Briefing note

Regional bodies supporting national-level evidence-informed decision-making on vaccines

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Key messages

- A range of regional bodies support national decision-making processes related to immunisation and public health policy. The five bodies profiled here vary in the orientation and breadth of their thematic scope: ProVac in the Americas, the Caribbean Immunization Technical Advisory Group (CITAG), the South-East Asia Regional Immunization Technical Advisory Group (SEAR-ITAG), Health Intervention and Technology Assessment Programme (HITAP) through its International Unit (HIU) and the West African Health Organization (WAHO). In each geographic region, multiple organisations provide specialised support, rather than comprehensive support from a single entity.
- The relative advantage and transferable lessons that each can offer relate directly to their thematic and institutional orientation:
  - CITAG and WAHO have direct links to policy-makers and Expanded Programme on Immunisation (EPI) managers, and enable cross-national collective action that individual countries would otherwise struggle to provide.
  - ProVac, CITAG and HITAP support models are most relevant to countries with needs similar to those for which the regional body was designed to address, respectively: cost effectiveness expertise, a shared National Immunization Technical Advisory Group (NITAG) function, and health technology assessment (HTA) to appraise a wide range of health interventions.
  - The SEAR-ITAG and WAHO illustrate how a regional body has supported existing NITAGs and help establish and grow new NITAGs, respectively.
- All five groups grew out of established institutional structures and expanded over time. These histories have also shaped their accountability structures and current role in decision-making processes.
- Individuals' time is a major cost driver, both for staff working for these regional bodies and for the people and institutions with and for whom they work. Regional bodies may be able to leverage some economies of scale by providing resources that multiple countries can draw upon; however, using these resources and interacting with regional bodies will still require dedicated time from national actors.

Introduction

The Global Vaccine Action Plan aims for all countries to have access to a functioning National Immunization Technical Advisory Group (NITAG) to provide evidence-informed recommendations to national policy-makers on vaccine-related matters (WHO, 2013). A recent ODI report explored factors that enable and constrain NITAGs' ability to fulfil their mandate as well as identifying options for future support (Buffardi and Njambi-Szlapka, 2019). That report focused on support options at the national and global levels and identified specific steps that could be taken by NITAG members, donors, the World Health Organization (WHO) and the Global NITAG Network. This brief serves as a companion piece, providing an overview of five regional bodies that support NITAGs and other national decision-making processes related to immunisation and public health more broadly.

We profile ProVac, an initiative focused on the cost effectiveness of new vaccine introduction in the Americas, the Caribbean Immunization Technical Advisory Group (CITAG), the South-East Asia Regional Immunization Technical Advisory Group (SEAR-ITAG), Health Intervention and Technology Assessment Programme (HITAP) through its International Unit (HIU) and the West African Health Organization (WAHO). These bodies vary considerably in terms of their geographic and thematic scope, structure, funding sources and the types of evidence they use. They offer different types of support, which together cover core needs identified by NITAG stakeholders: improving access to tools, guidance documents and relevant evidence; sharing experiences across NITAGs; training, coaching and mentoring; financial resources for basic NITAG secretariat functioning; strengthening relationships with key national actors and further integrating NITAG efforts into decision-making processes (Buffardi and Njambi-Szlapka, 2019). The relative advantage and transferable lessons that each regional body can provide relate directly to their thematic and institutional orientation.

The aim of this briefing note is to improve understanding of core aspects of each regional body so specific elements can be adapted elsewhere and to help advisory groups, other national actors and international donors identify ways of working in the future. The briefing note is written for stakeholders involved in evidence-informed decision-making (EIDM) for vaccines; however, the observations may also be relevant for those interested in the role of regional groups and in EIDM for other issue areas beyond health.

Methods

To determine which regional bodies to profile, we first compiled a list of entities that are prominent in the vaccine literature and conducted a rapid PubMed search to find additional examples.[1] Our selection strategy was guided by three criteria:

- **Relevance** to low- and middle-income countries that will need external support for existing or new EIDM processes.
- **Diversity**, with a focus on cross-case variation across different types of support models rather than within-case variation of the same type of group (i.e. comparison of different Regional Immunization Technical Advisory Groups).
- **Feasibility**, including availability of information and access to key informants in a short time frame.

The list of potential options excluded multi-country and global initiatives, including vaccine-specific initiatives to support evidence-informed decisions on use (i.e. Gavi Hib Initiative), Gavi Accelerated Development and Introduction Plans (ADIPs), and Product Development Partnerships (i.e. the Drugs for Neglected Diseases initiative, PATH's Malaria Vaccine Initiative, TB Alliance) which aim to support national-level decision-making through research, standardised evidence

1 We used the search terms: "national decision making process", "evidence informed decision making", "national decision making", "decision making structure", "decision making process", "evidence informed policy making" and "data informed decision making". Where search terms brought over 100 results, just the first 100, ordered by date of publication, were reviewed. In total, 363 article titles and abstracts were scanned to identify potentially relevant articles, resulting in a final set of 29 articles.

packages and awareness raising. We also excluded time-bound projects that aim to increase interaction between policy-makers and researchers like the EU-funded Supporting the Use of Research Evidence (SURE) and IDRC-funded Regional East African Community Health Policy Initiative (REACH). The final set of regional bodies was determined in discussion with Wellcome Trust and Gavi.

For each regional body, we compiled two-page overviews (Annex 1), using standardised templates for regional bodies that issue recommendations, and regional bodies that provide other types of support. The information was drawn from a review of organisational documents, websites and journal articles (Annex 2). For the three bodies for which there are fewer published articles, CITAG, the SEAR-ITAG and WAHO, we conducted supplementary key informant interviews with staff and members, many of whom had previously served in national ministries of health, and NITAG representatives in three countries that WAHO supports.

Comparative analysis of regional bodies

Based in the Americas, West Africa and Southeast Asia, each of the five regional bodies covers an *expansive geographic scope* and population size. CITAG is the smallest, covering 7.6 million people living in 22 countries and territories; the scope in the other regions ranges from hundreds of millions to nearly two billion people. Moreover, within each region there is substantial diversity across the countries that each serves. CITAG countries, for example, are geographically dispersed across the Caribbean, Central and South America and include former British, French and Dutch colonies, ties which influence national immunisation policy today. Among this selection of five regional bodies, they serve overlapping geographic areas. HITAP and the SEAR-ITAG support countries in Southeast Asia. ProVac and CITAG serve the Latin America and Caribbean (LAC) region, with ProVac analyses feeding into the CITAG evidence base. The current institutional configuration in these regions, therefore, is one of specialised support from multiple bodies rather than comprehensive support from a single regional entity.

The regional bodies vary in the orientation and breadth of their *thematic scope*. Table 1 presents an overview of these bodies along key dimensions, ordered by ascending thematic scope. ProVac is the most specialised, primarily focused on the cost effectiveness of new vaccine introduction. CITAG and the SEAR-ITAG focus on multiple aspects of immunisation including coverage, surveillance, vaccine hesitancy, legislation and the performance of immunisation systems; in this sense, their scope is broader than many NITAGs established in the last decade, which have concentrated on new vaccine introduction. HITAP's International Unit advises on and supports HTA, analysing vaccine investments and outcomes among a broader set of health interventions. WAHO is by far the broadest in scope, covering nearly all aspects of health across different population groups, disease and prevention areas, outbreak response and health systems, including human resources, infrastructure, information and governance. There are acknowledged trade-offs between specialisation and breadth, reflected in decades-long debates in public health regarding the relative merits of vertical and horizontal approaches (Mills, 2005; Uplekar and Raviglione, 2007; Behague and Storeng, 2008; Biesma et al., 2009; Hafner and Shiffman, 2013; Buffardi, 2018).

The orientation of each regional body lends itself to different *types of support*. CITAG and the SEAR-ITAG are more similar to NITAGs, as the names suggest, in that their primary outputs are recommendations to national immunisation programmes. Both also facilitate interactions among countries and the SEAR-ITAG produces tailored country reports populated by the NITAG. ProVac and HITAP offer analysis, advice and quality assurance related to cost effectiveness analysis (CEA) and economic analysis, including structured processes to identify needs and gaps, and interpret and communicate findings. Correspondingly, they are strongly oriented around economic evidence, whereas the other three bodies predominately, but not exclusively, draw on epidemiological evidence.

Table 1 Comparison of five regional bodies that support national evidence-informed decision-making for vaccines and other health matters

	ProVac	Caribbean Immunization Technical Advisory Group (CITAG)	South-East Asia Regional Immunization Technical Advisory Group (SEAR-ITAG)	Health Intervention and Technology Assessment Programme (HITAP)	West African Health Organization (WAHO)
Orientation	Regional initiative to support decisions on new vaccine introduction	Regional immunisation technical advisory group (ITAG) in lieu of country NITAGs	Regional ITAG supporting country NITAGs	Research unit supporting institutionalisation of health technology assessment (HTA)	Specialised institution of the Economic Community of West African States (ECOWAS) safeguarding health through policy harmonisation and resource pooling
Thematic scope	Cost effectiveness of new vaccine introduction, performance optimisation of immunisation programmes, vaccine impact	Vaccine coverage, surveillance, hesitancy, legislation	Immunisation performance, vaccine policy, strategies for new vaccines	HTA for priority-setting	Maternal, child and adolescent health, quality standards and centres of excellence, medicines and vaccines, prevention and control of communicable and non-communicable diseases (NCDs), health information, epidemics and emergencies, traditional medicine, health infrastructure and equipment, health system governance, human resources, strategic partnerships and institutional capacity building
Geographic scope	42 countries and territories in Latin America and the Caribbean, ~641 million people	22 countries and territories in the Caribbean, ~7.6 million people	11 member states in Southeast Asia, ~2 billion people	Predominantly the Asia Pacific region, 808,000 (Bhutan)–1.3 billion (India) people	15 member states in West Africa, ~335 million people
Structure and locus of decision-making authority	10 staff based at Pan American Health Organization (PAHO) in Washington, DC, network of academic centres of excellence; ProVac National Team established in ministry of health (MoH) presents results to MoH and NITAG	5 members, joint PAHO and Caribbean Community (CARICOM) Secretariat; no fixed institutional home; recommendations to MoH and Chief Medical Officers	8 members, 7 who work in the region; recommendations to government secretaries of member states	Semi-autonomous research unit housed in the Thai Ministry of Public Health (MoPH), 13 staff in the International Unit; memorandum of understanding with country governments, recommendations to MoH	~120 staff based in Burkina Faso; Council of ECOWAS Ministers (ministers of finance, planning) takes decisions for the approval of the Authority of Heads of State; Assembly of Health Ministers responsible for technical matters
Type of support and outputs	Health economic modelling tools; guidance; training and technical support; online e-support centre	Recommendations; facilitate interaction	Tailored country reports; recommendations; training	Economic analyses; guidelines and online platform; capacity strengthening, advise and offer technical support; research dissemination; international network	Financial support; guidance and regional plans; training and technical support; regional convenings; evaluation; implementation research; bulk procurement of medicine; Regional Centre for Surveillance and Disease Control

Table 1 cont.

	ProVac	Caribbean Immunization Technical Advisory Group (CITAG)	South-East Asia Regional Immunization Technical Advisory Group (SEAR-ITAG)	Health Intervention and Technology Assessment Programme (HITAP)	West African Health Organization (WAHO)
Cost components and funding sources	Staff, travel; funded through the Bill & Melinda Gates Foundation, PAHO, governments	In-kind member time, travel covered through other affiliations	Member time; funded through WHO	Staff, travel; common funding pool of domestic and international sources	Staff, financial resources for member state activities, primary research, convening costs; 36% funding from ECOWAS Community Levy, 64% external from bilateral, multilateral, foundation and private donors
Types and sources of evidence	Primarily economic and epidemiological; local estimates from interviews and data extraction with MoH, hospitals and local costing studies	Primarily epidemiological from Caribbean Public Health Agency and WHO, updates from EPI managers, feasibility, WHO and PAHO Technical Advisory Group guidance, cost effectiveness from PAHO and ProVac	Primarily epidemiological; also vaccine supply, country capacity and programmatic considerations, limited economic evidence	Primarily formal economic evaluations using cost and health outcome data; systematic reviews, theoretical and methodological studies	Primarily epidemiological from member states and global databases; also implementation research, regional declarations
Reported strengths and lessons	Balance between accessibility and robustness; inclusive process; effective tool in price negotiations; open access resources	Embedded in longstanding regional structure, direct line of communication to policy-makers and EPI managers; resource for countries too small to have a NITAG	Familiarity with EPI programmes in the region, linked to EPI reviews; NITAG reporting facilitates national discussions; technical and normative role	Demand-driven analysis that explicitly considers financial sustainability; transparent, inclusive process to communicate decisions	Embedded in longstanding regional structure, political mandate and direct line of communication to policy-makers; resource pooling and sharing (over/understocks)
Reported challenges and barriers	Local data gaps; limited attention to decision-making processes; need to consider affordability amid competing priorities	As a subregional body, no 'owner'; financial sustainability	Recommendations not binding; gaps in member expertise on vaccine regulation, economics	Requires political will, long-term commitment; transparency perceived as a threat to decision-maker autonomy; local data limitations	Inadequate human resources to fulfil very broad mandate; limited national immunisation financing and local data

WAHO support ranges from technical assistance to regional surveillance, bulk procurement of medicine and cross-national transfer of contraceptives to even out undersupply and oversupply. It is the only body to provide financial resources to its member states, directly funding the NITAG annual workplans in five countries, for example.[2] ProVac, HITAP and WAHO develop guidance materials and tools. All five bodies have a capacity-strengthening element of their work, which takes multiple forms, from training workshops to co-analyses, process accompaniment and interactions with EPI staff during country visits. In all cases, support is largely demand-driven based on country requests. These requests may come from technocrats or from one minister of

2 WAHO has funded NITAGs through a three-year agreement using funds from the ECOWAS Community Levy, costing approximately $30,000–$50,000 a year.

health to another. The SEAR-ITAG also identifies needs based on individual country reports and common cross-national challenges, and WAHO mobilises in response to disease outbreaks.

Notably, all five regional bodies *grew out of established institutional structures*, and expanded in scope, thematically and/or geographically, over time. As such, they could be characterised as embedded and incrementalist in nature. This institutional history has also *shaped their accountability structures and current roles in decision-making processes*.

PAHO member states have collaborated on health issues for more than a century, formalising in 1902, and established the PAHO Technical Advisory Group (TAG) on vaccine-preventable disease in 1985. The ProVac Initiative, based at PAHO headquarters in Washington, DC, was created in 2004. CITAG – the newest of the regional bodies, launched in February 2018 – is institutionally linked through the Secretariat to PAHO, as well as to the Caribbean Community's (CARICOM) governance structures for 'functional collaboration', established in 1973. CITAG meets alongside the annual meeting of CARICOM EPI managers, which has been in place since 1986.

The WHO Regional Office for South-East Asia (SEARO) was established in 1948 and the WHO-SEAR Technical Consultative Group (TCG) on Polio Eradication and Vaccine-Preventable Diseases was set up in 1994. In 2008, the TCG terms of reference (ToR) and membership were expanded and the group renamed as the South-East Asia Regional Immunization Technical Advisory Group. HITAP is a domestic research institution that began HTA when Thailand was a lower middle-income country. The International Unit was created in 2013, expanding to support other countries in the region, drawing on their domestic experience.[3]

Most recently, they have begun a collaboration in Kenya under the aegis of the International Decision Support Initiative (iDSI), an international network of priority-setting institutions. ECOWAS was formed in 1975 and WAHO in 1987.[4]

WAHO and CITAG are formally linked to regional governance mechanisms, under the ultimate authority of heads of state. This provides direct lines of communication to the Council of ECOWAS Ministers, ECOWAS Assembly of Health Ministers and CARICOM Council of Human and Social Development (COHSOD), on which ministers of health and chief medical officers sit. WAHO's link to the Council of ECOWAS Ministers, which is comprised of ministers of regional integration, finance and planning, is the only example of a permanent relationship between a regional body and finance ministries. Following CITAG recommendations, COHSOD issues collective decisions on immunisation issues, and ministers are then responsible for implementing at a national level the recommendations that they themselves made. This commitment is reflected in reporting requirements, with the progress of member states reviewed periodically by the COHSOD.

Forming the Secretariat with both technical (PAHO) and governance (CARICOM) representatives was intentional and is perceived to be a much stronger accountability mechanism to drive the implementation of recommendations. Since CITAG was formed in February 2018 and issued its first set of recommendations in September 2018, it is too early to tell if indeed this is the case in practice. However, NITAGs, the SEAR-ITAG and ProVac, as well as the broader literature on evidence use, have reported challenges in the adoption and implementation of recommendations (Weiss, 1979; Orton et al.,

3 For example, in 2016–2017 HITAP worked with the MoH in Bhutan to assess the value for money of introducing pneumococcal conjugate vaccines (PCV) in the context of the country's graduation from Gavi support. The study equipped the government with evidence which informed its decision to introduce the vaccine in May 2017. Programmatic support in countries has facilitated institutionalisation of HTA and assessment of topics, including cancer drugs and renal dialysis, that are relevant to those countries.

4 Relative to other regional economic and political communities on the continent, ECOWAS appears to have institutionalised a health pillar much earlier and with a broader mandate. The Southern African Development Community (SADC) Health Programme was established in 1997 and sits within the Social and Human Development and Special Programmes Directorate rather than as a separate institution. The East African Community (EAC) created the East African Health Research Commission (EAHRC) in 2008.

2011; Oliver et al., 2014; among others), so the absence of such an accountability mechanism elsewhere appears to be a constraint. Both CITAG and WAHO also use country visits to reinforce commitments and raise immunisation and health issues with heads of state, parliament, heads of institutions, chief medical officers and EPI managers.

ProVac and HITAP aim to structure inclusive processes so that key national stakeholders are involved throughout. For country engagements, a ProVac National Team is established within the MoH, drawing on ProVac staff and network expertise, MoH and other ministries, including health economists, immunisation programme managers and staff, clinicians and academics. In some cases, however, studies have not been completed along policy timelines or decision-makers have not been open to serious policy deliberation based on the findings. Countries receiving HITAP support typically sign a memorandum of understanding indicating their commitment to working in a transparent and participatory way and identify policy-relevant topics, which are then prioritised through working groups using select criteria (i.e. severity of disease). The analysis is led by the local research team which then present results to policy-makers. Though often timely, stakeholder involvement has been reported to increase willingness to invest in addressing data gaps and improve acceptance of what may be unpopular resource allocation decisions.

Annual in-person meetings of the SEAR-ITAG, CITAG and the biennial PAHO TAG meeting include participation from a range of stakeholders, including EPI programme managers, regional Strategic Advisory Group of Experts on Immunization (SAGE) members, representatives of WHO, UNICEF, the US Centers for Disease Control and Prevention (CDC), Gavi and the Bill & Melinda Gates Foundation (BMGF) so key groups understand the rationale behind recommendations that are subsequently made and can offer feedback on implementation considerations. Like WAHO, the SEAR-ITAG also uses country reporting as a way to monitor progress and encourage improvement, although these reviews involve technical staff rather than ministers. The SEAR-ITAG is the least directly involved in national decision-making processes, as it works through NITAGs, which in turn engage with national institutions. EPI focal points in WHO country offices support the dissemination of ITAG recommendations.[5]

Implementation considerations appear to be most prominently linked to institutional processes with CITAG, since their agenda is guided by the agenda of the annual EPI managers meeting and their in-person meeting takes place as part of this established process. ProVac's COSTVAC toolkit includes costs to deliver the programme, in addition to the cost of vaccines and supplies, so implementation considerations inform evidence inputs. Like many NITAGs, the SEAR-ITAG considers programme matters like vaccine supply and country capacity when determining their recommendations, but these do not appear to be formal processes in many instances. WAHO's broader scope of work includes reviews of EPI programmes and implementation research.

Among the five regional bodies profiled here, direct interaction with Gavi processes has been limited. WAHO is part of the Subregional Working Group on Immunization for West and Central Africa with Gavi, UNICEF and Agence de Médecine Préventive (AMP), and recently received delegations from Gavi and the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) to discuss future collaboration. Similar to what has been reported elsewhere (Howard et al., 2018a; Howard et al., 2018b), the presence of both NITAGs and Gavi Inter-agency Coordinating Committees (ICCs) has created confusion at the national level in most countries in the region. In the Caribbean, ICCs were perceived to endorse rather than guide MoH decisions. Gavi has less

5 It was beyond the scope of this brief to ask decision-makers receiving support from these bodies about the level and type of engagement they found most useful, but this is worth doing. The broader literature on EIDM highlights the perceived importance of interactive processes of evidence production and efforts to strengthen the capacity of individuals to access, appraise and use evidence (Punton, 2016). At the same time, several of our interviewees noted limits on people's time and trade-offs among multiple competing demands, including clinical and other managerial responsibilities. A forthcoming paper on institutional considerations for EIDM written as part of this larger study discusses these trade-offs in greater depth.

of a strong presence in the LAC region, and there were no examples of interactions with CITAG or ProVac. Similarly, the SEAR-ITAG does not work directly with Gavi, beyond Gavi participation in annual meetings. SEAR-ITAG recommendations form the basis of joint appraisal discussions and Gavi funding applications, links that WAHO thought could be possible with NITAGs in West Africa. HITAP has assessed two Gavi financing schemes in Myanmar.

In terms of the *costs of the regional bodies* themselves, WAHO and ProVac were the only entities for which budget details were readily publicly available. WAHO's 120 staff and operational activities are funded through the ECOWAS Community Levy (36%), and external bilateral, multilateral, foundation and private donors (64%), with the proportion from the latter increasing over time (WAHO, 2019). The budget for their 2016–2020 strategic plan is $323.5 million (WAHO, n.d.). The SEAR-ITAG and ProVac receive support from WHO/PAHO, although most ProVac funding comes from BMGF, including a five-year $5.3 million grant (Andrus et al., 2009). HITAP, including the International Unit, uses a pooled funding model from domestic and international resources. All bodies provide public goods like open access guidance materials, tools and recommendations, in addition to country-specific research, analysis and technical support that is funded through resources from member state 'clients' or international sources on their behalf.

Individuals' time is a major cost driver. This is true of staff working for these regional bodies, as well as the people and institutions with and for whom they work, including national advisory group members, ministry staff, academics and clinicians. Regional bodies may be able to leverage some economies of scale by providing resources that multiple countries can draw upon, though recognising decisions should be locally driven. Interacting with regional bodies and taking advantage of their resources, however, will still require dedicated time from national actors and institutions, who often face financial and human resource constraints.

Both WAHO and HITAP report that rising demands exceed current human resource capacity to respond. Like many newly established NITAGs, CITAG relies on in-kind time from core and ex-officio Secretariat members and is currently scoping financing options to cover travel, Secretariat support and activity costs, such as capacity-building evaluations of EPI programmes. The Benin NITAG, which WAHO funded for three years, has since been unable to secure national or international funding.

In addition to human resource and financial limitations, *challenges related to a lack of local data and to the nature of policy processes* were common among these regional bodies. Informants emphasised the multiple factors that influence decision-making and policy implementation, many of which were out of their sphere of control. They sought to maximise the use of regional support and evidence by creating inclusive, structured processes and, for WAHO and CITAG, by leveraging direct connections to senior decision-makers. Regional bodies offer the opportunity to share resources and access more specialised expertise; by definition, however, they are one step removed from national processes and thus represent an additional level of integration into political processes that themselves can be difficult to influence.

In terms of local evidence, cost data was reported to be particularly needed, alongside surveillance data in West Africa. This is consistent with previous studies that note a strong preference for *national* data and advisory groups (Woelk et al., 2009; Gautier et al., 2013; Rodríguez et al., 2015; Uneke et al., 2017a; Howard et al., 2018b; Bell et al., 2019). Data from clinical studies can be applied to other settings. Direct and indirect medical costs are more variable. Cost data from other countries can be used as proxies but then requires extensive uncertainty analyses.

Looking across the five regional bodies, their difference in orientation and scope makes it difficult to make direct comparisons among them. However, the *relative advantages, drawbacks and transferable lessons* that each can offer relates directly to their thematic and institutional orientation. CITAG and WAHO are embedded within existing governance mechanisms and, as such, have direct links to policy-makers and EPI managers. Both enable cross-national collective action that individual countries would otherwise struggle to provide: recommendations

on immunisation for small island states, regional surveillance, bulk purchasing and cross-national transfer of supplies.

The credibility of CITAG regional experts also provides additional assurance in the face of national critiques, regarding vaccine hesitancy for instance. However, as a subregional body, there is no single 'owner', and like some NITAGs, this newer entity faces financial sustainability challenges. WAHO offers an example of potential opportunities for integration across a broad set of health functions and national boundaries, which enables resource pooling and the ability to even out under- and oversupply. A key informant from a WAHO member state spoke of the moral support that WAHO provides, engendering a sense of solidarity and collaborative effort. WAHO is funded by member states, but delays in these disbursements affect the implementation of activities; and, the declining proportion of this revenue stream relative to external resources influences ownership and sustainability.

ProVac, CITAG and HITAP models will be most relevant to countries with similar needs to those which the regional body was designed to address: cost effectiveness expertise, a shared NITAG function and institutionalisation of HTA. ProVac's models are perceived to balance robustness and accessibility, but rely on some degree of economic analysis capacity at the national level. Their models have been tested more often with middle-income than low-income countries.

The SEAR-ITAG and WAHO illustrate how a regional body has supported existing NITAGs and helped establish and grow new NITAGs, respectively. The SEAR-ITAG provides a platform for peer learning among them. NITAGs report to the regional body in a systematic manner, which enables consistent assessments and provides the opportunity for NITAGs to convene stakeholders to review country performance. However, SEAR-ITAG recommendations are not mandatory and therefore, not always implemented.

HITAP's HTA model systematically evaluates a wide range of interventions to inform priority-setting. These broader assessments and prioritisation are increasingly necessary as countries move towards universal health coverage. Furthermore, as countries transition from external assistance, incorporating economic considerations will be crucial in building long-term financial sustainability of national health programmes. Their model facilitates two-way communication among researchers, the general public and decision-makers, although the latter sometimes feel that transparency and accountability pose a threat to their autonomy.

Conclusion

Together, these five regional bodies cover a range of core needs that stakeholders involved in EIDM processes for vaccines have identified (Buffardi and Njambi-Szlapka, 2019). Countries will continue to require different types of support depending on their specific institutional configuration, existing decision-making processes, epidemiological profile, evidence needs and resource base. Therefore, one type of EIDM support model is likely to be inadequate to cover the range of needs, both across countries and to address one country's needs as these evolve over time. If another region was considering establishing a new entity to support countries in the region,[6] the experiences of these five regional bodies suggest the importance of embedding new functions or units within existing governance structures in the region, determining specific needs and gaps that cannot be filled by existing resources, and determining that there are sufficient national resources – human and financial – to be able to take advantage of regional support.

Relative to one another and to national and global efforts to strengthen EIDM, regional bodies could be considered complements, providing specialised support to address defined needs in a particular territory. In practice, there are multiple examples of these groups collaborating with one another. At the same time, national, regional and global support options are substitutes in terms of people's time and external funding, as people and institutions decide where to invest their attention and resources. This overview of selected regional options can help to guide these decisions and discussions about the future role of regional efforts.

6 For instance, WHO's Western Pacific Regional Office is learning from CITAG's model.

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Annex 1. Regional profiles

Box 1 ProVac

ProVac is a Pan American Health Organization (PAHO) regional initiative to support evidence-informed decision-making (EIDM) on the introduction of new vaccines in Latin America and Caribbean (LAC), by developing user-friendly modelling tools, training and technical support for national teams conducting analysis and making recommendations.

Thematic scope: cost effectiveness analysis (CEA) of new vaccine introductions with a primary focus on pneumococcal conjugate vaccines (PCV), rotavirus and human papillomavirus (HPV) vaccines; subsequently expanded to include performance optimisation of immunisation programmes, post-introduction evaluation of vaccine impact, and strengthening of national and regional technical advisory groups (TAGs).

Geographical scope: Initially 42 countries in LAC, ~641 million people. International Working Group formed in 2012 to test the ProVac approach in African, Eastern European and Eastern Mediterranean regions.

Structure: A core regional team of 10 people based at PAHO in Washington, DC, includes PAHO technical officers on immunisation, and experts from the London School of Hygiene & Tropical Medicine and Harvard. In 2010, a network of academic centres of excellence was established among LAC universities.

Process for identifying support needs: Demand led, triggered by an official request from the MoH; for example, in Nicaragua the MoH requested support for special studies to inform the decision-making process between two available WHO prequalified pneumococcal pneumonia vaccines.

Type of support provided: user-friendly health economic modelling tools (often Excel-based) including the UNIVAC model to assess cost effectiveness of new vaccines (estimation of disease burden, incremental programme costs, potential disease costs averted) and the COSTVAC tool for total immunisation programme costing; guidance documents for evaluating the epidemiological and economic impact of vaccine introduction and for TAGs on processes and methods for evidence synthesis; direct in-country capacity building and technical support, regional workshops; desk-based exercises to inform regional recommendations; online e-support centre.

For country engagements, a ProVac National Team is established within the Ministry of Health (MoH), drawing on ProVac staff and network expertise, MoH and other ministries, including health economists, immunisation programme managers and staff, clinicians and academics. The PAHO focal point for immunisations in the country liaises with the ProVac Initiative, and ProVac typically funds a technical consultant, who provides training on standard and/or ProVac-specific economic modelling tools, helps the team craft a workplan for collecting data and conducting the economic analysis, coordinates data collection, prepares material meetings and drafts technical reports. The process support ends with presentations of results to national authorities, primarily decision-makers in the MoH and Ministry of Finance (MoF), but also National Immunization Technical Advisory Groups (NITAGs) when functioning. The recommendations are non-binding.

Implementation considerations are incorporated into their Excel-based COSTVAC toolkit, which provides guidance for countries to estimate the cost of routine immunisation, based on a sample of health facilities and administrative levels of the health system. Cost estimates include the costs to deliver the programme on top of the cost of vaccines and supplies, noting that the former are often not considered or are underestimated.

Types and sources of evidence: preloaded data from international sources for demography, vaccine coverage, disease burden, health service utilisation, and costs, which is then supplemented/challenged by national ProVac teams with local estimates where quality data is available; local data gathered through interviews and data extraction with MoH and hospitals; for example, data sources from studies in Nicaragua and Paraguay included national census and demographic projections, local, regional and international disease burden studies, and outpatient registries, clinical trials and Cochrane review on vaccine efficacy, historical diphtheria-tetanus-pertussis (DPT3) coverage, health service utilisation based on national household surveys and MoH study, and local costing studies on treatment in subsectors.

Relationship with other entities, including interactions with Gavi: developed a guide for ToR and a checklist of quality criteria for self-assessment of NITAGs and PAHO's regional TAG on vaccine-preventable diseases; supports peer learning and exchange between members of advisory groups across the LAC region. No apparent interactions with Gavi.

Cost components and funding sources: Bill and Melinda Gates Foundation (BMGF): $5.3 million 2009–2013. ProVac studies are mainly funded by the government and PAHO (with the PAHO funding primarily through the Gates Foundation grant). Additional in-kind support from PAHO.

Perceived strengths and conducive factors: strong emphasis on country ownership of the process; bringing together diverse local experts and government officials helps build relationships and clarify existing data gaps, which have been reported to generate enthusiasm for further work and collaboration; generalised but customisable models are perceived to strike a good balance between accessibility for those not expert in CEA, and being sufficiently robust; tools enable a 'rapid timeline' of 4–8 months; tools are open access.

Perceived challenges, weaknesses and barriers: tailoring model to country needs (time horizons, discount rates, compared interventions) means findings are country specific, limiting direct cross-country comparisons; model-based economic analyses need data from multiple sources, and other specific modelling limitations; studies are not generally published; focus on cost effectiveness as opposed to affordability and financial sustainability amid competing priorities; bulk of work focuses on the studies themselves, as opposed to deliberation and decision processes; in some cases, studies were carried out after decisions had already been made (or studies were not seriously deliberated).

Support needs/Gaps that external assistance could help address: more engagement on supporting deliberation and decision processes, including closer coordination with the Supporting Independent Immunization and Vaccine Advisory Committees (SIVAC) initiative; support for more flexible modelling that can be tailored to local data availability, the vaccine being evaluated and the time frame of the study.

Gaps the regional body has observed in national-level EIDM: inconsistent and poor quality national data is a concern. In Costa Rica for example, accounting and utilisation data was inconsistent.

Lessons on where this type of regional support may be most relevant: where some degree of existing economic analysis capacity is available, otherwise in practice much assessment is conducted by the consultant, limiting long-term capacity-building impacts. Focus on LAC and mostly middle-income countries elsewhere, less tested in low-income countries, where modelling may need simplification. In LAC immunisation policy has been strongly driven by regional priorities, elsewhere less participation from WHO regional offices was found.

Key changes over time and current status, considerations, challenges: in response to demand, expansion of scope, both geographic (creation of the International Working Group) and thematic (developing beyond CEA to budget impact analysis and programme-costing tools).

Box 2 Caribbean Immunization Technical Advisory Group (CITAG)

Caribbean Immunization Technical Advisory Group (CITAG), multidisciplinary group of regional and international experts who provide evidenced-based technical advice on immunisation and make recommendations to guide policy and the programmatic decisions of Health Ministers and EPI managers in CARICOM member and associated states, in lieu of individual NITAGs.

Thematic scope: priorities include promoting understanding of the value of vaccination and engendering vaccine confidence; capacity building of EPI managers through training; improving the quality of data (nominal electronic registers), data analysis and use; improving outbreak investigations for timely interventions; improving risk communication; promoting the development of legislative frameworks to support vaccination where none exists.

Geographic scope: serves 22 low- and middle-income countries and territories, all island states except for Belize in Central America and Guyana and Suriname in South America, ~7.6 million people; British, French and Dutch colonial histories.

Structure: currently five members (ToR call for no more than seven) with expertise in epidemiology, public health, microbiology, paediatrics and tropical medicine, two ex-officio members/joint Secretariat (PAHO subregional advisor on immunisation, CARICOM Program Manager for Health Sector Development). Members serve three-year terms and may be nominated by the CITAG, Caribbean countries, national professional associations, EPI managers, parent groups, public health labs, regulatory authorities, regional organisations, PAHO; selection done by the chair, Secretariat and 1–2 independent experts; annual in-person meeting alongside annual EPI managers meeting and remote meetings; ToR call for a written conflict of interest (CoI) to be signed at each meeting; establishment formally authorised by CARICOM Ministers of Health and Chief Medical Officers (CMOs) who meet annually as the Council of Human and Social Development (COHSOD); no fixed institutional home.

Steps in the recommendation and decision-making process: CITAG agenda follows that of the annual EPI managers meeting, which is guided by the PAHO Regional Immunization Action Plan (RIAP) and PAHO Technical Advisory Group on Vaccine-preventable Diseases. Following technical updates and plenary discussions on challenges and strategies at this meeting, CITAG discusses their recommendations and presents to EPI managers for their feedback; subsequently, the Secretariat compiles a summary of the situation, challenges and recommendations which is discussed at a virtual CITAG meeting; these recommendations are presented to COHSOD in person by the CITAG chair; COHSOD provides a written summary which is sent to back to ministers; at the country level, ministers and CMOs discuss with senior technical officers the recommendations and targets, which become part of their formal reporting requirements.

Members and the Secretariat also reinforce CITAG presence and recommendations through personal relationships, including discussions during country visits. Recommendations related to new vaccine introductions or ring fencing the budget are discussed between the CMO, EPI manager and MoH, who then take the recommendation to the Cabinet and/or have a bilateral discussion with MoF for approval or to broker an agreement. Across countries, immunisation schedules and state requirements of parents regarding children's vaccination *vary*, predominantly according to colonial ties (French, Dutch, British).

Implementation considerations are central to the EPI managers meeting agenda, discussion and recommendations, which drives the CITAG agenda.

Types and sources of evidence: epidemiological data from the Caribbean Public Health Agency and WHO Joint Reporting Form; technical updates provided at annual EPI managers meeting; feasibility; WHO SAGE and PAHO TAG guidance; CEA from PAHO and ProVac; for new vaccine introduction: incidence, mortality rates, hospital admissions, ToR include list from NITAG guidance including burden of disease, vaccine safety and efficacy, economic considerations, performance and capacity of immunisation programmes to expand services, financial sustainability of immunisation programmes, sustainability of vaccine supplies, population perception of risk, preference and values of the populations, feasibility, equity.

Relationship with other entities, including interactions with Gavi: PAHO and CARICOM through Secretariat, individual member affiliations with national, regional, international rather than formalised CITAG associations; looking to establish relationship with the Caribbean Association of Pediatricians. Limited Gavi presence in the region, no CITAG interaction; ICCs perceived to endorse rather than guide MoH decisions.

Cost components and funding sources: in-kind time of members and Secretariat to attend one in-person meeting a year, and for remote interactions with each other and regional officials; international travel expenses to attend annual CITAG/EPI managers meeting, international travel expenses to attend other meetings (i.e. Global NITAG Network).

Perceived strengths and conducive factors: regional resource for countries too small to have a NITAG; link with CARICOM provides an accountability mechanism that TAG recommendations lack; embeddedness within existing mechanisms (annual EPI managers meeting, COHSOD); familiar structure in the region similar to TAGs for other issue areas; credibility of regional and international experts which provides individual countries with additional assurance against critiques at the national level (i.e. vaccine hesitancy).

Perceived challenges, weaknesses and barriers: as a subregional body, no single 'owner'; EPI managers appeal to their local level international advisors for support more readily than this remote body; financial sustainability.

Support needs/Gaps that external assistance could help address: research/legal advice on legal frameworks; travel for a planning workshop with selected EPI managers and the CITAG to develop a unified programme of work; travel for members to attend annual meeting; technical secretariat support staff; research on social communication strategies for vaccine hesitancy.

Gaps the regional body has observed in national-level EIDM that external assistance could help address: ongoing training including funding for country EPI evaluations designed as a capacity-building tool; harmonised information systems between hospitals (where suspected cases of polio likely to be detected) and MoH (community-based immunisation efforts); support to minimise delayed reporting to PAHO; delays by some countries in payment to PAHO revolving fund for routine vaccines which delays receipt of supplies; immunisation programmes perceived to be doing well so receive less attention, face challenges from other health areas.

Lessons may be most relevant to: very small countries with insufficient human resources to sustain a NITAG; long history of regional cooperation – CARICOM represents 46 years of functional cooperation in economic integration, foreign policy coordination, human and social development and security; annual meeting of EPI managers has taken place since 1986 and has been chaired by current CITAG chair since 1989.

Key changes over time and current status, considerations, challenges: launched in February 2018, driven by a desire to fulfil Global Vaccine Action Plan (GVAP) and PAHO RIAP goals of establishing NITAGs, hurricanes in the Caribbean and outbreaks of vaccine-preventable illnesses in neighbouring countries and a desire to maintain the polio-, measles- and rubella-free status of the Caribbean.

Box 3 South-East Asian Regional Immunization Technical Advisory Group (SEAR-ITAG)

South-East Asian Regional Immunization Technical Advisory Group (SEAR-ITAG), a regional body composed of technical experts responsible for providing overall advice on immunisation to the 11 member states of SEARO. Reviews progress on the South-East Asia Regional Vaccine Plan (SEARVAP) developed in line with the World Health Assembly-approved Global Vaccine Action Plan.

Thematic scope: reviews and provides recommendations on regional and national immunisation policies; guides regional immunisation priority areas; advises on strategies for new vaccines; translates global recommendations into regional policies.

Geographical scope: 11 member states, Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand, Timor-Leste.

Structure: comprises eight core independent experts working in academia, programme management, vaccine-preventable diseases, virology, epidemiology and immunisation. Seven members work in the region, one is from outside. Members rotate every four years and are appointed by SEARO. None are involved in the implementation of immunisation programmes in SEARO countries during their term. Declarations of interest are given upon appointment and before every annual meeting.

Steps in the recommendation and decision-making process: An annual four-day meeting serves as a focal point for regional immunisation technical advisory group (RITAG) activities and recommendations, and includes the participation of RITAG members, chairpersons of the NITAGs, regional SAGE members, EPI country programme managers and representatives of UNICEF, US CDC, Gavi, BMGF, Rotary International and WHO headquarters. A pre-meeting is convened solely with the RITAG members to discuss progress and challenges in implementation of SEARVAP and GVAP and the previous year's RITAG recommendations.

Ahead of the annual meeting, each NITAG is to complete a report based on a structured country-tailored template ahead of the annual meeting on progress made, challenges faced and ways forward. Secretariat develops country-tailored reports, pre-populated with indicators and data, and incorporates the recommendations from last year. Progress is mapped against the eight goals in the SEARVAP. Two members of the RITAG review each report ahead of the meeting and make comments available in advance. During the meeting, a NITAG representative from each country makes a structured presentation on national progress, which is followed by an open discussion. EPI programme managers are given the opportunity to comment. EPI programme managers present a showcase on innovative activities in their countries. These may also be linked with regional vaccine plan goals (usually based on lessons learned or a topic assigned by the RITAG members).

Based on the NITAG reports, presentations and discussions, the RITAG members make recommendations under each SEARVAP goal. Some recommendations cut across all countries and are based on the GVAP, i.e. introduction of the inactivated polio vaccine as part of the global polio strategy. Other recommendations are more country specific. Recommendations are drafted during a penultimate session which is a closed-door meeting for RITAG members. The Chair of the RITAG then presents a summary of the draft recommendations to all in attendance for comment. Recommendations are compiled into a report with a formal letter signed off by the regional office and shared to the government secretaries of the member states and made publicly available. Recommendations are not legally binding and are a mechanism to help NITAGs and MoHs achieve immunisation targets.

Implementation considerations: such as vaccine supply and country capacity inform recommendations.

Types and sources of evidence: mostly clinical, i.e. vaccine trials and local surveillance, monitoring and prevalence data. The RITAG recommends the generation of local evidence. Though economic evidence is viewed as an important consideration, the RITAG recognises the limited capacity of member states to conduct economic studies and has maintained that a lack of local economic evidence should not prohibit the introduction of a new vaccine.

Process for identifying support needs: NITAGs request support from RITAG, i.e. how to incorporate economic considerations. The RITAG if needed can draw on partners to facilitate sessions at annual meeting. The RITAG also identifies needs based on the findings of NITAG reports and cross-cutting challenges like difficulties in reviewing and reporting.

Type of support provided: capacity-building activities for NITAGs to enhance technical capabilities and functioning, i.e. 2.5-day orientation in Delhi with two members of each NITAG (chair and another member) on reviewing and reporting. Workshops were based on monitoring and measuring progress and reviewing and utilising evidence. The RITAG provides additional in-country training for NITAGs. It provides up-to-date information on vaccine matters in sessions at annual meeting, like delivery and cold chain management; these do not lead to any concrete recommendations.

Relationship with other entities, including interactions with Gavi: annual meetings are a platform for multiple stakeholders involved in immunisation in the region to jointly review the performance of national EPI programmes and regional progress. The model strengthens coordination and communication with RITAG, SAGE and NITAGs. The RITAG chair, along with one or two NITAG representatives, attends the biannual SAGE meetings. No formal mechanisms to interact with other RITAGs. The RITAG provides guidance on public–private partnerships and invites private sector representatives as observers at the annual meeting (have previously given presentations on themes such as vaccine supply). Gavi are invited to the annual meetings and recommendations of the RITAG form the basis of the joint appraisal discussions as well as new appraisals put to Gavi for funding. However, the RITAG does not interact directly with Gavi, which is the responsibility of the NITAGs.

Cost components and funding sources: activities are funded by the World Health Organization.

Perceived strengths and conducive factors: provides expert-led guidance, a network to link NITAGs, platform for peer learning, building technical capacity of NITAGs. Involvement of the NITAGs has been critical to the success of the model. NITAGs are responsible for reviewing national progress and reporting to RITAG in a systematic manner, which provides NITAGs with greater ownership and empowers them to convene meetings with stakeholders to review country performance. Core ITAG members are from various areas of expertise. Such a multidisciplinary body is required for providing technical and political support to member states. RITAG also has knowledge of EPI programmes of the region. WHO plays a major role in the positioning and giving prominence to the RITAG, placing significance on the recommendations it gives. WHO ensures that RITAG recommendations are discussed at global, regional and national forums and form the basis of the EPI review of a member country. The EPI focal points in the WHO country offices are instructed to disseminate recommendations.

Perceived challenges, weaknesses and barriers: it is not mandatory for a country to implement recommendations. For instance, in 2017 RITAG recommended that member states develop communication strategies to address vaccine hesitancy; however, it was apparent in the 2018 RITAG meeting that this had not been implemented. There are only eight core RITAG members and, though from various disciplines, there are gaps in expertise: vaccine regulation or vaccine economics.

Support needs/gaps that external assistance could help address: expertise in economic evaluation; the RITAG has asked HITAP to join the next annual meeting to present on the use of HTA for vaccine introductions; support on strategies to combat vaccine hesitancy.

Gaps the regional body has observed in national-level EIDM: member states lack capacity to conduct economic evaluations, general lack of local data.

Lessons may be most relevant to: RITAGs with established NITAGs in member states.

Key changes over time and current status, considerations, challenges: Declared 'polio free' in March 2014. Shift with the NITAGs taking on more responsibility and ownership of reporting.

Box 4 Health Intervention and Technology Assessment Program (HITAP)

Health Intervention and Technology Assessment Program (HITAP), a semi-autonomous research unit responsible for evaluating a wide range of health interventions and technologies to inform the coverage, pricing and reimbursement decisions in Thailand. HITAP leverages on this experience as the formal HTA unit for Thailand to provide global and regional support for the institutionalisation of HTA as a tool for setting priorities in health.

Thematic scope: HTA, including studies to inform the pharmaceutical benefits package for reimbursement and the non-pharmaceutical benefits package for Thailand's universal health coverage (UHC) scheme, stakeholder consultations throughout the HTA process (i.e. refining research questions and parameters), research dissemination to policy-makers and the public. HITAP International Unit (HIU) promotes and shares knowledge on this systematic and participatory process for selecting topics and conducting HTA in its regional work. HIU facilitates research and capacity-building activities, including vaccine economics training, technical support for vaccine economic evaluations and research, and guidance materials.

Geographical scope: HIU provides technical support mainly in the Asia Pacific region for India, Indonesia, Philippines, Bhutan, Nepal, Sri Lanka, Myanmar, Laos and Vietnam; engages in global collaborative projects like the WHO pilot of Total Systems Effectiveness (TSE) to vaccine product selection in Thailand and Indonesia; recently extended its scope to Kenya.

Structure: a semi-autonomous research unit housed in the Ministry of Public Health (MoPH), with its foundation (HITAF) serving as an internal managing body. Unlike many other HTA units, research is conducted within HITAP rather than universities. HIU, established in 2013 and guided by the International Advisory Committee, currently employs 13 staff, predominantly international. All 65 HITAP staff members sign CoI statements annually.

Process for identifying support needs: demand-driven based on requests from governments, universities, international organisations (the Kenya MoH requested support from the Thai MoH on UHC, SEARO and iDSI links); research topics and pilot studies nominated by stakeholders rather than HITAP and prioritised through working groups using select criteria like severity of disease. HTA pilot studies respond to policy demand in countries. To partner with HITAP, the country should be progressing towards UHC and commit to work in a transparent and participatory way; the partnership is formalised through a memorandum of understanding between the two governments. HITAP does not accept for-profit projects.

Type of support provided: (1) *Research and development of a fundamental system for HTA* (i.e. methodological guidelines, healthcare cost database, creation of online platform Guide for Economic Analysis and Research); (2) *Capacity strengthening* (study visits to Thailand, raising policy awareness, technical training (on-the-job, scholarships and workshops) on health economic evaluation and topic nomination, pilot studies); (3) *Assess health technologies and policies in regard to public priority* (i.e. HTA on vaccines as part of the UHC benefit package); (4) *Research dissemination* (develops policy briefs, video animations, social media, and convenes workshops); (5) *Collaborating with and expanding network* through iDSI, working directly with governments, universities and non-profit units to build capacity for priority-setting.

While strategy remains the same domestically and internationally, HITAP is less directly involved in regional work, serving in an advisory and quality assurance role for local partners. In Thailand, HITAP will arrange stakeholder consultations, whereas in regional work this will be the role of the domestic partner. In Bhutan, HITAP/iDSI were asked to support the Bhutanese MoH Essential Medicines and Technology Division in conducting an economic evaluation on the introduction of the pneumococcal conjugate vaccine (PCV). PCV was found to be good value for money and financially feasible. The results were presented to and subsequently endorsed by the High-Level Committee in the MoH, approved by the Cabinet, and then included in the routine immunisation programme. In Vietnam, HITAP/iDSI worked with members of the Health Strategy and Policy Institute (a research agency under MoH) to review the basic health service package. Recommendations on rationalising use of drugs and removing inappropriate indications were presented to experts, including the Vice-Minister of Health, who then issued a letter to all health facilities to use medicines based on these recommendations.

Implementation considerations like vaccine availability can be included in decision-making criteria, along with burden of disease, budget impact, programmatic and financial sustainability. In Thailand, multicriteria decision-making is utilised to inform priority-setting.

Types and sources of evidence: systematic reviews, theoretical and methodological studies; focus on formal economic evaluations which compare costs and consequences of alternative options, requiring both costs and health outcome data; utilises international standard and qualified research methodologies (iDSI reference case for economic evaluations, Global Health Cost Consortium reference case for costing studies); local epidemiological, safety, clinical, cost data gathered from government databases, local studies and primary data sources; evidence from other countries, global/regional sources used as proxies when local data not available (with extensive uncertainty analysis). HITAP works to facilitate the improvement of health information systems.

Relationship with other entities, including interactions with Gavi: national stakeholder consultation processes in Thailand and other countries involve decision-makers (i.e. MoPH, MoF), health professionals, academics, patient associations, civic groups, lay citizens and healthcare industry groups; HITAP is a core founding member of HTAsiaLink, a network of 45 HTA organisations which hosts an annual conference to strengthen regional expertise. In Myanmar, HITAP, the WHO country office and Gavi Health Systems Strengthening Team assessed two financing schemes: the Hospital Equity Fund and Maternal and Child Health Voucher Scheme implemented by Gavi.

Cost components and funding sources: Common funding pool from domestic funders including MoPH, Thailand Research Fund, National Health Security Office, Health Systems Research Institute; the Rockefeller Foundation; deliverables-based contracts with WHO, UNICEF; currently in the third phase of the iDSI grant, predominantly funded through BMGF, to provide technical support to low- and middle-income countries.

Perceived strengths and conducive factors: HTA expertise that responds to decision-maker needs; independence; financially sustainable; transparent mechanisms to communicate why an unpopular decision is the right one; regional network to collaborate and avoid duplication; high quality research with mechanisms for quality assurance; facilitation of two-way communication between researchers, the general public and policy-makers.

Perceived challenges, weaknesses and barriers: HITAP's model requires political will and long-term commitment, decision-makers can feel that transparency and accountability pose a threat to their autonomy; investing in an HTA unit or body is both time-consuming and costly, two- to three-year time frames set by donors to achieve deliverables challenges sustainability; difficulties in creating means to factor equity.

Support needs/Gaps that external assistance could help address: current size of the research unit cannot meet rising demand for HTA; financial support for human capacity and training activities.

Gaps regional body has observed in national-level EIDM: HTA expertise; lack of local data in low- and middle-income countries, especially cost data i.e. direct medical costs and direct non-medical costs.

Lessons may be most relevant to: countries where there is government commitment and demand for UHC and HTA; commitment to improving data infrastructure/information systems to produce necessary local data; capacity to perform HTA (access to health economists/ HTA specialists as a minimum); formal mechanisms for stakeholder engagement and to link HTA to decision-making processes (i.e. drug list); an established focal point (HTA unit or body) for HTA to enable sustainability.

Key changes over time and current status, considerations, challenges: HITAP has leveraged its domestic work to become a regional hub for HTA capacity building and is now expanding work to sub-Saharan Africa. HITAP has recently partnered with National University of Singapore and the National Health Foundation of Thailand to become the Asia HTA Consortium.

Box 5 West African Health Organization

West African Health Organization, a specialised institution of ECOWAS charged with safeguarding the health of the peoples in the subregion, the initiation and harmonisation of the policies of member states, the pooling of resources and cooperation.

Thematic scope: focus on (1) maternal, child and adolescent health; (2) quality standards and centres of excellence; (3) pharmaceuticals (medicines and vaccines); (4) prevention and control of communicable and non-communicable diseases (NCDs) and (5) health information. Three strategic goals, 13 priority programmes and 102 activities in the 2016–2020 Strategic Plan also include research, epidemics and emergencies, traditional medicine, health infrastructure, governance, human resources, strategic partnerships and institutional capacity building.

Geographic scope: 15 low- and middle-income member states: Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo, ~335 million people; three working languages: English, French and Portuguese.

Structure: ~120 statutory, professional, support and contract staff. Council of ECOWAS Ministers, comprising the Ministers of Regional Integration, Finance and Planning, takes decisions for the approval of the Authority of Heads of State and Government. The Assembly of Health Ministers is responsible for technical matters; vaccines are on their agenda (the May 2019 session discussed recent measles outbreak). Directorate General visits countries annually to meet with heads of state, parliaments and ministers and heads of institutions. NITAG support is led by maternal and child health (MCH) focal point.

Functioning NITAGs currently in Côte d'Ivoire, Benin, Senegal, Burkina Faso, Togo and Nigeria; established in Ghana, Niger, The Gambia, Mali and Guinea; absent in Cape Verde, Guinea-Bissau, Liberia and Sierra Leone. Across countries, the EIDM process is similar, following NITAG guidance. They *vary* in group size, from six core members in The Gambia to 17 in Côte d'Ivoire, and the level of access for face-to-face meetings with the MoH. MoF technical staff serve as ex-officio members in some countries, but may not be in a position to influence decisions.

Process for identifying support needs: MoH requests to Director General of WAHO.

Type of support provided: Began process of NITAG establishment in the region in 2009 with AMP through SIVAC, including meetings with the Permanent Secretary and ministers from all 15 countries and feasibility studies in 11, an intentionally phased approach based on country capacity and political stability and will. WAHO has since provided technical and financial support for NITAG annual plan activities in Togo, Burkina Faso, Benin, Côte d'Ivoire and Senegal, external assessments in the latter four, financial support for a study on non-EPI vaccines in Côte d'Ivoire, resource person and new member training in Burkina Faso and Togo, and convened regional NITAG workshops in 2014, 2015 and 2019.

Additional WAHO support includes: a weekly epidemiological surveillance bulletin; implementation research and evaluations, including the annual review of national maternal child adolescent and youth health (MCAYH) programmes; development of guidelines (i.e. UHC, good manufacturing processes, community-based interventions, adolescent health), national (i.e. national medicines quality control laboratories) and regional strategic plans and roadmaps (i.e. pharmaceuticals, NCDs, mental health, nutrition, public–private partnership in health); mass treatment campaigns; bulk procurement of medicine; establishment of the ECOWAS Regional Centre for Surveillance and Disease Control and three regional centres of excellence for training; supply and cross-national transfer of contraceptives; annual meetings of tuberculosis control and malaria control programmes; conducted 27 training workshops involving 1,713 people in 2017.

Implementation research has influenced national systems, including the establishment of an essential medicines monitoring committee and integration of free MCH care in Nigeria, rehabilitation of cold chain in Sierra Leone, establishment of a national think tank committee on financing, equity and efficiency of health services in Senegal.

Types and sources of evidence: number of cases and deaths of specific diseases reported by member states, incidence rates from WHO Global Health Observatory Data, vaccine coverage and mortality rates from UNICEF; primary research on implementation science (adherence, community mobilisation, health systems strengthening); NITAG feasibility studies assessed political commitment and availability of human resources to serve in a voluntary capacity; regional and global declarations used as momentum for action (Addis Declaration on Immunization).

Relationship with other entities, including interactions with Gavi: WAHO is part of the Subregional Working Group on Immunization for West and Central Africa with Gavi, UNICEF, AMP; recent Gavi and GFATM delegations to WAHO to explore future collaboration. Confusion at national level between ICCs and NITAGs; ICC chairs sometimes invite NITAG chairs to present; the latter can be a technical tool for the ICC to make more robust decisions; joint appraisal recommendations could be raised to NITAGs to help identify solutions.

Cost components and funding sources: staff, financial support for member state activities; 2016–2020 Strategic Plan budget $323.5 million; in 2018, 36% of approved budget from ECOWAS Community Levy, 64% from external sources; funders include Netherlands, IDRC, UNICEF, WHO, BMGF, UNAIDS, NEPAD, ADB, GIZ, KFW, AFD, USAID, Africa CDC, World Bank, UEMOA.

Average NITAG costs ~25–30 million CFA francs ($30,000–$50,000)/year. All have been externally funded through WAHO (through an agreement for three years with funds from the Community Levy), AMP/SIVAC, Gavi, WHO, UNICEF and PIVI; most significant in-kind contribution (hosting Secretariat, meeting room) from the National Institute of Public Sanitation in Côte d'Ivoire.

Perceived strengths and conducive factors: embedded within a longstanding regional institution with a political mandate and direct line of communication to decision-makers; funded in part by member states; resource pooling and sharing (over/understocks).

Perceived challenges, weaknesses and barriers: inadequate human resources to fulfil very broad mandate; late disbursement of resources by the ECOWAS Commission delaying implementation of programmes financed by the Community Levy, declining proportion of WAHO funding through the Levy relative to external funds affects ownership and sustainability.

Support needs/Gaps that external assistance could help address: human resources to fulfil mandate.

Gaps the regional body has observed in national-level EIDM: availability of human resources (time rather than lack of expertise), lack of national data on disease burden and prevalence, limited national immunisation funding, low visibility of NITAGs, concerns about confidentiality and CoI reported in one country; inadequate capacity of organisations and budget for policy-relevant research, policy-makers' indifference to evidence, lack of interaction between researchers and policy-makers.

Lessons may be most relevant to: existing regional cooperation mechanisms without a health pillar or one with more limited function, as in East African and Southern African Development Community.

Key changes over time and current status, considerations, challenges: ECOWAS established in 1975, WAHO in 1987; Ebola outbreak in 2014–2015 in Guinea, Liberia, Sierra Leone heightened attention on the region, strained already weak health systems; biggest improvements in immunisation coverage from 2012–2016 in Togo and Nigeria, declines in Sierra Leone, Guinea, Niger, The Gambia and Liberia.

Annex 2. Documents and websites reviewed to create profiles

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