

Sharps Injury Reduction: 6-yr Study of a Human Factors Engineered Patient-room Sharps Container

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Background: The majority of UK hospitals carry small sharps containers to and from patient rooms. Container-associated sharps injuries (CASI) account for 11.5% of UK's SI and Inappropriate Disposal SI account for an additional 7%.

Objective: To examine impact of large, human factors engineered (HFE) sharps containers, sited in drug rooms or patient rooms, on CASI and inappropriate-disposal SI.

Hypothesis: Sharps container design and placement, independent of user behaviour, reduces SI risk.

Design and Methods: The 6-year study at in a 350 bed Australian hospital, utilised a three-phase, before/after intervention model. **Phase 1:** no sharps containers mounted in patient rooms; 1.4L single-use containers carried to and from rooms. **Phase 2:** small containers ceased; a larger, engineered reusable container (Sharpsmart, UK) was mounted in drug rooms and sharps carried to and from patient rooms in dishes. **Phase 3:** engineered container sited in patient rooms. Sharps injuries were: categorised into during procedure, after procedure but before disposal, CASI, and inappropriate disposal; enumerated per 1000 full-time equivalent staff (FTE); and analysed using Chi² with significance at $p \leq 0.05$.

Results: Use of the engineered container in drug rooms significantly reduced CASI (-95%; $p < 0.001$) but not inappropriate disposal SI (-3%; $p = 1.0$). Use in patient rooms was associated with Nil CASI and 53% less inappropriate disposal SI ($p = 0.3$).

Fig 1. HFE-designed containers: Impact on CASI

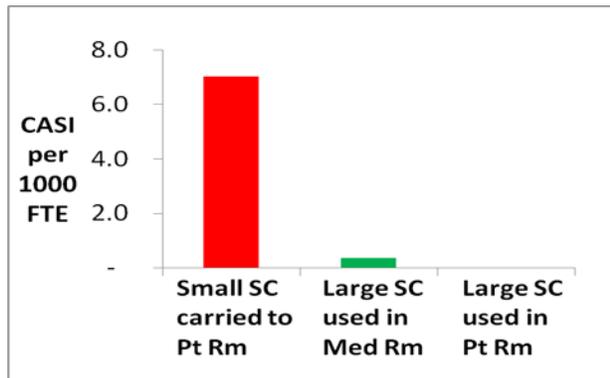
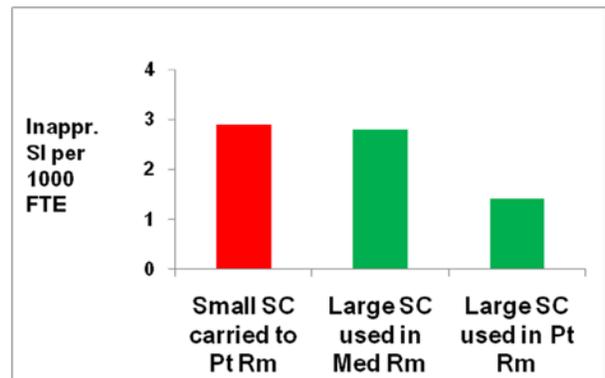


Fig 2. Pt Room Containers: Impact on Inappropriate Disposal SI



Discussion: HFE addresses a wide spectrum of user behaviour. The container's large aperture, sensitive tray and passive overfill protection are postulated as effecting the CASI reduction. Close proximity to sharp use is postulated as reducing the inappropriate disposal SI.

Conclusions:

- Larger, HFE-designed containers can reduce SI by shifting safety onus away from user-behaviour.
- The HFE-designed container may significantly reduce SI in UK.