – added to table V3 – vol info removed, no dose changes
1	Arsenic	2	5	V4 – added to table V5 – vol info removed, no dose changes
20 NS	Avelumab	New	2	V2 - vial size correction, no dose change
25 NS	Azacitidine	2	3	V2 – doses changed (max vol 4mL) & 100mg/m ² added V3 – table extended down to 30mg (existing doses not changed)

https://www.england.nhs.uk/wp-content/uploads/2017/03/national-dose-banding-table-drug-list-v13.pdf

1. Fahey OG (2020) Automated parenteral chemotherapy dose-banding to improve patient safety and decrease drug costs. <u>J Oncol Pharm Pract.</u> 2020 Mar;26(2):345-350

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- Maximum dose administered regardless of patient's weight or body surface area (BSA) based on clinical evidence
- Dose CAPPING nivolumab at 240 mg for solid tumor indications approved by Kaiser Permanente Chiefs of Oncology
- Historical weight-based 3 mg/kg dosing still used when clinically appropriate



Stack patients with the same drug regimen on the same day

- Effective for high volume, high cost drugs
 - Bortezomib
 - Trastuzumab
- Ineffective for low volume, high cost drugs
 - Cabazitaxel

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- Extending the sterility beyond-use date (BUD) of SDVs to 72 hours using a closed system drug-transfer device (CSTD)
- Increases the opportunity to utilize SDVs in multiple patients and minimize drug waste
- Not supported by USP and some state Boards of Pharmacy
- Significant opportunity for cost savings

- Centralize compounding of high cost drugs using a hub and spoke model
 - $\downarrow \downarrow$ waste from single dose vials
 - waste from patient no-shows or cancellation of therapy
- Model requires collaboration and standardization from all stakeholders

