Glass ampoule handling practices in Dutch healthcare: a comprehensive assessment

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Background

- Glass ampoules are extensively used in intravenous administration, pulmonary nebulization, and oral preparations.
- Multiple studies show the occurrence of visible and sub-visible glass contamination when opening ampoules and possible harm (e.g. phlebitis, pulmonary granulomas, thrombi).[1]
- Dutch guidelines recommend filter needles or straws to prevent this.[2]
- Compliance in hospital pharmacies and on wards is uncertain.

Aim

Primary aim:

- To evaluate the utilization of filter needles/straws in Dutch hospitals

Secondary aim:

- To evaluate the observation of glass particles among pharmacy technicians and registered nurses
- To evaluate the disposal of ampoules due to glass contamination
- To evaluate the procurement of glass ampoules in hospital pharmacies

Methods

Cross-sectional study:

- Questionnaire drawn up by hospital pharmacists at Utrecht Pharmacy Practice network for Education and Research (UPPER).
- The questions focused on using a filtering technique during ampoule preparations and procurement policies of hospital pharmacies.
- Interviews were held with:
  - Pharmacy technicians within the hospital pharmacy, and
  - Pharmacy technicians preparing medication on wards, and
  - Registered nurses on wards regarding filtering techniques
  - Hospital pharmacists regarding procurement policies
- Interviews were held by:
  - Master Pharmacy students at Utrecht University during the hospital pharmacy internship between Sept. – Nov. 2022
- Data analysis: descriptive analysis in SPSS

Primary outcome:

Proportion of healthcare professionals not using filtering techniques:
1) pharmacy technicians in the hospital pharmacy and 2) on wards and
3) registered nurses on wards

Secondary outcomes:

- The proportion of professionals that observed glass particles
- The proportion of professionals that disposed ampoules
- The proportion of pharmacies that had active procurement policies to reduce use of glass ampoules

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References

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2. KNMP. LNA-procedures. [Internet]. Available from: https://kennisbank-knmp-nl.proxy.library.uu.nl/article/LNA-procedwures_productzorg/asep/F114.html .[Dutch, Accessed 31st August 2023].

Results

In total 31 hospitals participated. Fifteen top clinical hospitals, 10 peripheral and 6 academic hospitals were included. In total, 101 pharmacy technicians, 50 registered nurses and 31 hospital pharmacists were interviewed.

Primary aim:

In the hospital pharmacy 14% of technicians did **not use** filtering techniques, while this was 68% for nurses on wards

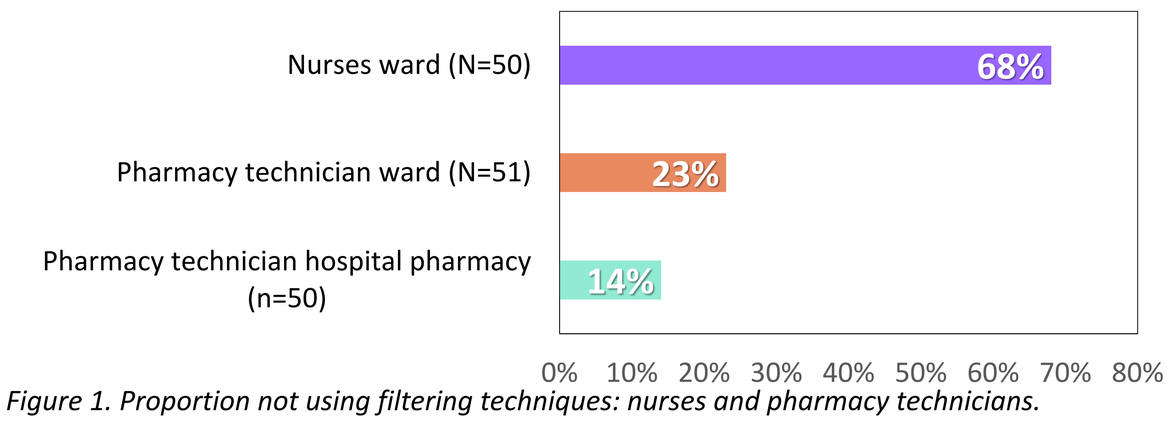

Figure 1. Proportion not using filtering techniques: nurses and pharmacy technicians.

Secondary aim

- All professionals reported that they observed glass contamination

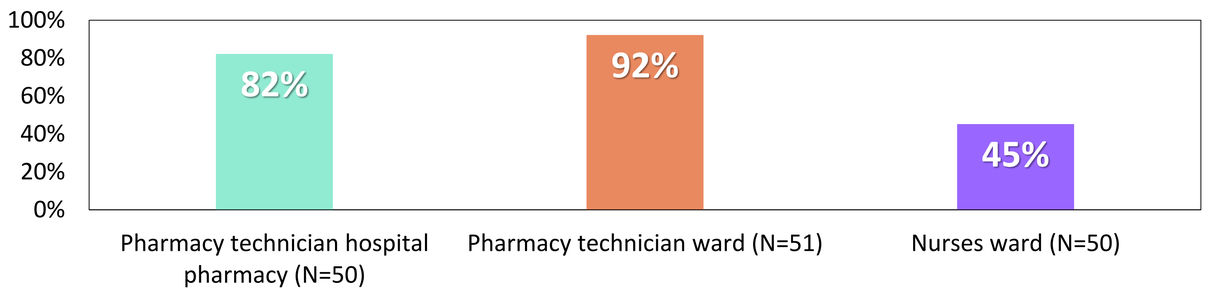

Figure 2. Proportion of pharmacy technicians and nurses observing glass particles

- Approximately 1 in 5 professionals disposed ampoules due to visible glass contamination.

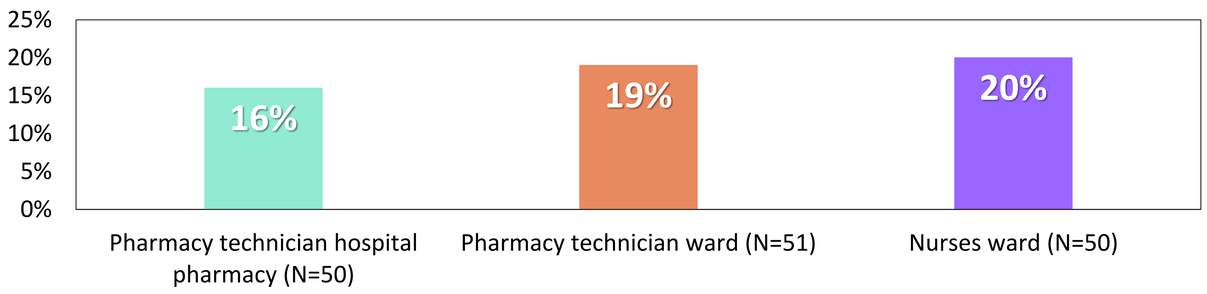

Figure 3. Proportion of disposed ampoules by pharmacy technicians and nurses

- Nine of 31 hospitals followed an active policy to avoid glass ampoules during procurement. Most common reason for not doing so were costs and lack of availability of alternatives.

Conclusion

- **Compliance with using filtering techniques when handling ampoules is suboptimal, while glass is observed when preparing medication**
- **It is crucial to investigate the safety of using glass ampoules**

In collaboration with:

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