

Safety Engineered Syringes for Therapeutic care in India

One syringe, Only one time

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Health Technology
Assessment in India (HTAIn)



Summary



An unsafe injection can transmit serious diseases to patients instead of delivering treatment to them. An estimated 16 billion injections are given globally each year and out of which 40% are reported unsafe. So the cost of managing these infections poses a significant economic burden, much of this is borne by households. In order to prevent unsafe injections; World Health Organization (WHO) recommends a transition to safety engineered injection devices by 2020. These syringes are specially designed to prevent NSI and reuse episodes. Long back in 2008, Government of India (GoI) introduced auto-disable (AD) syringes for immunization but its use is not mandated in the therapeutic sector which constitute the bulk of injection use. This study was undertaken to assess the cost-effectiveness of Safety Engineered Syringes for therapeutic use in India against a counterfactual scenario of use of exiting use of disposable syringes. The study suggested that the Reuse Prevention (RUP) syringes are cost-effective in Indian context. While Sharp Injury Prevention (SIP) and RUP+SIP are not cost-effective at the current unit prices. Efforts should be made to bring down the prices of SES to improve its cost-effectiveness.

Recommendations

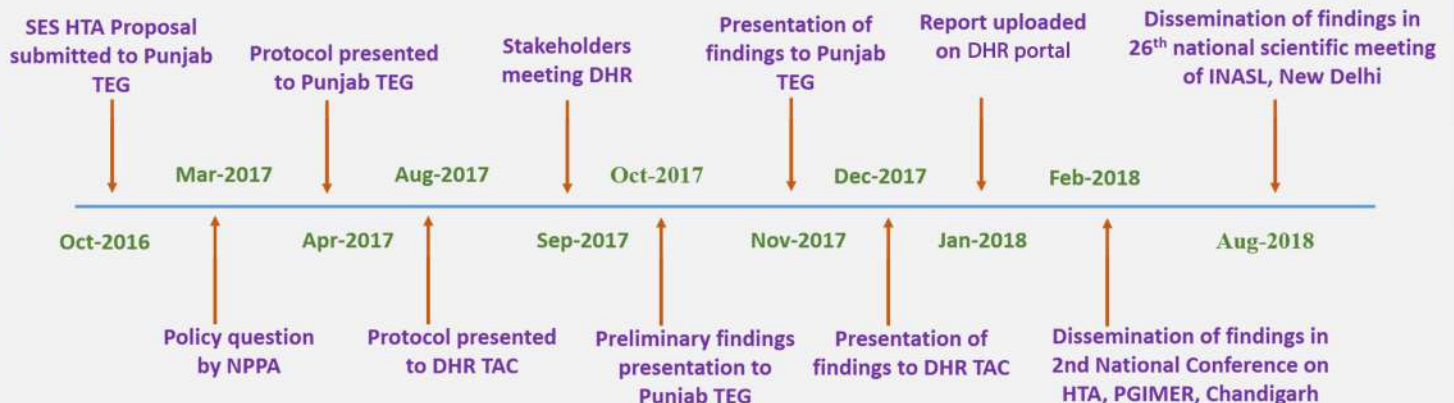


It is expected that evidence provided in this document will contribute to preventing the re-use of syringes on patients and to a decrease in the rate of needle-stick injuries in HCWs related to injection procedures, thus contributing to the prevention of injection-transmitted infections.

The study estimated that if the current injection practices are continued for next 20 years, there will be 99,557, 47,618 and 5,650 new cases of HBV, HCV and HIV, respectively which are attributable to NSI and reuse. Implementing RUP, SIP and RUP+SIP will prevent the new BBIs due to unsafe injections by 96%, 3.9% and 99%, respectively.

It is found that RUP syringe to be cost-effective in Indian context. Unit cost of SES (RUP) was major determinant of overall costs, upon extrapolation of the evidence, it was seen that RUP intervention will become cost saving strategy, if procured at a unit cost INR 1.9 or lower.

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Scope of Problem



Injections are one of the most common health care procedures. Every year at least 16 billion injections are administered worldwide. The vast majority – around 90% – are given in curative care. India contributes to 25-30% global injection load. Over 63% of these injections are reportedly unsafe or deemed unnecessary. Addressing the unsafe injection practices is an important public health agenda due to several reasons. Firstly, these lead to the large-scale transmission of blood borne infections (BBIs) among patients. Approximately 33% of new Hepatitis B viral (HBV) infections and 42% of Hepatitis C viral (HCV) infections (2 million new infections) and 9% of new HIV cases are attributable to the unsafe medical injections in developing countries. Secondly, there is a risk of transmission of BBIs to healthcare professionals (HCPs) in case of needle stick injuries (NSI). Thirdly, poor sharp waste management practices puts the waste handlers (and community) at risk. The cost of managing HBV, HCV and HIV poses a significant economic burden for the health system. In India, much of this economic burden is borne by households, as they contribute to 71% of the total health care expenditures through out-of-pocket expenditures (OOPE). Average health system cost and out of pocket expenditure for treating liver disorders in intensive care tertiary setting in India is USD 2,728 (INR 163,664) and USD 2,372 (INR 142,297) respectively. Moreover, since this burden is faced disproportionately more by the poor, it leads to inequities in utilization of care and financing. The World Health Organization (WHO) recommends a transition to safety engineered injection devices by 2020. These syringes are specially designed to prevent NSI and reuse episodes. While the Government of India (GoI) introduced auto-disable (AD) syringes for immunization in 2008, its use is not mandated in the therapeutic sector which constitute the bulk of injection use. Recently, Punjab state considered introduction of SES in therapeutic sector. The evidence on its cost-effectiveness is thus being sought as an essential criteria to decide on introduction of SES syringes. Moreover, the National Pharmaceutical Pricing Authority (NPPA), has requested India's Health Technology Assessment Board to provide economic evidence on different forms of SES. In order to answer these policy questions, we undertook this study to assess the incremental cost per quality adjusted life year (QALY) gained with introduction of SES as compared to current practice of using disposable syringes for therapeutic care.



Key Findings



1-Implementing RUP, SIP and RUP+SIP will prevent the new BBIs due to unsafe injections by 96%, 3.9% and 99%, respectively.

2-The introduction of RUP, SIP and RUP+SIP syringes in India will incur an incremental cost of INR 43,064, INR 7,219,687 and INR 209,398 per QALY gained, respectively.

3-RUP has a 93% probability to be cost effective at a threshold of per capita gross domestic product(GDP)).

4-RUP syringe will become cost saving at a unit price of INR 1.9. Similarly, SIP and RUP+SIP syringes will be cost-effective at a unit price less than INR 1.8 and INR 5.9 respectively.

5-At the national level, annual cost of disposable syringes for therapeutic care is INR 3.34 billion (USD 52.6 million). Introduction of RUP, SIP and RUP+SIP incurs an additional cost of INR 10.3 billion (USD 162 million), INR 32.3 billion (USD 509 million) and INR 32.4 billion (USD 511 million) per year. Implementing SES will save INR 4.2 billion (USD 66.2 million), INR 3.07 billion (USD 48.4 million) and INR 4.9 billion (USD 77.2 million) annually with use of RUP, SIP and RUP+SIP, respectively on account of treatment cost averted.

6-The study estimated that if the current injection practices are continued for next 20 years, there will be 99,557, 47,618 and 5,650 new cases of HBV, HCV and HIV, respectively which are attributable to NSI and reuse.



Estimation of Cost-Effectiveness



Three Safety Engineered Syringes – reuse prevention syringe (RUP), sharp injury prevention (SIP) syringe, and those with features of both RUP and SIP, were evaluated against a counterfactual current use of disposable syringes. We also included integrated trainings on safe injection practices which include training on use of SES, safe practices and waste management; along with behaviour change communication (BCC) for patients. We also considered the costs associated with these activities, however, we did not consider any incremental benefits associated with either training or BCC activities. In the counterfactual arm, the most appropriate choice was the prevailing current practice of using disposable syringes. In the unregulated private sector, there could be a possibility of using glass syringes, although to a lesser extent. However, for our analysis, we assume use of disposable syringes for therapeutic care, and avoid complexity of mixed practices. We used unit prices provided by WHO for respective SES. These prices, which were available in USD, were converted to local currency i.e. INR using conversion rates for the year 2017.

Conclusion



Our findings suggest RUP use for therapeutic care is cost-effective in Indian context. However, SIP and RUP+SIP are not cost-effective at current prices. So the study suggest that RUP should be considered for therapeutic care in India. The prices of these SES should be reduced either through price negotiation using bulk purchasing, or through price regulation by central agencies such as NPPA.



Type of SES	HBV prevented	HCV prevented	HIV prevented	Incremental costs (In million)	Incremental health benefits (QALYs)	ICER per QALY gained
RUP	96,297	44,082	5632	113,577	1,673,535	40,358
SIP	2869	3111	16	482,817	66,138	6,743,277
RUP+SIP	99,166	47,193	5648	462,078	1,739,678	196,021

