MINISTRY OF HEALTH

For a healthier life

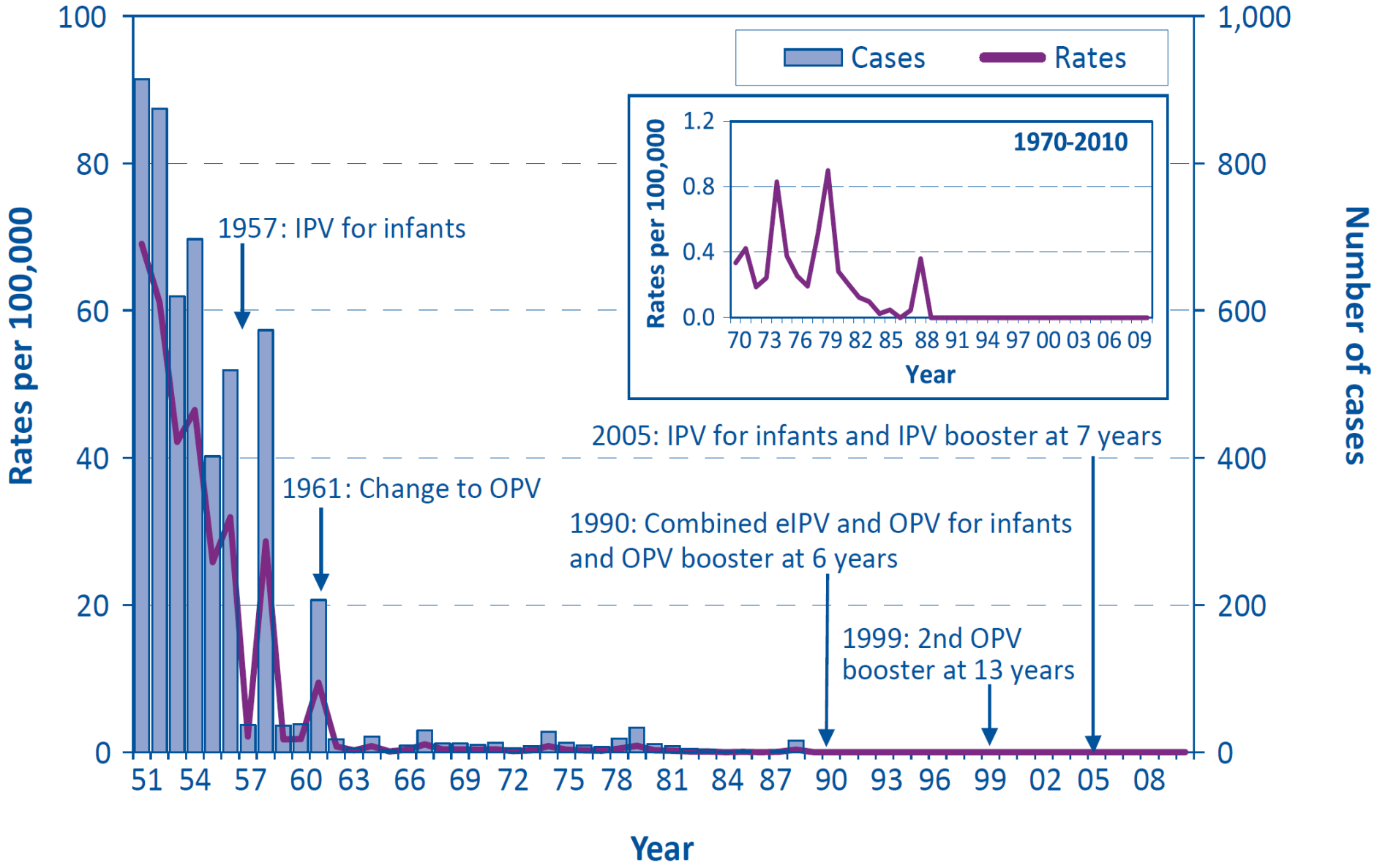
Reintroduction of WPV1 in an IPV vaccinated population

Prof. Itamar Grotto, Director, Public Health Services

Dr. Lester Shulman, Head of National Environmental Virology Laboratory

Dr. Boaz Lev, Associate Director General, Israel Ministry of Health

Number of cases and rates per 100,000: 1951-2010



MINISTRY OF HEALTH

For a healthier life

IPV vaccination coverage

- Israel ~ 95%
- Southern District ~ 92%
- Arabs ~ 97%
- Bedouins in Southern district ~ 90%

- Sero-prevalence study: 98.2% positive

MINISTRY OF HEALTH

For a healthier life

Supplementary Environmental Surveillance

- **Routine monthly sewage surveillance**
  - **8-10 sites since 1989**
  - **30% – 40% of entire population**
  - **Measure viral loads**

MINISTRY OF HEALTH

For a healthier life

The initial event: Observation of a Dramatic rise in plaques

Location	Feb	Mar
Beer-Sheva	2, 1, 0, 0 0.4/ml	10, 10, 6, 3 3.7/ml
Rahat	1, 0, 0, 0 0.1/ml	57, 50, 48, 48 25.4/ml

Plaque assay of concentrated sewage on L20B

The WPV in Israel

- Identify viruses based on sequence
  - **May 29th** non-Sabin type 1 poliovirus
  - CDC and WHO closest match to WPV1 SOAS from Pakistan 2012 and Egypt (Dec 2012)
  - Clade R3

MINISTRY OF HEALTH

For a healthier life

WPV circulation in Israel and The PA

- 350 samples Israel and PA; 109 SOAS positive
- High viral load: Parts of Southern District, mainly in Bedouin settlements
- Low viral load: Four locations in Central Israel
- “Anecdotal” virus identification: Four other locations in Central Israel; three location in the PA

MINISTRY OF HEALTH

For a healthier life

Public Health Response

MINISTRY OF HEALTH

For a healthier life

1st Stage Response: June–July 2013: IPV phase

- Nationwide active IPV catch-up: with focus on South
  - Achieving >98% coverage among children
- Rahat : Single dose IPV for adults
- National hygiene campaign – hygiene
- Intensified environmental surveillance (>50 sites)
- Intensified AFP and aseptic meningitis surveillance
- Stool survey – Southern district (July 2013)
- Communication with health professionals and public

Stool survey (CDC and CVL, n=2,203)

- **Identified reservoir**
  - **Bedouin children < 9 years old**
    - **Point prevalence: 4.2%**
  - **Jewish children < 9 years old**
    - **Point prevalence: 0.6%**
  - **48/50 excretors among IPV-only vaccinated children**
  - **Distribution of excretors - consistent with environmental surveillance “hot spots”**

MINISTRY OF HEALTH

For a healthier life

2nd Stage Response Aug 5th & 18th bOPV

- Single bOPV dose if previous IPV dose.
- Aug 5 – Southern Israel– 180,000 Children <10 yrs
  - SIA – bOPV
  - 86% by Sept 26th
- Aug 18 – all other children- total of 1.2 Million
  - SIA bOPV
  - 70% by Sept 25th

MINISTRY OF HEALTH

For a healthier life

Challenges of OPV SIA

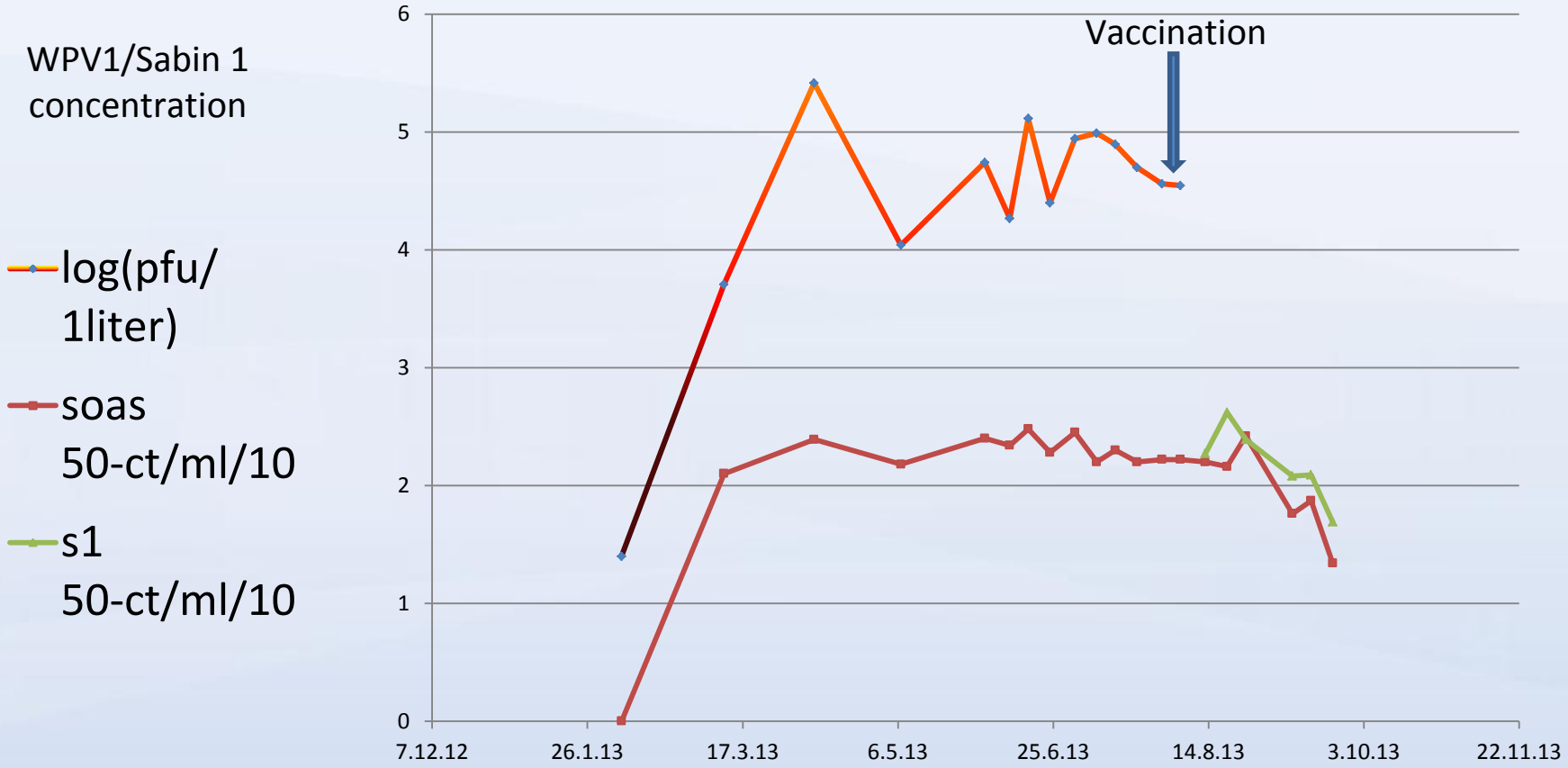
- SIA in an IPV-only country with no clinical polio
- Identify the target population for SIA
- Reach consensus in the medical community
- Risk communication to general public:
  - "Traditional" media
  - "New" media: internet and social networks
  - Community leaders
- Appeal to Supreme Court against vaccination campaign
- "halo" effect on other routine vaccines
- Compliance

MINISTRY OF HEALTH

For a healthier life

Rahat – WPV1 kinetics (high viral load)

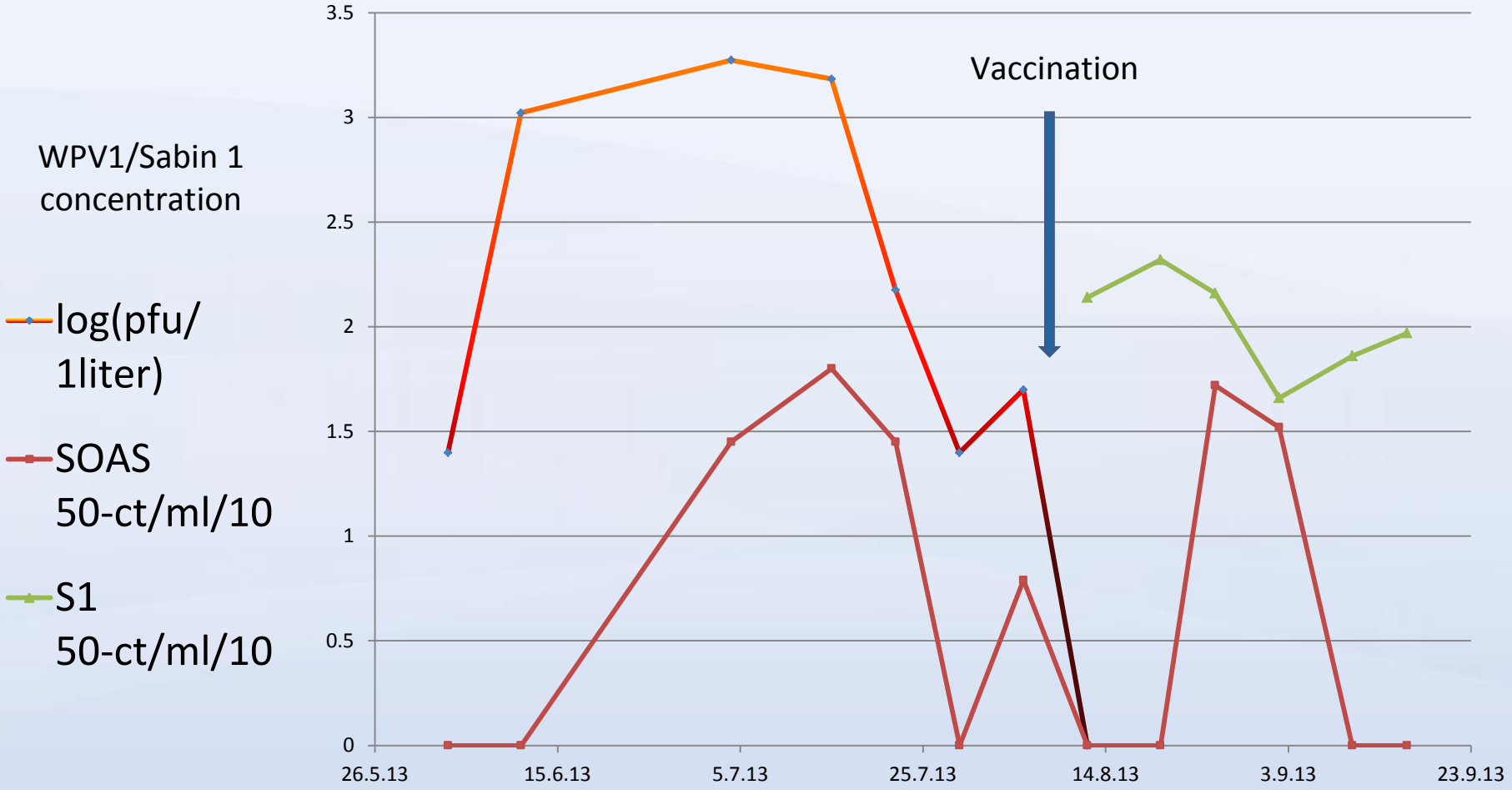
WPV1/Sabin 1 concentration



MINISTRY OF HEALTH

For a healthier life

Kiryat-Gat– WPV1 kinetics (low viral load)



Next step(s)

- **Additional round(s) of bOPV?**

- **Reexamination of childhood vaccination schedules: re-include tOPV or bOPV with IPV?**

MINISTRY OF HEALTH

For a healthier life

Conclusions

- Evidence: Introduction and sustained transmission of WPV1 in a highly vaccinated population
- Evidence-based national public health response
  - Time needed to acquire data and public trust
  - Consultation with external experts WHO and CDC
- Continuous Environmental surveillance - crucial for Early detection and monitoring intervention

MINISTRY OF HEALTH

For a healthier life

Future International Considerations

- Applying research evidence from Israel's event for polio endgame strategy

- We are open to suggestions to any additional studies that would help toward understanding this type of event

MINISTRY OF HEALTH

For a healthier life

Thank you:

WHO

CDC

NIBSC

RIVM

Immune status of population (during event)

- Neutralizing antibodies to type 1poliovirus (>1:8)
  - 98.2%

- Neutralization of SOAS vs IPV Type 1
  - 3 fold less, but all STILL neutralize SOAS
    - convenient serum samples
    - low and mid range titers
    - Mahoney GMT = 41 SOAS GMT = 13

MINISTRY OF HEALTH

For a healthier life

Environmental surveillance sites

- Include additional surveillance sites (n>50)
- Increase frequency of testing from monthly to weekly
- Subdivide sampling sites (upstream branches)