

ENDING HIGH PREVALENCE HIV EPIDEMICS IN HIGH AND MIDDLE INCOME SETTINGS: NEW YORK AND HAIPHONG

Don Des Jarlais PhD

¹The Baron Edmond de Rothschild Chemical Dependency
Institute, Mount Sinai Beth Israel

STUDY TEAM:

USA: Don C Des Jarlais , Kamyar Arasteh, Jonathan Feelemyer, Courtney McKnight

Vietnam: Huong Duong Thi, Oanh Khuat Thi Hai, Khuê Pham Minh, Giang Hoang Thi, Thanh Nham Thi Tuyet, Vinh Vu Hai, Le Minh Giang

France: Nicolas Nagot, Didier Laureillard, Marianne Peries, Laurent Michel, Marie Jauffret-Roustide, Jean-Pierre Moles, Catherine Quillet, Roselyne Vallo, Delphine Rapoud

THE HIGH PREVALENCE PROBLEM

- Many PWID who are HIV seropositive, capable of transmitting the virus
- Many PWID who are HIV seronegative, susceptible to acquiring the virus
- Impossible to eliminate injecting risk behavior

THE HIGH PREVALENCE PROBLEM

- In absence of comprehensive prevention and treatment, incidence rates of **4/100 PY** to **6/100 PY** are typical

Combined HIV Prevention and Care for PWID

- Syringe Service Programs (SSP)—Exchange and Legal Pharmacy Sales
- Medication Assisted Treatment (MAT)—Methadone and/or Buprenorphine for Heroin/opioid use disorders
- Antiretroviral Treatment (ART)—for persons who are HIV seropositive

Combined HIV Prevention and Care for PWID HIGH COVERAGE

- Syringe Service Programs (SSP)—50 to 200 syringes per PWID per year
- Medication Assisted Treatment (MAT)—50% of heroin users on treatment
- Antiretroviral Treatment (ART)—90-90-90 goals (72% of HIV seropositives at viral suppression)

ENDING AN HIV EPIDEMIC AMONG PWID

- NOT COMPLETE ABSENCE OF HIV INFECTIONS
- PREVALENCE OF HIV SEROPOSITIVE PWID:
< 5%
- HIV INCIDENCE AMONG PWID: > 0.5/100 PY

SPECIAL ISSUES IN LOW/MIDDLE INCOME COUNTRIES

- LIMITED PUBLIC HEALTH DATA
- LACK OF RESOURCES: particularly trained staff, withdrawal of international donors
- INTENSE STIGMATIZATION OF INJECTING DRUG USE
- INTENSE STIGMATIZATION OF HIV INFECTION

RESEARCH METHODS

- NEW YORK: serial cross sectional surveys of PWID entering treatment for prevalence and ART, repeat participants and HIV surveillance for incidence
- HAI PHONG: serial large scale community surveys for prevalence and ART, repeat participants and cohort studies for incidence

LOCAL SITUATION IN NEW YORK

- MAT since late 1960s
- HIV epidemic in late 1970s, 50+% in early 1980s
- Needle/syringe exchange implemented in 1993
- Antiretroviral treatment for PWID in early 2000s

LOCAL SITUATION IN HAIPHONG

- Haiphong has led movement towards **evidence based** HIV prevention in Vietnam
- High prevalence of HIV among PWID, as high as **66%** in 2006
- **Needle/syringe exchange** implemented in 2005
- **Methadone pilot programs** begun in 2008: 3,200 patients currently
- **Antiretroviral treatment** offered free for all HIV+ persons in 2014

ESTIMATING POPULATION OF PWID IN HAIPHONG

- Good estimates needed for proper allocation of scarce resources
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- Good estimates needed to assess coverage

METHODS: POPULATION SAMPLE

- A 2014 RDS survey served as one capture,
- Distribution of 600 distinctively marked cigarette lighters at drug use “hotspots” in 2016 served as another “capture
- A 2016 survey using RDS methods was conducted 1 week after lighter distribution served as “recapture” for both captures

METHODS: POPULATION SAMPLE

- **Fingerprint reader** was used to avoid multiple participation in 2014 and 2016 surveys
- Fingerprint reader then used to identify persons who participated in both surveys--**recaptured**
- Participants in 2016 survey were asked to **show (or describe) their lighters--recaptured**

FORMULAS: POPULATION SAMPLE

Estimated population size formula:

$$N = \frac{M * C}{R}$$

The standard error formula

$$\text{VAR (N)} = \frac{M * C (M - R) * (C - R)}{R^3}$$

N= estimate of total population size,

M= total number of people “captured” and “marked” on the first visit

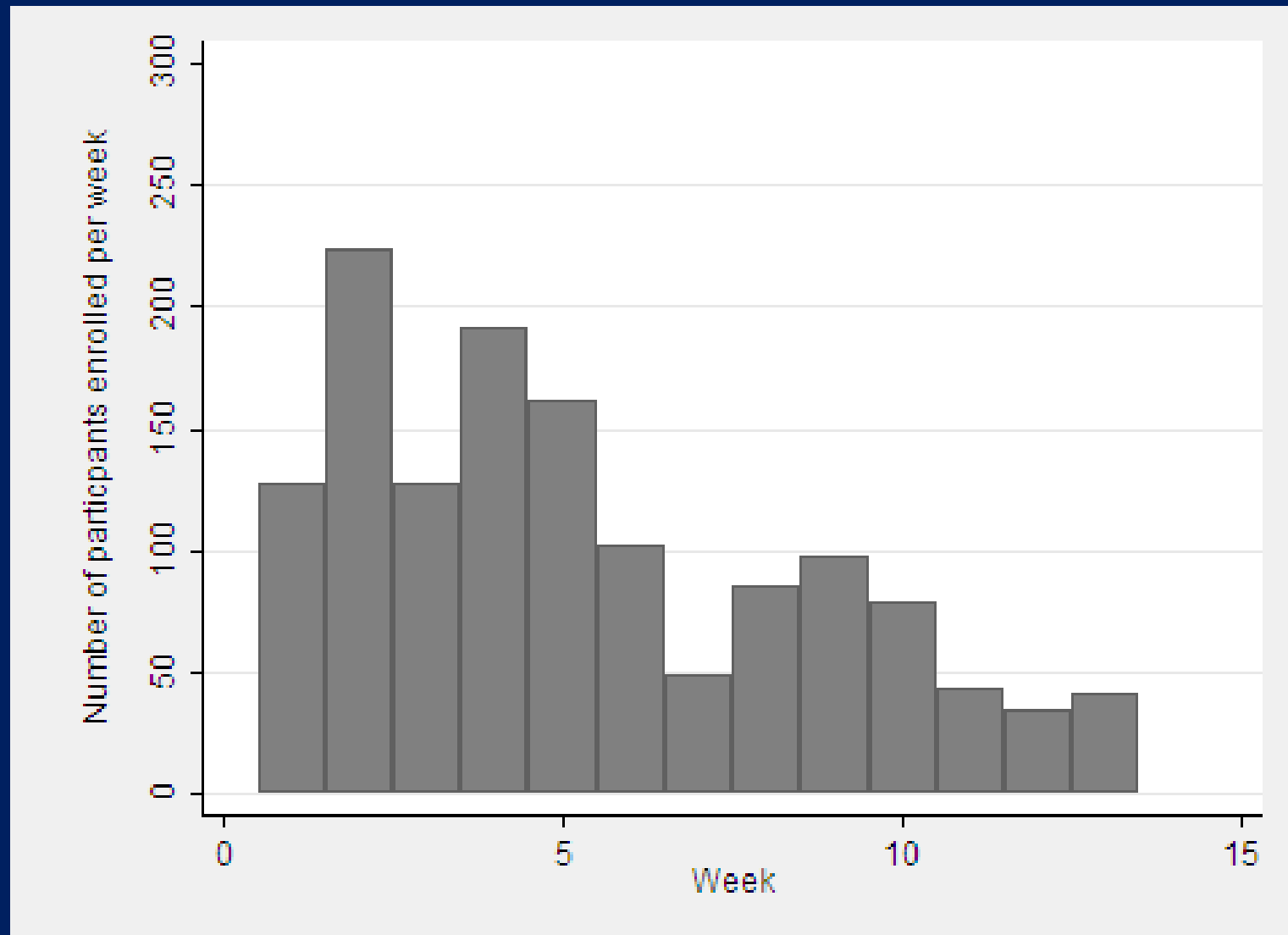
C= total number of people “captured” on the second visit

R= number of people captured and “marked” on the first visit that were then recaptured on the second visit (i.e. were included in both of the samples)

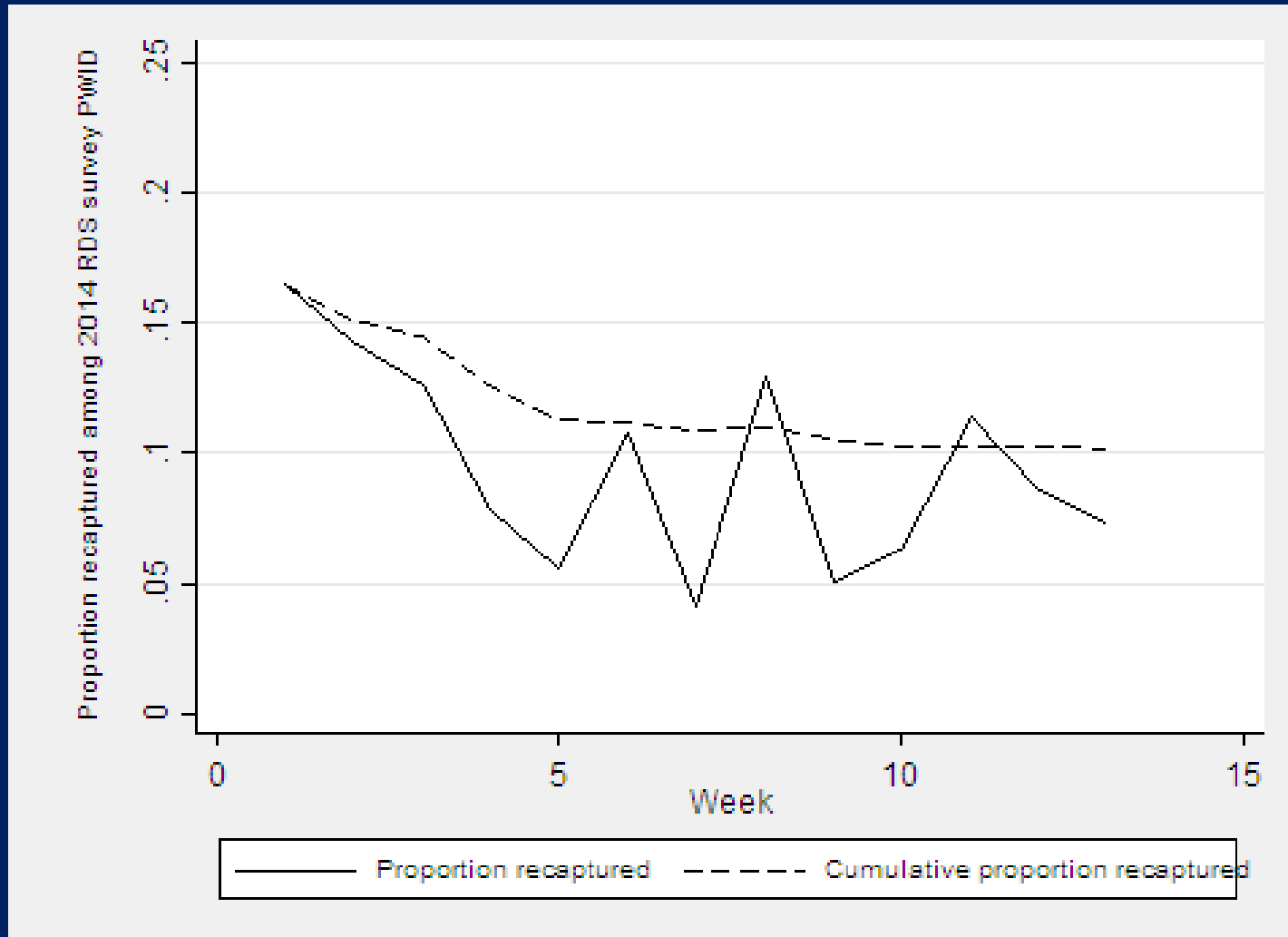
RESULTS

- 1385 participants were included in the “recapture” survey
- Characteristics of 2016 sample: 94% male, median age 39; 100% injected heroin, HIV prevalence was 30%, HCV prevalence 71%
- 144 of the 603 participants in the 2014 survey and 152 of the 600 PWID who had received lighters were “recaptured” in the 2016 survey

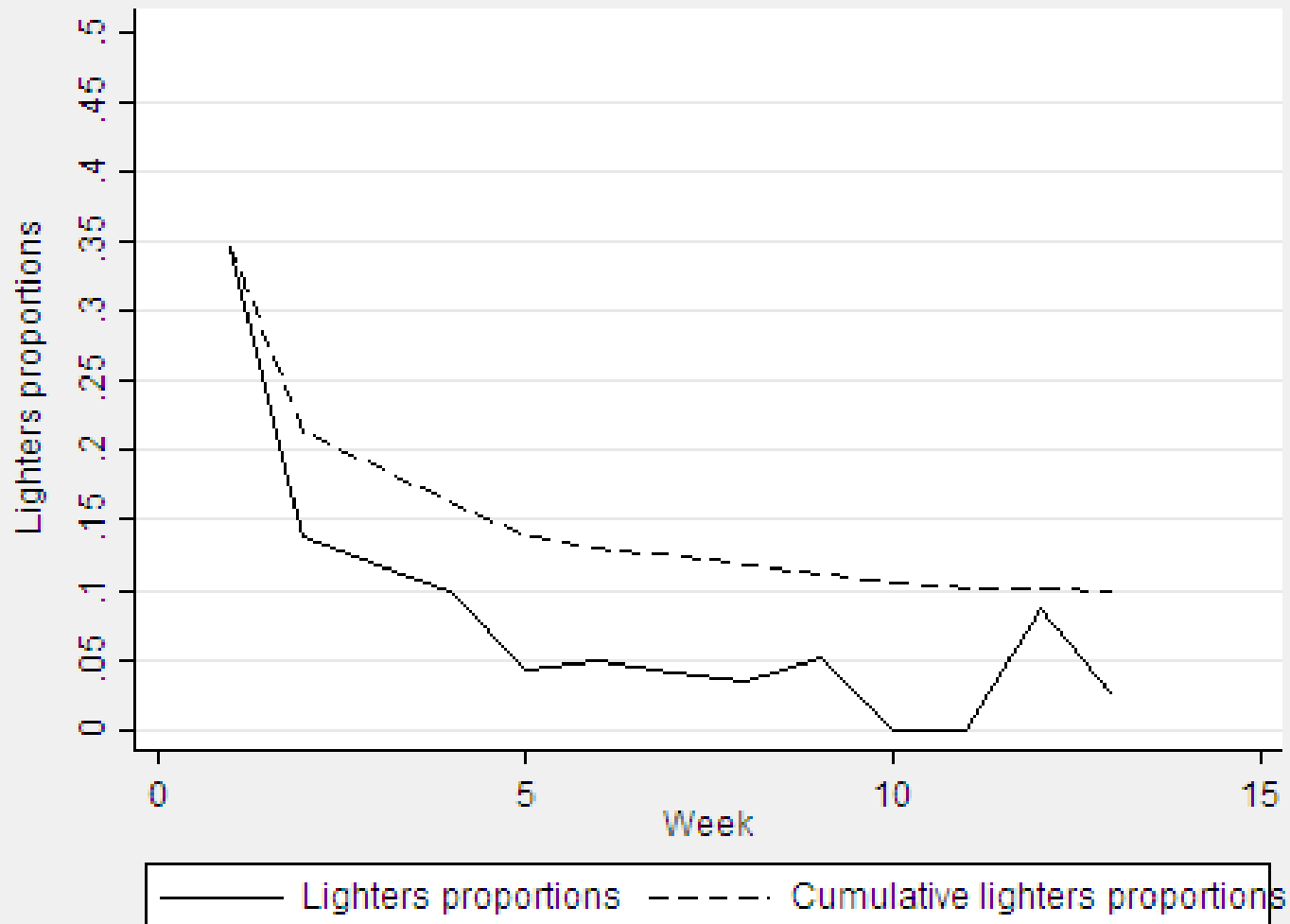
RECRUITMENT BY WEEK



2014 RECAPTURED PWID BY WEEK



TOKENS RECEIVED BY WEEK



CONTEXTUAL ISSUES

- Turnover in the PWID population between 2014 to 2016 reduces possible recapture leading to overestimation of population size
- Best estimate: 5% turnover for each of 2 years between 2014 and 2016 surveys

CONTEXTUAL ISSUES

- Police suppression of drug distribution “hotspots” during second half of the 2016 survey study
- Recapture of persons with lighters fell from 15% in first half of study to $> 4\%$ in second half of 2016 survey
- **Best assumption: recapture of persons with lighters would have been 13% without police suppression of hotspots**

RESULTS: POPULATION ESTIMATE

- Our best estimate from the 2014 survey to 2016 survey recapture was 5220 (95% CI: 4568-5872)
- Our best estimate of the active population size from the lighter recapture was 4617 (95% CI: 4090-5143)
- Combined rounded best estimate of the active PWID population in Hai Phong is 5000, range 4000-6000
- Plus 4000 in methadone treatment

ENDING HIV EPIDEMICS AMONG PWID

- PREVALENCE OF HIV SEROPOSITIVES NOT AT VIRAL SUPPRESSION, TARGET < 5%
- NEW YORK: 2%
- HAI PHONG: 7.5%

ENDING HIV EPIDEMICS AMONG PWID

- HIV INCIDENCE, TARGET $< 0.5/100$ PY
- NEW YORK: $0/100$ cohort study, $0.04/100$ PY by newly identified HIV seropositives, “Sentinental Event” study
- HAI PHONG: $< 0.5/100$ PY by repeat survey participants and cohort studies

ISSUES FOR NEW YORK CITY

- Opioid/heroin/fentanyl epidemic, many new users
- Overdose deaths, fentanyl and derivatives
- Need for HCV treatment and prevention

ISSUES FOR HAI PHONG

- **Police suppression** of public drug use activity
- **Reduction of PEPFAR funding**, transition of ART clinics to regular health care, regular social health insurance
- **“Renovation” plan** to phase out compulsory center drug treatment to evidence based community treatment (methadone) may be stalling, **methamphetamine use** increasing, political concern over use among methadone patients
- **Mental health**, including suicide
- Need for **HCV treatment**

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- Need for **HCV treatment and prevention**