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Interim impact and ongoing treatment requirements for achieving HCV elimination in Georgia

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Introduction

- Developed a dynamic HCV transmission model:
  - Capture current and historic epidemic,
  - Include role of people who inject drugs (PWID)

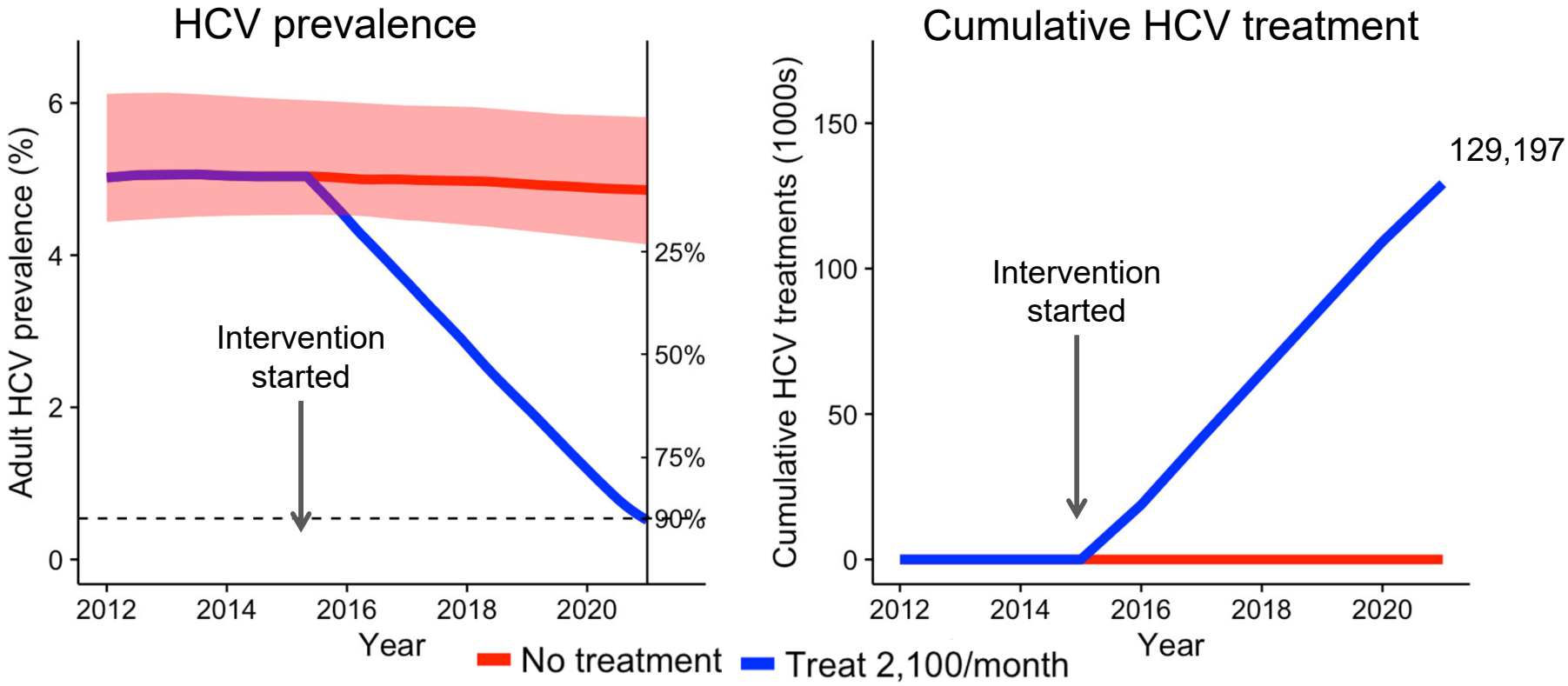
- Main aim of modelling:
  - Calculate interim impact of treatments done so far
  - Evaluate treatment needed to reach elimination

Important assumptions to remember!

- Model calibrated to changing PWID epidemic:
  - **Reduced** number of young PWID in recent IBBAs
  - **Decreasing** HCV prevalence in young PWID, and
  - **Very high prevalence of HCV** in middle aged men, but much lower in young men and women
  - ➢ Considerable but decreasing past IDU epidemic
- Used estimated SVR rate:
  - Assume proportion of those that were LTFU are cured
- Assumed equal treatment of PWID
  - Little data on this – tested in sensitivity analysis

What rate of treatment was necessary from start of the program to reach 90% reduction in HCV prevalence by 2020?

Initial treatment targets



- Model suggested 2,100 treatments needed per month to reach target
  - 129,000 treatments needed overall

How are we doing so far?

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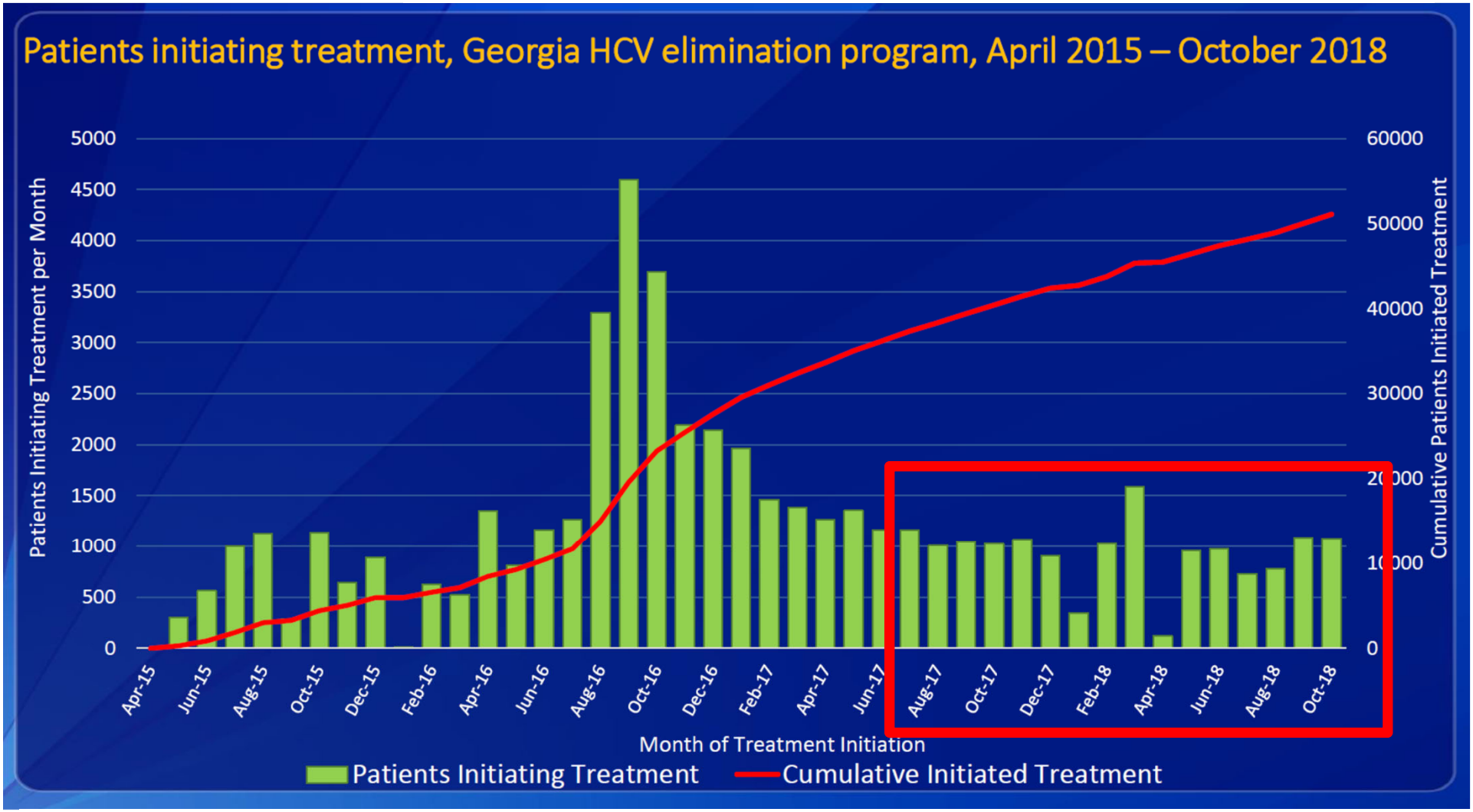
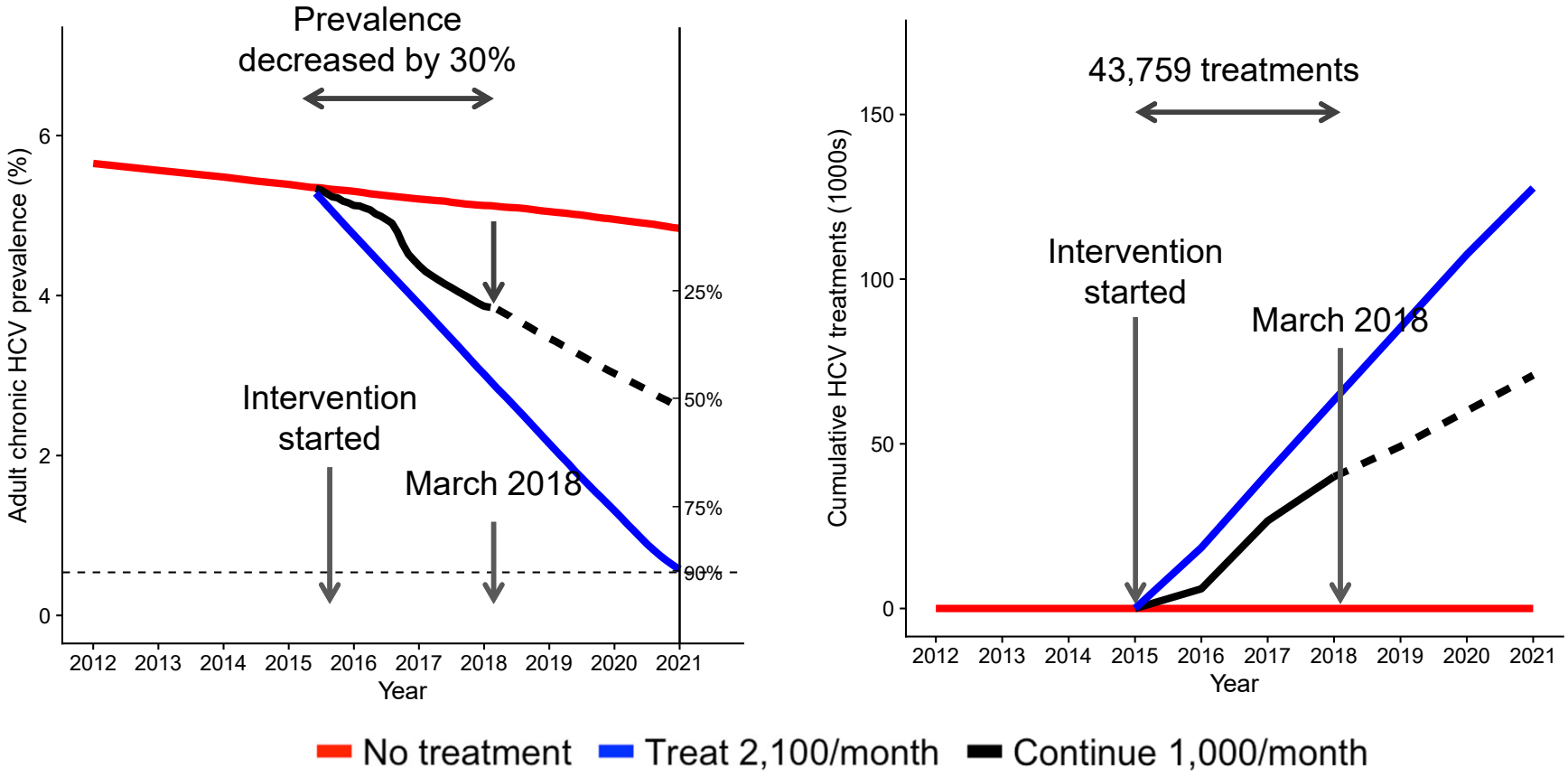
Treatments undertaken so far?



- Total of 51,000 treatments undertaken.
- Average 1,188 treatments/month, with ~1000/month over last 16 months

Interim impact done till **March 2018**?



- Continue 1000/mth - halve incidence and prevalence by 2020
- **90% decrease by end of 2025**

Impact up to **end 2018**

PV [2]1

- If assume **continues to end of 2018** as suggested by data:
  - Prevalence and incidence reduced by about **35%**
  - Prevented 3100 (1150-7082) new infections
  - Prevented 228 (74-386) HCV-related deaths

- Impact accumulates if follow over next 15 years
  - Prevented infections increase **9-fold**
  - Prevented deaths increase **23-fold**

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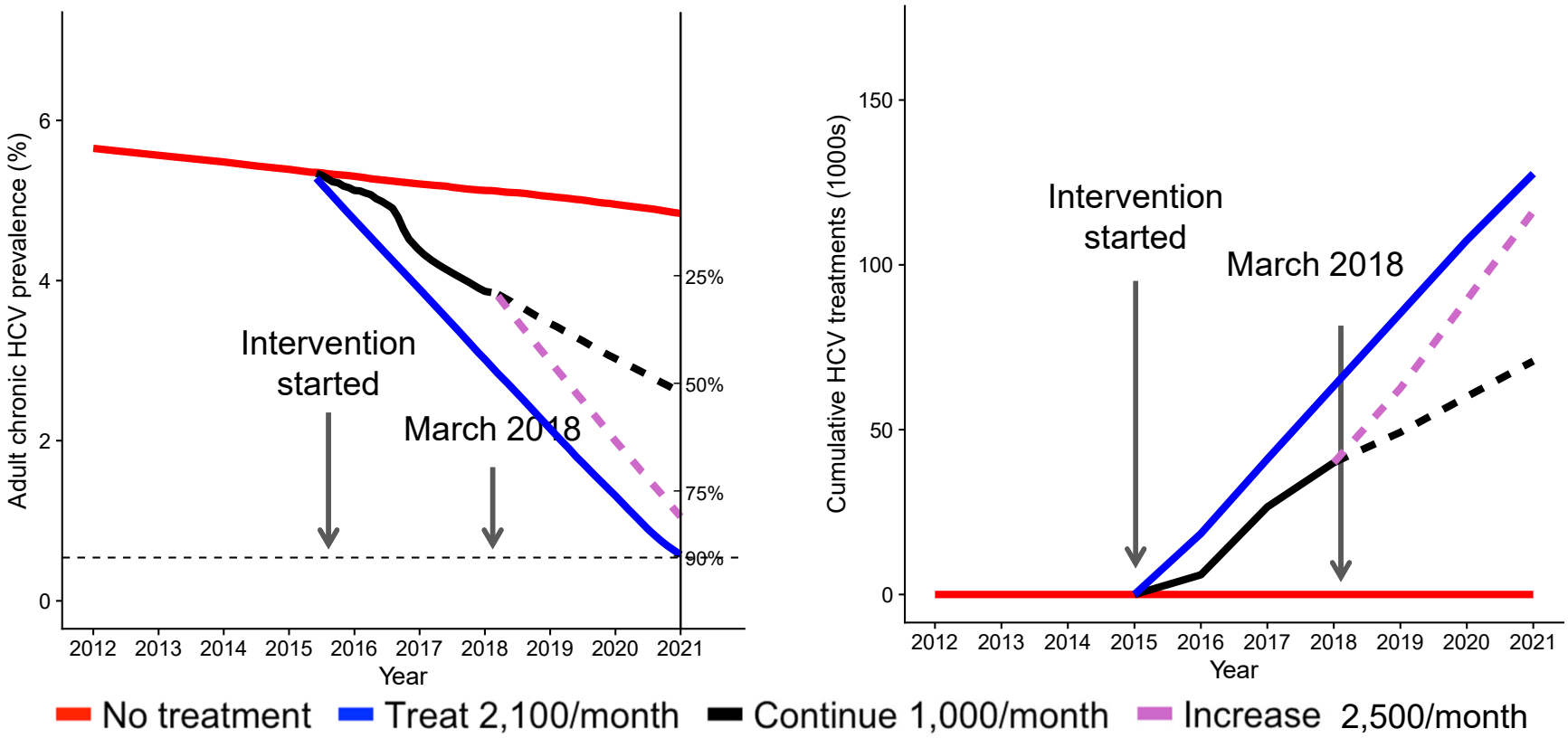
Peter Vickerman, 11/26/2018

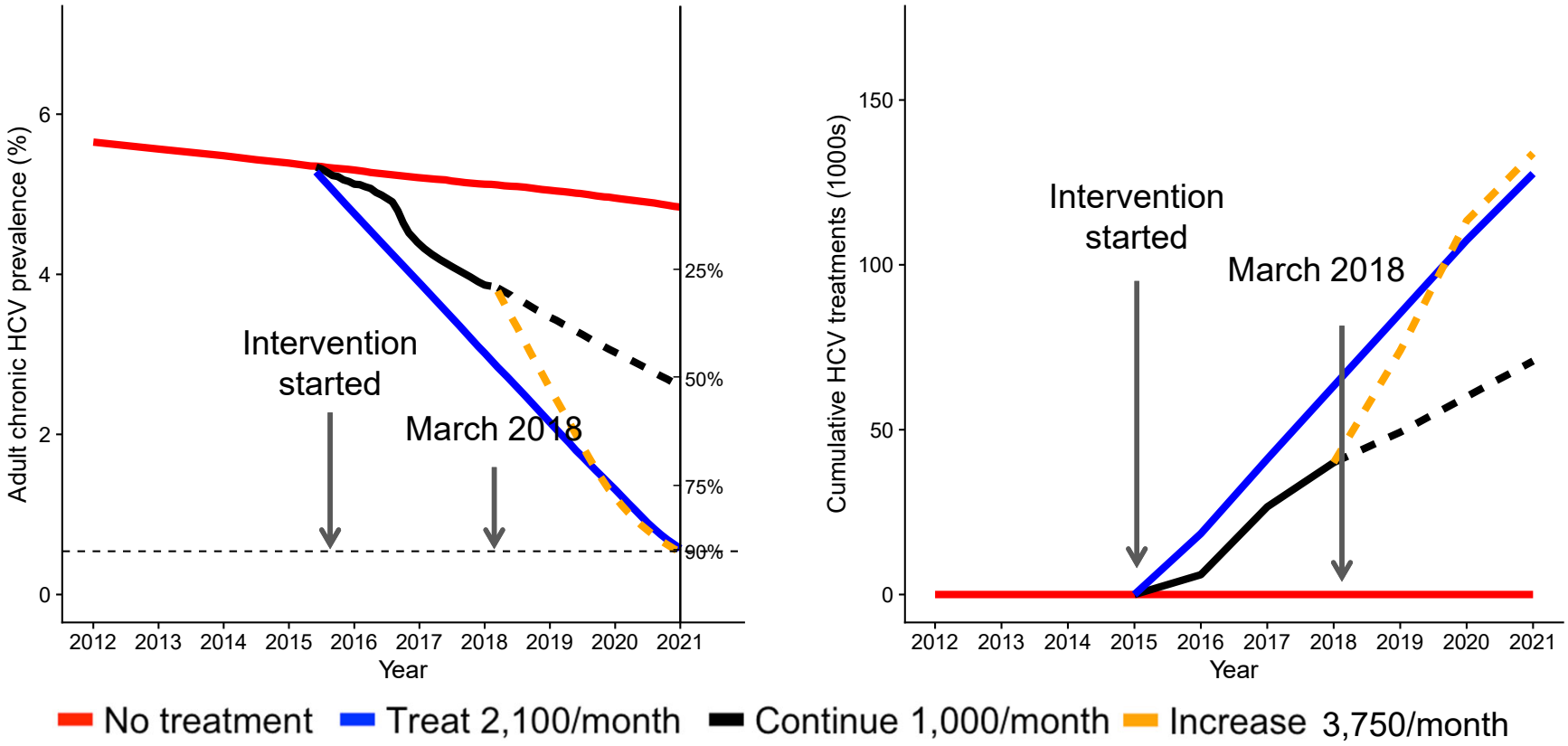
How can a 90% reduction HCV in prevalence be reached by 2020?

How much treatment was needed from March 2018?



- Increase treatment to 2,500/month - 80% reduction in prevalence by 2020
- 90% reduction by mid-2022

How much treatment was needed from March 2018?

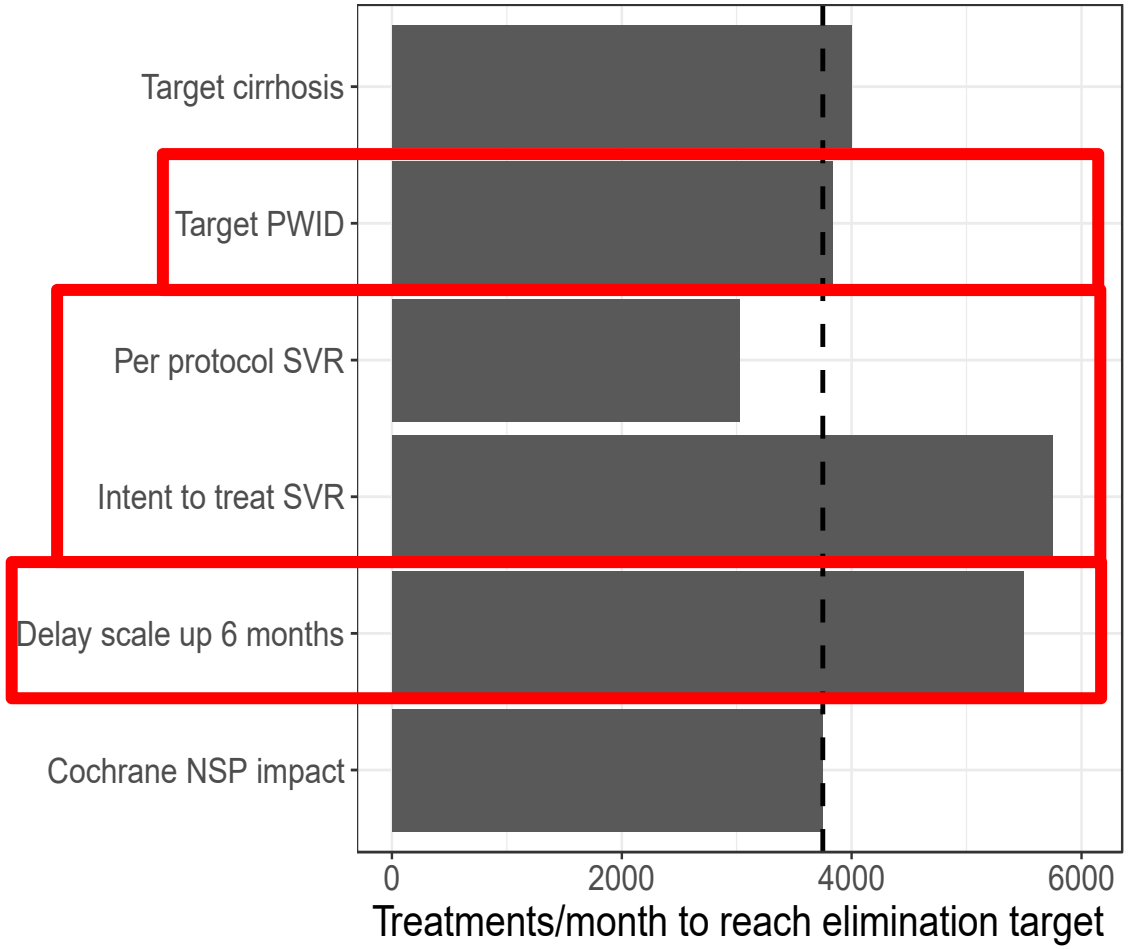


- To reach 90% reduction:
  - From **March 2018** - needed to increase treatment **4-fold to 3,750/month**
  - From **November 2018** - need to increase treatment **6-fold to 5,500/month**

Sensitivity analysis

Required treatment rates to achieve target by 2020

- Maximising retention and SVR rate is important
  - Per-protocol SVR rate - **Reduce** treat need by 25%
  - Intent to treat SVR rate - **Increase** treat need by 50%
- Delaying scale-up - big effect
- Need to ensure PWID are treated, but:
  - Targeting PWID not important, if
  - Being treated equitably



Implications: when will we reach 90% reduction?

- Treatments already achieved impact – prevalence and incidence reduced by 35%,
- Current treatment rate 1000 per month
  - Reach target 2025
- Increase treatment rate:
  - 1500 per mth - 2024
  - 2000 per mth - 2022
  - 5500 per mth - 2020
- Could also improve SVR rate – reduce LTFU:
  - Per protocol SVR and 2000 per mth –2021

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Key Points and Discussion

- Treatments have already achieved impact – prevalence reduced by 30%, infections and deaths averted
- Reaching 90-95-95 treatment target will achieve 80% reduction in prevalence and incidence by 2020
- Treatment rate must be scaled up for reaching target by end of 2020
  - **to 5500 per month from now**
- Targeting treatment to PWID not essential, just need to ensure they have good access
- What are implications for program – can't assume plans stay the same!

Next steps

1. Determine cost-effectiveness of different piloted strategies:
   - Prison, PWID interventions,
   - Which strategies are most efficient for increasing diagnosis and linkage to treatment?
   - We know treatment needs to scale up – how do we do it?
2. Use modelling to evaluate final impact of program:
   - Did intervention have expected impact, and if not then why not?
   - What can other countries learn from Georgia to implement efficient treatment programs?

Brief model methods

- Dynamic **HCV transmission and progression** model stratified by age, PWID status, infection and liver disease status
- Model calibrated to detailed data:
  - General population demography
  - 2015 National sero-survey HCV prevalence data by age and gender
  - PWID survey data on age distribution and HCV prevalence since 1997
- Incorporate scale-up of harm reduction interventions
- Model includes uncertainty in data used to parameterise and calibrate model.
- Captures evolving nature of HCV transmission and epidemic