

HPV Vaccines

How to introduce HPV vaccines into the ob/gyn practice: when, where, which

Basic Gynecology Oncology
Sociedad Chilena de Obstetricia y Ginecologia
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14:30-15:00
Diane M Harper, MD, MPH, MS

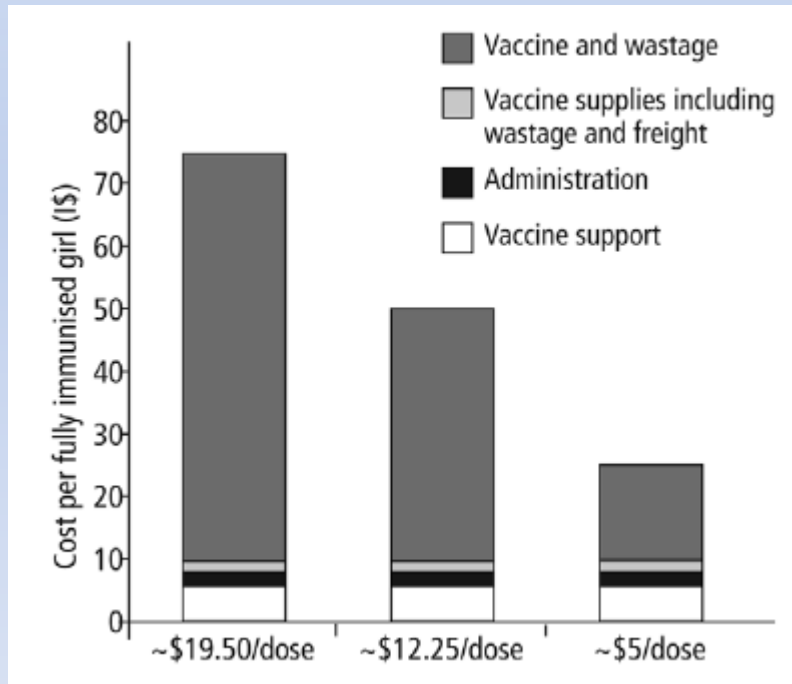
Individual Protection vs. Public Health Prevention

- Physicians work with **individual** patients
- Measurement of disease prevention can be at the individual level or the **public health** level
- Maximizing individual protection contributes to public health prevention
- Costs of screening and vaccination determine what maximizing individual protection means

Vaccination age approvals in women

- Ages of approval:
 - Cervarix: 10-25 years
 - Gardasil: 9-26 years
- WHO/PAHO/CDC targeted ages: 11-12 years with catch up to 25/26 years
- Future broadening of age ranges:
 - Cervarix: through 55 years
 - Gardasil: through 45 years
- No data to support vaccine-induced cancer prevention in men – no male vaccination

Components of vaccine costs



- Actual vaccine cost
 - \$5 x 3 = \$15
- Wastage of vaccine (expired, not temp controlled)
 - \$2.25
- Freight and supplies
 - \$1.31
- Vaccine administration
 - \$1.50
- Programmatic support costs
 - \$4.94

} \$25

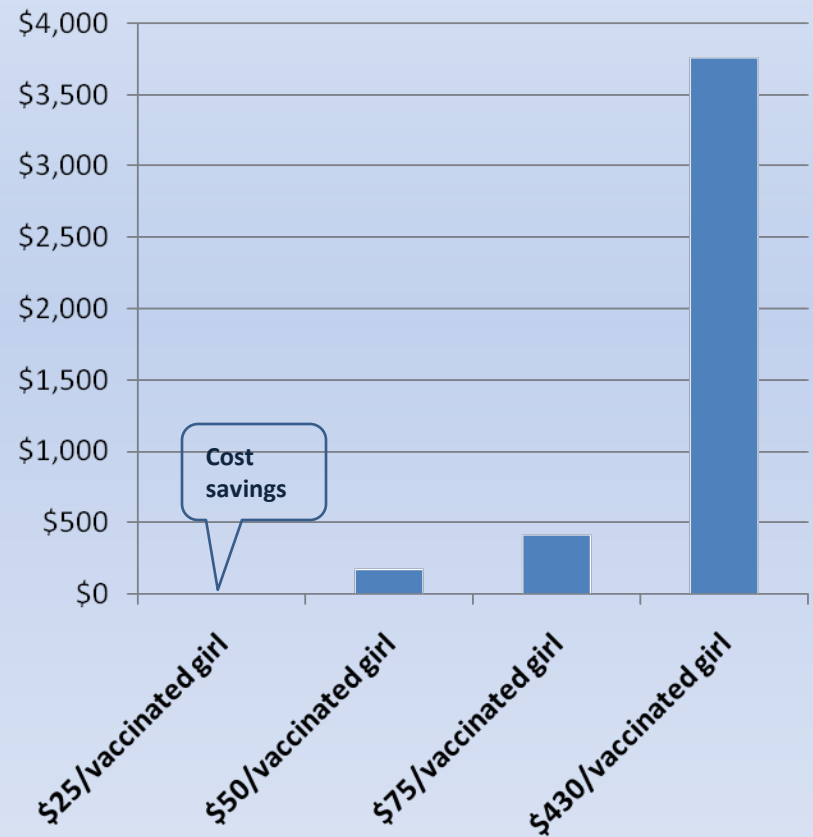
Chile

- **GDP per capita is \$9033**

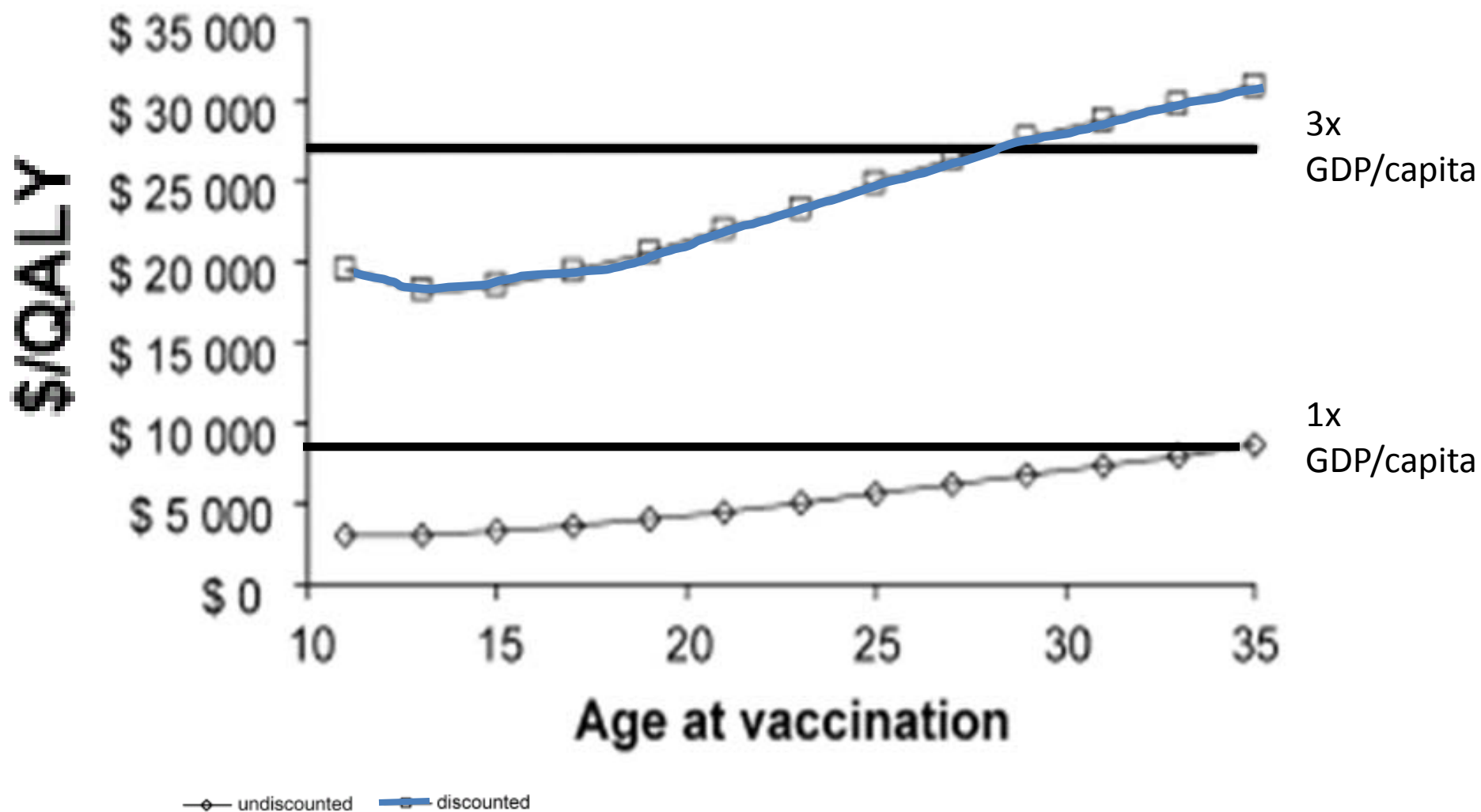
[World Bank 2007]

- Incremental cost effectiveness ratio
 - [ICER]: Dollars per disability (or quality adjusted) life years averted
 - ICER (\$/DALY, \$/QALY)
- **ICER is considered cost effective if it remains below 3xGDP per capita**
 - e.g. \$27098
- ICER is very cost effective if it is below 1 X GDP

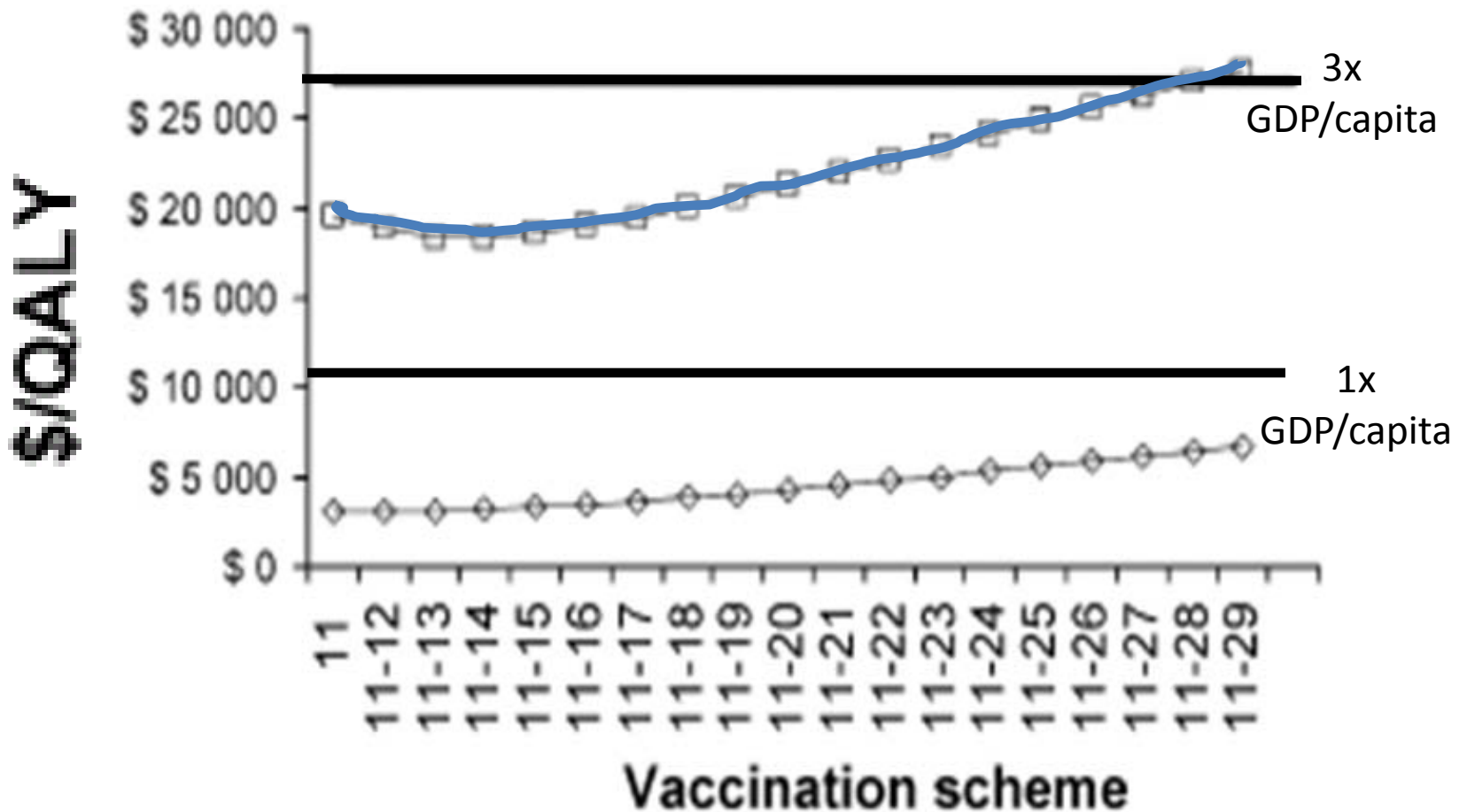
ICER, \$/DALY averted



Parameters in Policy Decision Making for **Chile**: Pick one age for vaccination

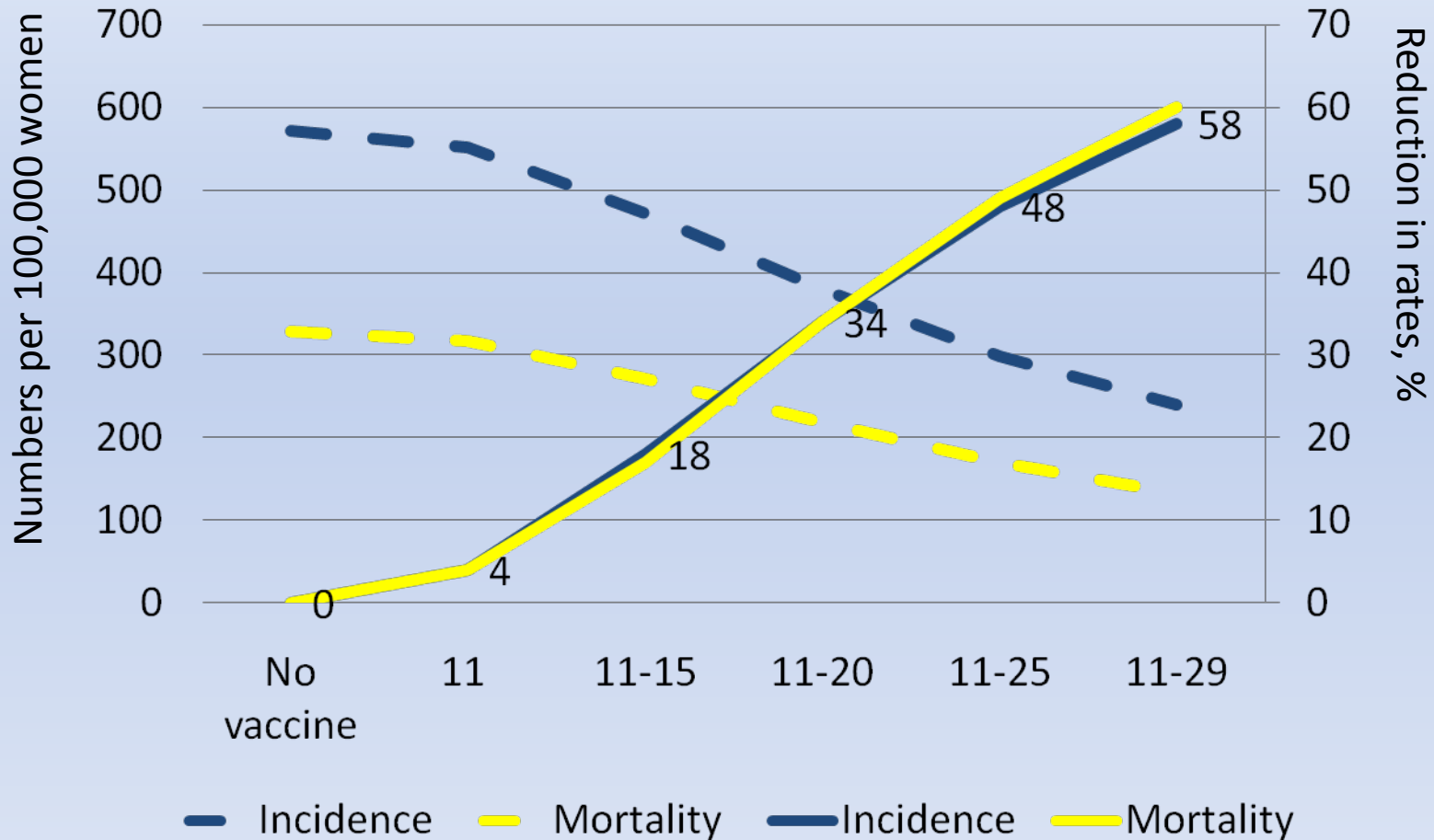


Parameters in Policy Decision Making for Chile: Age groups for vaccination



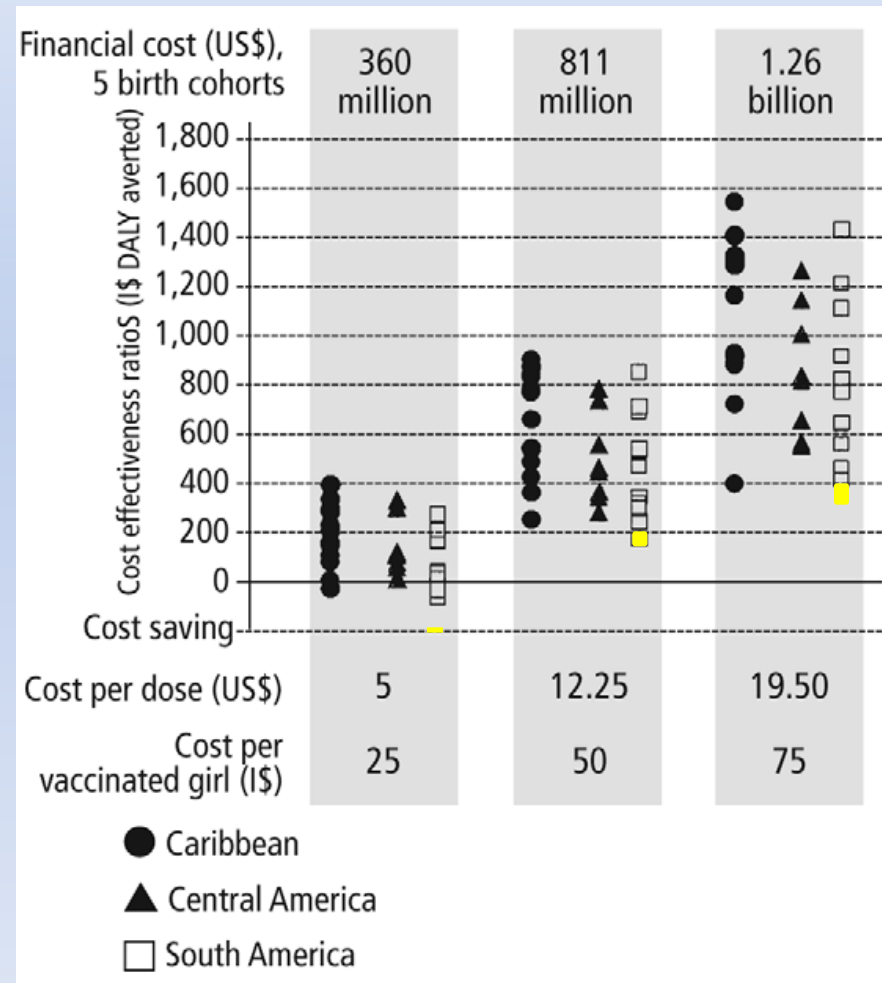
◇ undiscounted ■ discounted

Age cohort vaccination effects in Chile over 60 years

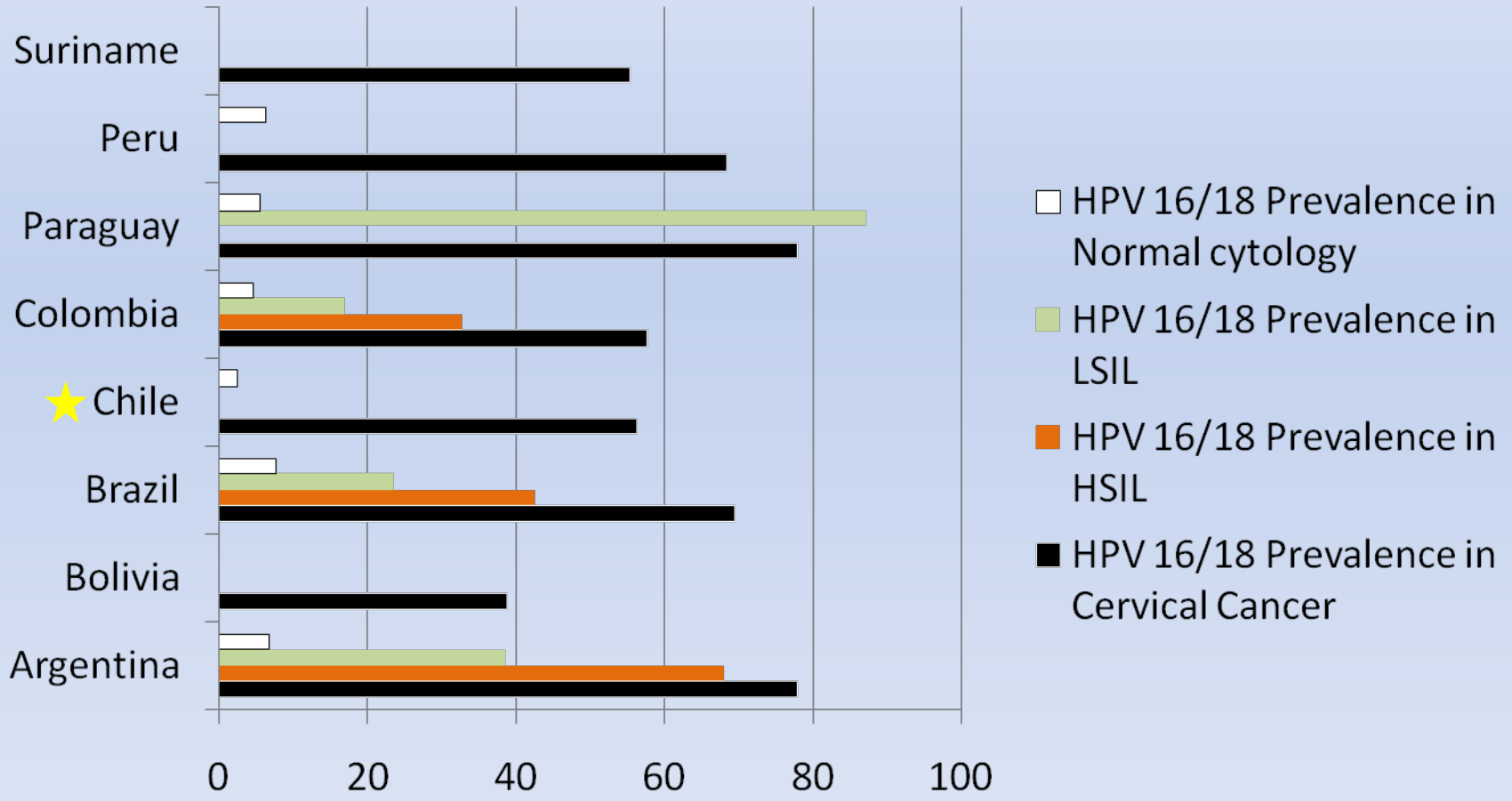


Cost effectiveness may not mean affordability

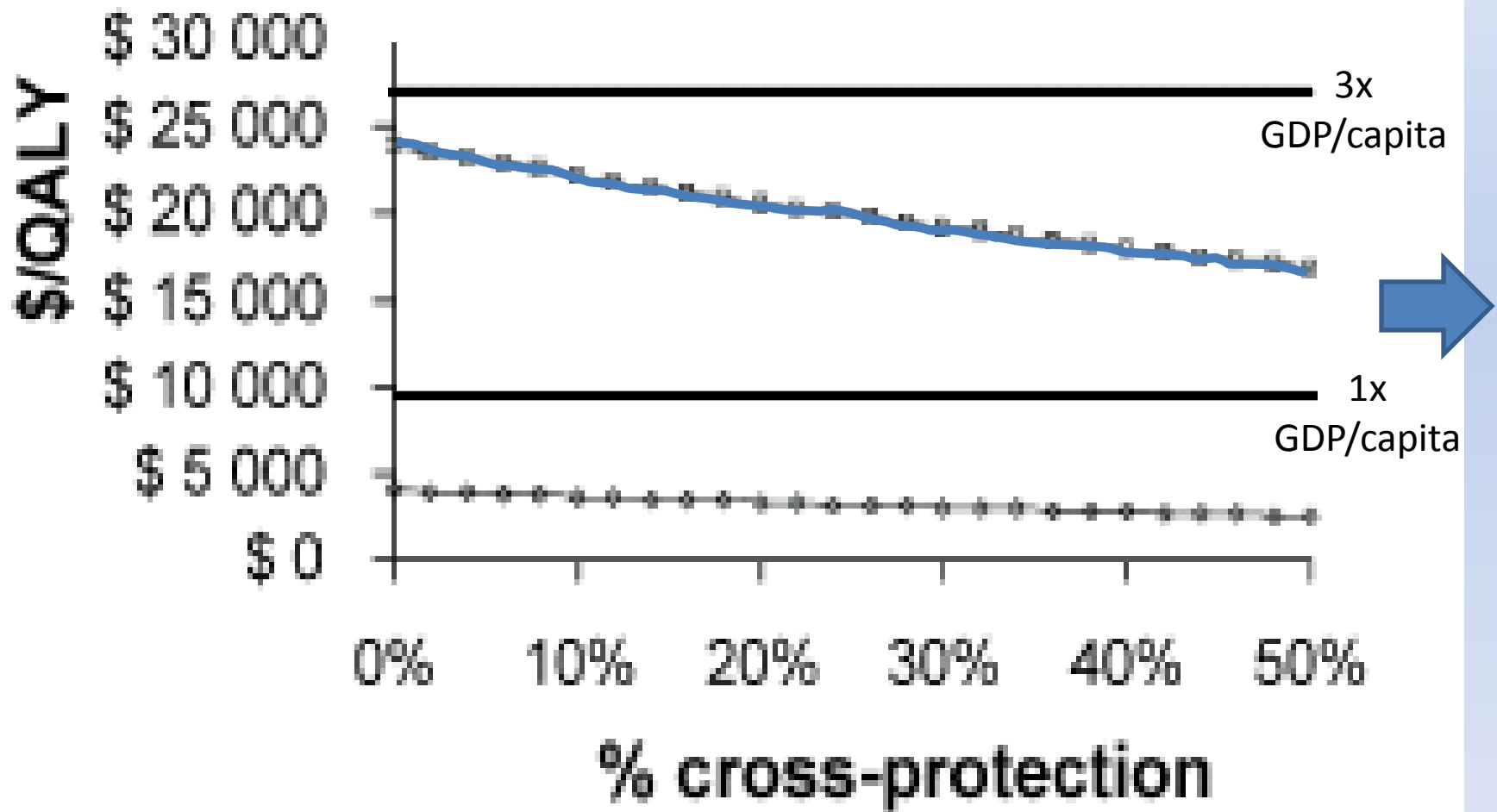
- Cost for only **5 years** of vaccination to cover **70%** of **12 year** old girls ranges from **\$360M - \$1.26B** when costs to vaccinate one girl range from **\$25-\$75**.
- *Importance of understanding discounting: paying now for benefit many years later*
- Chile is the yellow square



Lower HPV 16/18 Prevalence in Chile: Vaccine Efficacy will be lower



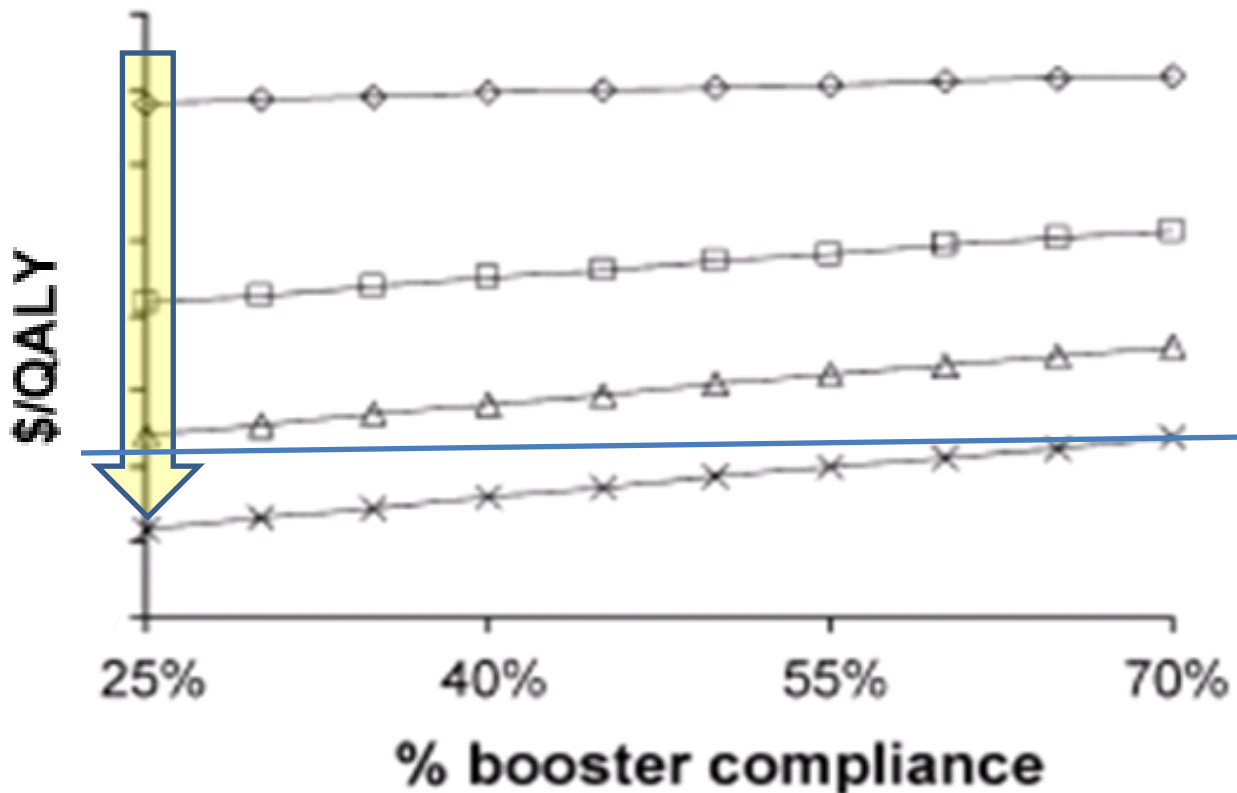
Parameters in Policy Decision Making for Chile: Efficacy from Cross Protection



—○— undiscounted —■— discounted

Parameters in Policy Decision Making for Chile:

Duration of HPV 18 Vaccine Efficacy

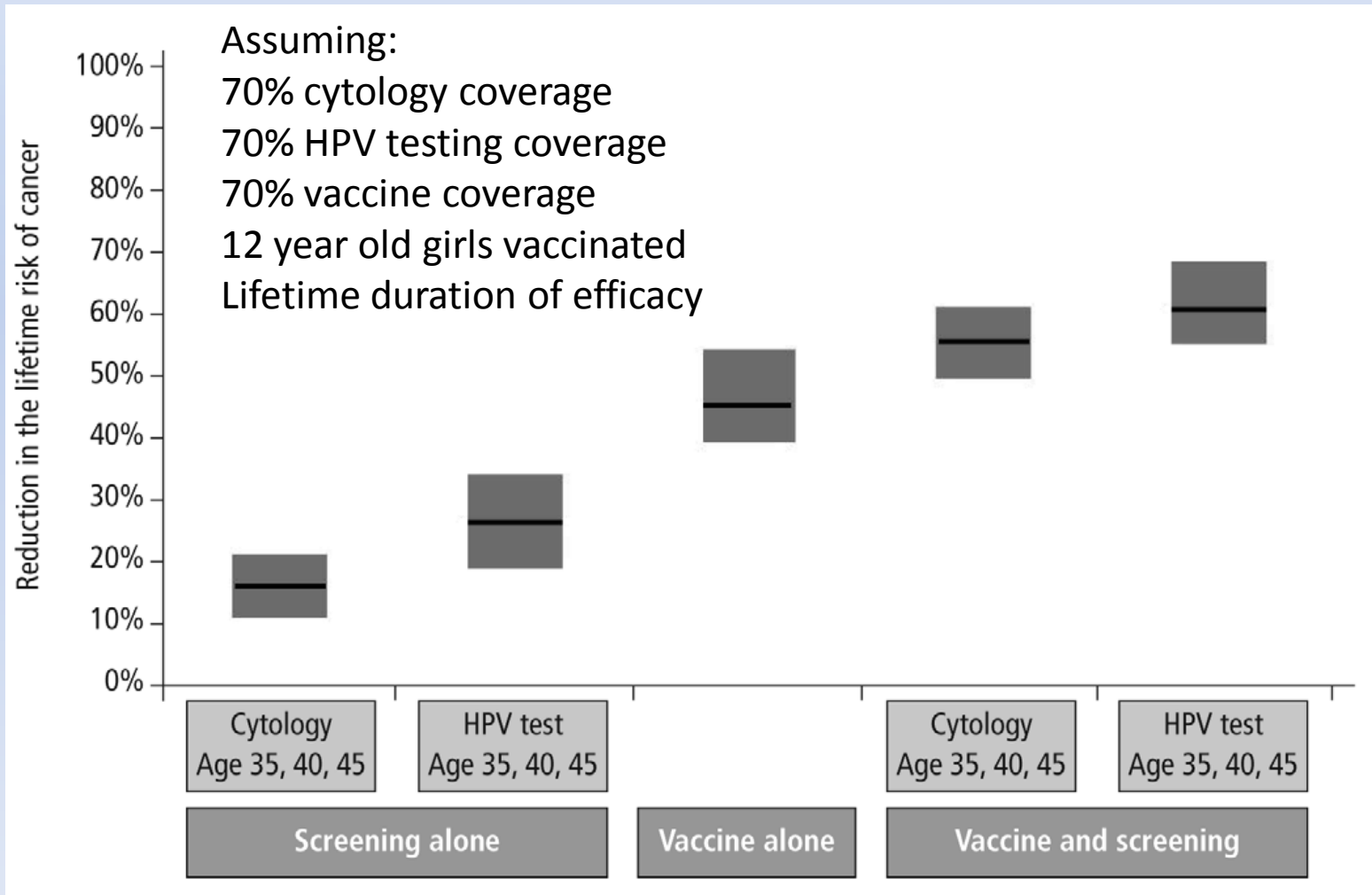


ICER goes up because cost increases as more women are boosted

—◇— 10 year plateau
—△— 20 year plateau

—□— 15 year plateau
—×— 25 year plateau

Assumed maximum reduction in lifetime risk of cervical cancer in Chile after 60+ yrs



Ages to vaccinate:

Alleviating parental concerns

- The longer the duration, the younger the age
- Within six years of sexual activity
- Post partum and six week exam
- For those finishing CIN/cervical cancer therapy
 - Theoretical, data support for seropositive PCR negative women
 - Prevent recurrence
- For those finishing VaIN/VIN therapy
 - Theoretical, no data support
 - Prevent recurrence

Access to screening

- Cytology Recommendation
 - 25-64 years old: every 3 years
- For those with access to screening,
 - Vaccination can be added to screening
 - Vaccination **CANNOT** replace screening
- For those with no access to screening
 - Vaccination, depending on duration of efficacy, may prevent some cervical cancers

Screening Program

- Relies on quality controlled cytology and histology laboratories
- Relies on surveillance for patient recall for abnormal results
- Relies on timely access to colposcopy, biopsy
- Relies on timely access for treatment
- Someone has to pay

Vaccine Procurement

- PAHO Revolving Fund
 - Vaccines, syringes and related products
- Distribution to your clinic from private sources
- Other

Vaccine Records

- Records of date of doses received
 - Dose number
 - Lot numbers
 - Vial sizes – single, multiple
 - Record in patient chart and in office log
- Record wastage after vaccine expiration

Cold chain for HPV vaccines

	2°–8°C	20°–25°C	37°C	>37°C
Gardasil	>36 months	24-36 months	1.5 months	14 days at 42°C
Cervarix	>36 months			

Store refrigerated at 2°C to 8°C (36°F to 46°F);

DO NOT FREEZE.

Protect from light.

Out of refrigeration (at temperatures at or below 25°C/71°F) for a total time of not more than 72 hours.

Vaccine Storage

- Two daily temperatures for the vaccine refrigerator taken and recorded in log book
 - Beginning and end of day
 - Between **2°–8°C**
 - One identified person responsible for monitoring temperature fluctuations
- Store vaccine inside refrigerator
 - Not on door shelves
- Do not freeze vaccine
 - Space left between products in the refrigerator so that air can circulate

Vaccine Inventory

- Lockable doors
- Logs of vaccine inventory
- Authorized handling
- If vaccine is frozen or exposed to temperatures outside of the **2°–8°C** range
 - Put in box marked DO NOT USE in refrigerator
 - Contact distributor of the vaccine for guidance on whether the vaccine is still effective or must be discarded

PAHO operating procedures

- Cold chain equipment purchased through the RF shall be in accordance with International Electrotechnical Commission standards for electromechanical and electromedical equipment.
- The products also should follow the WHO recommendations for cold chain equipment.
- PAHO will conduct performance evaluation and laboratory tests to verify conformity with the standards.
- The equipment should be subject to a preventive maintenance program including regular cleaning.

Where should vaccinations take place?

- Logs are necessary
 - Who was vaccinated,
 - Date of vaccination,
 - Which dose (1, 2, or 3): Tickler systems for recall visits
 - Which vaccine lot number
 - Place of vaccination
 - Side Effects
- Public immunization clinics
- Private offices
- Schools

Which Vaccine?

- Cervarix is the superior cervical cancer vaccine
 - Efficacy for five oncogenic HPV types
 - 70% prevention of excisional therapies for CIN 2+
 - Better coverage for adenocarcinoma associated HPV types
 - Higher and longer duration of antibody responses for HPV 16 and 18
 - Antibody responses for HPV 16 and 18 many fold higher than natural infection titers for women aged through 55 yrs
 - Mucosal antibody titers are significantly more abundant for both HPV 16 and 18
 - Memory B-cells are significantly more abundant
- Gardasil is the superior genital wart vaccine

Informed Consent: Factors women must be told

- Duration of vaccine efficacy:
 - Cervarix = 7.3+ yrs Gardasil = 5 yrs
- 10 year follow up data is insufficient
- **15 year duration** at minimum is needed to prevent, and not postpone, any cervical cancer
- If boosters are needed for Gardasil there will be a **window of vulnerability** for HPV infection as booster implementation occurs

Factors to be included

- Vaccination offers protection from HPV infection (not cancer)
 - Only 5% of the oncogenic HPV types will progress to CIN 2/3 usually within 3 years after infection
 - Less than half of women with CIN 2/3 will progress to cancer within 30 years
 - Leaving ample time to detect and treat CIN 2/3 if the woman continues her screening exams
- Very low frequency, rare serious side effects,
 - including death, have been reported after vaccination
- Age choice to vaccinate inversely proportional to duration of vaccine efficacy

Factors to be included

- ↓ number of abnormal Pap smears
 - 65% for Cervarix and 55% for Gardasil maximally
 - Reduced chance that the next Pap test will be abnormal
- ↓ 20% reduction in the number of colposcopies required
- ↓ reduction in the number of LEEPs required for CIN 2/3
 - 70% for Cervarix
 - 40% for Gardasil

Factors your patients should be told

- Cost of vaccine
- **Three** injections are needed
- Misunderstanding the level of protection
 - Not protected from all cervical cancers
 - Vaccine efficacy may not last long enough
 - Must continue screening if there is access to screening
- There are **reported serious adverse events**

How to space the three doses?

Regardless of HPV vaccine:

- Second dose must be no sooner than 4 weeks after first dose
- Third dose must be no sooner than 12 weeks after second dose
- All three doses must be given within ONE year
- Studies ongoing to evaluate efficacy and duration of efficacy with a 2 dose regimen

Informed cervical cancer
prevention!!