

Immunization and Vaccine related Implementation Research (IVIR) Advisory Committee update October 2014

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Chair, IVIR-AC

**Director, Emory University Global Health
Institute**

IVIR Committee in 2014

- ***Main responsibility***
 - Advise WHO on implementation research related to vaccines and immunization programs
 - Provide guidance on quantitative methods useful to vaccine research
- ***Current functions***
 - Provide guidance on implementation research relevant to immunization policies and practices
 - Focus on agenda and priorities
 - Review implementation research and advise research groups
 - Review best practices related to methods for conducting and reporting on quantitative research
- ***Membership***
 - All 15 seats* currently filled
 - Modelers, economists, epidemiologists, behavioural scientists, health systems experts, vaccine trial experts and EPI manager.
- ***Meetings***
 - Ad-hoc meeting June and Annual meeting in September

* Call for nomination of 3 new members in modeling/economics to be announced

GAP



**Current
status**

**DOV
GOAL**

RESEARCH

GAP



**Current
status**

**DOV
GOAL**



Strategic directions for WHO's vaccine research

Vaccines/products
licensed and currently
in use

Assess and/or develop strategies/
approaches to **expand coverage
and impact** and improve delivery of
vaccines

Candidate vaccines/
products under
development

Generate and/or synthesize and appraise
evidence for robust **policy making**

Contribute to development/availability of
**new or better vaccines/delivery
systems** to address remaining BoD

WHO's implementation research themes

1

Minimize barriers and improve coverage of vaccines currently in use

2

Conduct impact evaluation of vaccines in use

3

Improve methods for monitoring of immunization programmes

IVIR-AC agenda topics 2014

Minimize barriers

- Missed opportunities
- Reasons for non-vaccination
- Integration of care
- Non-specific effects of vaccines

Evaluate impact

- WHO VPD burden and impact assessment framework
- Typhoid and pertussis burden assessments
- Vaccine impact including economic assessments of typhoid, pertussis, meningitis A, hepatitis B, HPV vaccines
- GVAP's Decade of Vaccine Economics study

Monit- oring

- Coverage surveys
- GAVI Perspective



IVIR-AC agenda topics 2014

Minimize barriers	<ul style="list-style-type: none">• Missed opportunities• Reasons for non-vaccination• Integration of care• Non-specific effects of vaccines
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Missed opportunities in immunization

What are the next key steps in terms of MOI research?

Recommendations

- The fundamental question is **impact on overall immunization coverage**
 - impact assessments must be carried out to measure this outcome.
- Studies should include **documentation of reasons for missed opportunity, strategies to address them, and measurement of impact** (including on overall immunization coverage) with robust methodology.
- Studies should be **implemented rapidly in the African region** using an adapted version of the protocols and tools from the experiences in Latin America.
 - consultant will focus on this in collaboration with PAHO and the AFRO office to ensure adaptation

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WHO burden and impact framework

Is the proposed framework useful? What are the emerging gaps?

Challenges

- Lack of consensus on methods and approaches of evidence generated
- Unproductive duplication of work/neglected areas of work
 - Inefficient use of both human and financial resources

Recommendations


IVIR-AC supports framework as a **HUB**:

- Experts network: to share/discuss methods, collaborate
- Evidence sharing: VPD burden studies, reviews (EPI, impact etc), tools, capacity strengthening...
- Gap analysis: What has been done – currently on-going – needs to be done

WHO Framework on Vaccine Preventable Disease Burden and Impact Work Including Broader Economic Impact of Vaccines (BEIV)

	PCV	HIB	RV	HPV	Influenza
Type of Model Recommended	STATIC/DYNAMIC herd immunity serotype replacement	STATIC/DYNAMIC	STATIC/DYNAMIC	STATIC/DYNAMIC	STATIC
VPD Burden	PNEUMOCOCCAL DISEASE	HIB DISEASE	ROTAVIRUS DISEASE	CERVICAL CANCER	INFLUENZA DISEASE
Evidence	Scott et al. Russel et al. Review of NP carriage (LSHTM) Sanderson et al. Chaiyakunapruk et al.	Scott et al. WHO document Watt et al.	Soares et al. Sanderson et al. Patel & Clark Postma et al.	D’addario et al. WHO document Jit & Brisson Fesenfeld et al. Jit et al.	Jefferson et al. Ott et al. Shapalova et al.
Tools, Manuals, & Guidelines	ProVac TriVac LiST OneHealth WHO Costing Tool adapted C4P	ProVac TriVac LiST OneHealth	ProVac TriVac LiST OneHealth WHO Costing tool adapted C4P	WHO PRIME ProVac CerviVac HSPH Tools HPV Costing tool WHO C4P, CxCa Costing tool WHO/CDC C4P	Influenza CE guide Field guides Influenza COI guide WHO/CDC FLUTOOL costing tool
Validation & Learning	?	?	?	?	?
Capacity Strengthening	PAHO ProVac , IWG NUS (SEA)	PAHO ProVac	PAHO ProVac IWG	PAHO ProVac , IWG PRIME project	?
Independent Review Groups	CHERG AJ Van Hoek N Sundaram N Chaiyakunapruk	CHERG	CHERG AJ van Hoek	M Jit A Riewpaiboon A Colombini M Brisson A Levin AFR Cons.	N Chaiyakunapruk A Newall A Levin A Reiwpaiboon M VanKerkhove
Focal Points					
BEIV Work	?	?	Vietnam EPI Review Fiscal Consequences Vietnam & Ghana	?	?

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WHO Coverage survey

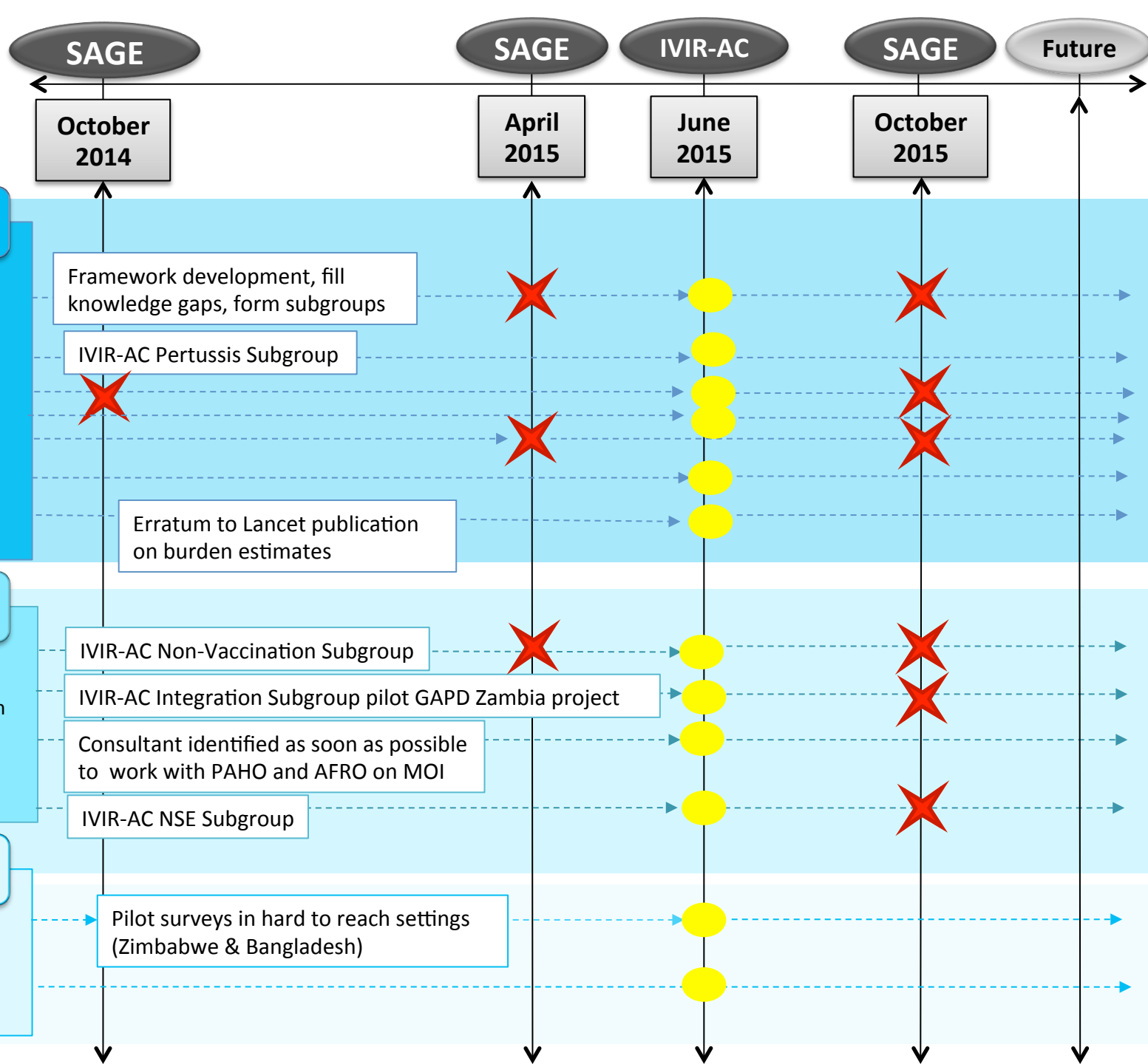
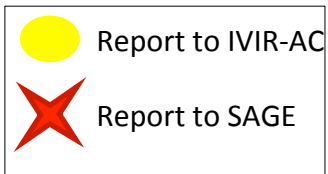
Are the revised methods useful to address existing shortcomings?

Realities

- Immunization landscape as well as coverage survey more complex – risk of errors
- Data quality of coverage surveys
 - Sampling frame and method
 - Recording/data entry issues
 - Response error
- Revision of EPI guidelines
 - Decrease selection bias
 - Decrease reliance recall
 - Increase likelihood adequate power

Recommendations

- Revised method for coverage survey is appropriate but will require statistical expertise
- Need to improve quality of survey sampling
- Need for piloting the survey in hard to reach settings, rural and urban areas of Bangladesh and Zimbabwe



Thank you



Back up slides IVIR-AC October 2014

Comprehensive WHO VPD burden and impact assessment framework

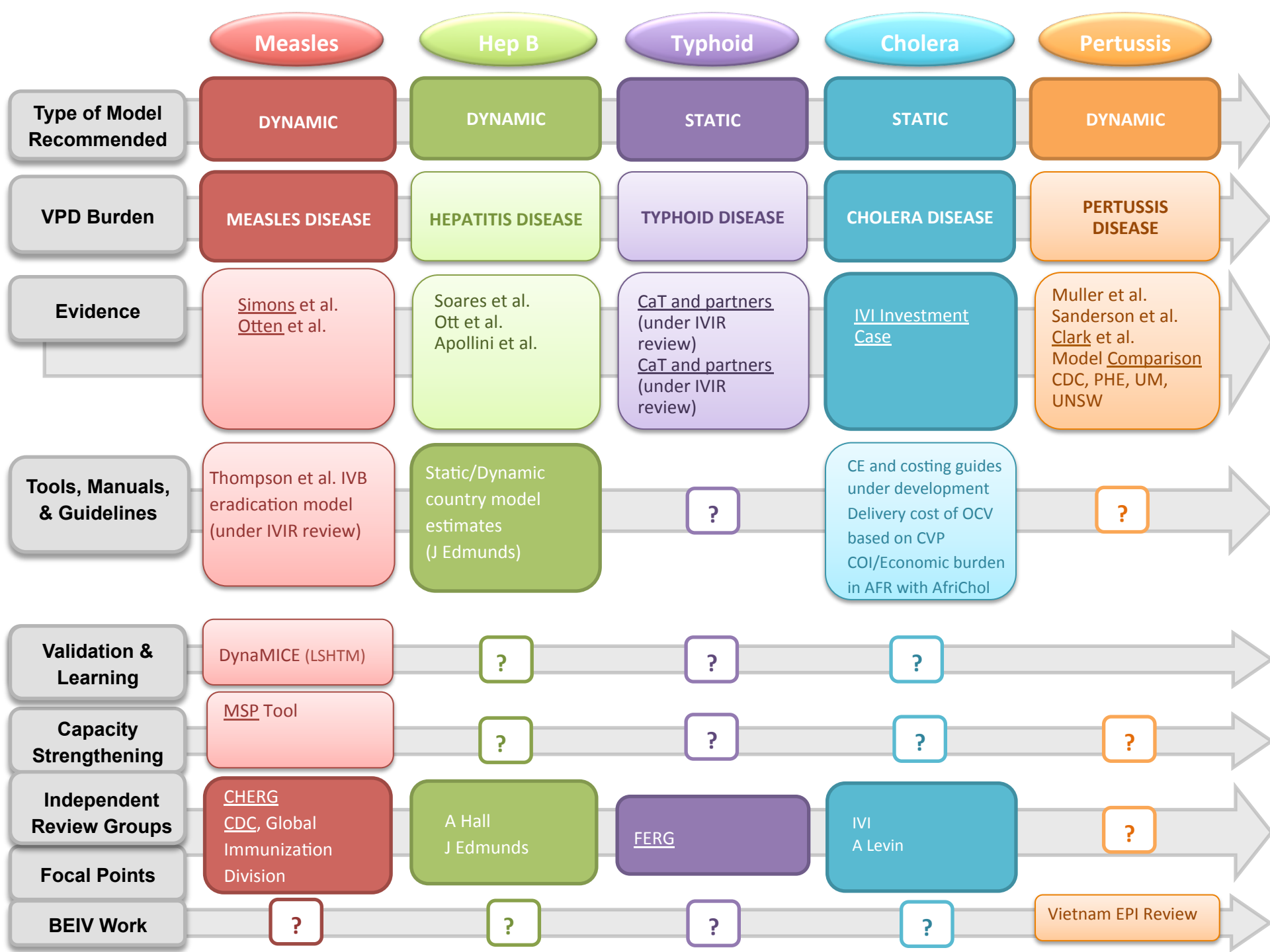
Is the proposed framework useful? What are the emerging gaps by information presented?

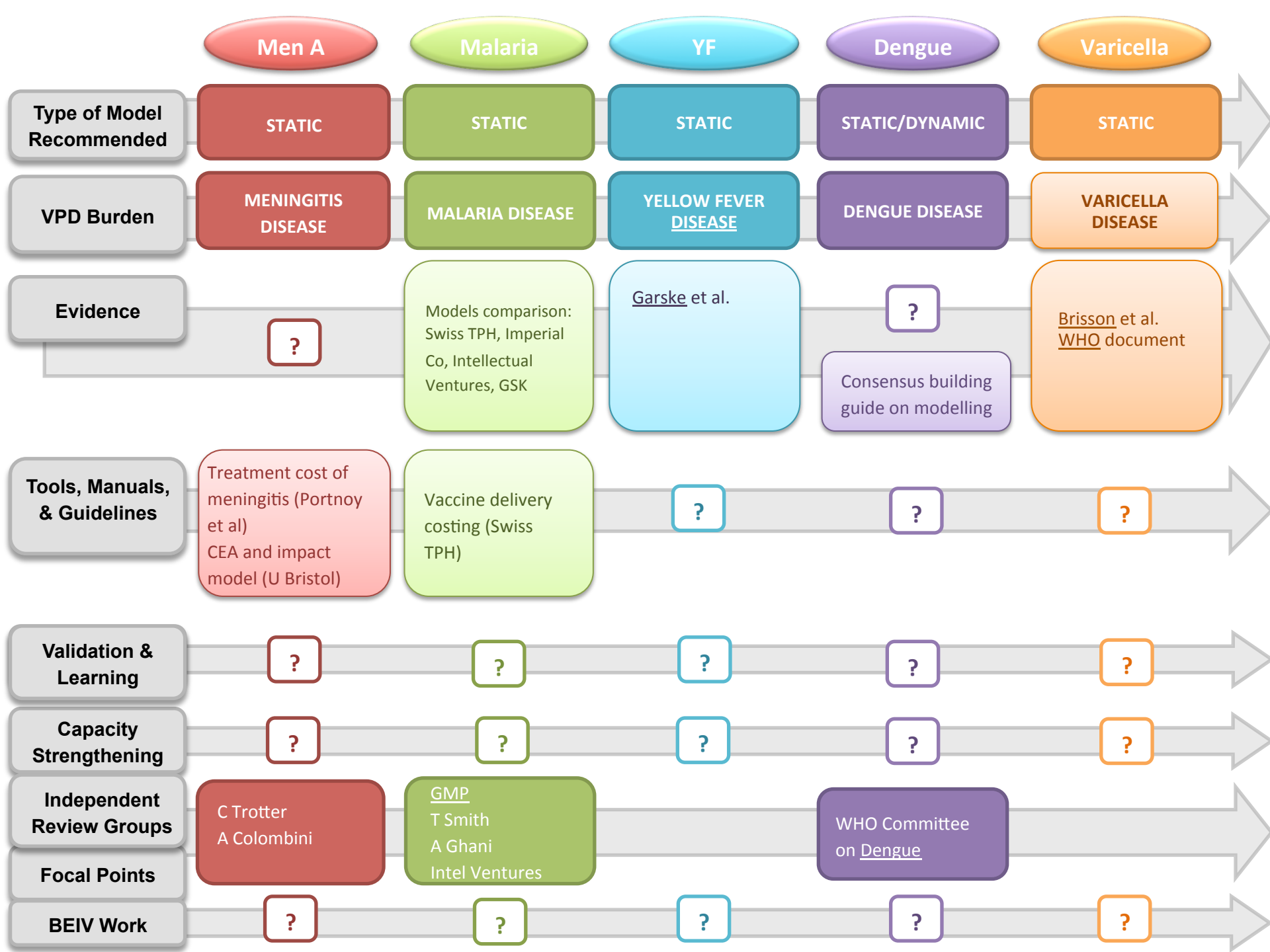
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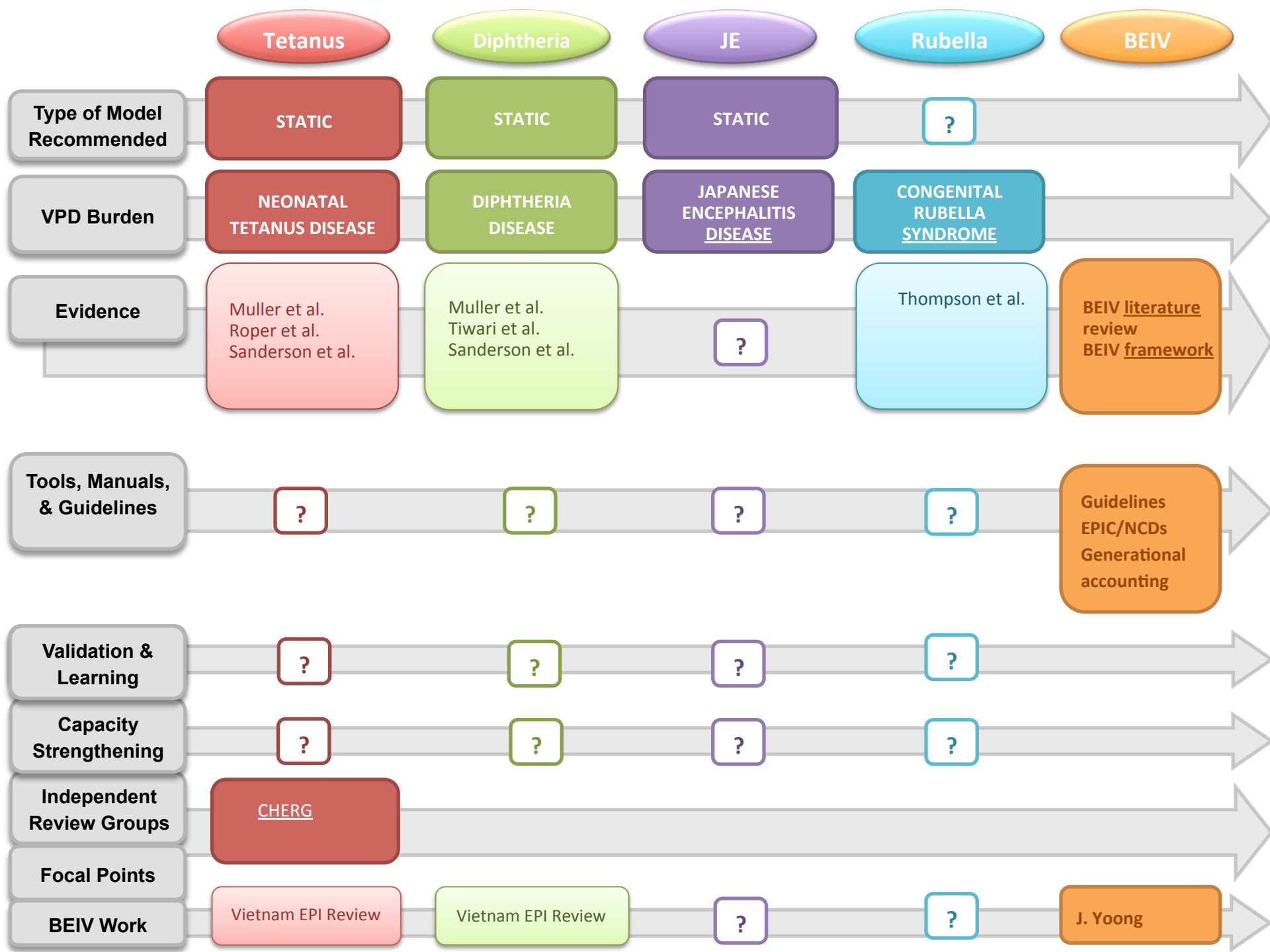
- IVIR-AC: reviewing evidence, identifying gaps, biases and limitations, assessing research methodology, commenting on analytic approaches, correctly utilizing models,
- Sub-groups: identify any clear gaps and both value-added and unnecessary duplications of work to better direct future modeling and vaccination program work.
- Institutional capacity is needed while funding from various partners is streamlined according to the proposed framework.
- Encourage partners in the immunization field and other interested parties to contribute to the framework and to utilize it.

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Pertussis impact modeling

What are the best approaches to address policy questions addressed by SAGE regarding pertussis vaccines?

Recommendations

- Models seem to be appropriate in terms of structure to better understand both schedule optimization and how HIC experiences can inform resurgence in LMICs
- Key problem is availability and quality of data – need for better surveillance in all countries
- IVIR-AC sub group will help identify specific data needs for parameterization of various models

WHO Pertussis burden modeling

Does the proposed provide reliable burden of pertussis estimates?

Recommendations

- New global pertussis model has significant limitations
 - solicitation exercise was too broad
 - age groups too wide
 - very wide range of potential estimates for model parameters
- Convene sub-group potential way forward to revise presented model in combination with the new data available since 2012

Meningitis impact assessment

Is the proposed approach adequate to assess men A vaccination?

Recommendations

- **Dynamic model presented is appropriate to understand long term impact of current men A campaigns**
- **Sensitivity and uncertainty of model assumptions**
- **Economic impact and benefits will be required to understand investments in prevention of serogroup A meningococcal meningitis**

Impact evaluation of Hep B vaccines

Is the proposed approach adequate to assess men A vaccination?

Recommendations

- Dynamic model presented is appropriate to understand long term impact of current men A campaigns
- Sensitivity and uncertainty of model assumptions
- Economic impact and benefits will be required to understand investments in prevention of serogroup A meningococcal meningitis

Decade of Vaccine Economics

Is the proposed approach adequate? Do the individual model components meet the state of the art modeling requirements?

Recommendations

- DoVE study aims to provide global estimates of resources needed for accomplishing the objectives of GVAP
- As individual disease model components do not meet state-of-the-art modeling requirements DoVE should not be used for:
 - Country level decision making
 - Comparison impact between vaccines
- Transparency and increase clarity needed regarding methods, assumptions used and extrapolations of the different model components

HPV Cost-effectiveness (PRIME)

Is PRIME suitable to use as demonstration tool and to provide conservative estimates of the CE of vaccinating girls prior to sexual debut in LMICs? Is there opportunity to develop PRIME further?

Recommendations

- PRIME is suitable to as as demo tool to answer the simple question whether vaccinating pre-adolescent girls with HPV vaccines is CE.
- IVIR-AC questions whether PRIME provides conservative estimates:
 - 95% coverage level for 3-dose schedule
 - GLOBOCAN incidence not conservative in some settings
 - Relevance of CxCa screening program in some countries
- Useful to include budget impact analysis in PRIME

Typhoid disease burden, impact and economic assessment

Disease burden: Is the proposed approach robust?

Transmission models: what are the specific scenario on impact estimates that are required

Economic analysis: How best to capture variation in COI?

Recommendations

- IVIR-AC observed CFR for burden of disease due to publication bias and corrections for access to and utilization of care
- For transmission models heterogeneity should be considered since it may have implications for vaccine effectiveness while more uncertainty analysis is needed of various schedules
- For economic study stratification by group of countries and typhoid transmission/burden setting.

Reasons for non-vaccination

What kind of evaluation and methods are required to understand the root cause of non-vaccination?

Recommendations

- IVIR-AC promotes the use of community research studies linked to effective vaccine policy and media communications
- As there is a variety of disparate factors related to non-vaccination entirely different strategies are needed to improve coverage
- Establish research protocols and instruments considering when and how these may be used for implementation research

Missed opportunities in immunization

What are the next key steps in terms of MOI research?

Recommendations

- The fundamental question for evaluating missed opportunities is the impact on overall immunization coverage, and thus impact assessments must be carried out to measure this outcome.
- Studies of missed opportunities should include documentation of reasons for the missed opportunity, strategies to address these reasons, and measurement of impact (including on overall immunization coverage) with robust methodology.
- Studies should be implemented rapidly in the African region using an adapted version of the protocols and tools from the experiences in Latin America.
 - consultant implement this in collaboration with PAHO and the AFRO office to ensure adaptation

Integration of care with other interventions

What are the priority questions to support the integration of delivery of vaccines with other health interventions?

Recommendations

- IVIR-AC identified the need for standardization of research tools and protocols locally applied, by antigen and schedule and determine how to translate the evidence on integration and community messaging
- IVIR-AC cautioned that integration should be conducted such that quality of successful immunization programs are not compromised.

Non-specific effects of vaccines research agenda

What are the priority questions to inform policy?

Recommendations

- IVIR-AC identified the need for development of standard protocols and implementation of high quality prospective studies (including RCTs where feasible) as observation studies are unlikely to provide conclusive evidence
- Immunological analysis should become an essential part of future RCTs
- Future NSE studies should also include morbidity outcomes

WHO Coverage survey

Are the revised methods useful to address existing shortcomings?

Recommendations

- The revised method is the way forward, but that it requires statistical expertise to implement the survey in the field.
- Need for incorporating GPS technology to keep up with real time information and to improve the quality of survey sampling.
- To identify the unreached, IVIR-AC recognized the need for qualitative studies and piloting of surveys in hard to reach settings such as in rural and urban areas of Bangladesh and Zimbabwe.
- Concern of interpreting the new survey data in comparison with the data collected from previously used methods. Difficulties in monitoring progress and comparing cross-sectional data across methods and time must be addressed.