

DETACHABLE LOW DEAD-SPACE SYRINGES FOR THE PREVENTION OF HEPATITIS C AMONG PEOPLE WHO INJECT DRUGS: AN ECONOMIC EVALUATION

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Background: People who inject drugs (PWID) either use syringes with attached or detachable needles, with detachable syringes retaining larger volumes of blood when the plunger is depressed than syringes with attached needles - referred to as low (LDSS) and high dead-space syringes (HDSS), respectively. Evidence suggests HDSS may result in greater hepatitis C (HCV) transmission risk than LDSS. Recently, new detachable syringes have been developed with lower dead-space (denoted detachable-LDSS). In 2016, Bristol introduced detachable LDSS in needle and syringe programmes (NSP). We evaluated the cost-effectiveness of this intervention.

Methods: A dynamic HCV-transmission model evaluated the cost-effectiveness of introducing detachable-LDSS in Bristol, compared to a counterfactual of not introducing these syringes. The intervention resulted in 10% of HDSS injections switching to detachable-LDSS, with detachable-LDSS having increased costs (£0.01) per syringe, yearly staff training costs (£500) and an estimated decreased risk (by 84%) of HCV-transmission. This decreased transmission risk was inferred through existing data suggesting needle-stick/vertical HCV-transmission risk increases 2.5-2.8-fold with HIV coinfection, which increases an individual's VL by 0.2-0.7 log₁₀copies/ml. The intervention was modelled for 10-years, with costs and benefits tracked for a further 40-years. A healthcare perspective was taken with costs and outcomes (quality-adjusted life years gained or QALYs) discounted at 3.5%. Univariate and probabilistic sensitivity analyses (PSA) were performed. Threshold analyses assessed the required reduction in transmission risk (compared to HDSS) for detachable-LDSS to be cost-saving.

Results: Compared to not introducing detachable-LDSS, their introduction was associated with cost-savings of £519,657 over 50-years and QALY gains of 267. In all sensitivity analyses, and 99.9% of PSA simulations, detachable-LDSS resulted in cost-savings and better health outcomes. Threshold analyses suggested detachable-LDSS would need to reduce HCV-transmission risk of HDSS by 1% to be cost-saving.

Conclusions: Introducing detachable-LDSS through NSPs could be a cost-saving approach for reducing HCV-transmission amongst PWID.

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