VHPB Meeting
Ljubljana, Slovenia
10-11 March 2016

"Cost Effectiveness of treating active PWID and the challenges of treating the underserved of the underserved"

Professor David Goldberg

- **Health Protection Scotland**

- **University of Glasgow**

- **Glasgow Caledonian University**

TREATMENT PRIORITIZATION
EASL GUIDELINES

Treatment 'should be prioritized'

- F3/F4
- Decomp. Cirrhosis
- HIV or HBV coinfection
- Liver transplant
- Clinically significant extra-hepatic manifestation
- Debilitating fatigue
- **(As of 2015) Individuals at risk of transmission (Grade B1)**
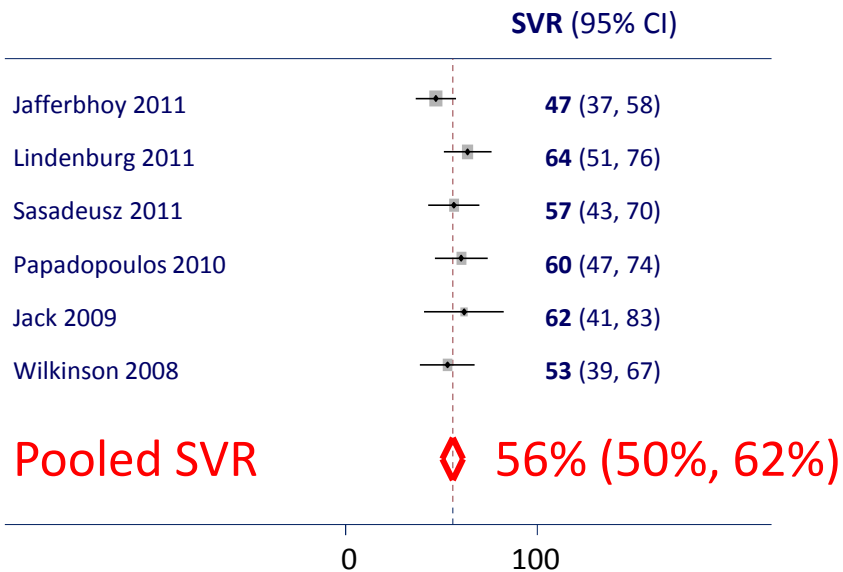
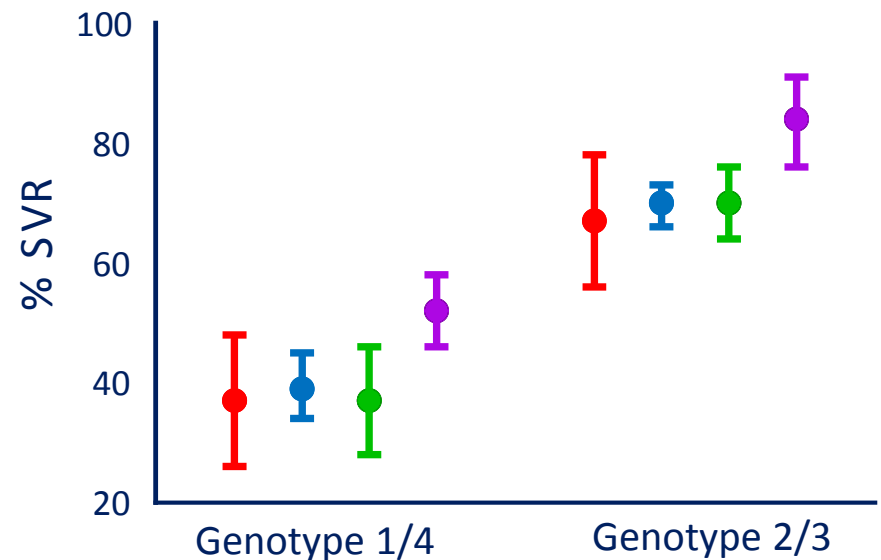**Treatment 'justified'**

- F2

'Informed deferral can be considered'

- F0/F1

J Hepatology 2015

Treatment of HCV among people who (actively) inject drugs (Aspinall et al. *CID* 2013)

Meta-analysis of SVR after PEGIFN+RBV

SVR (95% CI)

Jafferbhoy 2011	**47** (37, 58)
Lindenburg 2011	**64** (51, 76)
Sasadeusz 2011	**57** (43, 70)
Papadopoulos 2010	**60** (47, 74)
Jack 2009	**62** (41, 83)
Wilkinson 2008	**53** (39, 67)

Pooled SVR ◇ 56% (50%, 62%)

Pooled re-infection risk in PWID who reported IDU post-SVR:
6.4 per 100 PY (95% CI 2.5, 16.7)

Comparison with Clinical Cohort & RCT studies

● Aspinall 2013 (**PWID**)

● Innes 2012 (**Scottish Clinical Cohort**)

● Thomson 2008 (**English Clinical Cohort**)

● Hadziyannis 2004 (**RCT**)

# 'HCV treatment for Prevention' among active PWID: modelled impact of IFN-free DAAs

❖ Uptake of HCV treatment among PWID remains low.

❖ IFN-free DAA treatment regimes could potentially increase uptake of treatment among PWID, given:

- High efficacy (>90%)
- Daily oral-only dosing
- Minimal toxicity
- Shortened treatment duration
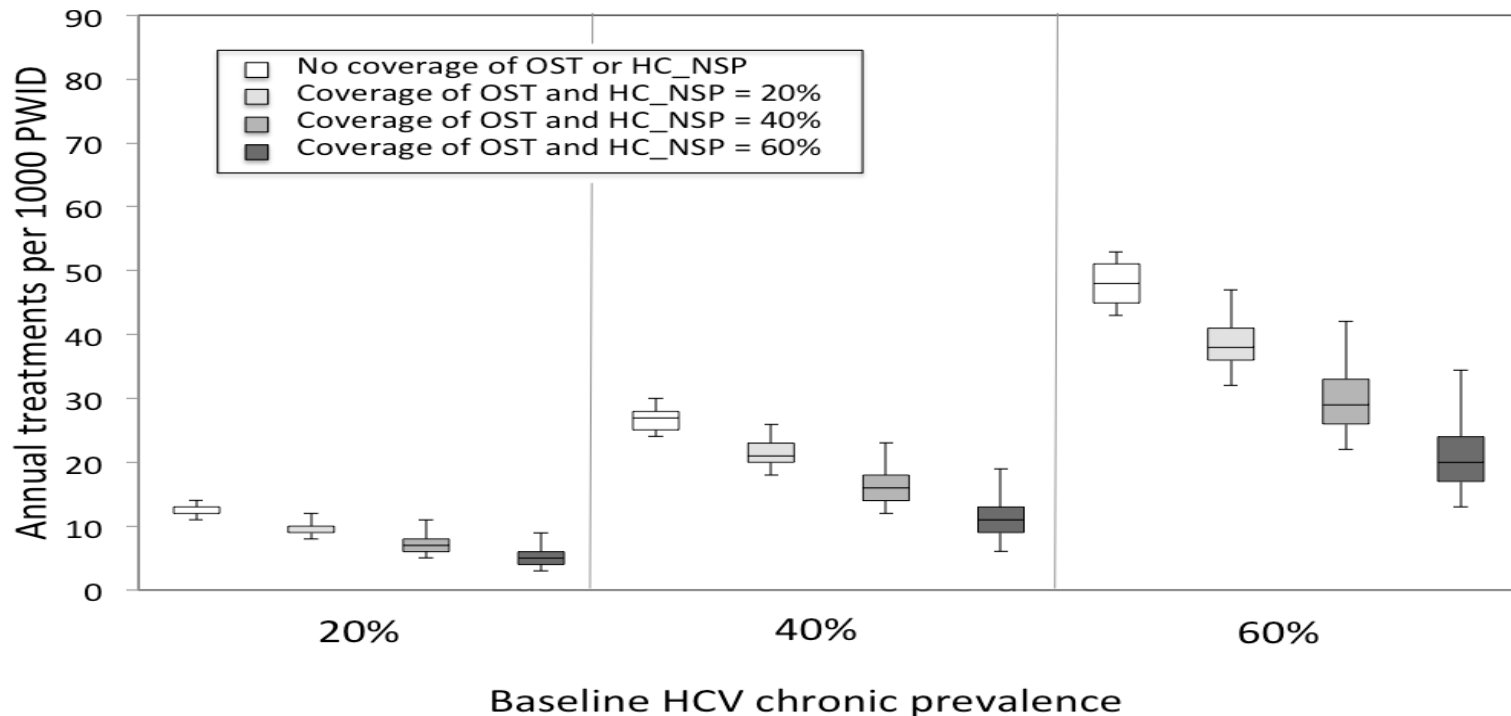
(Martin et al. Hepatology 2013)

Edinburgh
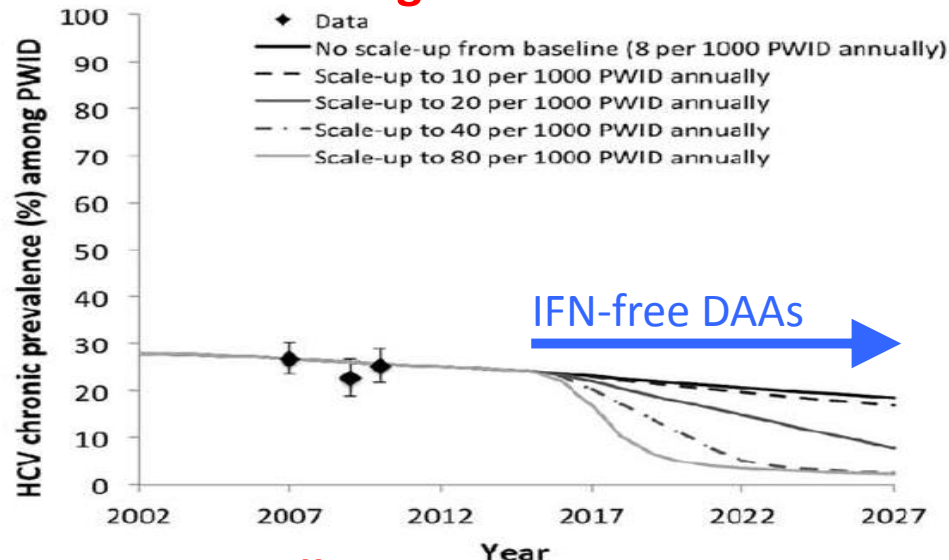
Melbourne
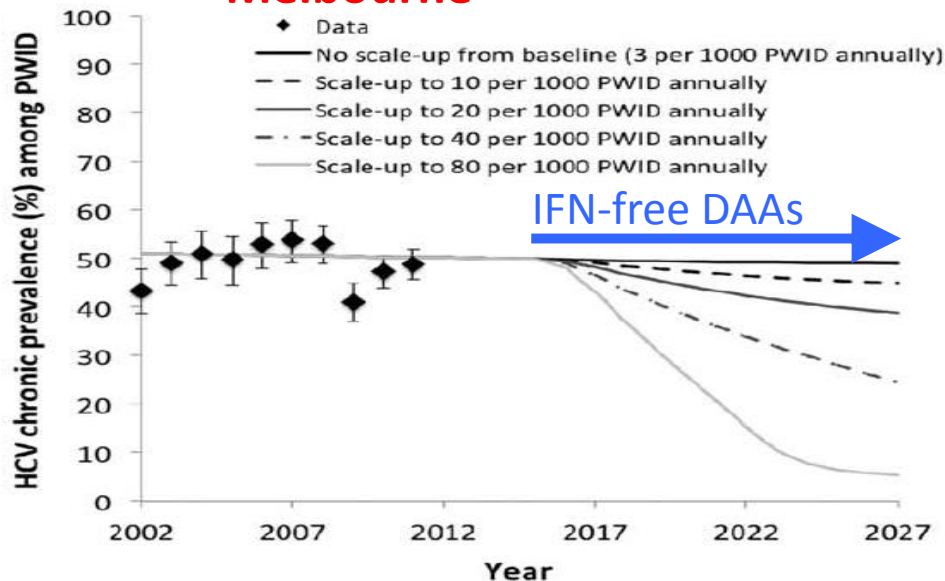
Combining interventions to prevent HCV among PWID: modelled impact of OST, NSP and HCV treatment
(Martin et al. CID 2013)

What uptake of IFN-free DAAs and coverage of OST and NSP are required to halve HCV prevalence among PWID with 10 years?

- Combining interventions likely to achieve maximum impact on HCV transmission
- Increasing coverage of OST and NSP reduces the number of treatments required

How should HCV treatment be prioritised in the direct-acting antiviral era? An economic evaluation including population prevention benefits.

Martin N, Vickerman P, Dore G, Grebely J,

Miners A, Cairns J, Foster G, Hutchinson S,

Goldberg D, Martin T, Ramsay M,

STOP-HCV Consortium, Hickman M.

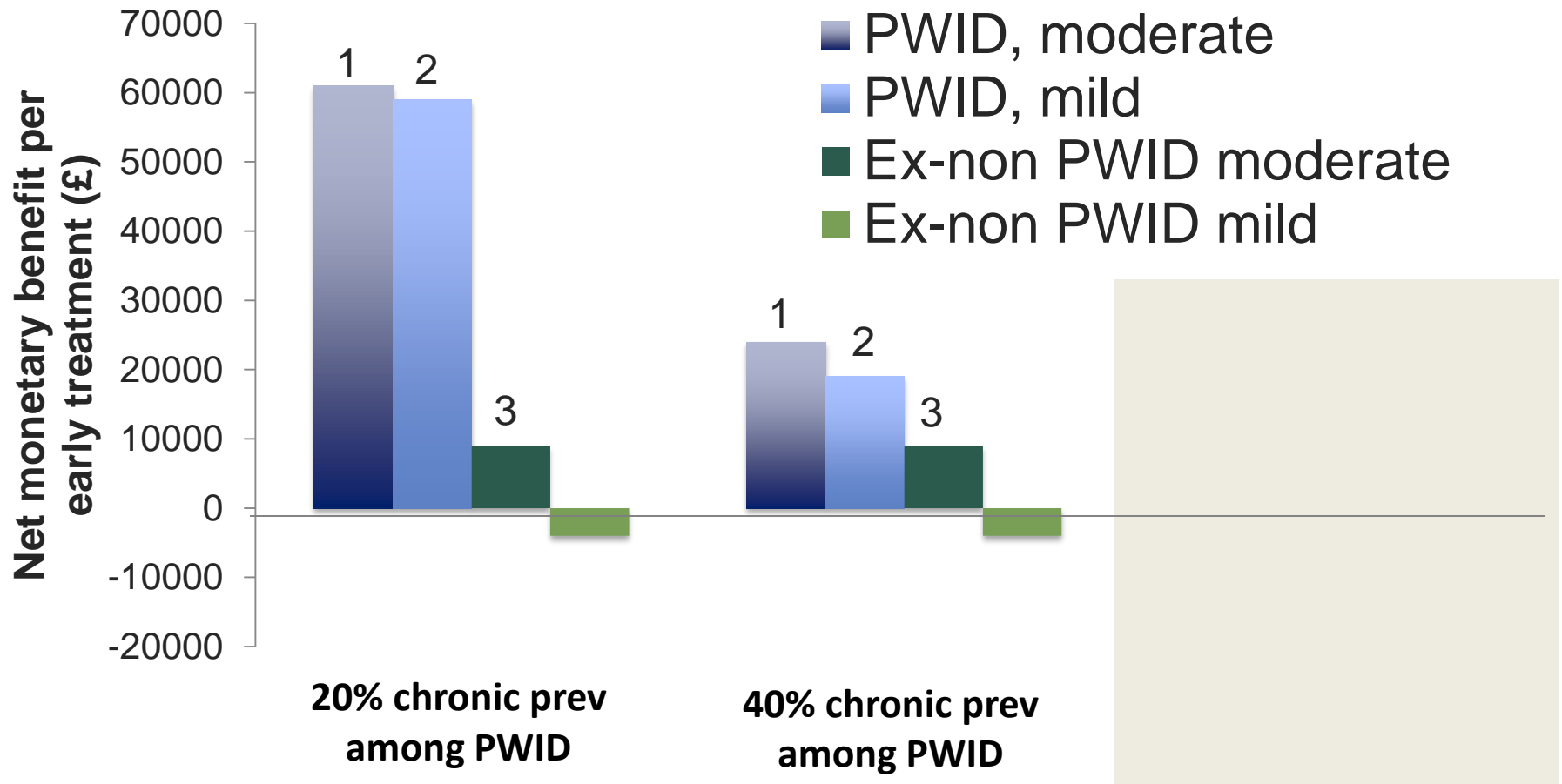# HCV TREATMENT PRIORITIZATION ANALYSIS: METHODS

- Analysis **ranks order** in which people should receive treatment

- Use **dynamic** economic model of HCV transmission

- **Baseline:** treat people with cirrhosis

- **Compare:** prioritization of IFN-free DAA treatment at earlier disease stages (mild or moderate fibrosis) and by risk status (PWID or non/ex PWID)

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HCV TREATMENT PRIORITIZATION ANALYSIS

- **Perspective**: UK Health Care Provider
- **Settings**: PWID chronic HCV prevalence at 20, 40, 60%
- **DAA treatment**: 12 weeks at £3300/wk; SVR 95%
- **Discount** health utilities (QALYs) and costs (GBP£) 3.5%/year
- **Time horizon:** 50 years
- Rank prioritization group by **net monetary benefit**
  - NMB= mean incremental QALYs * WTP– mean inc. costs
  - £20,000 (~AUD$40,000) willingness to pay threshold (WTP)
  - **Negative NMB means better to delay treatment (treatment at that stage not cost-effective)**

£1 = USD $1.60 = AUD $2.1

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IN 20%/40% CHRONIC PREVALENCE SETTING, CONSIDER PRIORITIZING BY RISK STATUS

Legend:
- PWID, moderate
- PWID, mild
- Ex-non PWID moderate
- Ex-non PWID mild

Y-axis: Net monetary benefit per early treatment (£)

X-axis categories:
- 20% chronic prev among PWID
- 40% chronic prev among PWID

*£20,000 willingness to pay. . £1=USD$1.60=AUD$2.1
Martin NK et al. EASL 2015 Oral eposter Martin NK et al. (Submitted)

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IN 60% CHRONIC PREVALENCE SETTING, PRIORITIZE BY LIVER DISEASE STAGE

*£20,000 willingness to pay. . £1=USD$1.60=AUD$2.1
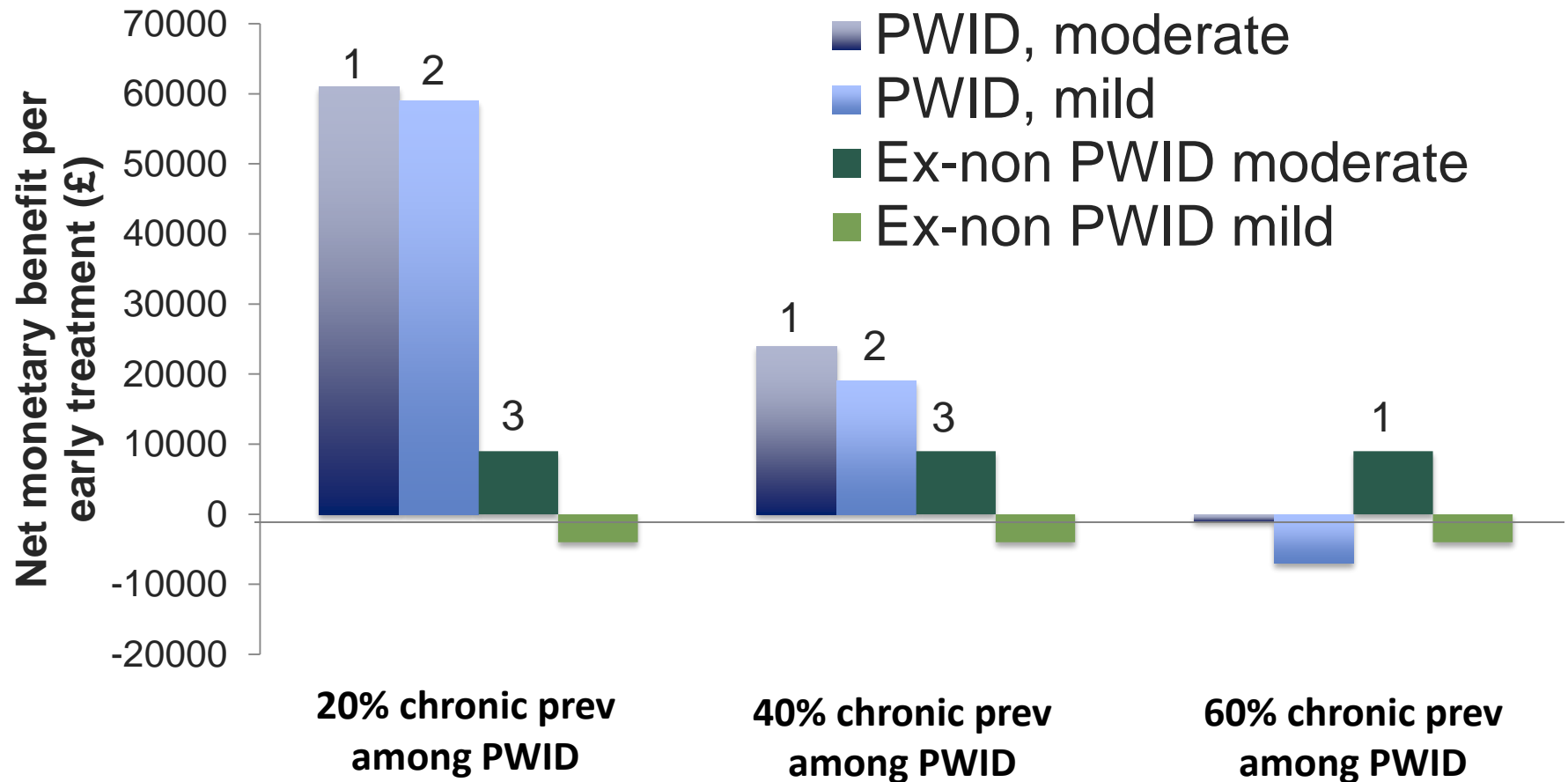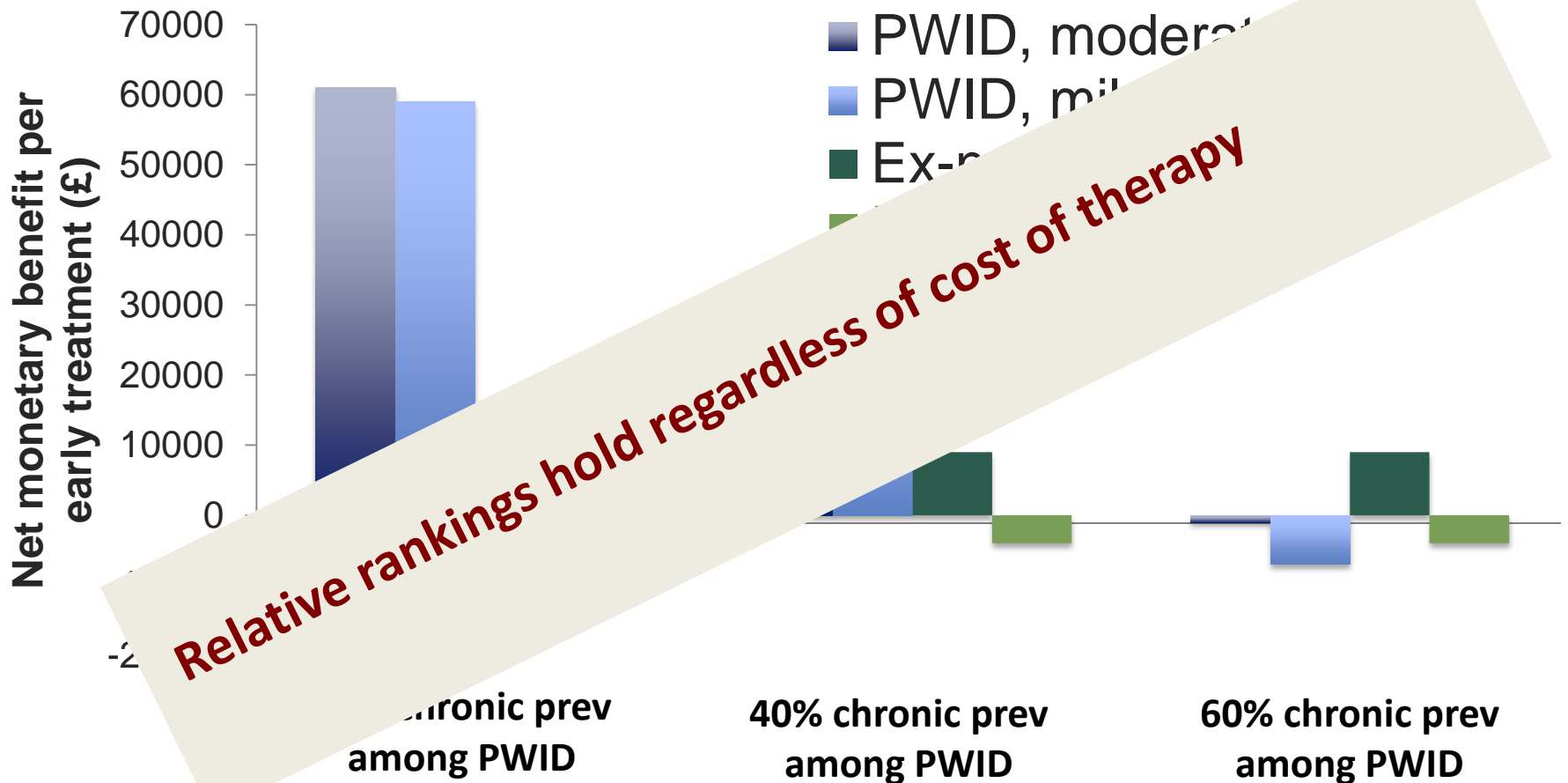Martin NK et al. EASL 2015 Oral eposter
Martin NK et al. (Submitted)

IN 20%/40% CHRONIC PREVALENCE SETTING, CONSIDER PRIORITIZING BY RISK STATUS
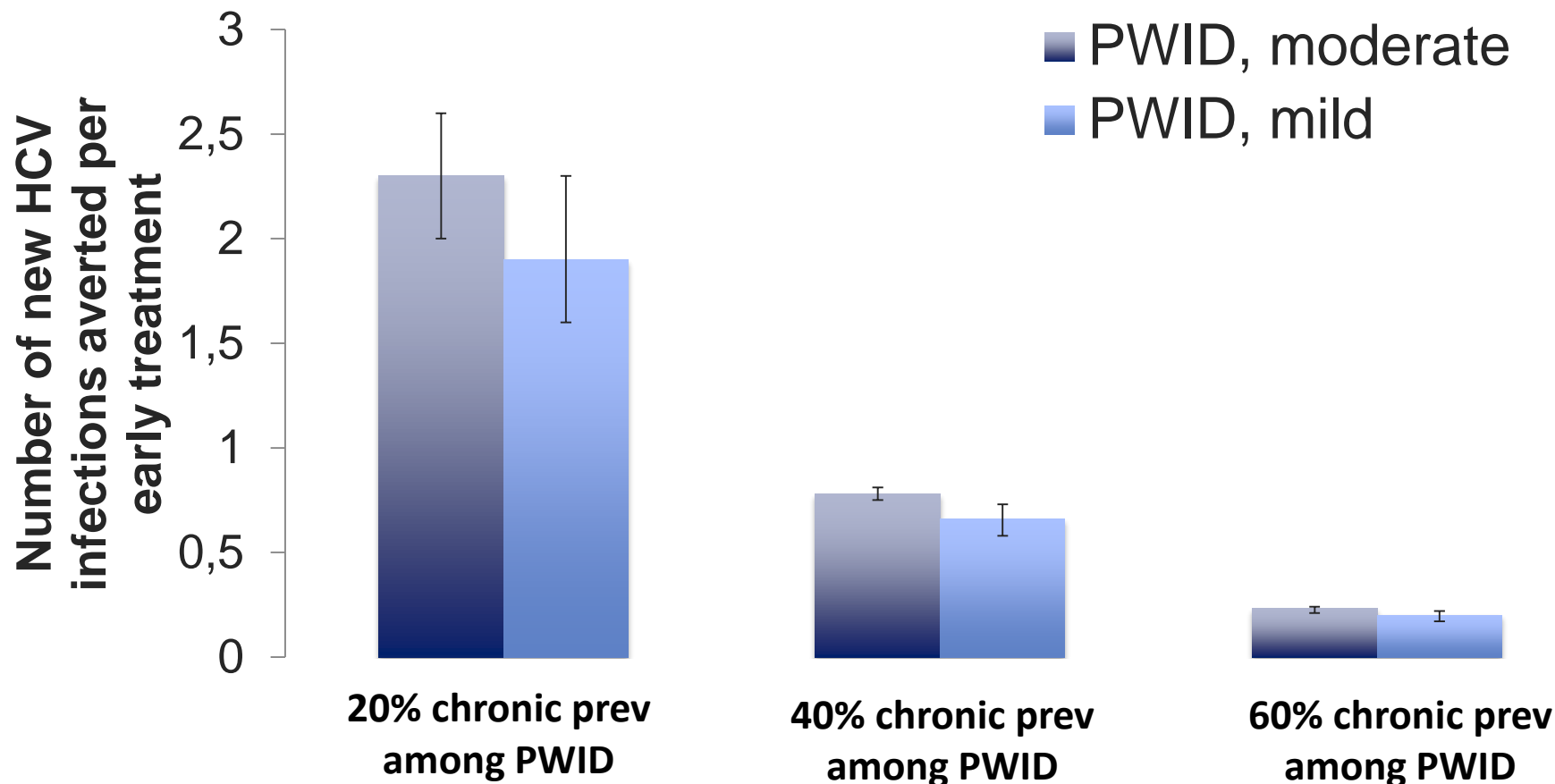
*£20,000 willingness to pay. . £1=USD$1.60=AUD$2.1
Martin NK et al. EASL 2015 Oral eposter
Martin NK et al. (Submitted)

NUMBER OF NEW INFECTIONS AVERTED PER EARLY TREATMENT

Martin NK et al. EASL 2015 Oral eposter
Martin NK et al. (Submitted)

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The Reality
Scotland

- **Fifth wealthiest country (as part of UK)**
- **NHS**
- **Additional Government Investment in Hepatitis C (2008-15): £100 million**
- **National Procurement of Therapy: Discounts**
- **Scottish Medicines Consortium approving all new therapies without restrictions.**

Prioritisation in order to solve a long standing public health problem
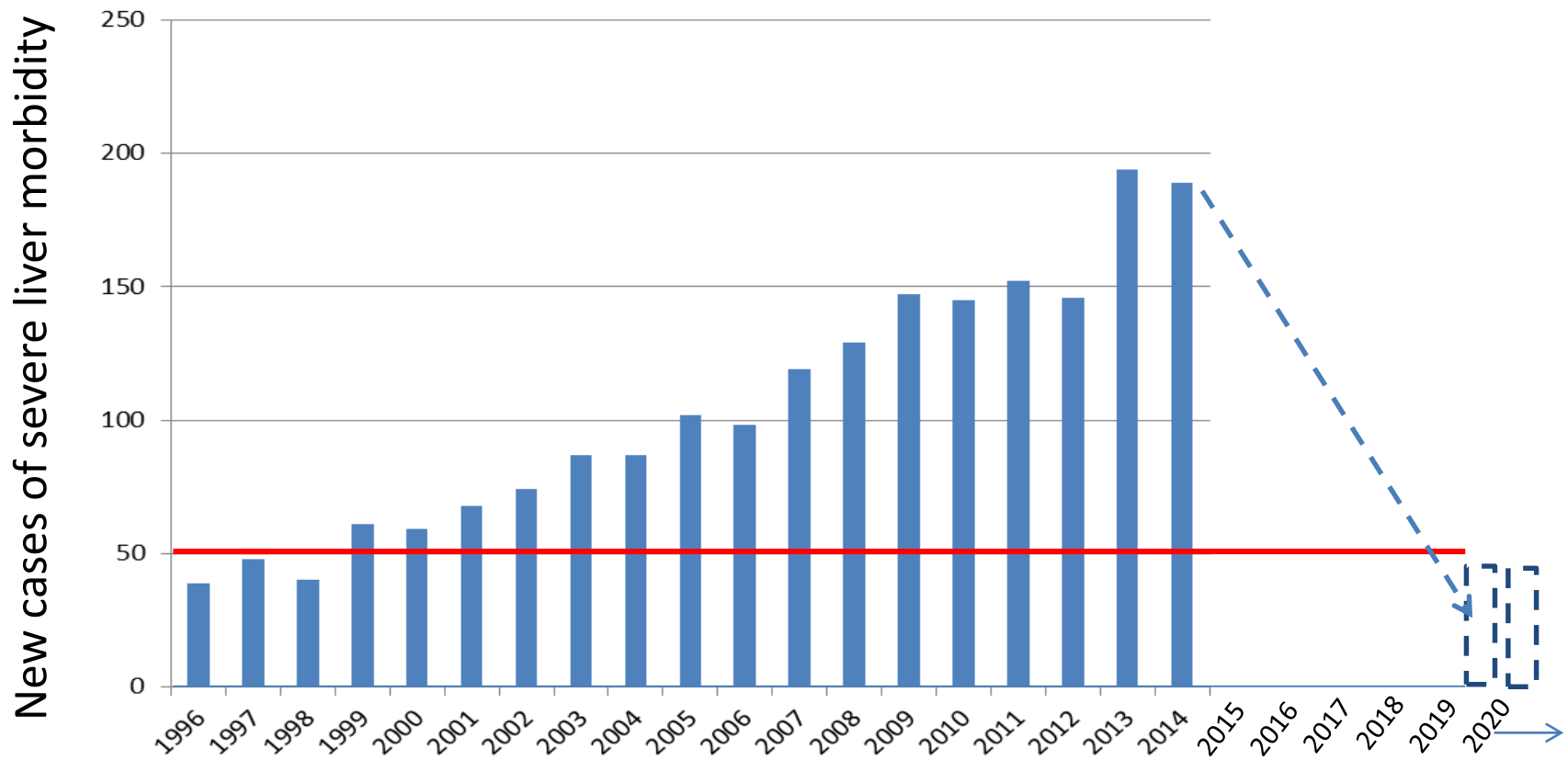
– TTG keen to use prioritisation to achieve a worthy public health goal

– They ask: How many patients, and what type of patients would we need to treat to affect a 75% reduction in severe liver morbidity by 2020

Modelled incidence of Advanced Liver Disease among those with <u>chronic HCV</u> in Scotland <u>by 2020</u>, according to different treatment strategies

Strategy	Annual number initiated on therapy in 2015+				New cases in 2020	
	F0-F1	F2-F3	F4	Total	HCC	ESLD
1	590 (59%)	250 (25%)	160 (16%)	**1,000**	30	168
2	1,180 (59%)	500 (25%)	320 (16%)	**2,000**	21	119
3		500 (61%)	320 (39%)	**820**	21	120
4		610 (61%)	390 (39%)	**1,000**	17	98
5		763 (61%)	488 (39%)	**1,250**	12	68
6		915 (61%)	585 (39%)	**1,500**	7	38
7		1,068 (61%)	683 (39%)	**1,750**	5	26
8		1,220 (61%)	780 (39%)	**2,000**	5	26

Treatment to Prevent Transmission Conclusion

- **Modelling makes compelling case,**

  but

- **Impractical at present due to**

  - **High drug prices which will fall**

  - **Need to prioritise those with moderate-severe disease**

  - **Treatment Paradox of Treating F_0/F_1 Active PWID & not F_0/F_1 ex-PWID**

  - **Absence of Empirical Evidence of Effectiveness**

And what about the underserved of the underserved?

Estimates of HCV chronic population by disease stage

Estimates for Scotland, 2013