



FIRLAND NORTHWEST TUBERCULOSIS CENTER
UNIVERSITY *of* WASHINGTON

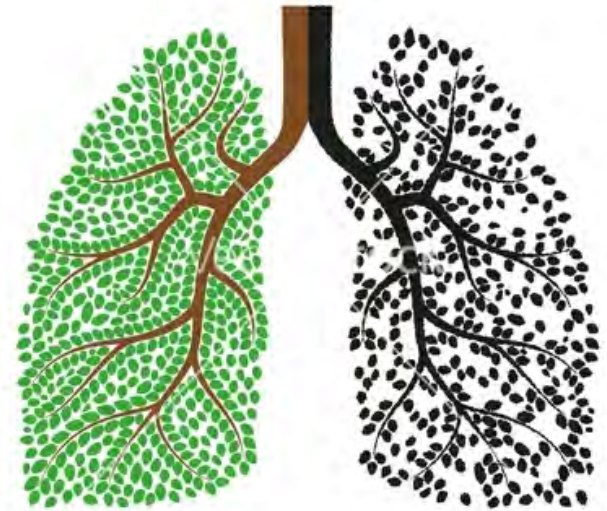


**Third Annual World TB Day Symposium:
*“Showcasing Clinical and Epidemiologic
Studies on TB at the UW”***

March 24, 2016

World TB Day Symposium – Planning Committee

David Horne, MD, MPH
Jessica Matthews, MPH
Alexandra Molnar, MD
Masa Narita, MD
David Park, MD



TB Project ECHO®

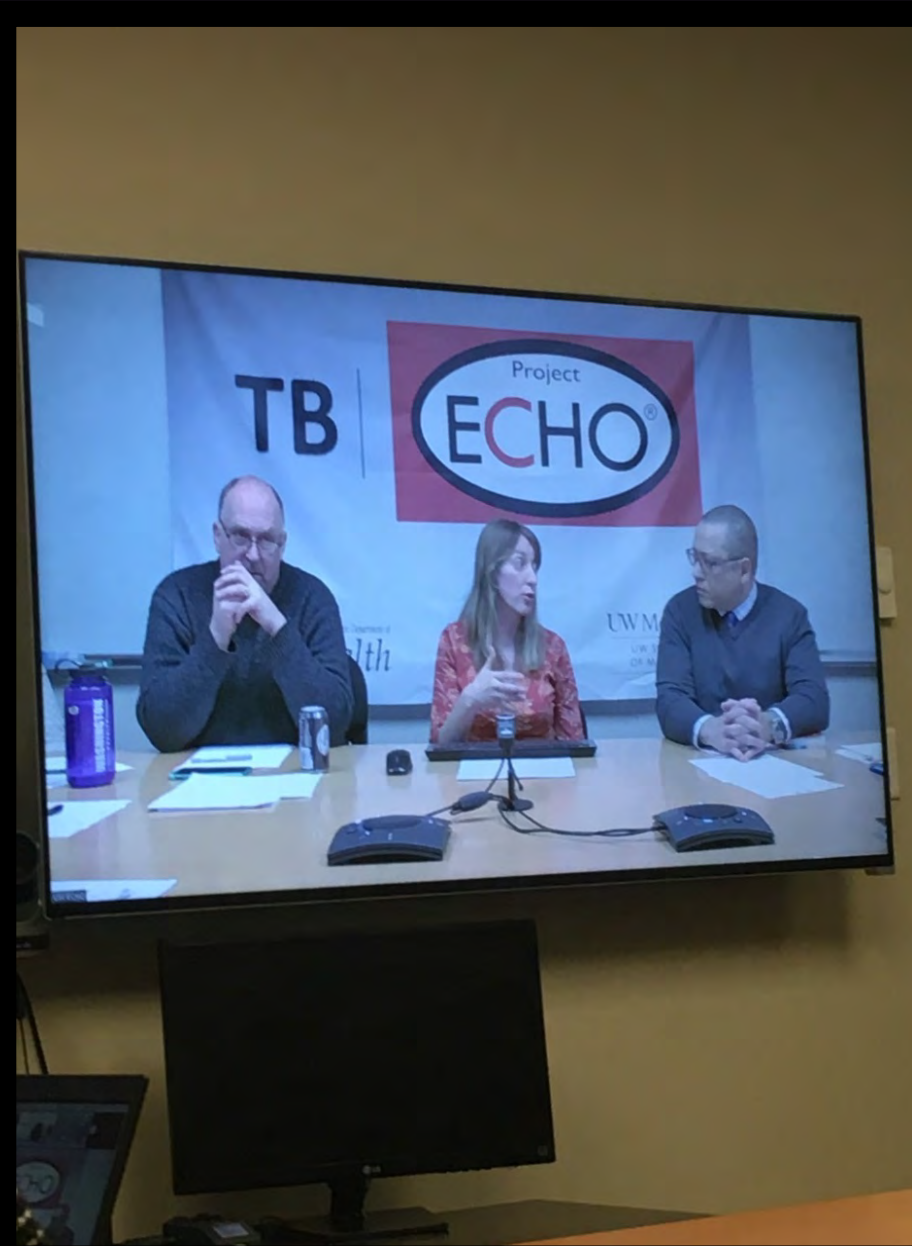
TB Project ECHO® (Extension for Community Healthcare Outcomes) is a collaborative model, between the Washington State Department of Health, UW Telemedicine, and Firland Northwest Tuberculosis Center.

Medical education and care management for clinicians:

- Bi-monthly sessions
- TB specialists as mentors
- CME/CNE credits



TB Project ECHO®



Tribal TB Needs Assessment

Collaboration between Northwest Center for Public Health Practice (NWCPHP), FNWTBC, and Northwest Portland Area Indian Health Board (NPAIHB)

Key findings:

Through the needs assessment we identified the following TB training preferences:

Top Training Needs	Key Factors in Selecting Trainings	Preferred Formats	Target Audiences
<ul style="list-style-type: none">• Pediatric TB• Legal issues related to TB• LTBI in other special populations	<ul style="list-style-type: none">• Offered during work hours• Reputation of trainer• Using a case or problem-based learning approach	<ul style="list-style-type: none">• Online module (self-paced learning)• Live webinar• Pre-recorded webinar	<ul style="list-style-type: none">• Clinics (local & county)• Public health nurses• Tribal health departments or corporations



Northwest Portland Area
Indian Health Board
Indian Leadership for Indian Health

Annual / Ongoing Activities

Seattle TB Intensive with Curry International Tuberculosis Center and WA Dept of Health : June

World TB Day : March

World TB Day Evening Event, 5:30-7:45

Seattle Public Library Downtown

1000 4th Ave

Tonight!

Publications :

- *Journal of AIDS (1)*
- *American Journal of Respiratory and Critical Care Medicine (2)*



Acknowledgments



Division of Pulmonary &
Critical Care Medicine
University of Washington



Symposium Agenda

3:30 – 3:35 : Firland Northwest Tuberculosis Center Introduction

3:35 – 3:55 : Bijan Ghassemieh, MD : *“Social Determinants of Health and TB”*

3:55 – 4:15 : Adelaide McClintock, MD : *“Latent TB Infection and Treatment in Vulnerable Populations in Seattle”*

4:15 – 4:30 : Final Q&A

4:30 – 5:00 : Refreshments in R&T Lobby



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Social Determinants of Health and TB

March 24, 2016

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Bijan Ghassemieh, MD

University of Washington
Division of Pulmonary and Critical Care Medicine
Senior Fellow

SOCIAL DETERMINANTS OF HEALTH (SDH)

•CDC: “The complex, integrated, and overlapping social structures and economic systems that are responsible for most health inequities. These social structures and economic systems include the social environment, physical environment, health services, and structural and societal factors.”

HINCHE, HAITI



HINCHE, HAITI



WHO DOTS PROGRAM: 5 ELEMENTS

- 1.) Political commitment with increased and sustained financing
- 2.) Case detection through quality assured bacteriology
- 3.) Standardized treatment, with supervision and patient support
- 4.) An effective drug supply and management system
- 5.) Monitoring and evaluation system

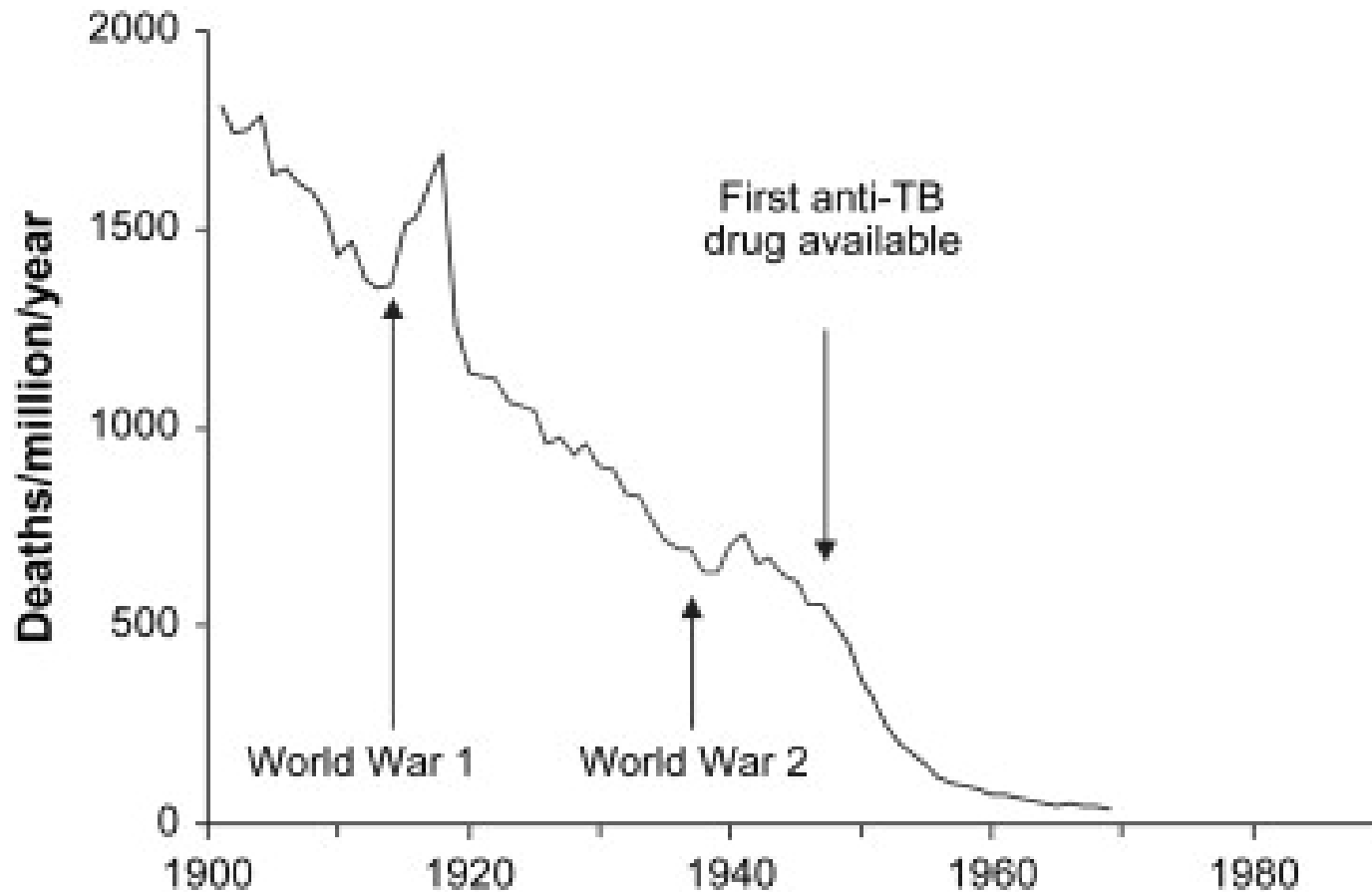
HINCHE, HAITI



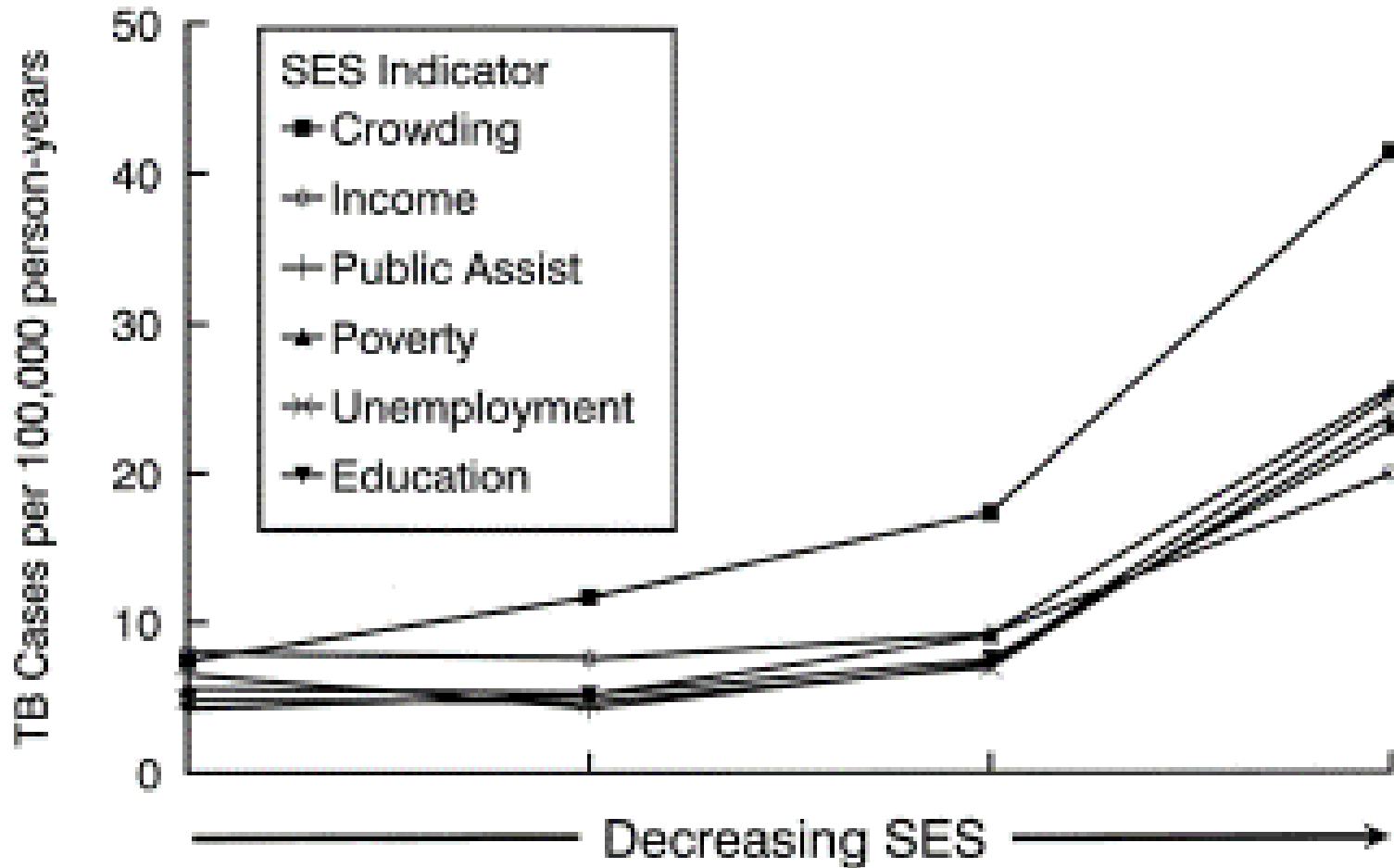
IDEAS ABOUT SDH AND TB ARE NOT NEW

- Rudolph Virchow (1860): TB epidemics are related to “disturbances that exist in the development of our populations, disturbances which arise from political and social institutions, and are therefore preventable”
- Robert Koch (1905 Nobel prize speech): “One of the most powerful weapons, if not the most powerful, which we can bring into use against TB are social welfare centers”

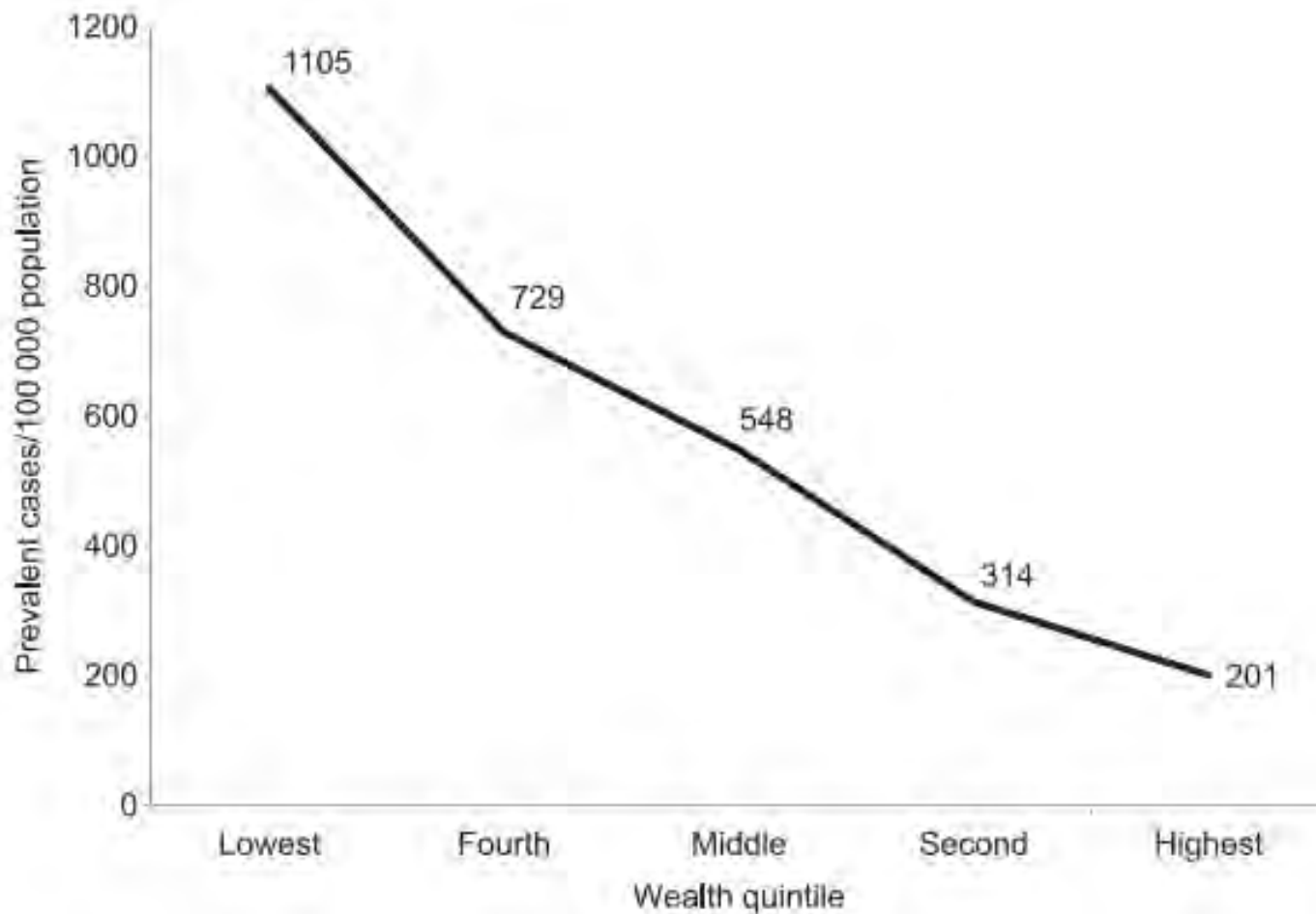
TB MORTALITY: ENGLAND AND WALES



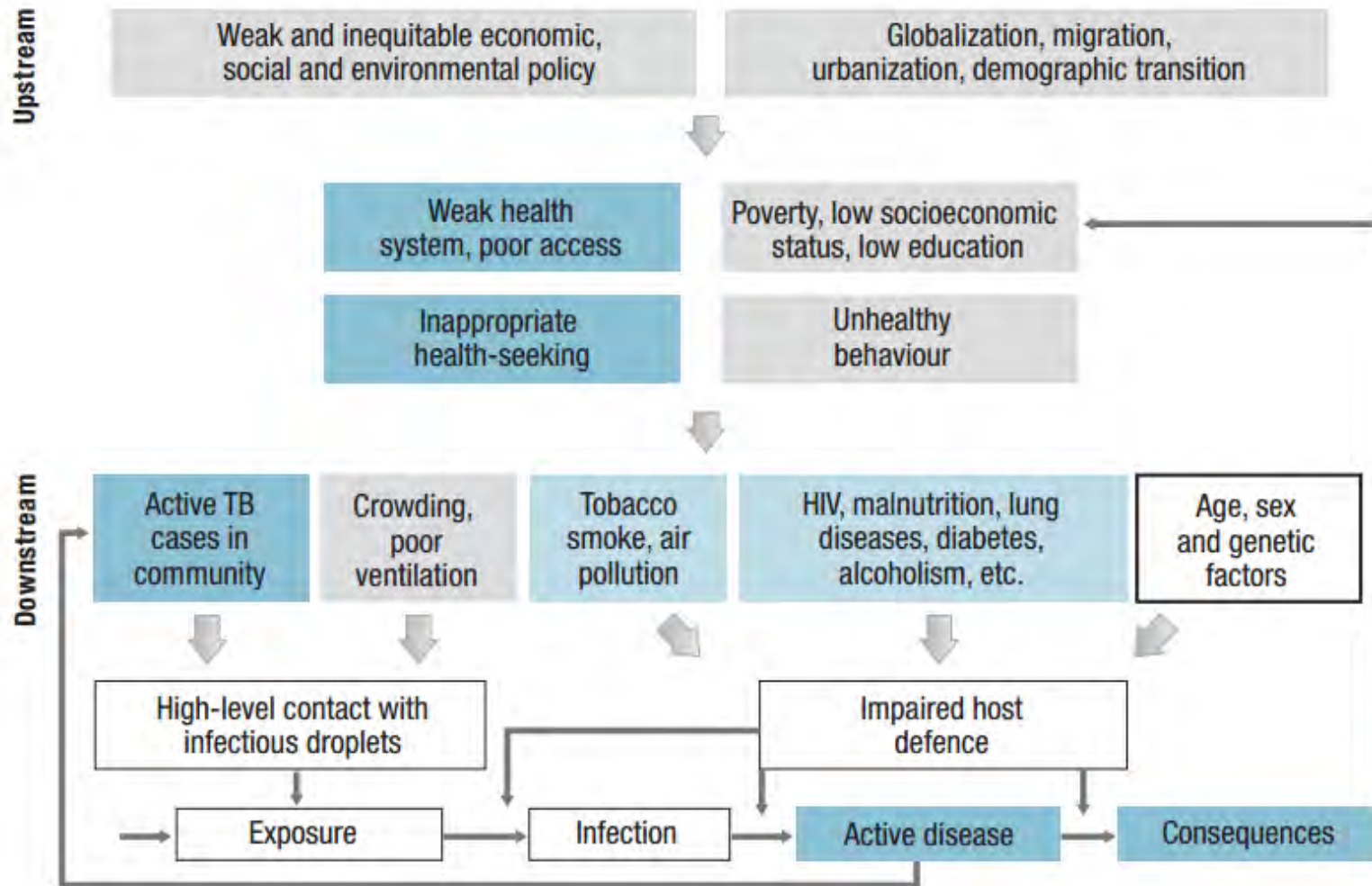
TB IN THE US: 1987-1993



SELF REPORTED TB HISTORY IN INDIA 2006



HOW DO SDH CAUSE TB?



CONTRIBUTION OF INTERMEDIATE RISK FACTORS

Risk factor (reference for relative risk and prevalence estimates respectively)	Relative risk for active TB disease (range)^a	Weighted prevalence, total population, 22 high TB burden countries^b	Population attributable fraction (range)^c
HIV infection (76, 132) ^d	26.7 (20.4–34.9)	0.9%	17.6% (13.7–22.1)
Malnutrition (121, 133) ^e	4.0 (2.0–6.0)	17.2%	34.1% (14.7–46.3)
Diabetes (126, 134)	3.1 (2.3–4.3)	3.4%	6.6% (4.1–9.9)
Alcohol use > 40g/day (123) ^f	2.9 (1.9–4.6)	7.9%	13.1% (2.8–10.3)
Active smoking (124, 135) ^g	2.6 (1.6–4.3)	18.2%	22.7% (9.9–37.4)
Indoor pollution (117, 118) ^h	1.5 (1.2–3.2)	71.1%	26.2% (12.4–61.0)

END TB STRATEGY 2015

PILLARS AND COMPONENTS

1. INTEGRATED, PATIENT-CENTRED CARE AND PREVENTION

- A. Early diagnosis of tuberculosis including universal drug-susceptibility testing, and systematic screening of contacts and high-risk groups
- B. Treatment of all people with tuberculosis including drug-resistant tuberculosis, and patient support
- C. Collaborative tuberculosis/HIV activities, and management of comorbidities
- D. Preventive treatment of persons at high risk, and vaccination against tuberculosis

2. BOLD POLICIES AND SUPPORTIVE SYSTEMS

- A. Political commitment with adequate resources for tuberculosis care and prevention
- B. Engagement of communities, civil society organizations, and public and private care providers
- C. Universal health coverage policy, and regulatory frameworks for case notification, vital registration, quality and rational use of medicines, and infection control
- D. Social protection, poverty alleviation and actions on other determinants of tuberculosis

3. INTENSIFIED RESEARCH AND INNOVATION

- A. Discovery, development and rapid uptake of new tools, interventions and strategies
- B. Research to optimize implementation and impact, and promote innovations

SO WHAT CAN WE DO?

- Politics and Advocacy:
 - “Health in all policies”
 - “Think Globally, Act Locally”
 - Example: Food Waste



How ‘Ugly’ Fruits and Vegetables Can Help Solve World Hunger

About a third of the planet's food goes to waste, often because of its looks. That's enough to feed two billion people.



Every year some six billion pounds of U.S. fruits and vegetables go unharvested or unsold, often for aesthetic reasons.

SO WHAT CAN WE DO?

•Research:

- Identify which SDH are impacting TB incidence, where they are impacting TB incidence, and how they are impacting TB incidence
 - Identify which intermediate risk factors are at play in different environments
 - Test interventions targeting SDH and intermediate risk factors
 - Evaluate cost-effectiveness of these interventions
-
- Essentially, provide data for policy makers to understand where resource allocation outside of the health sector is most likely to have an impact on TB incidence

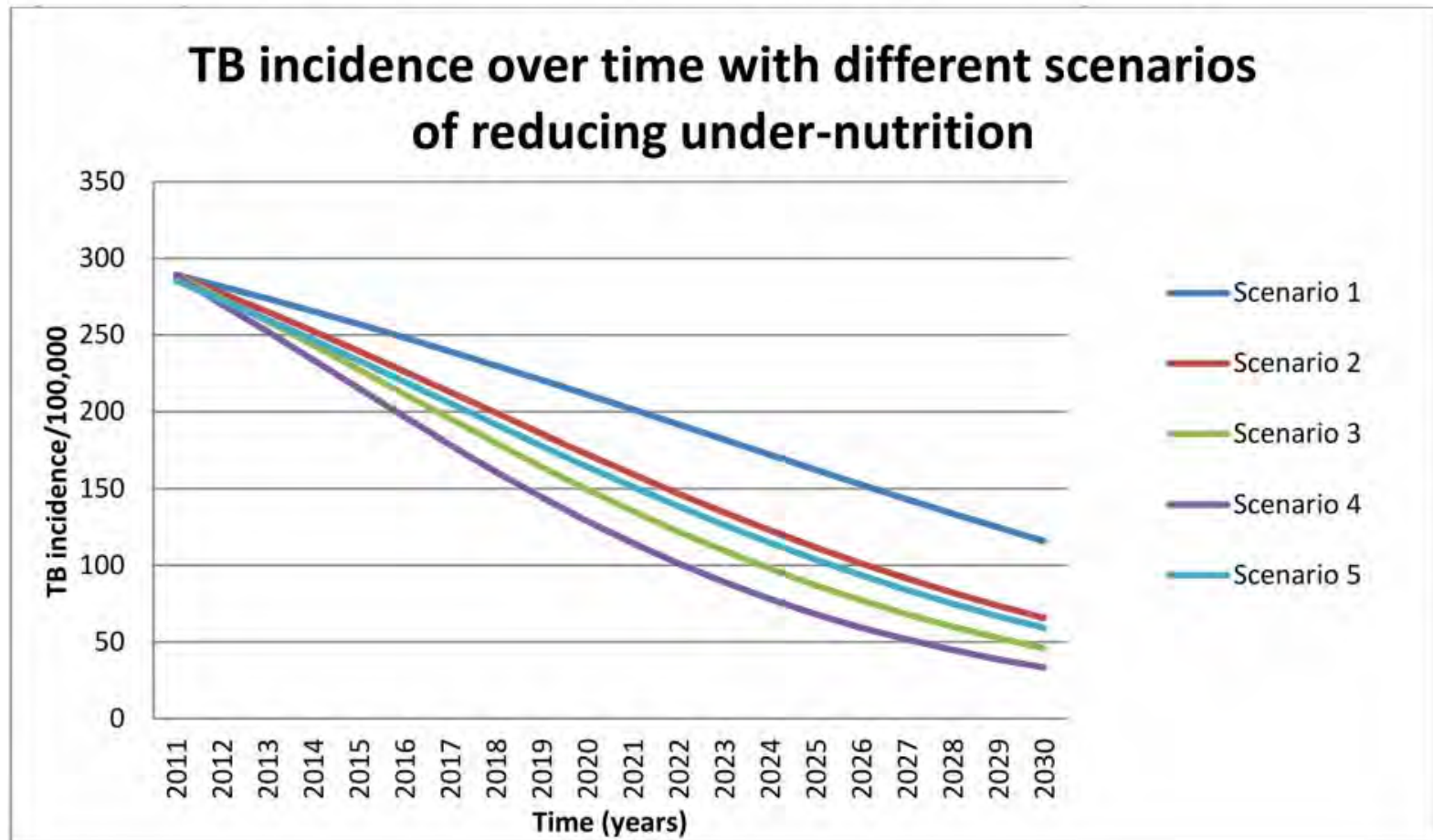


SDH RESEARCH EXAMPLE: INDIA 2006

Table 1. Association between proximate risk factors and Tuberculosis.

Risk Factor	Univariate OR and 95% CI (DHS)	Multivariate Odds Ratio (aOR) and 95% CI (DHS)
Smoking Cigarettes	1.49 (1.16–1.90)	0.77 (0.56–1.06)
Chewing Tobacco	2.12 (1.66–2.72)	1.38 (1.03–1.86)
Indoor Air Pollution (IAP)	3.07 (2.36–4.01)	2.00 (1.35–2.98)
Low Body Mass Index (BMI)	2.90 (2.39–3.51)	3.71 (2.84–4.83)
Alcohol Use- Daily	1.98 (1.16–3.37)	1.36 (0.73–2.55)
HIV Sero-prevalence	5.75 (2.46–13.43)	4.72(2.0–11.20)
Diabetes Mellitus	2.77 (1.67–4.59)	4.89 (2.73–8.76)
Age (per year)	1.04 (1.03–1.05)	1.06 (1.04–1.07)
Male Gender	1.72 (1.43–2.05)	1.83 (1.37–2.4)
Household density (rooms for sleeping/ people sleeping)	1.11 (1.07–1.15)	1.08 (1.03–1.14)
Family member with health insurance	0.46 (0.27–0.77)	0.59 (0.29–1.23)
Rural dwelling	1.86 (1.50–2.30)	0.91 (0.68–1.21)

SDH RESEARCH EXAMPLE: INDIA 2006



SO WHAT CAN WE DO?

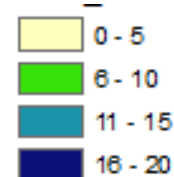
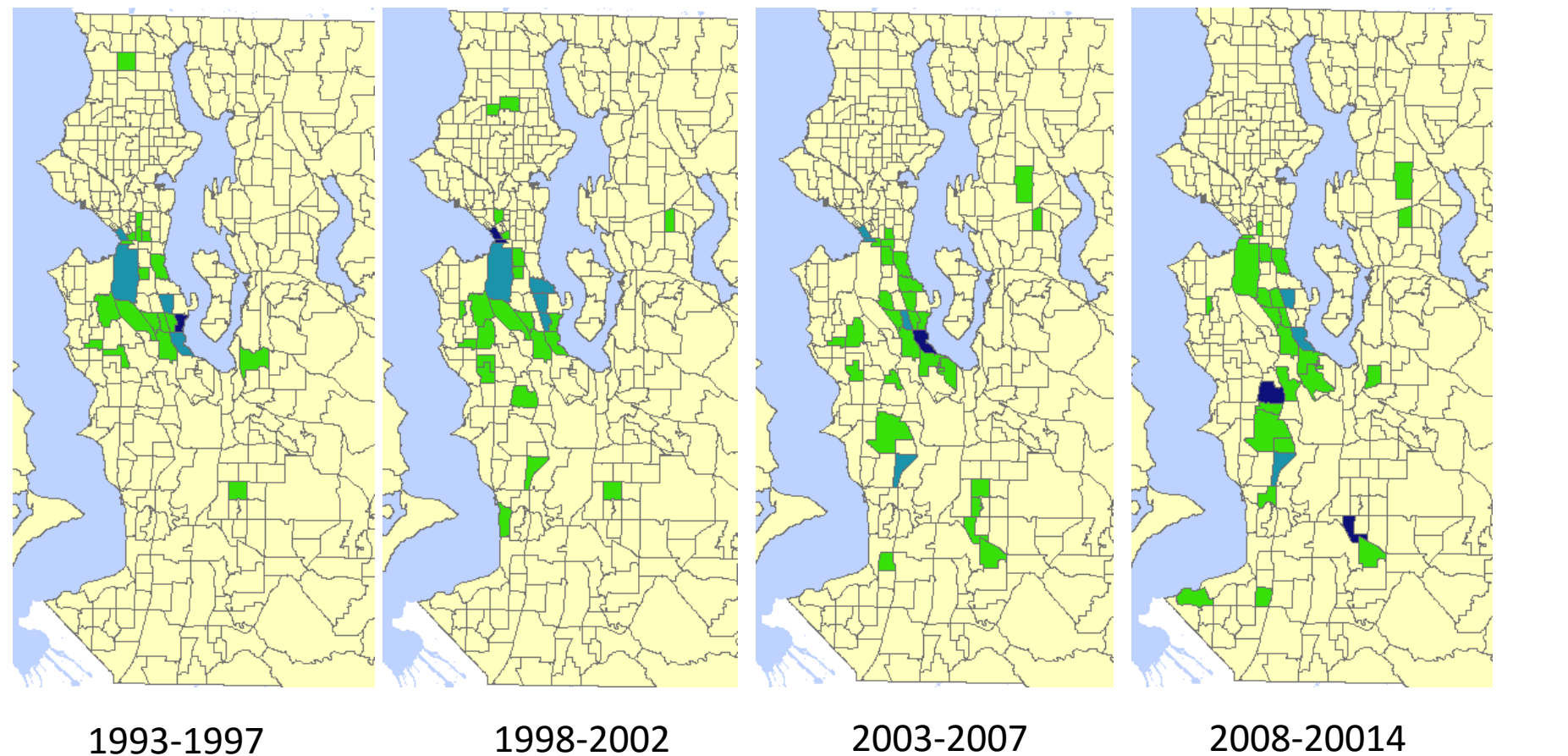
- Public Health:

- Encourage inclusion of SDH variables in TB monitoring/evaluation programs
- Encourage TB partnerships with other sectors (similar to partnerships for TB/HIV and TB/tobacco cessation partnerships)
- Develop novel methods to target interventions towards groups with certain SDH
 - Seattle-King County TB Program example of spatial methods



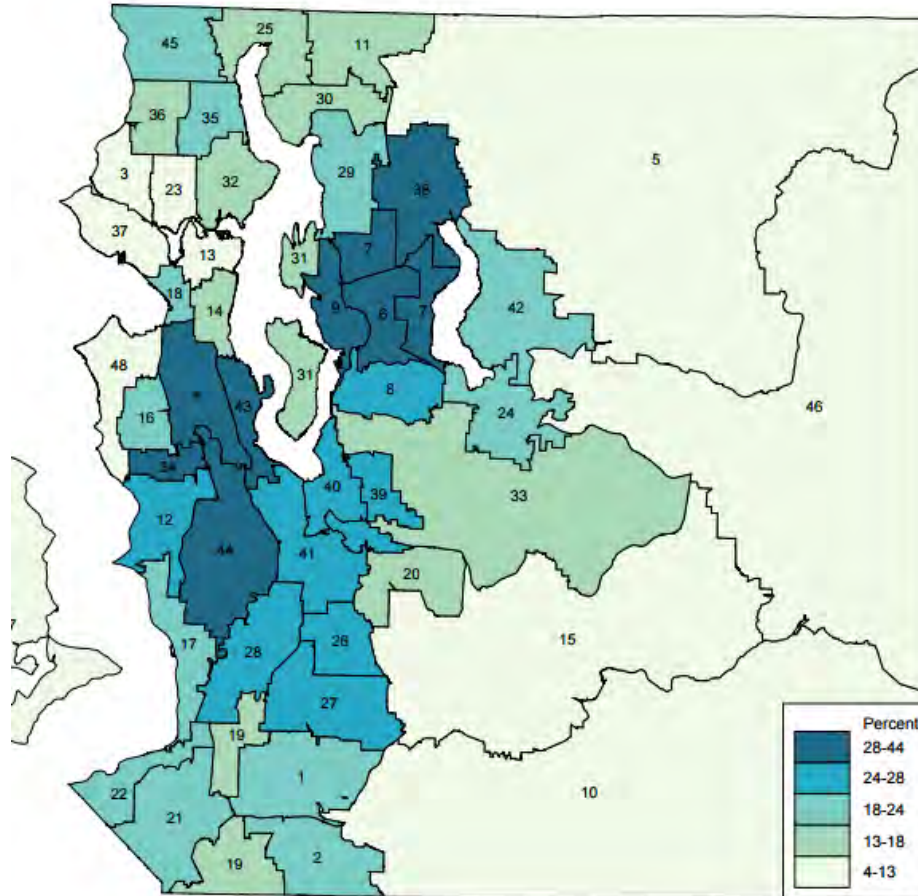
TARGETTING INTERVENTIONS TOWARDS SDH

KING COUNTY TB CASES OVER TIME



TARGETTING INTERVENTIONS TOWARDS SDH

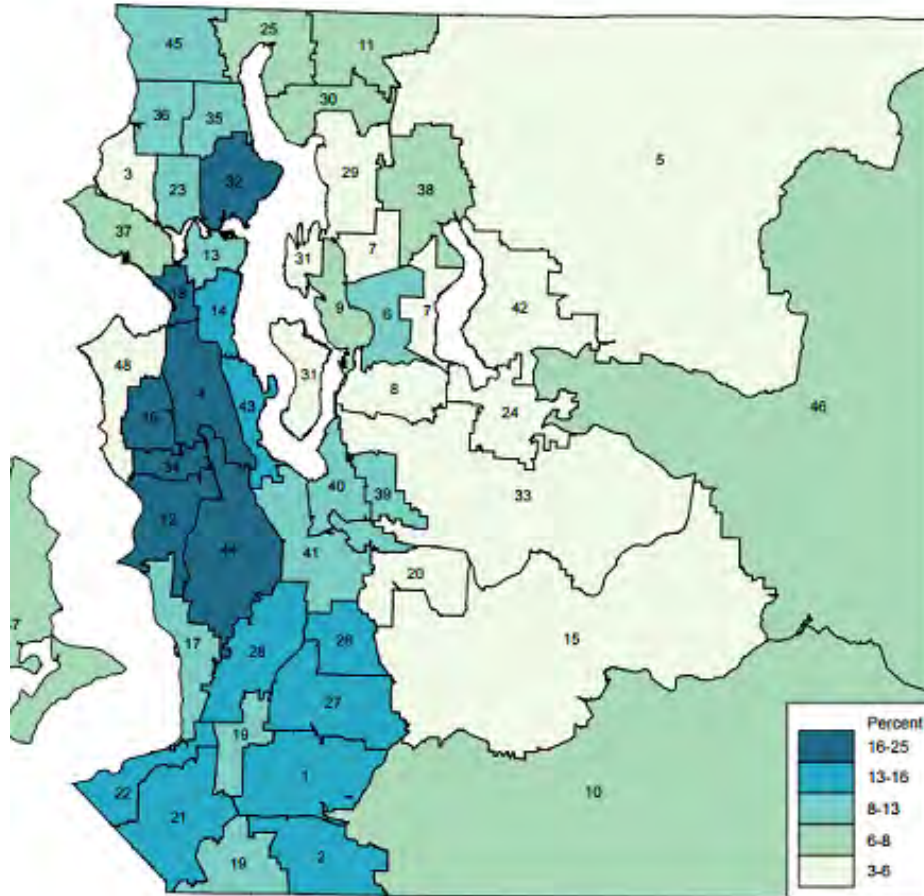
PERCENT FOREIGN BORN 2008-2012



Source: ACS
Produced by: APDE

TARGETTING INTERVENTIONS TOWARDS SDH

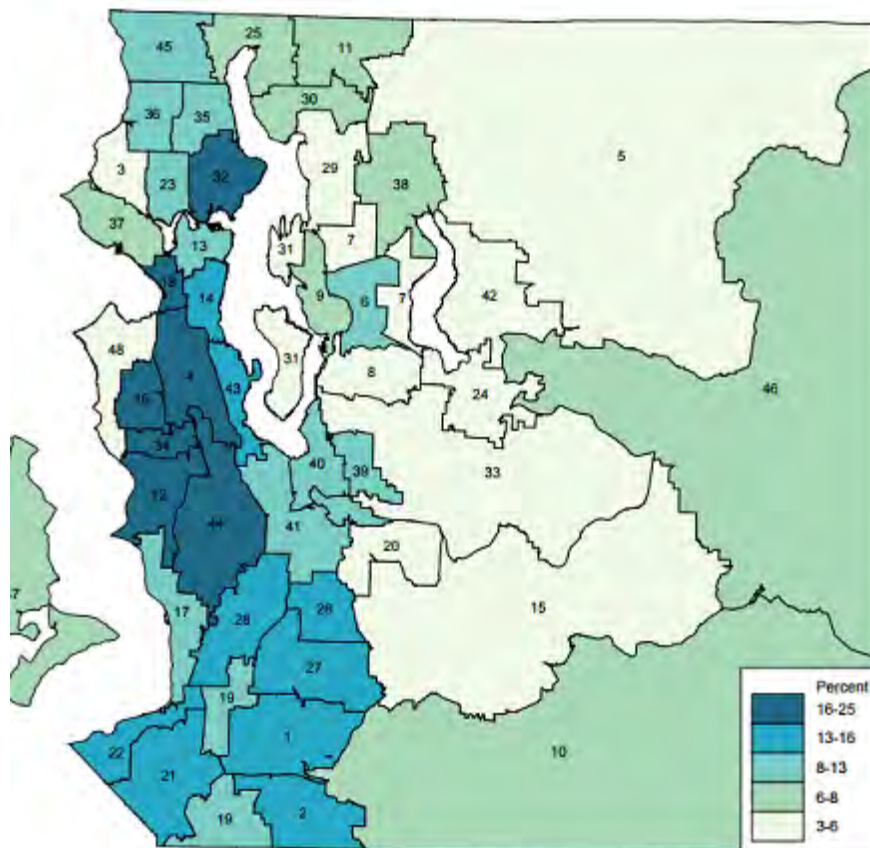
PERCENT IN POVERTY 2008-2012



Source: ACS
Produced by: APDE

TARGETTING INTERVENTIONS TOWARDS SDH

PERCENT DIABETIC 2009-2013



Source: BRFSS
Produced by: APDE

ELIMINATING TB WILL REQUIRE ADDRESSING SDH

- The White Plague: Tuberculosis, Man, and Society (Renes Dubos 1952):

“TB is a social disease.....its understanding demands that the impact of social and economic factors on the individual be considered as much as the mechanisms by which the tubercle bacilli cause damage to the human body.”



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Latent Tuberculosis Infection and Treatment in Vulnerable Populations in Seattle

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Adelaide McClintock, MD
on behalf of the LTBI Study Group
University of Washington
Acting Instructor, General Internal Medicine
Nothing to Disclose

Treatment Choices

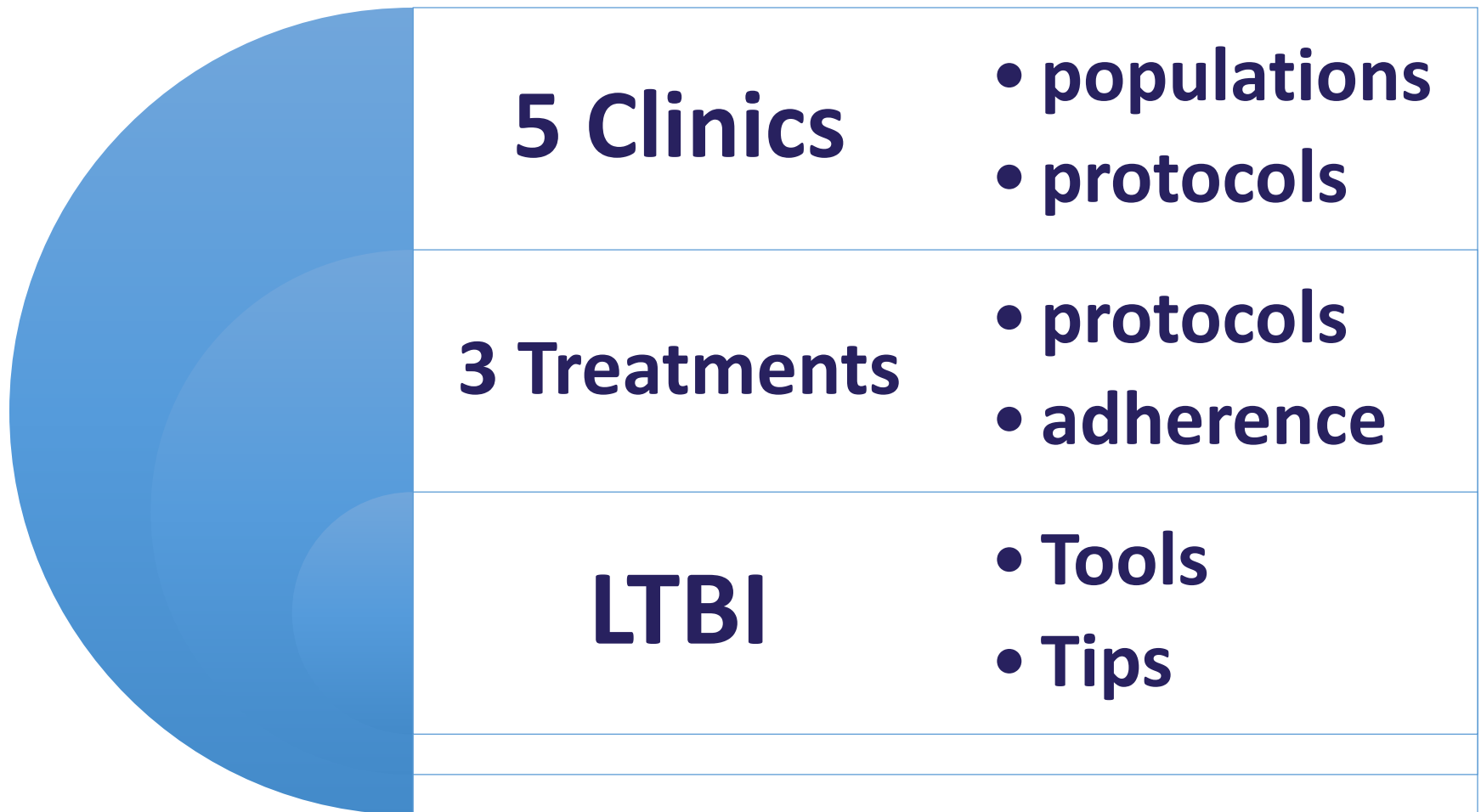
Choices

INH x9
months

Rifampin x
4 months

Weekly
INH+
Rifapentine

LTBI Adherence Study



Participating Clinics

Harborview

King County
TB

International
medicine

Infectious
Diseases

Employee
Health

Pioneer
Square



Choices

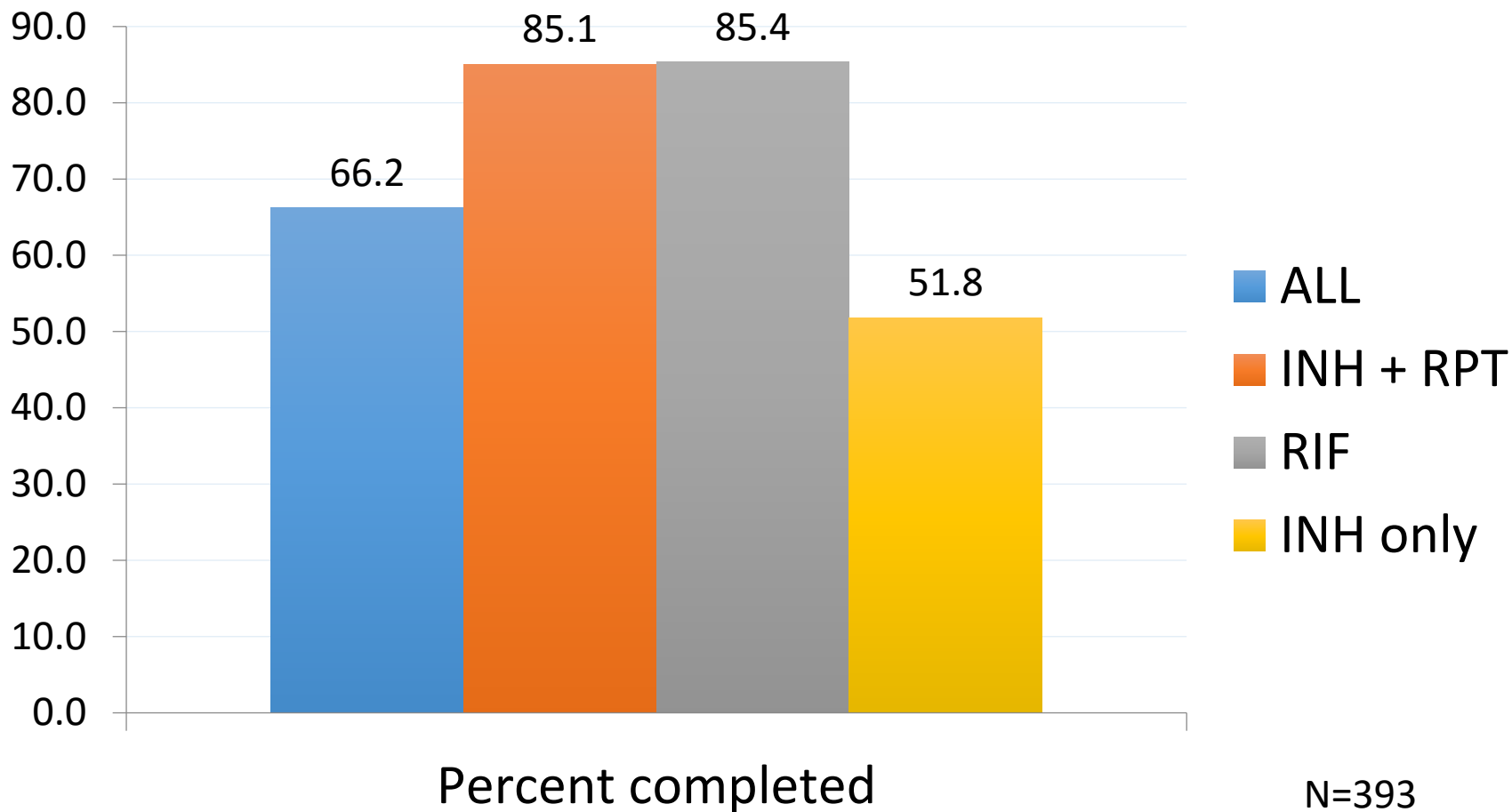
INH x9
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Weekly
INH+
Rifapentine

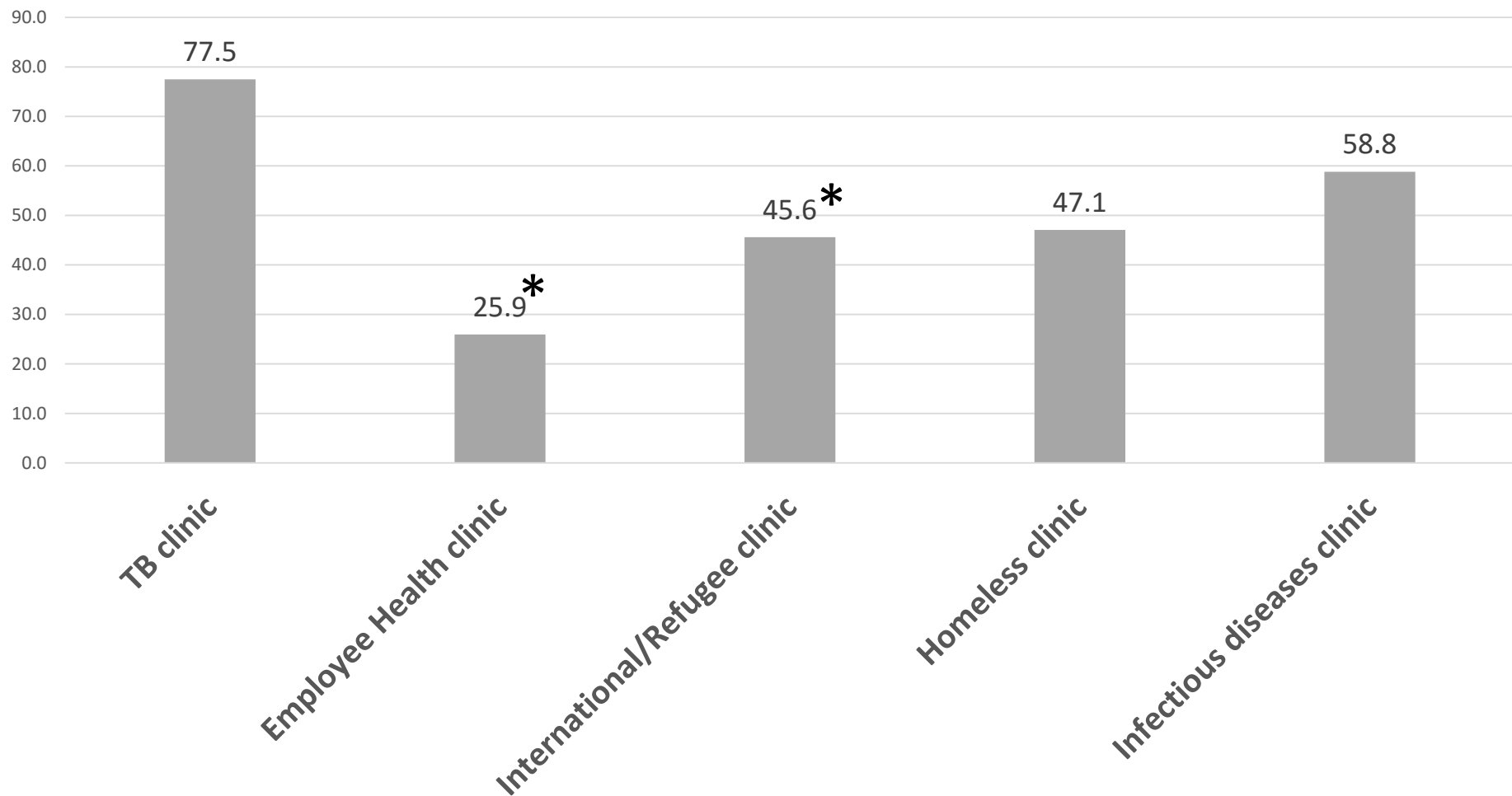


Percent Completing Therapy



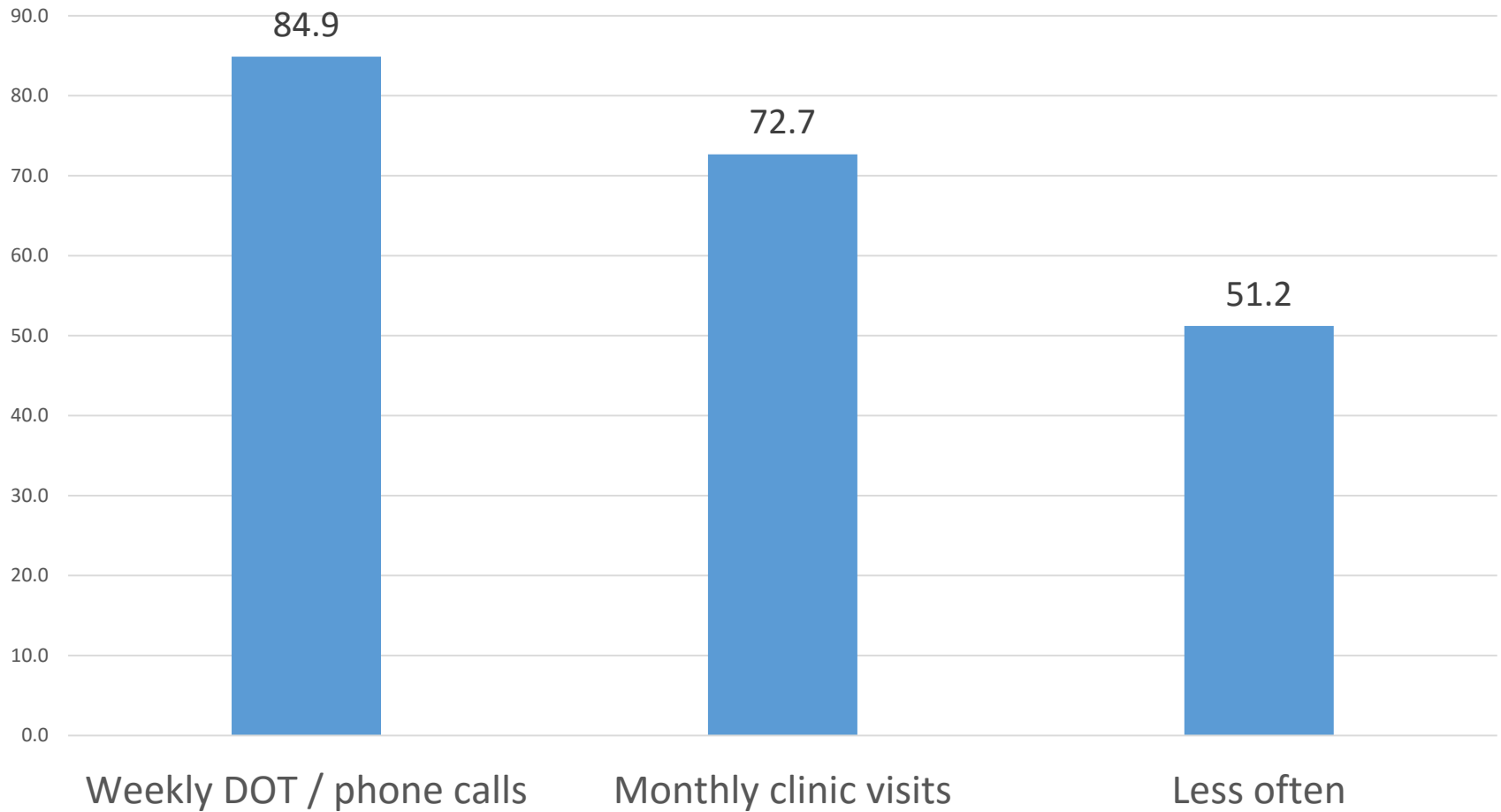


Percent completing therapy in each clinic

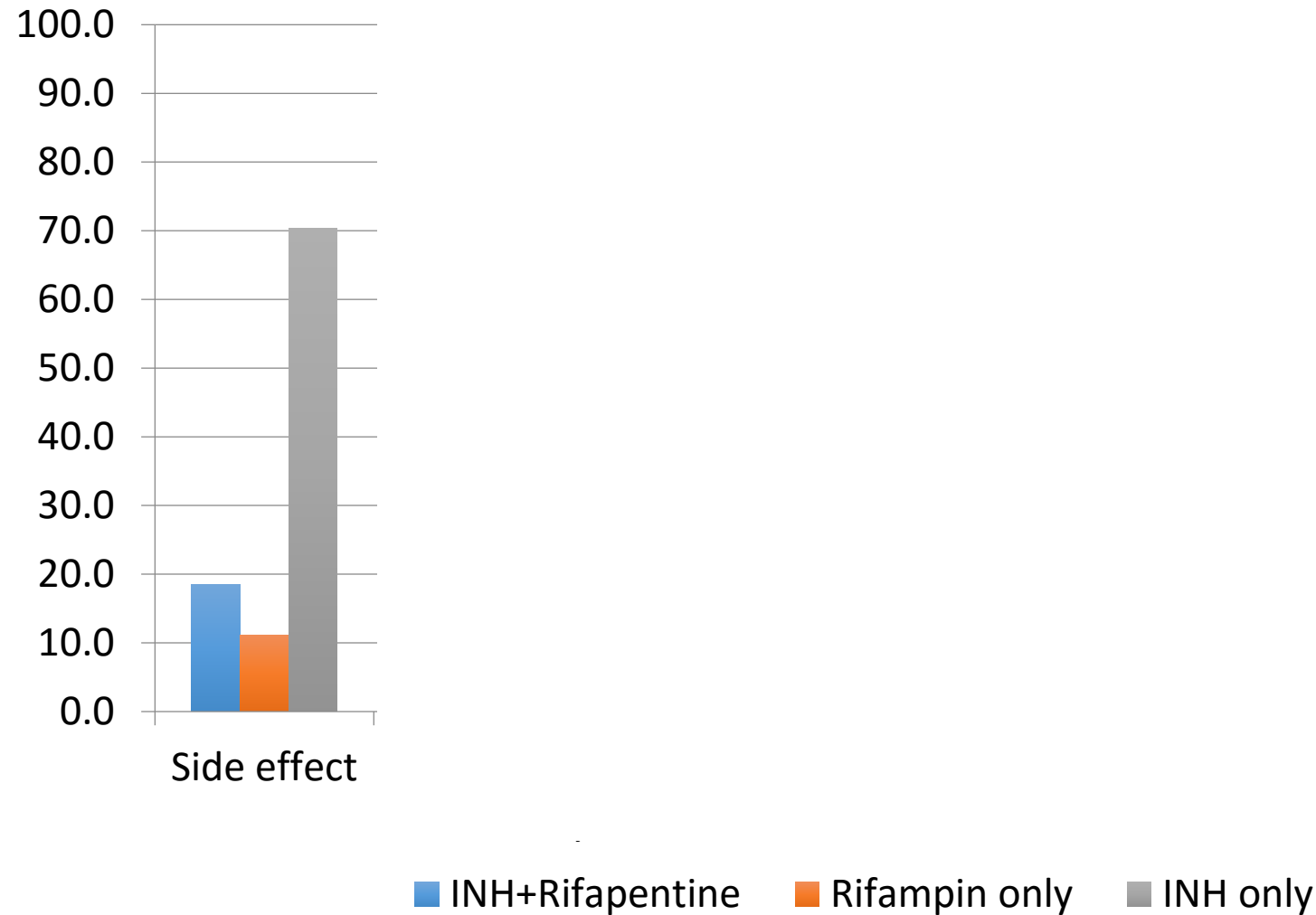


Adjusted for type of monitoring and type of treatment

Type of Monitoring



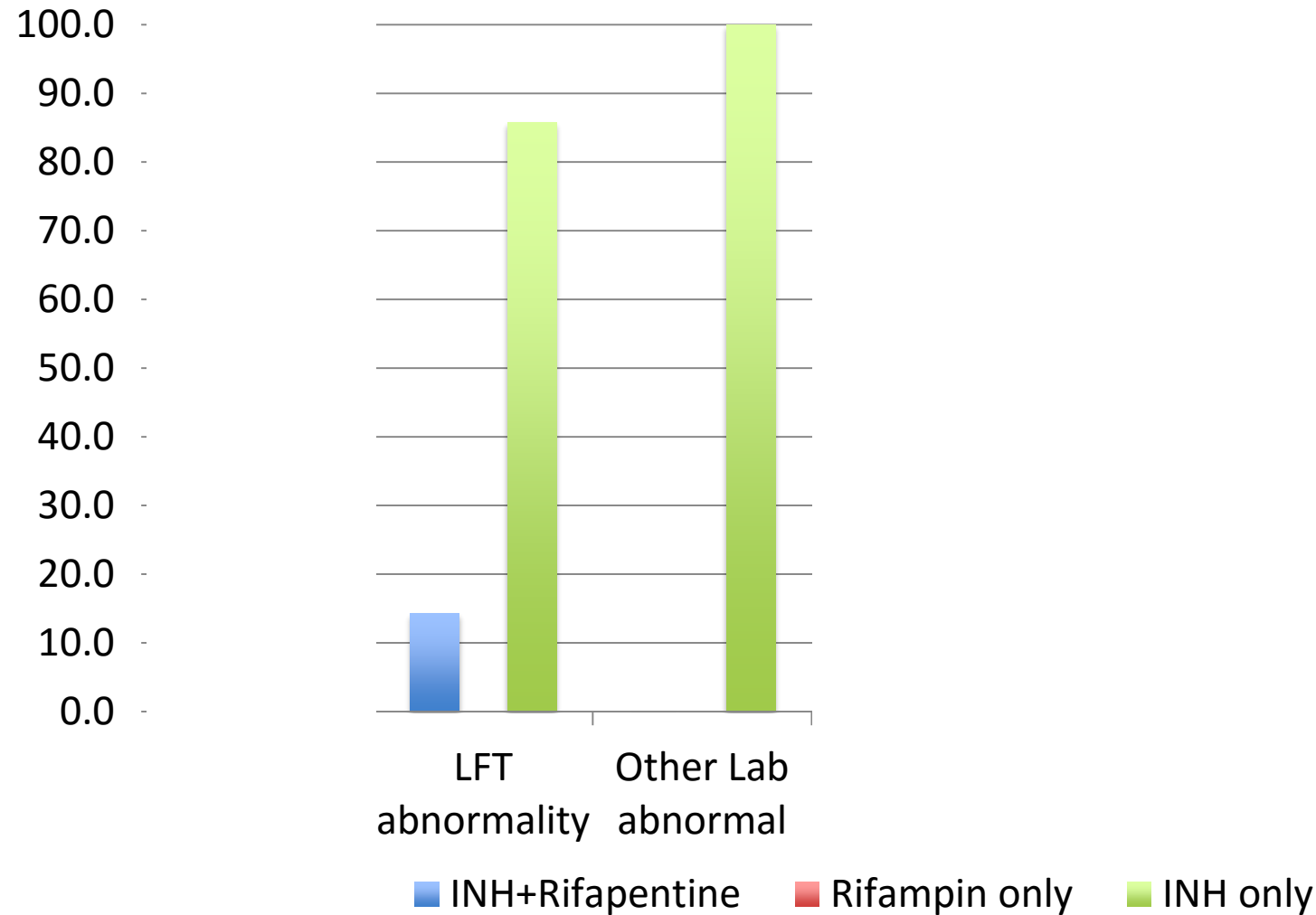
Reasons for non-completion



N=132

Participants who did not complete therapy

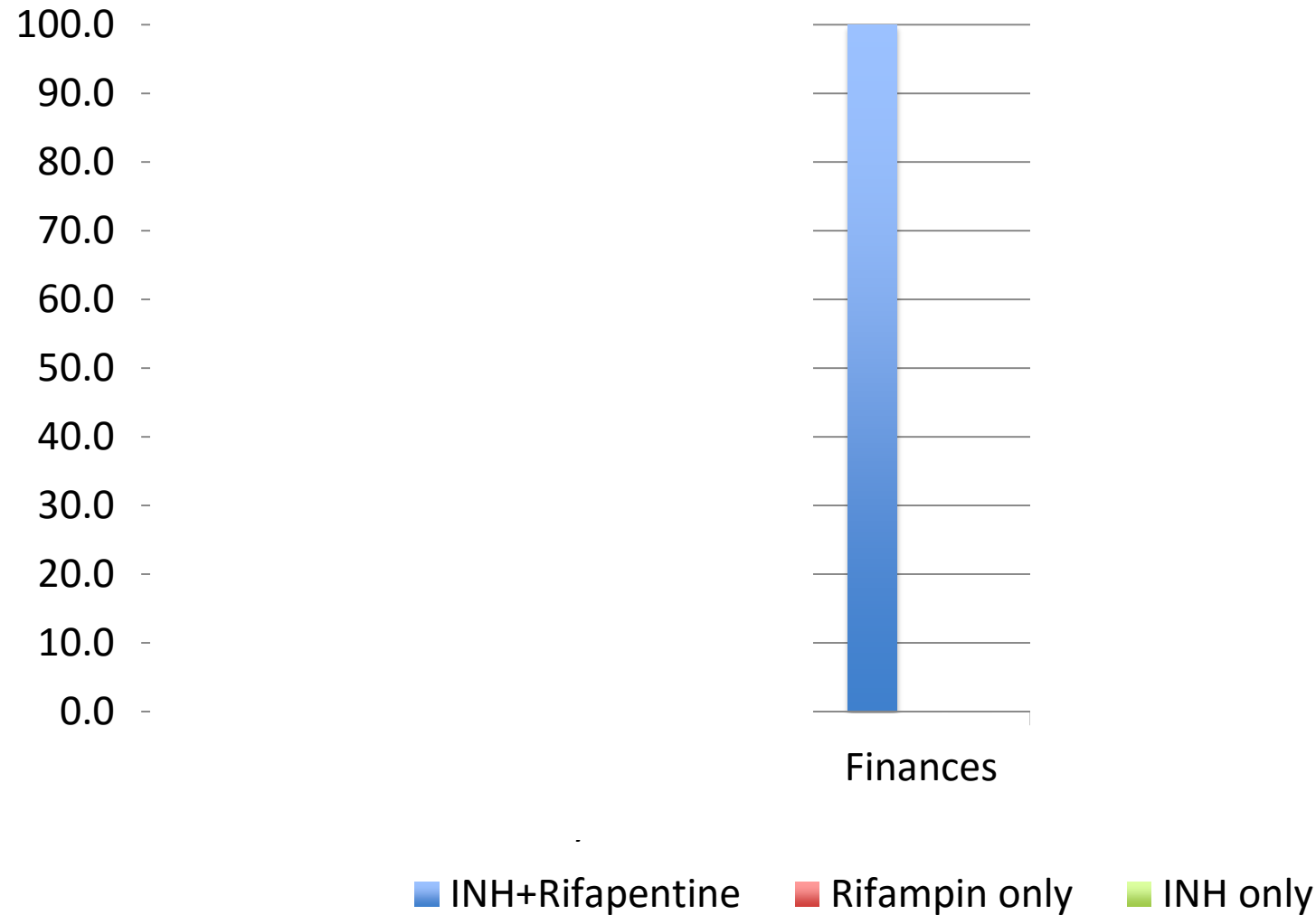
Reasons for non-completion



N=132

Participants who did not complete therapy

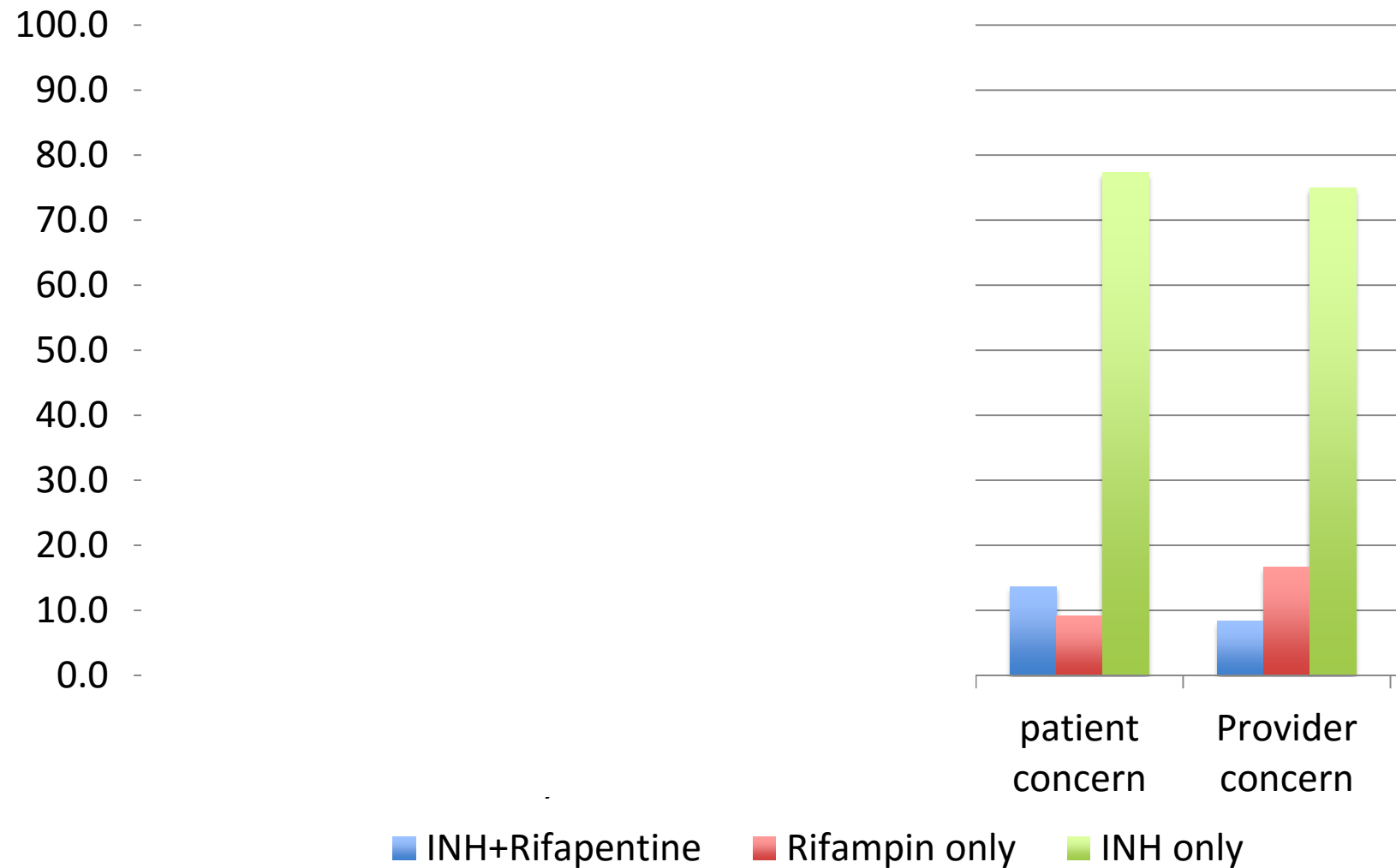
Reasons for non-completion



N=132

Participants who did not complete therapy

Reasons for non-completion



N=132

Participants who did not complete therapy

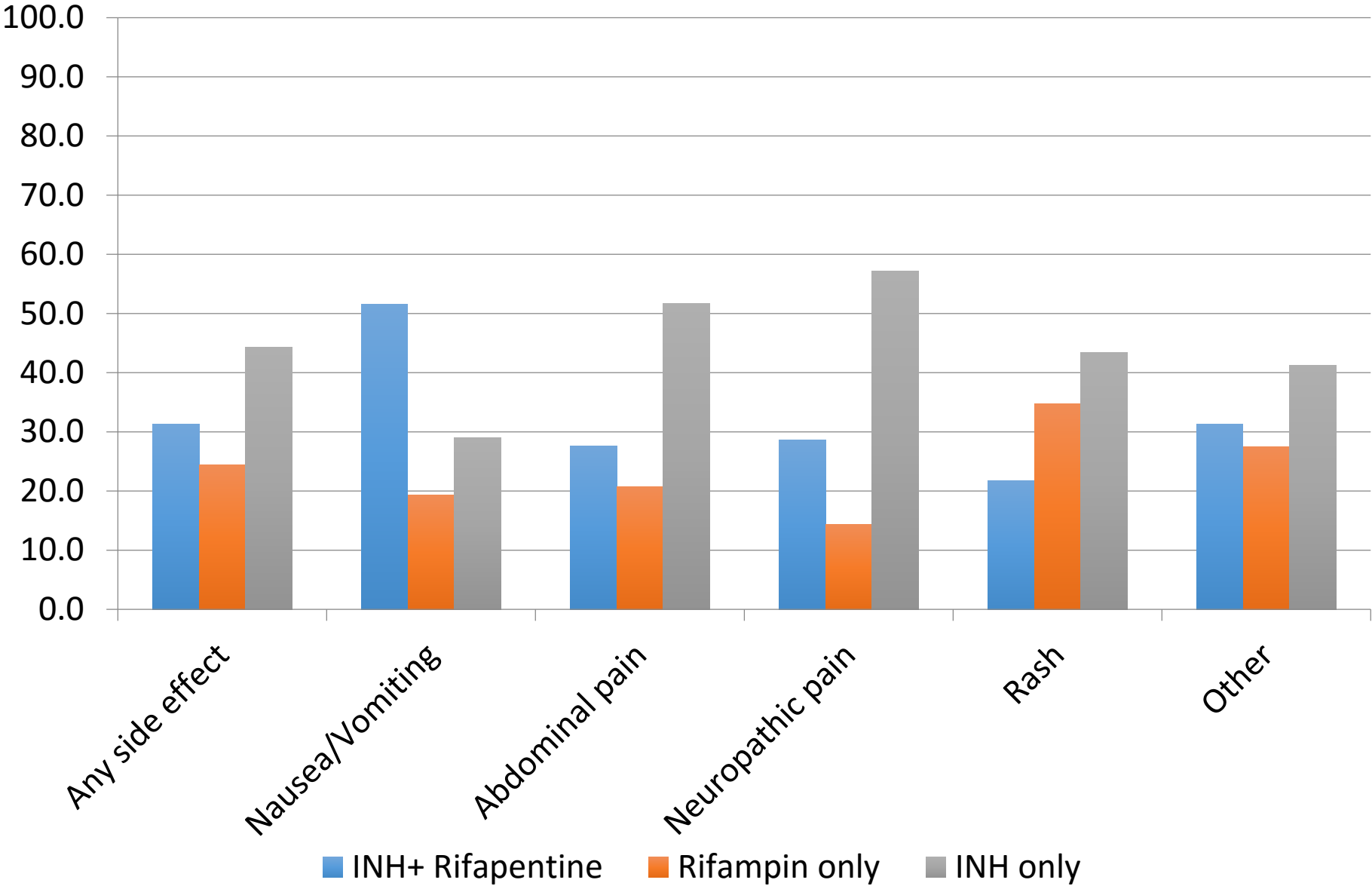
Reasons for non-completion



N=132

Participants who did not complete therapy

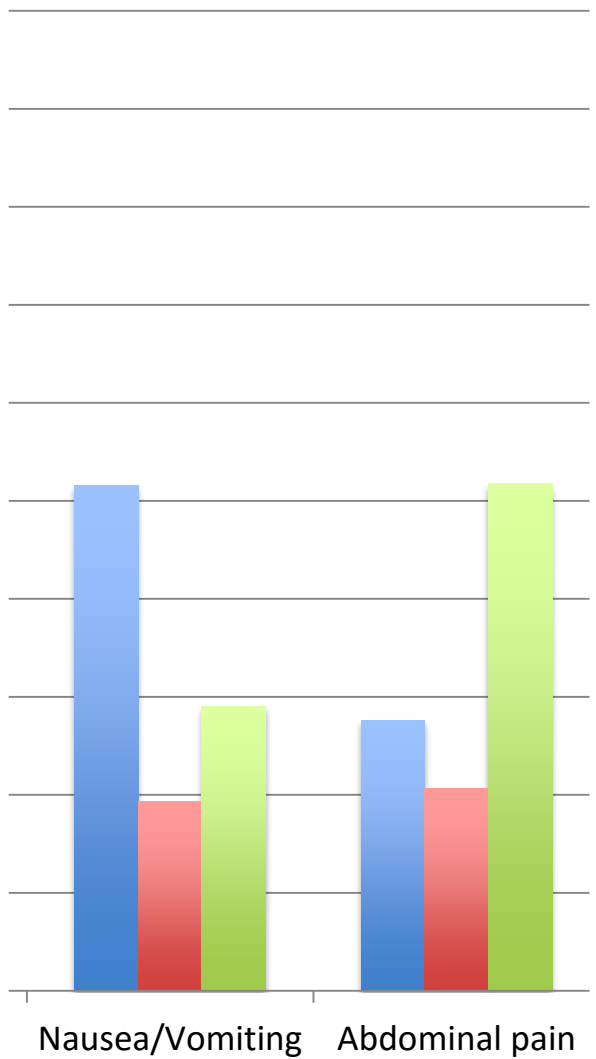
Percent of participants reporting side effects





Percent of participants reporting side effects

100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0



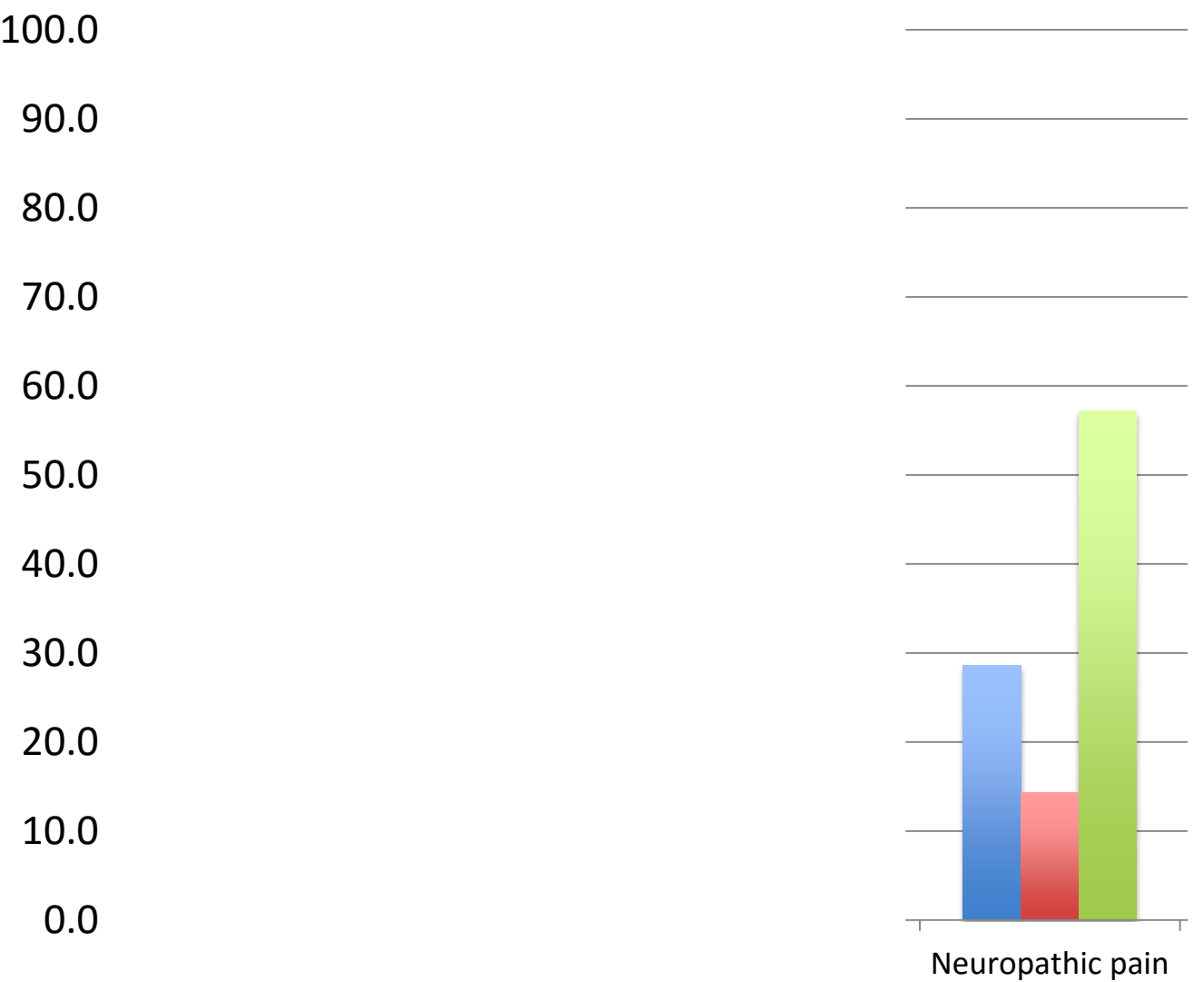
N=131

■ INH+ Rifapentine ■ Rifampin only ■ INH only





Percent of participants reporting side effects



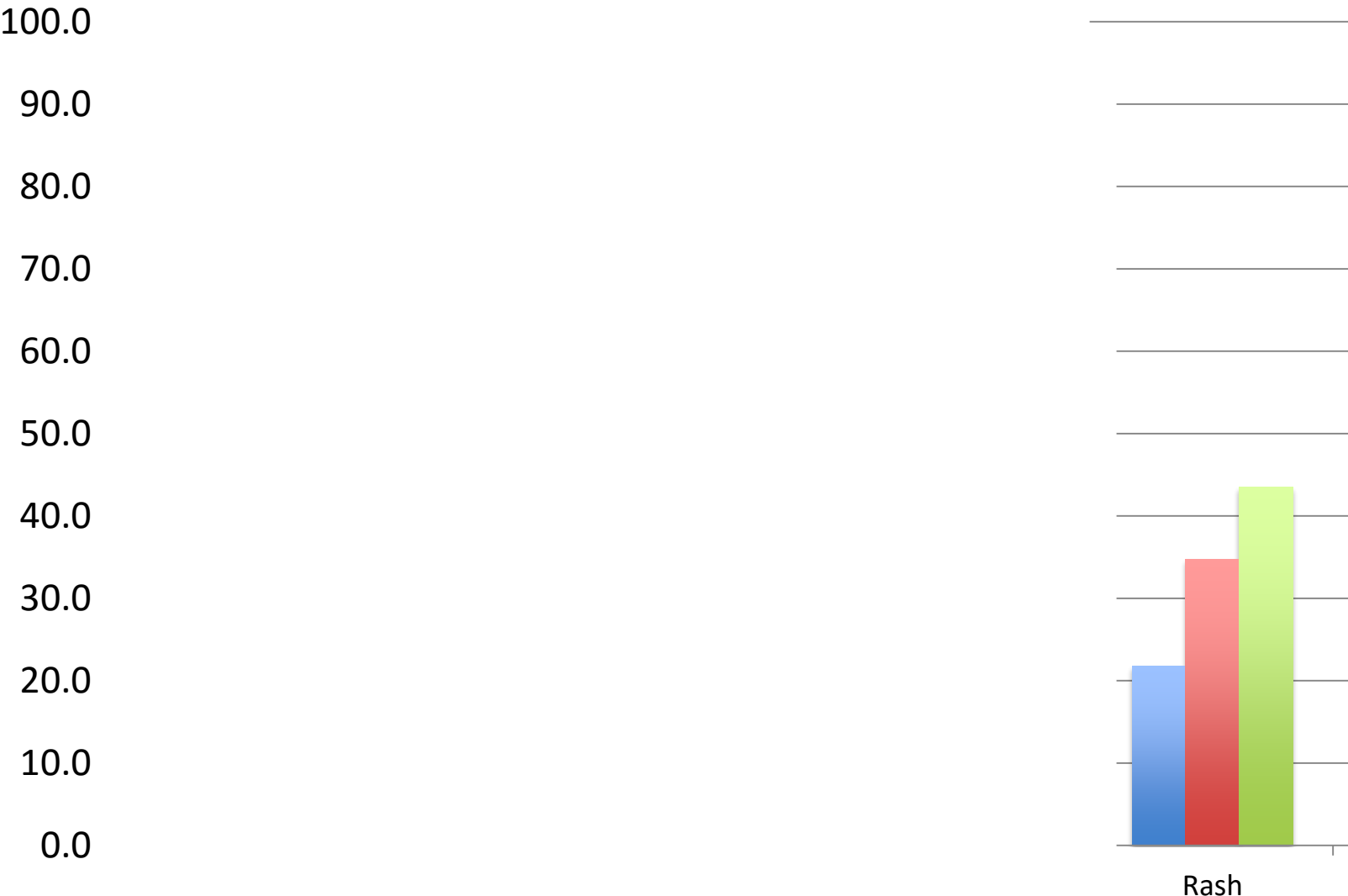
N=131

■ INH+ Rifapentine ■ Rifampin only ■ INH only





Percent of participants reporting side effects



N=131

 INH+ Rifapentine

 Rifampin only

 INH only



Percent of participants reporting side effects



N=131

 INH+ Rifapentine

 Rifampin only

 INH only



Exciting Discoveries

Rifampin alone has as good of completion rates as
INH+Rifapentine

****MAJOR cost differences!****



Exciting Discoveries

Type of treatment offered was a strong predictor of treatment completion

- monitoring type was not



Exciting discoveries

King County TB clinic does a great job of treating LTBI



Strategies to improve compliance

- Shorter therapy courses
- “Creative” DOT
- Incentive programs (homeless incentives)



Strategies to Improve Compliance

- Focused visits
- Engage your team (outreach, RNs)
- Monthly clinic visits when able

Choosing for your patient

INH x 9 months

Rifampin x 4
months

Weekly
INH+Rifapentine
x 3 mo



Choosing for your patient

INH x 9
months

¢

Rifampin x
4 months

\$

Weekly
INH+
Rifapentine
x 3 mo

\$\$\$

Choosing for your patient

INH x 9
months

SLOW

Rifampin x
4 months

Medium

Weekly
INH+
Rifapentine
x 3 mo

FAST



Choosing for your patient



INH x 9
months

Few
interactions

Rifampin x
4 months

Multiple
interactions

Weekly
INH+
Rifapentine
x 3 mo

Multiple
interactions

Choosing for your patient

INH x 9
months

1 pill

Rifampin x
4 months

2 pills

Weekly
INH+
Rifapentine
x 3 mo

9 pills*

Thank you

- Patients
- Clinic Colleagues
- LTBI Study Group*
- Dept of Public Health – TB clinic staff
- Curry Center

- Questions: amolnar@uw.edu or ahearst@uw.edu

* Alex Molnar, MD, McKenna Eastment, MD, Addie McClintock, MD, Christy McKinney, PhD, MPH, Masa Narita, MD, Shireesha Dhanireddy, MD, David Park, MD, John Lynch, MD, MPH, Caroline Pitney, PharmD

Final Q&A



**END
TB**

WORLD TB DAY MARCH 24



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