An overview of the Partnership for Influenza Vaccine Introduction and it's progress in Asia.

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PIVI GOALS

PIVI is an innovative public/private partnership between Ministries of Health, corporate partners, and technical agencies to:

- Create sustainable, routine, seasonal influenza vaccination programs in low- and middle-income countries
- Build the immunization infrastructure, capacity and vaccine delivery systems required for future influenza pandemics and other infectious disease epidemics

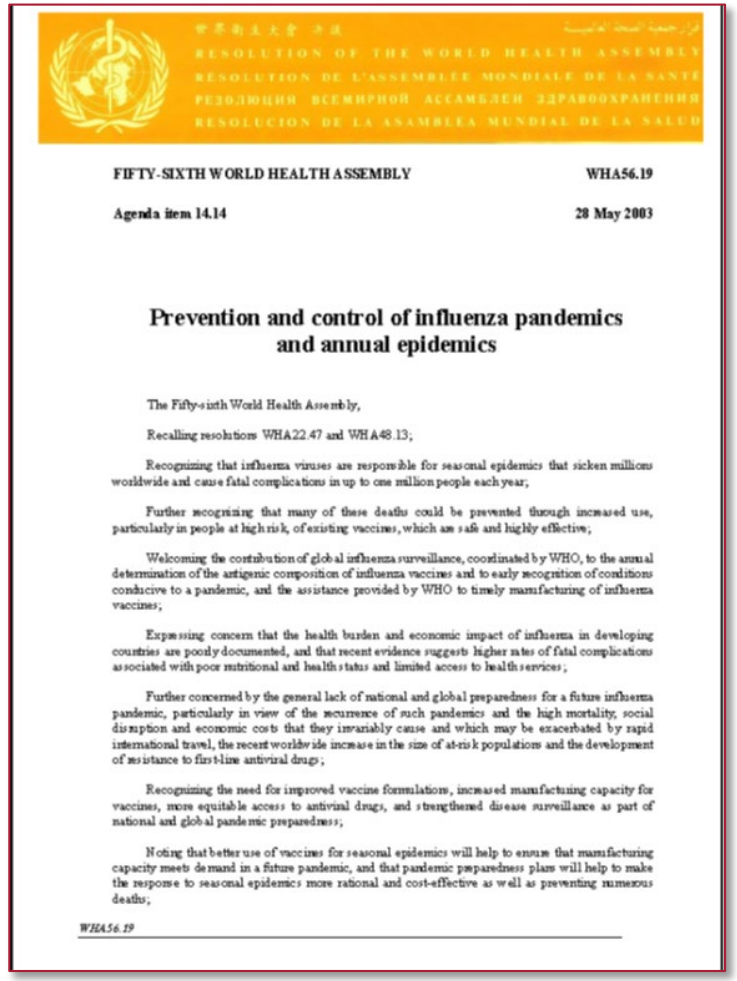
Assumptions underlying PIVI's pandemic planning goal

- Influenza is the only infectious disease that we are certain will cause another pandemic
- Effective response to a flu pandemic will include timely, national vaccination programs
- Planning and exercising the plans for pandemic vaccination is critical
- The best solution to planning and exercising vaccine preparedness is through conducting annual seasonal influenza vaccination programs
- Influenza vaccination capabilities will benefit other vaccine responses to epidemic diseases (e.g. Ebola, MERS)

Seasonal programs as a foundation for pandemic response

WHA56.19 (2003)

- Member States should establish and implement strategies to increase influenza vaccination coverage of all people at high risk.
- Urged members to develop pandemic plans



RESOLUTION OF THE WORLD HEALTH ASSEMBLY
RESOLUTION DE L'ASSEMBLÉE MONDIALE DE LA SANTÉ
РЕЗОЛЮЦИЯ ВСЕМИРНОЙ АССАМБЛЕИ ЗДРАВООХРАНЕНИЯ
RESOLUCIÓN DE LA ASAMBLEA MUNDIAL DE LA SALUD

FIFTY-SIXTH WORLD HEALTH ASSEMBLY — WHA56.19

Agenda item 14.14 — 28 May 2003

Prevention and control of influenza pandemics and annual epidemics

The Fifty-sixth World Health Assembly,

Recalling resolutions WHA22.47 and WHA48.13;

Recognizing that influenza viruses are responsible for seasonal epidemics that sicken millions worldwide and cause fatal complications in up to one million people each year;

Further recognizing that many of these deaths could be prevented through increased use, particularly in people at high risk, of existing vaccines, which are safe and highly effective;

Welcoming the contribution of global influenza surveillance, coordinated by WHO, to the annual determination of the antigenic composition of influenza vaccines and to early recognition of conditions conducive to a pandemic, and the assistance provided by WHO to timely manufacturing of influenza vaccines;

Expressing concern that the health burden and economic impact of influenza in developing countries are poorly documented, and that recent evidence suggests higher rates of fatal complications associated with poor nutritional and health status and limited access to health services;

Further concerned by the general lack of national and global preparedness for a future influenza pandemic, particularly in view of the recurrence of such pandemics and the high mortality, social disruption and economic costs that they invariably cause and which may be exacerbated by rapid international travel, the recent worldwide increase in the size of at-risk populations and the development of resistance to first-line antiviral drugs;

Recognizing the need for improved vaccine formulations, increased manufacturing capacity for vaccines, more equitable access to antiviral drugs, and strengthened disease surveillance as part of national and global pandemic preparedness;

Noting that better use of vaccines for seasonal epidemics will help to ensure that manufacturing capacity meets demand in a future pandemic, and that pandemic preparedness plans will help to make the response to seasonal epidemics more rational and cost-effective as well as preventing numerous deaths;

WHA56.19

Seasonal programs as a foundation for pandemic response

Opportunities

- More (and better) data on value of influenza vaccination
  - Disease and economic burden (PIP-sponsored)
  - Vaccine performance and safety
- Increased interest in influenza vaccines globally
  - 2009 - Experience with pandemic vaccine
  - 2012 - WHO SAGE recommendations
  - Doses increased 87% to 490M from 2004 – 2013
- More countries have influenza vaccine policies now
  - Increase from 74 countries (2006) to 115 countries (2016)[1]

Influenza vaccines

WHO position paper[1]

In accordance with its mandate to provide guidance to Member States on health policy matters, WHO issues a series of regularly updated position papers on vaccines and vaccine combinations against diseases that have an international public health impact. These papers are concerned primarily with the use of vaccines in large-scale immunization programmes; limited vaccination, as executed mostly in the private sector, may be a valuable supplement to national programmes, but is not emphasized in these policy documents. The position papers summarize essential background information on the respective diseases and vaccines, and conclude with the current WHO position concerning their use in the global context. The papers have been reviewed by a number of experts inside and outside WHO, and are designed for use mainly by national public health officials and immunization programme managers. However, the position papers may also be of interest to international funding agencies, the vaccine manufacturing industry, the medical community and the scientific media.

This position paper is concerned mainly with seasonal (epidemic) influenza and the public health impact of yearly influenza vaccination.[2]

Summary and conclusions

Influenza virus types A and B are both common causes of acute respiratory illnesses, although influenza A viruses are the principal cause of large epidemics, as well as pandemics. Children are efficient transmitters of influenza viruses and those 5–9 years of age typically manifest the highest rates of infection and illness. However, severe morbidity and mortality are more common among elderly people and in specific high-risk groups. Although morbidity, mortality and affected risk groups appear to be similar all over the world, in many developing countries the disease burden and the socioeconomic impact of influenza are largely unknown.

Influenza viruses undergo frequent changes in their surface antigens. Immunity resulting from infection by one influenza virus does not protect fully against antigenic or genetic variants of the same subtype (influenza A viruses) or type (influenza B viruses). As a consequence, influenza outbreaks occur every year. New influenza vaccines must be designed annually to match the circulating viruses which are expected to cause the next epidemic.

Efficacious and safe inactivated vaccines remain the cornerstone of influenza prophylaxis in most countries. Unless stated otherwise, the data presented in this document relate to inactivated trivalent vaccines only.

[1] Replaces position paper of 12 July 2002 (see No. 28, 2002, pp. 230–239).

[2] For authoritative information on pandemics, see http://www.who.int/influenza or WHO guidelines on the use of vaccines and antivirals during influenza pandemics. Geneva, World Health Organization, 2004 (WHO/CDS/CSR/RMD/2004.8; http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_RMD_2004_8/en).

RELEVE EPIDEMIOLOGIQUE HEBDOMADAIRE, N° 33, 19 AOUT 2005 279

Vaccins antigrippaux

Note d'information de l'OMS[1]

Conformément à son mandat qui prévoit qu'elle se doit de conseiller les Etats Membres sur les questions de politique sanitaire, l'OMS publie une série de notes d'information régulièrement actualisées sur les vaccins et associations vaccinales contre des maladies qui ont des effets sur la santé publique au niveau international. Ces notes d'information portent essentiellement sur l'utilisation des vaccins dans le cadre de programmes de vaccination à grande échelle; l'utilisation limitée de la vaccination telle qu'elle se pratique essentiellement dans le secteur privé peut compléter utilement les programmes nationaux mais n'est pas visée par ce type de document. Les notes d'information résument les informations générales essentielles sur les maladies et les vaccins correspondants et présentent en conclusion la position actuelle de l'OMS concernant leur utilisation dans le cadre mondial. Ces notes ont été soumises à un certain nombre de spécialistes à l'OMS et à l'extérieur et sont prin-cipalement destinées aux responsables nationaux de la santé publique et des programmes de vaccination. Mais les notes d'information peuvent également présenter un intérêt pour les organismes internationaux de financement, les fabricants de vaccins, le corps médical et les médias scientifiques.

La présente note s'intéresse principalement à la grippe saisonnière (épidémique) et aux conséquences de la vaccination antigrippale annuelle pour la santé publique.[2]

Résumé et conclusions

Les virus grippaux de type A et B sont des causes fréquentes d'affections respiratoires aiguës, les virus grippaux de type A étant principalement en cause dans le cas des grandes épidémies et des pandémies. L'enfant transmet de manière particulièrement efficace les virus grippaux et c'est l'enfant de 5 à 9 ans qui présente généralement les taux les plus élevés d'infection et de morbidité. La morbidité grave et la mortalité touchent cependant plus souvent les personnes âgées et certains groupes à haut risque. Si la morbidité, la mortalité et les groupes à risque semblent être semblables dans le monde entier, la charge de morbidité et les effets socio-économiques de la grippe restent en grande partie inconnus dans beaucoup de pays en développement.

Les antigènes de surface des virus grippaux changent fréquemment. L'immunité acquise à la suite d'une infection par un virus grippal n'induit pas une protection totale contre les variants antigéniques ou génétiques du même sous-type (virus grippaux A) ou du même type (virus grippaux B). Des flambées de grippe surviennent de ce fait chaque année. De nouveaux vaccins doivent être conçus chaque année et adaptés aux virus en circulation, lesquels devraient être à l'origine de l'épidémie suivante.

Les vaccins inactivés, efficaces et sûrs, restent la pierre angulaire de la prophylaxie dans la plupart des pays. Sauf indication contraire, les données présentées dans le présent document se rapportent uniquement aux vaccins trivalents inactivés.

[1] Remplace la note d'information de 12 juillet 2002 (voir le N° 28, 2002, Pages 230-239).

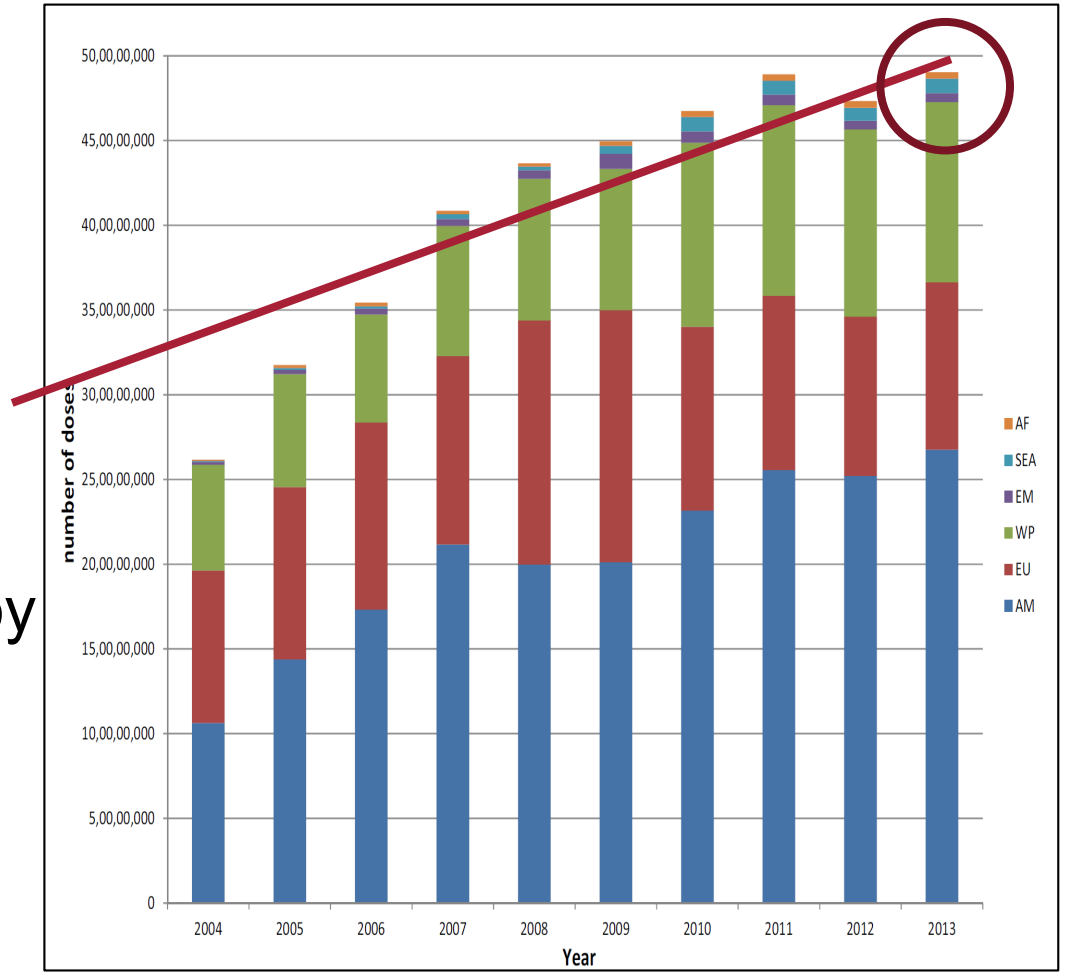
[2] Pour le point de la question sur les pandémies, voir http://www.who.int/influenza ou WHO guidelines on the use of vaccines and antivirals during influenza pandemics. Genève, Organisation mondiale de la Santé, 2004, (WHO/CDS/CSR/RMD/2004.8; http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_RMD_2004_8/en).

1. Ortiz et al (2016)

Seasonal programs as a foundation for pandemic response

Challenges

- Gaps in program implementation
  - Even in many countries with policies, programs are weak
  - 47% of population receive 4% of doses[2]
- Lack of seasonal programs threaten pandemic response
  - Countries lack programs to rapidly deploy pandemic influenza vaccines
  - Donors of vaccines may favor countries with proven records of strong vaccine programs



2. Palache et al. Vaccine 33 (2015) 5598–5605.

PIVI APPROACH | WORKING IN PARTNERSHIP

COUNTRY PARTNERS	Develop flu vaccine policy & implement vaccination program and evaluation
CONTRIBUTING PARTNERS	Provide vaccines, shipping, supplies and financial support
TECHNICAL COLLABORATORS	Support evaluation; provide technical guidance & assistance

CDC Centers for Disease Control and Prevention

The Task Force for Global Health

Coordinate the program; work with partners; develop and implement strategy; provide technical and NITAG support

PIVI ROADMAP FOR SUSTAINABILITY PLANNING FOR VACCINES

ASSESSMENT AND PARTNER COUNTRY INVESTMENT

SUPPORTING ACTIVITIES

- Program Evaluations
- Review of evidence
- Sustainability planning/decisions
- Update pandemic plan

PIVI TECHNICAL SUPPORT

Program Planning

NITAG strengthening

Selection of optimal vaccine formulations

Staff training

Communication / Social mobilization

KAPP surveys

Sustainability planning

Program Evaluation

Adverse event

monitoring

Post-introduction evaluations

Economic evaluations

Vaccine effectiveness

Modelling program impact

Pandemic Planning

Pandemic plan revision

Vaccine group prioritization

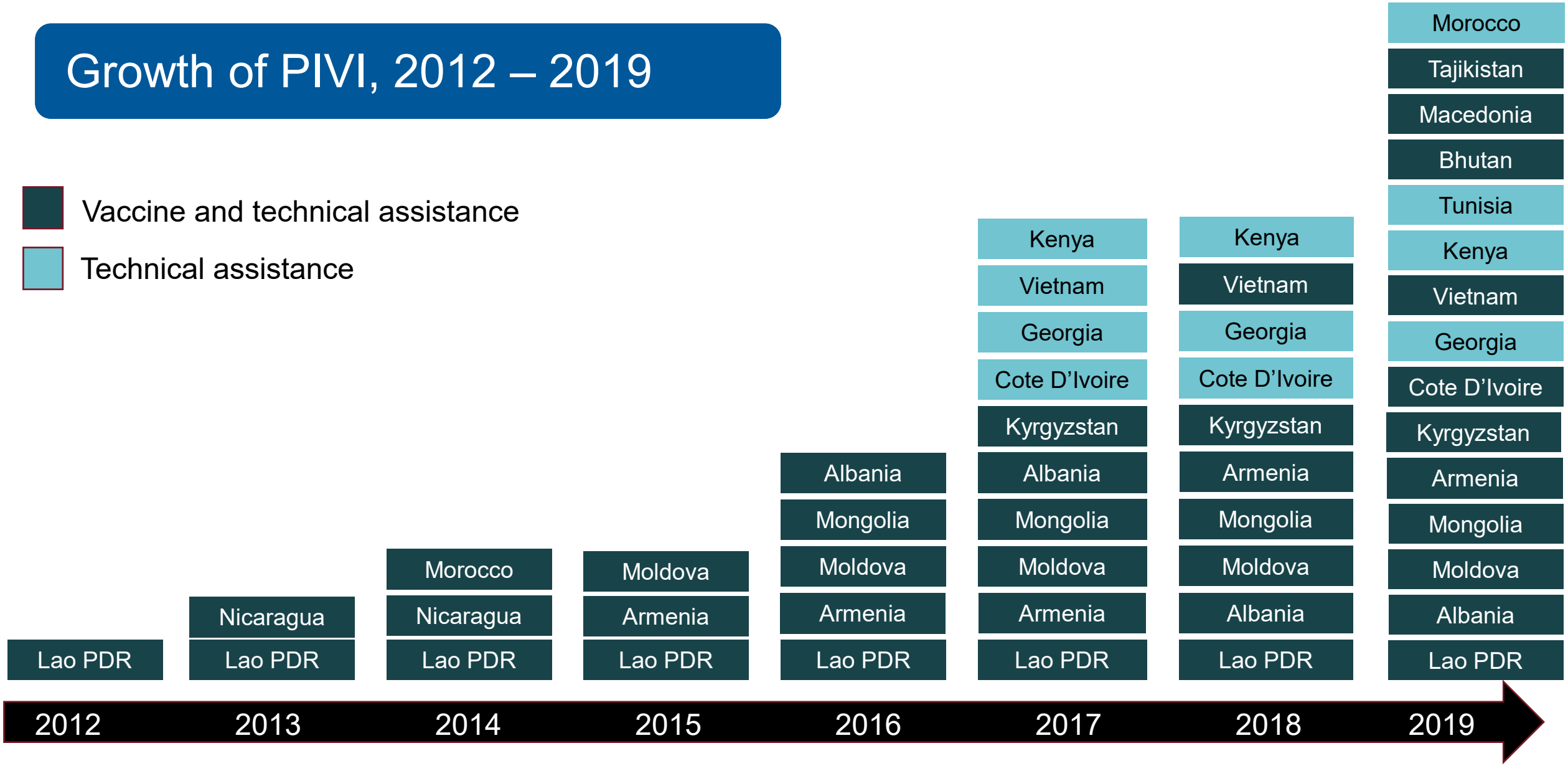
Technical support provided and planned to PIVI Partner Countries, 2018-19

- Albania – KAPP, Communications
- Armenia – iPIE, KAPP (Knowledge, Attitude, Practices, Perceptions) (Planned)
- Cote d'Ivoire – KAPP, Vaccine demonstration project, Communications
- Georgia – NITAG (planned, June 2019)
- Kenya – KAPP, Demonstration project (6m-2yrs) (Planned 2019)
- Kyrgyzstan – KAPP, Communications, AEFI (AEFI was completed in November 2017)
- Moldova – Disease Burden, Health worker (HW) workshops
- Mongolia – AEFI (birth outcomes), KAPP, Economic projects
- Vietnam – KAPP, Demonstration project (HWs), Communications and Workshops (Planned 2019)
- Laos – Economic projects

Growth of PIVI, 2012 – 2019

Vaccine and technical assistance

Technical assistance



ACCOMPLISHMENTS through 2019

- ✓ > 3.5 million vaccine doses distributed to 9 partner countries:

  Albania, Armenia, Lao PDR, Kyrgyzstan, Moldova, Mongolia, Morocco, Nicaragua
- ✓ Expansion of technical support

  Working in 15 countries
- ✓ Program evaluations conducted to assess:

  AEFIs, vaccine effectiveness, KAPP, vaccine coverage/wastage
- ✓ NITAG workshops (general and/or Flu Working Group) conducted for 7 countries

  Lao PDR, Vietnam, Mongolia, Armenia, Cote D'Ivoire, Georgia, Moldova

2nd Meeting of CDC and PIVI Partners on Influenza Vaccination Program Development

February 6-7, 2018

Bangkok, Thailand

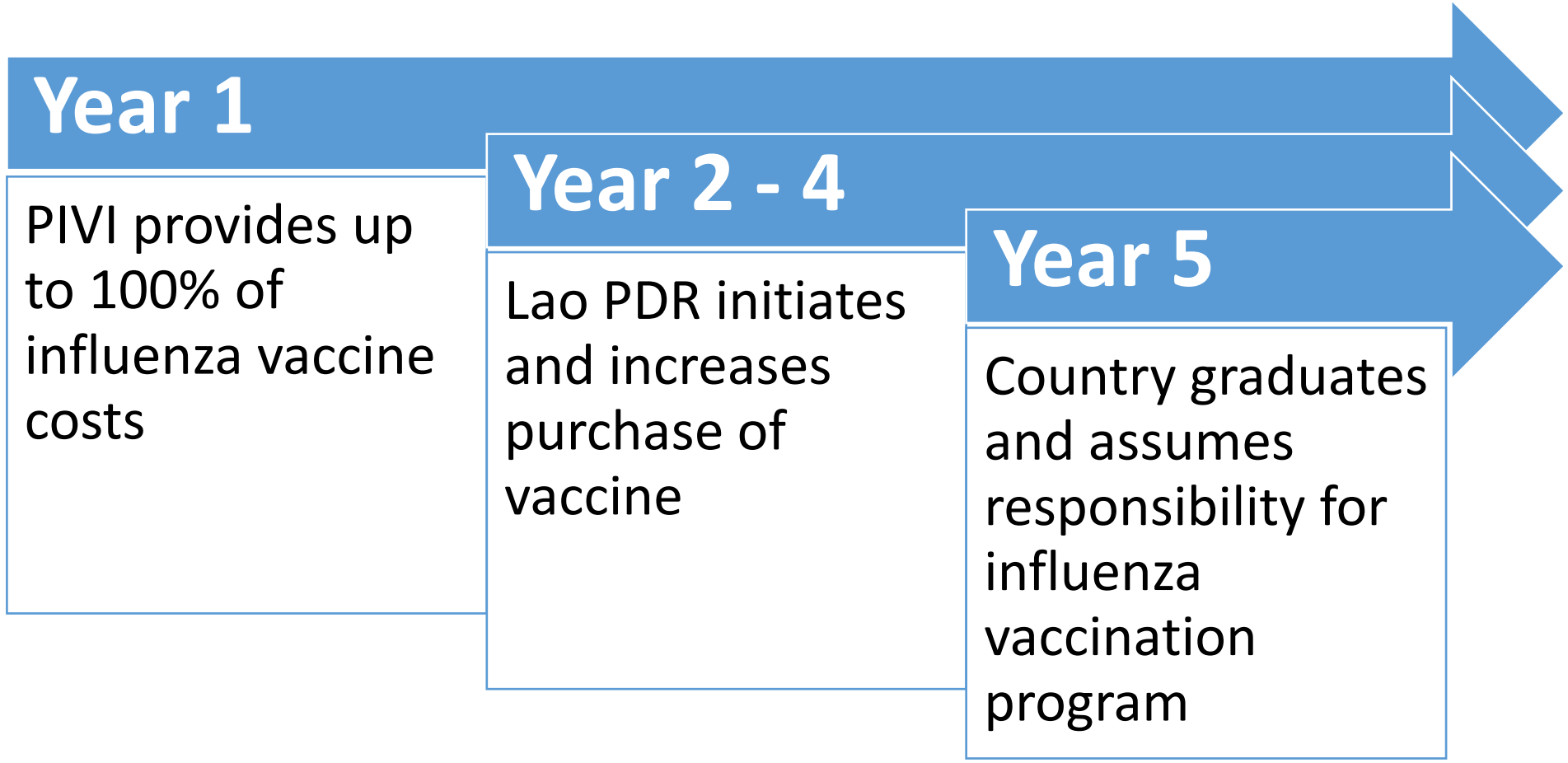
Meeting Goals and Themes in the 2nd Meeting

- To share experiences and learnings from national influenza vaccination program development;
- To learn from country partners' efforts to strengthen national influenza vaccination programs and make them more sustainable;
- To work together to derive best practices regarding influenza vaccine program development, while supporting partner countries' influenza vaccination program efforts;
- To discuss specific components of the partnership, including
    a. Evaluation tools
    b. Sustainability planning
    c. Data needed for advocating to a variety of stakeholders
    d. Link between pandemic preparedness and seasonal vaccine programs

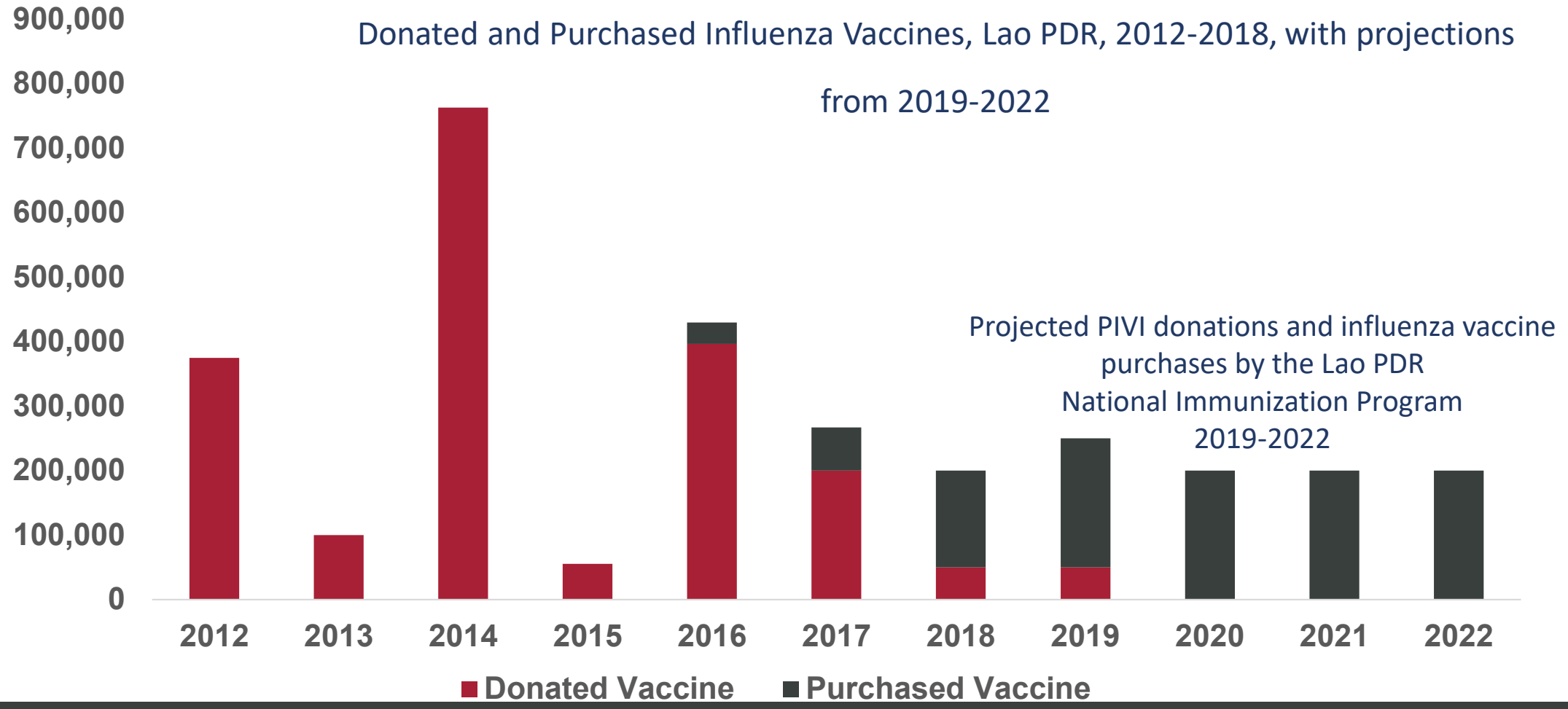
Building Foundation for Sustainable National Influenza Vaccination Programs: Laos Experience

- A member for over five years
- Created a successful vaccination program
- Developed the laboratory and surveillance capacity
- Used the pandemic influenza vaccination program in 2010 as a model for developing the seasonal vaccination plans
- Invest in advocacy and community awareness
- Countries gain financial support from the government

Multi year plan on Influenza vaccine program



Donated and Purchased Influenza Vaccines, and Projections



Partner Country progress towards transition

- Albania, Moldova, Kyrgyzstan, Mongolia – increased purchase of vaccine according to individual sustainability plans
- Laos – entered final year of PIVI donation; expected to transition in 2020; PIVI will maintain technical support
- Bhutan, Macedonia, Tajikistan, Tunisia, Vietnam – have created sustainability plans
- Cote d'Ivoire, Macedonia, Armenia – developing sustainability plans

PIVI in Asia

- Lao PDR
  - First country partner – focused on pregnant women, HWs, and older adults
  - Scheduled to transition to complete national government support in 2020
  - Provided key best practices to other PIVI partner countries
- Mongolia
  - Focused on growing vaccine program among PW, HWs
  - Conducted active surveillance for AEFIs among HWs
  - Growing vaccine program incrementally and steadily
- Vietnam
  - Collaborating on HW vaccination introduction and evaluation
- Bhutan
  - Joined 2019 – will start with HW, PW and persons with chronic diseases

PIVI in Asia

- Working with regional manufacturers
  - Hualan Bacterin Co, (China)
  - Green Cross (Korea)
  - IVAC (Vietnam)
  - Interested in working with other emerging suppliers in the region to provide “pull mechanism” for growth
- Technical collaborations
  - Collaborated with WHO to pilot test influenza program costing (WHO’s FuTool) in Thailand

Challenges in Introducing and Sustaining Influenza Vaccine Programs

Country perspective

- Perception of relative value – need political will
- Perceptions of affordability
- Availability of vaccines
  - Limited products approved in LMICs
  - Not all products prequalified
- Regulatory experience / obstacles
- Lack of operational plans to conduct programs
- Need for national policies

Industry perspective

- Uncertainty of future market in many countries
- Small markets compared with high-income countries
- Influenza vaccine business is generally low margin with multiple competitors
- Costs of local approval / WHO PQ

Thank you

PIVI

THE TASK FORCE FOR GLOBAL HEALTH

PARTNERSHIP FOR INFLUENZA VACCINE INTRODUCTION

CDC

For more information please contact Dr. Joseph Bresee, Director of PIVI, at jsb6@cdc.gov

www.pivipartners.org