

# Vaccine Hesitancy Landscape Analysis of organisations working on the issue of Vaccine Hesitancy<sup>1</sup>

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<sup>1</sup> Work in progress. No claims can be made about the completeness or adequacy of the contents of this document .

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## Background:

Vaccine hesitancy is one of several concepts and ideas that relate to the demand side of vaccine usage, synonymously following terms can be used: vaccine acceptance, vaccine confidence and vaccine refusal, among others. This landscape analysis attempts to take a relatively broad view of vaccine hesitancy by including all actors working on any of these concepts. However, for the purposes of simplicity, all concepts are grouped under the umbrella term of ‘vaccine hesitancy’.

The purpose of this document is to stimulate the compilation of a list of organizations involved in vaccine hesitancy work. This document presents a reference list which includes examples from many different types of organizations at many different levels. The intention is that the list becomes more populated and evergreen as stakeholders, organizations, institutes and communities respond with suggested additions. This currently initial list should be shared with country level partners for their additional input. As the list becomes more robust it will become more useful to meet the indicated objectives.

**Five** categories and **four** sub-categories of actors were determined to represent the groups working on the issue of vaccine hesitancy, including *Government* (national and regional), *Not-for-profit*, *Donors*, *Research Organisations* and *Multinationals*. An *Other* category was included to represent any actor that did not fit in the above categories but was still producing important work related to vaccine hesitancy. Industry was not included as its own category in this framework. Although industry has a major stake in vaccine hesitancy, industry vaccine groups share similar interests in combating vaccine hesitancy and therefore conduct comparable work on the issue. Consequently, limited benefit is seen in analysing each member of vaccine industry individually. Instead, the vaccine industry was included as one entity in the ‘other’ category, so their work and interests as a group may be presented in the Landscape Analysis.

Excluded were concepts, frameworks or strategies addressing vaccine hesitancy which are not a solitary entity but composed of different organizations, stakeholders or collaborators. In this context especially the “Decade of Vaccines’ Collaboration/ Global Vaccine Action Plan” needs to be mentioned. One of their strategic objectives is that individuals and communities understand the value of vaccines and demand immunization both as a right and a responsibility. Goal is to develop an indicator measuring vaccine hesitancy.

## Objectives:

- Allow to identify what organisations are working on the issue of vaccine hesitancy in various settings/countries.
- Allow those working on the issue of vaccine hesitancy to identify potential partners, donors and collaborators in the field.
- Allow people to identify the regions where work is being done on vaccine hesitancy and what kind of work is being done in each area.
- Be a regularly updated resource on work currently being done in the field of vaccine hesitancy
- Help identify research and funding gaps—particularly in countries where there are more significant vaccine hesitancy issues.

## Methods:

### *Areas of work:*

7 areas of work and/or interest were identified being carried out by actors working on the issue of vaccine hesitancy, these included:

- *research*
- *policy recommendation*
- *intervention*
- *education & promotion*
- *collaboration*
- *goal setting*
- *social mobilisation*

### *Search strategies:*

Two main strategies were used:

#### *1. Literature Search*

##### a. Databases/Search engines used:

- i. Google: Canadian (google.ca), United States (google.com), United Kingdom (google.co.uk) and Hong Kong (google.com.hk)
  - First 5 pages of google were searched for relevant actors
- ii. Pubmed
- iii. Refworks database for the systematic review on the rubric of trust and confidence in vaccines currently being produced by the London School of Hygiene and Tropical Medicine (LSHTM).
- iv. WHO database: Global Information Full Text project (GIFT), more than 10,000 priced and open access journals

##### b. Search terms

- i. Google (Canadian, US, German and UK), GIFT and Pubmed
  - Used the following search terms: vaccin\*, immunization, shot AND hesitan\*, resistan\* refusal, confidence, acceptance, promotion AND initiative\* OR organization\* OR strateg\*
- ii. Google (Hong Kong)
  - Used the same search terms as above, translated into Chinese:
    - 疫苗=vaccine
    - 犹豫=hesitant/hesitancy
    - 抗拒=refuse/resist
    - 信心=confident/confidence
    - 接受=accept/acceptance
    - 研究=research
    - 组织=organization/institution
- iii. Refworks
  - Searched full database, using term: vaccin\*, immunization, shot AND hesitan\*

#### *2. Snowballing technique*

Vaccine Hesitancy Landscape Analysis

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Furthermore, we obtained unpublished information through personal communication with colleagues and experts.

- a. Asked main players working on the issue of vaccine hesitancy (i.e. people in SAGE WG on vaccine hesitancy, and players identified through initial literature search) and colleagues familiar with regional/local circumstances
  - i. Feedback from:
    - Julie Leask, University of Sydney
    - Heidi Larson, member SAGE working group (WG) on vaccine hesitancy
    - Noni MacDonald, member SAGE WG on vaccine hesitancy
    - Susan (Yuquing) Zhou, member SAGE WG on vaccine hesitancy
    - Mahamane Laouali Manzo, member SAGE WG on vaccine hesitancy
    - Dr. Bettinger, vaccine researcher at the Child & Family Research Institute at the BC Children's Hospital and UBC, Canada
- b. Based on these responses collaborators and affiliates of players of vaccine hesitancy that were mentioned were looked up and it was determined if/how they were involved in vaccine hesitancy.
- c. The main players working on the issue of vaccine hesitancy also provided additional contact information for other actors working on this issue.

### ***Inclusion/exclusion criteria:***

#### **Inclusion:**

- i. Actors doing work in at least two of the seven areas of work/interest specified in the introduction.
- ii. Actors give *specific* examples of activities they are engaged relating to the issue of vaccine hesitancy (i.e. not simply stating general mandates).

#### **Exclusion:**

- iii. Actors promoting vaccine hesitancy or who are part of the anti-vaccination lobby.
- iv. Actors that have not worked on the issue of vaccine hesitancy in the last 5 years

## Results:

**Table 1. Key actors working on vaccine hesitancy**

Categories		Key Actors	Areas of Work/Interest <sup>†</sup>	Actions <sup>‡</sup>	Region <sup>§</sup>	Collaborators and Affiliates <sup>**</sup>
Gov.	National	China CDC (CCDC)	<ul style="list-style-type: none"> <li>• Research</li> <li>• Policy Recommendations Interventions</li> </ul>	<ul style="list-style-type: none"> <li>• Research:               <ul style="list-style-type: none"> <li>◦ Survey of KAP (knowledge, attitudes and practices) of measles<sup>2</sup> (MOH and WHO)</li> <li>◦ Survey on KAP of Hepatitis B among health care staff <sup>16</sup> (MOH and UNICEF)</li> <li>◦ Survey on EPI KAP among highly educated population <sup>16</sup> (CCDC)</li> <li>◦ Person to person communication intervention strategies<sup>16</sup> (MOH and UNICEF)</li> <li>◦ Evaluation of parents KAP on immunization<sup>16</sup> (MOH, WHO and US CDC)</li> </ul> </li> <li>• Social marketing campaign               <ul style="list-style-type: none"> <li>◦ 25 April- Children's Immunization Day<sup>3</sup>(MOH, CCDC and provincial health bureau and provincial CDC)</li> <li>◦ Information sheets/brochures for parents and caregivers, to address any vaccine concerns.<sup>4</sup> (MOH, CCDC)                   <ul style="list-style-type: none"> <li>▪ Guide providing info about general knowledge, the benefits of vaccination, situations when not to receive vaccination, preparation work for parents, adverse events, etc.<sup>18</sup> (MOH, CCDC)</li> </ul> </li> </ul> </li> </ul>	China	<ul style="list-style-type: none"> <li>• Provincial health bureau and CDC</li> <li>• WHO</li> <li>• US CDC</li> <li>• UNICEF</li> <li>• China Ministry of Health (MOH)</li> </ul>
		China MOH	<ul style="list-style-type: none"> <li>• Research</li> <li>• Interventions</li> <li>• Education &amp; Promotion</li> </ul>	<ul style="list-style-type: none"> <li>• Social Marketing:               <ul style="list-style-type: none"> <li>◦ ImmunizationDay<sup>17</sup> (MOH ,national wide health bureau and CDC and government)                   <ul style="list-style-type: none"> <li>▪ Theme: Vaccination is the responsibility of each household in 2012, each year has different theme based on the priority of work (MOH)</li> </ul> </li> </ul> </li> <li>• Promotion methods <sup>18</sup> (CCDC and Local CDC)               <ul style="list-style-type: none"> <li>◦ Central governor and Local governor attend initiating ceremony</li> <li>◦ Improve awareness and promotion through competitions about vaccine knowledge, expert visits, as well as art and cultural performances (CCDC)</li> <li>◦ Involvement of organisational leaders, including attending vaccine promotion activities, improve cooperation between education and social media departments, motivate village leaders and committee members to promote to the community</li> </ul> </li> </ul>	China	<ul style="list-style-type: none"> <li>• China CDC</li> <li>• Provincial health bureau and CDC</li> <li>• Central and local governments</li> </ul>

<sup>†</sup> Areas of work/interest within vaccine hesitancy including: research, policy recommendation, intervention, education/promotion, collaboration, goal setting.

<sup>‡</sup> Actions: examples of current vaccine hesitancy activities the actors are engaged in

<sup>§</sup> Where (country/setting) where the organization is based and/or where their work on vaccine hesitancy is focused.

<sup>\*\*</sup> Only organization that consistently collaborated on vaccine hesitancy or worked on key project related to vaccine are shown in the 'Collaborators and Affiliates' section.

Categories		Key Actors	Areas of Work/Interest†	Actions‡	Region§	Collaborators and Affiliates**
				<p>about the efficacy and safety of the vaccine(MOH, PROVINCIAL HEALTH BUREAU and CDC)</p> <ul style="list-style-type: none"> <li>○ Arrange visits to rural areas and visits of minorities which health information may not reach conveniently (CDC)</li> <li>○ Enforce education to village committees, village doctors, school teachers, and parents CDC</li> <li>○ Systematically collect and manage information of promotion activities CDC</li> <li>○ *Please note that many of these projects were undertaken in concert by both the China Department of Health and the China CDC.</li> </ul>		
		Department of Health, Belize	<ul style="list-style-type: none"> <li>• Policy</li> <li>• Intervention</li> <li>• Research</li> </ul>	<ul style="list-style-type: none"> <li>○ Public Health strategy to meet with all parents whose children not immunized in timely fashion. The workers will meet parents in their homes. <sup>5</sup></li> </ul>	Belize	Canadian Centre for Vaccinology
		Federal Centre for Health Education (Bundeszentrale für Gesundheitliche Aufklärung, BZgA)	<ul style="list-style-type: none"> <li>• Education &amp; Promotion</li> <li>• Research</li> </ul>	<ul style="list-style-type: none"> <li>• Health education and health promotion</li> <li>• Research on parental knowledge, behaviour and attitude concerning vaccinations and the need for information material<sup>6</sup></li> </ul>	Germany	<ul style="list-style-type: none"> <li>• German Ministry of Health</li> <li>• National Public Health Institute</li> </ul>
		National Centre for Immunisation Research and Surveillance (NCIRS)	<ul style="list-style-type: none"> <li>• Research</li> <li>• Policy Recommendations</li> <li>• Interventions</li> <li>• Education &amp; Promotion</li> </ul>	<ul style="list-style-type: none"> <li>• Workshops and conferences <ul style="list-style-type: none"> <li>○ 2012- <i>Ethical Issues in Immunisation Seminar</i><sup>7</sup> <ul style="list-style-type: none"> <li>▪ Presentation on 'How far can government go in promoting vaccination?' and 'A little bit more ethics on power and persuasion in immunisation'</li> </ul> </li> </ul> </li> <li>• Social Research <ul style="list-style-type: none"> <li>○ Descriptive, identifying immunisation-related beliefs, attitudes and practices of consumers and health professionals, as well as mass communication research. <sup>8</sup> <ul style="list-style-type: none"> <li>▪ Survey tracking parental attitudes to vaccination<sup>9</sup></li> <li>▪ <i>MMR Decision Aid</i><sup>10</sup> <ul style="list-style-type: none"> <li>• Used to help parents to decide whether to immunise their child with MMR the vaccine.</li> </ul> </li> </ul> </li> </ul> </li> </ul> <p>*Please note that the NCIRS is directly linked with the University of Sydney, however because of its varied work on the issue of vaccine hesitancy it was included as its own actor.</p>	Australia	<ul style="list-style-type: none"> <li>• Australian Technical Advisory Group on Immunisation (ATAGI)</li> <li>• Australian Government Department of Health and Ageing</li> <li>• University of Leeds</li> </ul>
		AFRICAN REGION: Ministries of Health and Communication	<ul style="list-style-type: none"> <li>• Policy/Recommendation</li> <li>• Intervention</li> <li>• Education&amp; promotion</li> <li>• Collaboration</li> </ul>	<ul style="list-style-type: none"> <li>• Solemn declaration by President (swearing on the Koran at Niger) on the safety of the vaccine to overcome reluctance</li> <li>• Launching ceremonies of immunization campaigns by heads of state: (Niger,Nigeria,Benin,Burkina Faso,Mali)A meeting is organized, all stakeholders are taking part and there are media reports.</li> <li>• Media coverage of immunization sessions where families of authorities(health and</li> </ul>	Africa	• UNICEF

#### Vaccine Hesitancy Landscape Analysis

Categories		Key Actors	Areas of Work/Interest†	Actions‡	Region§	Collaborators and Affiliates**
		(Niger,Benin,Nigeria,Mali,Burkina Faso,Kenya, Guinée Conakry)	• Goal setting.	<p>government) are vaccinated: Niger,Nigeria</p> <ul style="list-style-type: none"> <li>• Integration of home visits in the “minimum package” of health center service delivery: Niger, Benin, Burkina Faso ,Mali</li> <li>• Broadcast television radio messages explaining the different vaccinations during the EPI immunization schedule and the importance of respecting it (reports by religious association,,chief associations and MOH): Niger, Benin, Burkina Faso ,Mali,Nigeria</li> <li>• Capacity building of EPI managers: WHO and UNICEF support it in most of African region.</li> <li>• Production of information material (National EPI, National Directorate of Health Education with lean of UNICEF) and distribution of educational media information to raise awareness (pagivoltes, booklets, posters): health workers, religious and chief association</li> </ul>		
		Romania National Institute of Public Health	<ul style="list-style-type: none"> <li>• Policy/Recommendation</li> <li>• Research</li> </ul>	Project: Strategic Directions for the Development of the vaccination program and Promotion of vaccination Identifying issue related to vaccine hesitancy and developing a national strategy with best practice and recommended methodologies to tackle caregiver hesitancy.	Romania	
		UK Department of Health	<ul style="list-style-type: none"> <li>• Research</li> <li>• Interventions</li> <li>• Policy Recommendations</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Joint Committee on Vaccination and Immunisation (JCVI)</i> <ul style="list-style-type: none"> <li>◦ Research on attitudes on influenza vaccination in children<sup>11</sup></li> </ul> </li> <li>• Immunisation Market Research Section <ul style="list-style-type: none"> <li>◦ State: “feedback on attitudes and awareness of immunisation is vital to help inform and shape the work” on successfully promoting and administering vaccines. <sup>12</sup></li> <li>◦ Parent tracking research and health professionals surveys<sup>13</sup></li> <li>◦ Studies of attitudes towards HPV (e.g. for girls, mother, nurses administering the vaccine)<sup>14</sup></li> <li>◦ Evaluation of vaccine hesitancy campaigns<sup>15</sup></li> </ul> </li> <li>• <i>Arm Against Cervical Cancer</i> campaign A national media campaign “designed to inform mums and girls about the virus and vaccination program, offer reassurance of the vaccine’s safety, counteract possible negative press attention and maximise take up of the vaccine.”<sup>16</sup> (p.1)</li> </ul>	UK	• Health Protection Agency
		US Centers for Disease Control and Prevention (CDC)	<ul style="list-style-type: none"> <li>• Research</li> <li>• Interventions</li> <li>• Policy Recommendations</li> </ul>	<ul style="list-style-type: none"> <li>• National Center for Immunization and Respiratory Diseases (NCIRD) Online tool for Catch-up Scheduling for Childhood Immunization (<a href="http://www.vacscheduler.org">www.vacscheduler.org</a>)</li> <li>• Funds collaborations and initiatives focusing on vaccine hesitancy: <ul style="list-style-type: none"> <li>◦ <i>Immunization Action Coalition</i><sup>17</sup></li> <li>◦ <i>Vaccine Confidence Project (LSHTM)</i><sup>18</sup></li> </ul> </li> <li>• Clinical Immunization Safety Assessment (CISA) <ul style="list-style-type: none"> <li>◦ To enhance public confidence in sustaining immunization benefits for all populations</li> </ul> </li> </ul>	USA	<ul style="list-style-type: none"> <li>• US Department of Health and Human Services</li> </ul> <p>State public health departments</p>
		US Department of Health and Human Services	<ul style="list-style-type: none"> <li>• Research</li> <li>• Policy Recommendations</li> </ul>	<ul style="list-style-type: none"> <li>• <i>National Vaccine Advisory Committee (NVAC)</i> <ul style="list-style-type: none"> <li>◦ <i>Recommendations on Strategies to Achieve the Healthy People 2020 Annual Influenza Vaccine Coverage Goal for Health Care Personnel</i><sup>19</sup></li> </ul> </li> </ul>	USA	CDC

### Vaccine Hesitancy Landscape Analysis



Categories		Key Actors	Areas of Work/Interest†	Actions‡	Region§	Collaborators and Affiliates**
			<ul style="list-style-type: none"> <li>• Goal Setting</li> <li>• Education &amp; Promotion</li> </ul>	<ul style="list-style-type: none"> <li>○ Vaccine Hesitancy working group now being established <ul style="list-style-type: none"> <li>▪ In report, individuals raised concerns over adverse events, vaccine effectiveness, vaccine safety, etc.</li> </ul> </li> <li>○ <i>A Pathway to Leadership for Adult Immunization: Recommendations of NVAC</i><sup>20</sup> <ul style="list-style-type: none"> <li>▪ Identified 9 categories of barriers to adult immunization, including 'lack of public knowledge', 'health literacy', and 'concerns about adverse events'</li> <li>▪ One recommendation- increase 'community demand for vaccinations'</li> </ul> </li> <li>• <i>2010 National Vaccine Plan</i><sup>21</sup> <ul style="list-style-type: none"> <li>○ Goal 3: Support communications to enhance informed vaccine decision-making</li> </ul> </li> </ul> <p>Priorities for implementation include "increase awareness of vaccines, vaccine-preventable diseases, and the benefits/risks of immunization among the public, providers, and other stakeholders"<sup>3</sup></p>		
	Regional	Department of Health and Wellness, Nova Scotia, Canada	<ul style="list-style-type: none"> <li>• Research</li> <li>• Interventions</li> </ul>	<ul style="list-style-type: none"> <li>• Projects to decrease vaccine hesitancy: <sup>22,23</sup> <ul style="list-style-type: none"> <li>○ Campaign to mitigate pain with immunization based upon evidence– aimed at parents, adults, HCP anxious about immunization <ul style="list-style-type: none"> <li>• Campaign to increase uptake flu vaccine by pregnant women</li> </ul> </li> </ul> </li> </ul>	Nova Scotia, Canada	<ul style="list-style-type: none"> <li>• Can Centre for Vaccinology HELPinKIDS Canada</li> </ul>
		Institut National de Santé Publique de Québec	<ul style="list-style-type: none"> <li>• Policy/Recommendation</li> <li>• Research</li> <li>• Intervention</li> <li>• Goal setting</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Plan Québécois de Promotion de la Vaccination</i> (Feb 2010) <ul style="list-style-type: none"> <li>○ <i>Action Plan for Vaccination Promotion- Phase II</i> (April 2012)<sup>24</sup> <ul style="list-style-type: none"> <li>▪ Phase II addresses goals 3 and 4 of the action plan which related directly to vaccine hesitancy <ul style="list-style-type: none"> <li>• Goal 3: Encourage positive attitudes toward vaccination among health professionals and encourage such professionals to be vaccinated themselves</li> <li>• Goal 4: Encourage positive attitudes toward vaccination in the general population <ul style="list-style-type: none"> <li>▪ To achieve these goals <ul style="list-style-type: none"> <li>• Identify knowledge, attitudes, beliefs and practices of general population and health professionals,</li> <li>• Identify interventions to encourage positive attitudes toward vaccination</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> <li>• Strategies to train health professionals on vaccination, and update their immunization competencies</li> </ul> </li></ul>	Québec, Canada	<ul style="list-style-type: none"> <li>• L'Université Laval</li> </ul>
		<ul style="list-style-type: none"> <li>• Regional governors, prefects and mayors</li> <li>• Regional and departmental public health Direction</li> <li>• Traditional and religious</li> </ul>	<ul style="list-style-type: none"> <li>• Education &amp; Promotion</li> <li>• Interventions</li> <li>• Policy</li> </ul>	<ul style="list-style-type: none"> <li>• Organizing Meeting with communities around the reasons of vaccine hesitancy: MOH and, religious and chief association. Discussions with community, religious and traditional leaders, various associations,</li> <li>• Organization of home visits by health centers through Community women: (Volunteer Community mobilizes) Niger, Nigeria, Mali, Benin, Burkina Faso</li> <li>• Organization of meetings in neighborhoods, villages and health centers: health workers, religious association and traditional chief, community health committee</li> <li>• Debates and broadcasts messages on local radio stations: health workers, religious association and traditional chief, community health committee</li> <li>• Use of media for promotion and surveillance of campaigns: local radio, text messaging and</li> </ul>	Africa	<ul style="list-style-type: none"> <li>• MOH</li> <li>• UNICEF</li> </ul>

Categories		Key Actors	Areas of Work/Interest†	Actions‡	Region§	Collaborators and Affiliates**
		leaders (Imams, Pastors) •Health committees		daily evening meetings during campaigns to spot and correct refusals and other problems encountered (e.g. Guinée Conakry) • Providing rewards e.g. "hygiene kit during immunization session" in Kenya .to women whose children are fully immunized financed by MOH,UNICEF. • Reward health centers with the best performance vaccination financed by MOH,UNICEF		
		California Immunization Coalition	• Education & Promotion • Interventions	• Improving immunization rates (coverage) for Californians of all ages and achieving Healthy People goals relating to immunization rates across the lifespan. • Offering leadership in policy development and advocacy with an emphasis on promoting community based advocacy through support of local coalitions. • Supporting local coalitions. • Providing educational activities/opportunities for health care professionals, community stakeholders and the public. e.g. shotbyshot.org • Promoting use of immunization registries. • Reducing health disparities and improving access to vaccines by addressing barriers that prevent or limit access to immunizations. •	California, USA	•
		Canadian Association for Immunization Research and Evaluation	• Research • Intervention	• CAIRE actively participates and promotes vaccine related investigations • Conferences • Immunization Competencies Education Program (ICEP), training for Health Professionals • CAIRE offers a "second scientific home" to researchers who work in the field of applied vaccinology.	Canada	• Public Health Agency of Canada (Centre for Immunization and Respiratory Infectious Diseases)
		Canadian Pediatric Society	• Education & Promotion • Collaboration	• Education materials for parents and health care professionals: Caring for kids Collaboration: provincial governments, PHAC at the Federal Government	Canada	
		Global Polio Eradication Initiative	• Research • Interventions • Education & Promotion • Research	• Data and monitoring ○ Household survey <sup>25</sup> ▪ Asking about reasons why child was not immunized (e.g. Refusal- religious belief, vaccine safety, no felt need) ○ Polio Pipeline: KAP studies- understanding barriers to immunization <sup>26</sup> ▪ Studies conducted in Nigeria, India, Pakistan in 2008 and Afghanistan in 2009 • National Polio Surveillance Programme in India <sup>27</sup> : • Resistant issues in endemic areas • Surveys looking at what children are not being vaccinated and why?	Polio infected countries	• UNICEF • WHO • US CDC • Rotary International • National governments • LSHTM
		•National Association offices of	• Policy/Recommendation • Intervention	• Traditional chief and religious ( Muslim and Christian) have an Association in most African countries. Taking the example of Niger: National association of traditional chiefs named Association des Chefs Traditionnels du Niger(ACTN) or Association Islamic du Niger	Africa	MOH, WHO UNICEF

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Categories	Key Actors	Areas of Work/Interest†	Actions‡	Region§	Collaborators and Affiliates**
	traditional chief and religious leaders.	•	(AIN). • Advocacy on media • Preaching in villages • Face-to-face contact with reluctant individuals		
	National Foundation for Infectious Diseases (US)	• Education & Promotion • Collaboration •	• Professional educational program on immunization 2 times per year – 3 hours devoted to hesitancy each course for now > 5 years <sup>28</sup>	USA	CDC and others
	Trust for Vaccines and Immunization	• Education Intervention	• Several mass vaccination campaign against typhoid fever of children and adults in towns in the province of Karachi	Pakistan	• International Vaccine Institute • Ministry of Health – Govt of Sindh • Expanded Programme on Immunization • Ministry of Education – Govt of Sindh • City District Government Karachi
<b>Donors</b>	Bill and Melinda Gates Foundation	• Research • Intervention • Education & Promotion	• Funding ○ Initiatives related to vaccine hesitancy, as well as vaccine acceptance and promotion <sup>29</sup> ▪ E.g. <i>Vaccine Confidence Index</i> from LSHTM (global surveillance system to identify and track rumours/misinformation related to immunization. ○ Supporting organisations that are working in the area of vaccine hesitancy. ▪ E.g. WHO, UNICEF, LSHTM	Global	
	Robert Wood Johnson Foundation	• Research • Intervention	• Grants ○ Funding publications and research <sup>30</sup> ▪ E.g. 'Protecting public trust in immunization'	US	
<b>Research Organisations</b>	Canadian Centre for Vaccinology	• Research • Education & Promotion	• Vaccine hesitancy <sup>31</sup> ○ pain mitigation, ○ school based vaccine programs ○ hard to reach and their hesitancy, ○ health care professional undergrad curriculum ○ HCP hesitancy for flu vaccine policy and hesitancy	Canada	• Variety of local, regional and national partners- both NGOs and govt's

Categories	Key Actors	Areas of Work/Interest†	Actions‡	Region§	Collaborators and Affiliates**
	Harvard University	<ul style="list-style-type: none"> <li>• Research</li> <li>• Collaboration</li> </ul>	<ul style="list-style-type: none"> <li>• Working with the American Academy of Arts and Science on a vaccine hesitancy project</li> </ul>	USA	<ul style="list-style-type: none"> <li>• American Academy of Arts and Science</li> </ul>
	John Hopkins School of Public Health	<ul style="list-style-type: none"> <li>• Research</li> <li>• Collaboration</li> </ul>	Research parental attitudes, studied the effectiveness of providing vaccination education materials to pregnant women and women who have just delivered to see if that would make them less hesitant. He has also collaborated with the CDC and Kaiser on several studies.	USA	<ul style="list-style-type: none"> <li>• CDC</li> <li>• Kaiser Permanente</li> </ul>
	London School of Hygiene and Tropical Medicine	<ul style="list-style-type: none"> <li>• Research</li> <li>• Intervention</li> <li>• Promotion &amp; Education</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Vaccine Confidence Project</i><sup>32</sup></li> <li>• <i>MOTIV Think Tank: Motors of Trust in Vaccination</i></li> <li>• Developing systematic review on vaccine confidence, acceptance, hesitance, etc.</li> </ul>	UK	<ul style="list-style-type: none"> <li>• Wide variety of global partners</li> </ul>
	Ottawa Hospital Research Institute	<ul style="list-style-type: none"> <li>• Research</li> <li>• Education &amp; Promotion</li> </ul>	<ul style="list-style-type: none"> <li>◦ Research on evolution of controversies concerning pediatric vaccination (Kumanan Wilson, MD, FRCPC, MSc)</li> </ul>	Canada	
	Sherbrooke University (Quebec) and University of Victoria (British Columbia).	<ul style="list-style-type: none"> <li>• Research</li> <li>• Education &amp; Promotion</li> </ul>	<ul style="list-style-type: none"> <li>• Book title on Vaccine Hesitancy (working title): Cultural and Religious Roots of Vaccine Hesitancy: Explanations and Implications for Canadian Health Care. <ul style="list-style-type: none"> <li>▪ Objectives and target readership: 1) Report on various aspects of phenomenon of vaccine hesitancy (VH) and its features; 2) Propose theories for understanding VH; 3) Support public health (PH) practices and decisions for health professionals facing VH. PH authorities, health professionals and graduate students are targeted.</li> </ul> </li> </ul>	Canada	<ul style="list-style-type: none"> <li>• Researchers across Canada</li> </ul>
	University of British Columbia (Vaccine Evaluation Center)	<ul style="list-style-type: none"> <li>• Research</li> <li>• Education &amp; Promotion</li> </ul>	<ul style="list-style-type: none"> <li>• The main research themes involve disease burden studies, vaccine clinical trials, and studies to fine tune public immunization programs, including ongoing assessment of vaccine safety</li> </ul>	Canada	
	University of Leeds (UK)	<ul style="list-style-type: none"> <li>• Research</li> <li>• Intervention</li> </ul>	<ul style="list-style-type: none"> <li>• <i>MMR Decision Aid</i> (with NCIRS) <ul style="list-style-type: none"> <li>◦ <i>Detailed Evaluation of a Childhood Immunisation Decision Aid</i> (D.E.C.I.D.A study)<sup>33</sup></li> </ul> </li> </ul>	UK	University of Sydney
	University of Sydney	<ul style="list-style-type: none"> <li>• Research</li> <li>• Interventions</li> <li>• Education &amp; Promotion</li> </ul>	<ul style="list-style-type: none"> <li>• Working with the NCIRS and other partners on a variety of projects related to vaccine hesitancy, acceptance and promotion.<sup>34</sup> <ul style="list-style-type: none"> <li>◦ E.g. <i>MMR Decision Aid Tool</i><sup>35</sup></li> </ul> </li> <li>• Provide classes related to vaccine hesitancy and acceptance <ul style="list-style-type: none"> <li>◦ E.g. PUBH5416 Vaccines in Public Health<sup>36</sup></li> </ul> </li> <li>Content- “risk communication and immunisation myths and realities”</li> </ul>	Australia	<ul style="list-style-type: none"> <li>• University of Leeds</li> <li>• NCIRS</li> </ul>
	University of Washington School of	<ul style="list-style-type: none"> <li>• Research</li> <li>• Promotion&amp; Education</li> </ul>	<ul style="list-style-type: none"> <li>• Research in the field of vaccine refusal/ attitude towards vaccination <ul style="list-style-type: none"> <li>◦ Parental delay or refusal of vaccine doses, childhood vaccination coverage at 24 months of age, and the Health Belief Model.<sup>37</sup></li> </ul> </li> </ul>	USA	

## Vaccine Hesitancy Landscape Analysis

Categories	Key Actors	Areas of Work/Interest†	Actions‡	Region§	Collaborators and Affiliates**
	Medicine Seattle, Washington	•	<ul style="list-style-type: none"> <li>Washington State Pediatricians Attitudes Towards Alternative Childhood Immunization Schedules<sup>38</sup></li> </ul>		
	VAX Northwest	<ul style="list-style-type: none"> <li>Research</li> <li>Intervention</li> <li>Promotion &amp; Education</li> </ul>	<ul style="list-style-type: none"> <li>Social marketing campaign               <ul style="list-style-type: none"> <li>Increase timely immunizations from birth to age 24 months in Washington State<sup>39,40</sup> <ul style="list-style-type: none"> <li>Focus: vaccine hesitant parents</li> <li>Provider toolkit</li> <li>Outreach to parents/social norms<sup>41</sup></li> </ul> </li> </ul> </li> </ul>	Washington State, USA	<ul style="list-style-type: none"> <li>Within Reach Immunization Action Coalition of WA</li> <li>Washington State Department of Health</li> <li>Seattle children's hospital</li> <li>Community pediatric foundation of Washington.</li> </ul>
Multinationals	UNICEF	<ul style="list-style-type: none"> <li>Research</li> <li>Policy Recommendations</li> <li>Education &amp; Promotion</li> <li>Intervention</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>Works with GAVI on the <i>Advocacy &amp; Communication Task Force (ACTF)</i>- See GAVI above</li> <li>UNICEF works with governments, partners and communities to increase demand for immunization</li> <li>Vaccine strategies include engaging communities:               <ul style="list-style-type: none"> <li>Communication strategies that include advocacy, communication, and social mobilisation</li> <li>Rapid inquiry into attitudes about PCV and introduction in Rwanda</li> </ul> </li> <li>Financial and technical support for evidence-based social mobilization and communication for immunization e.g. in countries like Niger, Nigeria, Benin, Tchad, Guinée, Gabon)</li> <li>•</li> </ul>	Global	<ul style="list-style-type: none"> <li>Wide variety of global partners</li> <li>GAVI</li> <li>WHO</li> </ul>
	WHO	<ul style="list-style-type: none"> <li>Research</li> <li>Policy Recommendations</li> <li>Collaboration</li> <li>Education &amp; Promotion</li> </ul>	<ul style="list-style-type: none"> <li><i>Strategic Advisory Group of Experts (SAGE)</i> on immunization               <ul style="list-style-type: none"> <li>Vaccine Hesitancy SAGE Working Group (establ. March 2012)</li> </ul> </li> <li>Publications and information:               <ul style="list-style-type: none"> <li>E.g. Behavioural Factors in Immunization (Department of Mental Health and Substance Dependence)</li> <li>Vaccine Safety Net                   <ul style="list-style-type: none"> <li>"websites providing information on vaccines which adhere to good information practices"</li> </ul> </li> </ul> </li> <li>Surveys:               <ul style="list-style-type: none"> <li>EPI Coverage Survey                   <ul style="list-style-type: none"> <li>Reasons for immunization failure cluster form, includes reasons such as 'fear of side reactions', 'no faith in immunisations', 'rumours', etc.</li> </ul> </li> </ul> </li> <li>Capacity building e.g. of mid-level managers (MLM) in most of African country</li> </ul>	Global	<ul style="list-style-type: none"> <li>Wide variety of global partners</li> </ul>

Categories	Key Actors	Areas of Work/Interest†	Actions‡	Region§	Collaborators and Affiliates**
			<ul style="list-style-type: none"> <li>• Procure and assure vaccine safety and effectiveness</li> </ul>		
	WHO EURO	<ul style="list-style-type: none"> <li>• Intervention</li> <li>• Collaboration</li> <li>• Policy Recommendations</li> <li>• Goal setting</li> </ul>	<ul style="list-style-type: none"> <li>• Developing TIP (Tailoring Immunization Programme) Toolkit to identify behavioural determinants of vaccination (and barriers) and recommend promising practices to address or respond to such barriers. Includes caregiver hesitancy and presents diagnostic framework for pin-pointing reasons for acceptance, hesitancy and refusal.</li> <li>• Vaccine Hesitancy as subcomponent of <i>Communication Strategy</i></li> <li>• Factsheets               <ul style="list-style-type: none"> <li>◦ Talking with parents about vaccines for children'</li> <li>◦ Understanding the risk and responsibilities of not vaccinating your child. European Immunization Week media and caregiver publications : ie. 7 Key Reasons to Vaccinate and documents dispelling the myths that generate hesitancy.</li> </ul> </li> <li>Launching a mobile phone app'in 2013 to allow parents to track their child immunization status, remind them to vaccinate on time, and serve as a recall system in countries where physicians do not carry out this service. Addresses a consistently reported reason for hesitancy – lack of reminder or recall system (forgetfulness/apathy)</li> </ul>	Europe	<ul style="list-style-type: none"> <li>• Variety of partners</li> </ul>
Other	Vaccine Industry	<ul style="list-style-type: none"> <li>• Research</li> <li>• Intervention</li> </ul>	<ul style="list-style-type: none"> <li>• GlaxoSmithKline (GSK) supports the development of an education tool on how physicians' should address vaccine hesitancy and resistance.               <ul style="list-style-type: none"> <li>◦ Developer was a consultant for 8 different vaccine manufacturers</li> </ul> </li> <li>• Supporting researchers working on vaccine hesitancy               <ul style="list-style-type: none"> <li>◦ E.g. Gary S. Marshall (including but not limited to Merck, GSK, Sanofi Pasteur, etc)</li> </ul> </li> <li>Wrote article on 'Navigating Parental Vaccine Hesitancy'</li> </ul>	Global	<ul style="list-style-type: none"> <li>•</li> </ul>

## Discussion:

It is important to note some specific attributes and limitations of this framework. A broad variety of groups focusing on the promotion of vaccines and therefore addressing vaccine hesitancy in the population were found, yet according to our inclusion/exclusion criteria we only listed groups focusing on generating research/studies or implementation/evaluation of interventions where specific examples on the scope of their work could be identified.

There were several cases where actors and their interests could potential fit in more than one category. For instance, as CDC is both a subsidiary of the US national government and it donates money it could have fit in either the *Governmental*- National Category or the *Donors* category. In these cases the actors were organised based on how they identify themselves, and in which of the categories they produce most of their work on the issue of vaccine hesitancy. Therefore, in the case of the CDC, they were placed within the Government- National category, as they identify themselves as a major operating component of the Department of Health and Human Services in the US government and produce most of their work on vaccine hesitancy as a part of the US government.

Furthermore, many of the projects on the issue of vaccine hesitancy were conducted with the help of collaboration between multiple partners. This collaboration can make it difficult to demarcate which organisations are working on which vaccine hesitancy projects.

In these cases organisation taking the lead on the project were tried to be identified and classified the action under them. If two groups were highly connected it was noted that many of their projects would be interlinked in the action section.

Retrieving information on developing countries conducting work on the issue of vaccine hesitancy was difficult to find, possibly due to language or publication issues. Therefore Working Group members were asked to share their knowledge on country activities. In addition, the help of the Working Group members contributed to extending research to languages other than English.

The above framework illustrates that many advisory committees and organizations have started to deal with the issue of vaccine hesitancy, including encountering and defining the problem of lack of confidence in vaccines, gathering information on the problem and suggesting potential strategies to deal with this issue. However, although organisations are starting to view vaccine hesitancy as an important topic many organizations discuss and highlight the issue without making meaningful contributions (e.g. research, interventions, recommendation). In fact, many organizations working on vaccines state in their mandates that they will work to promote the use and acceptance of vaccines among both the public and health professionals. However it is rarely specified how they will achieve this vaccine demand section of their mandate. Few examples of current projects relating to vaccine promotion/acceptance are given.

This landscape analysis, along with the development of indicators of vaccine hesitancy, demonstrates that there are not many global vaccine reporting or surveillance systems currently measuring demand-side indicators, such as vaccine hesitancy. In addition, most of the vaccine-related work indicated in this landscape analysis is on supply side criteria, rather than demand-side criteria. For example, most of the grants given to vaccine-related work by The Bill & Melinda Gates Foundation in 2012 were to projects that focused on vaccine development, production and safety, as well as health systems strengthening, whereas there were only a few projects that focused on the demand-side factors (e.g. vaccine acceptance, confidence and hesitancy).

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