School of Medicine
University of Dundee

Improving access to HCV treatment for hard to reach populations

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Declaration of Financial Interests or Relationships

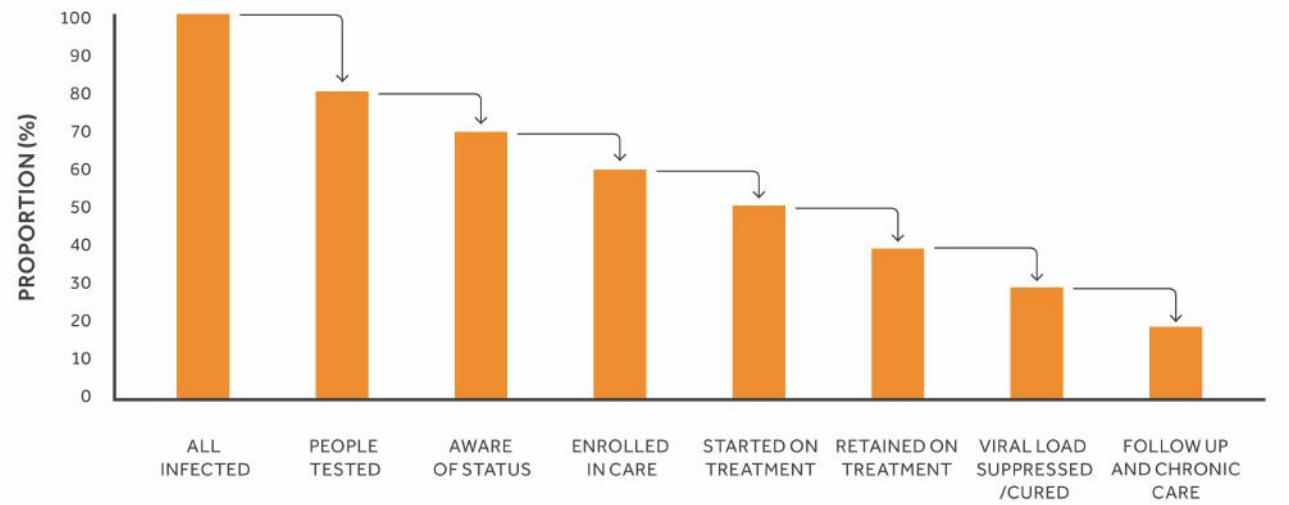
Speaker Name: Prof John F Dillon

I have the following financial interest or relationships to disclose with regard to the subject matter of this presentation:

- Grant/research support: AbbVie, Bristol-Myers Squibb, Boehringer Ingelheim, Gilead Sciences, GlaxoSmithKline, Janssen, Merck Sharp & Dohme, Roche
- Speakers Bureau: AbbVie, Bristol-Myers Squibb, Boehringer Ingelheim, Gilead Sciences, GlaxoSmithKline, Janssen, Merck Sharp & Dohme, Roche

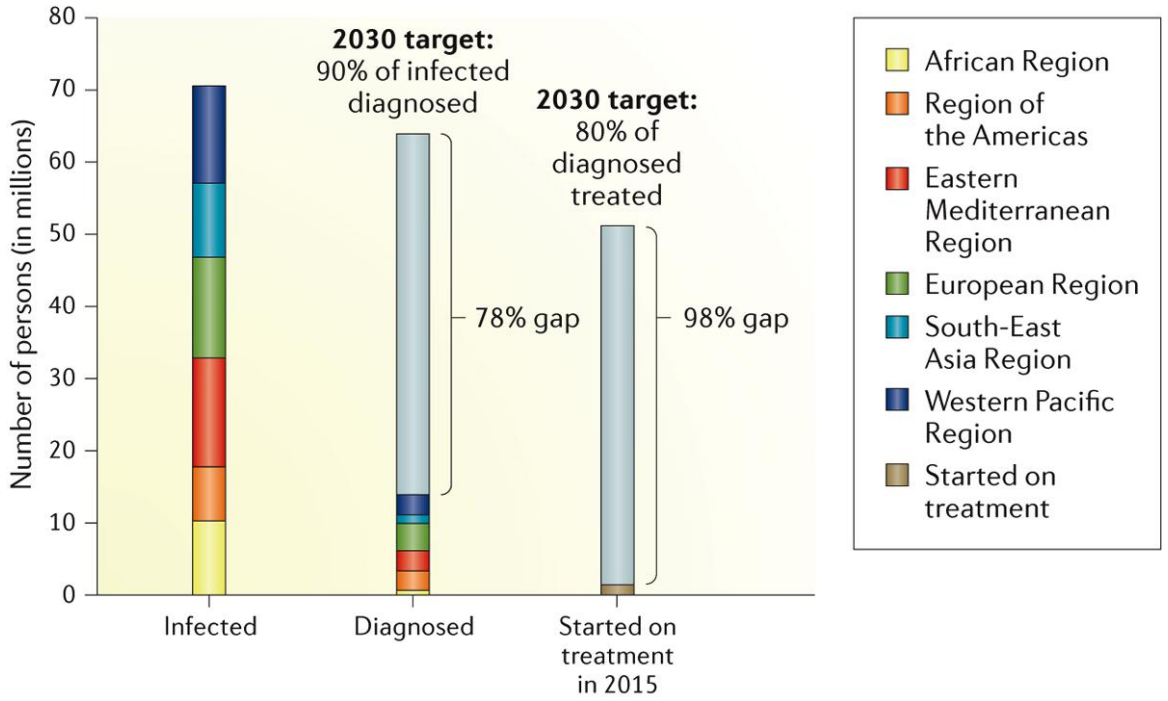
Why change our Hospital based model of care

The continuum of viral hepatitis services and the retention cascade



Source: WHO Global Hepatitis Report, 2017. Available at www.who.int/hepatitis/publications/global-hepatitis-report2017/en/ (accessed May 2017).

The global cascade of care for chronic HCV infection in 2015



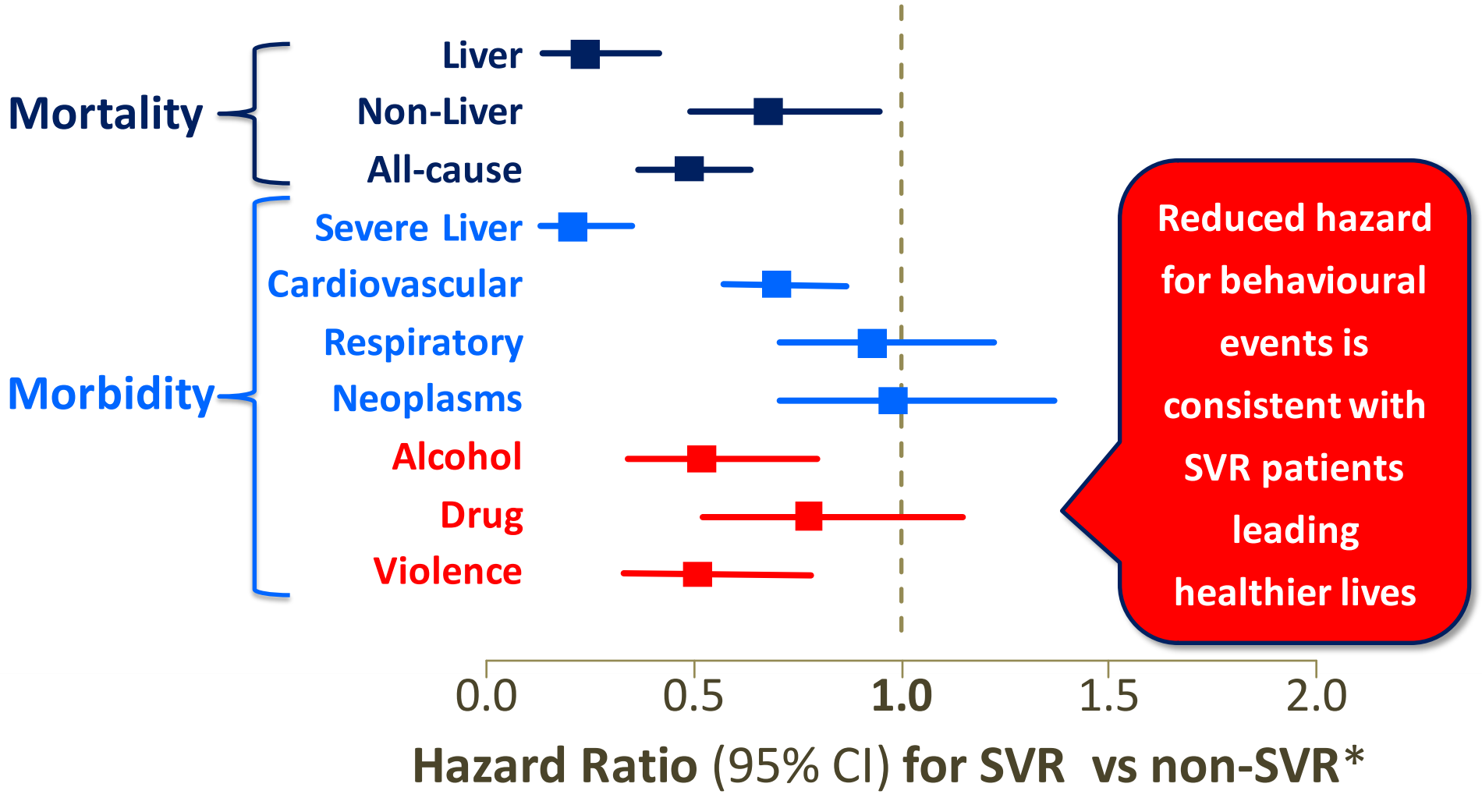
Nature Reviews | Gastroenterology & Hepatology

Adapted by Macmillan Publishers Ltd, part of Springer Nature with permission, from *Global Hepatitis Report, 2017,* World Health Organization, page 30, figure 8, 2017.

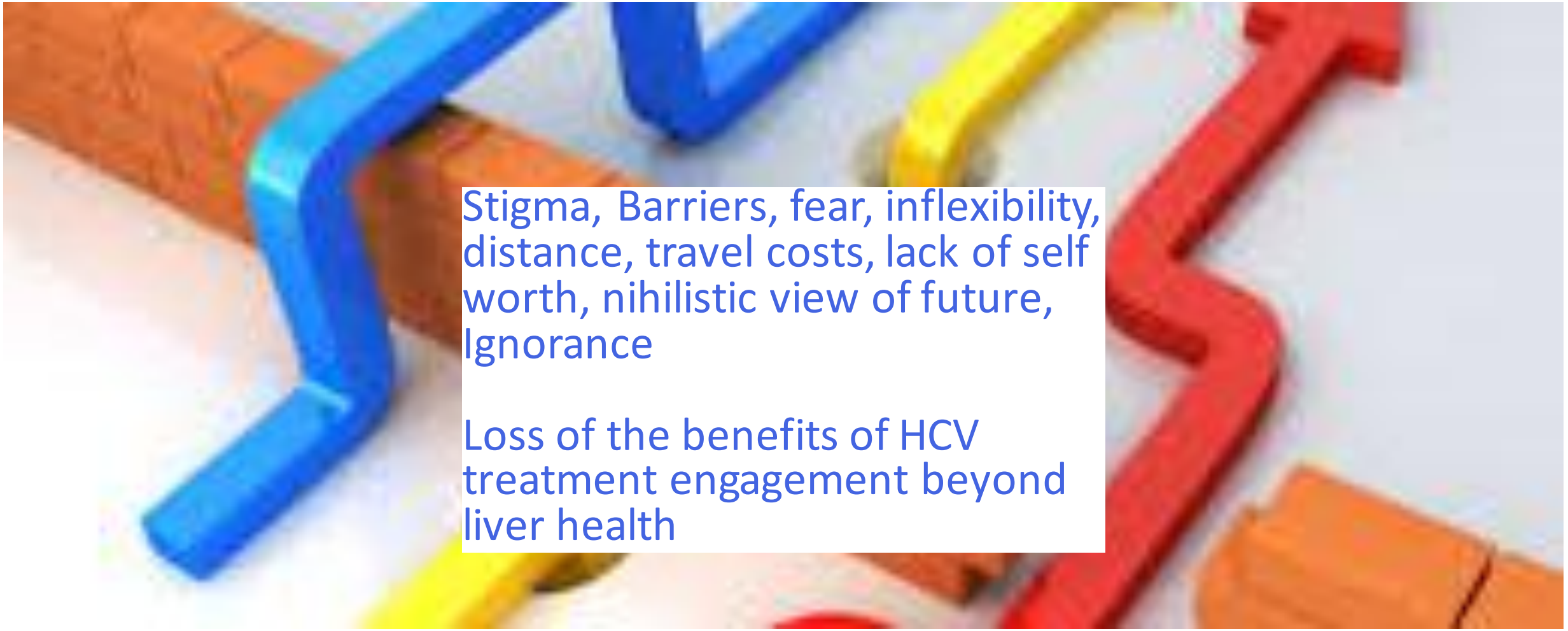
Source: Lazarus JV. *et al.* Many European countries 'flying blind' in their efforts to eliminate viral hepatitis. *Nat. Rev. Gastroenterol. Hepatol.* doi:10.1038/nrgastro.2017.98

SVR associated with reduced hazard for a range of hepatic and non-hepatic events in Scotland (N=3,385)

(Innes et al. Hepatology 2015)



* Adjusted for age, sex, medical comorbidites, genotype, behavioural factors, liver function tests.


Stigma, Barriers, fear, inflexibility, distance, travel costs, lack of self worth, nihilistic view of future, Ignorance
Loss of the benefits of HCV treatment engagement beyond liver health


If the Mountain of patients won’t come to treatment
We must take treatment to the patients to achieve elimination

Out Reach & In reach services
Nurse led services

Shortening the distance

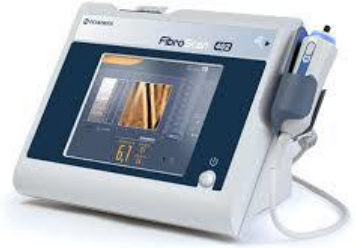
Moving conventional Out-patient services to Locality

- → Usually partial
- → Community health centres
- → Mobile vans
- → Sometimes collocated with addictions facilities
  - → Still new faces
  - → A new environment

Treatment - no one “best” model of care

What do you need to treat HCV?

David Luckenbach												
Analyte name	8/31/2009	9/8/2009	9/14/2009	9/21/2009	9/28/2009	10/5/2009	10/19/2009	10/27/2009	11/3/2009	12/15/2009	Good Range
White blood cell count	8.30	6.70	10.30	**11.10**	8.70	8.30	8.40	**11.70**	9.10	8.20	3.8-10.8
Red blood cell count	4.56	4.26	4.33	4.45	4.39	4.62	4.40	4.70	4.40	5.07	4.2-5.8
Hemoglobin	15.20	15.00	15.60	15.60	15.90	15.40	15.00	15.90	15.00	15.50	13.2-17.1
Hematocrit	46.90	45.00	45.60	46.00	45.90	46.70	46.30	47.80	42.30	46.40	38.5-50.0
MCV	**107.30**	**105.60**	**106.10**	**103.40**	**104.50**	**105.40**	**103.20**	**100.00**	96.10	91.50	80-100
MCH	**35.00**	**35.30**	**35.40**	**35.10**	**35.50**	**35.60**	**35.80**	33.80	**34.10**	30.50	27-33
MCHC	33.20	33.40	33.40	34.00	33.90	33.80	34.60	33.80	35.50	33.30	32-36
RDW	**24.00**	**22.50**	**21.90**	**20.80**	**19.40**	**18.30**	**16.50**	14.10	**15.50**	**15.30**	11.5-15.0
Platelet count	281.00	182.00	302.00	302.00	239.00	242.00	284.00	323.00	396.00	394.00	140-400
Glucose	**144.00**	**103.00**	**100.00**	79.00	93.00	78.00	80.00		94.00	87.00	65-99
Absolute Neutrophils	6242.00	4845.00	**8166.00**	**8381.00**	5872.00	5212.00	5552.00				1500-7800
Absolute Lymphocytes	1552.00	1253.00	1751.00	1943.00	2445.00	2415.00	2184.00				850-3900
Absolute Monocytes	465.00	402.00	402.00	577.00	479.00	564.00	554.00				200-950
Absolute Eosinophils	25.00	**7.00**	21.00	78.00	87.00	83.00	76.00				15-500
Absolute Basophils	17.00	13.00	21.00	22.00	17.00	25.00	34.00				0-200
Neutrophils %	75.20	73.80	78.70	75.50	65.20	62.80	66.10		64.00	67.00	
Lymphocytes %	18.70	18.70	17.00	17.50	28.10	29.10	26.00	26.00	25.00	22.00	
Monocytes	5.60	7.20	3.90	5.10	5.50	6.80	6.60	11.00	9.00	8.00	
Eosinophils %	0.30	0.10	0.20	0.70	1.00	1.00	0.90	1.00	1.00	2.00	
Basophils %	0.20	0.20	0.20	0.20	0.20	0.30	0.40	0.00	1.00	1.00	
Creatinine	0.78	**0.66**	**0.65**	**0.70**	0.68	0.80	**0.73**		0.80	0.80	0.75-1.45
Sodium	136.00	137.00	137.00	137.00	138.00	140.00	142.00		137.00	140.00	135-146
Potassium	4.10	4.00	4.20	3.90	3.80	3.70	4.20		4.00	3.80	3.5-5.3
Chloride	**96.00**	100.00	100.00	100.00	100.00	98.00	101.00		105.00	101.00	98-110
Carbon Dioxide	24.00	24.00	26.00	24.00	25.00	28.00	25.00		29.00	21.00	21-33
Calcium	8.80	8.90	9.00	8.90	9.00	9.20	9.00	9.50	9.20	9.50	8.6-10.2
Protein	6.90	7.00	7.00	6.70	6.90	6.80	7.10		6.90	7.20	6.2-8.3
Albumin	3.90	3.70	4.10	4.10	4.10	4.10	4.00		3.90	3.40	3.6-5.1
Globulin	2.90	3.30	2.90	2.80	2.50	2.70	3.10		3.80	3.80	2.1-3.7
AST	22.00	35.00	18.00	27.00	28.00	27.00	34.00		27.00	**49.00**	10.0-35.00
ALT	42.00	46.00	32.00	25.00	24.00	23.00	23.00		19.00	21.00	9.00-60.00
BUN									**5.00**	**5.00**	7.00-25.00



What do you really need to cure HCV?

Current Tayside practice
But can be varied to suit the patient

1. Diagnosis made on DBS (HCV ab and PCR, HIV, HBV) or venepuncture by non specialist, referred by who ever did the test
2. Visit 1 Seen by Nurse specialist (or the Community Pharmacist who did the DBS)
    1. Protocol history (age and alcohol history)
    2. Bloods for FBC, LFTs, Fib 4, HCV PCR if not possible before,
        1. Genotype (only if cost difference)
        2. Start treatment
3. Visit 2 Start Treatment/pick up treatment if not already done so
4. Virtual review of results, decide if ultrasound/fibroscan/duration of treatment/follow up
5. Visit 2 SVR

How do you deliver addiction care

Wide variety of

→ 1. addictive substances and treatments

→ 2. models of care

Key questions

→ Where are the patients already attending

→ Who is already seeing them

They have already over come the barriers

General practices, community health centres, and pharmacies

Community health Centres- site for outreach

General Practice-family practioners, primary medical care

- Often in community health centres

Addictions treatment centres

- Pharmacies for dispensing

Needle exchanges

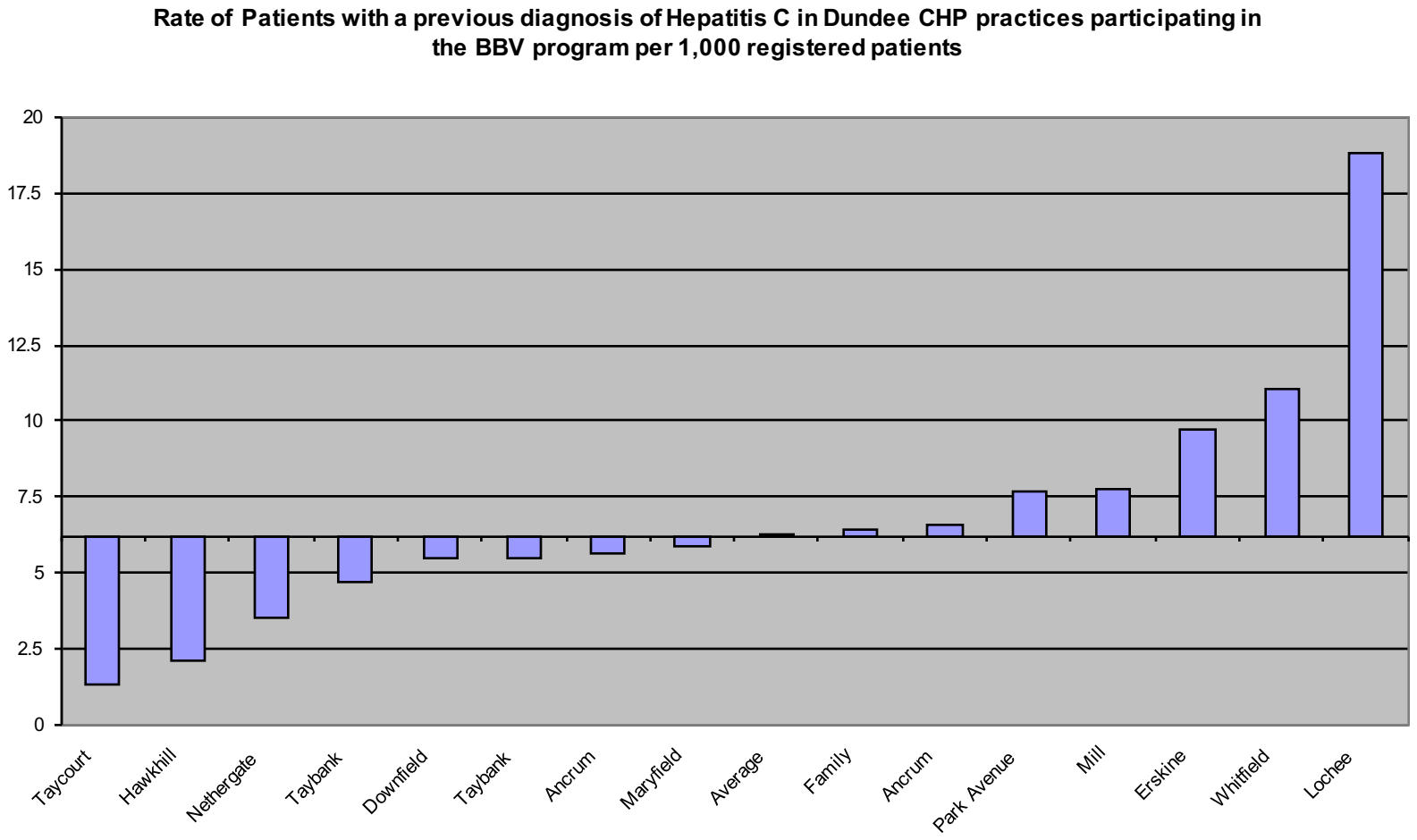
General Practice
Telemedicine, MCNs, virtual MDTs

Marked geographical variation in HCV prevalence with deprivation status in a practice area, varying from 0.1 to 3%

Should approaches be tailored to local circumstances?

GPs who provide addictions services

General Practice Identified Rates of Hepatitis C



Addictions services and Pharmacies

Addictions treatment centres

A site for out reach, an opportunity for addictions specialists

Who are your addictions specialists, what background

Who dispenses OST and where

PREFERENCES FOR HEPATITIS C TESTING: APPLICATION OF A DISCRETE CHOICE EXPERIMENT WITH METHADONE USERS IN TAYSIDE, SCOTLAND

Preference	Willing to Wait
Own rather than other pharmacy	4.25 weeks
Own pharmacy rather than GP	2.11 weeks
Own pharmacy rather than drug worker	0.08 weeks
Treated with respect	7.42 weeks

Community pharmacy

A key role in opioid substitution therapy and a local community resource

Specialist prescribing or GP prescribing

→ Drug treatment centres specialist assessment

→ Some dispensing

  → Especially for early or unstable patients

Dispensing in community pharmacy

→ Daily

→ Twice or thrice weekly

→ Weekly

Community pharmacy

Locality

- → Distance 0.5 km average Scottish urban location
- → Across Scotland, average 20 minutes travelling time
- → Normally ‘in the high street’

Commercial

- → Companies, franchises, own business
  - → So some leadership from pharmacists, some from commercial entities
- → Wide range of medical and personnel care products
- → Contractual payments for care
- → ‘Prescription for Excellence’

Highly trained healthcare professional on site

Dried blood spot testing in Tayside, Scotland

A quasi-experimental evaluation of DBST through community pharmacies in the Tayside region of Scotland

Pharmacy site	Number of eligible patients	Number of tests taken (% of eligible patients)	Number of positive tests
A	23	13 (57)	3
B	22	11 (50)	4
C	30	5 (17)	3
D	26	10 (38)	1
E	26	3 (12)	1
F	16	1 (6)	0
Totals	**143**	**43 (30)**	**12**

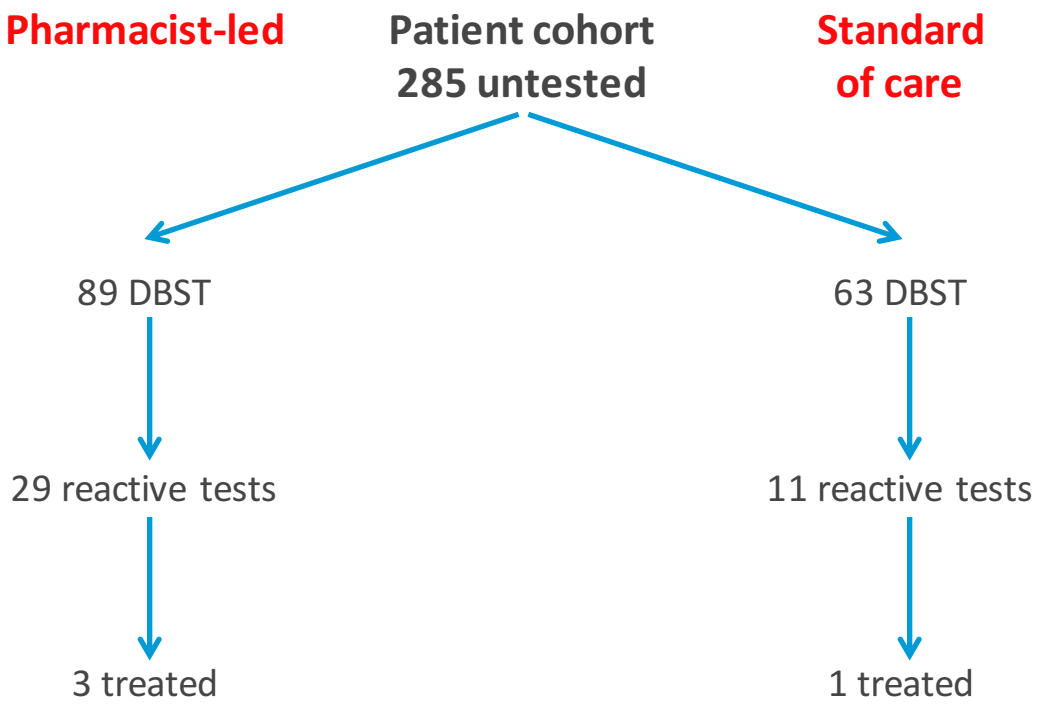
The OR for increased uptake of testing within the 6 pharmacies was 2.25 (95% CI 1.48 to 3.41, Z statistic = 3.81 p = <0.0001) in comparison to the other services

Radley A, et al. Frontline Gastroenterol 2017;0:1–8

CI: confidence interval; DBST: dried blood spot testing; OR: odds ratio

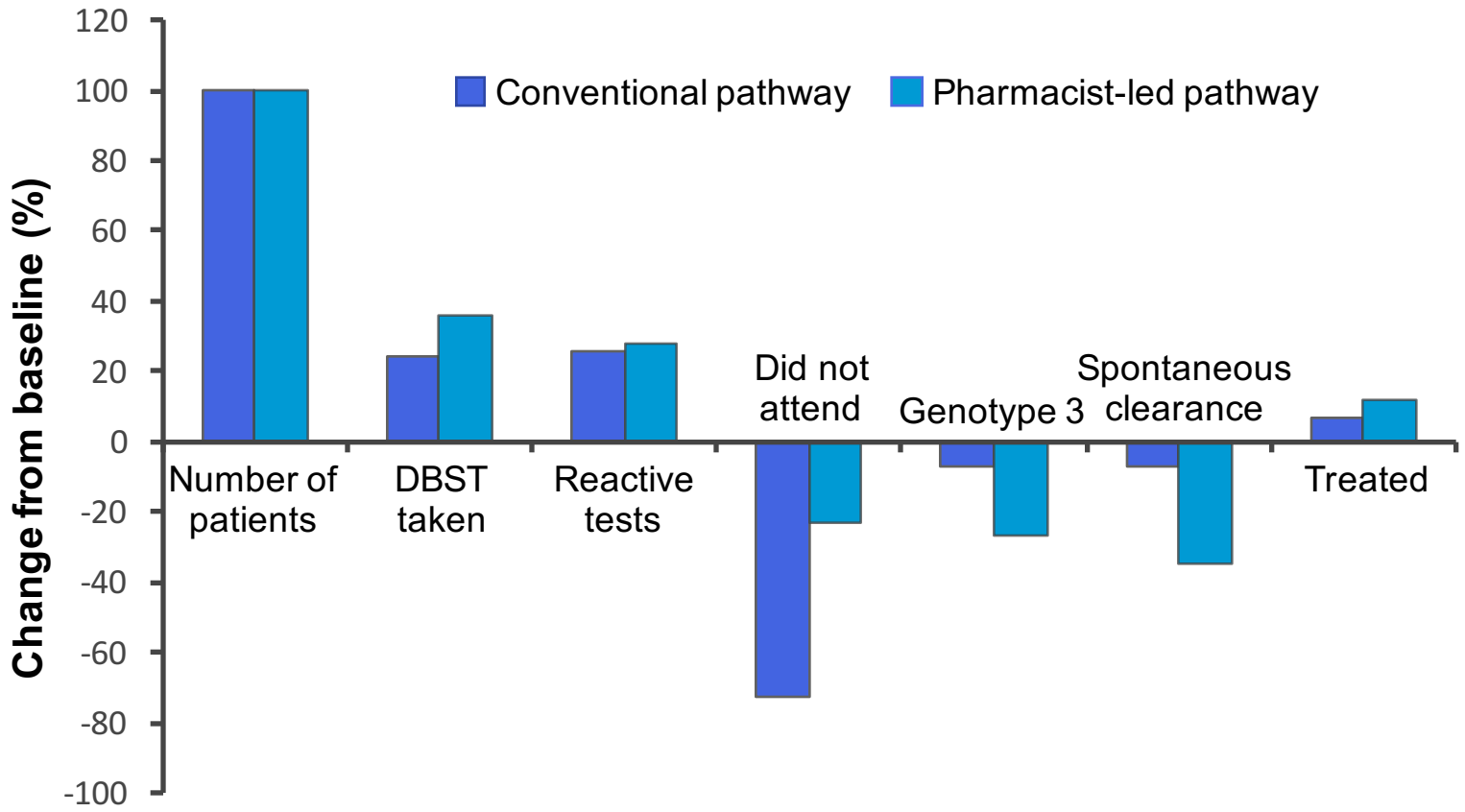
HCV testing and treatment in 8 community pharmacies

DOT-C: A pilot cluster randomised controlled trial



Radley A, et al. Unpublished data (manuscript under review)

DOT-C: waterfall plot of treatment attrition



Radley A, et al. Unpublished data (manuscript under review)

Pharmacy pathway vs conventional pathway: cost-effectiveness analysis

Stage	Reason	Activity (estimated staff time hrs)	Cost (per activity)
1	Pharmacy attendance for methadone	Pharmacist (0.33)	£17
2	DBS test in pharmacy	Pharmacy assistant (0.33)	£3
		DBS Test	£40
3	Assessment blood tests	Specialist nurse (0.33)	£25
		Liver panel	£5
4	Patient assessment in pharmacy	Pharmacist (0.5)	£25
5	Prescription	Pharmacist prescriber (band 8a) (0.5)	£25
6	Outpatient review (SVR test)	Specialist nurse (0.33)	£25
		SVR test	£50
7	Discharge from service	Specialist nurse (0.33)	£25
Total pathway cost			£238
Staff cost			£143
Testing cost			£95

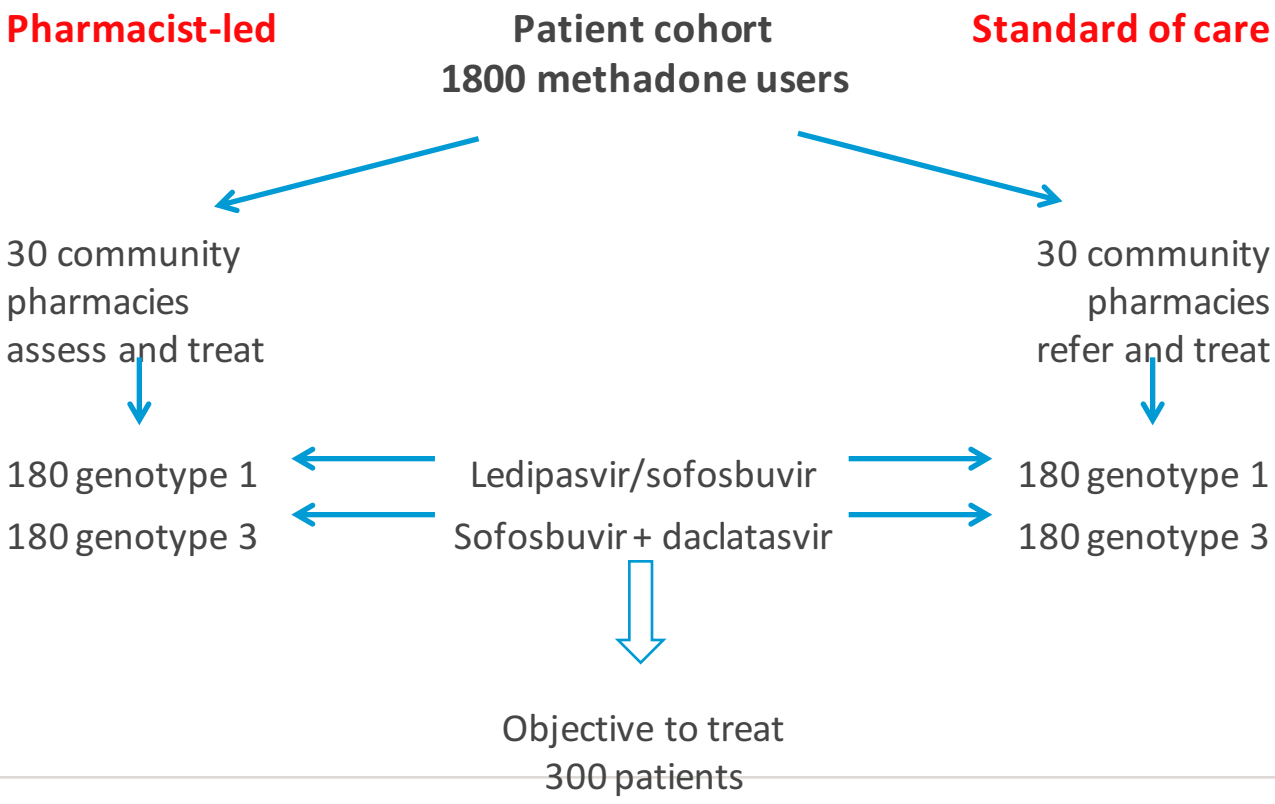
Stage	Reason	Activity (estimated staff time hrs)	Cost (per activity)
1	DDBS test	Specialist nurse (0.33)	£41
		Dried Blood Spot Test	£40
2	Outpatient appointment	Specialist nurse (0.66)	£83
		Liver panel	£5
3	Outpatient appointment	Ultrasonographer (0.5)	£20
		FibroScan	£55
4	Appointment Medical Clinic	Consultant (0.5)	£69
		Liver panel	£5
5	Radiology appointment	Ultrasonographer (0.5)	£20
		Ultrasound (liver)	£63
6	Medical Clinic appointment	Consultant/Registrar (0.33)	£24
7	Outpatient Clinic appointment	Specialist nurse (0.5)	£63
		Liver panel	£5
8	Prescription	Pharmacist prescriber (8a) (0.5)	£36
9	Outpatient review	Specialist nurse (0.33)	£41
		Liver panel	£5
10	Outpatient review	Specialist nurse (0.33)	£41
		Liver panel	£5
11	Outpatient review	Specialist nurse (0.33)	£41
		Liver panel	£5
12	Outpatient review	Specialist nurse (0.33)	£41
		Liver panel	£5
13	Outpatient review	Specialist nurse (0.33)	£41
		SVR test	£50
14	Outpatient review	Specialist nurse (0.33)	£41
		SVR test	£5
15	Discharge	Specialist nurse (0.33)	£41
Total pathway cost			£933
Service cost			£643
Testing cost			£290

Radley A, et al. Unpublished data (manuscript under review)

SVR: sustained virological response

Super DOT-C

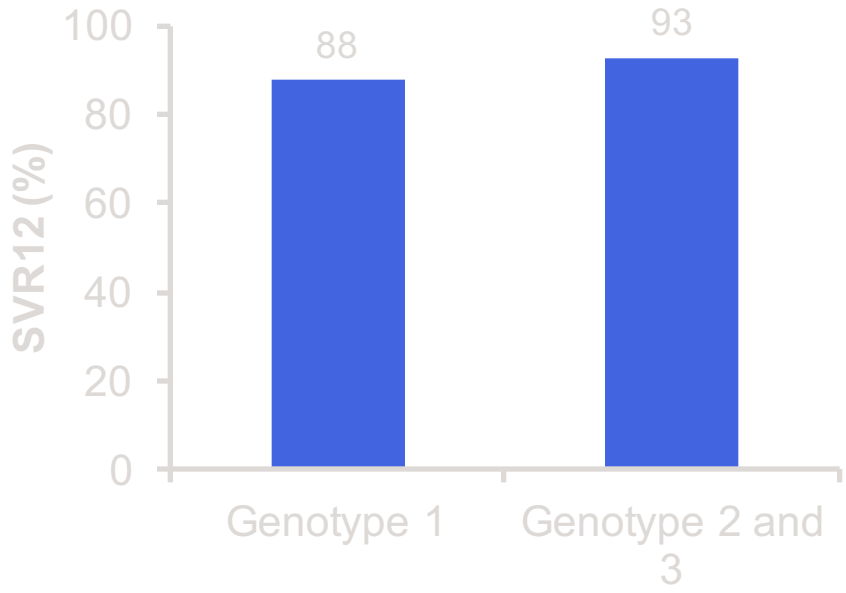
A phase 3 cluster RCT of pharmacist-led vs standard of care testing and treatment of HCV



Eradicate HCV project:
Needle exchange based treatment

- Engage PWID at needle exchange centres in Tayside
- Incentivise suitable participants to comply with treatment
- 42 months into project; 105/125 eligible patients agreed to participate

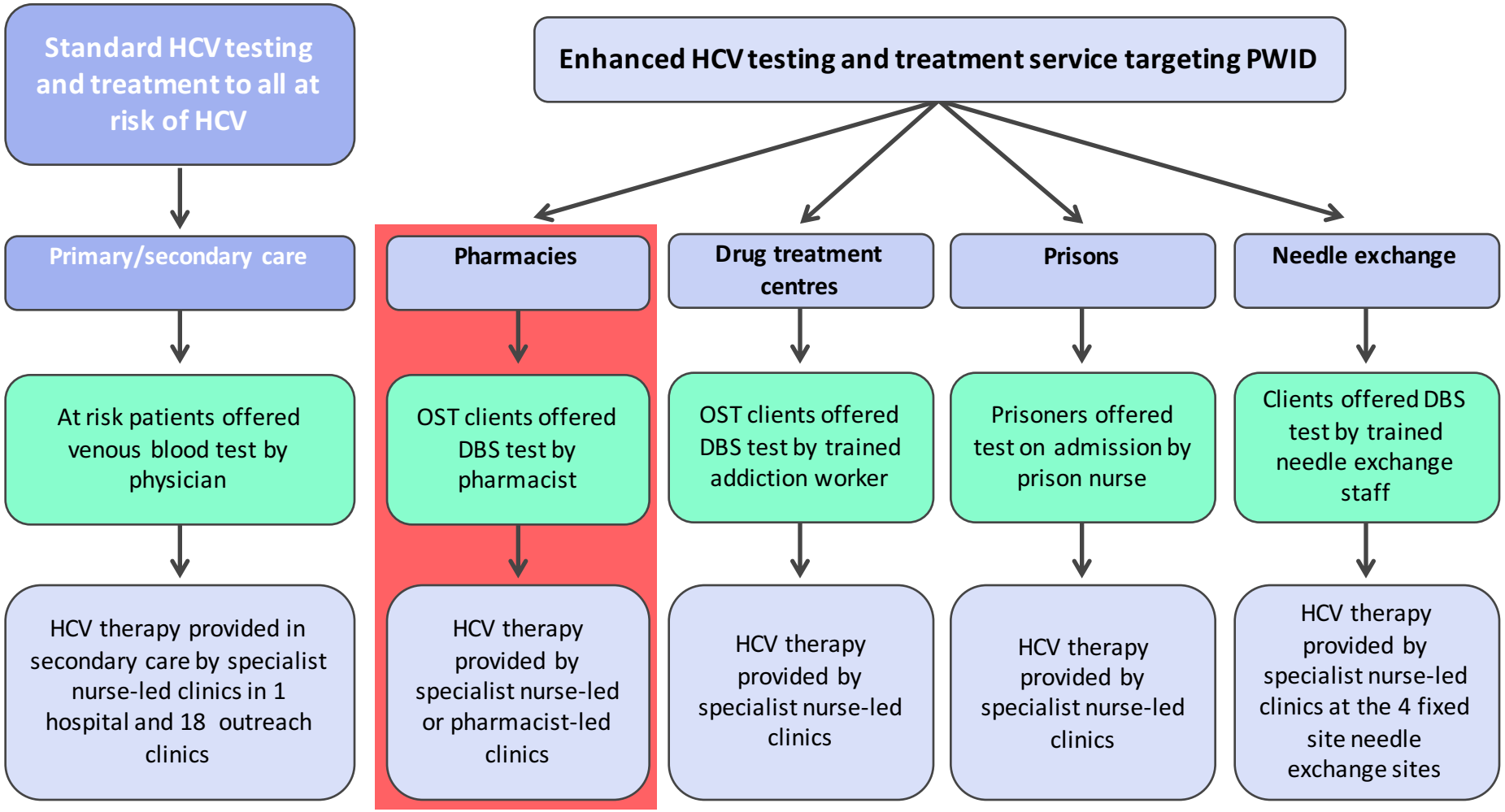
Consented	105
Received treatment	94
Spontaneous resolver	3
Lost to follow-up	4
Stabilised drug use	2
Died prior to treatment	1
Prison prior to treatment	1



Dillon JF. Unpublished data

SVR12: sustained virological response 12 weeks after the end of treatment

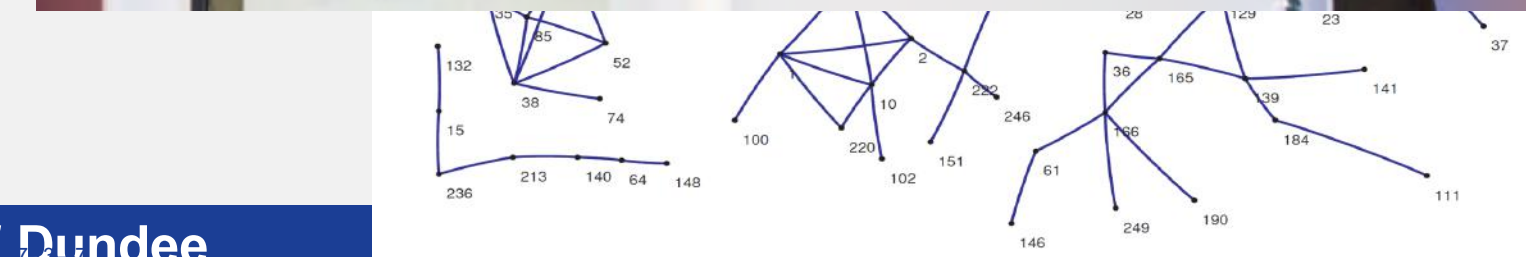
HCV testing and treatment pathways for the PWID and OST populations



PWID defined as those who either (a) are currently injecting drugs, (b) have ever injected drugs and are currently on opioid substitute therapy, or (c) have ever injected drugs and are currently in prison

DBS: dried blood spot; OST: opioid substitution therapies; POC: point of care; PWID: people who inject drugs

Empirical social network of PWID



200 % SVR

% SVR

Acknowledgements

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