Progress, Challenges, and Lessons Learned in Achieving Measles and Rubella goals

Workshop 4: How to Optimize Immunization Coverage?
GVIRF, 5 March 2014,
Dr Thomas Cherian, WHO/IVB
Measles global annual reported cases and MCV1 coverage*, 1980-2012

* MCV1 coverage: coverage with first dose of measles-containing vaccine as estimated by WHO and UNICEF
Measles and Rubella Targets

**Global targets** by 2015:
- Measles mortality reduction of 95% vs. 2000
- Measles reported incidence <5 cases per million
- Measles vaccination coverage ≥ 90% national and ≥ 80% district

**Regional targets:**

**Measles** Elimination goals:
- 2000 AMRO
- 2012 WPRO
- 2015 EURO, EMRO
- 2020 AFRO, SEARO

**Rubella** Elimination goals:
- 2010 – AMRO, 2015 – EURO

**Global Vaccine Action Plan (GVAP):**
- 2020 Measles and rubella elimination in 5 WHO regions
77% Reduction in Global Measles Incidence, 2000-2012

Measles incidence per million population (log scale)
Measles control is crucial for ensuring public health. Here are some key points:

- **Measles control highlights the importance of many of the goals and objectives of the GVAP.**
- **Population immunity of >93-95% is needed to prevent large outbreaks, requiring homogeneous coverage >95% with 2 doses.**
- A variety of **demand side and supply side factors** responsible for immunity gaps and consequent outbreaks.
- **Data quality is important for monitoring coverage, detecting immunity gaps and taking corrective actions.**
- These can serve as the **basis for operational research questions.**
Country Experiences

- Ecuador
- France
- UK
- Malawi
- Cambodia
The Americas

Measles vaccination coverage among children <1 year of age* and reported measles and rubella cases, 1970-2012

*MR in children aged 1 year as countries introduced measles-rubella containing vaccines

Source: Country reports to FCH-IM/PAHO.
Adolescent and Adult Rubella Vaccination (“Speed-up”) Campaigns, The Americas*

The commitment of the countries to conduct “speed-up” campaigns ultimately prevented the reestablishment of endemic measles virus transmission in the Region.

Source: Country reports to FCH/IM.
* Includes rubella and measles cases reported to PAHO as of epidemiological week 47/2010.
**Countries that implemented “speed-up” campaigns (1st phase) in women only.
Reported measles cases and measles vaccination coverage, 1990-2012, Ecuador

Data source:
measles cases - reported by national authorities to WHO annually
measles vaccination coverage - WHO/UNICEF immunization coverage estimates 1990-2010, as of August 2011;
SIA activities: WHO/EPI supplementary immunization activities database

Date of slide: 19 September 2012
Distribution of confirmed measles cases by province, Ecuador, 2011-2012* (N=329)

First case: 7/15/2011 EW/28

Last case 7/12/2012 EW/28

Source: Ministry of Health, Ecuador: Preliminary data by EW 36/2012
Measles cases by age and vaccination status, Ecuador, 2012

Source: Immunization Program, Ministry of Health in Ecuador
* Preliminary data as of EW12/2012
Percent of municipalities in different levels of MMR1 vaccination coverage
Latin America, 2010

Recent measles outbreaks suggest that over-estimation of routine and SIAs coverage may have occurred?

Source: PAHO-WHO/UNICEF Joint Reporting Form, 2011
Measles Vaccination Strategy in France

- 1983 – measles vaccine introduced
- 1986 – MMR at 12m
- 1996 – MMR2 at 3-6 y
- 2005 elimination strategy:
  - MMR1 at 12m and MMR2 at 1-2 y
  - Catch-up 1d for 1980-91 birth cohorts
  - Catch-up 2d for all cohorts since 1991
  - Vaccination for health care workers recommended
- 2008 birth cohort by 2 years of age:
  - MMR1 = 89%
  - MMR2 = 61%
- 1994-1997 birth cohort:
  - MMR1 coverage 96% by 11 years
  - MMR2 coverage 85% by 15 years
Measles Outbreak in France, 2008-2011

N=22,178 cases in 3 epidemic waves incidence: 2.7, 5.2, 25.6 per 100,000
Distribution of MMR 1 coverage and measles cases, France

MMR1 Coverage at 24 months, 2003-2008

Measles cases and incidence, 2010
Reasons for the French outbreak

• **Historically and currently low coverage**
  – MCV1 and MCV2 <90%
  – Some parents choose not to vaccinate
  – Not lack of access for financial or socio-cultural reasons

• **Catch-up vaccination not fully implemented**
  – Bad reputation from Hepatitis B school-based catch-up
  – Controversy around H1N1 influenza programme
  – Health care workers resistant to vaccination
Annual measles notifications & vaccine coverage

England and Wales 1950-2000

Beginning of the "Wakefield effect"

Source: Public Health England
MMR coverage at two and five years of age, England 1997/8-2011/12
Annual confirmed cases of measles
England and Wales 1996 to 2012

Localised outbreaks in low coverage populations

Measles re-established
Distribution of confirmed measles cases in England by year of birth, Q1 2013
Reported measles cases and measles vaccination coverage, 1996-2013*, Malawi

1) SIA administrative coverage can be misleading
2) Routine coverage 70%-90% and medium quality SIAs are insufficient to eliminate measles

Data source:
measles cases - reported by national authorities to WHO annually; monthly reports used for 2013
measles vaccination coverage - WHO/UNICEF immunization coverage estimates 1990-2012, as of July 2013;
SIA activities: WHO/EPI supplementary immunization activities database

*2013 data through 10.09.2013
Confirmed measles cases by age, Malawi, 2010 (N=131,725)

Proportion of cases per age group

Adapted from Minetti, Emerg Infect Dis 2013; 19(2):202-9
I. Defining unreached/High Risk Communities (HRC)
   — EPI review 2010

II. Mapping HRC & assessing true coverage/risk through card checking
   — Measles SIAs - 2011

III. Targeting HRC for routine EPI improvements
   — Linked to introduction of MCV2 - 2012
1. Defining High Risk Communities – 2010

- Unimmunized infants concentrated in specific high risk communities *
  - Remote, mobile, ethnic & urban poor
  - Poorly identified by admin coverage
  - Community status needs assessment by immunization card checks

- HRC represent a risk for measles elimination & all other immunization goals

* EPI Review 2010
2. Mapping HRC during Measles SIA - 2011

- HRC identified in Health Centre SIA micro plans
  - Based on socio economic status (not coverage)
  - Include estimate of community health service access
- During SIA - card check of infants 0 – 23 mths in HRC
  - 32,500 infants in 2,200 villages checked
  - Classified as: up-to-date, not up –to-date, no immunization
- Comprehensive list of 1,600 high risk communities across Cambodia
3. Using MCV2 to improve HRC coverage
Impact - No measles cases* since late 2011

2012 National discard rate = 6.9/100,000 population

*Lab confirmed measles cases
Summary

• Prevention of measles outbreaks demands homogeneous very high coverage
• Measles outbreaks highlight gaps in coverage
• Pursuit of measles elimination drives service delivery towards universal access