HCV treatment for people who inject drugs: modeling population prevention benefits

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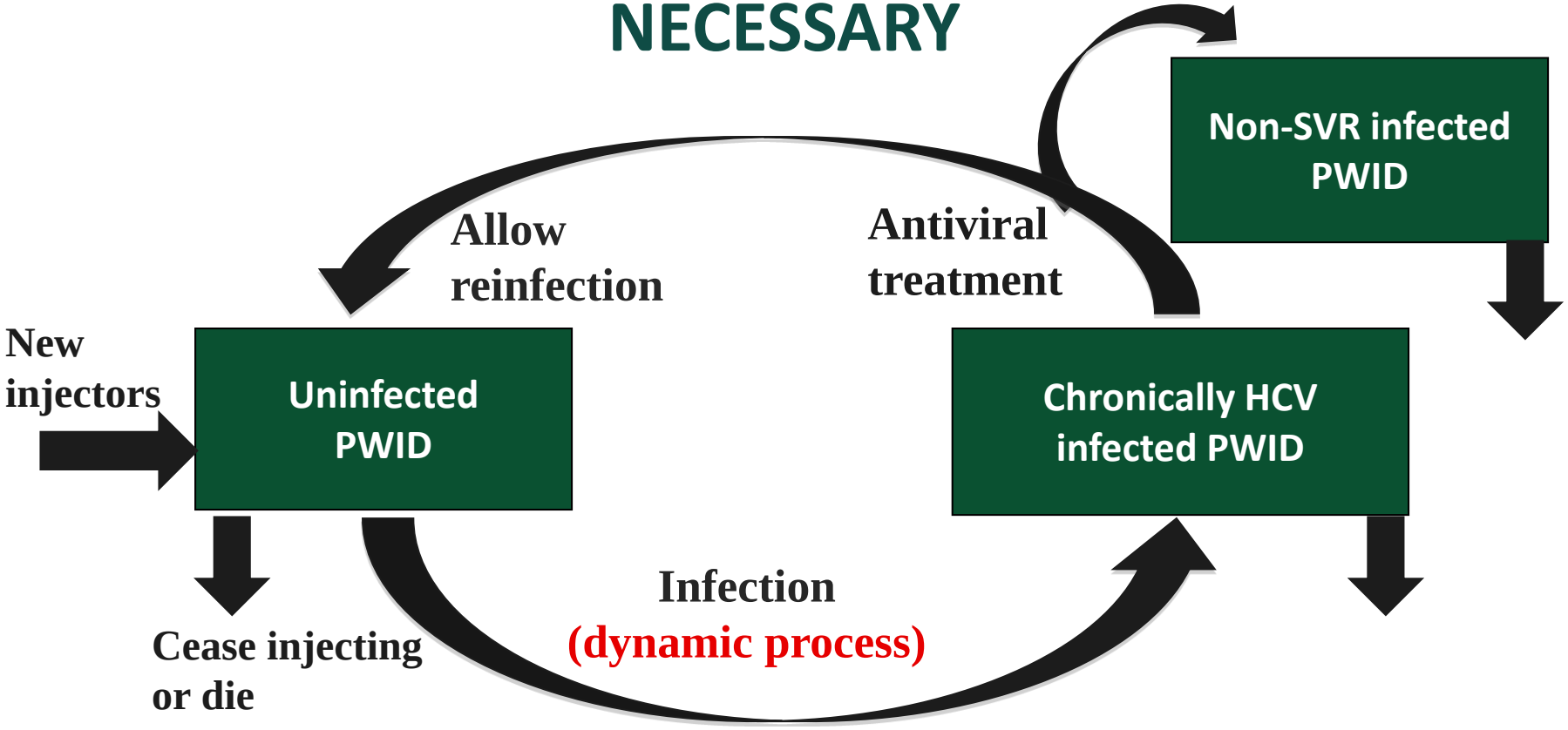
HCV TREATMENT FOR PWID

- HCV treatment highly effective for PWID[1]
- Yet few are treated
- Concerns about reinfection
- HIV treatment as prevention
  - What about HCV treatment for prevention??

1. Hajarizadeh et al. Lancet Gastro Hep 2018

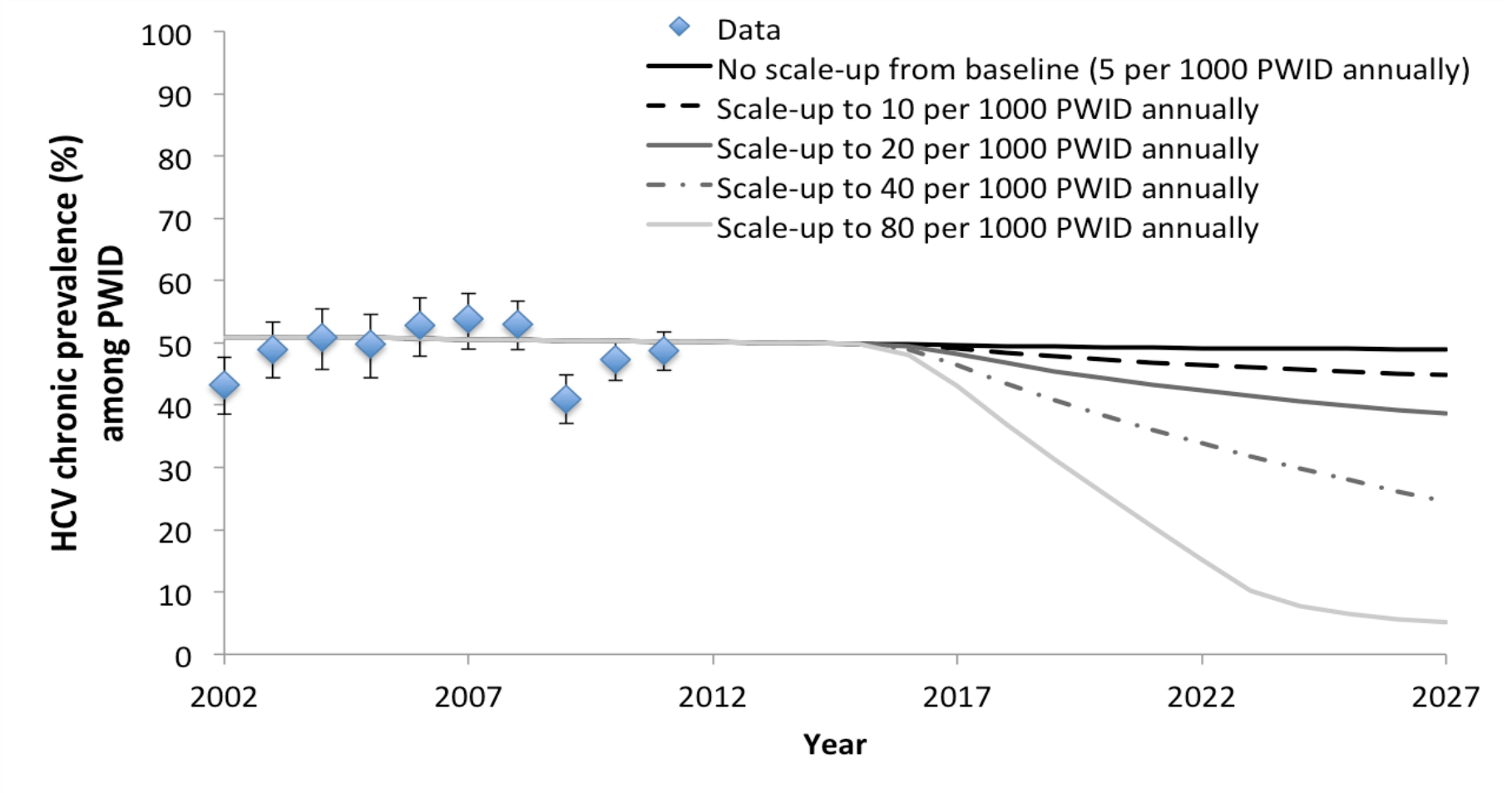
HCV TREATMENT FOR PWID: TREATMENT AS PREVENTION

EVALUATING HCV TREATMENT AS PREVENTION: A DYNAMIC HCV TRANSMISSION MODEL IS NECESSARY



- Incidence related to prevalence, level of interventions, and risk behavior -> can <u>predict</u> incidence
- As treatment increases, prevalence AND incidence decrease accordingly.

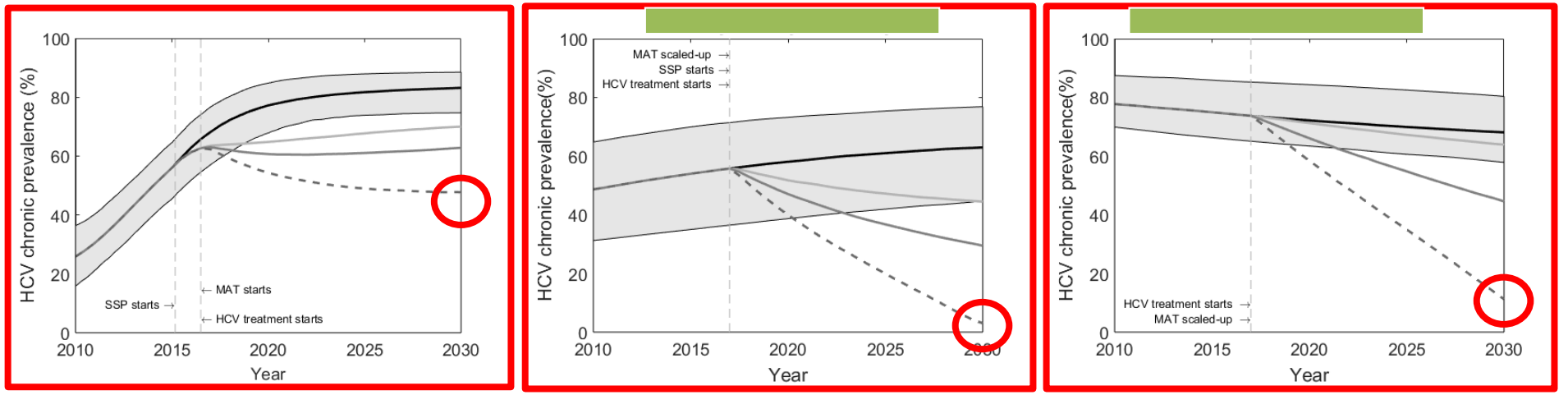
RETHINKING HCV TREATMENT FOR PWID….AS PREVENTION?



Martin NK, et al. Hepatology 2012;55:49–57.

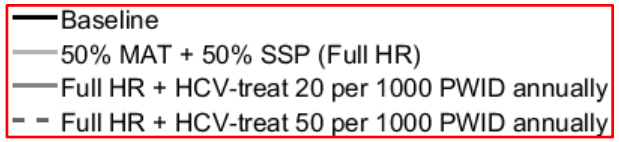
HCV TREATMENT AS PREVENTION IN U.S. – CHRONIC HCV AMONG PWID

Scott County, Indiana | Perry County, Kentucky | San Francisco



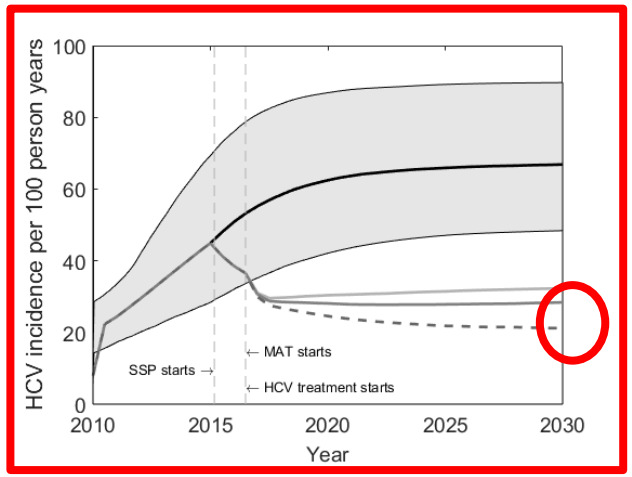
- Increasing epidemic in rural areas (Indiana and Kentucky) compared with stable epidemic in urban (San Francisco).
- **Full harm reduction (50% coverage OST and high coverage needle/syringe programs) and treat 50 per 1000 PWID annually** - 95% decrease in KY and SF

Fraser H et al. Am J Epidemiol 2019;
Fraser H et al. Addiction 2018

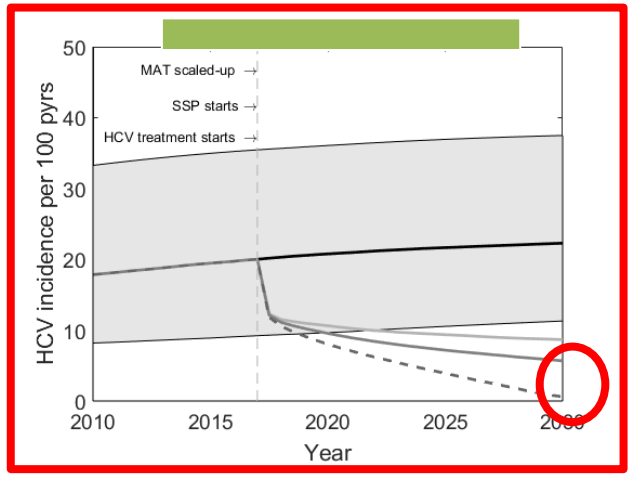


HCV TREATMENT AS PREVENTION IN U.S. – HCV INCIDENCE AMONG PWID

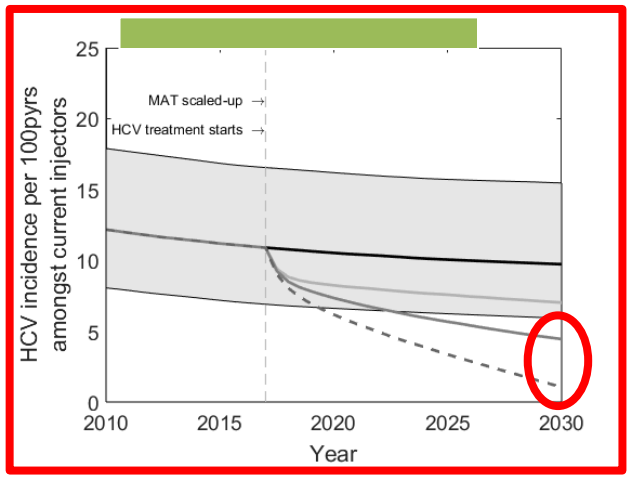
Scott County, Indiana



Perry County, Kentucky

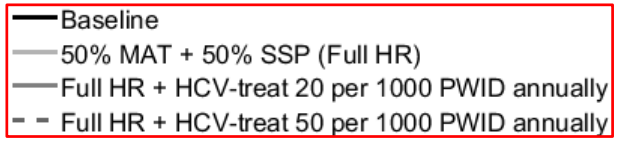


San Francisco



- High incidence (>10 per 100pyrs) in all 3 settings - lowest stable incidence in San Francisco, increasing and much higher in Indiana.
- **Treatment** further decreases incidence as did for prevalence - towards elimination levels in Kentucky and San Francisco, but less so in Indiana because of high incidence

Fraser H et al. Am J Epidemiol 2019;
Fraser H et al. Addiction 2018



HCV TREATMENT FOR PWID: THE ECONOMICS

IS TREATMENT FOR PWID COST-EFFECTIVE?

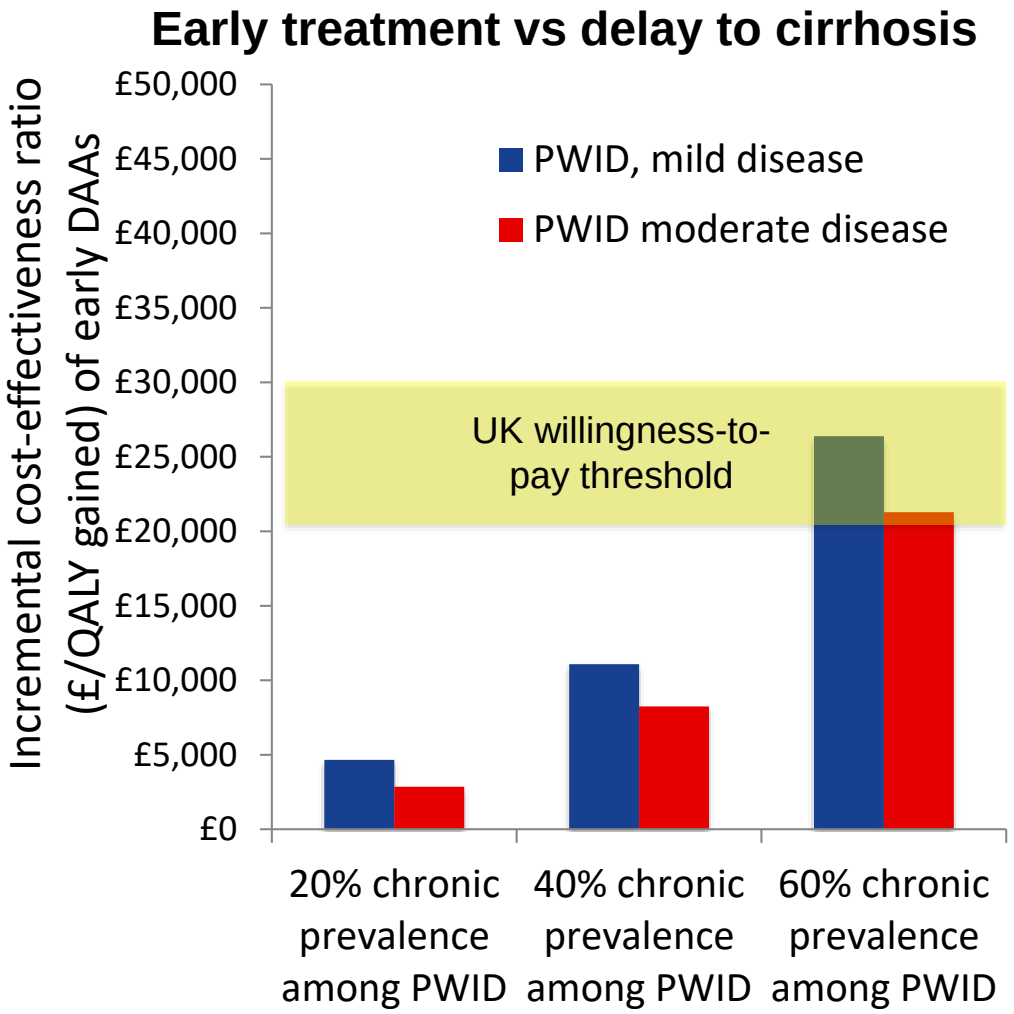
- **Are DAAs cost-effective for PWID?**
  - **YES** - in UK, Australia, Netherlands[1-3]
  - **Early DAA treatment for PWID cost-effective** compared to delay to cirrhosis[1]

1. Martin NK et al. J Hepatol 2016
2. Scott N et al. J Gastro Hep 2016
3. Van santen DK PLoS ONE 2016

TREATMENT FOR PWID SHOULD BE PRIORITIZED AFTER TREATING CIRRHOTICS

- Traditional thinking is most c effective to prioritize by disea stage

- BUT if include prevention benefits, **more cost-effectiv prioritize early treatment tc PWID regardless of liver disease stage, then to form PWID with moderate diseas** 20%/40% chronic prevalence settings[1]



£1 = USD $1.30

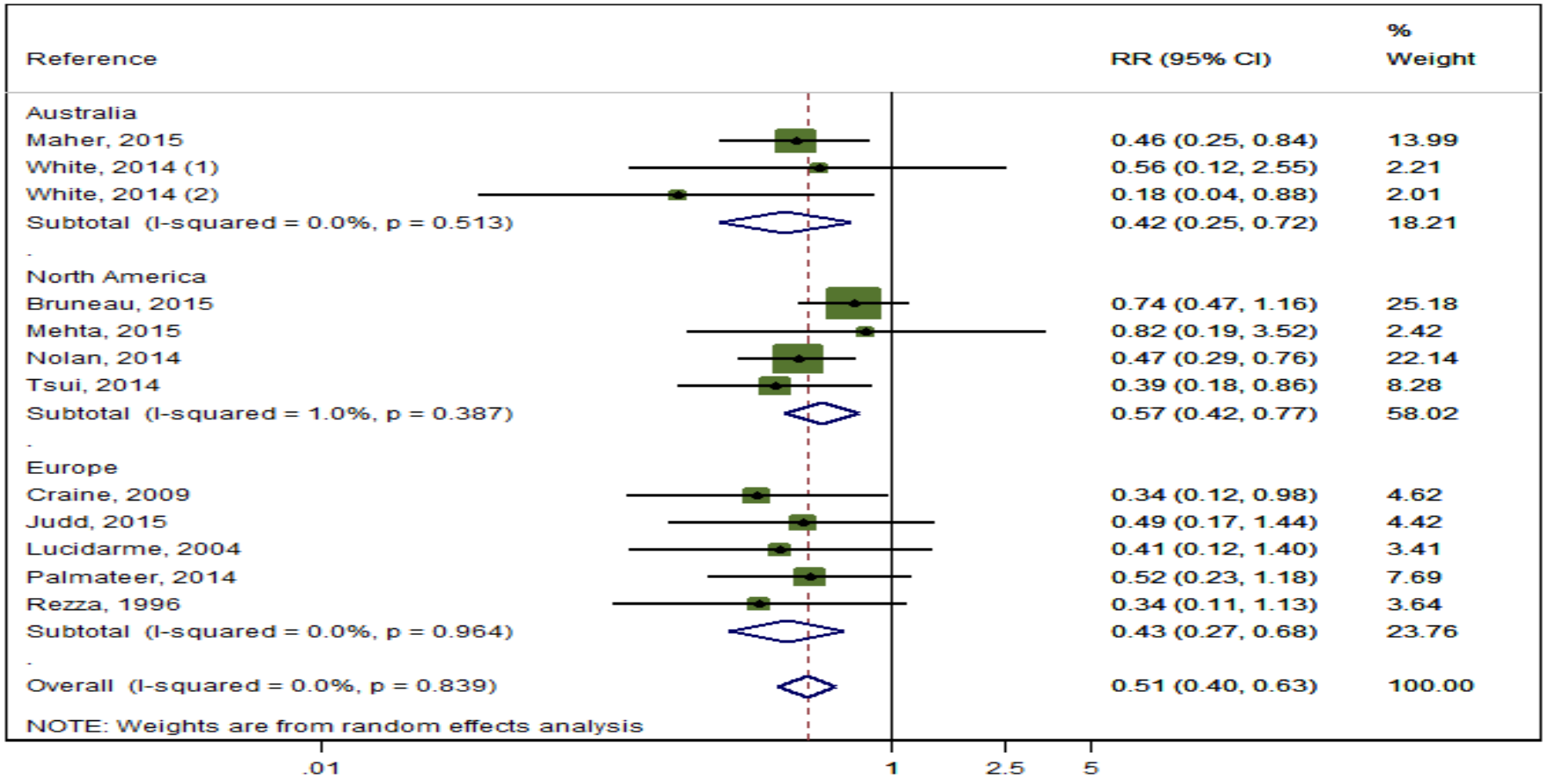
Martin NK et al. J Hepatol 2016

HCV TREATMENT FOR PWID: RETHINKING REINFECTION

REINFECTIONS

- Some reinfections will occur
- Reinfection is not all bad news (means we are treating the population truly at risk of transmission)
- Key is providing harm reduction to prevent reinfection, retest, retreat

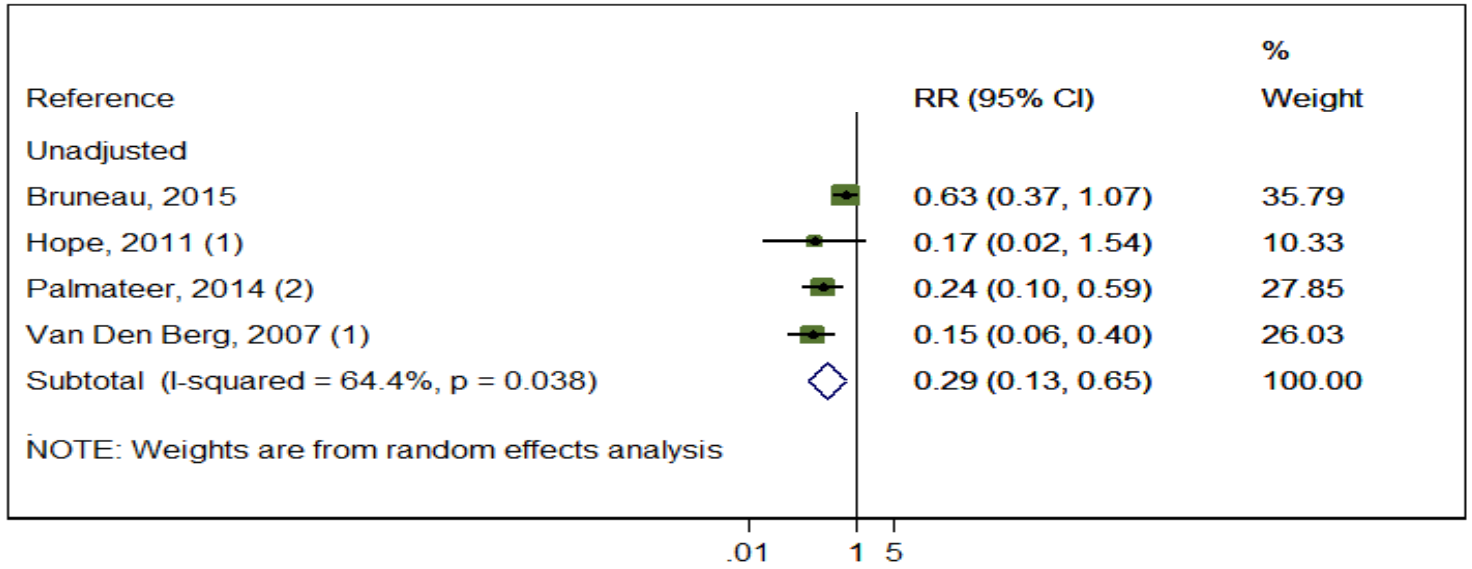
IMPACT OF OPIATE SUBSTITUTION THERAPY (OST) ON HCV INCIDENCE: COCHRANE REVIEW



OVERALL: 50% reduction in risk of HCV

Platt L et al. Cochrane Database Syst Rev 2017

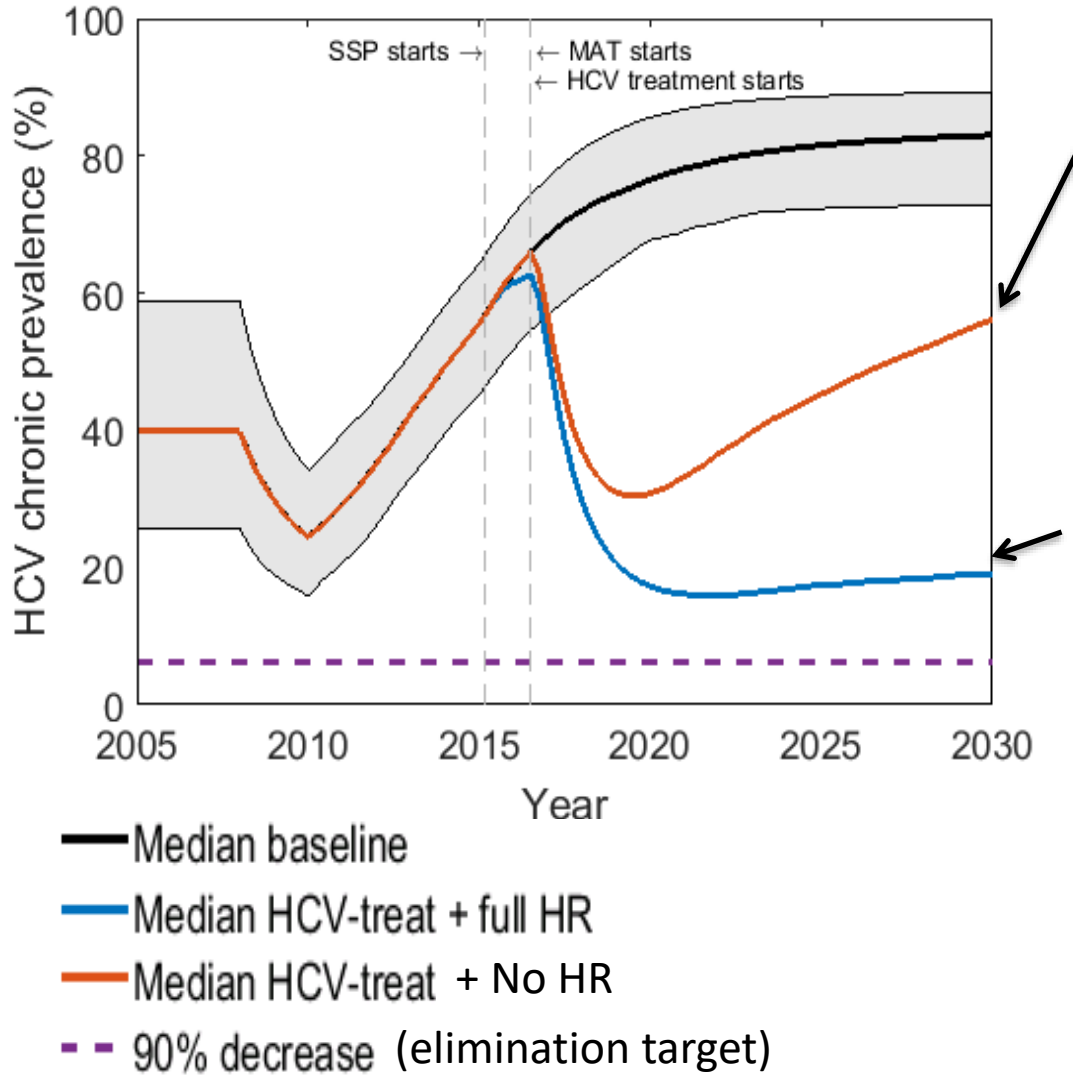
IMPACT OF HIGH COVERAGE NEEDLE/SYRINGE PROGRAMS (NSP) & OST ON HCV INCIDENCE: COCHRANE REVIEW



OVERALL: Reduced HCV incidence by 71%

Platt L et al. Cochrane Database Syst Rev 2017

RETESTING AND RETREAMENT CRITICAL TO MAINTAINING IMPACT, HARM REDUCTION CAN HELP



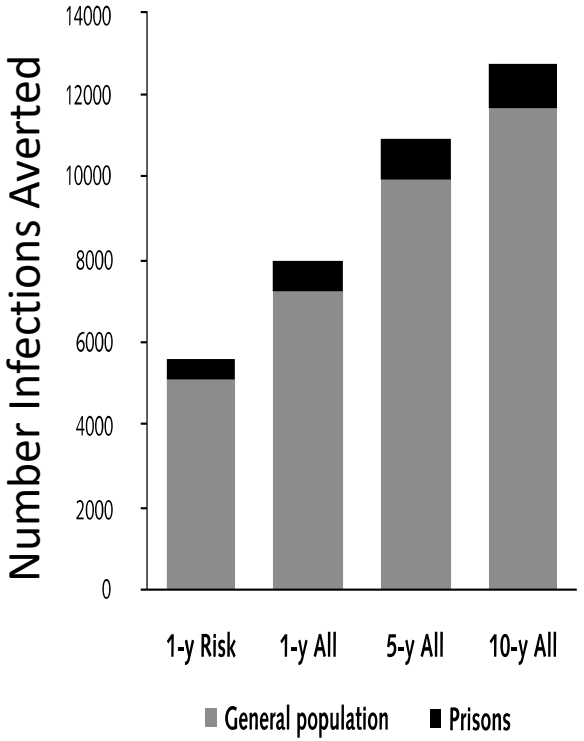
- If no retreatment, HCV epidemic can rebound due to reinfection in Scott County, IN
- Harm reduction (OST and NSP) can maintain impact

Fraser H et al, Addiction 2017

INCARCERATED POPULATIONS

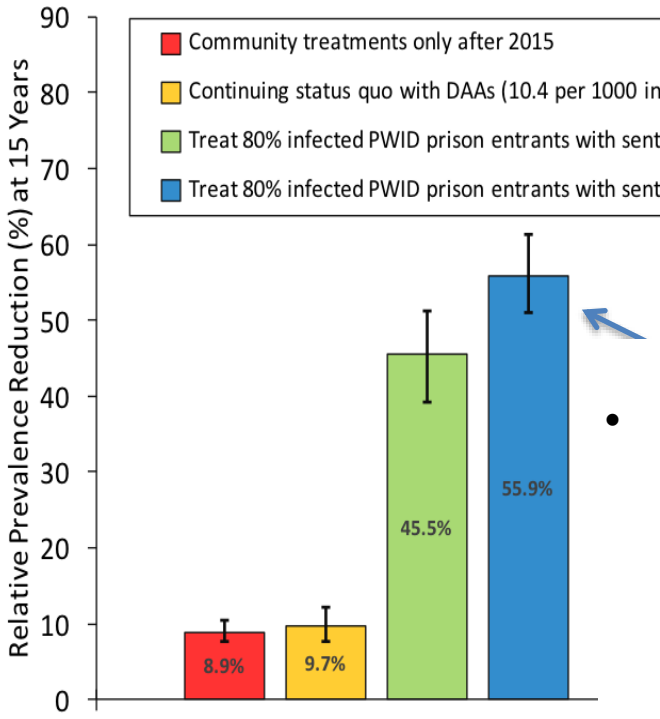
HCV SCREENING/TREATMENT IN PRISONS COULD BE HIGHLY EFFECTIVE AND COST-EFFECTIVE

United States



He et al. *Annals of Internal Medicine 2016:*(164)84-92.

UK



- Prison treatment for 80% infected PWID prison entrants with sentences >12 weeks **could halve chronic prevalence and incidence** among PWID in 15 years

Stone J, Martin NK, and Vickerman P et al. *Addiction* 2017
Martin NK et al. Hepatology 2016

CONCLUSIONS

- HCV treatment for PWID could prevent transmission and reduce HCV incidence
- DAA treatment for PWID is cost-effective, despite reinfection
- Prioritization strategies should prioritize both by liver disease AND risk (e.g. early treatment for PWID economically beneficial because of prevention benefits)
- Reinfection not all bad, means treating the right people (those at risk of transmission)
  - Need to retest/retreat/provide harm reduction
- Treatment of incarcerated populations (many PWID) may have substantial benefits on prevention in the community

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