

Adolescent and adult immunization: Strategies and challenges



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Memorial Institute, Thailand

Disclosure (2015-2017)

- Prof. Terapong Tantawichien: has received support for
Travel for International Conference (Bionet, Siam Pharm)
Lectureships (GlaxoSmithKline, Pfizer, MSD, Roche
Thai Meiji, Siam Pharm, Sanofi Aventis, Bionet).
- Prof. Terapong Tantawichien: has received research funds from
Sanofi (*C. difficile* vaccine) 2016-18

Adult Immunization

Some adults assume that the vaccines they received as children will protect them for the rest of their lives.

Generally this is true, except that:

- **Some adults were never vaccinated as children.**
(for example, varicella vaccine, hepatitis B)
- **Scientific discoveries are always being made, bringing vaccines into our lives that were not around during our childhood.**
(for example, JE vaccine)
- **The immunity provided by some of the vaccines received in childhood begins to fade over time.**
(for example, outbreak of diphtheria in Thailand)
- **Adults become more susceptible to serious disease caused by common infections as they age.**
(for example, influenza, pneumococcus)

#VACCINESWORK

Vaccination protects health
at every stages of life

World Immunization Week 2017 (24-30 April 2017)

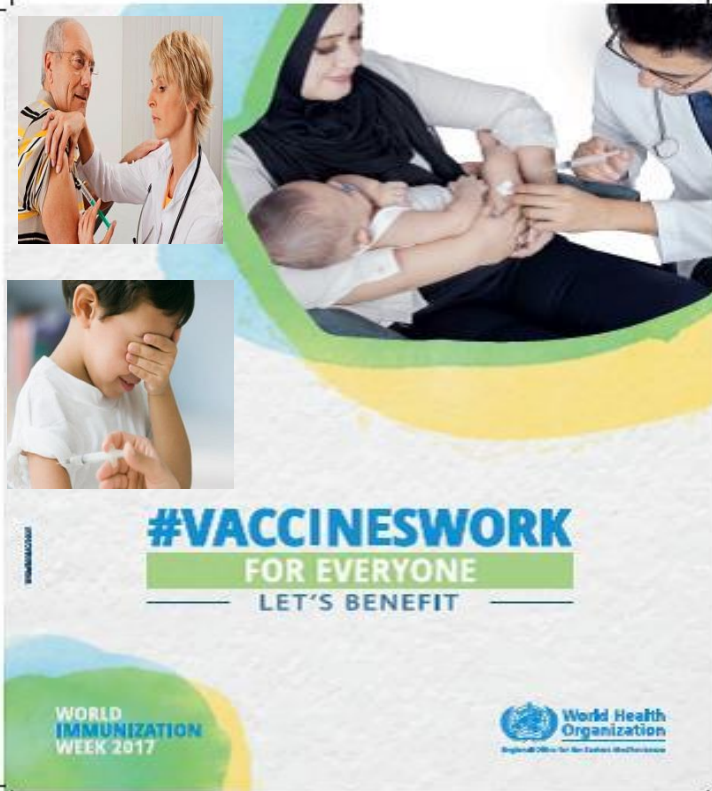
When **immunization**
rates are high, the wider
community is **protected**
including:

Infants who are
too young to
receive their vaccines.



Older adults
at risk of serious
diseases.

People who
take medication
that lowers their
immune systems.



To **fight** diseases

Adolescent and Adult Immunization

Recommendation depends on

Routine by Age:

Adolescent and adult immunization

Elderly immunization

Health status:

Pregnant women, MSM

Medical morbidity:

**Chronic kidney dis., cirrhosis, asthma, COPD,
DM, Cardiac dis., rheumatologic dis.**

Immunocompromised conditions:

**Postsplenectomy, HIV infection,
Steroid user, transplantation...**

Occupation: Health-care workers, oversea student, workers.....

Travel: Hajj, Africa, south or southeast Asia, south America..

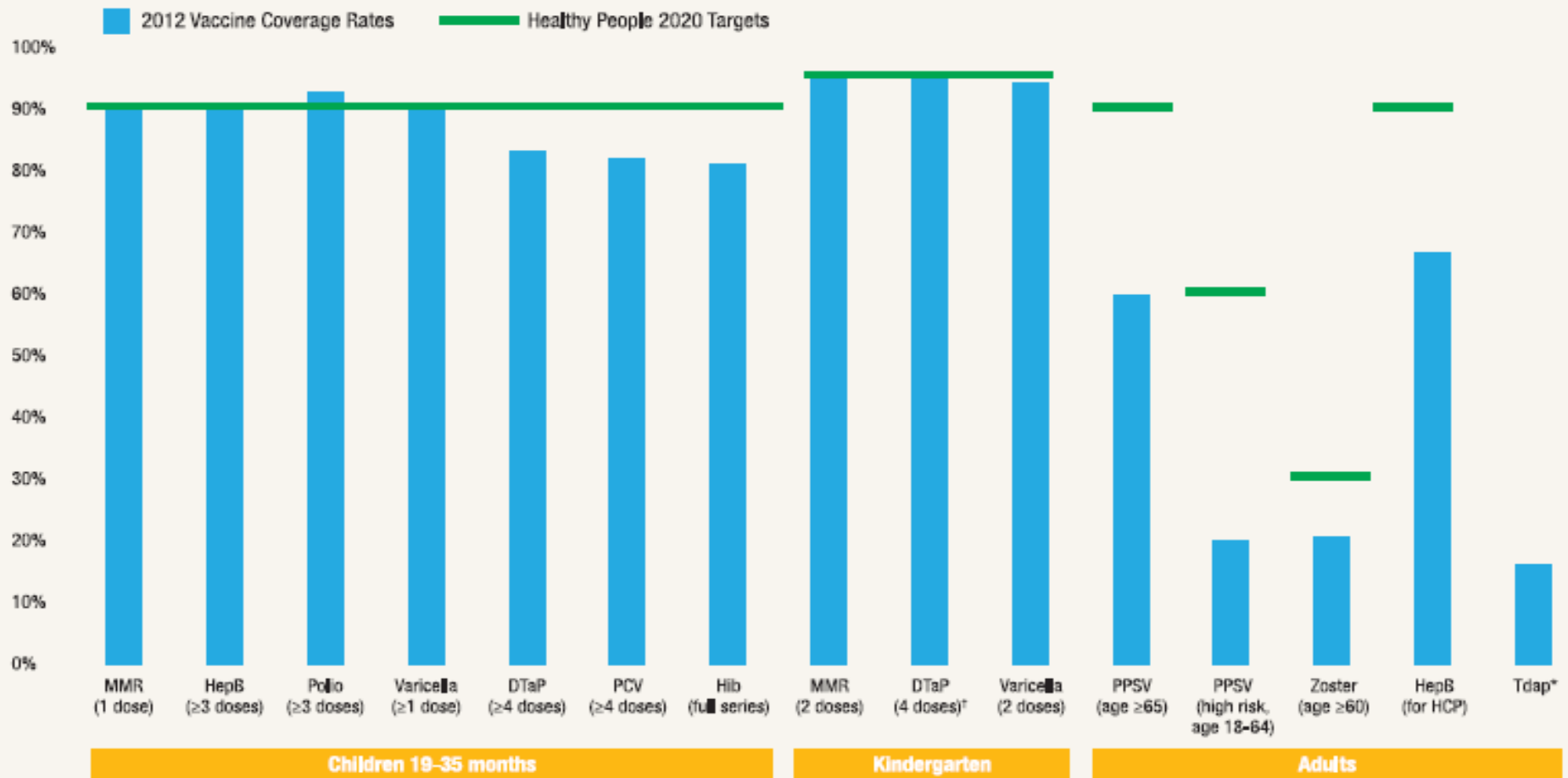
Factors determining the prior use of vaccine in adolescent and adult :

- **Burden of disease and targeted population**
 - Prevalence of disease/ rate of transmission
 - Morbidity/mortality of disease
- **Efficacy and effectiveness of vaccine**
- **Safety of vaccine**
- **Cost of vaccination (cost/effectiveness)**
- **Acceptance (awareness)**
 - ; both in medical profession/population
- **The availability of other preventive measures**
- **Supply of the vaccines**

Pediatricians called on to do their part to support adult immunization

Orenstein WA; APPNews April 2014

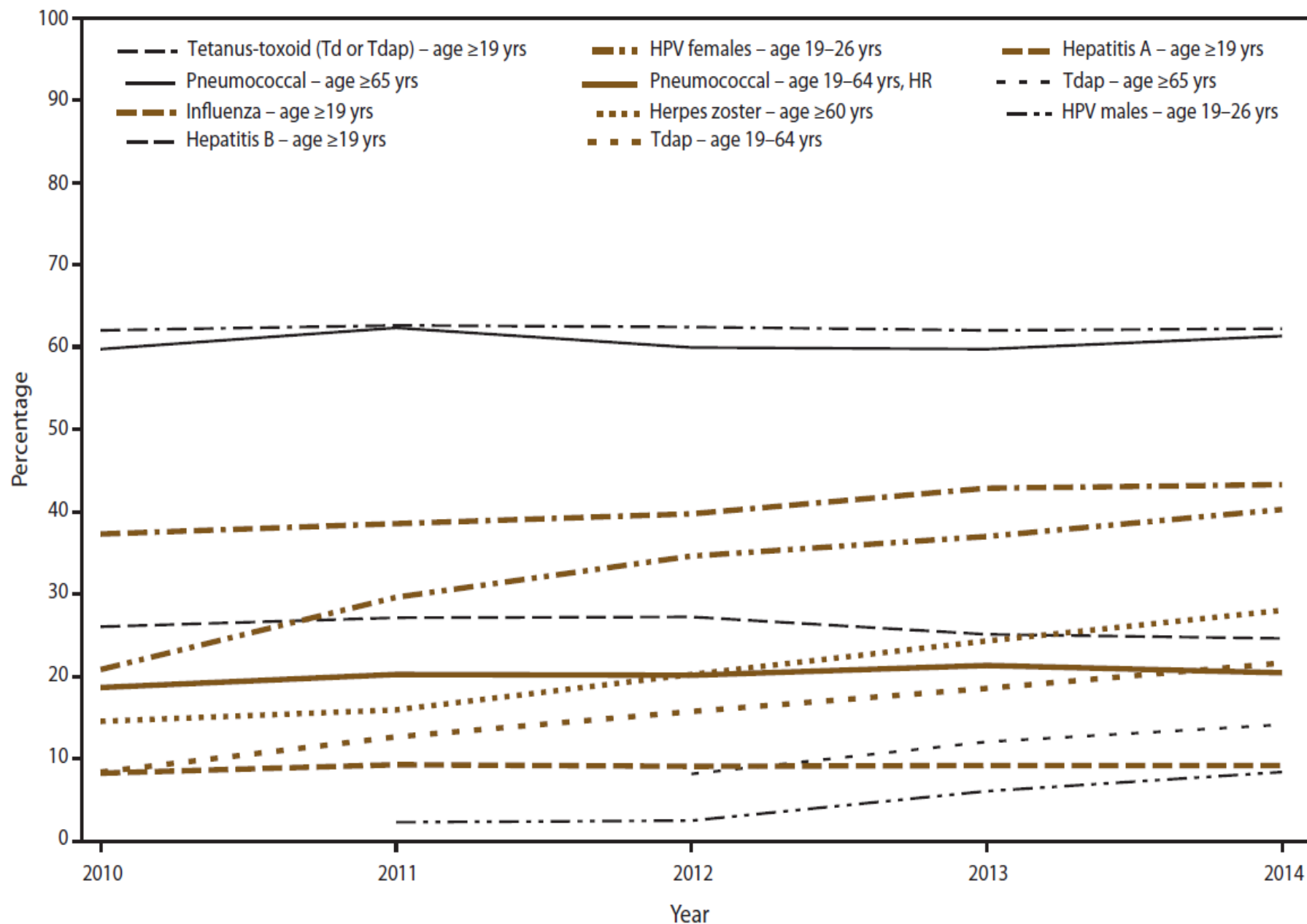
Childhood and adult vaccination coverage targets versus vaccine coverage rates



* The Healthy People 2020 Dtap vaccination coverage target for kindergarteners (10-11) is based on 4 doses of Dtap vaccine. This table reports compliance with local (state) regulations of 3, 4, or 5 doses of Dtap vaccine. Only 4 out of 51 awardees report <4 doses.

* No Healthy People 2020 adult target has been set for Tdap.

FIGURE 1. Estimated proportion of adults aged ≥ 19 years who received selected vaccines,* by age group and high-risk status[†] — National Health Interview Survey, United States, 2010–2014



The organization of the childhood and adult immunization enterprises is very different. Walter A. Orenstein; *AAP News* 2014;35;8

The childhood immunization program involves a universal schedule encompassing a limited age range and a relatively narrow network of provider types

The adult immunization is more complex:

- Wide variety of vaccines**

 - (adolescent, travel, pregnancy, elderly, risk factors..)

- Diverse target population**

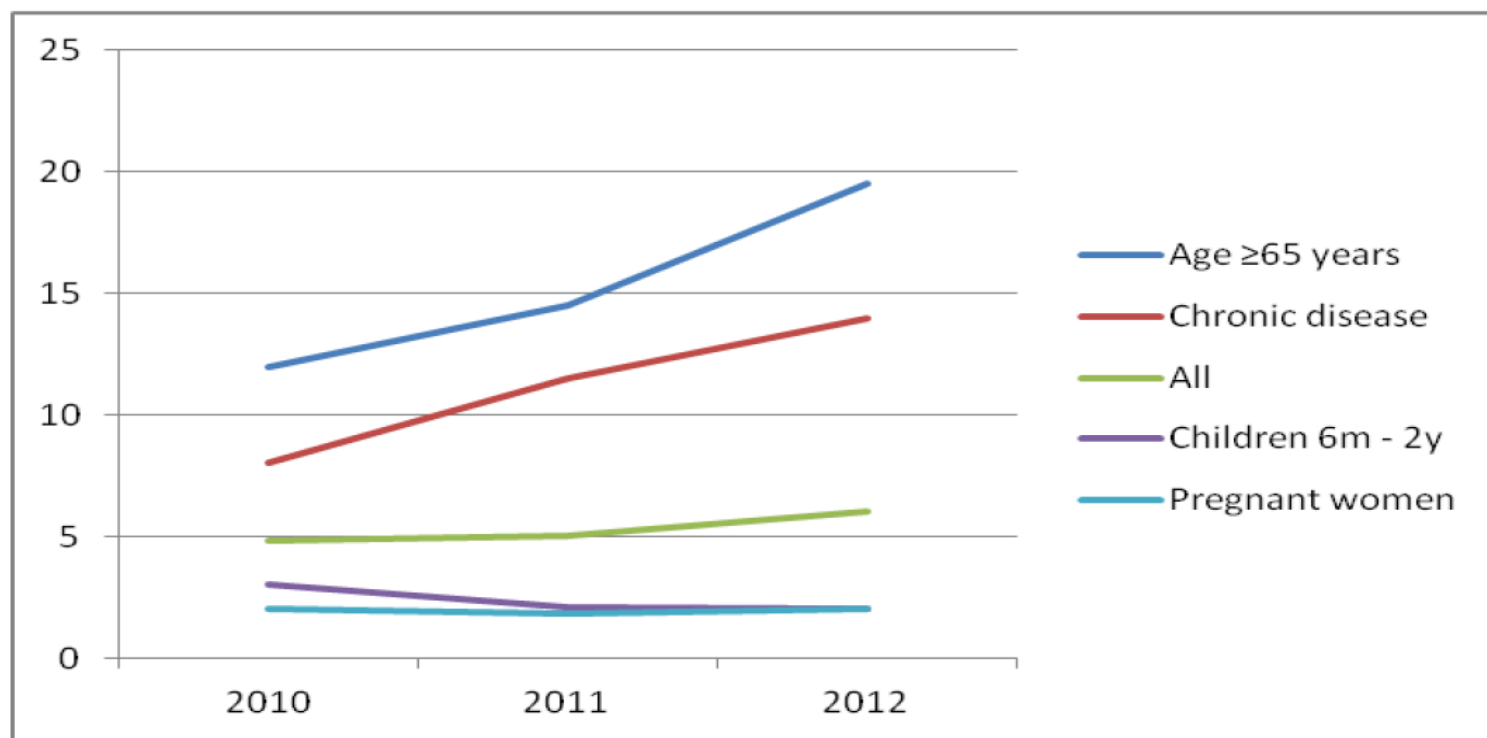
 - healthy young adults, adults and elderly people with chronic conditions, to those who are less likely to have a medical home and seek medical care in nontraditional settings.

- Diverse network of health-care providers**

 - (healthcare providers/healthcare settings).

Vaccine coverage by year and target group, Thailand 2010-2012

Vaccine. 2015 January 29; 33(5): 742–747.



Adapted from: Owusu JT *et al.* *Vaccine* 2015; 33(5):742-747.

From 2010 to 2012, 8.18 million influenza vaccines were publicly purchased : 77% vaccine doses to persons ≥65 years/ persons with chronic diseases, 19% to healthcare personnel/poultry cullers, 82,570 (1.1%) to children 6 months–2 years, 78,885 (1.1%) to obese persons, 26,481 (0.4%) to mentally disabled persons, 17,787 (0.2%) to pregnant women.

Barriers to adolescent and adult immunization

- **Research need:** burden dis., effectiveness, appropriate vaccine program
- **Lack of provider recommendations for immunization and concern about adverse events:**
- **Lack of access to, and utilization of, health-care services by adults:** spanning both traditional/nontraditional immunizers
- **Lack of public knowledge**
- **Financial impediments to vaccinations:**
out-of-pocket costs / cost-effectiveness
- **Lack of coordination of adult immunization activities and reminder or assessment systems :**
collaborating with stakeholders and register/assessment system
(national level, provider, company....)

Challenges of increasing adult immunization coverage rates in Asia-Pacific countries

- **Increased rate of adult Immunization**

- Provider's recommendation

- **Enhancing patient access to vaccination**

- Adequate Infrastructure to Support Adult Vaccination

- Adult immunization service

- School-based program

- Home-based visit

- Payment for Adult Vaccines and Vaccination

- Free/low price

- Improving community/patient demand

- People are educated

- **Provider- and healthcare system-directed interventions**

- Implementation of Quality Measures for adult Immunizations

- School entry requirements/ employee requirements,

- Standing order program

- Immunization Information Systems

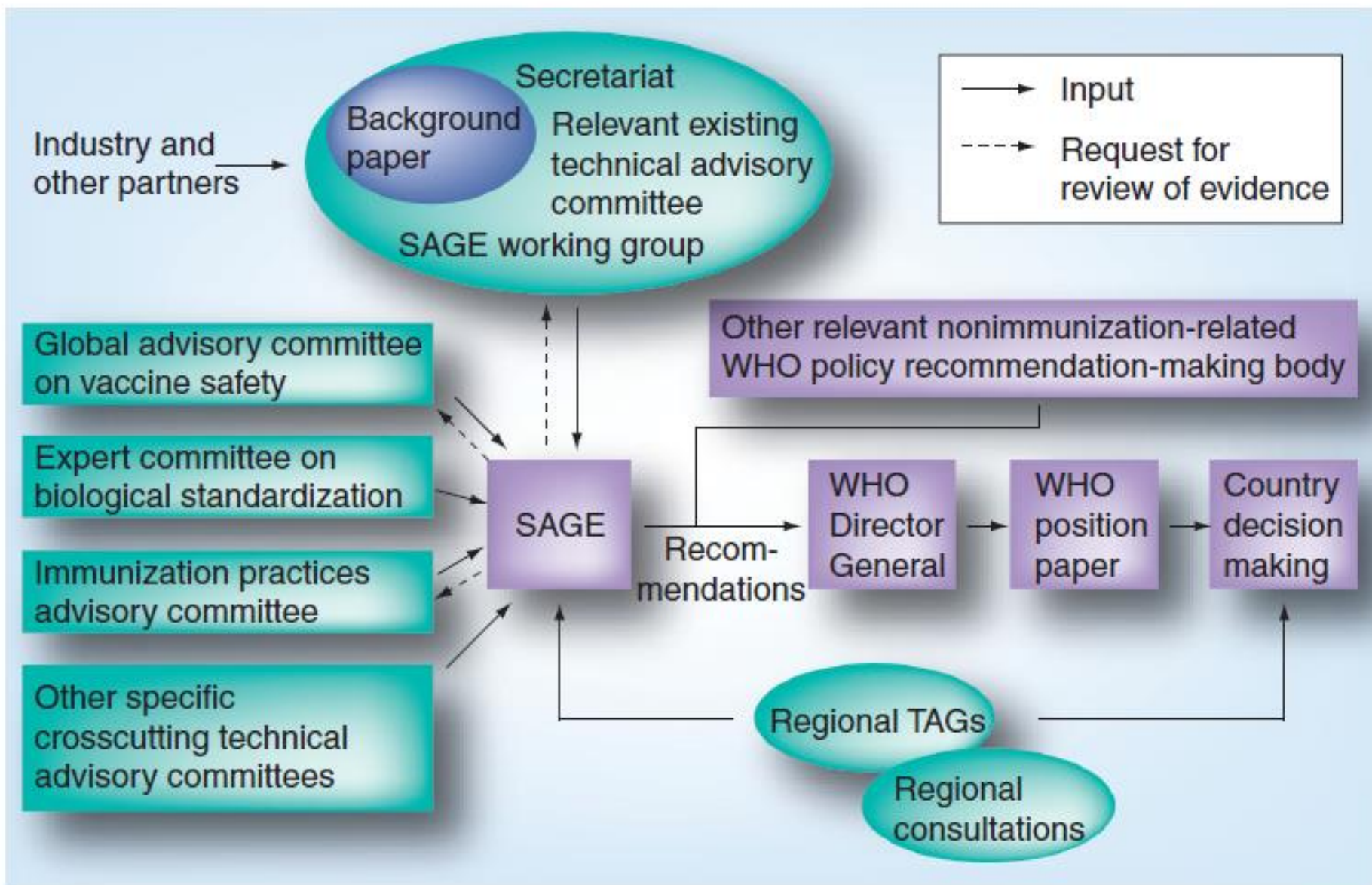


Figure 1. Pathways for WHO recommendations on vaccine use.

SAGE: Strategic Advisory Group of Experts; TAG: Technical Advisory Group.

RESEARCH ARTICLE

Open Access



What criteria do decision makers in Thailand use to set priorities for vaccine introduction?

Siriporn Pooripussarakul¹, Arthorn Riewpaiboon^{1*} , David Bishai², Charung Muangchana³ and Sripen Tantivess⁴

Adolescent and Adult Immunization

Recommendation depends on

Routine by Age:

Adolescent and adult immunization

Elderly immunization

Health status:

Pregnant women, MSM

Medical morbidity:

**Chronic kidney dis., cirrhosis, asthma, COPD,
DM, Cardiac dis., rheumatologic dis.**

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Steroid user, transplantation...**

Occupation: Health-care workers, oversea student,

Travel: Hajj, Africa, south or southeast Asia, south America..

**Recommended Adult Immunization Schedule ;
by vaccine and age group: The Royal College Physicians of Thailand (RCPT), Thailand 2014**

Vaccines ¹	Age groups (years)		
	19 – 26 years	27 – 64 years	≥ 65 years
Tetanus, diphtheria, pertussis vaccine (Td or TT or Tdap) ²	Boost with 1 dose of Td (or TT) every 10 years		
	Substitute one-time of Td (or TT) with Tdap ³		
Varicella vaccine ⁴	2 doses (consider serological test before vaccination)		
Measles, mumps, rubella (MMR) vaccine ⁵	2 doses		
Human Papillomavirus (HPV) vaccine	3 doses (female) ⁶		
	3 doses (male) ⁷		
Inactivated influenza vaccine ⁸	1 dose annually ⁹		1 dose annually
Hepatitis A vaccine ¹⁰	2 doses (consider serological test before vaccination)		
Hepatitis B vaccine ¹¹	3 doses (consider serological test before vaccination)		
23-valent pneumococcal polysaccharide vaccine ¹²	1 dose (with re-vaccination)		1 dose
13-valent pneumococcal conjugate vaccine ¹³	1 dose	1 dose (age ≥ 50 years)	
Meningococcal polysaccharide or conjugate vaccine ¹⁴	For high risk persons ¹⁵		
Zoster vaccine ¹⁶			1 dose (age ≥ 60 years)

Recommended Adult Immunization Schedule ; by vaccine and age group: The Royal College Physicians of Thailand (RCPT), Thailand 2014

Vaccines*	Conditions						
	Pregnancy	Health-care workers	Heart disease, COPD, chronic kidney disease, cirrhosis, diabetes	Anatomic or functional asplenia	HIV Infection (CD4+>200 /uL)	Severe Immune suppressive state	Organ/ bone marrow transplantation
Tetanus, diphtheria, pertussis vaccine (Td or TT or Tdap)	1-2 doses of Td (or Td)*	Boost with 1 dose of Td (or TT) every 10 years (substitute one-time of Tdap)	Boost with 1 dose of Td (or TT) every 10 years				
	1 dose of Tdap for pregnancy/ post-partum period*		Substitute one time of Td (or TT) with Tdap				
Varicella vaccine	Contraindication	2 doses (consider serological test before vaccination)			Contraindication (except patient who has CD4+>500/uL)	Contraindication	Contraindication
Measles, mumps, rubella (MMR) vaccine	Contraindication	2 doses*			Contraindication	Contraindication	Contraindication
Human Papillomavirus (HPV) vaccine		3 doses through age 26 years (female)					
		3 doses through age 26 years (male)					
Inactivated Influenza vaccine	1 dose at 2 nd or 3 rd trimester of pregnancy	1 dose annually					
Hepatitis A vaccine							2 doses (depend on serological results)
Hepatitis B vaccine		3 doses (consider serological test before vaccination)					3 doses (depend on serological results)
23-valent pneumococcal polysaccharide vaccine			1 dose	1 dose with revaccination	1 dose with revaccination		1 dose with revaccination
13-valent pneumococcal conjugate vaccine			1 dose	1 dose	1 dose		1 dose
Meningococcal polysaccharide or conjugate vaccine							
Zoster vaccine	Contraindication				Contraindication		Contraindication

Every provider of care to adults has a responsibility to assess, recommend, administer (or refer for administration to an immunizing provider), and document adult vaccinations

Barriers :

- **Research need:**

Burden dis., effectiveness, appropriate vaccine program

- **Lack of provider recommendations for immunization and concern about adverse events:**

Education, limited time during the medical visit, providers' knowledge, attitudes, practice infrastructure regarding adult vaccination, report system

Table 1. Estimated Number of Influenza-Related Deaths per 100,000 Population, by Age Group, Thailand, 2005–2009^a

Age Group, years	Influenza A(H1N1)		Influenza A(H3N2)		Influenza B		Total Influenza A		Total Influenza A and B	
	Mean	95% CrI	Mean	95% CrI	Mean	95% CrI	Mean	95% CrI	Mean	95% CrI
All ages	2.6	0.8, 5.1	1.6	–1.7, 5.4	1.9	–3.5, 6.9	4.2	–0.2, 9.2	6.1	0.5, 12.4
≤17	0.0	–0.8, 0.8	0.6	–0.4, 1.6	–0.4	–2.0, 1.3	0.6	–0.8, 2.1	0.1	–0.4, 0.6
18–59	1.4	0.3, 2.7	1.4	–0.4, 3.1	–1.7	–4.0, 0.6	3.0	0.5, 5.6	1.1	–1.7, 4.0
≥60	28.1	11.1, 45.9	13.0	–7.5, 34.5	26.9	–7.7, 62.2	41.0	13.7, 69.2	68.0	27.2, 108.1

Abbreviation: CrI, credible interval.

^a Estimates were obtained by using the model adjusting for meteorological data and allowing for annual variation in the association between type-specific influenza activity measures and mortality using a random-effects model.

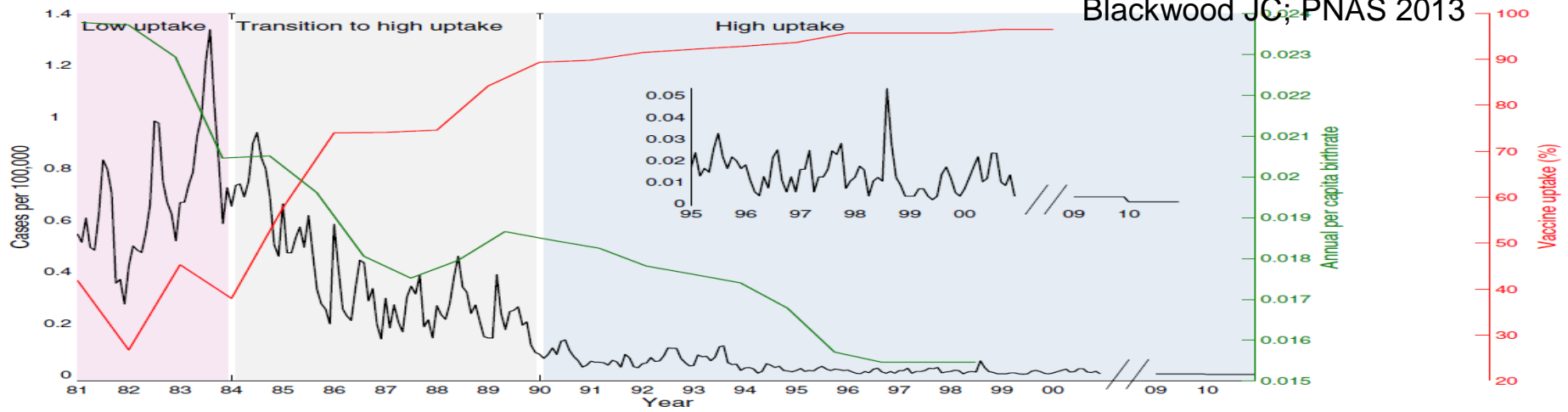
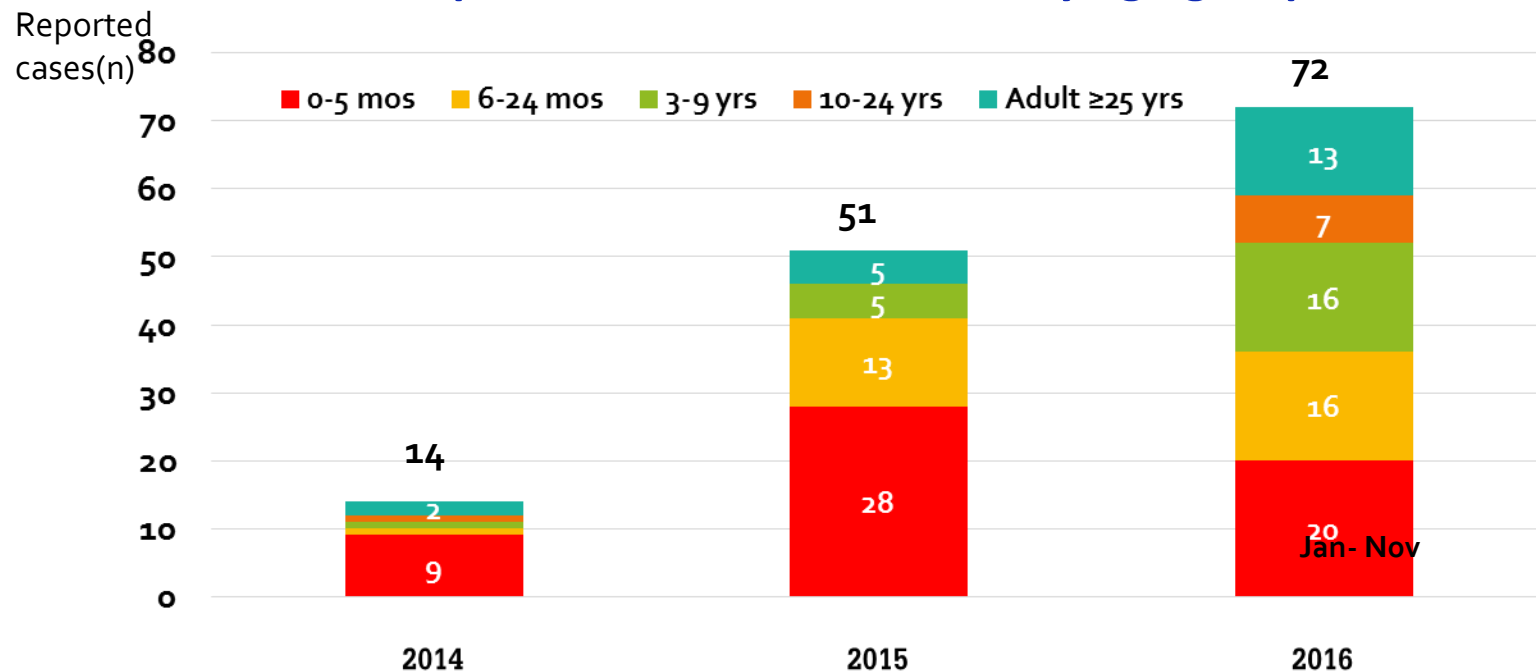


Fig. 1. Time series of monthly pertussis incidence per 100,000 individuals (black), annual vaccine uptake (red), and the annual per capita birth rate (green) in Thailand. (Inset) Incidence data from 1995–2010 at a finer resolution. The background shading represents three distinct vaccine eras: low vaccine uptake followed by a steep transition to high uptake, which subsequently remains at high levels.

Incidence of pertussis case in Thailand by age group in 2014-2016



Adult Vaccines: Efficacy

Vaccine	CYD-TDV	Tdap (pertussis)	Influenza	PCV-13	Zoster
Age group	9-16 years (Immune Bridging)	> 11 years	≥65 years	≥ 65 years	≥ 60 years
Efficacy	65%	70%	50-70%	CAP=45%	HZ= 48%
	Hospitalization = 80% Severe dengue= 92%			IPD=75%	PHN= 64%
Effectiveness	- Indirect effect ?	53% Prevent pertussis in infant	30-45% But prevent 55- 88% out-patient care, hospitalization, CAP....	Herd immunity?	HZ= 48% PHN= 59%

Pregnancy and Influenza Vaccination

- **Benefits of maternal vaccination**

Double protection for mom and baby-

Prevent severe illness in pregnant woman

Decreased complications in pregnancy

Prevent illness in baby < 6months baby

- **Reports of safety of influenza vaccines in pregnancy**

No fetal, perinatal or maternal serious adverse reactions were reported to be related to influenza vaccine given to pregnant women in their third trimester.

There was no statistically significant difference between influenza and control vaccine recipients regarding minor local systemic side effects, local pain and fever as well as regarding the numbers of death or hospitalization.



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Cost and Effectiveness Evaluation of Prophylactic HPV Vaccine in Developing Countries

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Adolescent and Adult Immunization

Improve immunization rates in specific risk groups

Routine by Age:

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Elderly immunization

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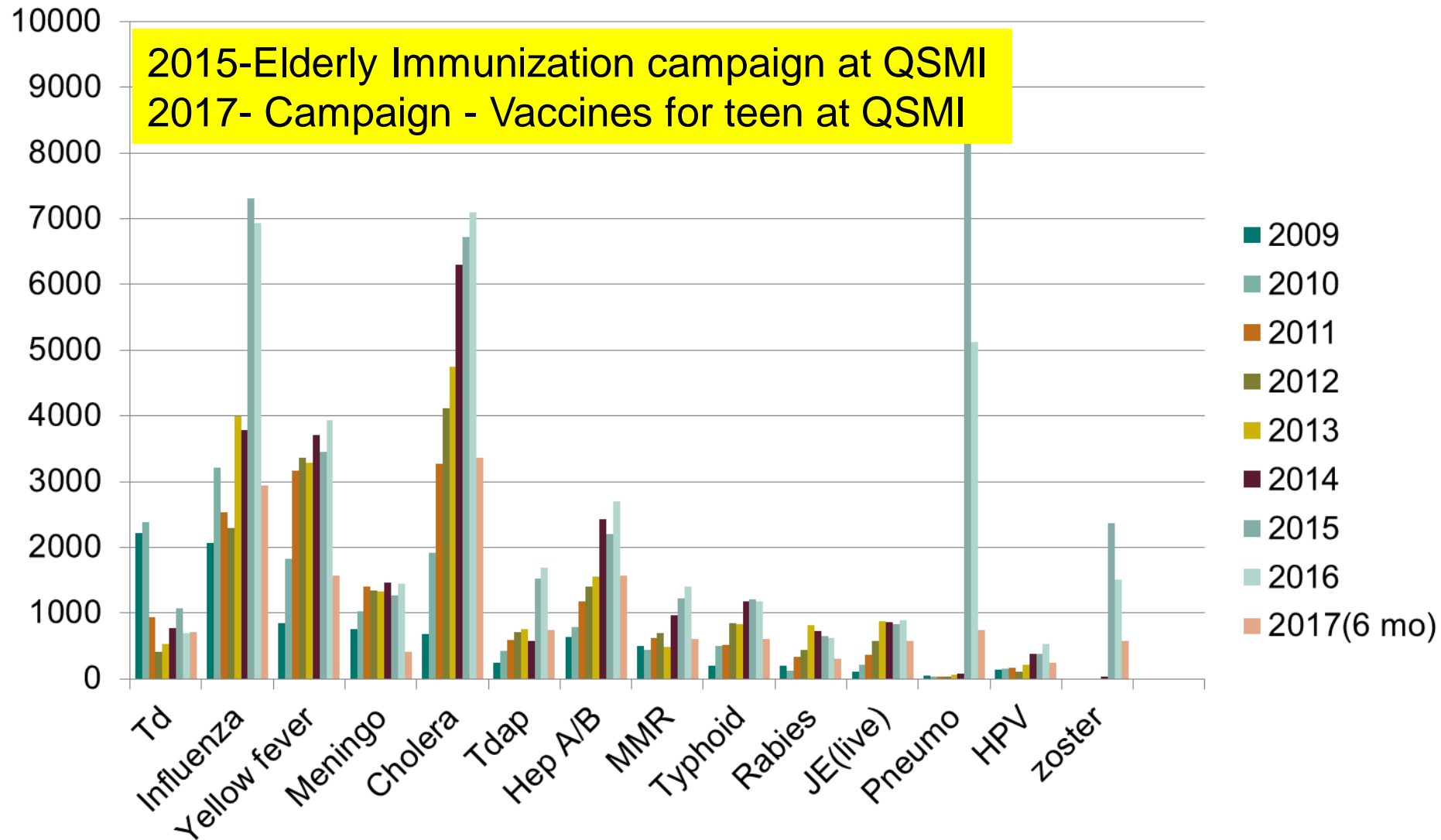
- Standing order program

- Immunization Information Systems

Travel and Adult Immunization Clinic at Queen Saovabha Memorial Institute, The Thai Red Cross Society, Bangkok, Thailand (2009)

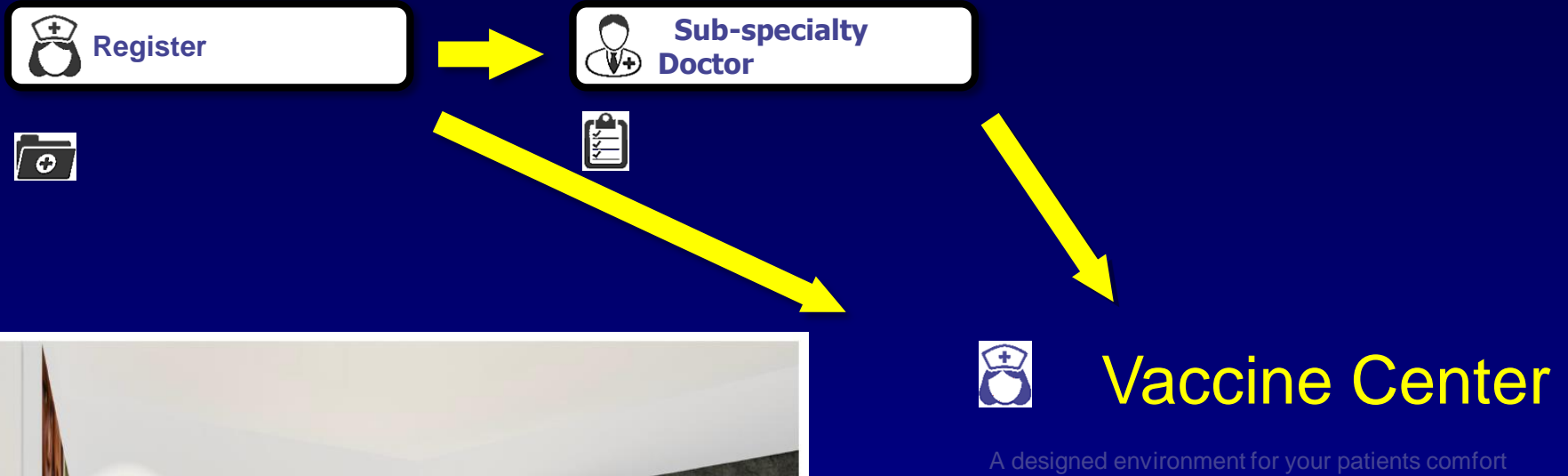


Travel and Adult Immunization Clinic at Queen Saovabha Memorial Institute (QSMI), Thai Red Cross Society Bangkok, Thailand (2009-2017)





Adult Vaccine Center in Private Hospital Or Public Hospital



Vaccine Center

A designed environment for your patients comfort



Community-based vaccination

School-based vaccination program for adolescent



โครงการรณรงค์ให้วัคซีนป้องกันโรคโควิดและหัด
เดือยพระตำหนักดินแดนพรหมพรรัตนราชสุธารา สำนักรับราชการในโอกาสฉลองพระชนมายุ 5 รอบ 2 เมษายน 2558
โดย สำนักอนามัย กรุงเทพมหานคร

โครงการรณรงค์ให้วัคซีนป้องกันโรคโควิดและหัด
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โควิด โรคร้าย ผู้ใหญ่ ก็เป็นได้
ผู้ที่มีอายุ 20-50 ปี ทุกคน
รับวัคซีนฟรี
ระหว่างเดือนมกราคม-เมษายน 2558
ที่สถานบริการสาธารณสุขของรัฐใกล้บ้าน

ทำไมต้องฉีด

- ผู้ที่ไม่เคยมีภูมิคุ้มกันมาก่อนอาจป่วยรุนแรงและเสียชีวิตได้
- ผู้ที่เคยได้รับวัคซีนแล้วจำเป็นต้องได้รับเข็ม เพื่อกระตุ้นภูมิคุ้มกันให้สูงขึ้นและรับที่ป้องกันโรคได้

สุขภาพดี เริ่มต้นที่ 1422 รับวัคซีนเร็ว ปลอดภัยกับ ป้องกันโรค

สภ. 11 นครศรีธรรมราช
กรมควบคุมโรค กระทรวงสาธารณสุข





สภากาชาดไทย
The Thai Red Cross Society

สถานเสาวภา สภากาชาดไทย
Queen Saovabha Memorial Institute

หน้าแรก ลอนดู ผลิตภัณฑ์ บริการ ฟาร์มม้า งานวิชาการ อินทราเน็ต ติดต่อเรา เกี่ยวกับเรา

TH EN



เข้าสู่ระบบอินทราเน็ต

รหัสผู้ใช้:
รหัสผ่าน:

ลืมรหัสผ่าน ?

ค้นหา

คำค้นหา:

บริการต่างๆ

- ▶ สวนงู
- ▶ คลินิกชันสูตรและวินิจฉัยโรคพิษสุนัขบ้าในสัตว์
- ▶ คลินิกชันสูตรและวินิจฉัยโรคพิษสุนัขบ้าในสัตว์

คลินิกเสริมสร้างภูมิคุ้มกันและอายุรศาสตร์การท่องเที่ยว

- แนะนำคลินิก
- บุคลากรประจำคลินิก
- งานบริการที่คลินิก
- ขั้นตอนการรับบริการ
- รายการวัคซีนที่คลินิก
- สอบถามเพิ่มเติม
- แผนที่คลินิก
- คำถามที่พบบ่อย

ความรู้เสริมภูมิคุ้มกันและอายุรศาสตร์การท่องเที่ยว

■ แนะนำคลินิก

ในโลกปัจจุบันการเดินทางไปมาระหว่างประเทศ มีความถี่มากขึ้น การศึกษา หรือกิจกรรมอื่นๆมากขึ้น ซึ่งในแต่ละประเทศเหล่านี้ได้ก่อให้เกิดปัจจัยเสี่ยงด้านสุขภาพของผู้เดินทางอย่างรวดเร็วเช่นกัน ประชาชนทั่วไปได้รับข่าวสารและมีความป้องกันโรค

ดังนั้นทางสถานเสาวภา สภากาชาดไทย เล็งเห็นความสำคัญของการท่องเที่ยว มีบริการฉีดวัคซีนป้องกันโรคต่าง ๆ ค่าปรึกษาเกี่ยวกับวัคซีนที่จำเป็นต้องได้รับก่อนการเดินทางก่อนการเดินทางและการปฏิบัติตัว ตลอดจนข้อพึงระวังหลัง

Travel and Adult Immunization

สถานเสาวภา สภากาชาดไทย

บริการฉีดวัคซีนป้องกันโรคต่าง ๆ

บริการฉีดวัคซีนป้องกันโรคต่าง ๆ

บริการฉีดวัคซีนป้องกันโรคต่าง ๆ

สภากาชาดไทย

คลินิกชันสูตรและวินิจฉัยโรคพิษสุนัขบ้า สภากาชาดไทย

Mammal Bite and Rabies Prevention

เวชปฏิบัติในการดูแลรักษาผู้ป่วยที่ถูกสัตว์กัดและกัด

และการป้องกันโรคพิษสุนัขบ้า

บริการชันสูตรและวินิจฉัยโรคพิษสุนัขบ้า

บริการชันสูตรและวินิจฉัยโรคพิษสุนัขบ้า

Vaccine-hesitancy

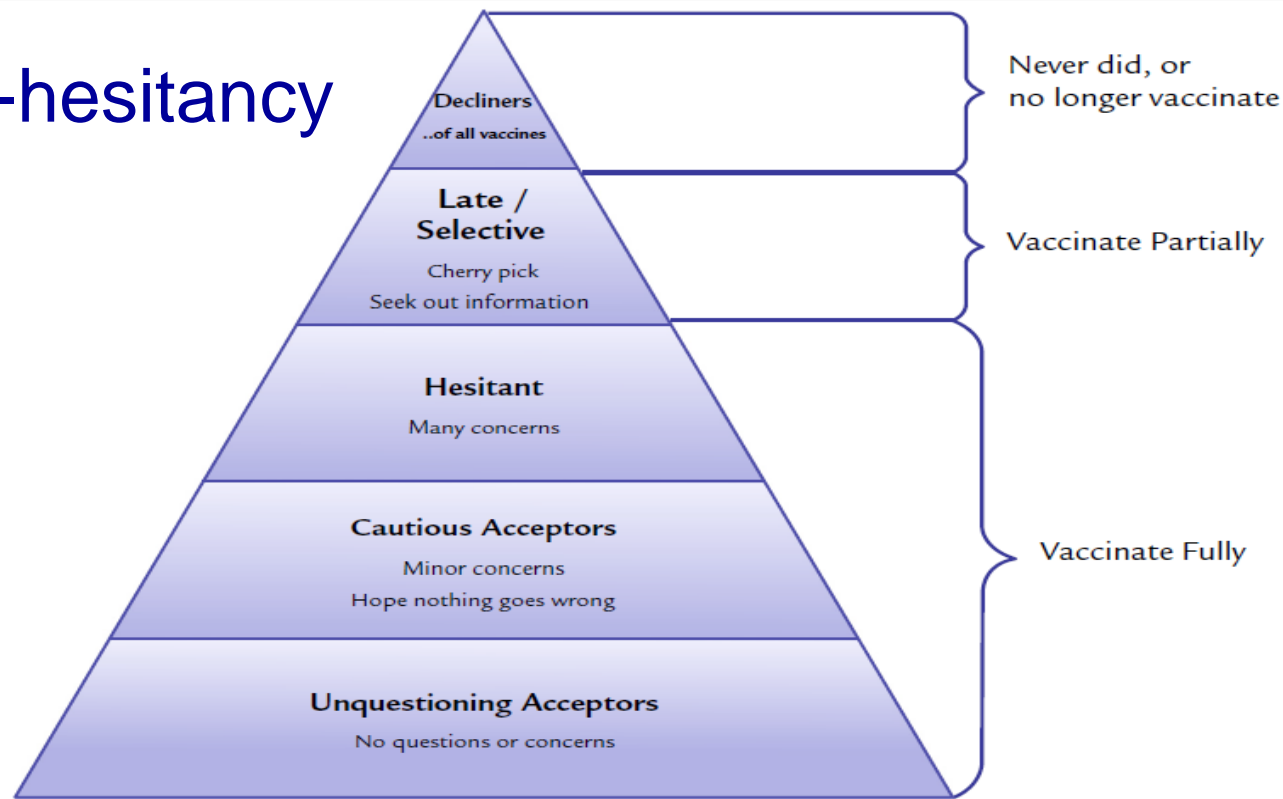


Figure 1. Vaccine acceptance spectrum. From: Leask, J. (2015, May 12). Improving communication about vaccination – “SARAH.” [Blog post]. <https://julieleask.wordpress.com/2015/05/12/improving-communication-about-vaccination-sarah/>. Accessed 16 May 2017.

Anti-vaccine group

Tafari S; Vaccine 32 (2014) 4860–4865

Anti-vaccination ideology in the 19th and 20th centuries:

- vaccines cause idiopathic illness
- vaccines as poisonous chemical cocktails
- vaccine immunity is temporary
- an alternative healthy lifestyle, personal hygiene and diet stop diseases.

Challenges of increasing adult immunization coverage rates in Asia-Pacific countries

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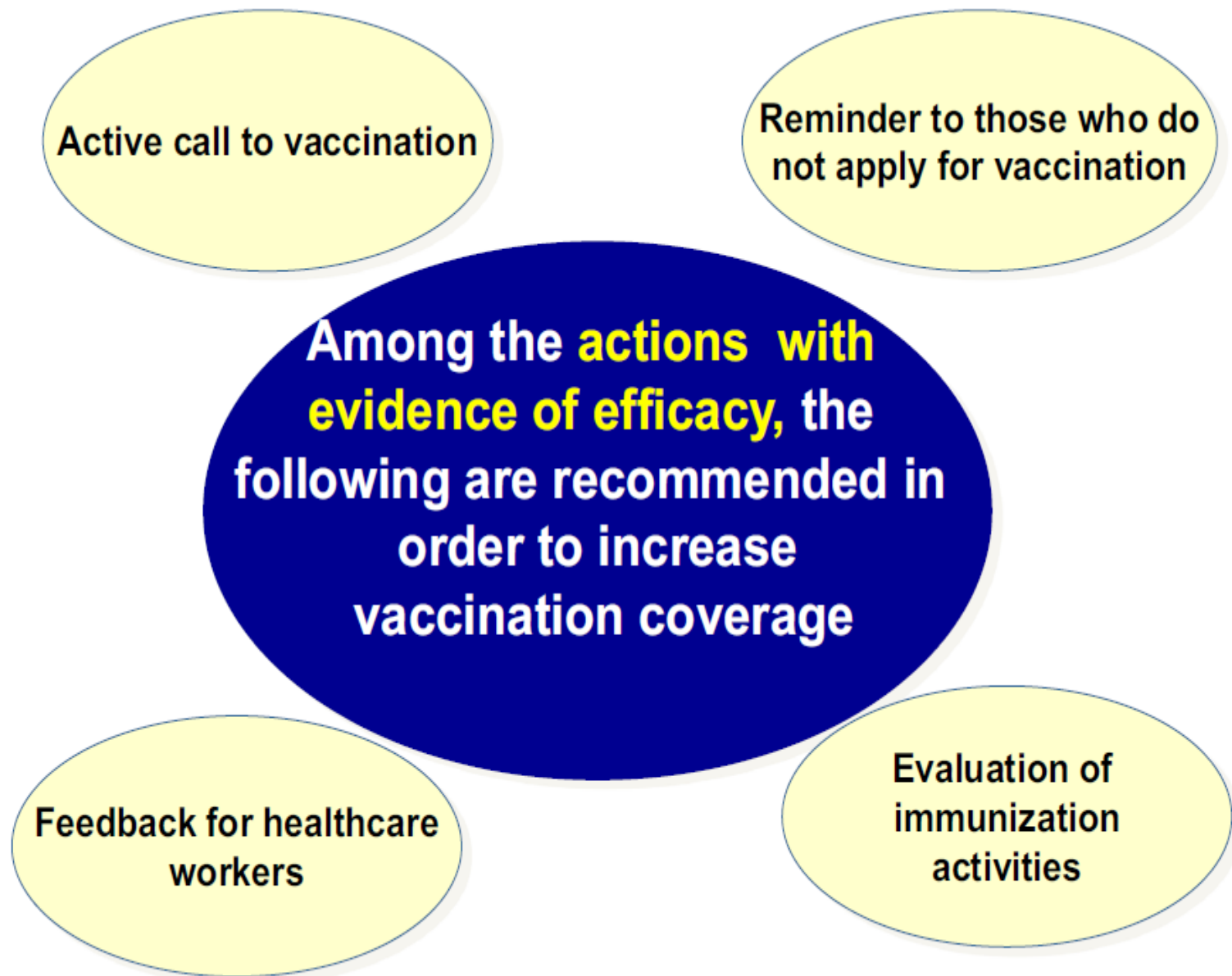


Fig. 1. Actions with evidence of efficacy to increase vaccination coverage. , Source:[102] adapted.

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21st century vaccines for adults

- Maternal immunization to protect newborns
Pertussis, Strep gr B, RSV
- Vaccination for adolescent/ ageing
Pertussis, dengue, pneumococcus, H. zoster
- Vaccination for adults with chronic diseases
Low usage of vaccines
- Vaccination for immunosuppressive hosts
Pre-immunization, circle of protection
- Vaccination against health-care associated infections
New vaccine- *C. dif.*, Staphylacocci, *Pseudomonas aeruginosa*
- New vaccines/ new adjuvants/ new route of vaccination
Live-attenuated, recombinant, plant-derived, combination adjuvant,...
- Vaccines against new emerging infectious diseases
Ebola, ZKV,.....
- Strategies of adult vaccination and vaccine hesitancy
Adult program, anti-vaccine group,....



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Thank you

