

What difference does it make? Assessing the impact of take-home naloxone scale up internationally

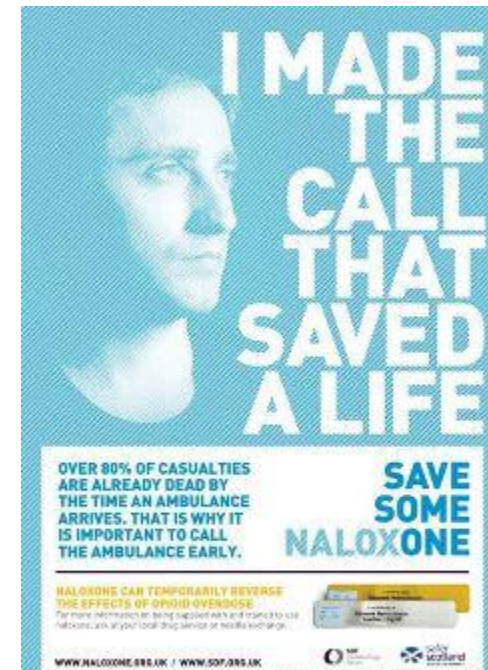
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Naloxone

- Opioid antagonist which reverses the effects of respiratory depression caused by opioid overdose;
- No obvious potential for abuse and a strong safety profile;
- Used routinely by health professionals in the treatment of opioid overdose;
- Hugely effective, but short acting;
- Only effective on opioids



The story so far...

- 1996-2001: Original proposal and THN pilots from 1996 to 2001.
- 2001-2006: testing, evaluation, and assessment of challenges and perceived medicolegal barriers.
- 2006–2011: expansion of THN programs;
- 2011-2016: high-impact research and efforts to widen THN availability.

What difference does it make?

- Take-home naloxone (THN) associated with:
 - ↑ knowledge & confidence re OD response
 - ↑ self-esteem
 - ↑ sense of safety
 - ↑ treatment engagement
 - ↓ drug use among trainees
 - And much more...

Why are there so many opioid-related deaths in Scotland if you're giving out naloxone? What difference does it *actually* make?



B B C

“Future studies will need to look at the extent to which widespread THN provision, as increasingly achieved in Scotland, Norway and several states in the US, results in reduction in opioid overdose mortality at state or national level, and what naloxone coverage rates are required to achieve this effect.”

Take-home naloxone to prevent fatalities from opiate-overdose: Protocol for Scotland's public health policy evaluation, and a new measure to assess impact

Sheila M. Bird¹, Mahesh K. B. Parmar², and John Strang^{3,4}


¹MRC Biostatistics Unit, Cambridge, UK, ²MRC Clinical Trials Unit, University College London, London, UK, ³King's College London, London, UK, and

⁴National Addiction Centre, London, UK

"...community-year strata with greater than 100 enrollments per 100 000 population (0.54, 0.39 to 0.76) had significantly reduced adjusted rate ratios compared with communities with no implementation."

"For THN to be available at every witnessed opiate overdose, a national THN-policy should aim to issue to at-risk clients around 20 times as many THN-kits as there are opiate related deaths (ORDs) per annum; and at least nine times as many (ORDs)."

Opioid overdose rates and implementation of overdose education and nasal naloxone distribution in Massachusetts: interrupted time series analysis

 OPEN ACCESS

Alexander Y Walley assistant professor of medicine, medical director of Massachusetts opioid overdose prevention pilot^{1,3}, Ziming Xuan research assistant professor², H Holly Hackman epidemiologist³, Emily Quinn statistical manager⁴, Maya Doe-Simkins public health researcher¹, Amy Sorensen-Alawad program manager¹, Sarah Ruiz assistant director of planning and development³, Al Ozonoff director, design and analysis core^{5,6}

Case studies

- Scotland



- Norway

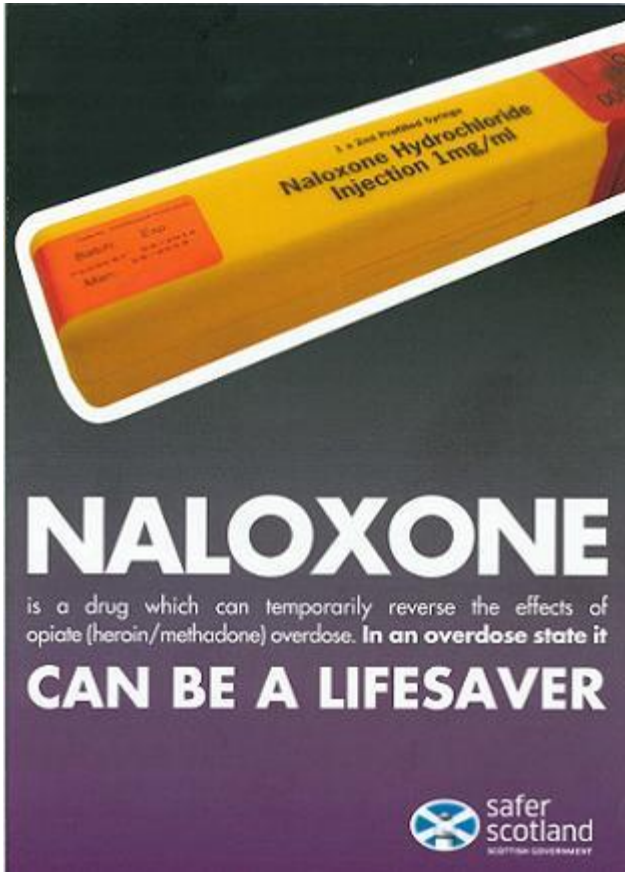


- British Columbia





Case study 1: Scotland

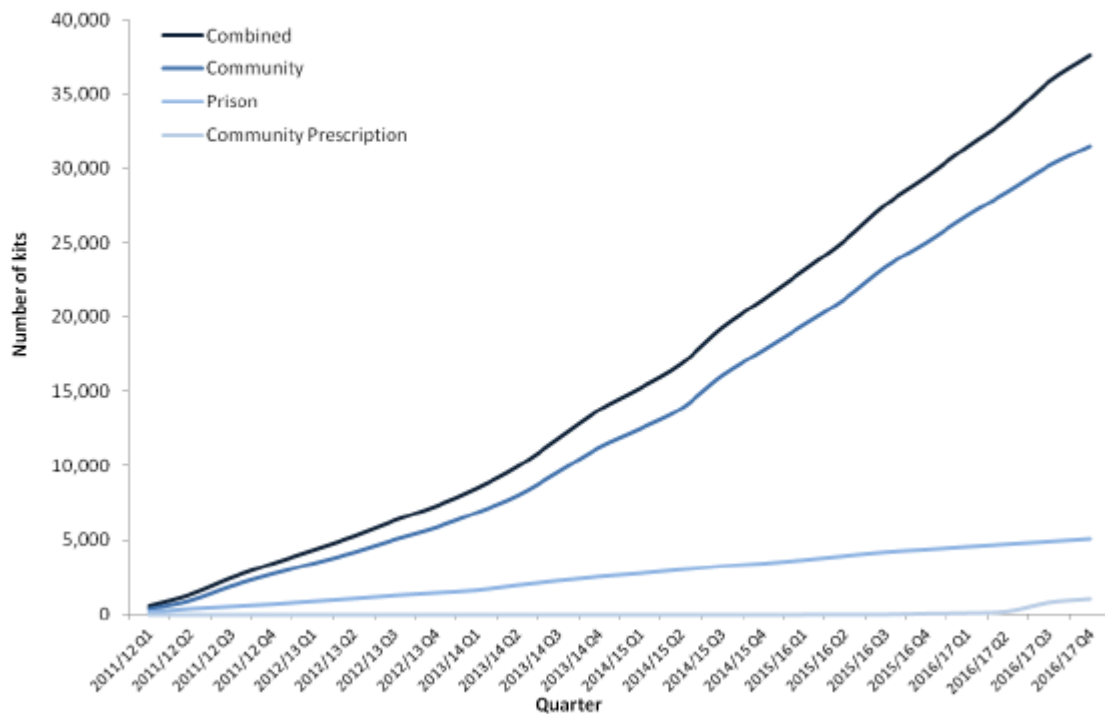


“The aim of this national programme is to increase the availability and awareness of naloxone across Scotland, in order to increase the chance of it being administered during an opiate overdose... I hope that the impact of increased naloxone availability will contribute to a reduction in fatal opiate overdoses in Scotland and I am very grateful for your support in taking forward this important initiative.”

Fergus Ewing, Minister for Community Safety, 01/11/10

Did the NNP in Scotland reach those most at risk of opioid overdose?

Figure 4.1: Cumulative number of THN kits supplied, by source, financial year and quarter (Scotland; 2011/12 to 2016/17)

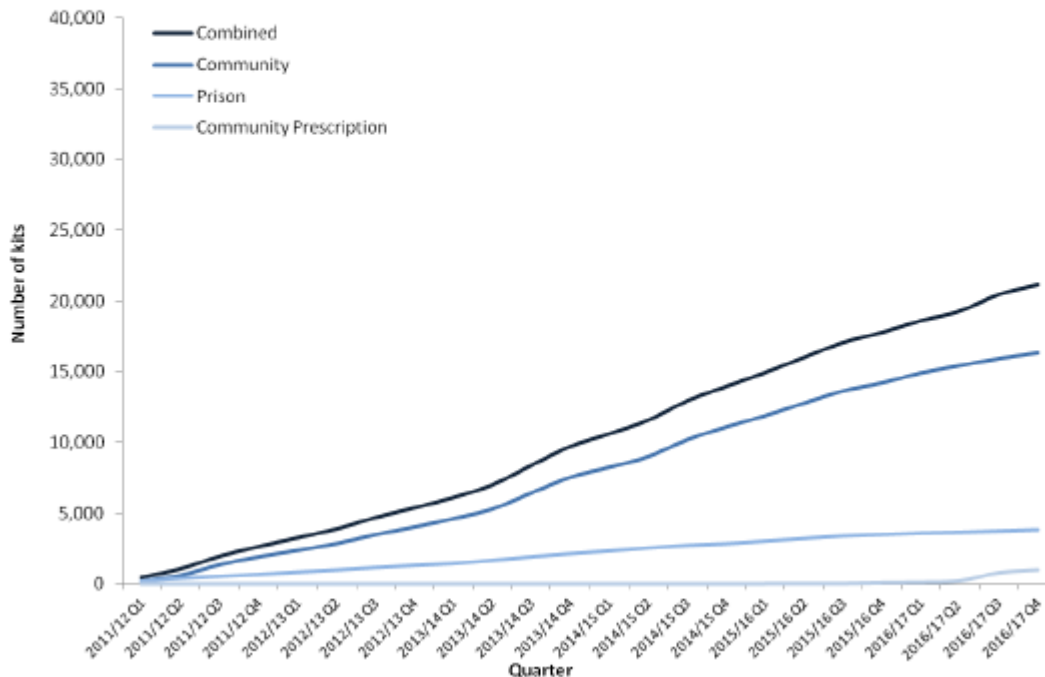


**85-91% per year
supplied to
'persons at risk
of opioid
overdose'**

Source: ISD (2017)

Did the NNP in Scotland reach those most at risk of opioid overdose?

Figure 4.3: Cumulative number of THN kits distributed as first supply to people at risk, by source, financial year and quarter (Scotland; 2011/12 to 2016/17)



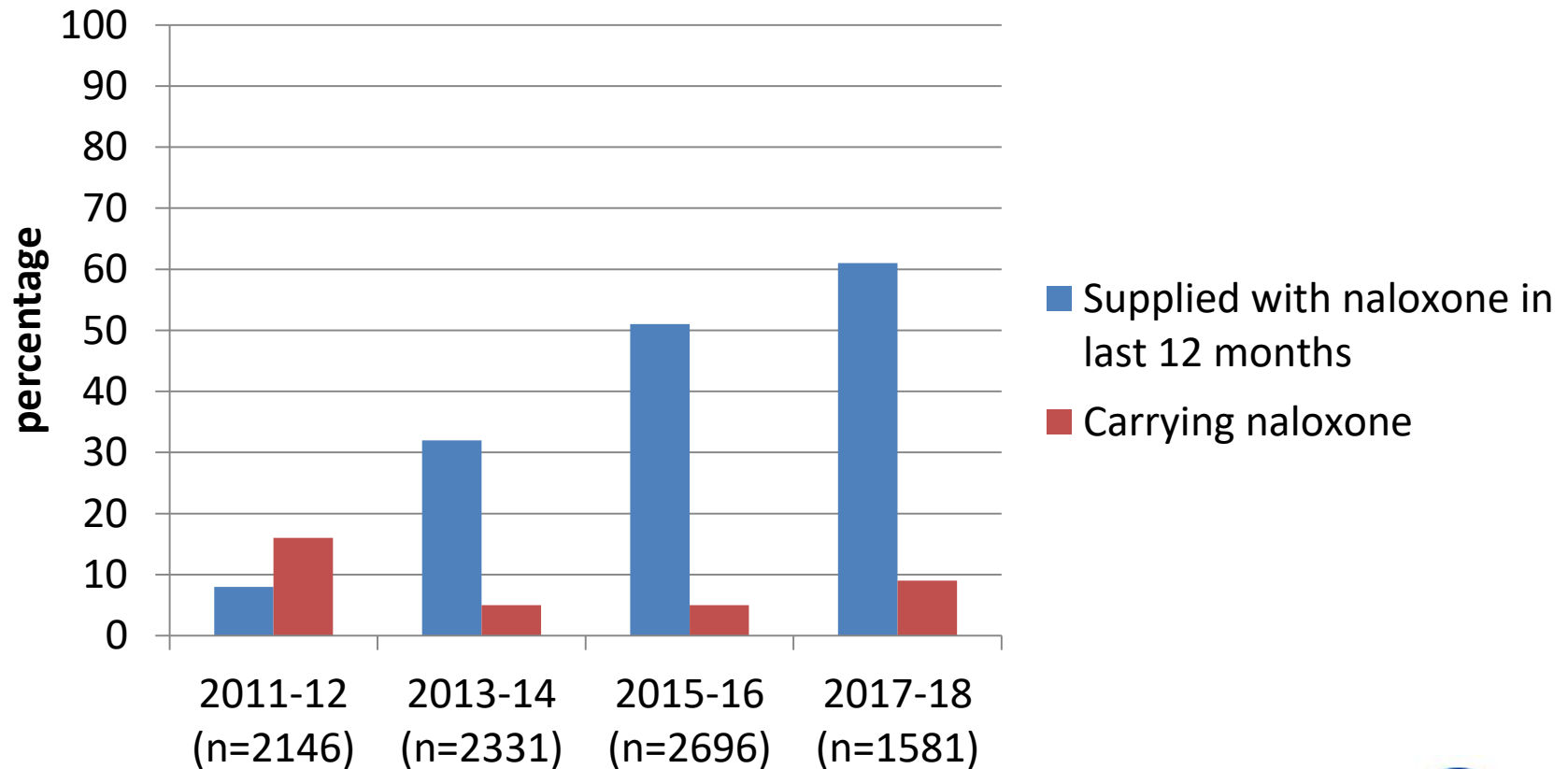
Estimated reach among PWUD: 345 kits per 1,000 'problem drug users'

Distribution target of 8000 kits (20 x mean no. ORDs) met 2014-2016.

Source: ISD (2017)

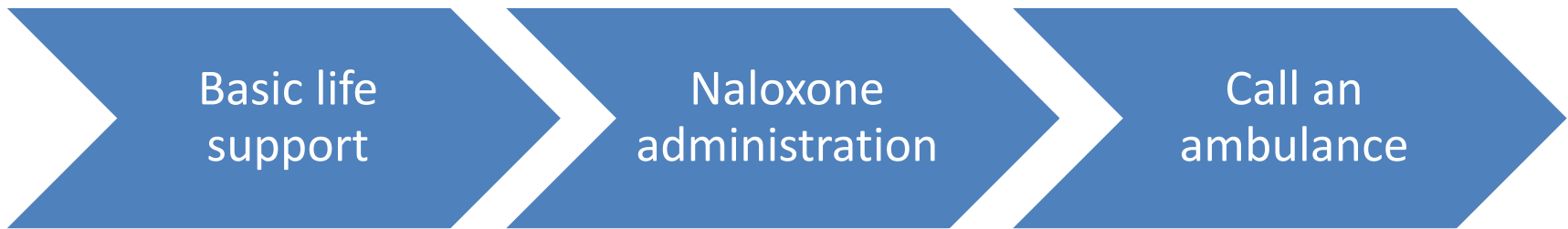
Did the NNP in Scotland reach those most at risk of opioid overdose?

Engagement in the NNP by people who inject drugs (PWID)



Source: McAuley et al, 2016 / Bird et al, 2017 / NESI 2017-18 (provisional)

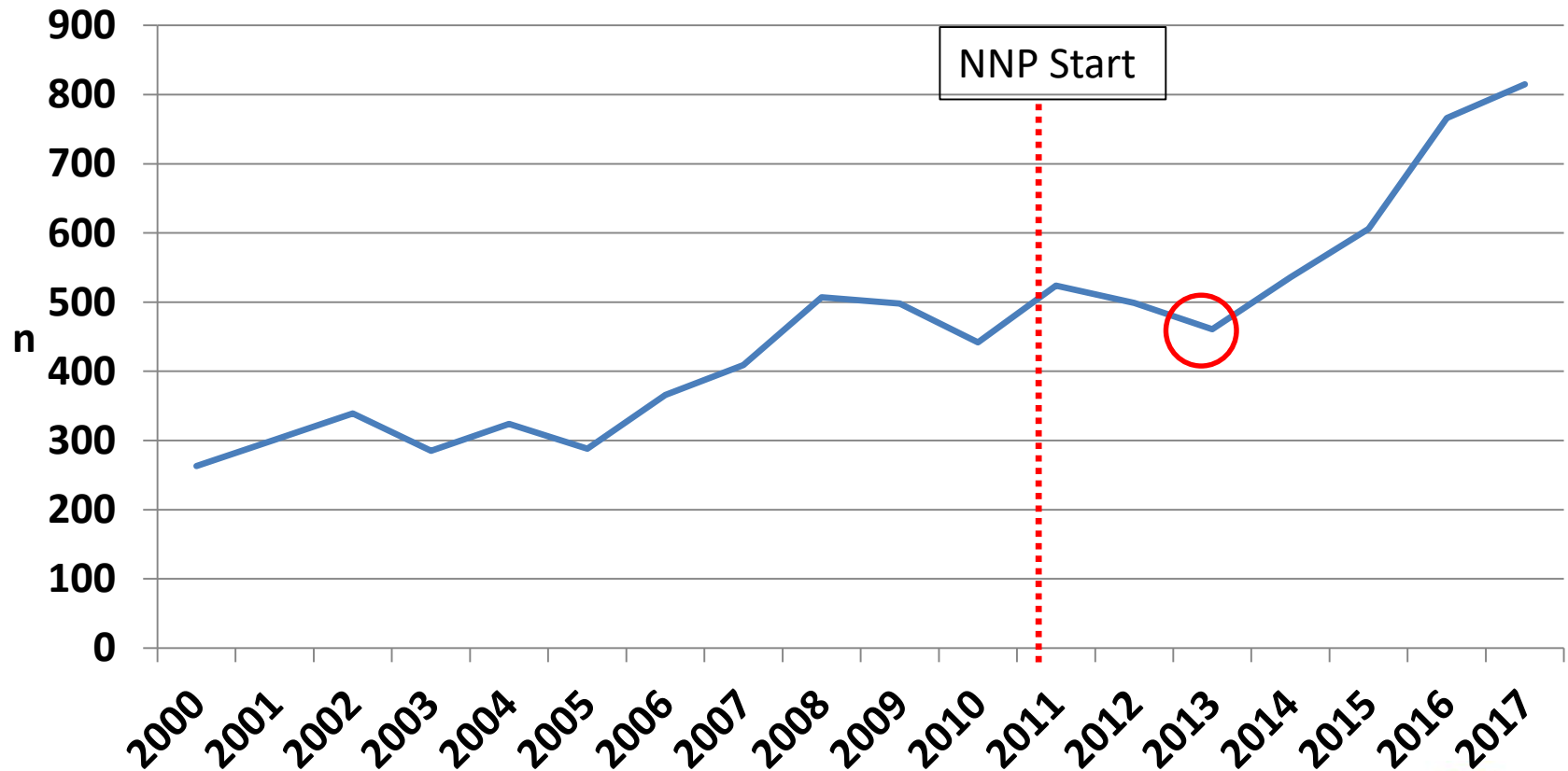
Are PWUD in Scotland following the NNP training protocol?



Between 2011/12 and 2016/17, a total of 3,088 repeat supplies were issued due to the previous kit being used for the purposes of saving a life...

Did the NNP in Scotland have an impact on opioid-related overdose?

Opioid-related deaths, Scotland, 2000-2017



Source: NRS(2017)

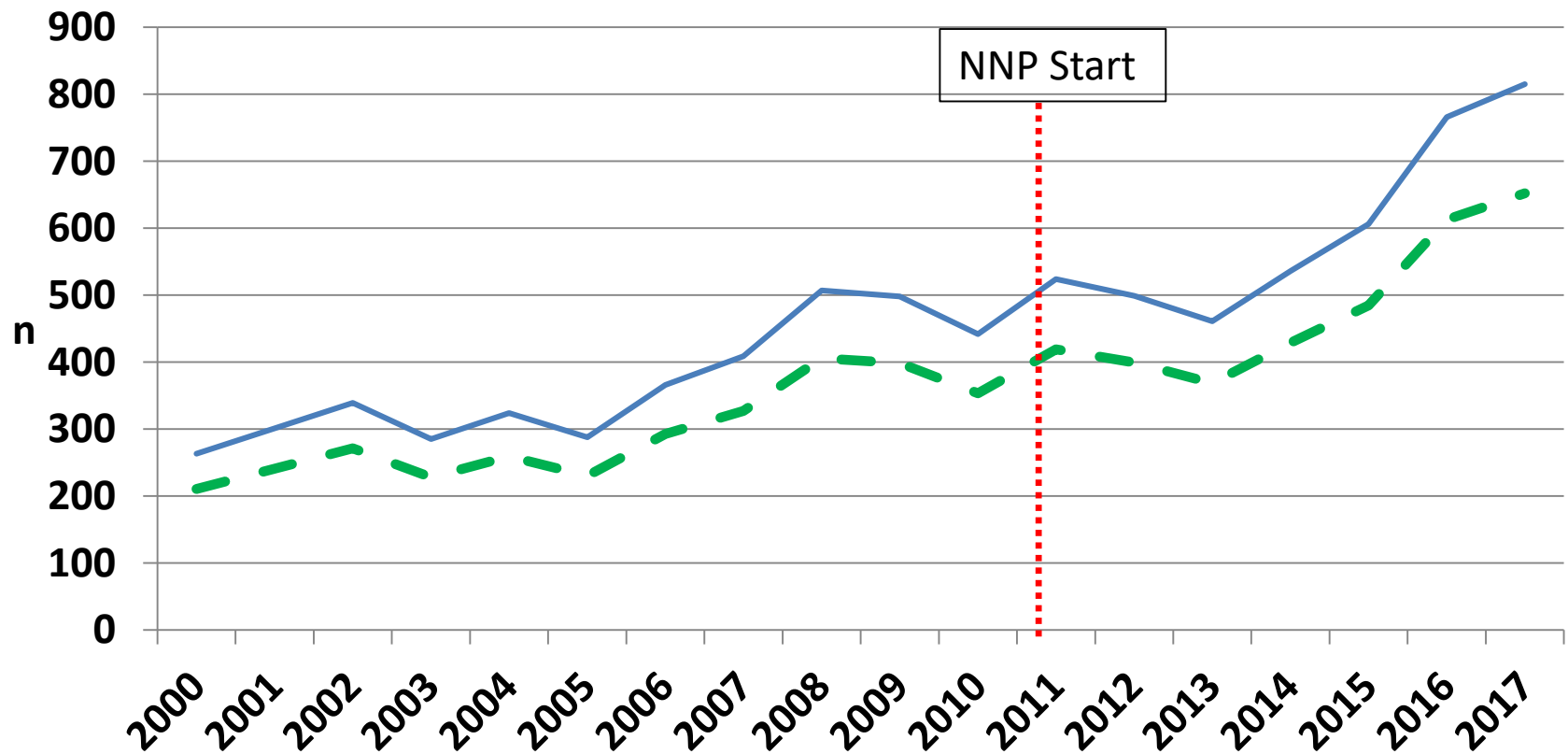
*“I invite the hon. Gentleman and the Scottish Government to consider the National Drug-Related Deaths Database (Scotland) Report, from June this year, which said that **the Scottish Government’s flagship take-home naloxone programme ‘has not prevented substantial increases in opioid-related deaths in Scotland.’**”*

Douglas Ross, MP for Moray

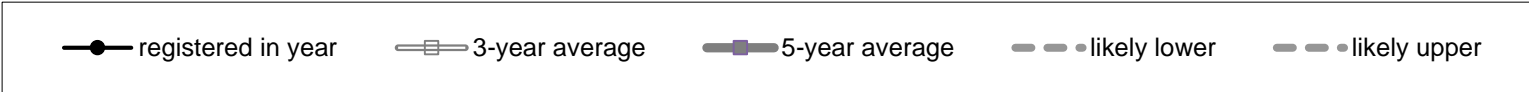
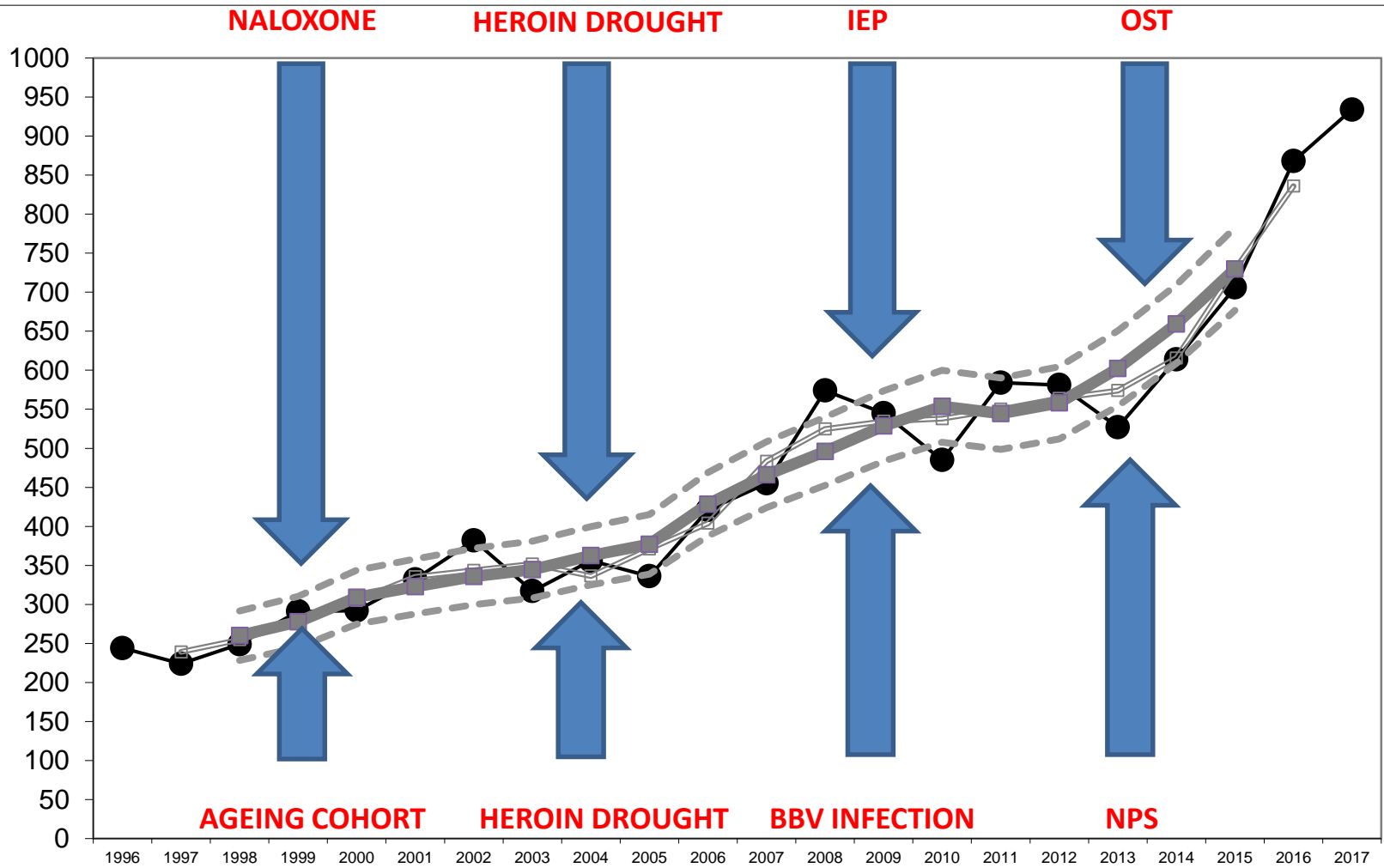
UK House of Commons drug policy debate, 23 October 2018

Did the NNP in Scotland have an impact on opioid-related overdose?

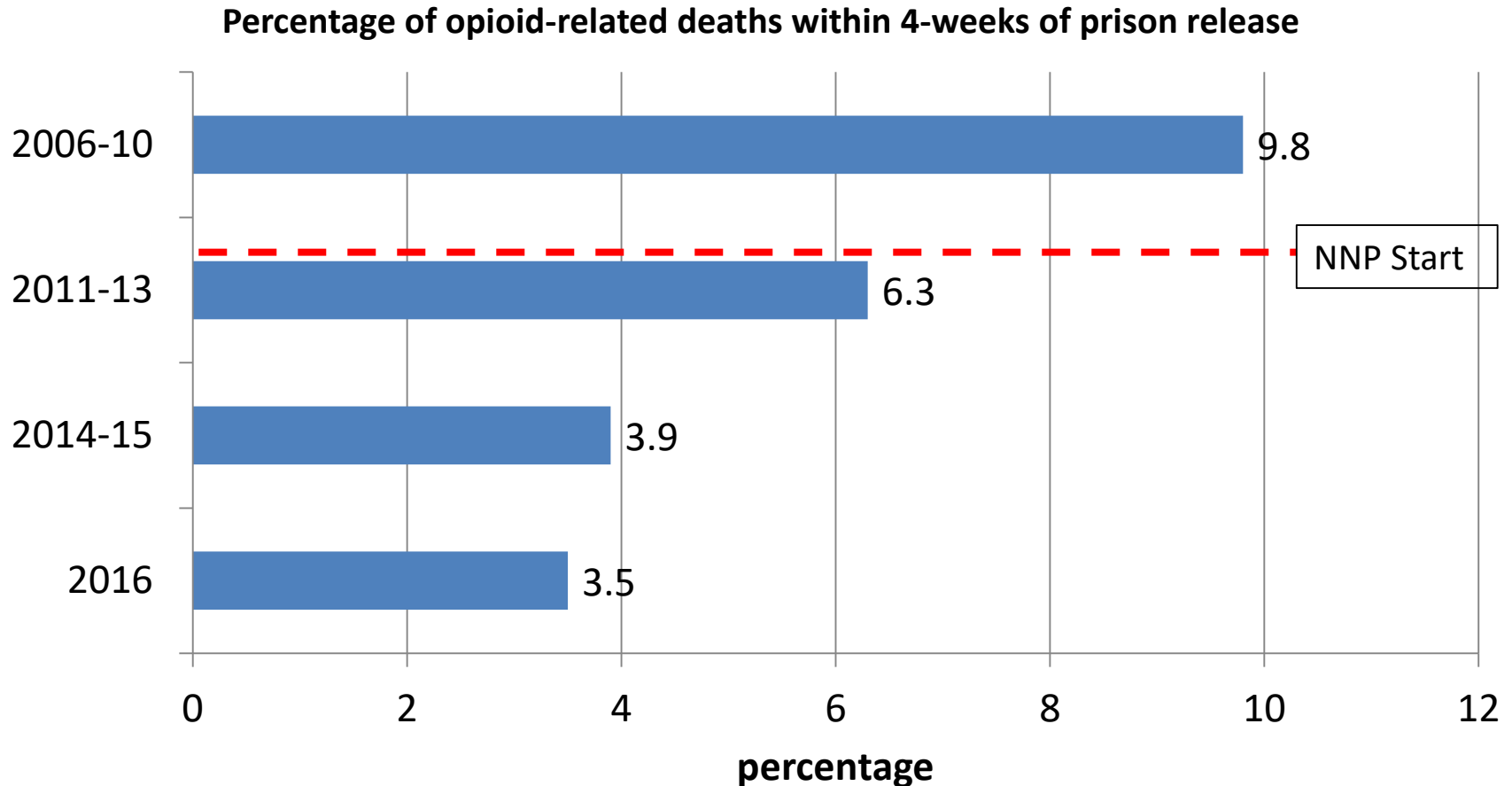
Opioid-related deaths, Scotland, 2000-2017



Source: NRS (2017)

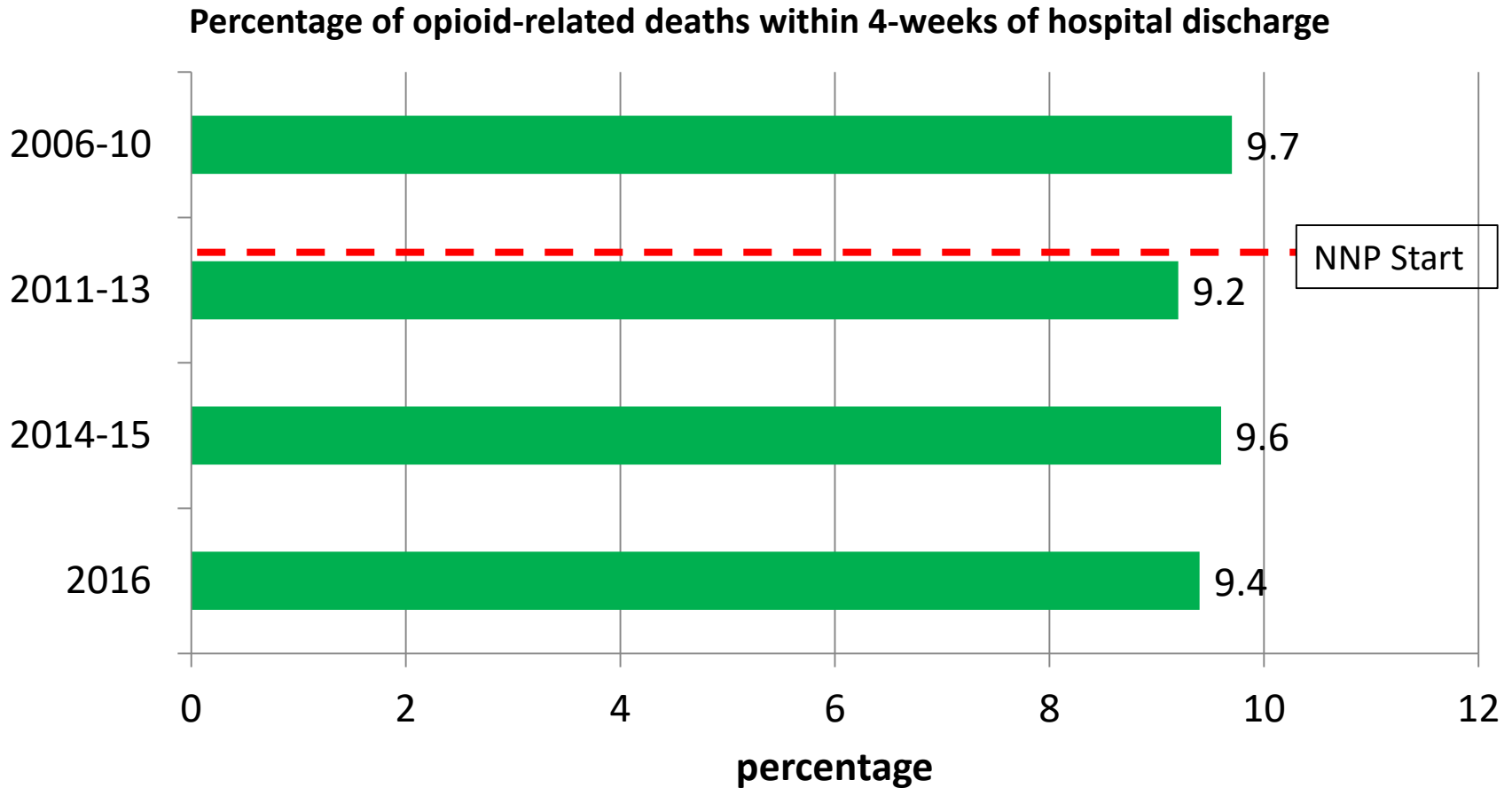


Did the NNP in Scotland have an impact on opioid-related overdose?



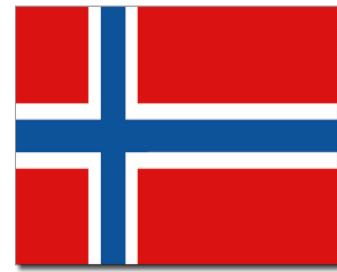
Source: ISD (2016) / Bird et al, (2016, 2017)

Did the NNP in Scotland have an impact on opioid-related overdose?



Source: ISD (2016)

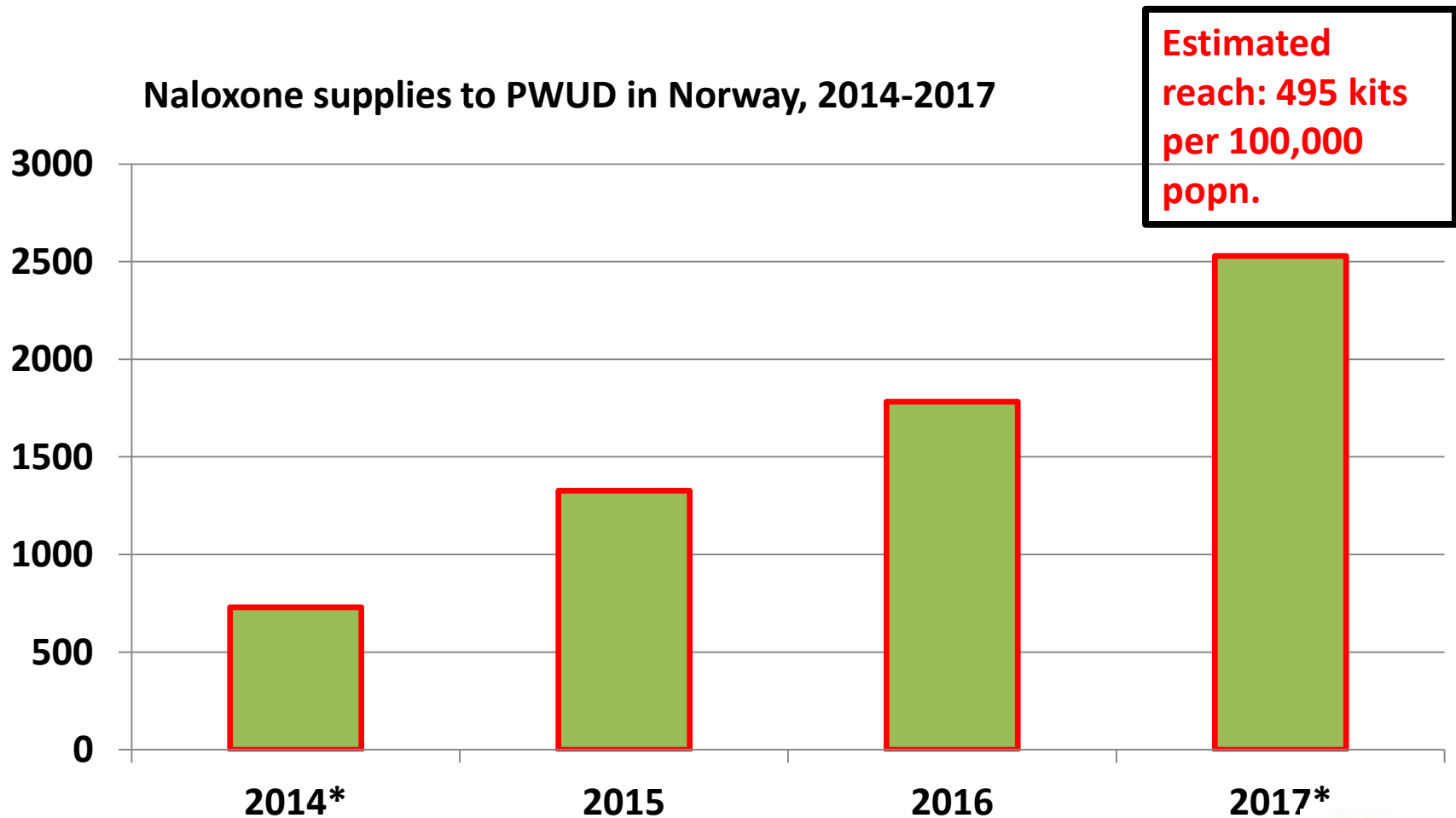
Case study 2: Norway



“In March 2013, in a letter to the Ministry of Health and Care Services, the Directorate of Health recommended the implementation of a trial project for distribution of nasal naloxone to users, relatives and street-based outreach workers in Norway.”

Norwegian National Overdose Prevention Strategy,
2014

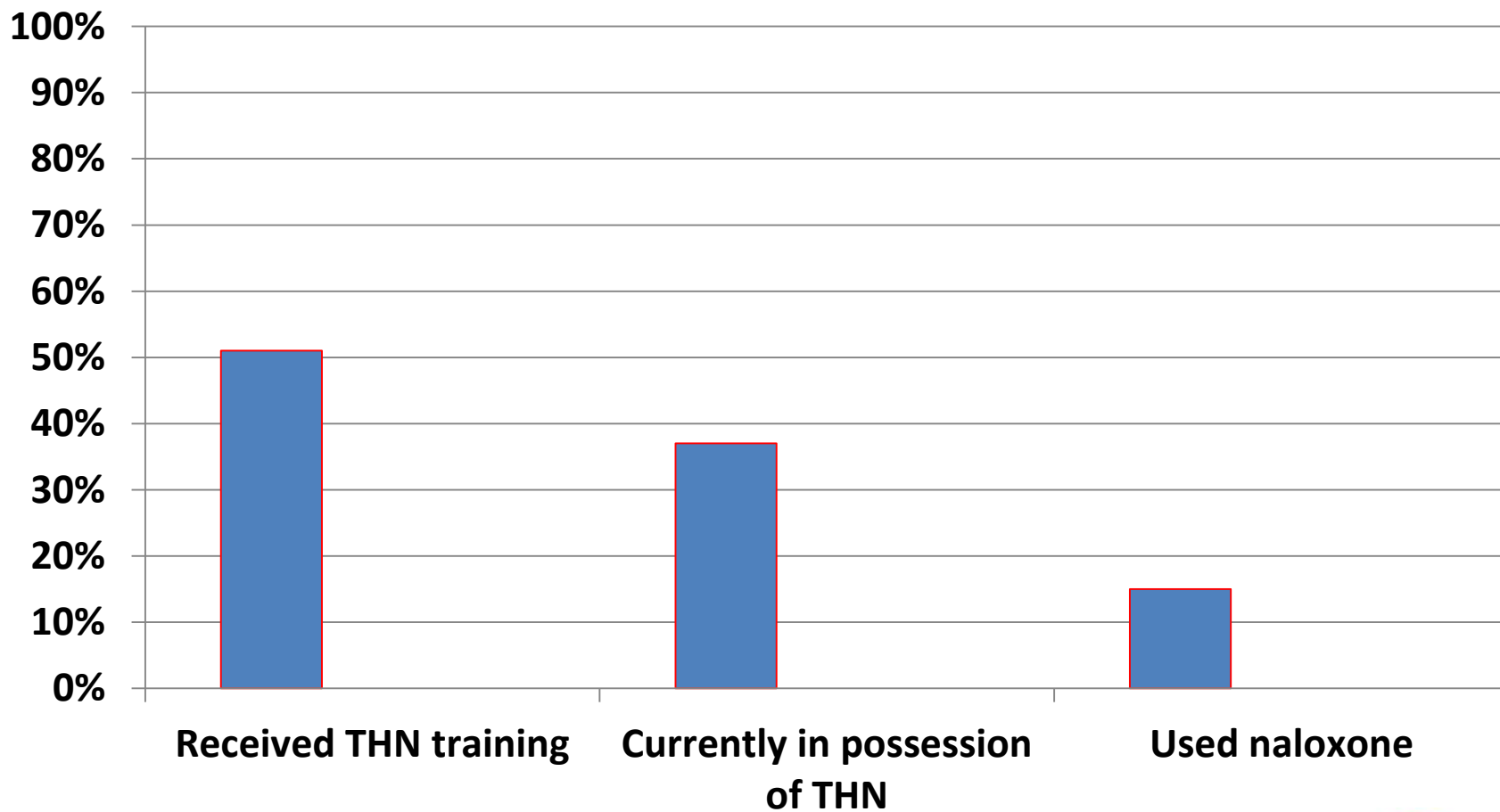
Did the NNP in Norway reach those most at risk of opioid overdose?



Source: Madah-Amiri et al, 2017

*part-year data

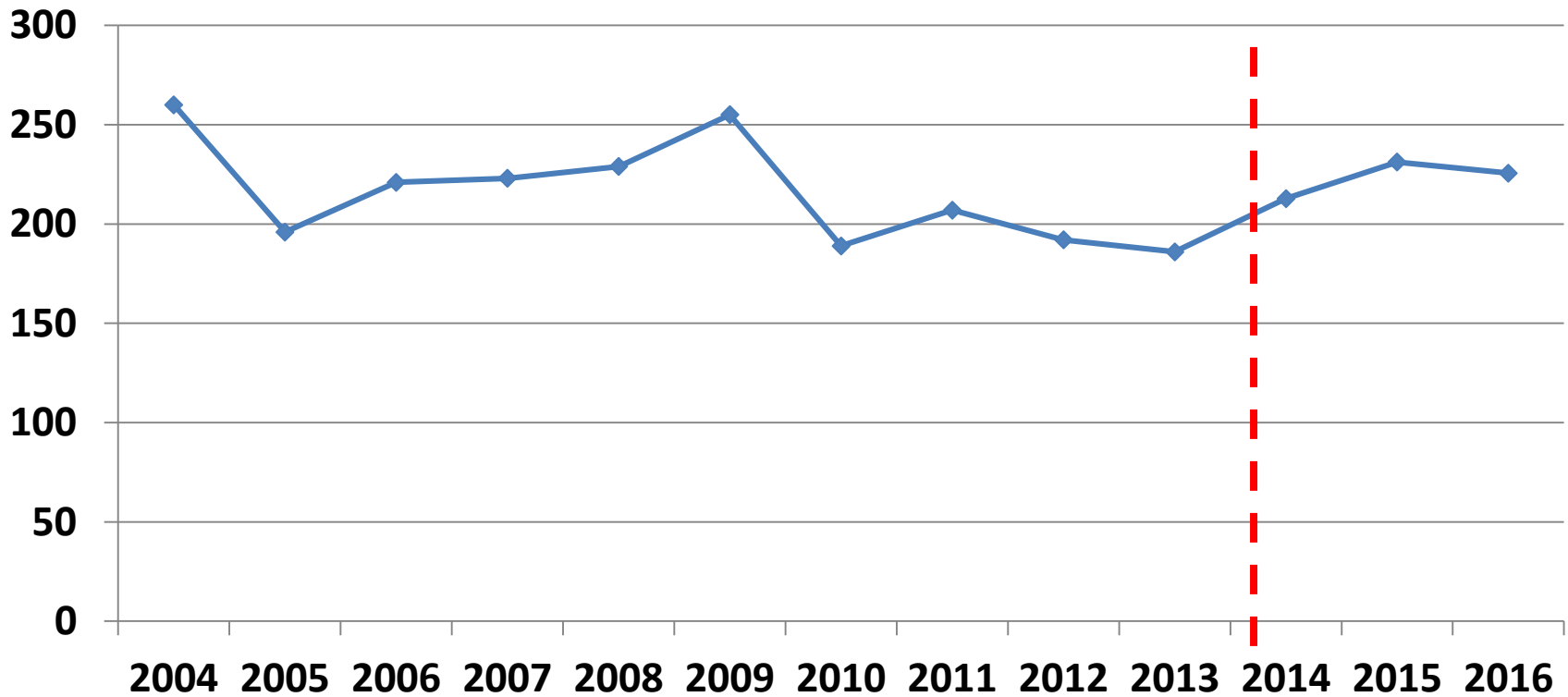
Naloxone reach, possession and use; Norway, 2017



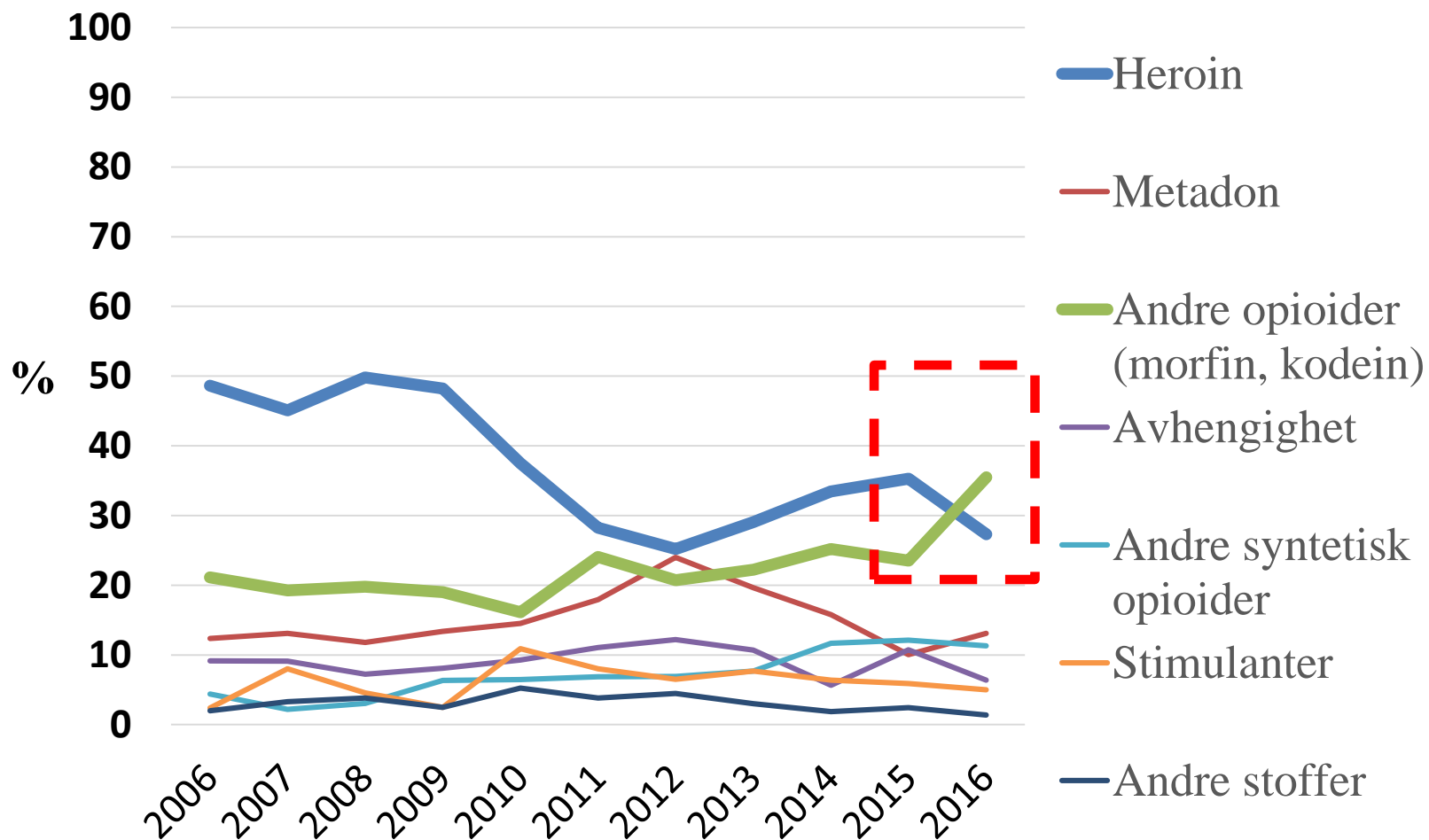
Source: Madah-Amiri et al, 2017

Did the NNP in Norway have an impact on opioid-related overdose?

Opioid-related deaths, Norway, 2004-2017



Overdosedødelighet i Norge



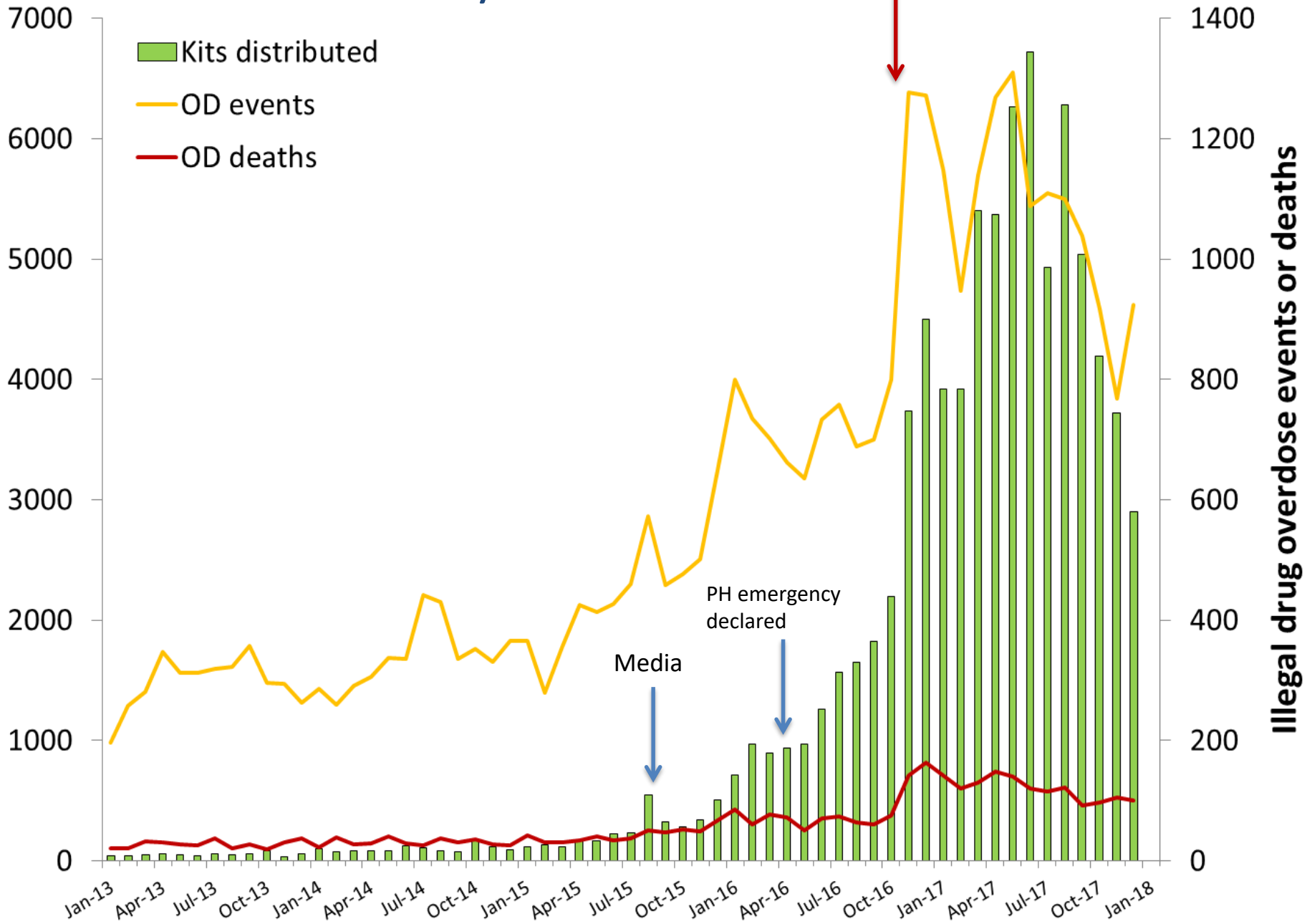
Case study 3: British Columbia



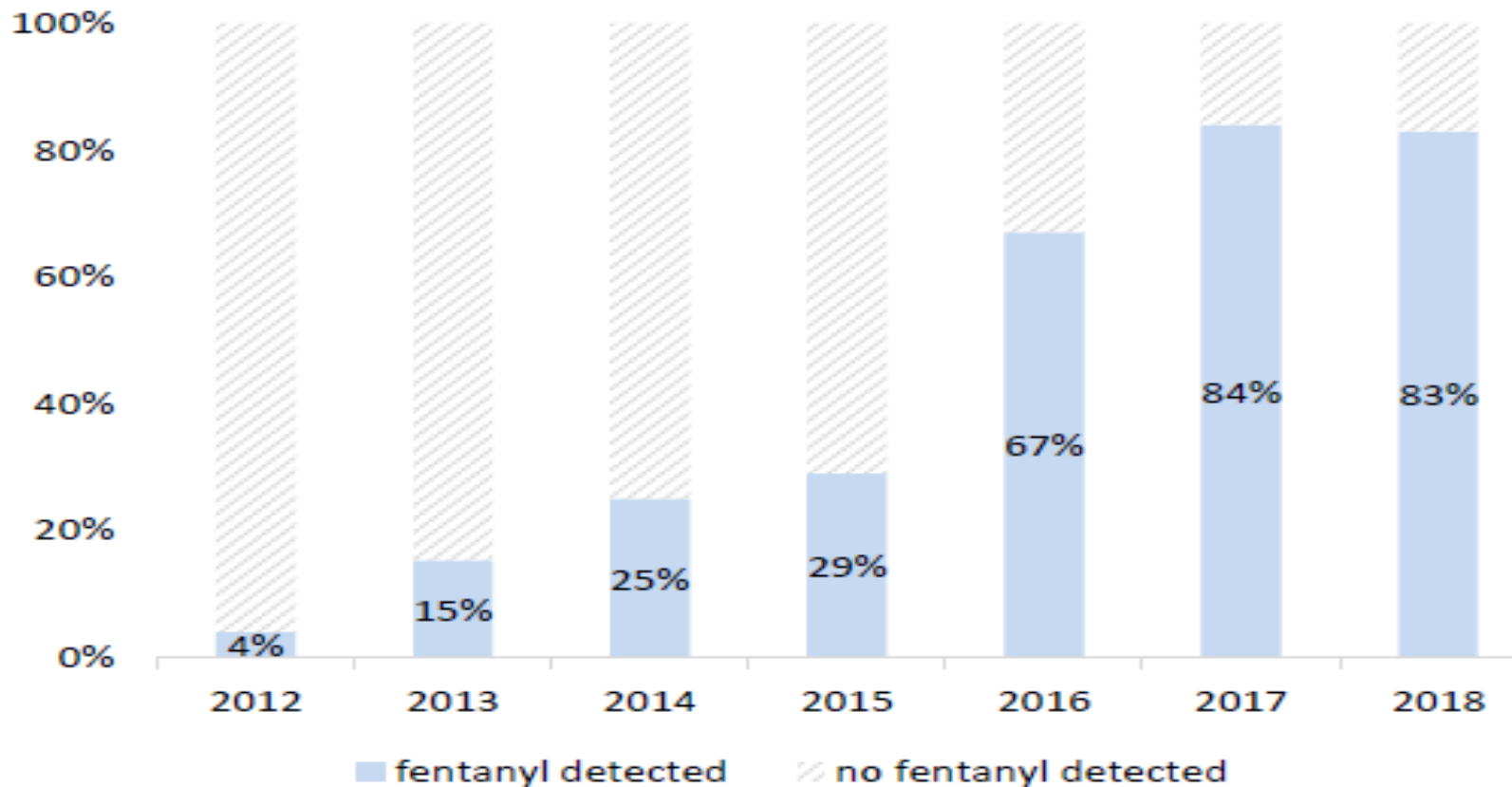
“BC Center for Disease Control started the Take Home Naloxone program in 2012 to provide life-saving training and kits to people at risk of an opioid overdose. “

Towardtheheart.com / BCCDC Harm Reduction Services

Monthly data



Percentage of illicit drug deaths in which fentanyl detected in BC



*Provisional data to Mar 31, 2018, may change as cases closed; Source BCCS, May 10, 2018

<http://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/death-investigation/statistical/illicit-drug.pdf>

Distribution of take-home opioid antagonist kits during a synthetic opioid epidemic in British Columbia, Canada: a modelling study

Michael A Irvine, Jane A Buxton, Michael Otterstatter, Robert Balshaw, Reka Gustafson, Mark Tyndall, Perry Kendall, Thomas Kerr, Mark Gilbert*, Daniel Coombs*



Summary

Background Illicit use of high-potency synthetic opioids has become a global issue over the past decade. This misuse is particularly pronounced in British Columbia, Canada, where a rapid increase in availability of fentanyl and other synthetic opioids in the local illicit drug supply during 2016 led to a substantial increase in overdoses and deaths. In response, distribution of take-home naloxone (THN) overdose prevention kits was scaled up (6-4-fold increase) throughout the province. The aim of this study was to estimate the impact of the THN programme in terms of the number of deaths averted over the study period.

Methods We estimated the impact of THN kits on the ongoing epidemic among people who use illicit opioids in British Columbia and explored counterfactual scenarios for the provincial response. A Markov chain model was constructed explicitly including opioid-related deaths, fentanyl-related deaths, ambulance-attended overdoses, and uses of THN kits. The model was calibrated in a Bayesian framework incorporating population data between Jan 1, 2012, and Oct 31, 2016.

Findings 22 499 ambulance-attended overdoses and 2121 illicit drug-related deaths (677 [32%] deaths related to fentanyl) were recorded in the study period, mostly since January, 2016. In the same period, 19 074 THN kits were distributed. We estimate that 298 deaths (95% credible interval [CrI] 91–474) were averted by the THN programme. Of these deaths, 226 (95% CrI 125–340) were averted in 2016, following a rapid scale-up in distribution of kits. We infer a rapid increase in fentanyl adulterant at the beginning of 2016, with an estimated 2-3 times (95% CrI 2-0–2-9) increase from 2015 to 2016. Counterfactual modelling indicated that an earlier scale-up of the programme would have averted an additional 118 deaths (95% CrI 64–207). Our model also indicated that the increase in deaths could parsimoniously be explained through a change in the fentanyl-related overdose rate alone.

Interpretation The THN programme substantially reduced the number of overdose deaths during a period of rapid increase in the number of illicit drug overdoses due to fentanyl in British Columbia. However, earlier adoption and distribution of the THN intervention might have had an even greater impact on overdose deaths. Our findings show the value of a fast and effective response at the start of a synthetic opioid epidemic. We also believe that multiple interventions are needed to achieve an optimal impact.

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See Comment page e205

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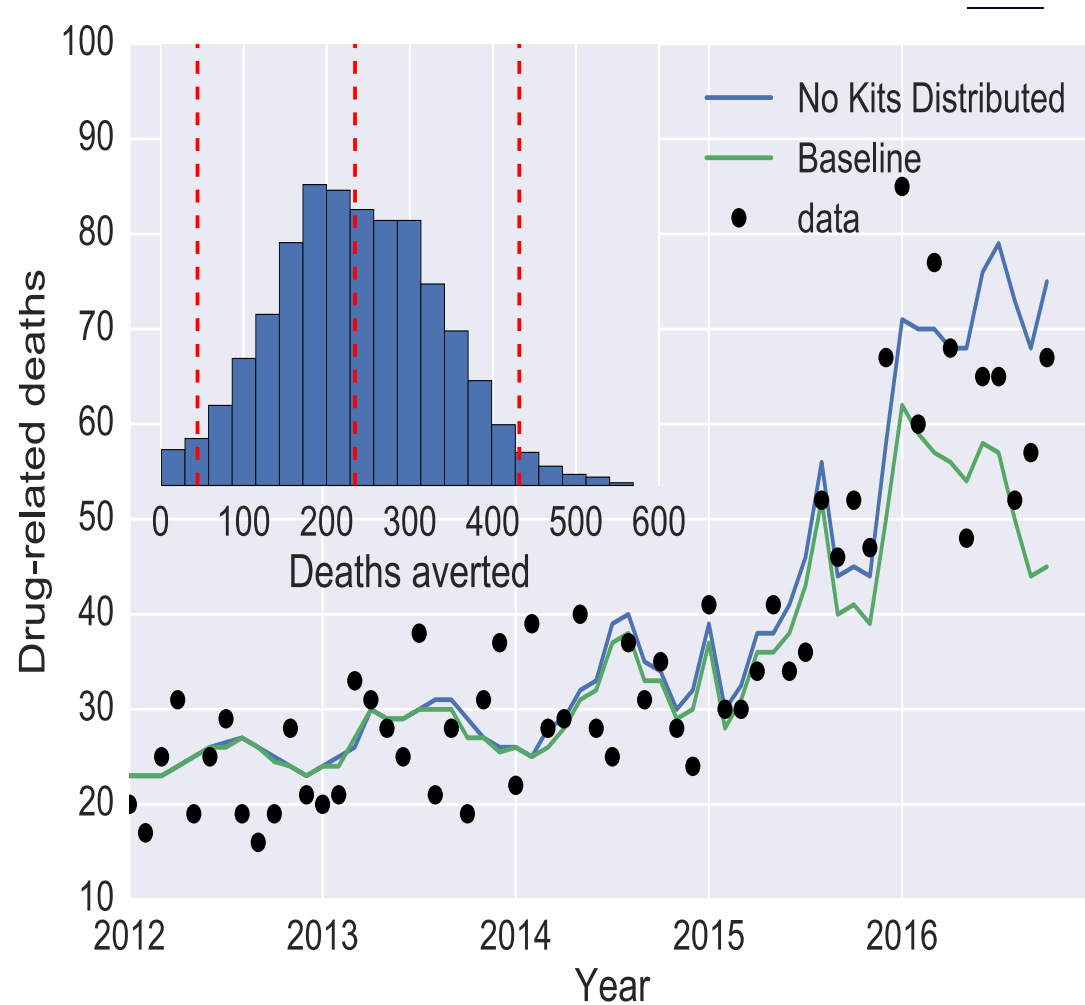
Lives saved by take home naloxone

Sep 2012- Oct 2016:

- 19,000 naloxone kits supplied

- 300 deaths averted

- Kit use increased after Oct 2016 but other confounders



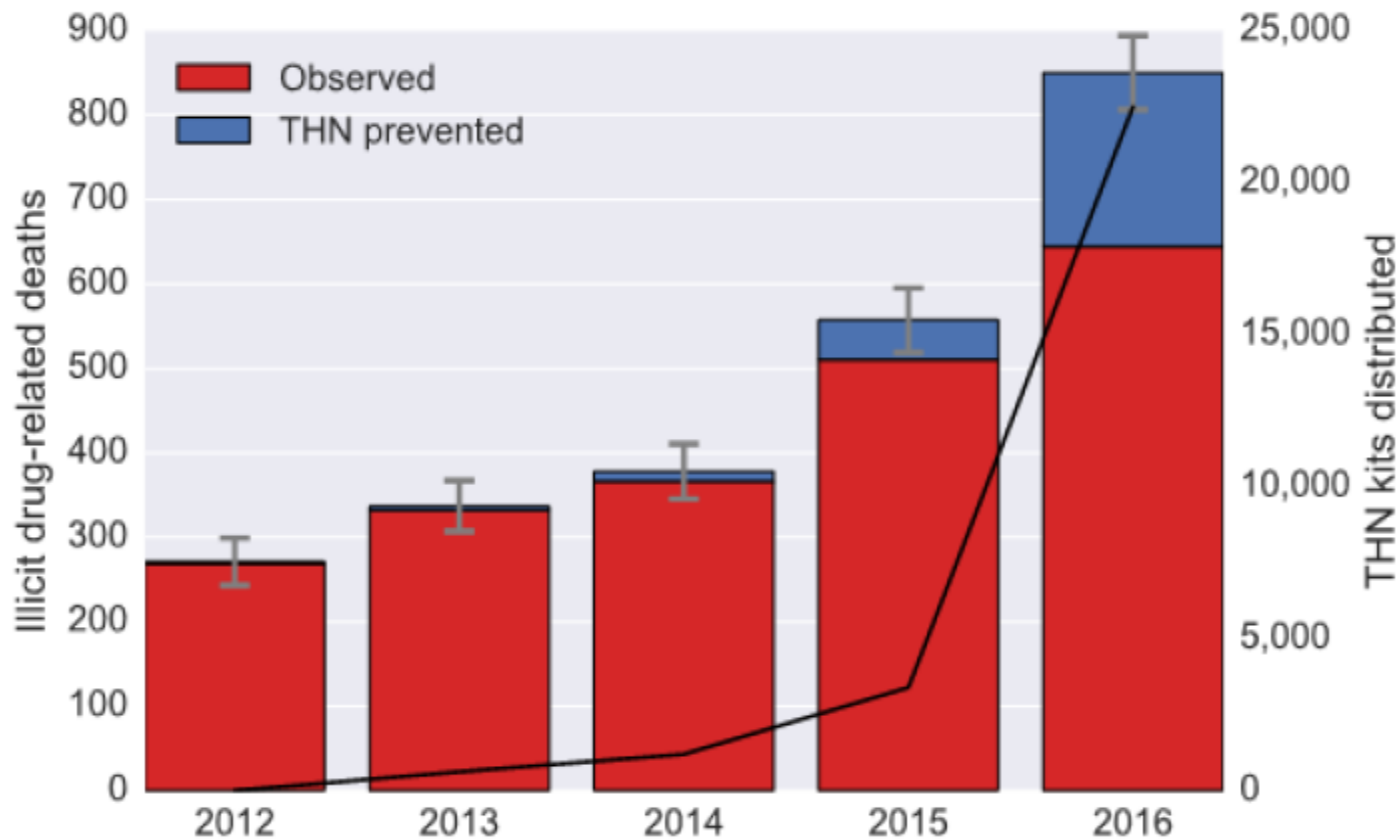
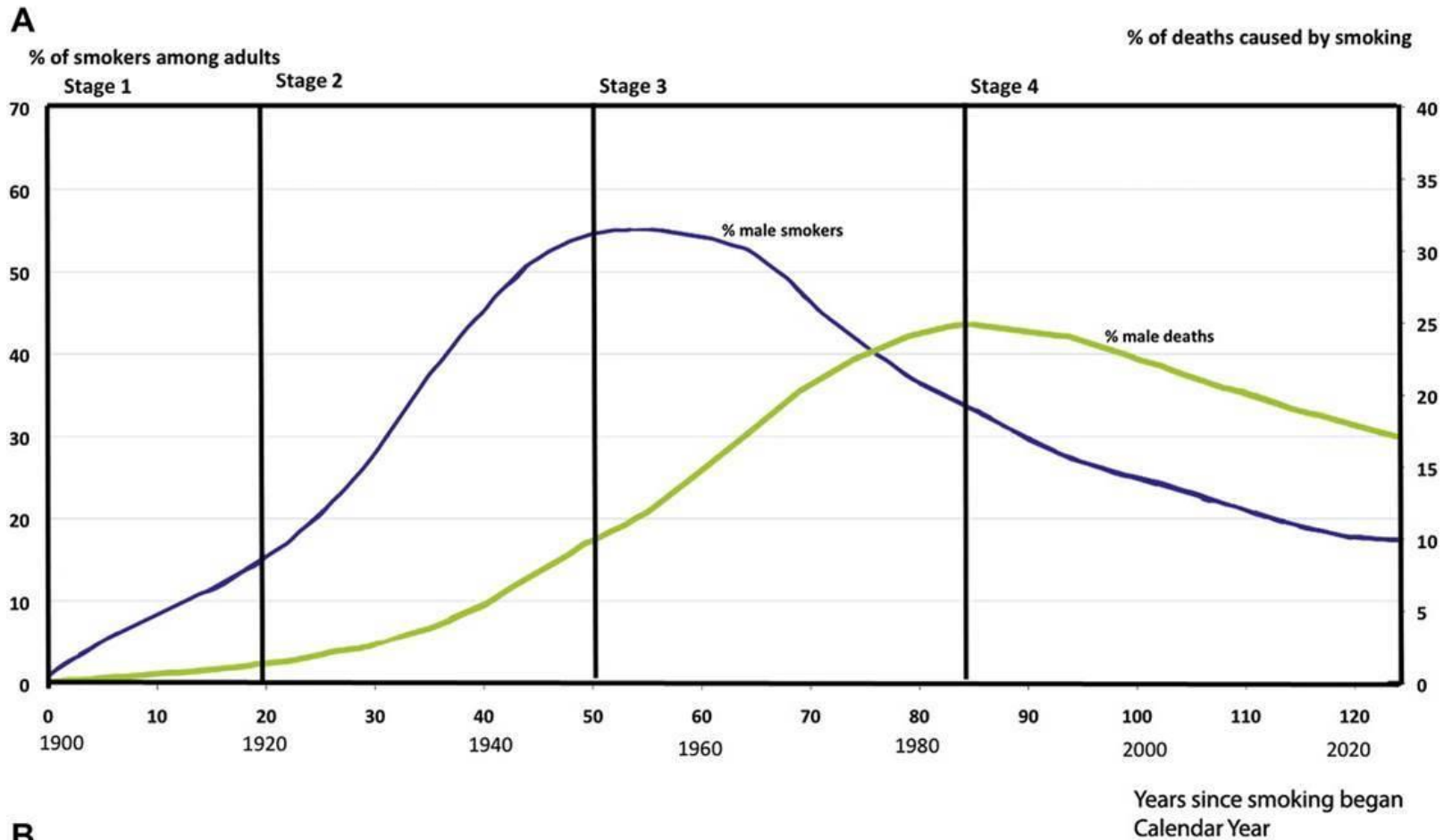


Figure 1: Estimated impact of Take Home Naloxone (THN) Jan 2012 - Oct 2016 on overdose-related deaths.

- Red = Observed number of illicit drug-related deaths
- Blue = deaths prevented by THN program
- Black = THN kits distributed.

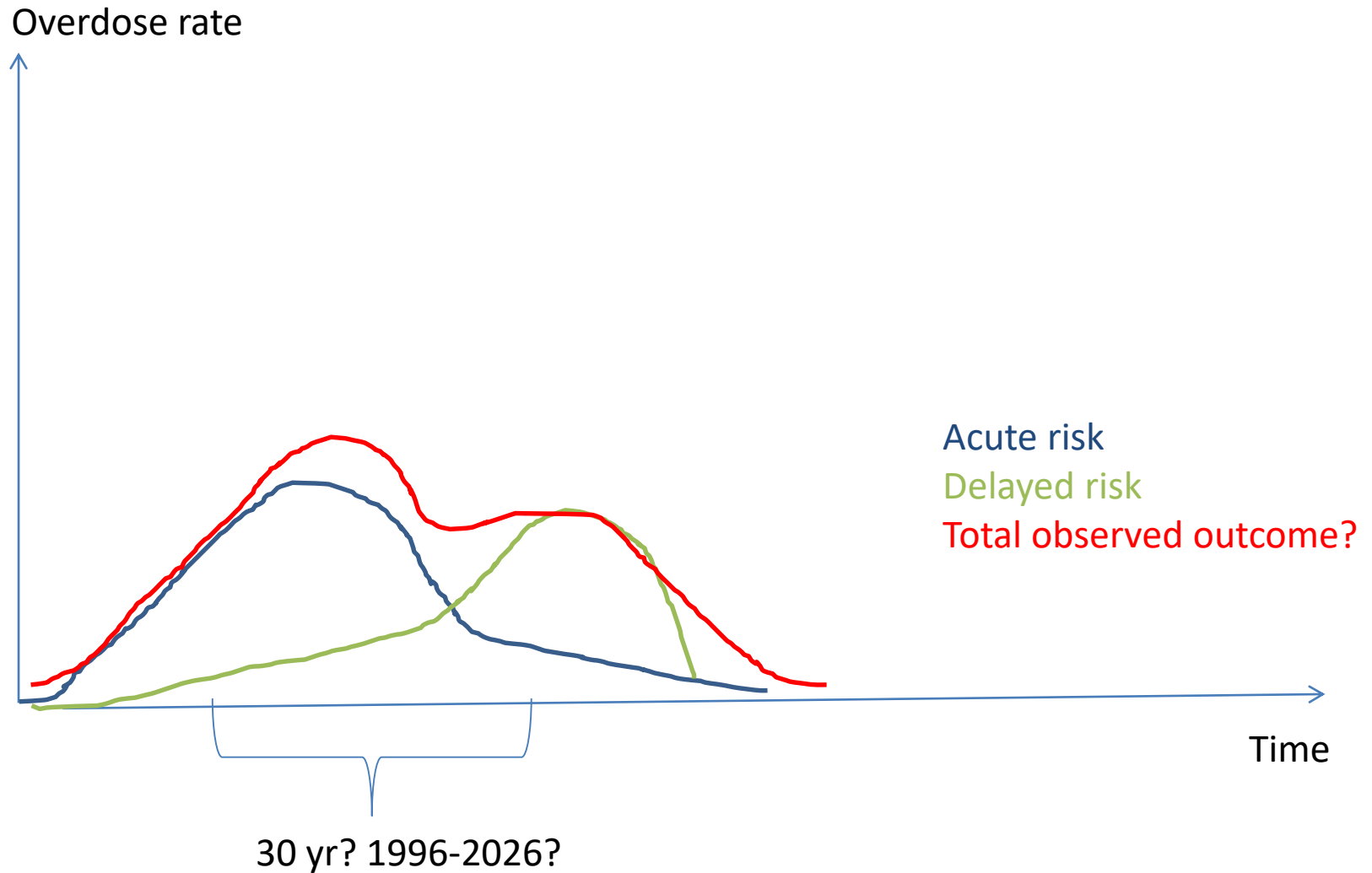
Epidemic with «delayed outcome».. Tobacco; men



B

Source: Thun et al, 2012

Acute and delayed; total risk



Summary

- Naloxone saves lives! But it's not a panacea.
- Extent of impact likely to vary from country to country, including time-lags.
- Mortality impact studies critical to sustainability and development of THN programmes moving forward

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