The impact of a 24-hour syringe dispensing machine on a face-to-face needle and syringe program and targeted primary healthcare clinic

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Abstract

Objective: Automatic syringe dispensing machines (ADM) have become an important adjunct to Australia's needle and syringe programs (NSP). However, concerns that they reduce face-to-face contact with health staff and other health interventions remain. We examined changes in the number of needle/syringes dispensed at an ADM and occasions of service at a co-located face-to-face NSP and targeted primary healthcare clinic during the first wave of COVID-19 restrictions.

Methods: We reviewed data from an inner-city harm reduction program during the study period of April 2020 to March 2021 compared to the previous year. Multivariable linear regression models were used to estimate the association between occasions of service and equipment distribution.

Results: ADM-dispensed equipment increased significantly by 41.1%, while face-to-face NSP occasions decreased by 16.2%. Occasions provided by the targeted primary healthcare clinic increased by 59.7% per month.

Conclusion: We have shown that 24-hour ADM access did not adversely affect the number of people using targeted primary healthcare when provided within close proximity.

Implication for public health: These findings reinforce the demand for 24-hour needle/syringe access and can be used to support the expanded access to ADMs, especially where people who inject drugs (PWID) have access to appropriate healthcare.

Key words: automatic syringe dispensing machines, face-to-face care, primary healthcare, people who inject drugs

Needle and syringe programs (NSP) are an important public health strategy to prevent hepatitis C and HIV among people who inject drugs (PWID).[1] However, face-to-face NSPs alone are unable to meet the demand for injecting equipment.[2] Automatic dispensing machines (ADMs) are a cost-effective method[2,3] to increase needle and syringe distribution, as they can provide after-hour access and facilitate client anonymity.[4] ADMs are well accepted by clients and the community,[5] and complement existing services.[6,7]

Sydney Local Health District provides a comprehensive harm reduction service in inner-city Sydney, with a co-located face-to-face NSP, ADM and targeted primary healthcare service.[8,9] Until April 2020, the face-to-face NSP operated eight hours a day, six days a week. In 2013, an ADM was installed within 50 metres to provide needles and syringes outside of these operating hours to ensure opportunities for healthcare staff to engage with NSP clients. The machine is filled every morning (except Sundays) with a capacity of 200 fitpacks. There is no promotional material on the ADM. Both the face-to-face service and the ADM dispense the same fitpacks (a small black plastic puncture-resistant container including 6 x 1 ml syringes, plastic spoons, sterile water, alcohol swabs and cotton wool). The face-to-face NSP provides needles/syringes, however, it also distributes as many individual syringes and other equipment as clients request. Equipment is dispensed free of charge from both services.

During the 2020 wave of the COVID-19 pandemic, services remained open, but the need to reduce face-to-face contact while maintaining access to sterile injecting equipment led to the ADM operating 24 hours a day. Thus, clients could choose to access injecting equipment either via the face-to-face service when opened or anytime from the ADM. The primary healthcare service hours of operation remained unchanged (Monday to Friday, 8:30–5.00 pm).

We aimed to examine whether the expansion of the ADM operating hours reduced face-to-face contact between healthcare staff and PWID. Specifically, we examined changes in service activity before and after the expanded ADM operating hours by measuring: i) the quantity of equipment dispensed from the ADM; ii) the quantity of equipment dispensed face-to-face; iii) occasions of service (herein

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occasions) at the face-to-face NSP; and iv) face-to-face primary healthcare service occasions.

Methods

We used routinely collected service data to examine the number of needle/syringes dispensed from both the face-to-face service and the ADM, and the occasions at the primary healthcare clinic (PHCC) and the face-to-face NSP from April 2020 to March 2021. The NSP face-to-face service provides injecting equipment provision, health education and promotion, brief intervention and referral, including referral to a co-located primary healthcare service. The service is staffed by health education officers and peer workers. The 2020 data were compared to those of the same period from the previous year. There were no reports of the machine being faulty or out of order during this period.

A dependent samples t-test was used. Prior to conducting the analysis, the assumption of normally distributed difference scores was examined and considered satisfied, with skew and kurtosis levels estimated to be less than the maximum allowable values for a t-test (2.1 and 7.1, respectively).[10] The correlation between equipment distributed by the ADM compared to the face-to-face NSP was assessed using Pearson Correlation. Bivariable linear regression was used to analyse the association between these two variables.

Multivariable linear regression models were used to estimate: i) the association between primary healthcare occasions and equipment distributed by both the ADM and face-to-face NSP; and ii) the association between the face-to-face NSP occasions and equipment distributed by the ADM and face-to-face NSP. Data analysis was performed with IBM SPSS statistics version 27.

Results

From April 2020 to March 2021, the face-to-face NSP distributed 440,226 needle/syringes, with a mean of 36,685.5 (SD 4726.4) distributed per month compared to 39,556.3 (SD 2602.1) in the previous year. The average reduction in needles/syringes dispensed per month was 2,870.8 (95%CI 948.3-6,990.0). This 7.3% decrease was not significant ($t(11)=1.654$, $p=0.126$) because, despite a sharp decrease in the second quarter of 2020 due to COVID-19 restrictions, there was a rapid return in the third quarter (see Figure 1).

During the study period, the ADM dispensed 200,880 needle/syringes, with a monthly mean of 16,740 (SD 2,131). This represented a 41.1% increase and was significantly ($t(11)=8.132$, $p<0.001$) higher (4,877 needle/syringes; 95%CI 3,556.9-6,197.1) than the 12 months prior when the service operated for limited hours and 142,236 needle/syringes were dispensed with a mean of 11,863 per month.

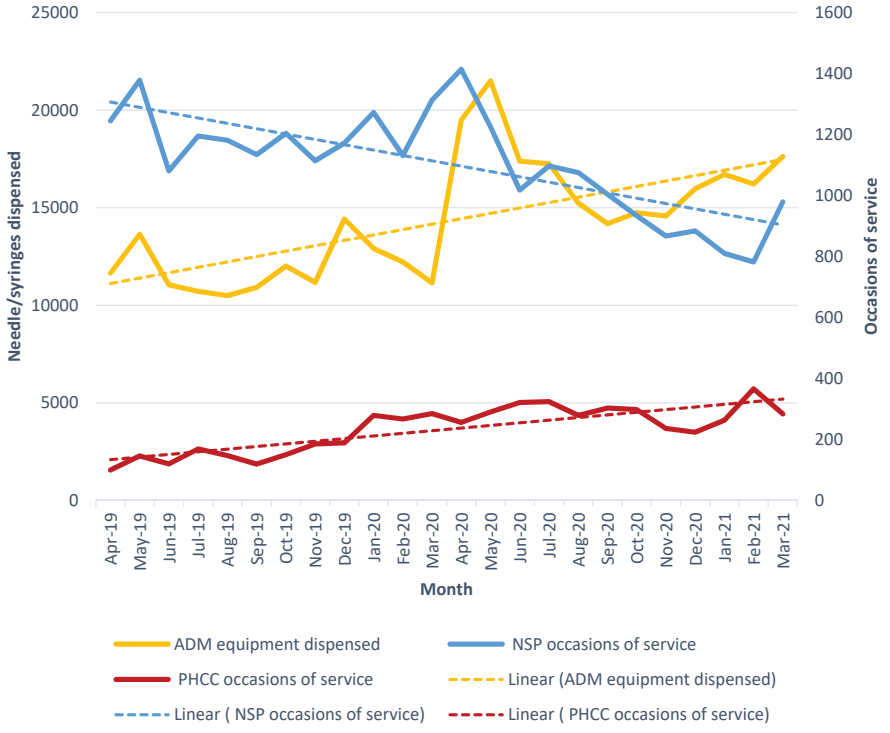
On average, there was an increase in the total number of needle/syringes distributed by the ADM and the NSP of 2,006 needles/syringes per month over this period compared to the previous year, but this was not statistically significant ($t(11)=1.326$, $p=0.212$).

The PHCC provided 3,444 nursing and social work occasions between April 2020 and March 2021. On average, there were 287 (SD 39.7) occasions per month compared to 179.7 occasions (SD 64.3) prior to COVID-19 restrictions, representing a significant mean difference of 107.3 occasions ($t(11)=5.106$, $p<0.001$; 95%CI 61.1-153.6) and an increase of 59.7%.

There were 12,089 face-to-face occasions provided by the health education officers at the NSP during the study period with a mean of 1,007.4 (SD 179.9) per month compared to 1,201.7 (SD 87.1) for the previous year, representing a decrease of 16.2%. A persistent decrease in the number of face-to-face occasions since the ADM commenced 24-hour operations was observed up to the first quarter of 2021. On average, there were 194.3 (95%CI 88.8-299.9) significantly fewer occasions per month over the study period compared to the previous year ($t(11)=4.044$, $p=0.002$).

Multivariable linear regression revealed a strong association between PHCC occasions and the equipment distributed by the ADM. On average, for every 100 needle/syringes distributed by the ADM, PHCC occasions increased by 1.5 occasions ($t(2)=3.152$, $p=0.005$), after adjusting for equipment distributed at the face-to-face NSP. The PHCC occasions were not associated with equipment distributed by the NSP ($t(2)=-0.368$, $p=0.716$). The NSP occasions were neither associated with equipment distributed by the ADM nor by the face-to-face NSP ($t(2)=-1.211$, $p=0.239$; $t(2)=-0.704$, $p=0.489$, respectively).

Figure 1: Recorded trends of needle/syringes dispensed by the ADM and occasions at Primary Health Care Clinic and NSP, April 2019-March 2021.



Discussion

We found that the expansion of ADM operating hours did not reduce NSP clients' use of primary healthcare. Indeed, there

was a strong association between PHCC occasions and ADM dispensed equipment, suggesting that, as the use of the ADM increased, so did the use of the PHCC. This relationship was not reflected in the use of the face-to-face NSP, which is co-located with the PHCC and within close proximity of the ADM. There was, however, a negative correlation between the face-to-face NSP and the ADM, which, unsurprisingly, indicated a greater distribution of equipment from the ADM once the service commenced 24-hour operation. The sharp increase in equipment distribution at the ADM between the first and second quarters of 2020 indicates clients reduced their face-to-face contact with services in response to public health measures that aimed to limit opportunities for transmission events. It coincides with an observed decrease in the face-to-face NSP in the same period, followed by a swift recovery in the third quarter.

These observations are a public health interest because, previously, there have been community concerns that, if the ADM operated 24-hours a day, it would deny PWID the opportunity to incidentally receive health promotion and engage in healthcare.[11] Our data suggest that increasing access to injecting equipment via ADMs will not reduce engagement with healthcare provided that appropriate services remain available. In this context, ADMs do exactly as intended – provide PWID with unimpeded access to sterile injecting equipment, without reducing healthcare engagement. Expansion of ADMs to ensure ongoing and adequate syringe coverage should therefore be encouraged.

Our data, however, was limited to one site, albeit a high activity site, and the association identified reflects only that service and cannot be interpreted as causal. Moreover, we were unable to adjust for other possible confounders. Increased staffing in late 2019 may have increased PHCC occasions, but the findings nevertheless reflect PWIDs' willingness to access harm reduction focused primary care when provided. We were also unable to explore more subtle changes in patterns of service use, which is likely to provide a more nuanced picture.

Overall, we have shown that 24-hour ADM access did not adversely impact targeted PHCC use when provided within close proximity. These findings can be used to support the expanded access to ADMs, especially where there is access to face-to-face services, including primary healthcare.

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