

## Supplemental material: Improving routine childhood immunisation outcomes in low- and middle-income countries: an evidence gap map

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## Appendix A: Intervention-outcome framework and definitions

### Interventions

Intervention		Definition/guidance	
A. Caregiver-oriented	AA. Information & education	AA1. Sustained sensitization and education campaigns	Sustained interventions (i.e., those that are <i>not</i> designed with a fixed end date in mind) that provide targeted caregivers with information about immunisation and its importance, the vaccination schedule, or where and how to access immunisation services. For example, village health and nutrition days (VHNDs) in India in which health education and counselling services are provided to pregnant women and mothers of young children on a regular basis.
		AA2. One-time sensitization and education campaigns	One-off interventions (i.e., those designed with a fixed end date in mind) that provide targeted caregivers with information about immunisation and its importance, the vaccination schedule, or where and how to access immunisation services.
		AA3. Public information campaigns	Mass media campaigns through newspapers, radio and TV which provide caregivers with information about immunisation and its importance, the vaccination schedule, or where and how to access immunisation services. Because of the nature of communication mediums they cannot be targeted to a specific audience.
	AB. Incentives & motivation	AB1. Material/monetary incentives for caregivers	Interventions that incentivise caregivers to vaccinate through items with monetary value. This could be cash transfers or material goods like food or home goods.
		AB2. Non-material incentives for caregivers	Interventions that seek to motivate caregivers to vaccinate through non-material incentives like social recognition. Unlike reminder messages, interventions in this category should seek to <i>create</i> or <i>strengthen</i> a desire to vaccinate, rather than activating a standing intention to vaccinate.
		AB3. Automated voice messages to caregivers	Use of automatically-generated voice messages (usually delivered to a mobile phone) that remind caregivers about upcoming vaccinations, provide them information on place and time of vaccination and encourage them to vaccinate. While these messages may contain some motivational component (e.g., stressing the importance of vaccination in addition to reminding caregivers about an upcoming appointment), voice messages should be categorised only here and not also under “non-material incentives”, unless they rely on a substantive motivational factor like social recognition.
		AB4. Written or pictorial messages (SMS, stickers, flyers etc.) to caregivers	Use of written messages/pictorial that remind caregivers about upcoming vaccinations, provide them information on place and time of vaccination and encourage them to vaccinate. While these messages may contain some motivational component (e.g., stressing the importance of vaccination in addition to reminding caregivers about an upcoming appointment), messages should be categorised only here and not also under “non-material incentives”, unless they rely on a substantive motivational factor like social recognition.

Intervention		Definition/guidance	
	AB5. Changes to health system user fees	Any change to the monetary costs to users for accessing the health system. This can include introduction or elimination of fees at the point of service, or pre-payment or insurance schemes.	

Intervention		Definition/guidance	
B. Health system-oriented	BA. Education & training	BA1. Formal health worker training and education	Programmes that train or educate formal health workers (FHWs). FHWs are typically vaccinators (and they tend to provide/prescribe medication or administer tests such as recording blood glucose level, etc.). (The only likely exception to this would be oral polio vaccination (OPV), especially supplementary polio campaigns, where CHWs or community volunteers may be enlisted to administer the vaccination.)
		BA2. Community health worker training and education	Programmes that train or educate community health workers (CHWs). CHWs are defined as “paraprofessionals or lay individuals with an in-depth understanding of the community culture and language, have received standardised job-related training of a shorter duration than health professionals, and their primary goal is to provide culturally appropriate health services to the community.” <sup>1</sup>
	BB. Planning, implementation, monitoring	BB1. Formal health worker involvement in planning & monitoring	Interventions that give FHWs substantive roles in creating plans/strategies to deliver vaccination services and/or monitor vaccination coverage in the community.
		BB2. Community health worker involvement in planning & monitoring	Interventions that give CHWs substantive roles in creating plans/strategies to deliver vaccination services and/or monitor vaccination coverage in the community.
		BB3. Paper-based tracking	Paper-based systems (e.g., logbooks) used by health workers to keep track of children in the community who are due for upcoming vaccinations or have not received scheduled vaccinations. Note that if a study merely mentions the existence of logbooks, that is not sufficient to code it as this intervention. The logbooks must be specifically used for tracking upcoming and missed vaccinations.
		BB4. Promoting outreach to vaccine-hesitant groups	Outreach to groups that, because of religious, cultural, or other reasons, are suspicious of vaccination or have specific fears about it (e.g., that vaccinations cause infertility or spread disease).
		BB5. Outreach to vulnerable populations (hard-to-reach, SES, caste, etc.)	Outreach to groups that are vulnerable in a way that affects their access to vaccination services. They may be in hard-to-reach geographical areas, have low socioeconomic status (including wealth and education), or be from groups marginalised based on caste, ethnicity, etc. This also includes interventions that set up temporary and mobile clinics to deliver vaccines, to make vaccination services more accessible.
		BB6. Outreach to migrant populations	Outreach to populations who have migrated temporarily or seasonally because of cultural or employment reasons.

<sup>1</sup> From Olaniran, A., Smith, H., Unkels, R., Bar-Zeev, S., & van den Broek, N. (2017). Who is a community health worker? – A systematic review of definitions. *Global Health Action*, 10(1), 1272223. <https://doi.org/10.1080/16549716.2017.1272223>.

Intervention		Definition/guidance
	BB7. Home visits	Use of visits to caregivers' homes by health workers. This includes both visits to encourage caregivers to vaccinate their children, and visits to deliver vaccines, provided they are <i>targeted</i> visits to specific households for routine immunization. General door-to-door campaigns to deliver specific vaccines go under BC1.
	BB8. Campaigns to vaccinate refugee populations	Interventions that make a special effort to vaccinate populations which have been displaced temporarily or permanently because of conflict, war or famine.
BC. Supplementary Immunisation Activities	BC1. National/sub-national immunisation days	Supplementary immunization activities (SIA) are mass immunization campaigns which complement routine immunization activities whereby a vaccine is taken simultaneously to many residents of a community within a defined short space of time. They have generally been conducted for polio and measles. They may be called national or sub-national immunization days. They may happen through booth days or door to door vaccination campaigns. On a booth day a large number of fixed site booths are set up throughout the target area for children to be brought to receive a specific vaccine like polio. In door to door campaigns vaccination teams go door to door to every house, checking each child under five to see if they have received the specific vaccine, and if they have not that vaccination is provided.
BD. Incentives & motivation	BD1. Material/monetary incentives for health workers	Interventions that incentivise formal or community health workers to deliver vaccination services through items with monetary value. This could be cash transfers or material goods like food or home goods.
	BD2. Non-material incentives for health workers	Interventions that use non-material incentives like social recognition to incentivise formal or community health workers to deliver vaccination services.
	BD3. Automated voice messages to health workers	Use of automatically-generated voice messages (usually delivered to a mobile phone) that remind health workers about upcoming vaccinations for community members, provide them information to help plan their work, and encourage them to conduct outreach to those community members.
	BD4. Written or pictorial messages (SMS, stickers, flyers etc.) to health workers	Use of written/pictorial messages that remind health workers about upcoming vaccinations for community members, provide them information to help plan their work, and encourage them to conduct outreach to those community members.
	BD5. Pay-for-performance schemes	Schemes whereby health centres or districts receive funding based on their performance in delivering health services (e.g., they receive a given amount of funding for each child vaccinated or each antenatal care visit completed). Also known as "results-based financing".

Intervention		Definition/guidance		
	BE. Infrastructure	BE1. Building & upgrading health clinics	Projects that build new permanent health clinics, or provide physical upgrades to existing clinics.	
		BE2. Cold chain infrastructure improvements	Interventions that improve the ability of health systems to maintain vaccine cold chains.	
	BF. Health system governance, policies and financing	BF1. Health system strategic planning	Initiatives at the national or sub-national level to develop plans and governance structures designed to improve vaccination services. This also includes interventions that improve the human resource availability, strategies, policies and plans in existing health governance and delivery structures that may or may not be directly related to immunization services.	
		BF2. Vaccination guidelines	Changes to official national or sub-national guidelines about when and how vaccinations should be administered. This includes studies comparing two different approaches to administering vaccines (e.g., one measles dose vs. two), which could be made into guidelines.	
		BF3. Changes to broader governance systems (beyond health systems)	Interventions that modify general governance systems not directly related to health. An example would be a policy dictating a certain level of representation for women in local or national governing bodies.	
		BF4. Health system financing	Interventions that increase the national or sub-national financing of health or specifically for vaccination in absolute terms or as a proportion of GDP. This also includes results- or performance-based financing.	
	BG. Technology & mHealth	BG1. New HMIS/Dashboard systems (incl. improved data collection)	New digital tools and systems designed to improve health system capacity to monitor and deliver vaccination services. This includes apps for mobile phones or tablets, as well as desktop-based software and setting up online dashboards. A common type of intervention in this category is giving health workers tablets with an app that allows them to register vaccination information (and for other health services) for community members, track their vaccination schedules and provide them readily-accessible information about vaccination.	
		BG2. Capacity building (e.g., training) for existing systems	Initiatives to train people working in the health system (including frontline health workers and administrative personnel) to improve their ability to use existing digital tools and systems more effectively.	
	C. Other community member-oriented	CA. Other community member-oriented	CA1. Faith-based outreach/outreach using local leaders	Interventions that enlist influential community members (often religious or other traditional leaders) to promote vaccination in the community.
	D. Community-level	DA. Communication & dialogue	DA1. Collaborating with whole community	Interventions that involve or plan to involve ALL community members beyond health workers in various aspects of the intervention, such as developing plans and solutions to improve immunization outcomes in the community.

Intervention		Definition/guidance	
	DA2. Collaborating with selected community groups and networks		Interventions that involve <i>selected</i> groups or networks of community members beyond health workers (other than the traditional or religious leaders who fall under CA1) in developing plans and solutions to improve immunization outcomes in the community. This includes interventions focusing on <u>mother's groups, father clubs, self-help groups, etc.</u>
	DB. Tracking & registering	DB1. Community tracking and registering	Interventions that involve community members beyond health workers (e.g., caregivers or any other community members other than the traditional leaders who fall under CA1) in registering children with the health system so their vaccination status can be tracked, and/or tracking which children are due for vaccinations.
E. Policies and institutions	EA. Education policy and infrastructure	EA1. Education policy and infrastructure	Policy interventions that affect education levels of people in a country or region. An example would be an intervention that makes education mandatory for a particular population where it had previously been optional.
	EB. Non-health/education infrastructure	EB1. Non-health/education infrastructure (e.g., electrification)	General improvements in physical infrastructure beyond the health system. This may include electrification, roads, sanitation improvements, etc.



## Outcomes

		Outcome	Definition/guidance
H. Behavioural, social and practical barriers faced by caregivers and communities	HAA. Thinking and feeling (attitudes, confidence)	HAA1. Knowledge about immunisation	Caregivers' knowledge about immunisation in general (i.e., its purpose and role in preventing disease)
		HAA2. Attitudes about immunisation	Caregivers' attitudes towards immunisation in general (i.e., whether they view it favourably or unfavourably or have high or low confidence in its efficacy)
		HAA3. Attitudes about health providers	Caregivers' attitudes about health providers in general (i.e., whether they generally trust health providers to provide high-quality and appropriate care)
	HAB. Social processes	HAB1. Community norms	Community-level attitudes and beliefs about immunisation, including whether there is social pressure to vaccinate or not vaccinate. This can be measured either objectively through aggregating community-level responses or subjectively by soliciting individual community members' beliefs about the norms in their community. This includes attitudes and beliefs about immunization of key influencers in the community like traditional or religious leaders.
		HAB2. Household norms & decision-making	Norms and practices determining who in a household (e.g., mother, father, mother-in-law) provides input to decisions about whether to vaccinate, and how much decision-making power individual household members have. This also covers attitudes towards immunisation of household members other than the primary caregiver.
	HAC. Readiness to vaccinate	HAC1. Readiness to vaccinate	Caregivers' motivation, intention and plan to vaccinate their children. Note this is more specific than general attitudes towards immunisation covered under HAA2
		HAC2. Reasons for not vaccinating	Caregivers' stated reasons for not vaccinating children. This may include factors such as convenience (which would also be coded under "perceived convenience of vaccination"), but only use this code if the factors mentioned are specifically framed as reasons for not vaccinating. Also, only use this code when the study measures <i>effects</i> of the intervention on this outcome. If the study gathers data on reasons for not vaccinating but does not provide an effect size for this as an outcome, use the cross-cutting theme but not this outcome code.

	HAD. Practical factors	HAD1. Awareness of place, time, schedule for vaccination	Caregivers' knowledge about when and where they should go for vaccinations.
		HAD2. Actual cost of vaccinating	Actual cost of vaccinating the child, including vaccine cost, transportation cost, loss of wage/income due to missed work, and providing gifts/unofficial payments to the health providers
		HAD3. Perceived convenience of vaccination	Subjective measures (i.e., caregivers' beliefs) of the convenience of taking the child for vaccination, such as opportunity costs of vaccinating a child (e.g., not able to care for a younger child), long lines at health clinic, and inconvenient day/time of vaccination.
		HAD4. Experience and satisfaction with health services	The actual experience of health services in the last visit such as duration of waiting time, availability of vaccine or vaccinator, and behaviour of the health staff (respect, rudeness). This also includes level of satisfaction with the health services, professionals and facilities.
		HAD5. Vaccination health card availability/retention	Measures of whether caregivers possess vaccination health cards provided by the health system, and/or whether caregivers can show the vaccination health card.
		HAD6. Perception of vaccination side effects	Caregivers' perceptions of the likelihood and severity of side effects from vaccination, and their knowledge of how to recognise and treat normal side effects.
I. Delivery of vaccination services	IAA. Comm. health workers	IAA1. Community HW motivation, capacity & performance	Any measure of CHWs' capacity to deliver quality and timely vaccination services.
		IAA2. Supply of CHWs	The total availability of CHW services in the community, taking into account both the number of CHWs and the time they have available.
	IAB. Vaccinators	IAB1. Formal HW supply	The total availability of FHW services in the community, taking into account both the number of FHWs and the time they have available.
		IAB2. Availability of HWs at vacc. point of service	Whether vaccinators are present at vaccination point of service (e.g., health clinic) when vaccination services are supposed to be offered. This includes measures of health worker "absenteeism". This is different from perception or experience of health workers from caregivers' point of view. The source of information for this outcome can be administrative data or survey of health facilities and staff.
		IAB3. Formal HW motivation, capacity & performance	Any measure of FHWs' capacity to deliver quality and timely vaccination services, or of their performance in doing so.
	IAC. Administrators	IAC1. Admin staffing	The number of staff in administrative posts in the health system (i.e., those not directly involved in health service provision).
		IAC2. Capacity of health admin. responsible for vaccination	The knowledge, skills, and motivation of staff in administrative posts in the health system, including leadership positions.
	IBA. Health information systems	IBA1. Immunisation data collection (quality, completeness)	The health system's capacity for and success in collecting data about vaccination coverage and service quality for regular monitoring and accountability.
		IBA2. Defaulter tracing	The health system's capacity for and success in identifying vaccination "defaulters" (i.e., those whose children receive early vaccine doses but do not return for subsequent vaccinations).
		IBA3. Supply chain management	The health system's capacity to monitor the supply of vaccines at points of service, ensure reliable supply chains, and avoid supply "bottlenecks".

	IBA4. Immunisation data availability/ transparency	How easy it is for stakeholders within and beyond the health system to access data about vaccination service quality, coverage and timeliness.
ICA. Vaccine availability	ICA1. Stockouts	The frequency and duration of incidents when vaccines are out of stock at points of service, or when vaccines are in stock but cannot be administered to children who are brought in (e.g., because health workers are instructed not to open a new vial if there are not enough children to receive all doses in the vial, meaning that some of the vaccine would go to waste). Source of this information is administrative data and/or survey of health facilities and staff
	ICA2. Quality of cold chain infrastructure	The availability, quality and upkeep of physical equipment and place for cold chain storage of vaccines
IDA. Resources	IDA1. National or sub-national vaccine financing	Change in financial resources for national or sub-national vaccination programmes, policies or strategies.

JAA. Vaccination coverage	JAA01. Full routine immunization for children	Binary measure of whether or not children have received all routine vaccinations for the relevant country or region.
	JAA02. BCG	Binary measure of whether or not children have received the BCG vaccine. This may be measured by checking whether children have a BCG vaccination scar.
	JAA03. DPT1	Binary measure of whether children have received first dose of the DPT/penta vaccine. If study does not specify which doses were included in the outcome measures (i.e., the outcome is just "DPT/pentavalent vaccination" then apply this code unless it is clear they are talking about full DPT/penta vaccination, in which case code it as JAA05: DPT3.
	JAA04. DPT2	Binary measure of whether or not children have received the second dose of the DPT or pentavalent vaccine
	JAA05. DPT3	Binary measure of whether or not children have received the third dose of the DPT or pentavalent vaccine. If the study does not specifically say "DPT3" (or "pentavalent 3"), but refers to "complete DPT/penta vaccination", then use this code.
	JAA06. OPV0	Binary measure of whether children have received 1 <sup>st</sup> dose of oral polio vaccine (recommended for administration at birth).
	JAA07. OPV1	Binary measure of whether children have received 2 <sup>nd</sup> dose of the oral polio vaccine (recommended for administration at 6 weeks).
	JAA08. OPV2	Binary measure of whether children have received the 3 <sup>rd</sup> dose of the oral polio vaccine (recommended for administration at 10 weeks).
	JAA09. OPV3	Binary measure of whether children have received the 4 <sup>th</sup> and final dose of the oral polio vaccine (recommended for administration at 14 weeks).
	JAA10. IPV	Binary measure of whether children have received inactivated polio vaccine, given as injection. Countries differ in their guidelines/practices regarding IPV, so, please note the number of doses and age(s) when administered.
	JAA11. Measles	Binary measure of whether or not children have received the measles vaccine
	JAA12. No vs. partial routine immunization	Proportion of children who receive at least one vaccination versus those who are completely unvaccinated.
	JAA13. Vacc. timeliness	Proportion of vaccinations delivered on time according to the recommended schedule, vs those that are delivered late.
	JAA14. Drop out rate for multi-dose vaccines	Proportion of children who fail to receive the complete course of a multi-dose vaccine (DPT/penta, OPV, or in some cases measles) after receiving the first dose.
	JAA15. Vaccination coverage (unspecified)	Use this code if the evaluation or SR refers to impacts on routine vaccination coverage for children, but without specifying which vaccines.
KAA. Health outcomes	KAA1. Childhood morbidity	Incidence of vaccine-preventable diseases or symptoms associated with those diseases (e.g., diarrhoea) among children under 5.
	KAA2. Neonatal/Infant/Child Mortality	Incidence of mortality among children below five years from all causes. Neonatal mortality refers to death of a live-born baby within the first 28 days of life. <i>Infant mortality</i> is the death of young children under the age of 1. Child mortality, refers to the mortality of children under the age of five. This category includes all-cause mortality.

### Cross-cutting themes

Theme	Definition/guidance
Hard-to-reach	Code as “yes” if the study performs subgroup analysis for hard-to-reach populations, or if the intervention specifically targets a population that the authors define as hard-to-reach. See the guidance for gender/equity coding in the protocol for further information on what constitutes subgroup analysis.
Sex	Code as “yes” if the study performs subgroup analysis by sex of the children, or if the intervention specifically targets children of one sex. See the guidance for gender/equity coding in the protocol for further information on what constitutes subgroup analysis.
SES	Code as “yes” if the study performs subgroup analysis by socioeconomic status, or if the intervention specifically targets households below the locally-defined poverty line. See the guidance for gender/equity coding in the protocol for further information on what constitutes subgroup analysis.
Maternal education	Code as “yes” if the study performs subgroup analysis by maternal education, or if the intervention specifically targets mothers with a given level of education. See the guidance for gender/equity coding in the protocol for further information on what constitutes subgroup analysis.
Cost information	Code as “yes” if the study presents data on the costs of the intervention. This may be a detailed cost-effectiveness or cost-benefit analysis, but that is not necessary.
Information sources	Code as “yes” if the study includes data about or discusses different sources through which participants receive information about vaccination, or if the study analyses impact of exposure to different information sources on various immunization outcomes. Code as “no” if only one type of information source is discussed.
Adverse effects	Code as “yes” if the study includes data about or discusses potential adverse effects on participants as a result of the intervention.
Multi-component	Code as “yes” if the study evaluates an intervention that is multi-component.

## Appendix B: Detailed methods

This EGM followed the 3ie methodology and process for evidence gap maps (Snilstveit et al. 2017; 2016).

### B.1 Database searches

#### 1. Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Daily and Versions(R) <1946 to May 15, 2019> Searched 16<sup>th</sup> May 2019

- 1 (immuniz\* or immunis\* or vaccin\* or inoculat\* or innoculat\* or immunotherap\* or prophyla\*).ti,ab,kw. (672732)
- 2 immunization/ or immunization, passive/ or immunization schedule/ or immunization, secondary/ or immunotherapy, active/ or vaccination/ or Immunization Programs/ or mass vaccination/ (158163)
- 3 Tuberculosis Vaccines/ or BCG Vaccine/ or Diphtheria-Tetanus Vaccine/ or Meningococcal Vaccines/ or Pertussis Vaccine/ or Diphtheria-Tetanus-acellular Pertussis Vaccines/ or Diphtheria-Tetanus-Pertussis Vaccine/ or Diphtheria-Tetanus Vaccine/ or Measles Vaccine/ or Mumps Vaccine/ or Rubella Vaccine/ or Measles-Mumps-Rubella Vaccine/ or Poliovirus Vaccines/ or Poliovirus Vaccine, Inactivated/ or Poliovirus Vaccine, Oral/ or Japanese Encephalitis Vaccines/ or Rotavirus Vaccine/ (49639)
- 4 or/1-3 (720583)
- 5 developing countries.sh,kf. (83271)
- 6 (Africa or Asia or Caribbean or West Indies or South America or Latin America or Central America).ti,ab,kw. (200981)
- 7 Africa/ or Asia/ or Caribbean/ or West Indies/ or South America/ or Latin America/ or Central America/ (73389)
- 8 (Africa or Central America or South America or Caribbean or Central Asia or Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or Burkina Faso or Burkina Fasso or Upper Volta or Burundi or Urundi or Cambodia or Khmer Republic or Kampuchea or Cameroon or Cameroons or Cameron or Camerons or Cape Verde or Cabo Verde or Central African Republic or Chad or Tchad or China or Colombia or Comoros or Comoro Islands or Comores or Mayotte or Congo or Zaire or Costa Rica or Cote d'Ivoire or Ivory Coast or Cuba or Djibouti or French Somaliland or Dominica or Dominican Republic or East Timor or East Timur or Timor Leste or Ecuador or Egypt or United Arab Republic or El Salvador or Eritrea or Ethiopia or Fiji or Gabon or Gabonese Republic or Gambia or Gaza or Georgia Republic or Georgian Republic or Ghana or Grenada or Guatemala or Guinea or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or Kyrgyz Republic or Kirghiz or Kirgizstan or Lao PDR or Laos or Lebanon or Lesotho or Basutoland or Liberia or Libya or Macedonia or Madagascar or Malagasy Republic or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or Marshall Islands or Mauritania or Mauritius or Agalega Islands or Mexico or Micronesia or Middle East or Moldova or Moldovia or Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or Netherlands Antilles or Nicaragua or Niger or Nigeria or Muscat or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or Phillippines or Phillippines or Papua New Guinea or Romania or Rumania or Roumania or Rwanda or Ruanda or Saint Lucia or St Lucia or Saint Vincent or St Vincent or Grenadines or Samoa or Samoan Islands or Navigator Island or Navigator Islands or Sao Tome or Senegal or Serbia or Montenegro or Seychelles or Sierra Leone or Sri Lanka or Solomon Islands or Somalia or Sudan or Suriname or Surinam or Swaziland or Eswatini or South Africa or Syria or Tajikistan or Tadjikistan or Tadjikistan or Tadjhik or Tanzania or Thailand or Togo or Togolese Republic or Tonga or

Tunisia or Turkey or Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu or New Hebrides or Venezuela or Vietnam or Viet Nam or West Bank or Yemen or Zambia or Zimbabwe or Rhodesia).ti,ab,kw,sh. (1387951)

9 ((developing or less\* developed or least developed or under developed or underdeveloped or middle income or low\* income or underserved or under served or deprived or poor\* or resource limited or resource constrained) adj (countr\* or nation? or population? or world or state\*)).ti,ab,kw. (91955)

10 ((developing or less\* developed or least developed or under developed or underdeveloped or middle income or low\* income or resource limited or resource constrained) adj (economy or economies)).ti,ab,kw. (504)

11 (low\* adj (gdp or gnp or gross domestic or gross national)).ti,ab,kw. (234)

12 (low adj3 middle adj3 countr\*).ti,ab,kw. (12819)

13 (lmic or lmic3 or third world or lami countr\*).ti,ab,kw. (6486)

14 (transitional countr\* or emerging econom\* or global south).ti,ab,kw. (873)

15 or/5-14 (1487811)

16 4 and 15 (80257)

17 Parents/ or Fathers/ or Mothers/ or Grandparents/ or Caregivers/ or Single Parent/ or Pregnant Women/ or Child, Preschool/ or Infant/ or Infant, Newborn/ or Infant, Low Birth Weight/ or Infant, Small for Gestational Age/ or Infant, Very Low Birth Weight/ or Infant, Extremely Low Birth Weight/ or Infant, Postmature/ or Infant, Premature/ or Infant, Extremely Premature/ (1597959)

18 (child\* or infant\* or newborn\* or neonat\* or neo nat\* or prenatal or pre natal or ante natal or antenatal or baby or babies or toddler\* or preschool\* or parent\* or mother\* or father\* or maternal or paternal).ti,ab,kw. (2284298)

19 or/17-18 (2893768)

20 16 and 19 (28515)

21 (random\* or experiment\* or (match\* adj2 (propensity or coarsened or covariate)) or "propensity score" or ("difference in difference\*" or "difference-in-difference\*" or "differences in difference\*" or "differences-in-difference\*" or "double difference\*") or ("quasi-experimental" or "quasi experimental" or "quasi-experiment" or "quasi experiment") or ((estimator or counterfactual) and evaluation\*) or "instrumental variable\*" or (IV adj2 (estimation or approach)) or regression discontinuity or time series or segment\* regression).ti,ab,kw. (2983909)

22 Randomized Controlled Trial/ or Random Allocation/ or Evaluation Studies/ or Propensity Score/ or Interrupted Time Series Analysis/ or Controlled Before-After Studies/ or Controlled Clinical Trial/ or Non-Randomized Controlled Trials as Topic/ (896249)

23 or/21-22 (3415351)

24 Cost Analysis/ or Cost-Benefit Analysis/ or Quality-Adjusted Life Years/ or Economics, Medical/ or Cost of Illness/ or Health Care Costs/ or Direct Service Costs/ or Budgets/ or Health Care Sector/ or Public Expenditures/ (193420)

25 (cost-effective\* or cost-benefit).ti,ab,kw. (130711)

26 ("life year" or "life years" or qaly\* or daly\*).ti,ab,kw. (18749)

27 ((economic\* or cost\*) adj6 (mortality or death\* or markov)).ti,ab,kw. (17246)

28 ("cost minimi\*" or "cost-utilit\*" or "economic evaluation\*" or "economic review\*" or "cost outcome" or "cost analys\*" or "economic analys\*" or "budget\* impact analys\*").ti,ab,kw. (27594)

29 or/24-28 (301485)

30 (review or meta-analysis).pt. (2557796)

31 meta-analysis/ or "systematic review"/ (163880)

32 cochrane database of systematic reviews.jn. (14162)

33 (systematic review or literature review).ti. (130870)

34 or/30-33 (2590211)

- 35 23 or 29 or 34 (5946083)
- 36 20 and 35 (8309)
- 37 exp Animals/ (22312530)
- 38 Humans/ (17732234)
- 39 37 not (37 and 38) (4580296)
- 40 36 not 39 (7984)

## 2. Embase Classic+Embase (Ovid) <1947 to 2019 May 15> Searched 16<sup>th</sup> May 2019

- 1 (immuniz\* or immunis\* or vaccin\* or inoculat\* or innoculat\* or immunotherap\* or prophyla\*).ti,ab,kw. (919517)
- 2 immunization/ or active immunization/ or immunoprophylaxis/ or mass immunization/ or passive immunization/ or secondary immunization/ or exp vaccination/ or vaccination coverage/ (284063)
- 3 measles mumps vaccine/ or Haemophilus influenzae type b vaccine/ or rubella vaccine/ or diphtheria pertussis tetanus Haemophilus influenzae type b hepatitis B vaccine/ or measles mumps rubella vaccine/ or diphtheria pertussis poliomyelitis tetanus Haemophilus influenzae type b hepatitis B vaccine/ or diphtheria poliomyelitis tetanus vaccine/ or diphtheria tetanus vaccine/ or diphtheria vaccine/ or diphtheria pertussis tetanus Haemophilus influenzae type b vaccine/ or meningitis vaccine/ or measles vaccine/ or BCG vaccine/ or Meningococcus vaccine/ or Japanese encephalitis vaccine/ or diphtheria pertussis poliomyelitis tetanus hepatitis B vaccine/ or measles rubella vaccine/ or mumps rubella vaccine/ or pertussis vaccine/ or diphtheria pertussis tetanus vaccine/ or poliomyelitis vaccine/ or diphtheria pertussis poliomyelitis tetanus Haemophilus influenzae type b vaccine/ or mumps vaccine/ or diphtheria pertussis tetanus hepatitis B vaccine/ or Mycobacterium vaccine/ or triple vaccine/ or diphtheria pertussis poliomyelitis tetanus vaccine/ or varicella zoster vaccine/ or Rotavirus vaccine/ (95305)
- 4 or/1-3 (1000586)
- 5 developing country/ (92964)
- 6 "developing countr\*".ti,ab,kw. (74327)
- 7 (Africa or Asia or Caribbean or West Indies or South America or Latin America or Central America).ti,ab,kw. (238430)
- 8 Africa/ or Asia/ or Caribbean/ or Caribbean Islands/ or "south and central america"/ or South America/ or Central America/ (156354)
- 9 (Africa or Central America or South America or Caribbean or Central Asia or Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or Burkina Faso or Burkina Fasso or Upper Volta or Burundi or Urundi or Cambodia or Khmer Republic or Kampuchea or Cameroon or Cameroons or Cameron or Camerons or Cape Verde or Cabo Verde or Central African Republic or Chad or Tchad or China or Colombia or Comoros or Comoro Islands or Comores or Mayotte or Congo or Zaire or Costa Rica or Cote d'Ivoire or Ivory Coast or Cuba or Djibouti or French Somaliland or Dominica or Dominican Republic or East Timor or East Timur or Timor Leste or Ecuador or Egypt or United Arab Republic or El Salvador or Eritrea or Ethiopia or Fiji or Gabon or Gabonese Republic or Gambia or Gaza or Georgia Republic or Georgian Republic or Ghana or Grenada or Guatemala or Guinea or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or Kyrgyz Republic or Kirghiz or Kirgizstan or Lao PDR or Laos or Lebanon or Lesotho or Basutoland or Liberia or Libya or Macedonia or Madagascar or Malagasy Republic or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or Marshall Islands or Mauritania or Mauritius or Agalega Islands or Mexico or Micronesia or Middle East or Moldova or Moldovia or Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma or Burma or Namibia or



Nepal or Netherlands Antilles or Nicaragua or Niger or Nigeria or Muscat or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or Phillipines or Phillippines or Papua New Guinea or Romania or Rumania or Roumania or Rwanda or Ruanda or Saint Lucia or St Lucia or Saint Vincent or St Vincent or Grenadines or Samoa or Samoan Islands or Navigator Island or Navigator Islands or Sao Tome or Senegal or Serbia or Montenegro or Seychelles or Sierra Leone or Sri Lanka or Solomon Islands or Somalia or Sudan or Suriname or Surinam or Swaziland or Eswatini or South Africa or Syria or Tajikistan or Tadjhikistan or Tadjikistan or Tadjhik or Tanzania or Thailand or Togo or Togolese Republic or Tonga or Tunisia or Turkey or Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu or New Hebrides or Venezuela or Vietnam or Viet Nam or West Bank or Yemen or Zambia or Zimbabwe or Rhodesia).ti,ab,kw,sh. (1693062)

10 ((developing or less\* developed or least developed or under developed or underdeveloped or middle income or low\* income or underserved or under served or deprived or poor\* or resource limited or resource constrained) adj (countr\* or nation? or population? or world or state\*)).ti,ab,kw. (121399)

11 ((developing or less\* developed or least developed or under developed or underdeveloped or middle income or low\* income or resource limited or resource constrained) adj (economy or economies)).ti,ab,kw. (663)

12 (low\* adj (gdp or gnp or gross domestic or gross national)).ti,ab,kw. (335)

13 (low adj3 middle adj3 countr\*).ti,ab,kw. (15489)

14 (lmic or lmic3 or third world or lami countr\*).ti,ab,kw. (7992)

15 (transitional countr\* or emerging econom\* or global south).ti,ab,kw. (1087)

16 or/5-15 (1853015)

17 4 and 16 (104331)

18 (child\* or infant\* or newborn\* or neonat\* or neo nat\* or prenatal or pre natal or antenatal or antenatal or baby or babies or toddler\* or preschool\* or parent\* or mother\* or father\* or maternal or paternal).ti,ab,kw. (3061147)

19 boy/ or girl/ or exp infant/ or preschool child/ or toddler/ or parent/ or exp father/ or exp mother/ or grandparent/ or grandfather/ or grandmother/ or caregiver/ or pregnant woman/ (1833747)

20 or/18-19 (3666036)

21 17 and 20 (34101)

22 (random\* or experiment\* or (match\* adj2 (propensity or coarsened or covariate)) or "propensity score" or ("difference in difference\*" or "difference-in-difference\*" or "differences in difference\*" or "differences-in-difference\*" or "double difference\*") or ("quasi-experimental" or "quasi experimental" or "quasi-experiment" or "quasi experiment") or ((estimator or counterfactual) and evaluation\*) or "instrumental variable\*" or (IV adj2 (estimation or approach)) or regression discontinuity or time series or segment\* regression).ti,ab,kw. (3705127)

23 randomized controlled trial/ or controlled clinical trial/ or equivalence trial/ or non-inferiority trial/ or pragmatic trial/ or superiority trial/ or "randomized controlled trial (topic)"/ or evaluation study/ or exp program evaluation/ or propensity score/ or controlled study/ or time series analysis/ or quasi experimental study/ or instrumental variable analysis/ or mendelian randomization analysis/ (6960490)

24 or/22-23 (9221333)

25 (cost-effective\* or cost-benefit).ti,ab,kw. (181445)

26 ("life year" or "life years" or qaly\* or daly\*).ti,ab,kw. (30322)

27 ((economic\* or cost\*) adj6 (mortality or death\* or markov)).ti,ab,kw. (23530)

28 ("cost minimi\*" or "cost-utilit\*" or "economic evaluation\*" or "economic review\*" or "cost outcome" or "cost analys\*" or "economic analys\*" or "budget\* impact analys\*").ti,ab,kw. (43685)

29 "health care cost"/ or "drug cost"/ or health care financing/ or budget/ or cost/ or "cost benefit analysis"/ or economic evaluation/ or "cost control"/ or "cost effectiveness analysis"/ or "cost minimization analysis"/ or "cost utility analysis"/ or quality adjusted life year/ or disability-adjusted life year/ or "cost of illness"/ (538960)

- 30 or/25-29 (633936)  
 31 "review".pt. or "systematic review"/ or "systematic review (topic)"/ or meta analysis/ or "meta analysis (topic)"/ or cochrane library/ (2700519)  
 32 (systematic review or literature review).ti. (158376)  
 33 or/31-32 (2727777)  
 34 24 or 30 or 33 (11907798)  
 35 21 and 34 (15343)  
 36 limit 35 to exclude medline journals (1420)

### 3. CAB Global Health (Ovid) <1910 to 2019 Week 19> Searched 17<sup>th</sup> May 2019

- 1 (immuniz\* or immunis\* or vaccin\* or inoculat\* or innoculat\* or immunotherap\* or prophyla\*).ti,ab. (263128)  
 2 immunization/ or passive immunization/ or vaccination/ or immunization programmes/ or mandatory vaccination/ or oral vaccination/ or vaccines/ or candidate vaccines/ or combined vaccines/ or conjugate vaccines/ or inactivated vaccines/ or live vaccines/ or pertussis vaccines/ or poliomyelitis vaccines/ or polyvalent vaccines/ or bcg vaccine/ or diphtheria pertussis tetanus vaccines/ or diphtheria tetanus pertussis poliomyelitis vaccines/ or measles mumps rubella vaccines/ (122515)  
 3 or/1-2 (271288)  
 4 exp africa/ (246366)  
 5 exp Central America/ or exp Latin America/ or exp South America/ (182184)  
 6 mexico/ (22593)  
 7 exp central asia/ (12607)  
 8 east asia/ or china/ or korea democratic people's republic/ or korea republic/ or mongolia/ (242282)  
 9 exp south asia/ or himalaya/ (151860)  
 10 exp south east asia/ or pacific rim/ (98947)  
 11 exp caribbean/ (22195)  
 12 exp pacific islands/ (14470)  
 13 exp developing countries/ (913995)  
 14 (Africa or Asia or Caribbean or West Indies or South America or Latin America or Central America).tw. (1028925)  
 15 (Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or Burkina Faso or Burkina Fasso or Upper Volta or Burundi or Urundi or Cambodia or Khmer Republic or Kampuchea or Cameroon or Cameroons or Cameron or Camerons or Cape Verde or Central African Republic or Chad or China or Colombia or Comoros or Comoro Islands or Comores or Mayotte or Congo or Zaire or Costa Rica or Cote d'Ivoire or Ivory Coast or Cuba or Djibouti or French Somaliland or Dominica or Dominican Republic or East Timor or East Timur or Timor Leste or Ecuador or Egypt or United Arab Republic or El Salvador or Eritrea or Ethiopia or Fiji or Gabon or Gabonese Republic or Gambia or Gaza or Georgia Republic or Georgian Republic or Ghana or Grenada or Guatemala or Guinea or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or Kyrgyz Republic or Kirghiz or Kirgizstan or Lao PDR or Laos or Lebanon or Lesotho or Basutoland or Liberia or Libya or Macedonia or Madagascar or Malagasy Republic or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or Marshall Islands or Mauritania or Mauritius or Agalega Islands or Mexico or Micronesia or Middle East or Moldova or Moldovia or Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or Netherlands Antilles or Nicaragua or Niger or Nigeria or Muscat or Pakistan or Palau

or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or Phillipines or Phillippines or Papua New Guinea or Romania or Rumania or Roumania or Rwanda or Ruanda or Saint Lucia or St Lucia or Saint Vincent or St Vincent or Grenadines or Samoa or Samoan Islands or Navigator Island or Navigator Islands or Sao Tome or Senegal or Serbia or Montenegro or Seychelles or Sierra Leone or Sri Lanka or Solomon Islands or Somalia or Sudan or Suriname or Surinam or Swaziland or South Africa or Syria or Tajikistan or Tadjhikistan or Tadjikistan or Tadjhik or Tanzania or Thailand or Togo or Togolese Republic or Tonga or Tunisia or Turkey or Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu or New Hebrides or Venezuela or Vietnam or Viet Nam or West Bank or Yemen or Zambia or Zimbabwe).tw. (1003891)

16 ((developing or less\* developed or least developed or under developed or underdeveloped or middle income or low\* income or underserved or under served or deprived or poor\* or resource limited or resource constrained) adj (countr\* or nation? or population? or world or state\*)).ti,ab. (52582)

17 ((developing or less\* developed or least developed or under developed or underdeveloped or middle income or low\* income or resource limited or resource constrained) adj (economy or economies)).ti,ab. (278)

18 (low\* adj (gdp or gnp or gross domestic or gross national)).tw. (69)

19 (low adj3 middle adj3 countr\*).tw. (6904)

20 (lmic or lmic3 or third world or lami countr\*).tw. (22597)

21 (transitional countr\* or emerging econom\* or global south).ti,ab. (472)

22 or/4-21 (1156687)

23 3 and 22 (84490)

24 (child\* or infant\* or newborn\* or neonat\* or neo nat\* or prenatal or pre natal or antenatal or antenatal or baby or babies or toddler\* or preschool\* or parent\* or mother\* or father\* or maternal or paternal).ti,ab. (533665)

25 infants/ or low birth weight infants/ or neonates/ or premature infants/ or preschool children/ or parents/ or fathers/ or grandparents/ or mothers/ or careproviders/ or child careproviders/ or pregnant women/ (166504)

26 or/24-25 (541963)

27 23 and 26 (27216)

28 (random\* or experiment\* or (match\* adj2 (propensity or coarsened or covariate)) or "propensity score" or ("difference in difference\*" or "difference-in-difference\*" or "differences in difference\*" or "differences-in-difference\*" or "double difference\*") or ("quasi-experimental" or "quasi experimental" or "quasi-experiment" or "quasi experiment") or ((estimator or counterfactual) and evaluation\*) or "instrumental variable\*" or (IV adj2 (estimation or approach)) or regression discontinuity or time series or segment\* regression).ti,ab. (501698)

29 randomized controlled trials/ or program evaluation/ or time series/ or regression analysis/ (39829)

30 or/28-29 (506758)

31 (cost-effective\* or cost-benefit).ti,ab. (24530)

32 ("life year" or "life years" or qaly\* or daly\*).ti,ab. (5193)

33 ((economic\* or cost\*) adj6 (mortality or death\* or markov)).ti,ab. (4632)

34 ("cost minimi\*" or "cost-utilit\*" or "economic evaluation\*" or "economic review\*" or "cost outcome" or "cost analys\*" or "economic analys\*" or "budget\* impact analys\*").ti,ab. (4648)

35 costs/ or estimated costs/ or health care costs/ or operating costs/ or exp "cost analysis"/ or exp "cost benefit analysis"/ or "cost control"/ or quality-adjusted life year/ or economic evaluation/ or budgets/ or public expenditure/ (31162)

36 or/31-35 (53514)

37 systematic reviews/ or meta-analysis/ (35616)

38 (systematic review or literature review or meta-analy\* or metaanaly\* or meta analy\*).ti. (33890)

39 or/37-38 (42308)

40 30 or 36 or 39 (578827)

41 27 and 40 (5518)

#### 4. Cochrane Library – searched 17<sup>th</sup> May 2019

- #1 (immuniz\* or immunis\* or vaccin\* or inoculat\* or innoculat\* or immunotherap\* or prophyla\*):ti,ab,kw  
65058
- #2 [mh ^immunization] or [mh ^"immunization, passive"] or [mh ^"immunization schedule"] or [mh ^"immunization, secondary"] or [mh ^"immunotherapy, active"] or [mh ^vaccination] or [mh ^"Immunization Programs"] or [mh ^"mass vaccination"] 5349
- #3 [mh ^"Tuberculosis Vaccines"] or [mh ^"BCG Vaccine"] or [mh ^"Diphtheria-Tetanus Vaccine"] or [mh ^"Meningococcal Vaccines"] or [mh ^"Pertussis Vaccine"] or [mh ^"Diphtheria-Tetanus-acellular Pertussis Vaccines"] or [mh ^"Diphtheria-Tetanus-Pertussis Vaccine"] or [mh ^"Diphtheria-Tetanus Vaccine"] or [mh ^"Measles Vaccine"] or [mh ^"Mumps Vaccine"] or [mh ^"Rubella Vaccine"] or [mh ^"Measles-Mumps-Rubella Vaccine"] or [mh ^"Poliovirus Vaccines"] or [mh ^"Poliovirus Vaccine, Inactivated"] or [mh ^"Poliovirus Vaccine, Oral"] or [mh ^"Japanese Encephalitis Vaccines"] or [mh ^"Rotavirus Vaccine"] 2605
- #4 {OR #1-#3} 65243
- #5 MeSH descriptor: [Developing Countries] explode all trees 811
- #6 MeSH descriptor: [Africa] explode all trees 6332
- #7 MeSH descriptor: [Asia] explode all trees 17824
- #8 MeSH descriptor: [Caribbean Region] explode all trees 381
- #9 MeSH descriptor: [West Indies] explode all trees 363
- #10 MeSH descriptor: [South America] explode all trees 2185
- #11 MeSH descriptor: [Latin America] explode all trees 109
- #12 MeSH descriptor: [Central America] explode all trees 256
- #13 (Africa or Asia or Caribbean or "West Indies" or "South America" or "Latin America" or "Central America"):ti,ab,kw 10930
- #14 (Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or "Burkina Faso" or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Cameroons or Cameron or Camerons or "Cape Verde" or "Central African Republic" or Chad or China or Colombia or Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote d'Ivoire" or "Ivory Coast" or Croatia or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or Grenada or Guatemala or Guinea or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or Laos or Lebanon or Lesotho or Basutoland or Liberia or Libya or Macedonia or Madagascar or "Malagasy Republic" or Malaysia or Malay or Sabah or Sarawak or Malawi or Mali or "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or "Middle East" or Moldova or Moldovia or Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles" or "New Caledonia" or Nicaragua or Niger or Nigeria or "Northern Mariana Islands" or Oman or Muscat or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or Phillipines or Phillippines or "Papua New Guinea" or Portugal or Romania or Rumania or Roumania or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles or

- "Sierra Leone" or "Sri Lanka" or Ceylon or "Solomon Islands" or Somalia or Sudan or Suriname or Surinam or Swaziland or "South Africa" or Syria or Tajikistan or Tadzhikistan or Tadjikistan or Tadjhik or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Trinidad or Tobago or Tunisia or Turkey or Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu or "New Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Yugoslavia or Zambia or Zimbabwe):ti,ab,kw 67338
- #15 ((developing or "less\* developed" or "least developed" or "under developed" or underdeveloped or "middle income" or "low\* income" or "resource limited" or "resource constrained") near/1 (economy or economies)):ti,ab,kw 15
- #16 ((developing or "less\* developed" or "least developed" or "under developed" or underdeveloped or "middle income" or "low\* income" or underserved or "under served" or deprived or poor\* or "resource limited" or "resource constrained") near/1 (countn\* or nation? or population? or world or state\*)):ti,ab,kw 6362
- #17 (low\* next (gdp or gnp or "gross domestic" or "gross national")):ti,ab,kw 49
- #18 (low next/3 middle next/3 countr\*):ti,ab,kw 1054
- #19 (lmic or lmic\* or "third world" or "lami countr\*"):ti,ab,kw 320
- #20 ("emerging econom\*" or "global south" or "transitional countr\*"):ti,ab,kw 5
- #21 #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 80139
- #22 #4 and #21 7174
- #23 (child\* or infant\* or newborn\* or neonat\* or "neo nat\*" or prenatal or "pre natal" or antenatal or "ante natal" or baby or babies or toddler\* or preschool\* or parent\* or mother\* or father\* or maternal or paternal):ti,ab,kw 200260
- #24 [mh ^Parents] or [mh ^Fathers] or [mh ^Mothers] or [mh ^Grandparents] or [mh ^Caregivers] or [mh ^"Single Parent"] or [mh ^"Pregnant Women"] or [mh ^"Child, Preschool"] or [mh ^Infant] or [mh ^"Infant, Newborn"] or [mh ^"Infant, Low Birth Weight"] or [mh ^"Infant, Small for Gestational Age"] or [mh ^"Infant, Very Low Birth Weight"] or [mh ^"Infant, Extremely Low Birth Weight"] or [mh ^"Infant, Postmature"] or [mh ^"Infant, Premature"] or [mh ^"Infant, Extremely Premature"] 19319
- #25 #23 or #24 201672
- #26 #22 and #25 3990
- #27 (random\* or experiment\* or (match\* near/2 (propensity or coarsened or covariate)) or "propensity score" or ("difference in difference\*" or "difference-in-difference\*" or "differences in difference\*" or "differences-in-difference\*" or "double difference\*") or ("quasi-experimental" or "quasi experimental" or "quasi-experiment" or "quasi experiment") or ((estimator or counterfactual) and evaluation\*) or "instrumental variable\*" or (IV near/2 (estimation or approach)) or "regression discontinuity" or "time series" or "segment\* regression"):ti,ab,kw 929331
- #28 [mh ^"Randomized Controlled Trial"] or [mh ^"Random Allocation"] or [mh ^"Evaluation Studies"] or [mh ^"Propensity Score"] or [mh ^"Interrupted Time Series Analysis"] or [mh ^"Controlled Before-After Studies"] or [mh ^"Controlled Clinical Trial"] or [mh ^"Non-Randomized Controlled Trials as Topic"] 21006
- #29 #27 or #28 929342
- #30 [mh ^"Cost Analysis"] or [mh ^"Cost-Benefit Analysis"] or [mh ^"Quality-Adjusted Life Years"] or [mh ^"Economics, Medical"] or [mh ^"Cost of Illness"] or [mh ^"Health Care Costs"] or [mh ^"Direct Service Costs"] or [mh ^Budgets] or [mh ^"Health Care Sector"] or [mh ^"Public Expenditures"] 9124
- #31 (cost-effective\* or cost-benefit):ti,ab,kw 22145
- #32 ("life year" or "life years" or qaly\* or daly\*):ti,ab,kw 5073
- #33 ((economic\* or cost\*) near/6 (mortality or death\* or markov)):ti,ab,kw 2822
- #34 ("cost minimi\*" or "cost-utilit\*" or "economic evaluation\*" or "economic review\*" or "cost outcome" or "cost analys\*" or "economic analys\*" or "budget\* impact analys\*"):ti,ab,kw 3517

#35 {OR #30-#34} 27818  
 #36 (review or meta-analysis):pt 26656  
 #37 ("systematic review" or "literature review"):ti 5036  
 #38 {OR #36-#37} 29887  
 #39 #29 or #35 or #38 936279  
 #40 #26 and #39 3055

##### 5. PsycINFO (Ovid) <1806 to May Week 2 2019> Searched 18<sup>th</sup> May 2019

- 1 (immuniz\* or immunis\* or vaccin\* or inoculat\* or innoculat\* or immunotherap\* or prophyla\*).ti,ab. (17647)
- 2 immunization/ or immunotherapy/ (5068)
- 3 or/1-2 (18043)
- 4 (Afghanistan or Albania or Algeria or Angola or Argentina or Armenia or Armenian or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or Burkina Faso or Burkina Fasso or Upper Volta or Burundi or Urundi or Cambodia or Khmer Republic or Kampuchea or Cameroon or Camerouns or Cameron or Camerons or Cape Verde or Central African Republic or Chad or China or Colombia or Comoros or Comoro Islands or Comores or Mayotte or Congo or Zaire or Costa Rica or Cote d'Ivoire or Ivory Coast or Cuba or Djibouti or French Somaliland or Dominica or Dominican Republic or East Timor or East Timur or Timor Leste or Ecuador or Egypt or United Arab Republic or El Salvador or Eritrea or Ethiopia or Fiji or Gabon or Gabonese Republic or Gambia or Gaza or Georgia Republic or Georgian Republic or Ghana or Grenada or Guatemala or Guinea or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or Kyrgyz Republic or Kirghiz or Kirgizstan or Lao PDR or Laos or Lebanon or Lesotho or Basutoland or Liberia or Libya or Macedonia or Madagascar or Malagasy Republic or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or Marshall Islands or Mauritania or Mauritius or Agalega Islands or Mexico or Micronesia or Middle East or Moldova or Moldovia or Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or Netherlands Antilles or Nicaragua or Niger or Nigeria or Muscat or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or Phillipines or Phillippines or Papua New Guinea or Romania or Rumania or Roumania or Rwanda or Ruanda or Saint Lucia or St Lucia or Saint Vincent or St Vincent or Grenadines or Samoa or Samoan Islands or Navigator Island or Navigator Islands or Sao Tome or Senegal or Serbia or Montenegro or Seychelles or Sierra Leone or Sri Lanka or Solomon Islands or Somalia or Sudan or Suriname or Surinam or Swaziland or South Africa or Syria or Tajikistan or Tadjikistan or Tadjikistan or Tadjhik or Tanzania or Thailand or Togo or Togolese Republic or Tonga or Tunisia or Turkey or Turkmenistan or Turkmen or Uganda or Ukraine or Uzbekistan or Uzbek or Vanuatu or New Hebrides or Venezuela or Vietnam or Viet Nam or West Bank or Yemen or Zambia or Zimbabwe).hw,ti,ab,cp,lo. (249271)
- 5 (Africa or Asia or Caribbean or West Indies or Middle East or South America or Latin America or Central America).hw,ti,ab,cp,lo. (47894)
- 6 ((developing or less\* developed or least developed or under developed or underdeveloped or middle income or low\* income or resource limited or resource constrained) adj (economy or economies)).ti,ab. (350)
- 7 ((developing or less\* developed or least developed or under developed or underdeveloped or middle income or low\* income or underserved or under served or deprived or poor\* or resource limited or resource constrained) adj (countr\* or nation? or population? or world or state\*)).ti,ab. (16821)
- 8 (low\* adj (gdp or gnp or gross domestic or gross national)).ti,ab. (42)
- 9 (low adj3 middle adj3 countr\*).ti,ab. (2687)
- 10 (lmic or Imics or third world or lami countr\*).ti,ab. (1637)

- 11 (transitional countr\* or emerging econom\* or global south).ti,ab. (1295)
- 12 developing countries/ or emerging economies/ (6069)
- 13 or/4-12 (275101)
- 14 3 and 13 (2041)
- 15 (child\* or infant\* or newborn\* or neonat\* or neo nat\* or prenatal or pre natal or ante natal or antenatal or baby or babies or toddler\* or preschool\* or parent\* or mother\* or father\* or maternal or paternal).ti,ab. (851334)
- 16 (childhood birth 12 yrs or infancy 2 23 mo or neonatal birth 1 mo or preschool age 2 5 yrs).ag. (517691)
- 17 family members/ or grandparents/ or exp parents/ or caregivers/ (126795)
- 18 or/15-17 (997122)
- 19 14 and 18 (944)
- 20 (random\* or experiment\* or (match\* adj2 (propensity or coarsened or covariate)) or "propensity score" or ("difference in difference\*" or "difference-in-difference\*" or "differences in difference\*" or "differences-in-difference\*" or "double difference\*") or ("quasi-experimental" or "quasi experimental" or "quasi-experiment" or "quasi experiment") or ((estimator or counterfactual) and evaluation\*) or "instrumental variable\*" or (IV adj2 (estimation or approach)) or regression discontinuity or time series or segment\* regression).ti,ab. (571101)
- 21 experimental design/ or experimental methods/ or exp clinical trials/ or quantitative methods/ or quasi experimental methods/ or exp statistical regression/ or time series/ (41453)
- 22 or/20-21 (594997)
- 23 (cost-effective\* or cost-benefit).ti,ab. (16148)
- 24 ("life year" or "life years" or qaly\* or daly\*).ti,ab. (2367)
- 25 ((economic\* or cost\*) adj6 (mortality or death\* or markov)).ti,ab. (1335)
- 26 ("cost minimi\*" or "cost-utilit\*" or "economic evaluation\*" or "economic review\*" or "cost outcome" or "cost analys\*" or "economic analys\*" or "budget\* impact analys\*").ti,ab. (3788)
- 27 "costs and cost analysis"/ or budgets/ or health care costs/ or "cost containment"/ or funding/ or health care economics/ or resource allocation/ (31851)
- 28 or/23-27 (46005)
- 29 "literature review"/ or meta analysis/ (26684)
- 30 (systematic review or literature review).ti. (20723)
- 31 or/29-30 (46733)
- 32 22 or 28 or 31 (670259)
- 33 19 and 32 (197)

## 6. CINAHL (Ebsco) – Searched 18<sup>th</sup> May 2019

- S45 S22 AND S44 Database - CINAHL Plus with Full Text  
**1,672**
- S44 S29 OR S39 OR S43  
762,995
- S43 S40 OR S41 OR S42  
124,839
- S42 TI("systematic review" or "literature review")  
65,112
- S41 (MH "Meta Analysis") OR (MH "Meta Synthesis")  
39,339
- S40 (MH "Literature Review") OR (MH "Systematic Review") OR (MH "Scoping Review")  
76,956
- S39 S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S38

- 151,231
- S38 (MH "Public Expenditures") OR (MH "Resource Allocation") OR (MH "Health Resource Allocation")  
10,627
- S37 (MH "Budgets")  
9,232
- S36 (MH "Economic Aspects of Illness")  
8,290
- S35 (MH "Quality-Adjusted Life Years") OR (MH "Disability-Adjusted Life Years")  
4,021
- S34 (MH "Costs and Cost Analysis+") OR (MH "Health Care Costs+") OR (MH "Cost Control+")  
102,662
- S33 TI("cost minimi\*" or "cost-utilit\*" or "economic evaluation\*" or "economic review\*" or "cost outcome" or "cost analys\*" or "economic analys\*" or "budget\* impact analys\*") OR AB("cost minimi\*" or "cost-utilit\*" or "economic evaluation\*" or "economic review\*" or "cost outcome" or "cost analys\*" or "economic analys\*" or "budget\* impact analys\*") OR SU("cost minimi\*" or "cost-utilit\*" or "economic evaluation\*" or "economic review\*" or "cost outcome" or "cost analys\*" or "economic analys\*" or "budget\* impact analys\*")  
23,886
- S32 TI((economic\* or cost\*) N6 (mortality or death\* or markov)) OR AB((economic\* or cost\*) N6 (mortality or death\* or markov)) OR SU((economic\* or cost\*) N6 (mortality or death\* or markov))  
5,722
- S31 TI("life year" or "life years" or qaly\* or daly\*) OR AB("life year" or "life years" or qaly\* or daly\*) OR SU("life year" or "life years" or qaly\* or daly\*)  
8,344
- S30 TI(cost-effective\* or cost-benefit) OR AB(cost-effective\* or cost-benefit) OR SU(cost-effective\* or cost-benefit)  
51,463
- S29 S23 OR S24 OR S25 OR S26 OR S27 OR S28  
544,911
- S28 (MH "Quasi-Experimental Studies")  
10,873
- S27 (MH "Interrupted Time Series Analysis") OR (MH "Controlled Before-After Studies") OR (MH "Nonrandomized Trials")  
791
- S26 (MH "Evaluation Research")  
114,845
- S25 (MH "Random Assignment")  
54,711
- S24 (MH "Randomized Controlled Trials") OR (MH "Equivalence Trials")  
81,940
- S23 TI(random\* or experiment\* or (match\* N2 (propensity or coarsened or covariate)) or "propensity score" or ("difference in difference\*" or "difference-in-difference\*" or "differences in difference\*" or "differences-in-difference\*" or "double difference\*") or ("quasi-experimental" or "quasi experimental" or "quasi-experiment" or "quasi experiment") or ((estimator or counterfactual) and evaluation\*) or "instrumental variable\*" or (IV N2 (estimation or approach)) or "regression discontinuity" or "time series" or "segment regression") OR AB(random\* or experiment\* or (match\* N2 (propensity or coarsened or covariate)) or "propensity score" or ("difference in difference\*" or "difference-in-difference\*" or "differences in difference\*" or "differences-in-difference\*" or "double difference\*") or ("quasi-experimental" or "quasi experimental" or "quasi-experiment" or "quasi experiment") or ((estimator or counterfactual) and evaluation\*) or "instrumental



variable\*" or (IV N2 (estimation or approach)) or "regression discontinuity" or "time series" or "segment\* regression") OR SU(random\* or experiment\* or (match\* N2 (propensity or coarsened or covariate)) or "propensity score" or ("difference in difference\*" or "difference-in-difference\*" or "differences in difference\*" or "differences-in-difference\*" or "double difference\*") or ("quasi-experimental" or "quasi experimental" or "quasi-experiment" or "quasi experiment") or ((estimator or counterfactual) and evaluation\*) or "instrumental variable\*" or (IV N2 (estimation or approach)) or "regression discontinuity" or "time series" or "segment\* regression")

465,698

S22 S15 AND S21

6,658

S21 S16 OR S17 OR S18 OR S19 OR S20

913,473

S20 (MH "Caregivers")

30,125

S19 (MH "Grandparents")

1,885

S18 (MH "Parents") OR (MH "Fathers") OR (MH "Mothers") OR (MH "Expectant Mothers")

70,610

S17 (MH "Child, Preschool") OR (MH "Infant+")

312,965

S16 TI(child\* or infant\* or newborn\* or neonat\* or "neo nat\*" or prenatal or "pre natal" or "ante natal" or antenatal or baby or babies or toddler\* or preschool\* or parent\* or mother\* or father\* or maternal or paternal) OR AB(child\* or infant\* or newborn\* or neonat\* or "neo nat\*" or prenatal or "pre natal" or "ante natal" or antenatal or baby or babies or toddler\* or preschool\* or parent\* or mother\* or father\* or maternal or paternal) OR SU(child\* or infant\* or newborn\* or neonat\* or "neo nat\*" or prenatal or "pre natal" or "ante natal" or antenatal or baby or babies or toddler\* or preschool\* or parent\* or mother\* or father\* or maternal or paternal)

891,134

S15 S4 AND S14

(14,504)

S14 S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13

469,011

S13 TI ("transitional countr\*" OR "emerging econom\*" or "global south") OR AB ("transitional countr\*" OR "emerging econom\*" or "global south") OR SU ("transitional countr\*" OR "emerging econom\*" or "global south")

354

S12 TI (lmic or lmics or "third world" or "lami countr\*") OR AB (lmic or lmics or "third world" or "lami countr\*") OR SU (lmic or lmics or "third world" or "lami countr\*")

1,821

S11 TI (low N3 middle N3 countr\*) OR AB (low N3 middle N3 countr\*) OR SU (low N3 middle N3 countr\*)

6,168

S10 TI (low\* N1 (gdp or gnp or "gross domestic" or "gross national" or GNI)) OR AB (low\* N1 (gdp or gnp or "gross domestic" or "gross national" or GNI)) OR SU (low\* N1 (gdp or gnp or "gross domestic" or "gross national" or GNI))

71

S9 TI ((developing or "less\* developed" or "under developed" or underdeveloped or "middle income" or "low\* income") N1 (economy or economies)) OR AB ((developing or "less\* developed" or "under developed" or underdeveloped or "middle income" or "low\* income") N1 (economy or economies)) OR SU ((developing or

"less\* developed" or "under developed" or underdeveloped or "middle income" or "low\* income") N1 (economy or economies))

120

S8 TI((developing or "less\* developed" or "least developed" or "under developed" or underdeveloped or "middle income" or "low\* income" or underserved or "under served" or deprived or poor\* or "resource limited" or "resource constrained") N1 (countr\* or nation? or population? or world or state\*)) OR AB((developing or "less\* developed" or "least developed" or "under developed" or underdeveloped or "middle income" or "low\* income" or underserved or "under served" or deprived or poor\* or "resource limited" or "resource constrained") N1 (countr\* or nation? or population? or world or state\*)) OR SU ((developing or "less\* developed" or "least developed" or "under developed" or underdeveloped or "middle income" or "low\* income" or underserved or "under served" or deprived or poor\* or "resource limited" or "resource constrained") N1 (countr\* or nation? or population? or world or state\*))

37,075

S7 TI (Africa or Asia or Caribbean or "West Indies" or "South America" or "Latin America" or "Central America") OR AB (Africa or Asia or Caribbean or "West Indies" or "South America" or "Latin America" or "Central America") OR SU (Africa or Asia or Caribbean or "West Indies" or "South America" or "Latin America" or "Central America")

58,567

S6 TI (Afghanistan or Albania or Algeria or Angola or Antigua or Barbuda or Argentina or Armenia or Armenian or Aruba or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or "Burkina Faso" or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Cameroons or Cameron or Camerons or "Cape Verde" or "Central African Republic" or Chad or Chile or China or Colombia or Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote d'Ivoire" or "Ivory Coast" or Croatia or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or "Gold Coast" or Grenada or Guatemala or Guinea or Guam or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or Laos or Latvia or Lebanon or Lesotho or Basutoland or Liberia or Libya or Lithuania or Macedonia or Madagascar or "Malagasy Republic" or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or "Middle East" or Moldova or Moldavia or Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles" or "New Caledonia" or Nicaragua or Niger or Nigeria or Oman or Muscat or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or Phillipines or Phillippines or Romania or Rumania or Roumania or Russia or Russian or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles or "Sierra Leone" or "Sri Lanka" or Ceylon or "Solomon Islands" or Somalia or Sudan or Suriname or Surinam or Swaziland or Syria or Tajikistan or Tadzhikistan or Tadjikistan or Tadjik or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Trinidad or Tobago or Tunisia or Turkey or Turkmenistan or Turkmen or Tuvalu or Uganda or Ukraine or Uruguay or Uzbekistan or Uzbek or Vanuatu or "New Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Yugoslavia or Zambia or Zimbabwe) OR AB (Afghanistan or Albania or Algeria or Angola or Antigua or Barbuda or Argentina or Armenia or Armenian or Aruba or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or

Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or "Burkina Faso" or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Cameroons or Cameron or Camerons or "Cape Verde" or "Central African Republic" or Chad or Chile or China or Colombia or Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote d'Ivoire" or "Ivory Coast" or Croatia or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or "Gold Coast" or Grenada or Guatemala or Guinea or Guam or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or Laos or Latvia or Lebanon or Lesotho or Basutoland or Liberia or Libya or Lithuania or Macedonia or Madagascar or "Malagasy Republic" or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or "Middle East" or Moldova or Moldovia or Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles" or "New Caledonia" or Nicaragua or Niger or Nigeria or Oman or Muscat or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or Phillipines or Phillippines or Romania or Rumania or Roumania or Russia or Russian or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles or "Sierra Leone" or "Sri Lanka" or Ceylon or "Solomon Islands" or Somalia or Sudan or Suriname or Surinam or Swaziland or Syria or Tajikistan or Tadjhikistan or Tadjikistan or Tadjhik or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Trinidad or Tobago or Tunisia or Turkey or Turkmenistan or Turkmen or Tuvalu or Uganda or Ukraine or Uruguay or Uzbekistan or Uzbek or Vanuatu or "New Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Yugoslavia or Zambia or Zimbabwe) OR SU (Afghanistan or Albania or Algeria or Angola or Antigua or Barbuda or Argentina or Armenia or Armenian or Aruba or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or "Burkina Faso" or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Cameroons or Cameron or Camerons or "Cape Verde" or "Central African Republic" or Chad or Chile or China or Colombia or Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote d'Ivoire" or "Ivory Coast" or Croatia or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or "Gold Coast" or Grenada or Guatemala or Guinea or Guam or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or Laos or Latvia or Lebanon or Lesotho or Basutoland or Liberia or Libya or Lithuania or Macedonia or Madagascar or "Malagasy Republic" or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or "Middle East" or Moldova or Moldovia or Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles" or "New Caledonia" or Nicaragua or Niger or Nigeria or Oman or Muscat or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or Phillipines or Phillippines or Romania or Rumania or Roumania or Russia or Russian or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles or "Sierra Leone" or "Sri Lanka" or Ceylon or "Solomon

Islands" or Somalia or Sudan or Suriname or Surinam or Swaziland or Syria or Tajikistan or Tadjikistan or Tadjikistan or Tadjik or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Trinidad or Tobago or Tunisia or Turkey or Turkmenistan or Turkmen or Tuvalu or Uganda or Ukraine or Uruguay or Uzbekistan or Uzbek or Vanuatu or "New Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Yugoslavia or Zambia or Zimbabwe)

337,608

S5 MH (Africa+ OR Asia+ OR "South America+" OR "Central America+" OR Mexico OR "West Indies+" OR "Atlantic Islands+" OR Armenia OR Azerbaijan OR "Georgia (Republic)" OR "Indian Ocean Islands" OR "Pacific Islands")

366,684

S4 S1 OR S2 OR S3

(105,391)

S3 (MH "Pertussis Vaccine+") OR (MH "Vaccines, Combined+") OR (MH "Chickenpox Vaccine") OR (MH "Japanese Encephalitis Vaccines") OR (MH "Measles Vaccine+") OR (MH "Measles-Mumps-Rubella Vaccine+") OR (MH "Mumps Vaccine+") OR (MH "Poliovirus Vaccine+") OR (MH "Rubella Vaccine+") OR (MH "BCG Vaccine") OR (MH "Diphtheria-Tetanus Vaccine") OR (MH "Diphtheria-Tetanus-acellular Pertussis Vaccines") OR (MH "Diphtheria-Tetanus-Pertussis Vaccine") OR (MH "Meningococcal Vaccines") OR (MH "Rotavirus Vaccines")

8,714

S2 (MH "Vaccination Coverage") OR (MH "Pre-Exposure Prophylaxis") OR (MH "Immunization") OR (MH "Immunization Schedule") OR (MH "Immunization, Secondary")

23,373

S1 TI(immuniz\* or immunis\* or vaccin\* or inoculat\* or innoculat\* or immunotherap\* or prophyla\*) OR AB(immuniz\* or immunis\* or vaccin\* or inoculat\* or innoculat\* or immunotherap\* or prophyla\*) OR SU(immuniz\* or immunis\* or vaccin\* or inoculat\* or innoculat\* or immunotherap\* or prophyla\*)

(105,391)

**7. Ebsco Discovery – Searched 19<sup>th</sup> May 2019 – limited to: Academic Search Complete (2411); Africa-Wide (2170); Ideas-Repec (123); Econlit (67); World Bank e-library (23)**

S21 S13 AND S20 Interface - EBSCO Discovery Service

17,156

S20 S14 OR S15 OR S16 OR S17 OR S18 OR S19

17,411,786

S19 TI ( ("systematic review" or "literature review" or meta-analy\* or metaanaly\* or "meta analy\*\*") ) OR SU ( ("systematic review" or "literature review" or meta-analy\* or metaanaly\* or "meta analy\*\*") )

706,007

S18 TI("cost minimi\*" or "cost-utilit\*" or "economic evaluation\*" or "economic review\*" or "cost outcome" or "cost analys\*" or "economic analys\*" or "budget\* impact analys\*") OR AB("cost minimi\*" or "cost-utilit\*" or "economic evaluation\*" or "economic review\*" or "cost outcome" or "cost analys\*" or "economic analys\*" or "budget\* impact analys\*") OR SU("cost minimi\*" or "cost-utilit\*" or "economic evaluation\*" or "economic review\*" or "cost outcome" or "cost analys\*" or "economic analys\*" or "budget\* impact analys\*")

497,100

S17 TI((economic\* or cost\*) N6 (mortality or death\* or markov)) OR AB((economic\* or cost\*) N6 (mortality or death\* or markov)) OR SU((economic\* or cost\*) N6 (mortality or death\* or markov))

69,853

- S16 TI("life year" or "life years" or qaly\* or daly\*) OR AB("life year" or "life years" or qaly\* or daly\*) OR SU("life year" or "life years" or qaly\* or daly\*)  
133,045
- S15 TI(cost-effective\* or cost-benefit) OR AB(cost-effective\* or cost-benefit) OR SU(cost-effective\* or cost-benefit)  
848,452
- S14 TI(random\* or experiment\* or (match\* N2 (propensity or coarsened or covariate)) or "propensity score" or ("difference in difference\*" or "difference-in-difference\*" or "differences in difference\*" or "differences-in-difference\*" or "double difference\*" or ("quasi-experimental" or "quasi experimental" or "quasi-experiment" or "quasi experiment") or ((estimator or counterfactual) and evaluation\*) or "instrumental variable\*" or (IV N2 (estimation or approach)) or "regression discontinuity" or "time series" or "segment regression") OR AB(random\* or experiment\* or (match\* N2 (propensity or coarsened or covariate)) or "propensity score" or ("difference in difference\*" or "difference-in-difference\*" or "differences in difference\*" or "differences-in-difference\*" or "double difference\*" or ("quasi-experimental" or "quasi experimental" or "quasi-experiment" or "quasi experiment") or ((estimator or counterfactual) and evaluation\*) or "instrumental variable\*" or (IV N2 (estimation or approach)) or "regression discontinuity" or "time series" or "segment regression") OR SU(random\* or experiment\* or (match\* N2 (propensity or coarsened or covariate)) or "propensity score" or ("difference in difference\*" or "difference-in-difference\*" or "differences in difference\*" or "differences-in-difference\*" or "double difference\*" or ("quasi-experimental" or "quasi experimental" or "quasi-experiment" or "quasi experiment") or ((estimator or counterfactual) and evaluation\*) or "instrumental variable\*" or (IV N2 (estimation or approach)) or "regression discontinuity" or "time series" or "segment regression")  
. 21,537,647
- S13 S11 AND S12  
82,102
- S12 TI(child\* or infant\* or newborn\* or neonat\* or "neo nat\*" or prenatal or "pre natal" or "ante natal" or antenatal or baby or babies or toddler\* or preschool\* or parent\* or mother\* or father\* or maternal or paternal) OR AB(child\* or infant\* or newborn\* or neonat\* or "neo nat\*" or prenatal or "pre natal" or "ante natal" or antenatal or baby or babies or toddler\* or preschool\* or parent\* or mother\* or father\* or maternal or paternal) OR SU(child\* or infant\* or newborn\* or neonat\* or "neo nat\*" or prenatal or "pre natal" or "ante natal" or antenatal or baby or babies or toddler\* or preschool\* or parent\* or mother\* or father\* or maternal or paternal)  
12,363,410
- S11 S1 AND S10  
302,160
- S10 S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9  
17,426,742
- S9 TI ("transitional countr\*" OR "emerging econom\*" or "global south") OR AB ("transitional countr\*" OR "emerging econom\*" or "global south") OR SU ("transitional countr\*" OR "emerging econom\*" or "global south")  
77,803
- S8 TI (lmic or Imics or "third world" or "lami countr\*") OR AB (lmic or Imics or "third world" or "lami countr\*") OR SU (lmic or Imics or "third world" or "lami countr\*")  
86,226
- S7 TI (low N3 middle N3 countr\*) OR AB (low N3 middle N3 countr\*) OR SU (low N3 middle N3 countr\*)  
61,578

S6 TI (low\* N1 (gdp or gnp or "gross domestic" or "gross national" or GNI)) OR AB (low\* N1 (gdp or gnp or "gross domestic" or "gross national" or GNI)) OR SU (low\* N1 (gdp or gnp or "gross domestic" or "gross national" or GNI))

4,541

S5 TI ((developing or "less\* developed" or "under developed" or underdeveloped or "middle income" or "low\* income") N1 (economy or economies)) OR AB ((developing or "less\* developed" or "under developed" or underdeveloped or "middle income" or "low\* income") N1 (economy or economies)) OR SU ((developing or "less\* developed" or "under developed" or underdeveloped or "middle income" or "low\* income") N1 (economy or economies))

57,068

S4 TI((developing or "less\* developed" or "least developed" or "under developed" or underdeveloped or "middle income" or "low\* income" or underserved or "under served" or deprived or poor\* or "resource limited" or "resource constrained") N1 (countr\* or nation? or population? or world or state\*)) OR AB((developing or "less\* developed" or "least developed" or "under developed" or underdeveloped or "middle income" or "low\* income" or underserved or "under served" or deprived or poor\* or "resource limited" or "resource constrained") N1 (countr\* or nation? or population? or world or state\*)) OR SU ((developing or "less\* developed" or "least developed" or "under developed" or underdeveloped or "middle income" or "low\* income" or underserved or "under served" or deprived or poor\* or "resource limited" or "resource constrained") N1 (countr\* or nation? or population? or world or state\*))

1,137,178

S3 TI (Africa or Asia or Caribbean or "West Indies" or "South America" or "Latin America" or "Central America") OR AB (Africa or Asia or Caribbean or "West Indies" or "South America" or "Latin America" or "Central America") OR SU (Africa or Asia or Caribbean or "West Indies" or "South America" or "Latin America" or "Central America")

5,836,383

S2 TI (Afghanistan or Albania or Algeria or Angola or Antigua or Barbuda or Argentina or Armenia or Armenian or Aruba or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or "Burkina Faso" or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Cameroons or Cameron or Camerons or "Cape Verde" or "Central African Republic" or Chad or Chile or China or Colombia or Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote d'Ivoire" or "Ivory Coast" or Croatia or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or "Gold Coast" or Grenada or Guatemala or Guinea or Guam or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or Laos or Latvia or Lebanon or Lesotho or Basutoland or Liberia or Libya or Lithuania or Macedonia or Madagascar or "Malagasy Republic" or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or "Middle East" or Moldova or Moldavia or Moldovan or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles" or "New Caledonia" or Nicaragua or Niger or Nigeria or Oman or Muscat or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or Phillipines or Phillippines or Romania or Rumania or Roumania or Russia or Russian or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles or "Sierra Leone" or "Sri Lanka" or Ceylon or

"Solomon Islands" or Somalia or Sudan or Suriname or Surinam or Swaziland or Syria or Tajikistan or Tadjikistan or Tadjikistan or Tadjik or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Trinidad or Tobago or Tunisia or Turkey or Turkmenistan or Turkmen or Tuvalu or Uganda or Ukraine or Uruguay or Uzbekistan or Uzbek or Vanuatu or "New Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Yugoslavia or Zambia or Zimbabwe) OR AB (Afghanistan or Albania or Algeria or Angola or Antigua or Barbuda or Argentina or Armenia or Armenian or Aruba or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or "Burkina Faso" or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Cameroons or Cameron or Camerons or "Cape Verde" or "Central African Republic" or Chad or Chile or China or Colombia or Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote d'Ivoire" or "Ivory Coast" or Croatia or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or "Gold Coast" or Grenada or Guatemala or Guinea or Guam or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or Laos or Latvia or Lebanon or Lesotho or Basutoland or Liberia or Libya or Lithuania or Macedonia or Madagascar or "Malagasy Republic" or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or "Middle East" or Moldova or Moldovia or Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles" or "New Caledonia" or Nicaragua or Niger or Nigeria or Oman or Muscat or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or Phillipines or Phillipines or Romania or Rumania or Roumania or Russia or Russian or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles or "Sierra Leone" or "Sri Lanka" or Ceylon or "Solomon Islands" or Somalia or Sudan or Suriname or Surinam or Swaziland or Syria or Tajikistan or Tadjikistan or Tadjik or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Trinidad or Tobago or Tunisia or Turkey or Turkmenistan or Turkmen or Tuvalu or Uganda or Ukraine or Uruguay or Uzbekistan or Uzbek or Vanuatu or "New Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Yugoslavia or Zambia or Zimbabwe) OR SU (Afghanistan or Albania or Algeria or Angola or Antigua or Barbuda or Argentina or Armenia or Armenian or Aruba or Azerbaijan or Bangladesh or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or "Burkina Faso" or "Burkina Fasso" or "Upper Volta" or Burundi or Urundi or Cambodia or "Khmer Republic" or Kampuchea or Cameroon or Cameroons or Cameron or Camerons or "Cape Verde" or "Central African Republic" or Chad or Chile or China or Colombia or Comoros or "Comoro Islands" or Comores or Mayotte or Congo or Zaire or "Costa Rica" or "Cote d'Ivoire" or "Ivory Coast" or Croatia or Cuba or Djibouti or "French Somaliland" or Dominica or "Dominican Republic" or "East Timor" or "East Timur" or "Timor Leste" or Ecuador or Egypt or "United Arab Republic" or "El Salvador" or Eritrea or Ethiopia or Fiji or Gabon or "Gabonese Republic" or Gambia or Gaza or "Georgia Republic" or "Georgian Republic" or Ghana or "Gold Coast" or Grenada or Guatemala or Guinea or Guam or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or "Kyrgyz Republic" or Kirghiz or Kirgizstan or "Lao PDR" or Laos or Latvia or Lebanon or Lesotho or Basutoland or Liberia or Libya or Lithuania or Macedonia or Madagascar or "Malagasy Republic" or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Mali or "Marshall Islands" or Mauritania or Mauritius or "Agalega Islands" or Mexico or Micronesia or "Middle East"

or Moldova or Moldovia or Moldovian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanma or Burma or Namibia or Nepal or "Netherlands Antilles" or "New Caledonia" or Nicaragua or Niger or Nigeria or Oman or Muscat or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philipines or Phillipines or Phillippines or Romania or Rumania or Roumania or Russia or Russian or Rwanda or Ruanda or "Saint Lucia" or "St Lucia" or "Saint Vincent" or "St Vincent" or Grenadines or Samoa or "Samoan Islands" or "Navigator Island" or "Navigator Islands" or "Sao Tome" or Senegal or Serbia or Montenegro or Seychelles or "Sierra Leone" or "Sri Lanka" or Ceylon or "Solomon Islands" or Somalia or Sudan or Suriname or Surinam or Swaziland or Syria or Tajikistan or Tadjikistan or Tadjikistan or Tadjhik or Tanzania or Thailand or Togo or "Togolese Republic" or Tonga or Trinidad or Tobago or Tunisia or Turkey or Turkmenistan or Turkmen or Tuvalu or Uganda or Ukraine or Uruguay or Uzbekistan or Uzbek or Vanuatu or "New Hebrides" or Venezuela or Vietnam or "Viet Nam" or "West Bank" or Yemen or Yugoslavia or Zambia or Zimbabwe)

14,848,010

S1 TI(immuniz\* or immunis\* or vaccin\* or inoculat\* or innoculat\* or immunotherap\* or prophyla\*) OR AB(immuniz\* or immunis\* or vaccin\* or inoculat\* or innoculat\* or immunotherap\* or prophyla\*) OR SU(immuniz\* or immunis\* or vaccin\* or inoculat\* or innoculat\* or immunotherap\* or prophyla\*)

2,006,154

## 8. Scopus – Searched 19<sup>th</sup> May 2019

( TITLE-ABS-KEY ( immuniz\* OR immunis\* OR vaccin\* OR inoculat\* OR innoculat\* OR immunotherap\* OR prophyla\* ) )

**AND**

(( TITLE-ABS-KEY ( afghanistan OR albania OR algeria OR angola OR antigua OR barbuda OR argentina OR armenia OR armenian OR aruba OR azerbaijan OR bangladesh OR benin OR byelarus OR byelorussian OR belarus OR belorussian OR belorussia OR belize OR bhutan OR bolivia OR bosnia OR herzegovina OR hercegovina OR botswana OR brazil OR bulgaria OR "Burkina Faso" OR "Burkina Fasso" OR "Upper Volta" OR burundi OR urundi OR cambodia OR "Khmer Republic" OR kampuchea OR cameroon OR cameroons OR cameron OR camérons OR "Cape Verde" OR "Central African Republic" OR chad OR chile OR china OR colombia OR comoros OR "Comoro Islands" OR comores OR mayotte OR congo OR zaire OR "Costa Rica" OR "Cote d'Ivoire" OR "Ivory Coast" OR croatia OR cuba OR djibouti OR "French Somaliland" OR dominica OR "Dominican Republic" OR "East Timor" OR "East Timur" OR "Timor Leste" OR ecuador OR egypt OR "United Arab Republic" OR "El Salvador" OR eritrea OR ethiopia OR fiji OR gabon OR "Gabonese Republic" OR gambia OR gaza OR "Georgia Republic" OR "Georgian Republic" OR ghana OR "Gold Coast" OR grenada OR guatemala OR guinea OR guam OR guiana OR guyana OR haiti OR honduras OR india OR maldives OR indonesia OR iran OR iraq OR jamaica OR jordan OR kazakhstan OR kazakh OR kenya OR kiribati OR korea OR kosovo OR kyrgyzstan OR kirghizia OR "Kyrgyz Republic" OR kirghiz OR kirgizstan OR "Lao PDR" OR laos OR latvia OR lebanon OR lesotho OR basutoland OR liberia OR libya OR lithuania OR macedonia OR madagascar OR "Malagasy Republic" OR malaysia OR malaya OR malay OR sabah OR sarawak OR malawi OR mali OR "Marshall Islands" OR mauritania OR mauritius OR "Agalega Islands" OR mexico OR micronesia OR "Middle East" OR moldova OR moldovia OR moldovian OR mongolia OR montenegro OR morocco OR ifni OR mozambique OR myanmar OR myanma OR burma OR namibia OR nepal OR "Netherlands Antilles" OR "New Caledonia" OR nicaragua OR niger OR nigeria OR oman OR



muscat OR pakistan OR palau OR palestine OR panama OR paraguay OR peru OR philippines OR philippines OR phillipines OR phillippines OR romania OR rumania OR roumania OR russia OR russian OR rwanda OR ruanda OR "Saint Lucia" OR "St Lucia" OR "Saint Vincent" OR "St Vincent" OR grenadines OR samoa OR "Samoan Islands" OR "Navigator Island" OR "Navigator Islands" OR "Sao Tome" OR senegal OR serbia OR montenegro OR seychelles OR "Sierra Leone" OR "Sri Lanka" OR ceylon OR "Solomon Islands" OR somalia OR sudan OR suriname OR surinam OR swaziland OR syria OR tajikistan OR tadjhikistan OR tadjikistan OR tadjhik OR tanzania OR thailand OR togo OR "Togolese Republic" OR tonga OR trinidad OR tobago OR tunisia OR turkey OR turkmenistan OR turkmen OR tuvalu OR uganda OR ukraine OR uruguay OR uzbekistan OR uzbek OR vanuatu OR "New Hebrides" OR venezuela OR vietnam OR "Viet Nam" OR "West Bank" OR yemen OR yugoslavia OR zambia OR zimbabwe )) OR ( TITLE-ABS-KEY ( africa OR asia OR caribbean OR "West Indies" OR "South America" OR "Latin America" OR "Central America" )) OR ( TITLE-ABS-KEY ( ( developing OR "less\* developed" OR "least developed" OR "under developed" OR underdeveloped OR "middle income" OR "low\* income" OR underserved OR "under served" OR deprived OR poor\* OR "resource limited" OR "resource constrained" ) W/1 ( countr\* OR nation? OR population? OR world OR state\* ) ) ) OR ( TITLE-ABS-KEY ( ( developing OR "less\* developed" OR "under developed" OR underdeveloped OR "middle income" OR "low\* income" ) W/1 ( economy OR economies ) ) ) OR ( TITLE-ABS-KEY ( low\* W/1 ( gdp OR gnp OR "gross domestic" OR "gross national" OR gni ) ) ) OR ( TITLE-ABS-KEY ( low W/3 middle W/3 countr\* ) ) OR ( TITLE-ABS-KEY ( lmic OR lmic OR "third world" OR "lami countr\*" ) ) OR ( TITLE-ABS-KEY ( "transitional countr\*" OR "emerging econom\*" OR "global south" ) ) )

**AND**

( TITLE-ABS-KEY ( child\* OR infant\* OR newborn\* OR neonat\* OR "neo nat\*" OR prenatal OR "pre natal" OR "ante natal" OR antenatal OR baby OR babies OR toddler\* OR preschool\* OR parent\* OR mother\* OR father\* OR maternal OR paternal ) )

**AND**

( ( TITLE-ABS-KEY ( random\* OR experiment\* OR ( match\* W/2 ( propensity OR coarsened OR covariate ) ) OR "propensity score" OR ( "difference in difference\*" OR "difference-in-difference\*" OR "differences in difference\*" OR "differences-in-difference\*" OR "double difference\*" ) OR ( "quasi-experimental" OR "quasi experimental" OR "quasi-experiment" OR "quasi experiment" ) OR ( ( estimator OR counterfactual ) AND evaluation\* ) OR "instrumental variable\*" OR ( iv W/2 ( estimation OR approach ) ) OR "regression discontinuity" OR "time series" OR "segment\* regression" ) ) ) OR ( TITLE-ABS-KEY ( cost-effective\* OR cost-benefit ) ) OR ( TITLE-ABS-KEY ( "life year" OR "life years" OR qaly\* OR daly\* ) ) OR ( TITLE-ABS-KEY ( ( economic\* OR cost\* ) W/6 ( mortality OR death\* OR markov ) ) ) OR ( TITLE-ABS-KEY ( "cost minimi\*" OR "cost-utilit\*" OR "economic evaluation\*" OR "economic review\*" OR "cost outcome" OR "cost analys\*" OR "economic analys\*" OR "budget\* impact analys\*" ) ) OR ( TITLE-ABS-KEY ( "systematic review" OR "literature review" OR meta-analy\* OR metaanaly\* OR "meta analy\*" ) ) )

**AND**

( LIMIT-TO ( SUBJAREA , "MEDI" ) OR LIMIT-TO ( SUBJAREA , "SOCI" ) OR LIMIT-TO ( SUBJAREA , "NURS" ) OR LIMIT-TO ( SUBJAREA , "MULT" ) OR LIMIT-TO ( SUBJAREA , "ECON" ) OR LIMIT-TO ( SUBJAREA , "HEAL" ) OR LIMIT-TO ( SUBJAREA , "PSYC" ) OR LIMIT-TO ( SUBJAREA , "DECI" ) ) - 8214 hits

**9. Popline – Searched 19<sup>th</sup> May 2019**

**ALL FIELDS:** (immuniz\* OR immunis\* OR vaccin\* OR inoculat\* OR innoculat\* OR immunotherap\* OR prophyla\*)

**AND**

**ALL FIELDS:** (child\* OR infant\* OR newborn\* OR neonat\* OR "neo nat\*" OR prenatal OR "pre natal" OR "ante natal" OR antenatal OR baby OR babies OR toddler\* OR preschool\* OR parent\* OR mother\* OR father\* OR maternal OR paternal)

**AND**

**ALL FIELDS:** (random\* OR experiment\* OR ( match\* AND ( propensity OR coarsened OR covariate ) ) OR "propensity score" OR ( "difference in difference\*" OR "difference-in-difference\*" OR "differences in difference\*" OR "differences-in-difference\*" OR "double difference\*" ) OR ( "quasi-experimental" OR "quasi experimental" OR "quasi-experiment" OR "quasi experiment" ) OR ( ( estimator OR counterfactual ) AND evaluation\* ) OR "instrumental variable\*" OR ( iv AND ( estimation OR approach ) ) OR "regression discontinuity" OR "time series" OR "segment\* regression")

**Result: 1134 hits**

#### 10. WHO Global Health Index – Searched 20<sup>th</sup> May 2019

(immuniz\* or immunis\* or vaccin\* or inoculat\* or innoculat\* or immunotherap\* or prophyla\*) AND (child\* OR infant\* OR newborn\* OR neonat\* OR "neo nat\*" OR prenatal OR "pre natal" OR "ante natal" OR antenatal OR baby OR babies OR toddler\* OR preschool\* OR parent\* OR mother\* OR father\* OR maternal OR paternal) AND (random\* OR experiment\* OR ( match\* AND ( propensity OR coarsened OR covariate ) ) OR "propensity score" OR ( "difference in difference\*" OR "difference-in-difference\*" OR "differences in difference\*" OR "differences-in-difference\*" OR "double difference\*" ) OR ( "quasi-experimental" OR "quasi experimental" OR "quasi-experiment" OR "quasi experiment" ) OR ( ( estimator OR counterfactual ) AND evaluation\* ) OR "instrumental variable\*" OR ( iv AND ( estimation OR approach ) ) OR "regression discontinuity" OR "time series" OR "segment\* regression") – 2833 hits

#### 11. Epistemonikos – Searched 20<sup>th</sup> May 2019

(title:(immuniz\* OR immunis\* OR vaccin\* OR inoculat\* OR innoculat\* OR immunotherap\* OR prophyla\*) AND (child\* OR infant\* OR newborn\* OR neonat\* OR "neo nat\*" OR prenatal OR "pre natal" OR "ante natal" OR antenatal OR baby OR babies OR toddler\* OR preschool\* OR parent\* OR mother\* OR father\* OR maternal OR paternal) AND (random\* OR experiment\* OR ( match\* AND ( propensity OR coarsened OR covariate ) ) OR "propensity score" OR ( "difference in difference\*" OR "difference-in-difference\*" OR "differences in difference\*" OR "differences-in-difference\*" OR "double difference\*" ) OR ( "quasi-experimental" OR "quasi experimental" OR "quasi-experiment" OR "quasi experiment" ) OR ( ( estimator OR counterfactual ) AND evaluation\* ) OR "instrumental variable\*" OR ( iv AND ( estimation OR approach ) ) OR "regression discontinuity" OR "time series" OR "segment\* regression")) OR abstract:(immuniz\* OR immunis\* OR vaccin\* OR inoculat\* OR innoculat\* OR immunotherap\* OR prophyla\*) AND (child\* OR infant\* OR newborn\* OR neonat\* OR "neo nat\*" OR prenatal OR "pre natal" OR "ante natal" OR antenatal OR baby OR babies OR toddler\* OR preschool\* OR parent\* OR mother\* OR father\* OR maternal OR paternal) AND (random\* OR experiment\* OR ( match\* AND ( propensity OR coarsened OR covariate ) ) OR "propensity score" OR ( "difference in difference\*" OR "difference-in-difference\*" OR "differences in difference\*" OR "differences-in-difference\*" OR "double difference\*" ) OR ( "quasi-experimental" OR "quasi experimental" OR "quasi-experiment" OR "quasi experiment" ) OR ( ( estimator OR counterfactual ) AND evaluation\* ) OR "instrumental variable\*" OR ( iv AND ( estimation OR approach ) ) OR "regression discontinuity" OR "time series" OR "segment\* regression")) – 3041 hits

## 12. Pascal-Francis (Updated to 2015) – Searched 20<sup>th</sup> May 2019

1. (((immuniz\* OR immunis\* OR vaccin\* OR inoculat\* OR innoculat\* OR immunotherap\* OR prophyla\*) AND (child\* OR infant\* OR newborn\* OR neonat\* OR "neo nat\*" OR prenatal OR "pre natal" OR "ante natal" OR antenatal OR baby OR babies OR toddler\* OR preschool\* OR parent\* OR mother\* OR father\* OR maternal OR paternal) AND (random\* OR experiment\* OR ( match\* AND ( propensity OR coarsened OR covariate ) ) OR "propensity score" OR ( "difference in difference\*" OR "difference-in-difference\*" OR "differences in difference\*" OR "differences-in-difference\*" OR "double difference\*" ) OR ( "quasi-experimental" OR "quasi experimental" OR "quasi-experiment" OR "quasi experiment" ) OR ( ( estimator OR counterfactual ) AND evaluation\* ) OR "instrumental variable\*" OR ( iv AND ( estimation OR approach ) ) OR "regression discontinuity" OR "time series" OR "segment\* regression" ))) AND ((( low\* AND ( gdp OR gnp OR "gross domestic" OR "gross national" OR gni ) ) OR ( low AND middle AND countr\* ) OR lmic OR lmic OR "third world" OR "lami countr\*" OR "transitional countr\*" OR "emerging econom\*" OR "global south" )) – 1 hit
2. (((immuniz\* OR immunis\* OR vaccin\* OR inoculat\* OR innoculat\* OR immunotherap\* OR prophyla\*) AND (child\* OR infant\* OR newborn\* OR neonat\* OR "neo nat\*" OR prenatal OR "pre natal" OR "ante natal" OR antenatal OR baby OR babies OR toddler\* OR preschool\* OR parent\* OR mother\* OR father\* OR maternal OR paternal) AND (random\* OR experiment\* OR ( match\* AND ( propensity OR coarsened OR covariate ) ) OR "propensity score" OR ( "difference in difference\*" OR "difference-in-difference\*" OR "differences in difference\*" OR "differences-in-difference\*" OR "double difference\*" ) OR ( "quasi-experimental" OR "quasi experimental" OR "quasi-experiment" OR "quasi experiment" ) OR ( ( estimator OR counterfactual ) AND evaluation\* ) OR "instrumental variable\*" OR ( iv AND ( estimation OR approach ) ) OR "regression discontinuity" OR "time series" OR "segment\* regression" ))) AND ((( developing OR "less\* developed" OR "least developed" OR "under developed" OR underdeveloped OR "middle income" OR "low\* income" OR underserved OR "under served" OR deprived OR poor\* OR "resource limited" OR "resource constrained" ) AND ( countr\* OR nation? OR population? OR world OR state\* OR economy OR economies) )) – 74 hits
3. (((immuniz\* OR immunis\* OR vaccin\* OR inoculat\* OR innoculat\* OR immunotherap\* OR prophyla\*) AND (child\* OR infant\* OR newborn\* OR neonat\* OR "neo nat\*" OR prenatal OR "pre natal" OR "ante natal" OR antenatal OR baby OR babies OR toddler\* OR preschool\* OR parent\* OR mother\* OR father\* OR maternal OR paternal) AND (random\* OR experiment\* OR ( match\* AND ( propensity OR coarsened OR covariate ) ) OR "propensity score" OR ( "difference in difference\*" OR "difference-in-difference\*" OR "differences in difference\*" OR "differences-in-difference\*" OR "double difference\*" ) OR ( "quasi-experimental" OR "quasi experimental" OR "quasi-experiment" OR "quasi experiment" ) OR ( ( estimator OR counterfactual ) AND evaluation\* ) OR "instrumental variable\*" OR ( iv AND ( estimation OR approach ) ) OR "regression discontinuity" OR "time series" OR "segment\* regression" ))) AND ((( africa OR asia OR caribbean OR "West Indies" OR "South America" OR "Latin America" OR "Central America" )) – 285 hits

((immuniz\* OR immunis\* OR vaccin\* OR inoculat\* OR innoculat\* OR immunotherap\* OR prophyla\*) AND (child\* OR infant\* OR newborn\* OR neonat\* OR "neo nat\*" OR prenatal OR "pre natal" OR "ante natal" OR antenatal OR baby OR babies OR toddler\* OR preschool\* OR parent\* OR mother\* OR father\* OR maternal OR paternal) AND (random\* OR experiment\* OR ( match\* AND ( propensity OR coarsened OR covariate ) ) OR "propensity score" OR ( "difference in difference\*" OR "difference-in-difference\*" OR "differences in difference\*" OR "differences-in-difference\*" OR "double difference\*" ) OR ( "quasi-experimental" OR "quasi experimental" OR "quasi-experiment" OR "quasi experiment" ) OR ( ( estimator OR counterfactual ) AND evaluation\* ) OR "instrumental variable\*" OR ( iv AND ( estimation OR approach ) ) OR "regression discontinuity" OR "time series" OR "segment\* regression" )) AND ( afghanistan OR albania OR algeria OR angola OR antigua OR barbuda OR argentina OR armenia OR armenian OR aruba OR azerbaijan OR bangladesh OR benin OR byelarus OR byelorussian OR belarus OR belorussian OR belorussia OR belize OR bhutan OR bolivia OR bosnia OR herzegovina OR hercegovina OR botswana OR brazil OR bulgaria OR "Burkina Faso" OR "Burkina Fasso" OR "Upper Volta" OR burundi OR urundi OR cambodia OR "Khmer

Republic" OR kampuchea OR cameroon OR cameroons OR cameron OR camérons OR "Cape Verde" OR "Central African Republic" OR chad OR chile OR china OR colombia OR comoros OR "Comoro Islands" OR comores OR mayotte OR congo OR zaire OR "Costa Rica" OR "Cote d'Ivoire" OR "Ivory Coast" OR croatia OR cuba OR djibouti OR "French Somaliland" OR dominica OR "Dominican Republic" OR "East Timor" OR "East Timur" OR "Timor Leste" OR ecuador OR egypt OR "United Arab Republic" OR "El Salvador" OR eritrea OR ethiopia OR fiji OR gabon OR "Gabonese Republic" OR gambia OR gaza OR "Georgia Republic" OR "Georgian Republic" OR ghana OR "Gold Coast" OR grenada OR guatemala OR guinea OR guam OR guiana OR guyana OR haiti OR honduras OR india OR maldives OR indonesia OR iran OR iraq OR jamaica OR jordan OR kazakhstan OR kazakh OR kenya OR kiribati OR korea OR kosovo OR kyrgyzstan OR kirghizia OR "Kyrgyz Republic" OR kirghiz OR kirgizstan OR "Lao PDR" OR laos OR latvia OR lebanon OR lesotho OR basutoland OR liberia OR libya OR lithuania OR macedonia OR madagascar OR "Malagasy Republic" OR malaysia OR malaya OR malay OR sabah OR sarawak OR malawi OR mali OR "Marshall Islands" OR mauritania OR mauritius OR "Agalega Islands" OR mexico OR micronesia OR "Middle East" OR moldova OR moldovia OR moldovian OR mongolia OR montenegro OR morocco OR ifni OR mozambique OR myanmar OR myanma OR burma OR namibia OR nepal OR "Netherlands Antilles" OR "New Caledonia" OR nicaragua OR niger OR nigeria OR oman OR muscat OR pakistan OR palau OR palestine OR panama OR paraguay OR peru OR philippines OR philipines OR phillippines OR philippines OR romania OR rumania OR roumania OR russia OR russian OR rwanda OR ruanda OR "Saint Lucia" OR "St Lucia" OR "Saint Vincent" OR "St Vincent" OR grenadines OR samoa OR "Samoan Islands" OR "Navigator Island" OR "Navigator Islands" OR "Sao Tome" OR senegal OR serbia OR montenegro OR seychelles OR "Sierra Leone" OR "Sri Lanka" OR ceylon OR "Solomon Islands" OR somalia OR sudan OR suriname OR surinam OR swaziland OR syria OR tajikistan OR tadjhikistan OR tadjikistan OR tadjhik OR tanzania OR thailand OR togo OR "Togolese Republic" OR tonga OR trinidad OR tobago OR tunisia OR turkey OR turkmenistan OR turkmen OR tuvalu OR uganda OR ukraine OR uruguay OR uzbekistan OR uzbek OR vanuatu OR "New Hebrides" OR venezuela OR vietnam OR "Viet Nam" OR "West Bank" OR yemen OR yugoslavia OR zambia OR zimbabwe ) – 590 hits

## B.2 Grey literature searches

To identify relevant grey literature, we will search the following databases and websites:

- Campbell Library
- Google Scholar
- Open-Grey
- Grey Literature Report
- Social Science Research Network (SSRN)
- Eldis
- GAVI
- Innovations for Poverty Action (IPA)
- Abdul Latif Jameel Poverty Action Lab (J-PAL)
- 3ie Impact Evaluation Repository
- 3ie Systematic Review Repository
- Registry of International Development Impact Evaluations (RIDIE)
- Global Development Network
- World Bank Development Impact Evaluation (DIME) and Impact Evaluation Policy Papers
- Inter-American Development Bank

- Center for Global Development
- Center for Effective Global Action (CEGA)
- DFID Research for Development (R4D)
- USAID

### B.3 Data extraction template

Coding field	Description/coding instructions
Study title	Use only the English version of the publication's main title. If paper is not written in English and has the title translated, use the translated version of the title. If the publication does not provide an English version, include the title in its original language.
Foreign title	When publication is not written in English, code the original title using original accents and special characters.
Language	Select <b>full text</b> language that applies: English, French, Spanish, Portuguese
Authors	Enter all study authors
Publication type	Whether the study is a journal article, working paper, report, etc.
Publication source	The journal, working paper series, or institution publishing the study
Year	Input the year when the print version of the study was published. If the publication is online-only, then input the date the publication appeared online.
Country or countries	The country or countries where the study was conducted
Equity focus	How does this study consider gender and/or equity?
Equity dimension	Which dimension(s) of gender and/or equity does the intervention target?
Equity description	Open answer - provide a description of how the study considers gender and equity, and for which population to corroborate answers above (include page numbers where relevant)
Adverse effects	Input any potential adverse effects of the intervention that the study reports on. If study does not report on any potential adverse effects, code as "Not applicable".
Evaluation design	The general evaluation design (i.e., experimental or quasi-experimental)
Evaluation method	The specific method used to evaluate impact (mainly applicable to quasi-experimental studies—regression discontinuity, instrumental variables, etc.)
Mixed methods	Select YES if study includes quantitative and qualitative analyses, otherwise select NO.
Unit of observation	The unit(s) of observation/analysis used in the study, e.g., individual, household, village, etc.
Programme name	Input the name of the project/programme being evaluated (if any)

Implementing agency	Input the name of the agency or agencies implementing the programme
Programme funding agency	Input the name of the agency or agencies funding the programme (note: this is not the same as organizations that fund the research of the evaluation)
Research funding agency	Input the name of the agency or agencies funding the research (note: this is not the same as organizations that fund the programme)
Intervention A category	Select the framework category for the first intervention
Intervention A description	Briefly describe the activities that comprise the intervention.
<i>Add rows for additional interventions as needed.</i>	
Outcome 1 category	Select the framework category for the first outcome.
Outcome 1 description	Briefly describe the first outcome.
<i>Add rows for additional outcomes as needed.</i>	
Hard-to-reach	Does the study report on differential impacts for hard-to-reach populations?
Sex	Does the study report on differential impacts by gender?
Socioeconomic status	Does the study report on differential impacts by socioeconomic status (e.g., wealth quantile, caste)?
Maternal education	Does the study report on differential impacts by maternal education level?
Cost analysis	Does the study include cost or cost-effectiveness analysis?
Information sources	Does the study include data on different information sources about vaccination?
Adverse effects	Does the study provide data about potential adverse effects of the intervention?
Multi-component	Is the intervention multi-component?
<i>Add rows for additional outcomes as needed.</i>	

## B.4 SR critical appraisal tool

### Checklist for making judgements about how much confidence to place in a systematic review of effects (adapted version of SURE checklist)<sup>2</sup>

<b>Assessed by:</b>
<b>Date:</b>

*Overall Notes. When the primary publication does not provide the information needed to appraise, information in other version of the publication can be used (document additional source in the appraisal). Study protocols cannot be used as a source, as the plans described in the protocols might not have been implemented.*

*We provide authors with the completed checklist and they can provide additional information.*

#### Section A: Methods used to identify, include and critically appraise studies

<p><b>A.1 Were the criteria used for deciding which studies to include in the review reported?</b></p> <p>Did the authors specify:</p> <p><input type="checkbox"/> Types of studies</p> <p><input type="checkbox"/> Participants/ settings/ population</p> <p><input type="checkbox"/> Intervention(s)</p> <p><input type="checkbox"/> Outcome(s)</p> <p><i>Note.</i> This information cannot be determined by looking at the types of studies included, because some eligible populations, designs, interventions, and outcomes might not have been examined in the studies.</p>	<p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Partially</p> <p><input type="checkbox"/> No</p> <p><i>Coding guide - check the answers above</i>  <i>YES: All four should be yes</i>  <i>NO: All four should be no</i>  <i>PARTIALLY: Any other</i></p>
<p><i>Documentation/Comments (note important limitations or uncertainty)</i></p>	

<sup>2</sup> Adapted from Supporting the Use of Research Evidence (SURE) Collaboration. SURE checklist for making judgements about how much confidence to place in a systematic review. In: (SURE Collaboration 2011).

<p><b>A.2 Was the search for evidence reasonably comprehensive?</b></p> <p>Were the following done:</p> <p><input type="checkbox"/> Language bias avoided (no restriction of inclusion based on language)</p> <p><input type="checkbox"/> No restriction of inclusion based on publication status</p> <p><input type="checkbox"/> Relevant databases searched: at least one database that includes grey/unpublished literature,<sup>3</sup> as well as either: (a) for health, at least two relevant comprehensive subject databases (such as PubMed/MEDLINE, EMBASE and CENTRAL),<sup>4</sup> or (b) for social sciences, at least two relevant comprehensive subject databases (such as IDEAS) and one comprehensive general database (such as EconLit, PsychInfo, Scopus)</p> <p><input type="checkbox"/> Reference lists in included articles checked</p> <p><input type="checkbox"/> Authors/experts contacted</p> <p><i>Notes.</i> When authors do not mention limitation on language or publication status, code <i>Yes</i>. The use of “published” often simply means released (e.g, “studies published between 1990 – 2010”) and not necessarily that studies were excluded based on publication status; do not code <i>No</i> simply because the authors use “published” in this way. When authors do not mention that reference lists were searched or experts contacted, code <i>No</i>. If authors were only contacted for study results data, Code <i>No</i>. Checking reference lists of review articles does not fully meet A2.4 requirement (code <i>Partially</i>) but is a mitigating factor.</p>	<p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Partially</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Can't tell</p> <p><i>Coding guide - check the answers above:</i>  <i>YES: All five should be yes</i>  <i>PARTIALLY: Relevant databases and reference lists are both reported</i>  <i>NO: Any other</i></p>
<p><i>Documentation/Comments (note important limitations or uncertainty)</i></p>	

<sup>3</sup> Grey literature typically means research that is not published in sources such as books or journal articles. The following databases include grey literature: Academic Search Complete (includes many conference proceedings), CAB Abstracts, search conducted using CADATH checklist, clinicaltrials.gov, Cochrane Central Register of Controlled Trials (CENTRAL), Cochrane Library, Embase (includes 3.6m+ conference abstracts), Google, Google Scholar, Healthcare Management Information Consortium (HMIC), IDEAS/RePEc, National Technical Information Service (NTIS), OpenSIGLE/OpenGrey, PsycEXTRA, Scopus (includes ~10m conference papers). If you identify additional sources, please add to the list. Searching websites of relevant governmental agencies and non-governmental organizations can also identify grey literature. Note that MEDLINE/PubMed, a comprehensive data base of journals, does not include grey literature: “For indexing in MEDLINE, NLM currently selects publications that it considers to be journals.”; see also Citrome L. Beyond PubMed: Searching the “Grey Literature” for Clinical Trial Results. *Innov Clin Neurosci.* 2014;11(7-8):42-46.

<sup>4</sup> If the search is for studies in China, the CNKI (China National Knowledge infrastructure) is acceptable as a comprehensive database.



<p><b>A.3 Does the review cover an appropriate time period?</b></p> <p><i>Is the search period comprehensive enough that relevant literature is unlikely to be omitted?</i></p> <p><i>Note.</i> If the authors do not report the search period, check the publication date of the earliest included study. If the study was published before 1990 this can be coded Yes.</p>	<p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Can't tell (only use if no information about time period for search)</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Unsure</p> <p><i>Coding guide:</i>  <b>YES:</b> Generally this means searching the literature at least back to 1990  <b>NO:</b> Generally if the search does not go back to 1990  <b>CAN'T TELL:</b> No information about time period for search</p> <p><i>Note: With reference to the above – there may be important reasons for adopting different dates for the search, e.g. depending on the intervention. If you think there are limitations with the timeframe adopted for the search which have not been noted and justified by the authors, you should code this item as a NO and specify your reason for doing so in the comment box below. Older reviews should not be downgraded, but the fact that the search was conducted some time ago should be noted in the quality assessment. Always report the time period for the search in the comment box.</i></p>
<p><i>Documentation/Comments (note important limitations or uncertainty)</i></p>	

<p><b>A.4 Was bias in the selection of articles avoided?</b></p> <p>Did the authors specify:</p> <p><input type="checkbox"/> Independent screening of full text by at least 2 reviewers</p> <p><input type="checkbox"/> List of included studies provided</p> <p><input type="checkbox"/> List of excluded studies provided</p> <p><i>Notes.</i> Independent screening means that both screeners screened all full-text without knowing what the other screener decided (that is, one screener and one verifier does not meet criterion). If the authors note two screeners and do not use the word “independent” but mention a third reconciler to resolve differences, assume independence. When authors do not mention whether independent screening was conducted by at least two reviewers, code <i>No</i>. The list of excluded studies does not need to include studies that were abstract screened out as ineligible. Because journals often have word count limits, reviews published in journals do not need to have a list of excluded studies and are coded <i>Not Applicable</i>.</p>	<p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Partially</p> <p><input type="checkbox"/> No</p> <p><i>Coding guide:</i>  <i>YES: All three should be yes, although reviews published in journals are unlikely to have a list of excluded studies (due to limits on word count) and the review should not be penalised for this.</i>  <i>PARTIALLY: Independent screening and list of included studies provided are both reported</i>  <i>NO: All other. If list of included studies provided, but the authors do not report whether or not the screening has been done by 2 reviewers review is downgraded to NO.</i></p>
<p><i>Documentation/Comments (note important limitations or uncertainty)</i></p>	

<p><b>A.5 Did the authors use appropriate criteria to assess the quality and risk of bias in analysing the studies that are included?</b><sup>5</sup></p> <p><input type="checkbox"/> The criteria used for assessing the quality/ risk of bias were reported</p> <p><input type="checkbox"/> A table or summary of the assessment of each included study for each criterion was reported</p> <p><input type="checkbox"/> Sensible criteria were used that focus on the quality/ risk of bias (and not other qualities of the studies, such as precision or applicability/external validity). “Sensible” is defined as a recognised quality appraisal tool/ checklist, or similar tool which assesses bias in included studies Please see footnotes for details of the main types of bias such a tool should assess.</p> <p><i>Notes.</i> Identified tools with sensible criteria include: Academy of Nutrition and Dietetics Quality Criteria Checklist, Child Health Epidemiology Reference Group (CHERG) study design &amp; quality standards, Cochrane Handbook, The Delphi List, Effective Public Health Practice Project (EPHPP) Quality Assessment Tool, Grading of Recommendations Assessment, Development and Evaluation (GRADE) RoB criteria, Guide to Community Preventative Services Study Quality tool, Joanna Briggs Institute Checklists for RCT/QED, National Institutes of Health’s Quality Assessment Tool for Controlled Intervention Studies (sometimes labelled NHLBI tool). For case-control studies and cohort studies, the Newcastle-Ottawa Scale uses sensible criteria that are focused on risk of bias as does Methodological Index for Non-Randomized Studies (MINORS). Note that these designs typically are not as rigorous as RCTs or even QEDs.</p>	<p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Partially</p> <p><input type="checkbox"/> No</p> <p><i>Coding guide:</i>  <b>YES:</b> All three should be yes  <b>PARTIALLY:</b> The first and third criteria should be reported. If the authors report the criteria for assessing risk of bias and report a summary of this assessment for each criterion, but the criteria may be only partially sensible (e.g. do not address all possible risks of bias, but do address some), we downgrade to <b>PARTIALLY</b>.  <b>NO:</b> Any other</p>
<p><i>Documentation/Comments (note important limitations or uncertainty)</i></p>	

<sup>5</sup> **Risk of bias** is the extent to which bias may be responsible for the findings of a study. **Bias** is a systematic error or deviation from the truth in results or inferences. In studies of the effects of social, economic and health care interventions, the main types of bias arise from systematic differences in the groups that are compared (selection bias), the intervention that is provided, or exposure to other factors apart from the intervention of interest (performance bias/contamination), withdrawals or exclusions of people entered into a study (attrition bias) or how outcomes are assessed (detection bias) and reported (reporting bias). Reviews of social science studies may be particularly affected by reporting bias, where a biased subset of all the relevant data and analyses is presented. Assessments of the risk of bias are sometimes also referred to as assessments of the **validity** or **quality** of a study. **Validity** is the extent to which a result (of a measurement or study) is likely to be true. **Quality** is a vague notion of the strength or validity of a study, often indicating the extent of control over bias.

<p><b>A.6 Overall – how much confidence do you have in the methods used to identify, include and critically appraise studies?</b></p> <p><i>Summary assessment score A relates to the 5 questions above.</i></p> <p><i>High confidence applicable when the answers to the questions in section A are all assessed as ‘yes’</i></p> <p><i>Low confidence applicable when any of the following are assessed as ‘NO’ above: not reporting explicit selection criteria (A1), not conducting reasonably comprehensive search (A2), not avoiding bias in selection of articles (A4), not assessing the risk of bias in included studies (A5)</i></p> <p><i>Medium confidence applicable for any other – i.e. section A3 is assessed as ‘NO’ or can’t tell and remaining sections are assessed as ‘partially’ or ‘can’t tell’</i></p>	<p><input type="checkbox"/> <b>Low confidence</b> (limitations are important enough that the results of the review are not reliable)</p> <p><input type="checkbox"/> <b>Medium confidence</b> (limitations are important enough that it would be worthwhile to search for another systematic review and to interpret the results of this review cautiously, if a better review cannot be found)</p> <p><input type="checkbox"/> <b>High confidence</b> (only minor limitations)</p>
<p><i>Documentation/Comments (note important limitations or uncertainty)</i></p>	

**Section B: Methods used to analyse the findings**

<p><b>B.1 Were the characteristics and results of the included studies reliably reported?</b></p> <p>Was there:</p> <p><input type="checkbox"/> Independent data extraction by at least 2 reviewers</p> <p><input type="checkbox"/> A table or summary of the characteristics of the participants, interventions and outcomes for the included studies</p> <p><input type="checkbox"/> A table or summary of the results of all the included studies</p> <p><i>Notes. Independent extraction means that both extractors extracted all data without knowing what the other extractor decided (that is, one extractor and one verifier does not meet criterion). If the authors note two reviewers and do not use the word “independent” but mention a third reconciler to resolve differences, assume independence. When authors do not mention whether independent extraction was conducted by at least two reviewers, code No. Forest plots are an appropriate summary of the results, as is reporting summarizes the findings by outcome domain.</i></p>	<p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Partially</p> <p><input type="checkbox"/> Not applicable (e.g. no included studies)</p> <p><i>Coding guide:</i>  <i>YES: All three should be yes</i>  <i>PARTIALLY: Criteria one and three are yes, but some information is lacking on second criteria.</i>  <i>No: None of these are reported. If the review does not report whether data was independently extracted by 2 reviewers (possibly a reporting error), we downgrade to NO.</i>  <i>NOT APPLICABLE: if no studies/no data</i></p>
<p><i>Documentation/Comments (note important limitations or uncertainty)</i></p>	

<p><b>B.2 Are the methods used by the review authors to analyse the findings of the included studies clear, including methods for calculating effect sizes if applicable?</b></p> <p><i>Note.</i> An example of acceptable reporting: “fixed effects meta-analysis, with standardized mean differences for continuous outcomes and response ratios for dichotomous outcomes”</p>	<p><input type="checkbox"/> Yes  <input type="checkbox"/> Partially  <input type="checkbox"/> No  <input type="checkbox"/> Not applicable (e.g. no studies or no data)</p> <p><i>Coding guide:</i>  <b>YES:</b> <i>Methods used clearly reported. If it is clear that the authors use narrative synthesis, they don't need to say this explicitly.</i>  <b>PARTIALLY:</b> <i>Some reporting on methods but lack of clarity</i>  <b>NO:</b> <i>Nothing reported on methods</i>  <b>NOT APPLICABLE:</b> <i>if no studies/no data</i></p>
<p><i>Documentation/Comments (note important limitations or uncertainty)</i></p>	
<p><b>B.3 Did the review describe the extent of heterogeneity?</b></p> <p><input type="checkbox"/> Did the review ensure that included studies were similar enough that it made sense to combine them, sensibly divide the included studies into homogeneous groups, or sensibly conclude that it did not make sense to combine or group the included studies?</p> <p><input type="checkbox"/> Did the review discuss the extent to which there were important differences in the results of the included studies?</p> <p><input type="checkbox"/> If a meta-analysis was done, was the <math>I^2</math>, chi square test for heterogeneity or other appropriate statistic reported? If no statistical test was reported, is a qualitative justification made for the use of random effects?</p> <p><i>Notes.</i> Code B3.1 <i>No</i> if analyses includes studies with implausibly different interventions, comparisons, or populations. If a narrative analysis, the authors need to have a rationale for why studies were not combined (such as interventions were too different) or Code B3.1 as <i>No</i>. For meta-analyses, reporting a metric for heterogeneity is sufficient for B3.2. For non-meta-analysis, mentioning heterogeneity in results is enough (for example, The impacts varied from X to Y or Study A found X and Study B found Y).</p>	<p><input type="checkbox"/> Yes  <input type="checkbox"/> Partially  <input type="checkbox"/> No  <input type="checkbox"/> Not applicable (e.g. no studies or no data)</p> <p><i>Coding guide:</i>  <b>YES:</b> <i>First two should be yes, and third category should be yes if applicable should be yes</i>  <b>PARTIALLY:</b> <i>The first category is yes</i>  <b>NO:</b> <i>Any other</i>  <b>NOT APPLICABLE:</b> <i>if no studies/no data</i></p>
<p><i>Documentation/Comments (note important limitations or uncertainty)</i></p>	

<p><b>B.4 Were the findings of the relevant studies combined (or not combined) appropriately relative to the <u>primary question</u> the review addresses and the available data?</b></p> <p>How was the data analysis done?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Descriptive only</li> <li><input type="checkbox"/> Vote counting based on direction of effect</li> <li><input type="checkbox"/> Vote counting based on statistical significance</li> <li><input type="checkbox"/> Description of range of effect sizes</li> <li><input type="checkbox"/> Meta-analysis</li> <li><input type="checkbox"/> Meta-regression</li> <li><input type="checkbox"/> Other: specify</li> <li><input type="checkbox"/> Not applicable (e.g. no studies or no data)</li> </ul> <p>How were the studies weighted in the analysis?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Equal weights (this is what is done when vote counting is used)</li> <li><input type="checkbox"/> By quality or study design (this is rarely done)</li> <li><input type="checkbox"/> Inverse variance (this is what is typically done in a meta-analysis)</li> <li><input type="checkbox"/> Number of participants (sample size)</li> <li><input type="checkbox"/> Other: specify</li> <li><input type="checkbox"/> Not clear</li> <li><input type="checkbox"/> Not applicable (e.g. no studies or no data)</li> </ul> <p>Did the review address unit of analysis errors?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Yes - took clustering into account in the analysis (e.g. used intra-cluster correlation coefficient)</li> <li><input type="checkbox"/> No, but acknowledged problem of unit of analysis errors</li> <li><input type="checkbox"/> No mention of issue</li> <li><input type="checkbox"/> Not applicable - no clustered trials or studies included</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Yes</li> <li><input type="checkbox"/> Partially</li> <li><input type="checkbox"/> No</li> <li><input type="checkbox"/> Not applicable (e.g. no studies or no data)</li> <li><input type="checkbox"/> Can't tell</li> </ul> <p><i>Coding guide:</i>  <b>YES:</b> If appropriate table, graph or meta-analysis (or descriptive where meta-analysis not possible and authors report magnitude of effects for all included studies) AND appropriate weights AND unit of analysis errors addressed (if appropriate).</p> <p><b>PARTIALLY:</b> If appropriate table, graph or meta-analysis AND appropriate weights AND unit of analysis errors not mentioned or not addressed (and should have been).</p> <p><b>NO:</b> If descriptive OR vote counting (where quantitative analyses would have been possible) OR inappropriate reporting of table, graph or meta-analyses.</p> <p><b>NOT APPLICABLE:</b> if no studies/no data</p> <p><b>CAN'T TELL:</b> if unsure (note reasons in comments below)</p>
<p><i>Documentation/Comments (note important limitations or uncertainty)</i></p>	

<p><b>B. 5 Does the review report evidence appropriately?</b></p> <p><input type="checkbox"/> The review makes clear which evidence is subject to low risk of bias in assessing causality (attribution of outcomes to intervention), and which is likely to be biased, and does so appropriately</p> <p><input type="checkbox"/> Where studies of differing risk of bias are included, results are reported and analysed separately by risk of bias status</p> <p><i>Notes.</i> Making clear which evidence is subject to low risk of bias can be accomplished in a table listing RoB for each study or by listing RoB for each study on each RoB criterion; that is, if A5.2 is Yes, then B5.1 is Yes (but the reverse is not true). Reporting only study design is not sufficient to meet B5.1. For B5.2, narrative analysis must group or report by RoB, it is not sufficient to simply report RoB of each study. If the SR does not use sensible criteria to assess RoB, then B5.1 is No.</p> <p><i>Note on reporting evidence and risk of bias:</i> For reviews of effects of 'large n' interventions, experimental and quasi-experimental designs should be included (if available). For reviews of effects of 'small n' interventions, designs appropriate to attribute changes to the intervention should be included (e.g. pre-post with assessment of confounders).</p>	<p><input type="checkbox"/> Yes  <input type="checkbox"/> No  <input type="checkbox"/> Partially  <input type="checkbox"/> Not applicable</p> <p><i>Coding guide:</i>  <b>YES:</b> Both criteria should be fulfilled (where applicable)  <b>NO:</b> Criteria not fulfilled  <b>PARTIALLY:</b> Only one criteria fulfilled, or when there is limited reporting of quality appraisal (the latter applies only when inclusion criteria for study design are appropriate)  <b>NOT APPLICABLE:</b> No included studies</p>
<p><i>Documentation/Comments (note important limitations or uncertainty)</i></p>	
<p><b>B.6 Did the review examine the extent to which specific factors might explain differences in the results of the included studies?</b></p> <p><input type="checkbox"/> Were factors that the review authors considered as likely explanatory factors clearly described?</p> <p><input type="checkbox"/> Was a sensible method used to explore the extent to which key factors explained heterogeneity?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Descriptive/textual</li> <li><input type="checkbox"/> Graphical</li> <li><input type="checkbox"/> Meta-analysis by sub-groups</li> <li><input type="checkbox"/> Meta-regression</li> <li><input type="checkbox"/> Other</li> </ul>	<p><input type="checkbox"/> Yes  <input type="checkbox"/> Partially  <input type="checkbox"/> No  <input type="checkbox"/> Not applicable</p> <p><i>Coding guide:</i>  <b>YES:</b> Explanatory factors clearly described and appropriate methods used to explore heterogeneity  <b>PARTIALLY:</b> Explanatory factors described but for meta-analyses, sub-group analysis or meta-regression not reported (when they should have been)  <b>NO:</b> No description or analysis of likely explanatory factors  <b>NOT APPLICABLE:</b> e.g. too few studies, no important differences in the results of the included studies, or the included studies were so dissimilar that it would not make sense to explore heterogeneity of the results</p>
<p><i>Documentation/Comments (note important limitations or uncertainty)</i></p>	

<p><b>B.7 Overall - how much confidence do you have in the methods used to analyse the findings relative to the primary question addressed in the review?</b></p> <p><i>Summary assessment score B relates to the 5 questions in this section, regarding the analysis.</i></p> <p><i>High confidence applicable when all the answers to the questions in section B are assessed as 'yes'.</i></p> <p><i>Low confidence applicable when any of the following are assessed as 'NO' above: critical characteristics of the included studies not reported (B1), not describing the extent of heterogeneity (B3), combining results inappropriately (B4), reporting evidence inappropriately (B5).</i></p> <p><i>Medium confidence applicable for any other: i.e. the "Partial" option is used for any of the 6 preceding questions or questions and/or B.2 and/ or B.6 are assessed as 'no'.</i></p>	<p><input type="checkbox"/> <b>Low confidence</b> (limitations are important enough that the results of the review are not reliable)</p> <p><input type="checkbox"/> <b>Medium confidence</b> (limitations are important enough that it would be worthwhile to search for another systematic review and to interpret the results of this review cautiously, if a better review cannot be found)</p> <p><input type="checkbox"/> <b>High confidence</b> (only minor limitations)</p>
<p><i>Documentation/Comments (note important limitations or uncertainty)</i></p>	



*Section C: Overall assessment of the reliability of the review*

<b>C.1 Are there any other aspects of the review not mentioned before which lead you to question the results?</b>	<input type="checkbox"/> Additional methodological concerns – only one person reviewing <input type="checkbox"/> Robustness <input type="checkbox"/> Interpretation <input type="checkbox"/> Conflicts of interest (of the review authors or for included studies) <input type="checkbox"/> Other <input type="checkbox"/> No other quality issues identified
<b>C.2 Are there any mitigating factors which should be taken into account in determining the reviews reliability?</b>	<input type="checkbox"/> Limitations acknowledged <input type="checkbox"/> No strong policy conclusions drawn (including in abstract/ summary) <input type="checkbox"/> Any other factors
<i>Documentation/Comments (note important limitations or uncertainty)</i>	
<b>C.3 Based on the above assessments of the methods how would you rate the reliability of the review?</b>  <input type="checkbox"/> <b><u>Low confidence in conclusions about effects:</u></b>  <input type="checkbox"/> <b><u>Medium confidence in conclusions about effects:</u></b>  <input type="checkbox"/> <b><u>High confidence in conclusions about effects :</u></b>  <i>Coding guide:</i> <b>High confidence in conclusions about effects:</b> high confidence noted overall for sections A and B, unless moderated by answer to C1 <b>Medium confidence in conclusions about effects:</b> medium confidence noted overall for sections A or B <b>Low confidence in conclusions about effects:</b> low confidence noted overall for sections A or B, unless moderated by answer to C1 or C2.  Limitations should be summarised above, based on what was noted in Sections A, B and C.	

## Appendix C: References – Included studies

### Impact evaluations

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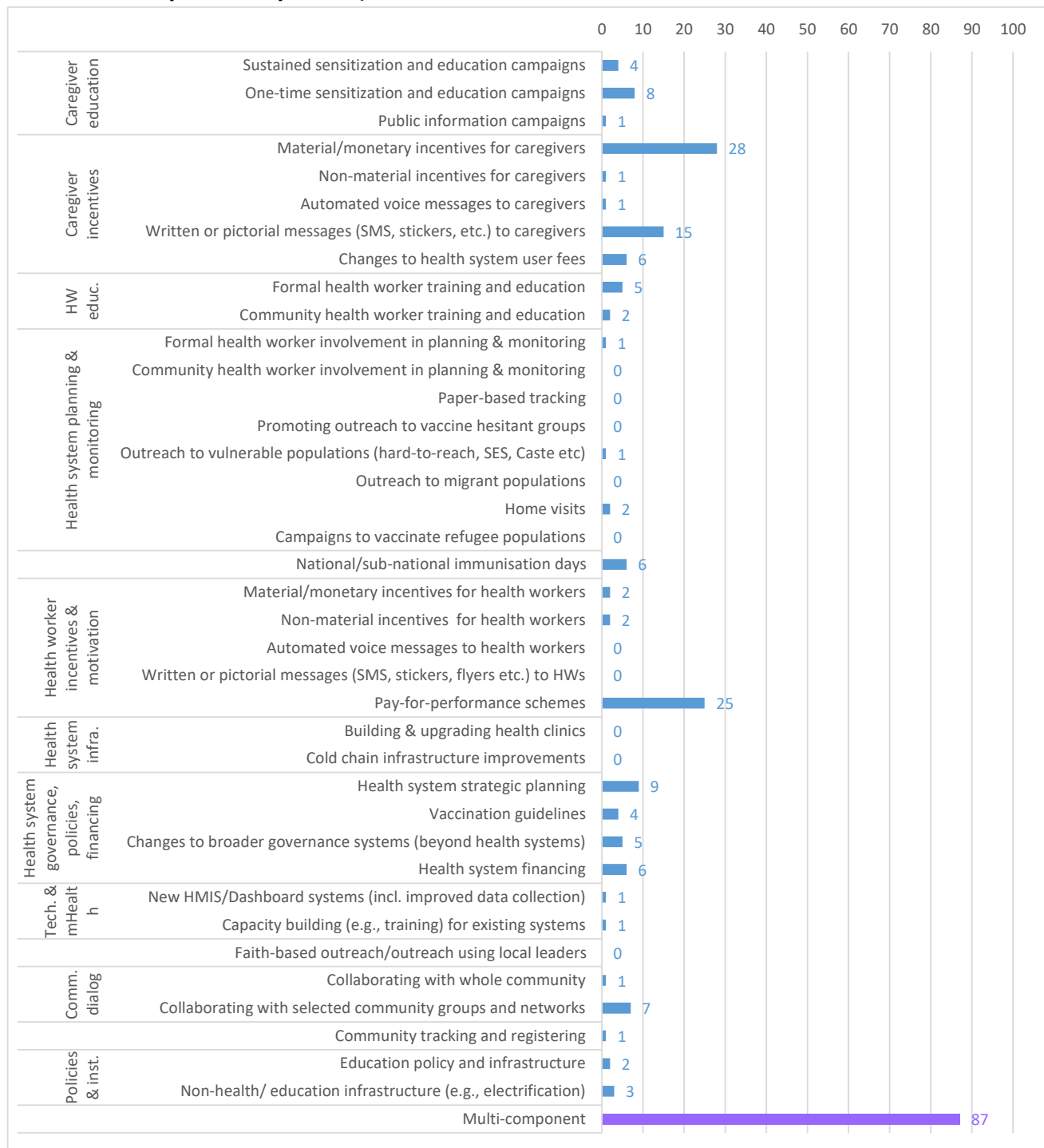


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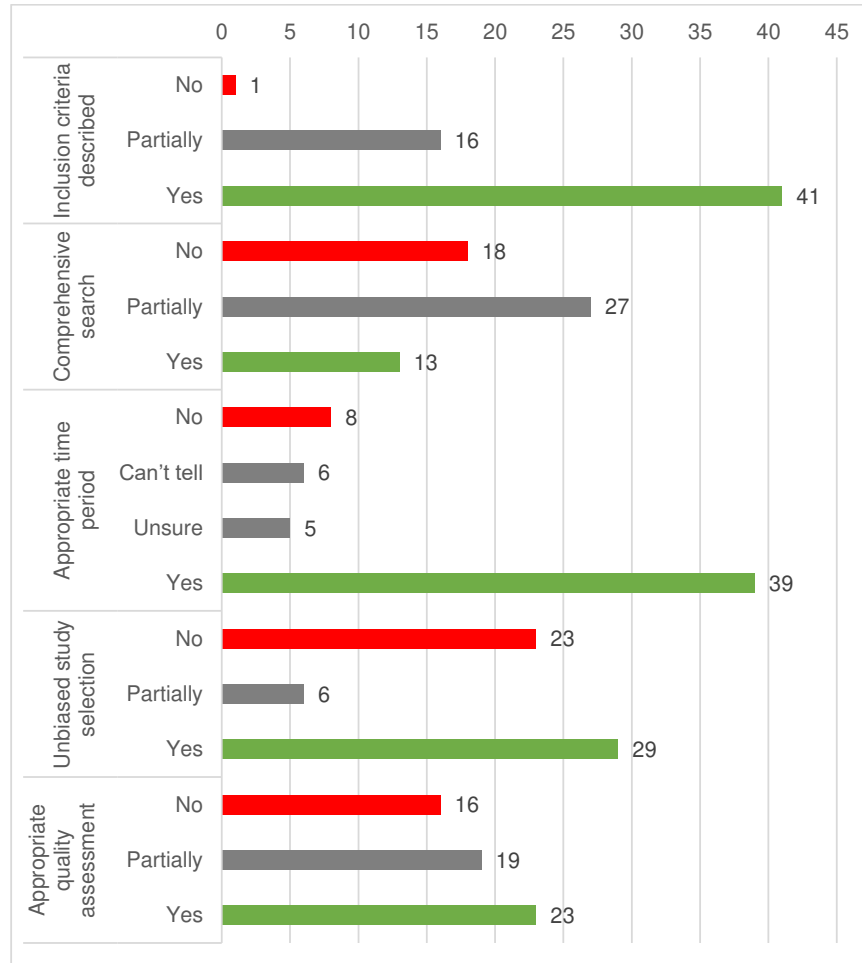
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## **Appendix D: Additional figures**

**Figure D.1: Impact evaluations by specific intervention category (multi-component separated)**



**Figure D.2: SR critical appraisals – methods used to identify, include, and critically appraise studies**



**Figure D.3: SR critical appraisals – analysis methods**