Rapid point of care HCV testing allows high throughput HCV screening and rapid treatment uptake among PWID attending a medically supervised injecting room (MSIR)

MacIsaac MB[1,2], Whitton B[1], Anderson J[3], Penn M[3], Weeks T[3], Cogger S[3], Elmore K[3], Pemberton D[3], McKeever U[4], Papaluca T[1,2], Howell J[1,2], Hellard M[5,6,7], Stoové M[5,6], Wilson D[5], Pedrana A[5,6], Doyle J[5,7], **Clark N**[3,8], Holmes JA[1,2], Thompson AJ[1,2]

[1]Department of Gastroenterology, St Vincent's Hospital Melbourne, Fitzroy, Victoria, Australia
[2]Faculty of Medicine, University of Melbourne, Parkville, Victoria, Australia
[3]Medically Supervised Injecting Room, North Richmond Community Health, Richmond, Victoria, Australia
[4]Health Independence Department, St Vincent's Hospital Melbourne, Fitzroy, Victoria, Australia
[5]Disease Elimination Program, Burnet Institute, Melbourne, Victoria, Australia
[6]School of Public Health and Preventative Medicine, Monash University, Melbourne, Victoria, Australia
[7]Department of Infectious Diseases, The Alfred and Monash University, Melbourne, Victoria, Australia
[8]Addiction Medicine Service, The Royal Melbourne Hospital, Parkville, Victoria, Australia

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north richmond community health
Wulempuri - Kertheba

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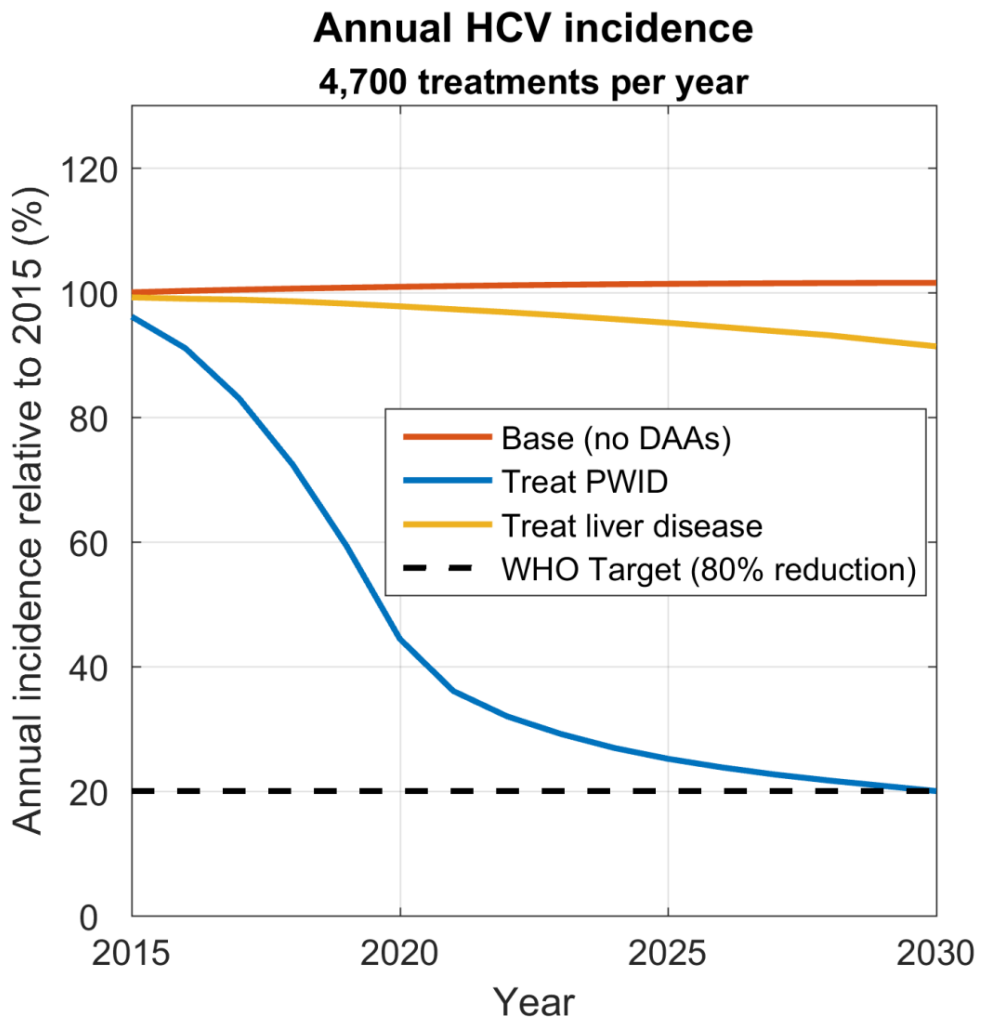
  - Mark Stoove
  - David Wilson
  - Alisa Pedrana
  - Joe Doyle

Local Hepatitis C Elimination Targets (Victoria)



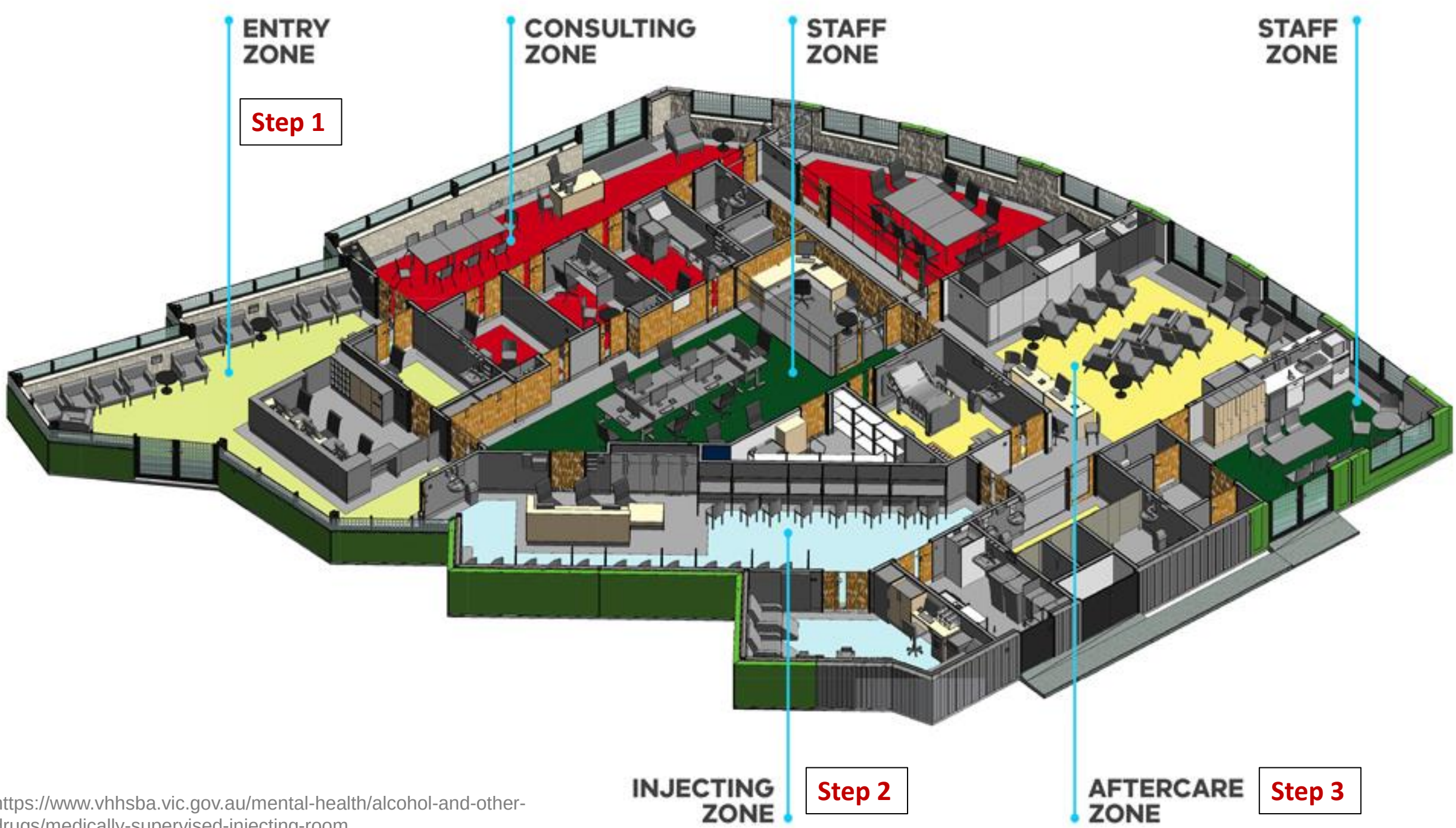
In Victoria, there are 15,000 – 25,000 PWID
~ 25% chronically HCV

Modelling suggests that treating 1000 PWID/yr will achieve the WHO target

AIM: treat > 1,000 PWID/yr

Scott N, *et al. Gut* 2017; 66: 1507–1515

New Facility, opening morning, 07/07/2019



https://www.vhhsba.vic.gov.au/mental-health/alcohol-and-other-drugs/medically-supervised-injecting-room

Key data for the MSIR trial (30 June 2018 to 30 December 2020)

- 208,311 visits with a supervised injection
- 4,003 overdoses managed onsite
- 5,198 registered clients
- 42,449 services provided by MSIR staff
- 502 clients screened for BBV, with 171 hepatitis C treatment initiations
- 223 clients commenced opioid agonist treatment, with 177 choosing depot buprenorphine

Who uses the MSIR?

- Average age 42 years
- 75% male
- ~15% identify as Aboriginal
- ~25% released from prison in the three months prior to registration
- Histories of trauma – intergenerational, childhood, complex +++
- High rates of health care utilisation at registration:
  - ~25% ambulance transport last 12 months
  - ~30% hospitalised in last six months
  - ~50% currently taking prescribed medications
  - ~30% ever hospitalised for mental health issues
  - ~57% history of medication for mental health issues

Onsite services in the Consulting Area

Service	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
OAT CLINIC	**Dellie** 09:30am – 4:30pm	**Dellie** 09:30am – 4:30pm	**Meg** 09:30am – 4:30pm	**Carmelo** 09:30am – 4:30pm	**Meg** 09:30am – 4:30pm
GP DROP-IN		**Matt** 2pm – 4:30pm	**John** 2pm – 4:30pm		**John** 10:30am – 1:30pm
BBV CLINIC/EPOCH	Check with duty manager	Check with duty manager	Check with duty manager	Check with duty manager	Check with duty manager
Nurse on duty	9:30am – 4:30pm	9:30am – 4:30pm	9:30am – 4:30pm	9:30am – 4:30pm	9:30am – 4:30pm
DENTAL CLINIC (main building)	**1 x MSIR appointment** @ 13:30 Call before 11:00	**1 x MSIR appointment** @ 13:30 Call before 11:00	**Drop-in clinic 13:30** Call before 11:00 for MSIR clients	**1 x MSIR appointment** @ 13:30 Call before 11:00	**1 x MSIR appointment** @ 13:30 Call before 11:00
Vein Care		**Tony** 10:00 – 12:00pm		**Tony** 10:00 – 12:00pm	
CARE COORDINATION	**Barb, Kate & Nicola**	**Kate & Nicola**	**Barb, Kate & Nicola**	**Kate & Nicola**	**Barb & Nicola**
SEXUAL HEALTH	**Kate**	**Kate**	**Kate, Meg**	**Kate**	**Meg**
SVHM WOUND NURSE				**Celia** 10:00am – 4:00pm	
LAUNCH HOUSING	**Yana** 9:00am - 4:00pm	**Yana** 9:00am - 4:00pm	**Yana** 9:00am - 4:00pm	**Yana** 9:00am - 4:00pm	**Yana** 9:00am - 4:00pm
FITZROY LEGAL			**Fortnightly** 1:00pm – 4:00pm		
REGEN		12:00pm – 5:00pm	12:00pm – 5:00pm		
NALOXONE TRAINING	9:30am – 4:30pm	9:30am – 4:30pm	9:30am – 4:30pm	9:30am – 4:30pm	9:30am – 4:30pm
SOCIAL SUPPORT	9:30am – 4:30pm	9:30am – 4:30pm	9:30am – 4:30pm	9:30am – 4:30pm	9:30am – 4:30pm
PHONE CALLS	9:30am – 4:30pm	9:30am – 4:30pm	9:30am – 4:30pm	9:30am – 4:30pm	9:30am – 4:30pm
COVID VAX CLINIC (main building)	**CLOSED**	**Walk-ins only** 10:30am – 4:30pm	**Appointment only** 10:30am – 4:30pm	**Walk-ins only** 10:30am – 4:30pm	**Appointment only** 10:30am – 4:30pm
ORANGE SKY LAUNDRY				11:00am – 1:00pm	

Opioid Agonist Treatment Clinic

- Long-acting injectable buprenorphine (depot) became available in September 2019
- Weekly or monthly injection
- Data on first 41 MSIR clients treated onsite
- 61% maintained continuous treatment over 84 days
- Visits with a supervised injection reduced from 10 in 28 days prior to 0 in the 28 days (median) following first administration
- 76% of clients with weekly injection and 88% of clients with monthly injection remained n treatment
- 59% did not return to inject heroin

Drug and Alcohol REVIEW
APSAD
Drug and Alcohol Review (2021)
DOI: 10.1111/dar.13291

LETTER TO THE EDITOR

Initial experience with subcutaneous depot buprenorphine in a medically supervised injecting facility

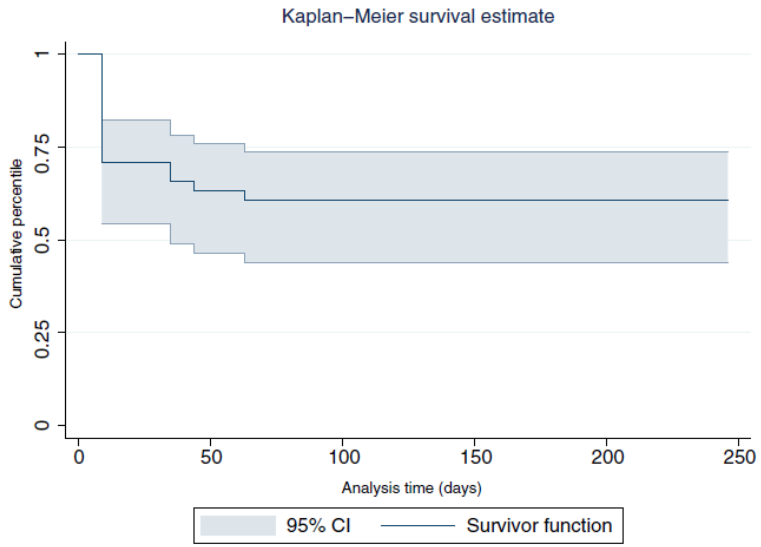


Figure 1. *Depot buprenorphine treatment retention among 41 Medically Supervised Injecting Room clients. CI, confidence interval.*

Hepatitis C testing and treatment in MSIR

- Streamlined testing and treatment approaches have been offered in the MSIR since day 1

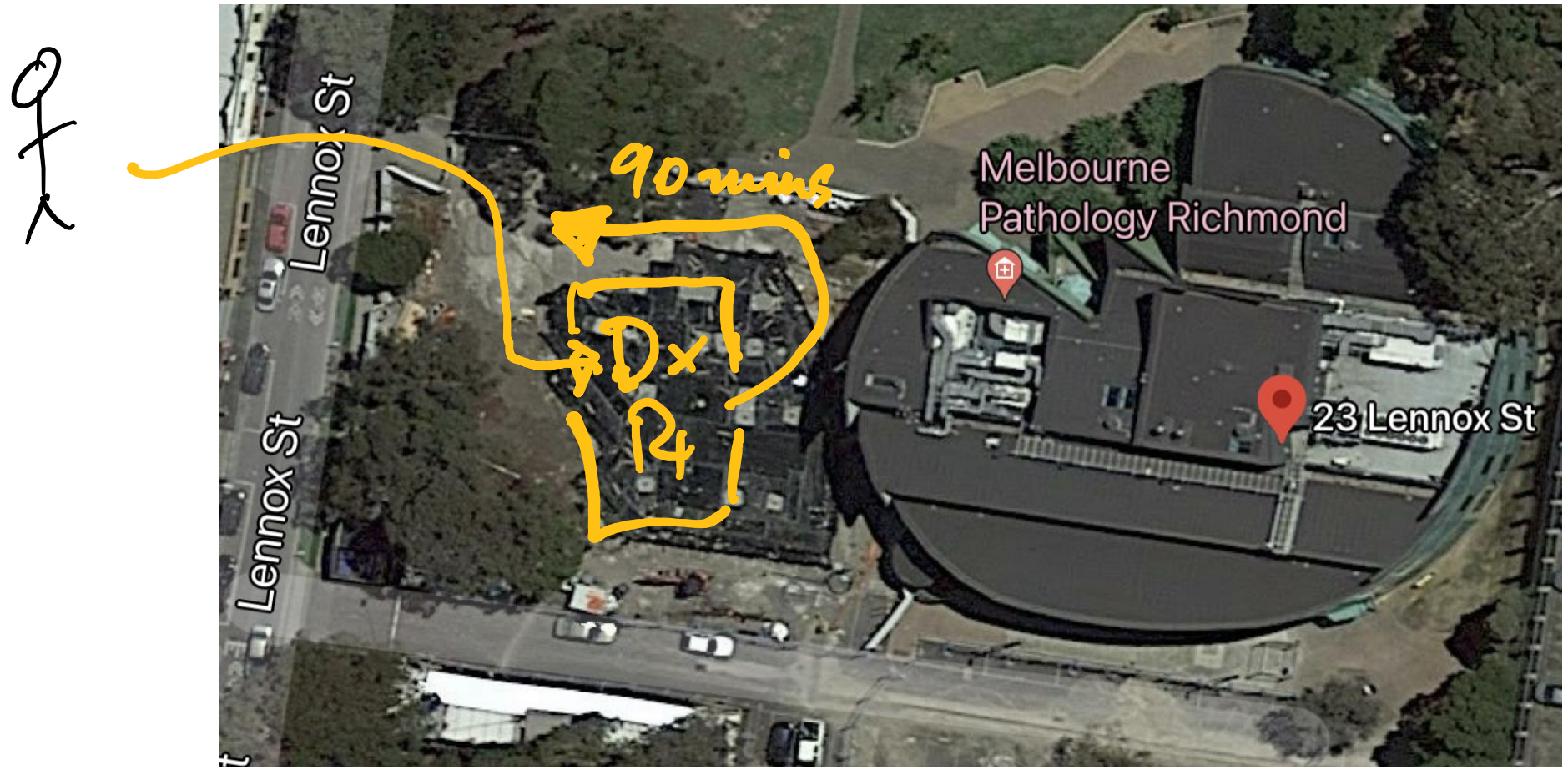
  Model 1: Testing and treatment through the Community Health Centre

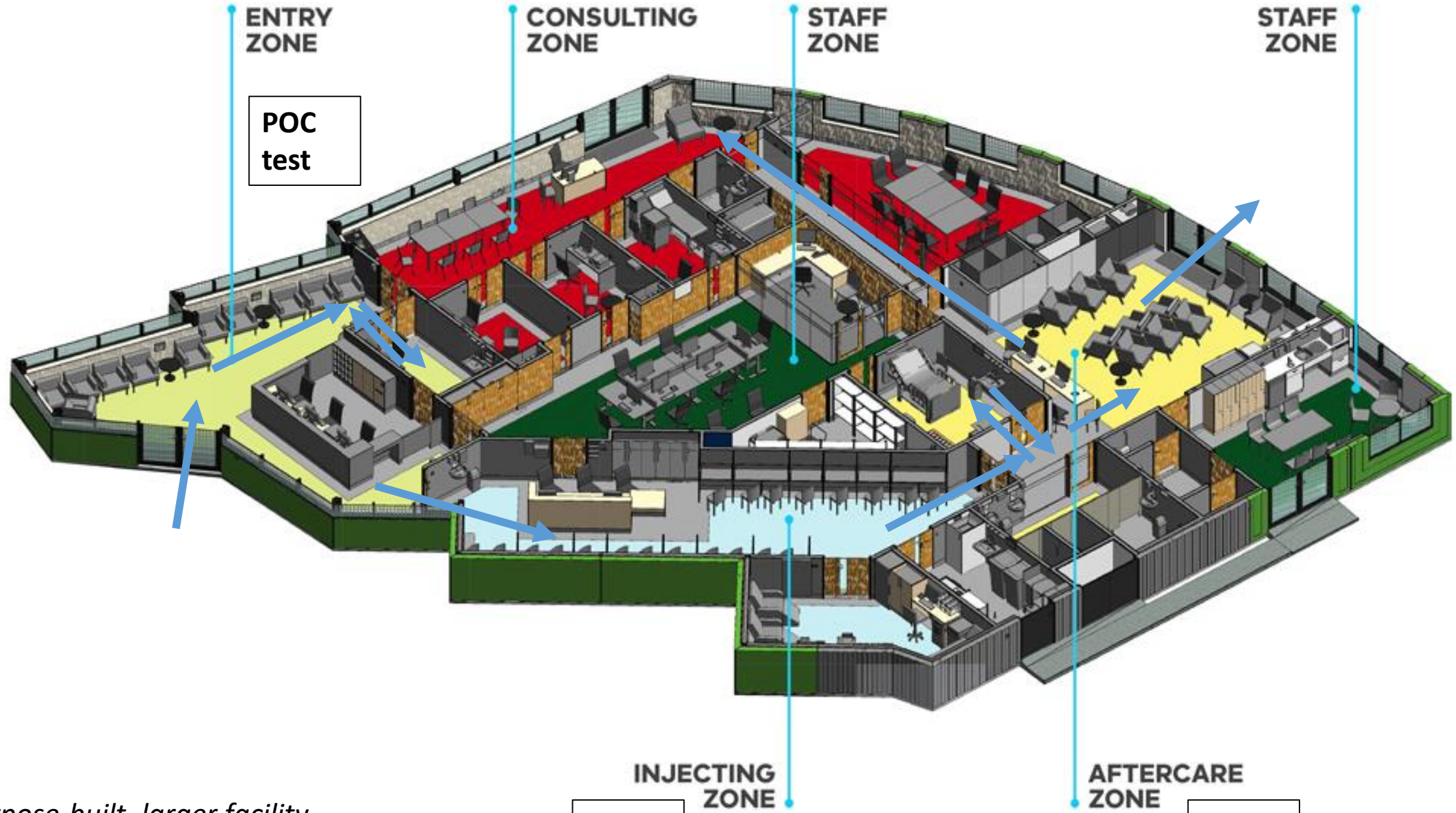
  Model 2: On-site testing and treatment in the MSIR with a simplified diagnostic and treatment pathway with venepuncture and off-site pathology

Model 2 – on-site test and treat over 18 months – treating 2/wk	**N**
Screened for hepatitis C	321
Returned a positive hepatitis C result (	143
Commenced hepatitis C treatment	126

  Model 3: On-site testing and treatment in the MSIR with POC testing

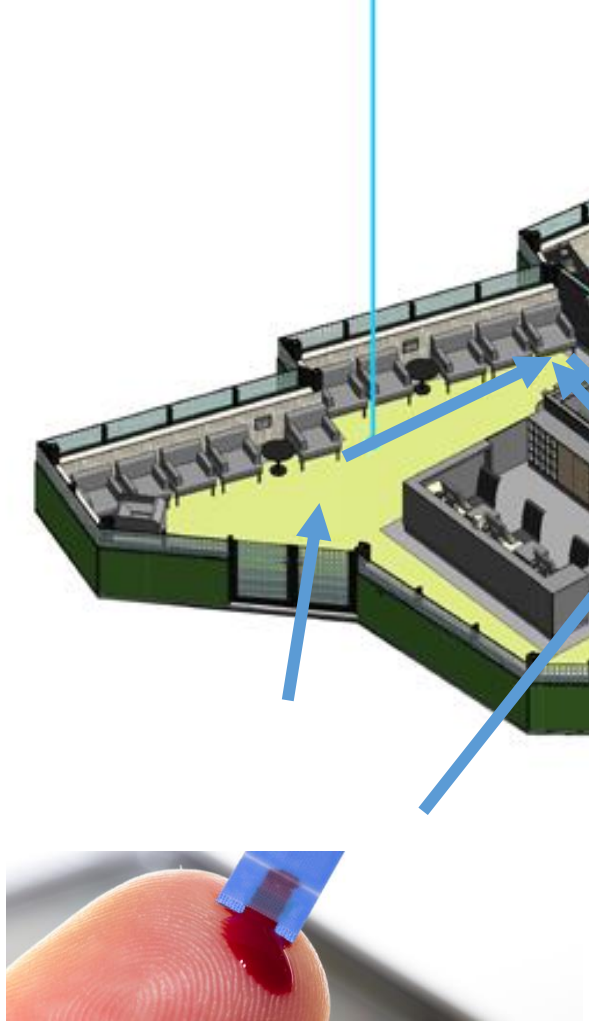
Point of Care based model of HCV treatment – on the spot “test and treat”





**Purpose-built, larger facility – post July 2019*

https://www.vhhsba.vic.gov.au/mental-health/alcohol-and-other-drugs/medically-supervised-injecting-room



ENTRY ZONE

CONSULTING ZONE

STAFF ZONE

STAFF ZONE

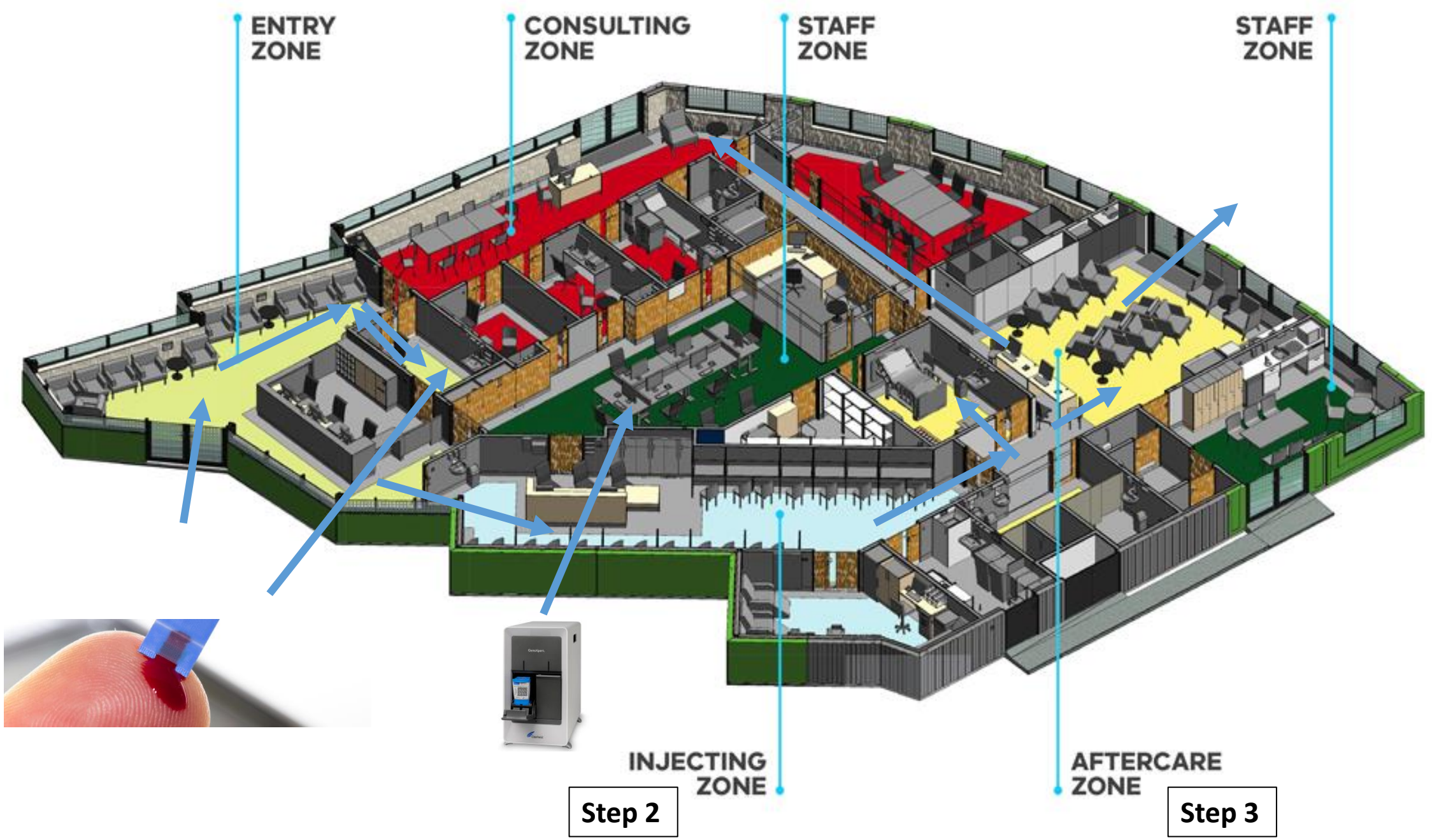
INJECTING ZONE

AFTERCARE ZONE

Step 2

Step 3

https://www.vhhsba.vic.gov.au/mental-health/alcohol-and-other-drugs/medically-supervised-injecting-room



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ENTRY ZONE

CONSULTING ZONE

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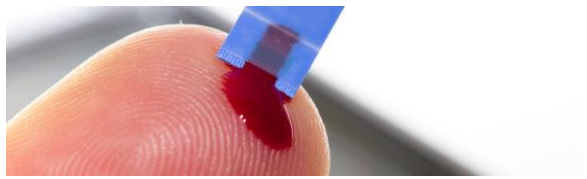


INJECTING ZONE

AFTERCARE ZONE

Step 2

Step 3

https://www.vhhsba.vic.gov.au/mental-health/alcohol-and-other-drugs/medically-supervised-injecting-room

Rapid fingerstick HCV RNA point of care testing

- Point of care technology[1,2]
  1. Increases testing rates
  2. Improves linkage to care
  3. Highly acceptable among PWID; majority prefer to venepuncture
- **Cepheid Xpert HCV Viral Load (VL)** fingerstick POC test for **HCV RNA** detection
  - Approved by TGA in May 2020
  - Only requires ~100µL of blood from fingerstick
  - Portable machine, result <60mins
  - Very high sensitivity (100%) and specificity (100%)[3]

[1]Bajis S *et al. Int. J. Drug Policy.* 2017; 47: 34-46
[2]Williams B *et al. Int. J. Drug Policy*. 2019; 72: 91-98
[3]Lamoury FMJ *et al. J Infect.. Dis*. 2018; 217: 1889-96

Aims

- To assess the acceptability and feasibility of rapid POC fingerstick testing for HCV RNA at the MSIR
- To determine if POC fingerstick HCV testing increases screening and treatment initiation compared to standard HCV screening
- To assess the feasibility and impact of potential same day treatment initiation among PWID with HCV

Methods

- **9 week** prospective pilot study evaluating a **novel, real world model** of care **incorporating rapid fingerstick POC testing** for hepatitis C among PWID attending the MSIR
- Staffed by: 1 full time hepatology fellow, 2 part time integrated hepatitis nurses
- Supported by: nearby community pharmacy which delivered HCV medications

Rapid POC testing at the MSIR is highly successful

228

PWID consented to hepatitis C screening with the POC fingerstick testing

Rapid POC testing dramatically increases HCV screening

- 490 PWID approached
- **228** (47%) consented to HCV POC testing over the 9 week study period
  - Average of **>25 clients screened per week**
- By comparison, 61 clients were screened using standard of care venepuncture testing during the same 9 week time period 12-months prior

274% increase in hepatitis C screening rates with POC testing

Baseline characteristics for study cohort

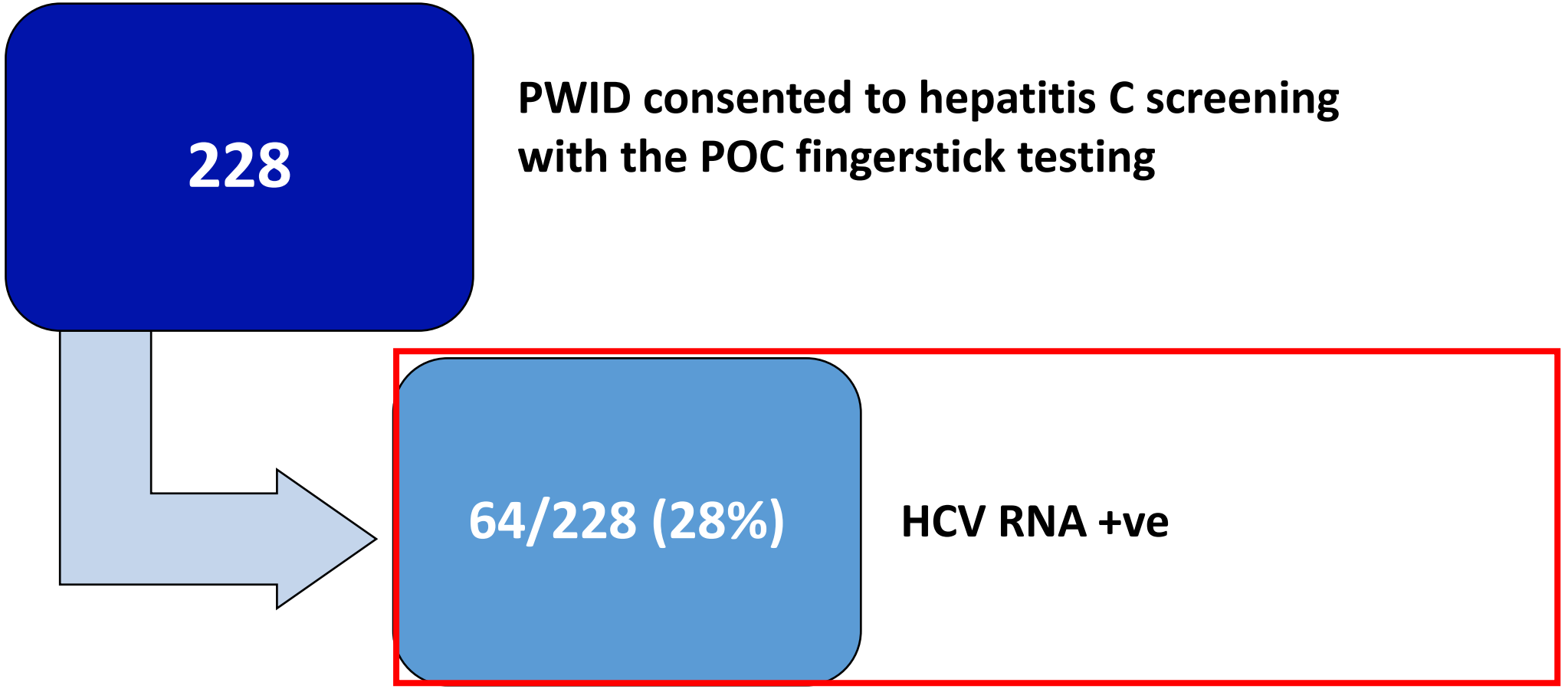
	N = 228
Age, median [IQR]	43 [38 – 48]
Male gender, n (%)	178 (78%)
Indigenous, n (%)	44 (19%)
Homeless / Temp accom, n (%)	66 (29%)
No contact telephone number, n (%)	65 (29%)
No NOK to list, n (%)	142 (62%)
Forensic history, n (%)	165 (72%)
Heavy EtOH, n (%) (≥4 STD on ≥4 days/wk)	36 (16%)
Drug of choice, n (%) Heroin Methamphetamine Other / Not disclosed	 199 (87%) 23 (10%) 6 (3%)

Baseline characteristics for study cohort

	N = 228
Anti-HCV Ab positive, n (%)	161/177 (91%)
Prior hepatitis C care, n (%)	
Prior hepatitis C diagnosis	173 (76%)
Prior treatment	117/173 (68%)
APRI, n (%)	164 (72%)
≥1.0	15/164 (9%)
FibroScan, n (%)	127 (56%)
<9.5	112/127 (88%)
9.5 – 12.5	9/127 (7%)
>12.5	6/127 (5%)
Cirrhosis, n (%)	14 (6%)
HBV co-infection	4/179 (2%)
HIV co-infection	5/177 (3%)

Limited utility of screening with Anti-HCV Ab in this cohort as >90% positive

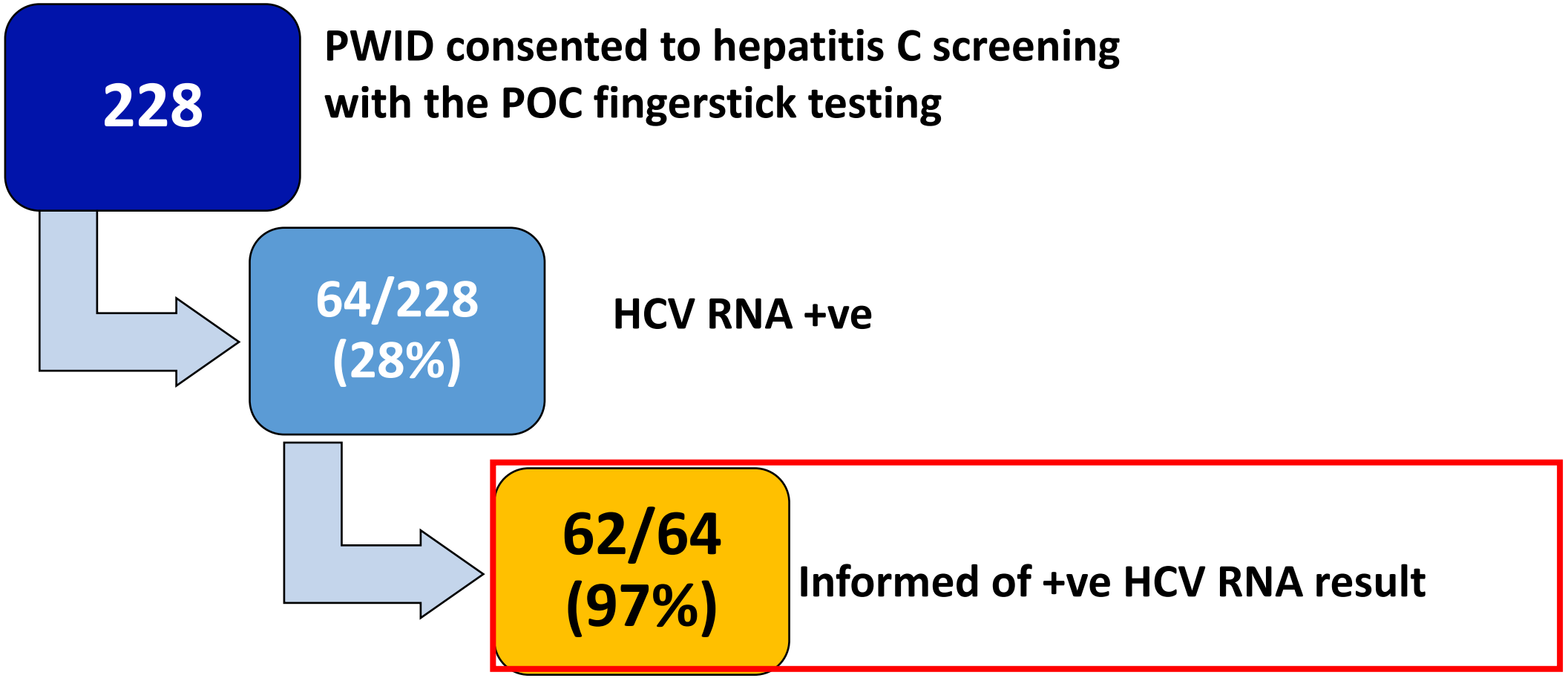
Rapid POC testing at the MSIR is highly successful



Baseline characteristics among HCV RNA +ve clients

	HCV RNA +ve (n = 64)
ALT U/L, median [IQR]	39 [30 – 64]
HCV RNA log10, median [IQR]	6.10 [5.36– 6.41]
Genotype, n (%)	
1a	21 (33%)
2	1 (2%)
3	27 (42%)
4	2 (3%)
6	1 (2%)
Not available	11 (17%)

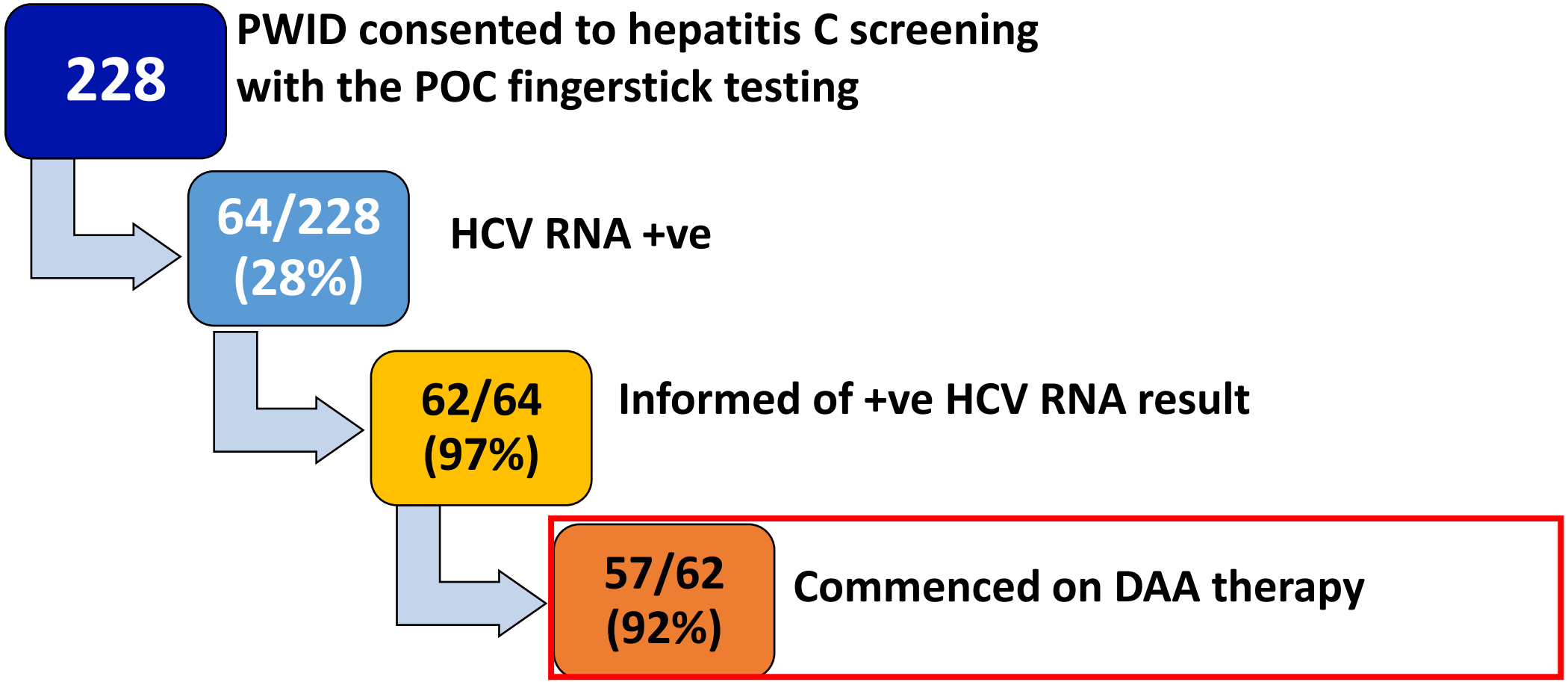
Rapid POC testing at the MSIR is highly successful



Almost all HCV RNA positive clients were informed of their results

- **62/64 (97%)** of HCV RNA positive clients were informed of their result
- **Most (n = 40, 65%)** received their result on the same day as testing
- Median time to result delivery for HCV RNA positive clients not given result on the same day as testing was **2 days** (IQR, 1 – 6)

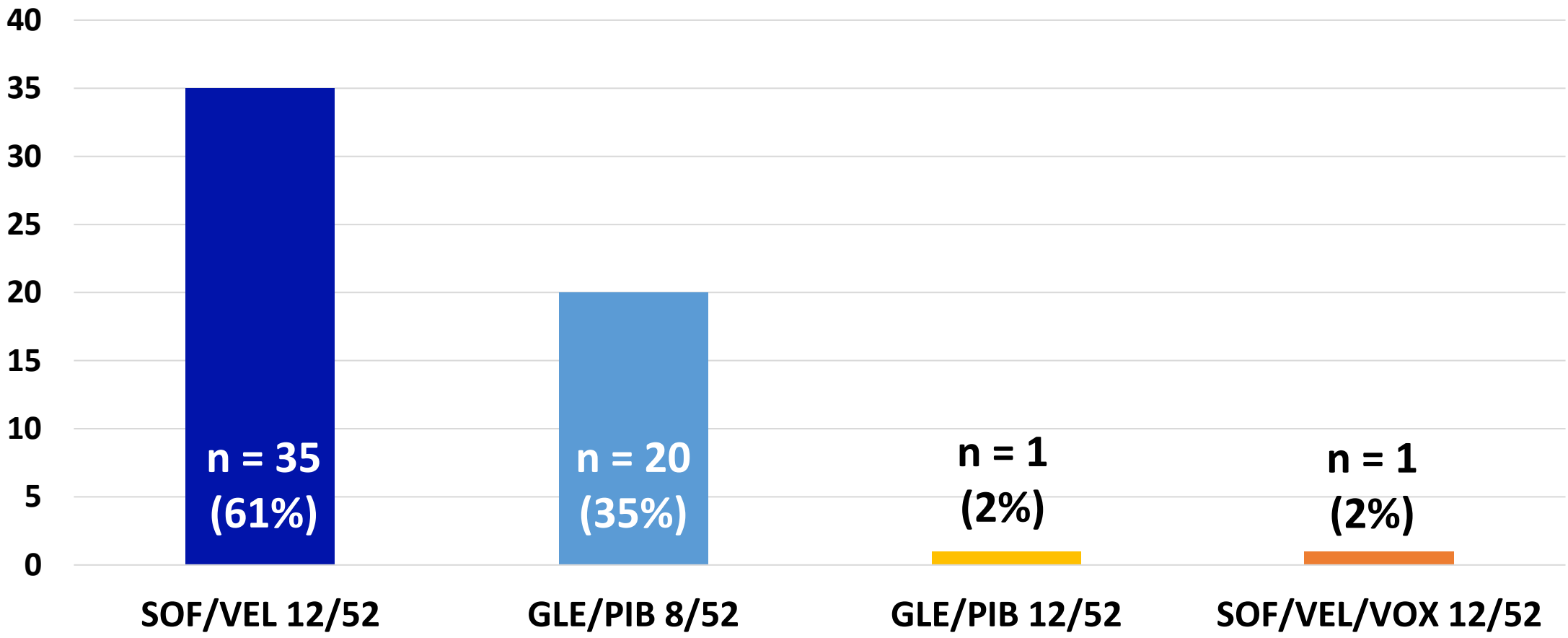
Rapid POC testing at the MSIR is highly successful



Rapid POC testing results in very high rates of linkage to treatment

- **57/62 (92%)** of HCV RNA positive clients were commenced on treatment with DAA therapy
- **13 (23%) started treatment on the same day as testing**
- Median time to DAA start for HCV RNA positive clients who did not start treatment on the same day as testing was **9 days** (IQR, 1 – 23)

Treatment Regimens



Treatment outcomes to date

End of Treatment (EOT)

- 20/23 (87%) with an available HCV RNA result **negative**
- 3 cases of positive HCV RNA due to incomplete treatment adherence (<4 wks of treatment)

SVR12

- 15/17 (88%) HCV RNA **negative**
- 1 case of re-infection
- 1 case of virological relapse

1 on treatment death (**unrelated** to liver disease/DAA therapy)

Conclusions

1. **POC testing rapidly engages large numbers of PWID in hepatitis C screening in a high volume supervised injecting room (>100 client visits/day)**
2. **High rates of HCV RNA +ve (28%)**
3. **Screening with HCV Ab has a limited role (>90% HCV Ab positive)**
4. **Almost all HCV RNA positive clients were successfully linked to treatment**
   - Early delivery of results and opportunity for treatment initiation may be important to successful linkage to care
   - Treatment initiation of 6 per week (compared to 2/wk previously)
5. **A streamlined, real world model of care offering rapid POC hepatitis C screening, treatment work up and access to DAA therapy in a single visit (<1.5hrs) is feasible and can be extremely successful**

Future directions

- Ongoing point of care based screening and treatment program at the MSIR
- Evaluation of a nurse and harm reduction practitioner led model of care
- Consider the applicability of this model of care in other settings with high-risk populations of PWID