



# Adolescent Immunization in Developing Countries: Obstacles and Opportunities

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# | Outline

- ✓ **Adolescent immunization schedules in developing countries**
- ✓ **Obstacles related to optimal implementation of vaccines**
- ✓ **Identify opportunities to address these obstacles**

# WHO recommendations for routine immunization

	Adolescents	Adults
Hepatitis B	3 doses (catch up)	
Td	1 boost 9-15yrs	
Rubella	1 dose (catch up)	1 dose (catch up)
HPV	2 doses (F)	3 doses (catch up)
<i>Certain Regions</i>		
Tick-borne Encephalitis	3 doses + boost	

# WHO recommendations for routine immunization

	Adolescents	Adults
<i>High-risk populations</i>		
Typhoid	Vi Ps 1 dose/ Ty21a 3-4 doses +boost	
Cholera	WC-rBS 2 doses +X 2 doses + boost / Shanchol & mORVAX : 2 doses + boost	
Mening C conj	2 doses + boost (catch up)	
Mening Quadri conj	1 dose (catch up)	
Hepatitis A	at least 1 dose	
Rabies	3 doses	
Dengue (CYD-TDV)	3 doses 9-45 yrs	
<i>Others IP with certain characteristics</i>		
Seasonal Influenzae	1 dose	Priority for pregnant women
varicella	2 doses	

# Obstacles of implementation

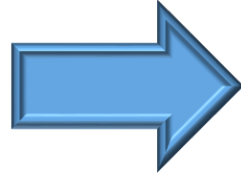
Population  
level

Practice level

Patient level

# Obstacles of implementation

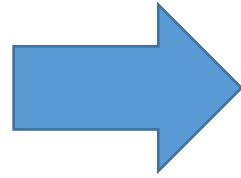
**Population  
level**



Social marketing  
Web-based education  
Antivax & Halal issues

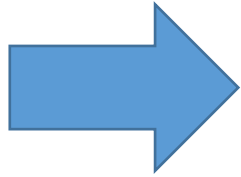
# Population level : obstacles & opportunity

**Social  
marketing**



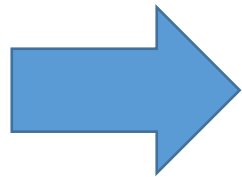
TV, Radio, Newspapers, Social  
media : benefits & safety  
Ministry of Health & Professional  
org

**Web-based  
education**



Created by MoH or professional  
organization or NGOs

**Antivax**



Ministry of Health (HPV)  
Religious Council  
Professional organization

# Opportunities to overcome antivax

## **1. Should we do battle with antivaccination activists?**

Antivaccination groups persist and attempts to silence them may amplify exposure to their messages

## **2. What is the best focus of vaccine advocacy?**

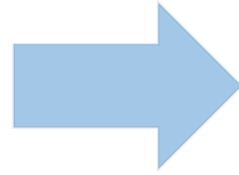
Best focus should be on addressing the causes of low coverage:

- a. who lack opportunity to vaccinate
- b. who lack acceptance of vaccination



# Obstacles of implementation

Population  
level

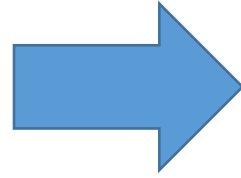


Social marketing (benefit & safety)  
Web-based education  
Antivax & Halal issues

**Practice level**

# Obstacles & opportunity at practice level

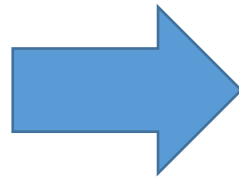
School base



Missed immunization

Less interested

Health facility  
based



Limited working hour

Cost efficient

Vaccine is not available in hospital

# Opportunity in School based delivery

- Delivery platform for vaccinating **large numbers of adolescents**
- May not be successful due to **suboptimal school attendance rates** → geographical location, socio-economic status and gender
- Ideally offer second opportunity for missed immunization

# Coverage achievements across delivery experiences of HPV vaccination in 45 LMIC

Characteristic	Final dose coverage <sup>2</sup> (number (%))			
	≥90%	70–89%	50–69%	Total
<b>School only</b>	8 (40)	11 (55)	1 (5)	20
<b>Health facility (+/- outreach)</b>	2 (40)	1 (20)	2 (40)	5
<b>School + health facility (+/- outreach)</b>	15 (43)	13 (37)	7 (20)	35
<b>All experiences</b>	25 (42)	25 (42)	10 (17)	60

Coverage of a 2 or 3 dose regimen (only 10 experiences had coverage data on 2-dose regimen)

Gallagher KE, et al. Lessons learnt from human papillomavirus (HPV) vaccination in 45 low-and-middle-income countries.

PLoS One. 2017 Jun 2;12(6):e0177773.

# Potential adolescent school-based health interventions

<b>Intervention category</b>	<b>Possible complimentary intervention</b>
<b>Screening</b>	<b>Vision screening</b> (if referral/glasses available & affordable) / psychosocial screening
<b>Provision of information</b>	<b>Reproductive and sexual health education;</b> HIV prevention, Life skill
<b>Commodity delivery</b>	<b>Anti-helminthic treatment</b> / Insecticide treated bed nets for malaria prevention / Iron and folic acid supplementation

# Opportunity in Health based delivery

- **Immunization service closes before school dismissed**

Extending working hour for immunization services

- **Cost-effectiveness vs coverage**

Minimum number of threshold for multidose vial vaccine should be omitted

- **Vaccine is not available/not covered by insurance in hospitals**

Changes in health care (Immunization) policy

# Outreach Programmes

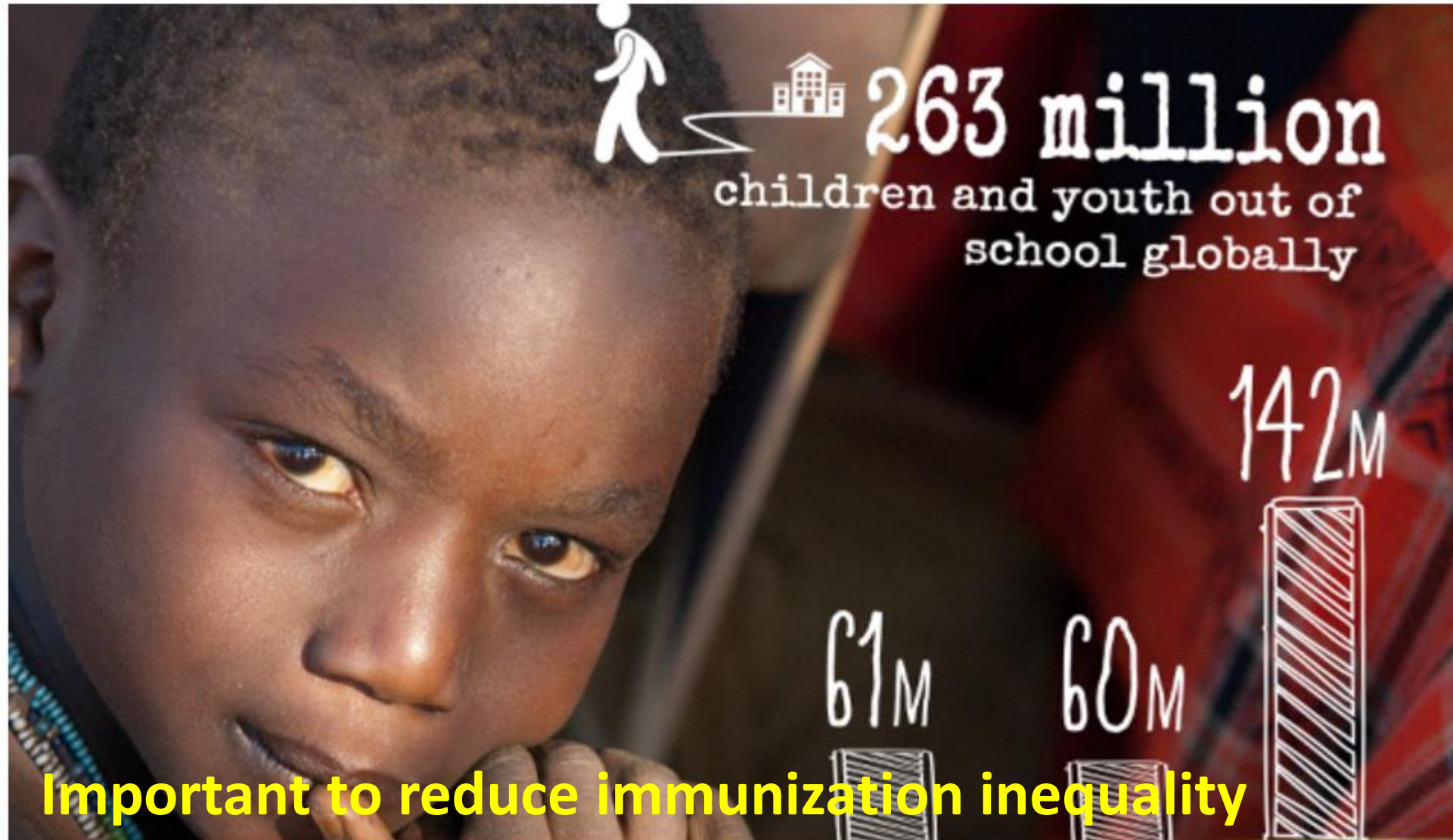
## Mobile unit

- To reach out-of-school adolescents
- Geographical obstacles

## Vaccine availability

- Lowering number of adolescent per vaccine vial

# Out-of-school children and adolescent globally



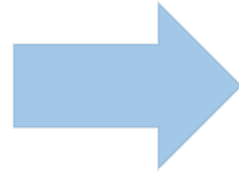


# Opportunity to immunize out-of-school adolescents

- (1) Identify and quantify** out-of-school adolescents eligible for vaccination,
- (2) Understand barriers** to vaccine access and acceptance,
- (3) Communicate effectively** with communities and eligible adolescent about vaccine,
- (4) Increase vaccine access** by creating opportunities for follow-up, outreach, and integrated health services.

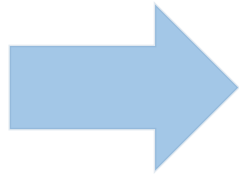
# Obstacles of implementation

Population level



Social marketing (Benefit & safety)  
Web-based education  
Antivax & Halal issues

Practice level



Enhance access  
School based immunization  
Health facility based

**Patient level**

# Patient level

## Vaccine hesitancy

- Education by professional organization/healthcare provider/religious leader

## Reminders

- Text message
- Postcard
- Email
- Phone call

# Opportunity to overcome vaccine hesitancy (1)

The interventions with largest observed increases (>25%) in vaccine uptake:

- 1) aimed to increase **vaccination knowledge and awareness**
- 2) engaged **religious or other influential leaders** to promote vaccination
- 3) improved **convenience and access** to vaccination
- 4) **directly targeted unvaccinated** or under-vaccinated populations
- 5) **mandated vaccinations or sanction** against non-vaccination






# Opportunity to overcome vaccine hesitancy (2)

## Dialogue-based interventions

- Involvement of **religious or traditional leaders** in low baseline uptake indicated a large, positive effect (RR 4.12 [3.99, 4.26])
- **Social media** interventions found a positive effect on uptake for MCV4/Tdap (RR 2.01 [1.39, 2.93])

# Vaccination reminders

## Impact of strategies on vaccination coverage

Study or Subgroup	log[Risk Ratio]	SE	Weight	Risk Ratio IV, Random, 95% CI	Risk Ratio IV, Random, 95% CI
<b>5.3.3 Reminders</b>					
Kempe 2012	0.4957	0.0954	7.7%	1.64 [1.36, 1.98]	
Stockwell 2012	0.7005	0.1904	6.6%	2.01 [1.39, 2.93]	
Suh 2012	0.3631	0.077	7.8%	1.44 [1.24, 1.67]	
Szilagyi 2013	0.3511	0.1064	7.6%	1.42 [1.15, 1.75]	
<b>Subtotal (95% CI)</b>			<b>29.6%</b>	<b>1.53 [1.37, 1.72]</b>	

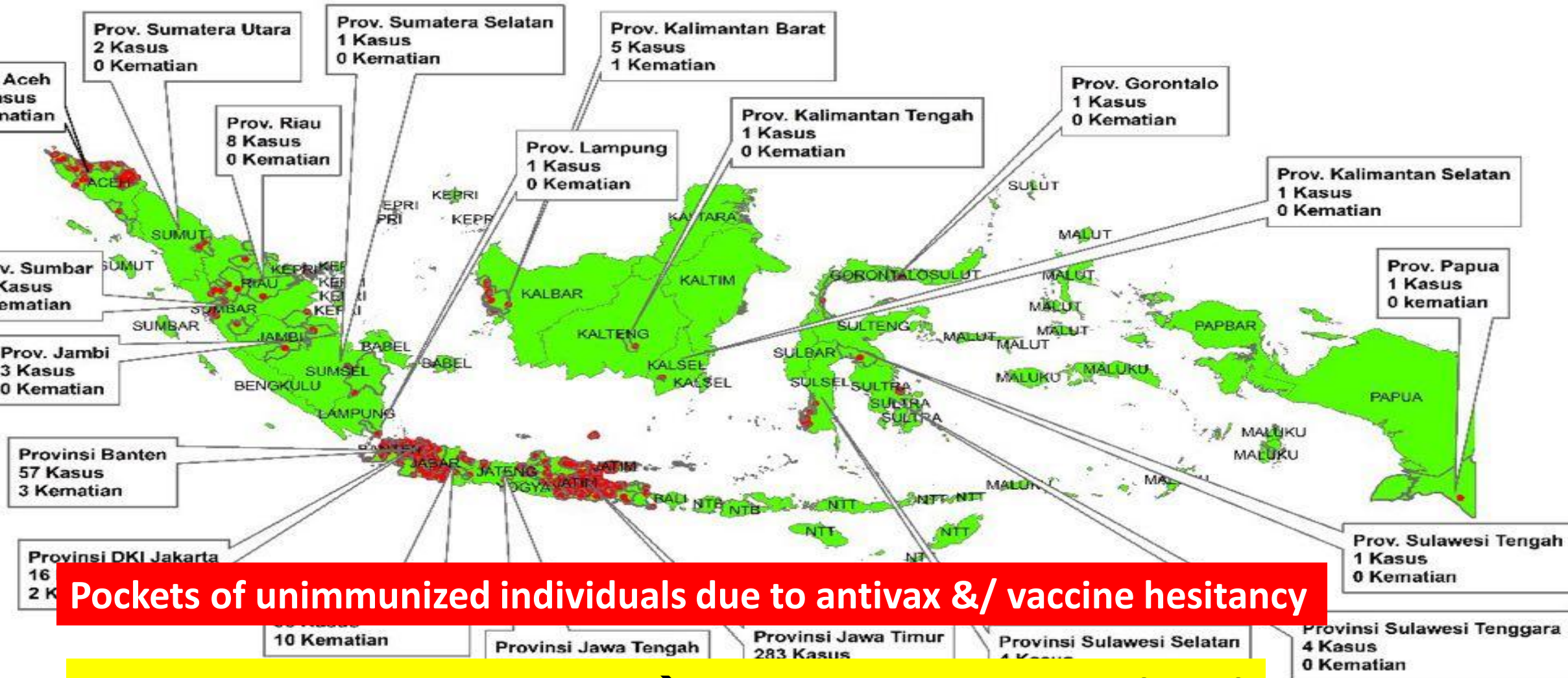
Heterogeneity:  $\tau^2 = 0.00$ ;  $\chi^2 = 3.77$ ,  $df = 3$  ( $P = 0.29$ );  $I^2 = 20\%$

Test for overall effect:  $Z = 7.33$  ( $P < 0.00001$ )

Heterogeneity:  $\tau^2 = 0.19$ ;  $\chi^2 = 527.86$ ,  $df = 6$  ( $P < 0.00001$ );  $I^2 = 99\%$

Test for overall effect:  $Z = 3.90$  ( $P < 0.0001$ )

# Diphtheria Outbreak in Indonesia 2017



**Pockets of unimmunized individuals due to antivax &/ vaccine hesitancy**

**2017 : diphtheria cases 954 → adolescent cases 239 (25%)**





# Wae Rebo : UNESCO Asia-Pacific Heritage Award 2012 winner



# Summary

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High adolescent immunization coverage may be achieved by taking the opportunities to overcome obstacles in:

- a. Population level by social marketing through collaboration with religious/community leader/all stakeholders to increase knowledge and awareness to reduce vaccine hesitancy and antivax
- b. Practice level by school-based, hospital-based and outreach program to reach optimal coverage
- c. Patient level by establishing rapport and trust, improving access and setting of reminder.

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