MODELLING THE INTRODUCTION OF AN OVERDOSE PREVENTION CENTRE (OPC) IN ENGLAND AND GLASGOW

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BACKGROUND

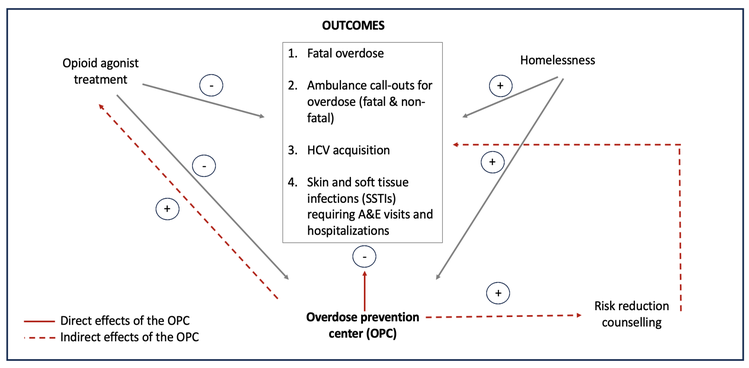
- Drug-related deaths are at an all-time high across the UK, with Scotland having one of the highest rates in the world[1]
- People who inject drugs (PWID) in the country have high levels of non-fatal overdose (20-35%/past year), chronic hepatitis C virus (HCV) infection (15-27%) and skin and soft-tissue infections (SSTIs; 35-40%/past year)[2,3]
- No overdose prevention centre (OPC) exists yet in the UK
- Studies have shown that OPCs could reduce harms associated with injecting drug use[4-7]

OBJECTIVE AND CONTEXT

- To model the potential impact of introducing an OPC in England and Glasgow on several drug-related harms:
  - Fatal overdose
  - Overdose-related ambulance call-outs
  - HCV infection
  - Skin or soft tissue infections (SSTIs) requiring emergency care and hospitalization among PWID
- A pilot facility—the first sanctioned site in the UK—will open in Glasgow in 2024. No OPC is yet planned in England.
- Thus, we modelled a generic English city (using English-average data) and the Glasgow city centre.

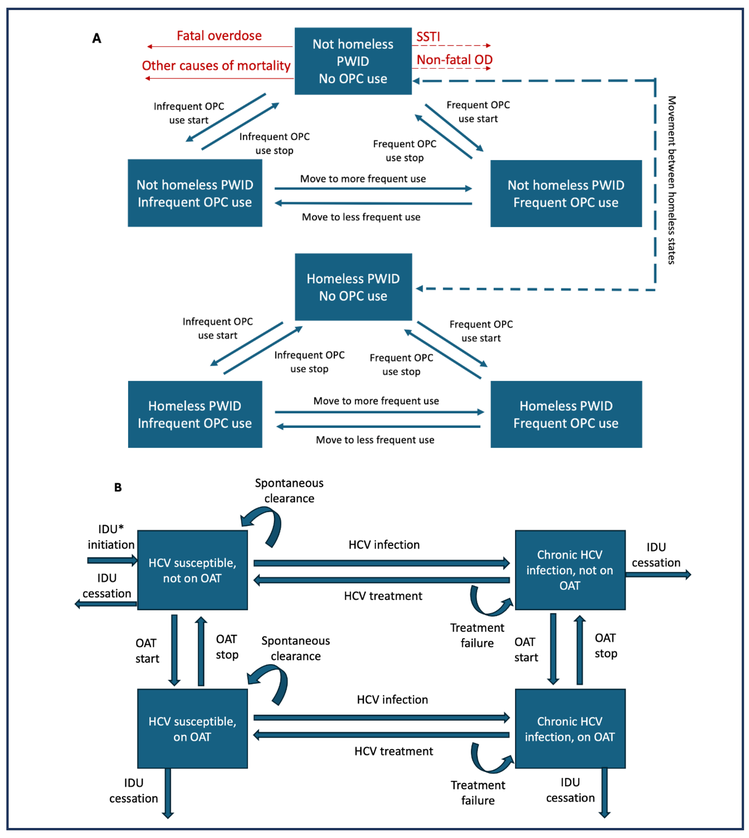
METHODS

Figure 1: Key variables and interactions considered in the model



Model: A dynamic deterministic model of overdose (fatal and non-fatal), HCV transmission, and SSTIs among PWID in England and Glasgow.

Figure 2: Model schematic with compartments for OPC use according to frequency of use and homelessness states (A) and HCV infection and opioid agonist treatment (OAT) use (B)



Key factors influencing population-level OPC impact:
- Proportion of PWID using the OPC (OPC coverage)
- Proportion of injections done inside the OPC
- Additional services made available through the OPC (i.e., indirect OPC effects)
- The extent to which the OPC engages more with at-risk groups (e.g., homeless PWID, PWID not on OAT)

Table 1: Key model assumptions regarding OPC impact

Outcome	Assumption	Justification and source
Fatal overdose	All injections done inside the OPC assumed to carry no risk of fatal overdose.	No fatal overdose has ever occurred at an OPC and PWID attending the program receive new injection equipment and counselling.
HCV	All injections done inside the OPC assumed to carry no risk of HCV acquisition.	All OPCs generally offer new injection equipment and counselling for every injection.
Non-fatal overdose	• Assume the same risk of non-fatal overdose inside the OPC as in the community • Assume a lower fraction of overdoses occurring inside (vs outside) the OPC need an ambulance run	• % of overdoses in the community resulting in an ambulance run: 38 – 71%[8,9] • % of overdoses inside the OPC resulting in an ambulance run: (0.8% - 6%)[10,11]
SSTIs	All injections done inside the OPC assumed to carry a lower risk of SSTI.	• SSTI risk assumed to be lower for injections done inside the OPC; estimate based on evidence that using new injection equipment is associated with lower risk of SSTI (RR= 0.30; 95%CI: 0.19 – 0.49).[12]

SCENARIOS

3 scenarios of OPC coverage: 10%/20%/30%, evenly split between frequent and infrequent OPC users.

For each scenario of OPC coverage, we also estimated six scenarios:
- S1: % of injections done at the OPC: 10% and 60% for infrequent and frequent users, respectively
- S2: % of injections done at the OPC: 30% and 80% for infrequent and frequent users, respectively
- S3: Scenario 1 + increased OAT uptake through the OPC
- S4: Scenario 2 + increased OAT uptake through the OPC
- S5: Scenario 3 + 20% reduction in risk for injections done outside of the OPC
- S6: Scenario 4 + 20% reduction in risk for injections done outside of the OPC

MODEL PARAMTERISATION AND CALIBRATION
- The model was parametrized and calibrated to England and Glasgow data, where available, based on detailed analyses of bio-behavioural surveys among people who inject drugs: UAM and NESI.
- The model was calibrated to setting-specific estimates of fatal/non-fatal overdose, chronic HCV prevalence—all higher in Glasgow than England—and SSTI—similar in Glasgow/England.
- Parameters related to OPC use were informed by studies done in settings where OPC exist, particularly Melbourne and Vancouver.[13,14]

RESULTS

Figure 3: Model fit to selected calibration data

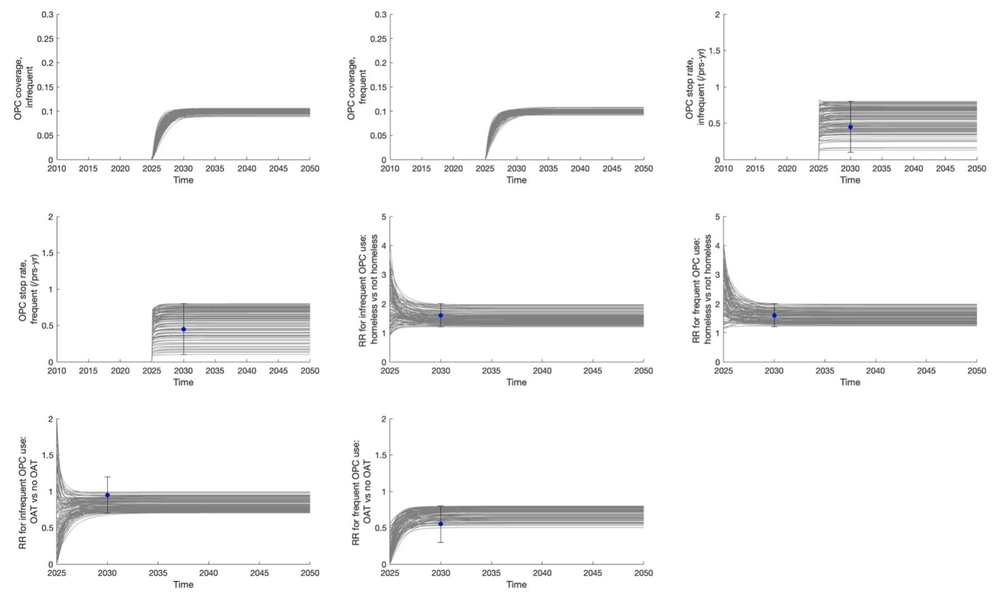


Figure 4: Estimated impact over 10 years of introducing an overdose prevention centre in England and Glasgow on (i) fatal overdose, (ii) ambulance call-outs for overdose, (iii) hepatitis C (HCV) infection and (iv) A&E visits and hospitalisations for skin/soft tissue infections (SSTIs). Scenario: 20% OPC coverage and 10% (among infrequent OPC users) and 60% (among frequent OPC users) of injections are done inside

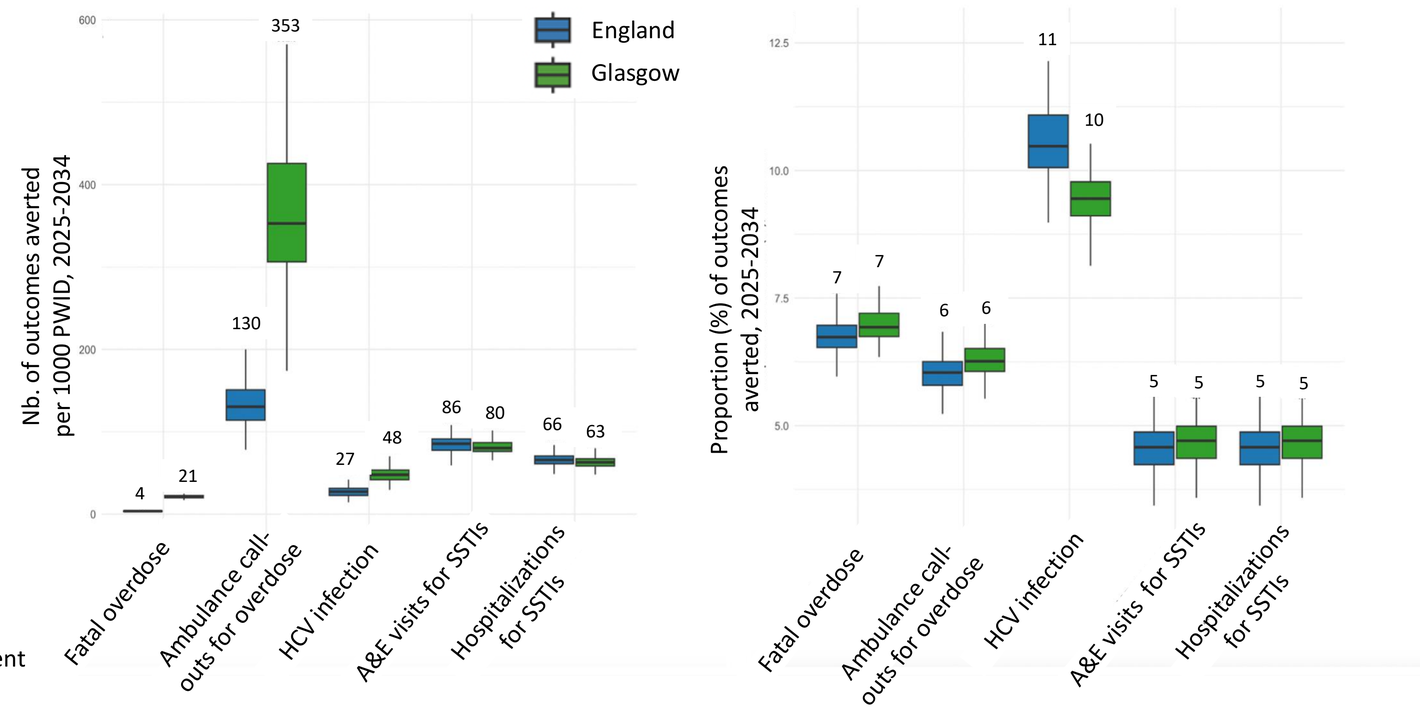
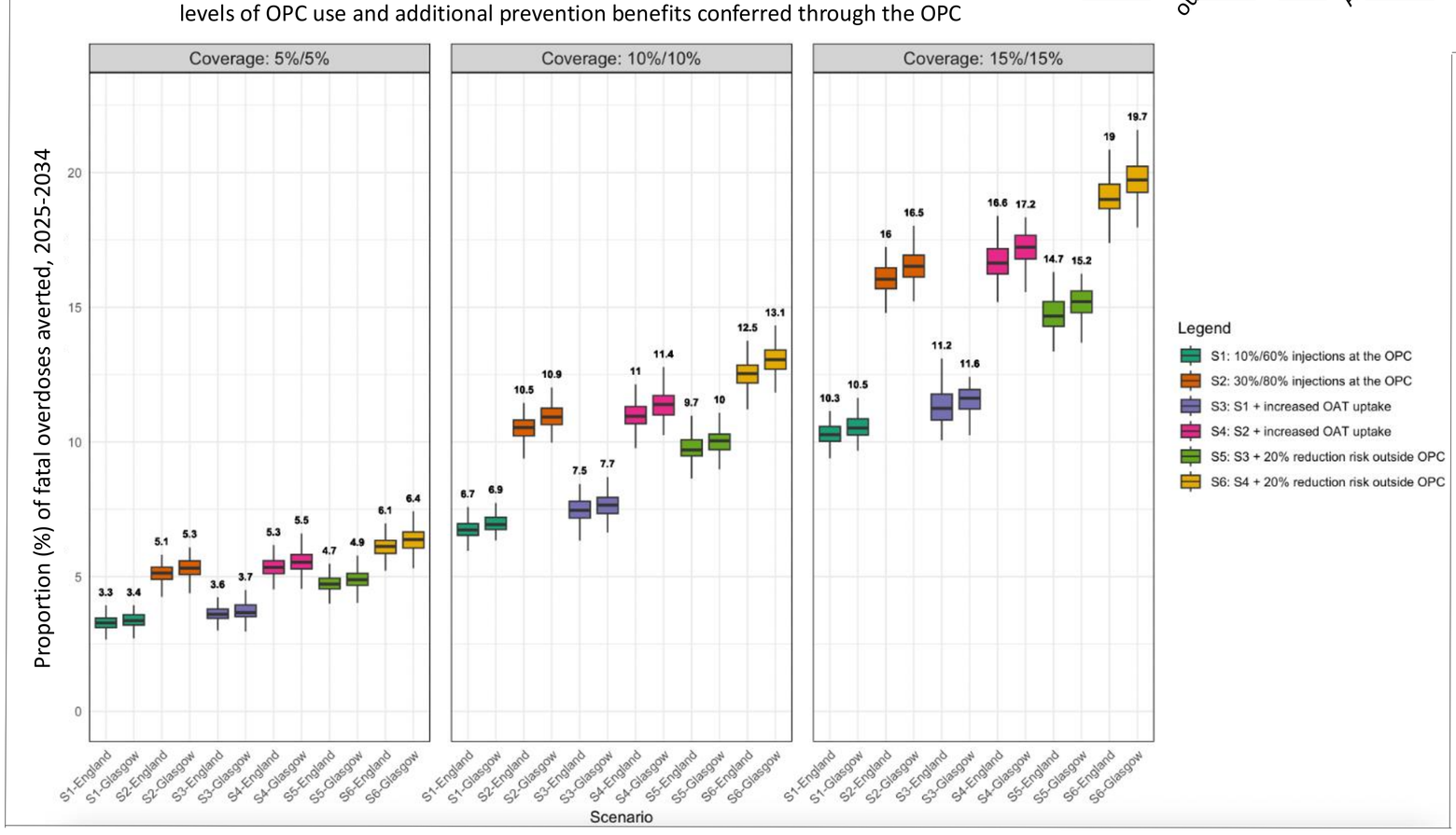


Figure 5: Estimated 10-year impact of introducing an OPC on fatal overdose assuming different levels of OPC use and additional prevention benefits conferred through the OPC



CONCLUSIONS

- The introduction of an OPC in England or Glasgow could have substantial benefits on multiple drug-related harms, including fatal overdose, ambulance calls for overdose, HCV infections and SSTIs requiring A&E visits/hospitalizations
- The expected impact is dependent on factors relative to OPC use (i.e., % of PWID using the program and fraction of injections done inside) and additional services provided through the program (i.e., OAT, risk reduction counselling)
- The estimated effects of OPCs on the outcomes considered are based on theoretical assumptions and external observational data
  - Studies that measure and contrast the effect of OPCs on outcomes using stronger study designs and a more granular definition of program use are needed (e.g., % of PWID using the OPC, % of injections done inside, heterogeneity in OPC use)

REFERENCES

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