

# Can we handle the waste?

## A review of the disposal of Patient Controlled Analgesia infusion bags

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### BACKGROUND

Management of pharmaceutical waste is a perpetual issue in the healthcare space, with new approaches for more appropriate management being constantly sought after.

Drugs and Poisons legislation requires Drugs of Dependence to be rendered non-recoverable and non-identifiable prior to disposal.<sup>1</sup> For partially used infusion bags, the current process (in accordance with the Victorian Therapeutic Advisory Group recommendation) is to empty residual liquids into pharmaceutical waste bins with absorbent capacity, prior to disposal of empty bags into the bins.<sup>2</sup> The volume of fluid disposed of must not exceed the bin's absorbency limits; that being 1L for the current pharmaceutical waste bins (Cleanaway Daniels Pharmasmart P22)



Image 1: Cleanaway Daniels Pharmasmart P22 pharmaceutical waste container

### AIM

To examine Patient Controlled Analgesia (PCA) infusion bag usage patterns and the residual fluid volume discarded from these bags to determine if current disposal processes remain appropriate.

### METHOD

#### Study design, setting and time period:

- Retrospective review of PCA infusion bags on five high-usage wards at a metropolitan hospital over two time periods; June - December 2021 (category 1 and 2 surgeries only, secondary to Covid restrictions) and June - December 2022 (no elective surgery restrictions).

#### Inclusion criteria:

- All patients who received PCA and had the associated PCA administration form completed

#### Data collection:

- Data was extracted from PCA administration forms uploaded to a scanned medical records database and inputted into a standardized data collection tool
- Data extracted included:
  - Patient details (i.e., age)
  - Medication(s) administered
  - Number of PCA bags administered
  - Time each PCA bag was commenced/discarded
  - Residual PCA bag volume

### RESULTS

PCA usage of 237 and 291 patients was evaluated during the first and second time periods, respectively.

The median total daily volume of residual fluid discarded was 90 mL (range: 1-485 mL) during the first time period and 70 mL (range: 1-381 mL) during the second.

The median number of PCA bags discarded each day was 2 (range: 1-12) and 1 (range: 1-8) during each time period.

Majority of patients received single medication therapy via PCA; that being, 71.5% (168/235) in first time period compared to 69.1% (201/291) in the second time period

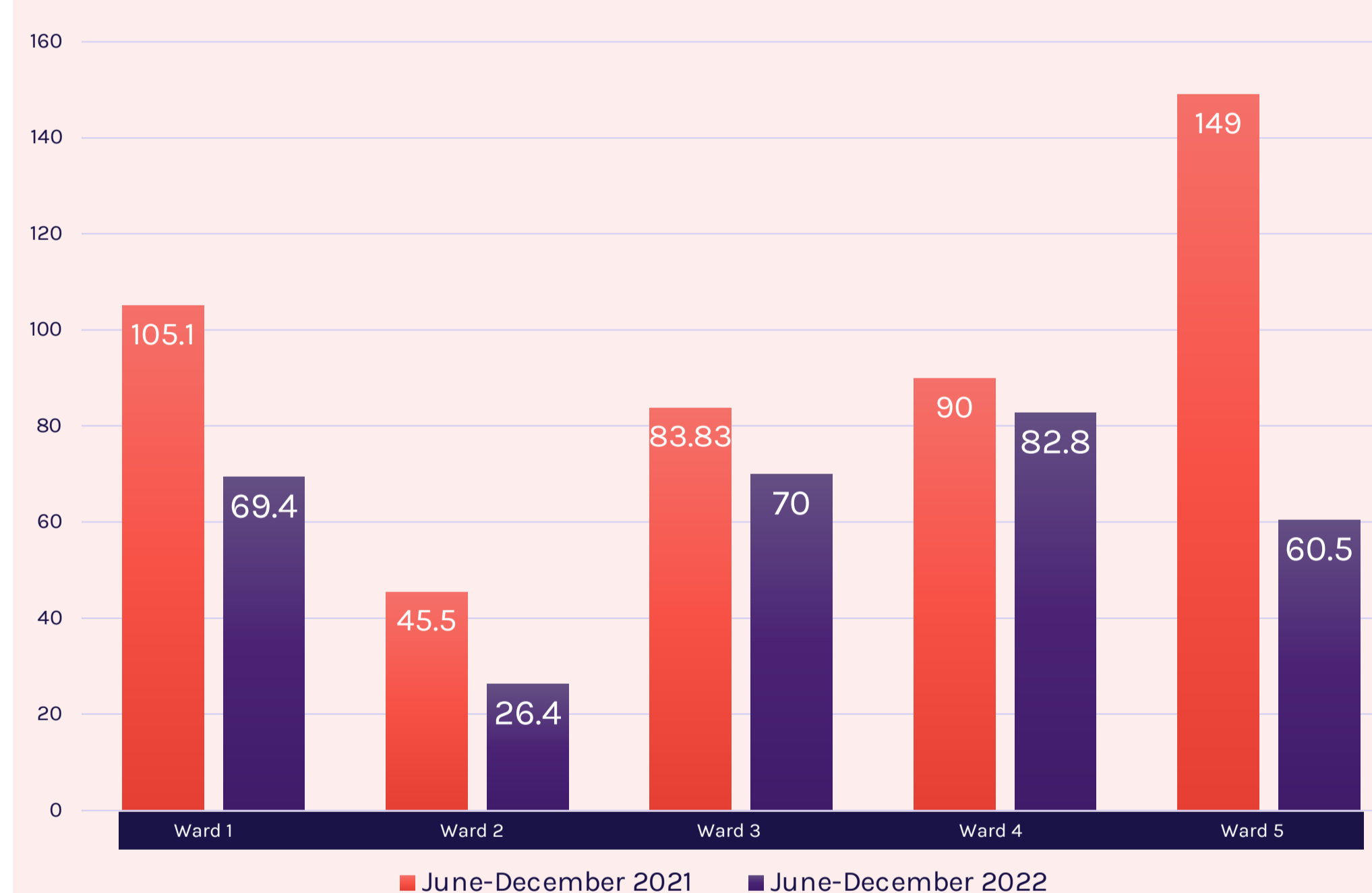


Figure 1: Median volume of PCA fluid discarded daily (mL)



Figure 2: Median number of PCA bags discarded daily

### DISCUSSION

The study was originally conducted over 2 time periods to evaluate the difference in PCA fluid disposal before and after the re-introduction of elective surgeries in Victoria to determine if current waste disposal mechanisms remain appropriate.

Over the two study periods, a higher number of patients were included in second time period compared to the first (291 VS 235). This was expected due to a complete re-introduction of category 1 and category 2 elective surgeries after the COVID-19 pandemic.

Within this, surgical wards reported the highest amount of discarded fluid volume compared to other wards over both time periods.

Despite the greater number of patients treated during the second time period, the volume of fluid and number of bags discarded daily remained similar; the discarded fluid volume remained below the 1L capacity of the current pharmaceutical waste bins (i.e., Cleanaway Daniels Pharmasmart P22) and hence, no adjustments are required.

### LIMITATIONS

- The PCA forms were completed by hand and therefore is subject to variable interpretation
- The data collection process was undertaken by multiple individuals and therefore may have discrepancies between the data collection skillsets.

### CONCLUSION

The disposal process for partially used PCA infusion bags is appropriate based on our usage patterns.

A better understanding of a hospital's pharmaceutical waste may be helpful in developing an optimal disposal process.

A pharmaceutical waste disposal process tailored to each patient care area is required for optimal pharmaceutical waste management.

### REFERENCES

- Drugs, Poisons and Controlled Substances Regulations 2017 (VIC). Accessed May 03, 2023. <https://www.legislation.vic.gov.au/in-force/statutory-rules/drugs-poisons-and-controlled-substances-regulations-2017/015>
- Victorian Framework for handling and disposal of Pharmaceutical Waste. Victorian Therapeutics Advisory Group; 2020. Accessed May 03, 2023. [https://www.victag.org.au/Framework\\_\\_\\_Appendices\\_FINAL\\_formatted.pdf](https://www.victag.org.au/Framework___Appendices_FINAL_formatted.pdf)