

Overview

- Hepatitis C and prisons
- Hepatitis C Incidence and Transmission Study in prisons (HITS-p)
- Nurse-led model of care
- SToP-C



Background

Prisons – New South Wales, Australia

- Full time custodial population ~10,000
- 30 prison centres; 800,000 Km²
- 30,000 new receptions per annum
- 150,000 movements per annum
- Short stay - 24% remand; 21% sentence <6 months
- Over-representation of Indigenous (20% vs 2%)
- Chronic hepatitis C prevalent - 32%
- Co-morbidities prevalent
 - Mental health - 49%
 - Injecting drug use (IDU) - 43%

2009 NSW Inmate Health Survey

HITS-p: incidence and predictors (n=210)

Variable	HCV incidence per 100 person-years			Univariate Cox regression			Multivariable Cox regression (adjusted)		
	No. cases n=38	Incidence rate (%)	95% CI (%)	Hazard ratio	95% CI	P ^a	Hazard ratio	95% CI	P ^a
Gender									
Female	13	22.68	12.08-38.79	1					
Male	25	11.76	7.61-17.36	0.53	0.27 - 1.04	0.062			
Indigenous identity^b									
No	22	10.44	6.54-15.80	1					
Yes	16	27.05	15.46-43.92	2.63	1.38 - 5.05	0.003	2.28	1.72 - 4.44	0.015
IDU during follow-up									
No	7	4.96	1.10-10.22	1					
Yes	31	24.05	16.3-34.14	4.75	2.09 - 10.83	0.0002			
IDU daily or more often									
No	20	9.05	5.53-13.97	1					
Yes	18	36.84	21.83-58.22	4.05	2.12 - 7.76	<0.001	2.22	1.09 - 4.52	0.028
IDU - heroin									
No	17	7.68	4.47-12.30	1					
Yes	21	43.20	26.74-66.03	5.62	2.95 - 10.69	<0.001	4.15	2.07 - 8.34	<0.001
IDU - cocaine									
No	31	12.55	8.53-17.81	1					
Yes	7	30.56	12.29-63.97	2.51	1.1 - 5.73	0.029			
IDU - methamphetamine									
No	21	10.44	6.46-15.96	1					
Yes	17	24.71	14.40-39.57	2.40	1.25 - 4.59	0.008			
Break from IDU									
No	11	7.35	3.67-13.15	1					
Yes	27	22.45	14.79-32.66	2.98	1.47 - 6.04	0.024			
Sharing									
No	21	10.52	6.51-16.09	1					
Yes	17	24.15	14.07-38.67	2.36	1.23 - 4.51	0.010			
Tattooing									
No	31	14.43	9.80-20.47	1					
Yes	7	12.71	5.11-26.20	0.86	0.37 - 1.98	0.731			
Bleaching- always									
No	28	12.27	8.15-17.73	1					
Yes	10	23.94	11.48-44.02	1.98	0.96 - 4.10	0.066			
OST									
No	28	12.35	8.21-17.86	1					
Yes	10	23.09	11.07-42.25	1.92	0.93 - 3.99	0.079			

Abbreviations: CI, confidence interval; OST, methadone maintenance treatment.

^a P values are 2-sided

^b Indigenous identity = reported Australian Aboriginal or Torres St Islander identity.

Justice Health Hepatitis Service

- Justice Health authority separate from custodial authority
- Prison-based
- Taxpayer funded health care
- Taxpayer funded antiviral therapy (HSD S100 scheme)
- Specialist-led, nurse supported clinics
- Outcomes comparable to community standards
- <1% of those eligible, interested – treated

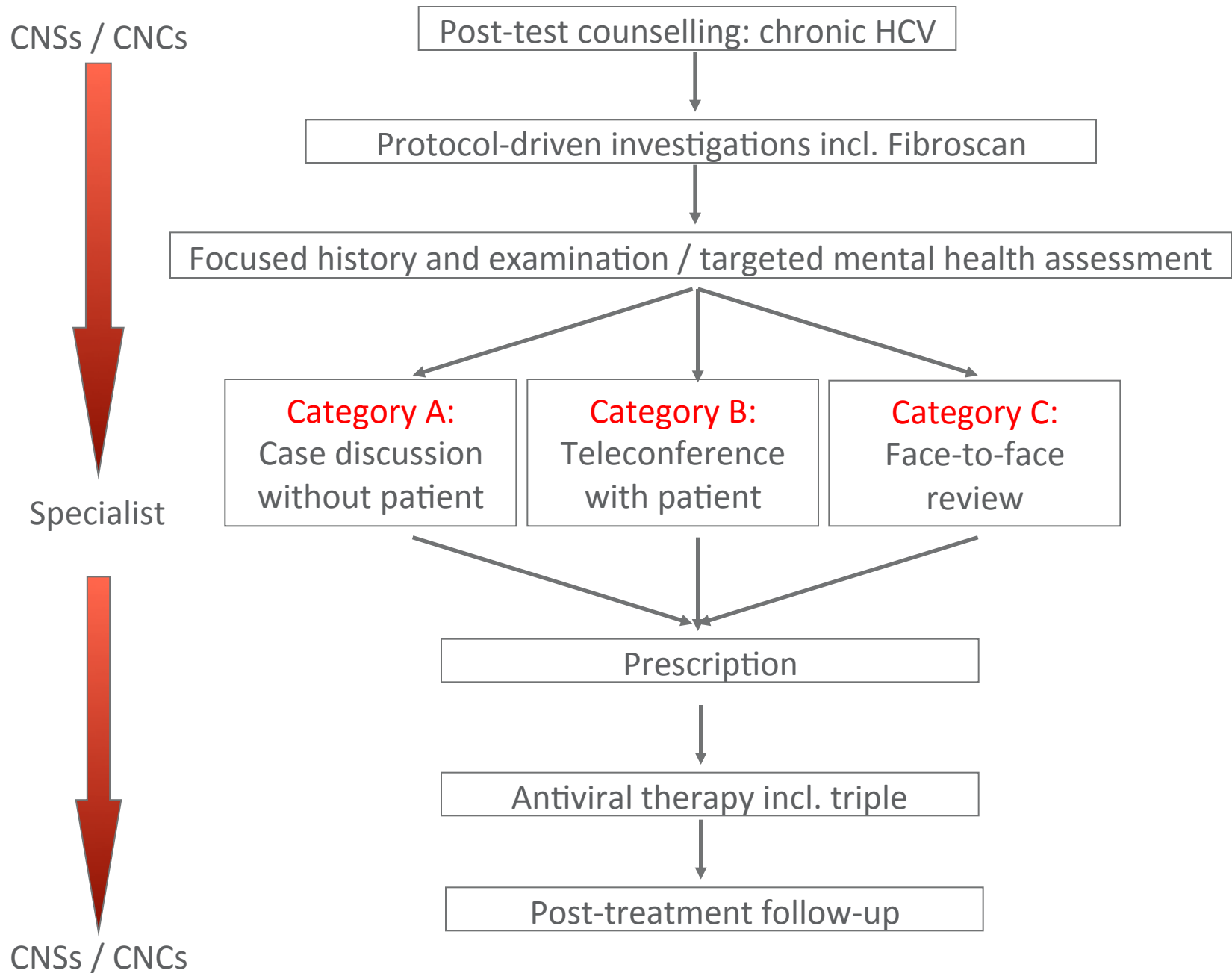
Boonwaat L et al, *Medical Journal of Australia*, 2010; 192:496–500

Justice Health - Nurse-led model of care - pilot

- Lithgow, Goulburn, Long Bay
- 2009-2010
- Training of Clinical Nurse Consultants (CNCs)
- Protocol driven assessment and triage
- Qualitative and quantitative evaluation
- Safe, effective, well accepted, enhanced treatment rates

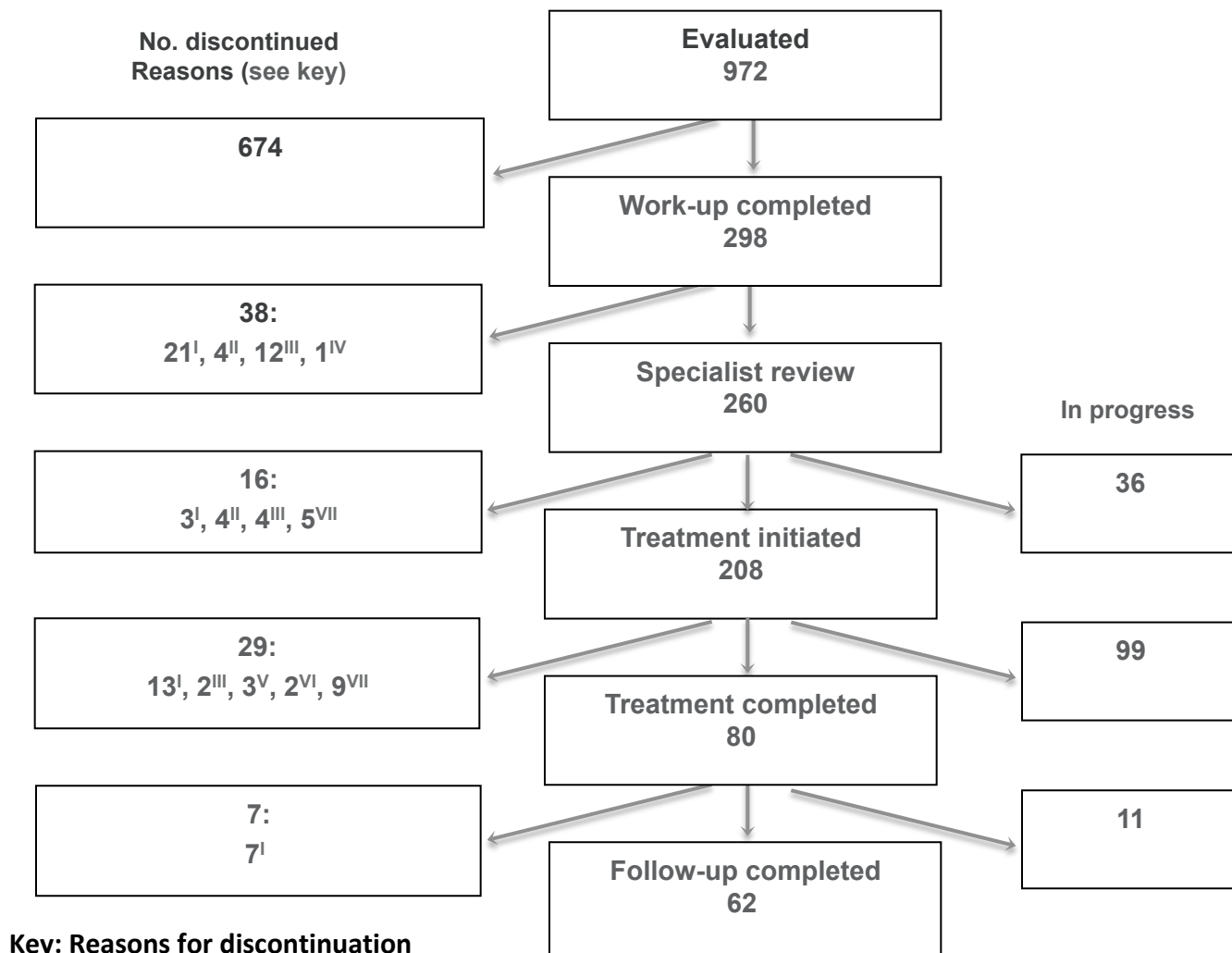
Lloyd A et al, *Clinical Infectious Diseases* 2013; 56(8):1078–8

Nurse-led model of care – roll out



Outcomes – NLMC roll out

- 30 months: 2011-2013
- Prison sites: n=15
- 2 CNCs
- 15 CNSs (0.4FTE/site)
- Portable fibroscan
- Triple therapy

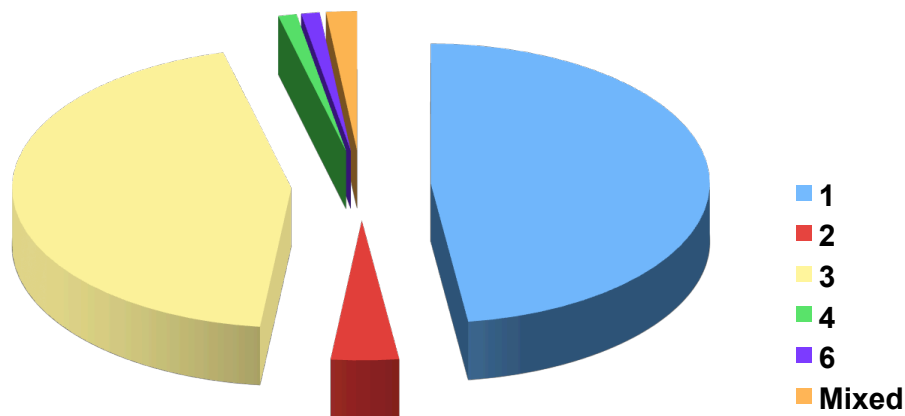


Patient characteristics - CNC assessment (n=298)

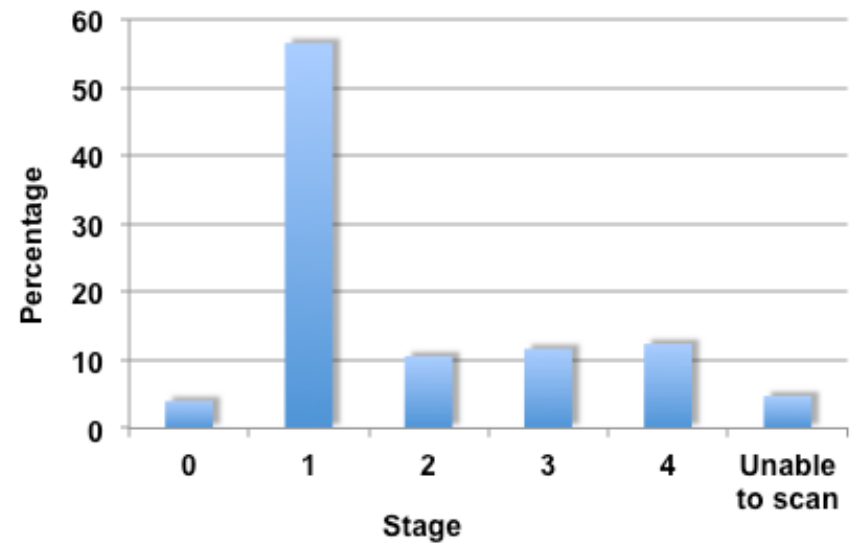
Variable	No. (%)
Mean age; years (SD)	37 (9)
Male gender (%)	268 (89)
Born in Australia (%)	252 (85)
Aboriginal or Torres Strait Islander (%)	80 (27)
Remand (%)	56 (19)
<i>Risk factors for HCV</i>	
Lifetime - injecting drug use (IDU) (%)	283 (95)
Lifetime - tattooing (%)	250 (84)
Recent IDU <12 mths (%)	243 (82)
Current IDU (%)	35 (12)
Current methadone/buprenorphine (%)	146 (49)
<i>Co-morbidities</i>	
History of excessive daily alcohol (%)	95 (32)
History of excessive binge alcohol (%)	113 (38)
History of major depression (%)	187 (63)
History of anxiety disorder (%)	146 (49)
History of psychosis (%)	121 (41)
Current mood disorder (%)	70 (24)
Current psychosis (%)	10 (3)

Patient characteristics (n=298)

Genotype distribution



Fibrosis stage (Fibroscan)



Outcomes

Serious adverse events on Rx (n=28/208; 13%)

- Haematological 13; metabolic (thyroid) 8; psychiatric 4; cardiovascular 2; gastrointestinal 1
- Hospitalisations: 2 (atrial fibrillation; myocarditis)
- Deaths: 1 (myocarditis)
- Treatment discontinuations due to serious adverse events: 3 /28 (11%)

HCV treatment-as-prevention: prisons (STOP-C)

Primary objective

- To evaluate the feasibility and impact of rapid scale-up of IFN-free HCV treatment on the incidence of HCV infection in the prison setting

Secondary objectives

- To evaluate impact of HCV treatment on HCV prevalence
- To evaluate treatment outcomes (SVR)
- To evaluate treatment uptake and adherence
- To record HCV risk behaviors, including the impact of treatment
- To measure HCV reinfection rates following treatment
- To evaluate cost-effectiveness of scaling up HCV treatment
- To model the impact of HCV treatment in prisons on community prevalence
- To develop and framework and toolkit for roll-out across the prisons nationally

HCV treatment-as-prevention: prisons (STOP-C)

Phase I

- 2 maximum security prisons: active vs control
- Funding: Gilead Sciences
- Surveillance target: 80%
- Treatment target: 50%
- All infected subjects eligible
- Sofosbuvir / GS-5816
- Once daily, oral, 8-12 weeks

Goulburn Correctional Centre

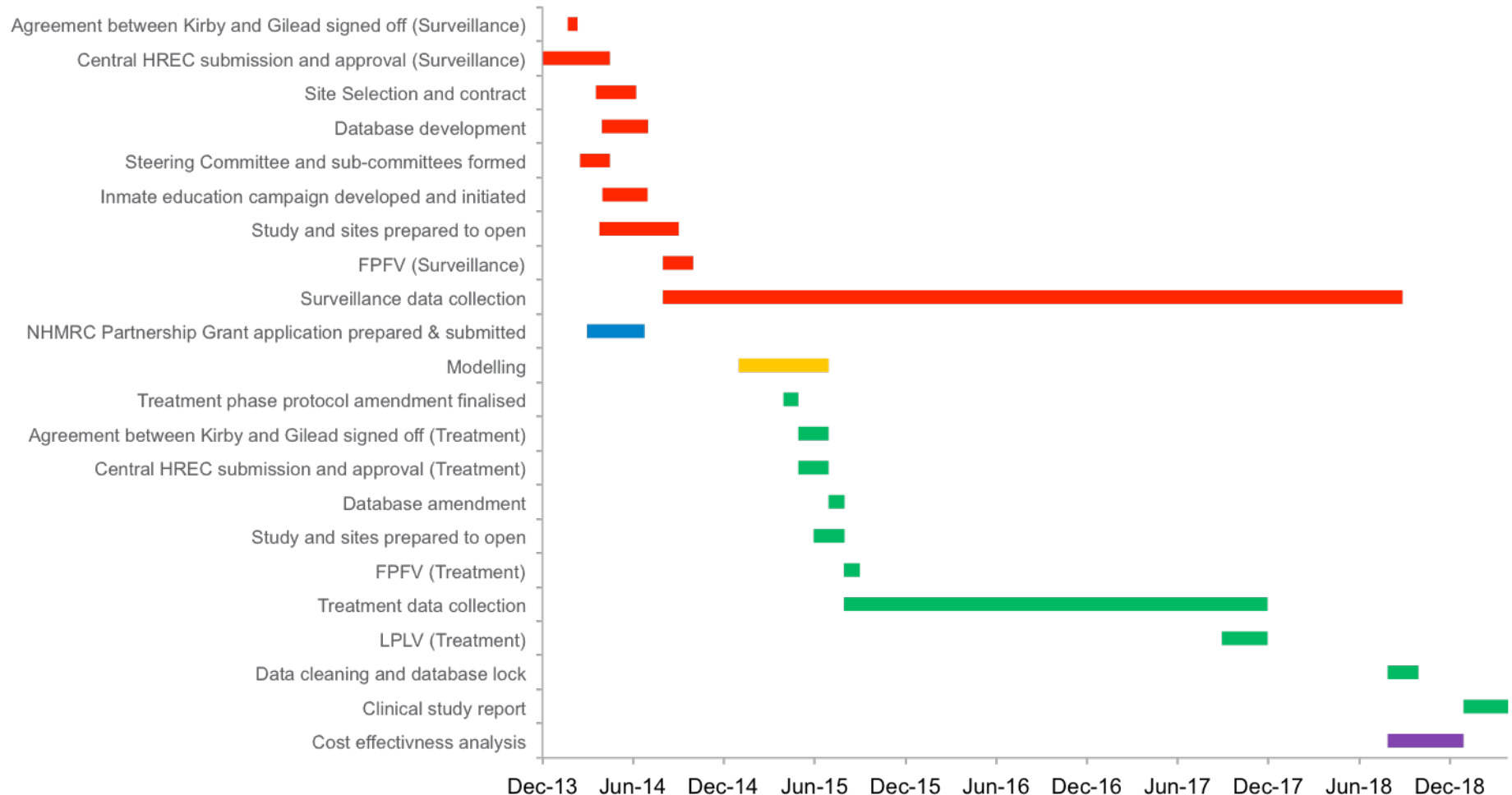


Implementation plan

	2014				2015				2016				2017				2018						
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4			
Lithgow	Start-up																						
			Surveillance																				
							Modelling																
							Treatment scale-up																
Goulburn			Surveillance																				
											Modelling												
													Treatment scale-up										
																			Analysis				

HCV treatment-as-prevention: prisons (STOP-C)

Phase I - timelines



HCV treatment-as-prevention: prisons (STOP-C)

Phase II

- Rapid scale-up across network of prisons
- 3-4 medium security prison settings
- Qualitative evaluation of attitudes and barriers
- Mathematical modelling of the impact of prison-based treatment
- Cost-effectiveness and budget impact evaluation
- Development of framework and implementation toolkit for roll-out
- Funding application to NHMRC (Partnership Grant)

Timelines

	2015				2016				2017				2018				2019								
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4					
Roll-out prisons 1-4	Start-up																								
			Surveillance																						
							Modelling																		
											Treatment scale-up														
Translational studies							Qualitative evaluation																		
															Mathematical modelling										
											Cost-effectiveness - data collection						- data analysis								
																	Framework and toolkit								

Future perspectives

- Taxpayer subsidised listing of direct-acting antivirals (DAAs)
- Australian burden of disease equation
 - ~250,000 currently affected
 - ~3-4,000 currently treated per annum
 - ~9-10,000 new infections per annum
- Models / venues of care – key elements
 - Hepatitis- skilled nurses
 - Fibroscan
 - Triage and management protocols
 - Prisons, OST clinics, primary care
 - Liver clinics for advanced liver disease
- Treatment-as-prevention
 - SToP-C, TAP



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