

# Expanding health insurance coverage in vulnerable groups: A systematic review of options

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## **Abstract**

The World Health Organization promotes health insurance as a way of financing health care. However, expansion of coverage to low income groups is important as coverage in these groups is often limited. We sought to use existing literature to a) summarise the options for expanding health insurance coverage to the vulnerable in LMICs derived from the global literature; b) describe which countries have tried these strategies; and c) what evaluation studies have been done and what did they show.

We included any report of a policy or strategy to expand health insurance coverage, including reports describing policies, observational studies, experimental studies, and economic modelling studies of policies.. Vulnerable populations were defined as children, the elderly, women, low-income individuals, rural population, racial or ethnic minorities, immigrants, and those with disability or chronic diseases. Forty five databases were searched for relevant documents. The authors applied inclusion criteria, and extracted data using pre-coded forms, on contents of health insurance schemes or programs, and used the Framework approach to establish categories.

Of the 21,528 articles screened, 86 documents were finally included. Descriptions about the US dominated (72), with only 5 from Africa, 6 from Asia, and 2 from South America. Target populations were children, women, elderly, low income population, rural population, and people with chronic diseases. We identified six main categories: 1) changing eligibility criteria of health insurance; 2) increasing public awareness; 3) making the premium more affordable; 4) innovative enrolment strategies; 5) improving health care delivery; and 6) improving management and organization of the insurance schemes. All six categories were found in the literature about schemes in the US, and schemes often included components from each category. Strategies in developing countries were much more limited in their scope. Evaluation studies numbered 25, of which the majority were time series. All studies found that the expansion strategies were effective as the author(s) assessed.

In countries expanding coverage, the categories identified from the literature can help policy makers consider their options, implement strategies where it is common sense to do so, and establish appropriate implementation monitoring. Given the paucity of quasi-experimental data, there is a need for judicious testing of approaches where it is unclear if they are effective.

# Expanding health insurance coverage in vulnerable groups: A systematic review of options

## Background

Governments providing basic health care to the whole population need to finance to do this. The World Health Organization recommends prepayment financing mechanisms including social health insurance, to protect against financial risk and to improve access to health care (WHO 2005). In middle and low income countries (MLICs), health insurance schemes often only covered a small proportion of population (Hsiao 2007; Carrin 2005). For example, in India, social health insurance covers formal sector employees, accounting for only 3% of the total population (Devadasan 2006). Though community-based health insurance schemes are widely promoted in many countries in Africa, Asia, and Latin America, most of them have limited coverage (De Allegri 2006; Arhin-Tenkorang 2001). Yet the people least likely to be covered are those with high health care requirements and need financial protection (Gilson 2000; Habtom 2007; Hsiao 2007).

As there is considerable debate about how best to expand coverage to low income groups, we considered how best this can be informed by reliable research and summaries of research. In the first instance, we sought evidence from existing systematic reviews. A review by Lagarde (2006) identified one controlled before and after study from Rwanda of community health insurance, and no evaluations of social health insurance. A second review of community health insurance with broader inclusion criteria suggested these schemes to date had small effects on a limited section of the population but what might work where was not apparent (Ekman 2004).

As there seemed such a dearth of reliable evidence about whether schemes worked from systematic reviews, we took a step back from the “benefits and harms” paradigm. We considered what questions policy makers, with tasks in expanding health insurance coverage, might have, that could be informed by existing literature and evaluation studies. We identified two simple questions:

1. What are the options for expanding health insurance coverage to the vulnerable population derived from the global literature and where have they been tried? and
2. What evaluation studies have been done and what did they show?

We then reviewed the literature using standard methods to address questions 1-2 and this is what we report here. We judged that this information could

- a) Help policy makers consider all options, and allow a discussion of the relevance and feasibility of these strategies for implementation in particular contexts; and
- b) Provide policy makers with an option to move forward with strategies where it was common sense to implement them, and then monitor the implementation; or, where there was sufficient uncertainty as to whether they would be effective, to implementing through a more formal experimental or quasi-experimental approach, such as randomised trials, controlled before and after studies, or interrupted time series analysis.

We also debated about whether to use studies from high income countries, in particular the US, where the context is so different. However, we considered that understanding policies tried in the US may be helpful for middle and low income countries to generate ideas and avoid similar mistakes being made, and made the review global.

## Methods

### Criteria for inclusion of studies

**Location:** This review was confined to regions where health insurance programmes were established, and where the government or other agencies were modifying programmes to expand coverage of vulnerable groups.

**Policies:** Any report of a policy or strategy to expand insurance coverage was included, including overviews of policies across several countries. We excluded opinions, discussion papers, and policy documents that did not refer to actual implementation of expansion strategies in specific countries.

**Target groups:** Vulnerable groups were defined as children, the elderly, women, low-income individuals, rural populations, racial or ethnic minorities, immigrants, and population with disability or chronic diseases.

**Study designs:** We included reviews, policy descriptive articles, observational studies, experimental studies or economic modelling studies. We excluded opinion pieces, letters, news, commentary, editorial, bibliography, meeting abstract, and background literature written in the introduction to specific projects.

**Language:** We included articles written in English or Chinese. Articles identified in English databases written in another language but with an English abstract were screened and included if they met the inclusion criteria.

## Review methods

**Screening:** In an initial pilot programme, we randomly selected 5% of searched results which were independently assessed by two of the authors, and then each discussed to ensure the same approach was being used. Subsequently each paper identified was screened by titles and abstracts, and then all the literature included in titles and abstracts were searched. The retrieved full texts were screened and the final included items were identified. The process of screen was done and recorded in the EPPI Reviewer (EPPI-Center 2008).

**Data extraction:** Data extraction was done by 5 authors. Initially, we took screening 5% of the results from the screening process. All these were double extracted making use of coding form designed in protocol. The differences in data extraction, problems in coding form were identified and discussed by all reviewers and subject experts. Then the coding form was adjusted and improved. We used EPPI Reviewer for screening and data extraction. Relevant information was extracted from included documents. We describe the characteristics of study methods, which include data sources, time period of data, sample size, and analytic methods, but not methodology quality.

**Data analysis:** The data analysis was guided by our review protocol. We adapted the framework approach used in the analysis of qualitative literature. As we read all articles, authors grouped strategies into their corresponding categories from our initial framework. Strategies that were not grouped into the originally defined categories were described in detail and grouped into a temporary choice "Others". Once the coding was completed, all reviewers and subject experts discussed contents of all the strategies and adjusted the categories based on the exact strategies found. All strategies were finally grouped into six main categories. Within each category, in an iterative process, we developed a more detailed framework, informed by the literatures we had identified, comparable to "sub-themes" in qualitative analysis. The literature fell into either descriptive articles of the policy or strategy (for objective a), or articles that included some measure of implementation success such as change in coverage (a) and (b). For the latter we also briefly summarised the evaluation design.

## Results

### Selection of the articles

Figure 1 shows the study selection process, with over 21,528 articles screened. Finally, 86 documents met the inclusion criteria and were included in this review (figure 1). During this process, we obtained the full text on 654 articles. However, there were 79 marked for retrieval, that, despite our best efforts, were not available: 36 were in documents were published articles in Journals which we could not access in the UK or in China by any method, and the remainder were unpublished without clear reference to the source or location. Of the 79, most described US programs (67, 85%), and only 11 documents (13.7%) from developing countries.

Of the 86 included documents, 61 studies were descriptive articles and 25 were evaluation studies. Descriptive articles from the US dominated (72), with a smaller number from LMICs: Africa (5), Asia (6), and South America (2). Target populations of strategies from the included documents were

children, women, elderly, low income populations, rural population, and individuals with disability or chronic diseases.

**[Figure one is about here]**

## **1. What are the options and where have they been tried?**

We identified six main strategies, from our iterative process described in methods, each with subcategories. Table 1 summarizes the strategies and distribution of reviewed documents. Note that some schemes may have more than one document evaluating them. Below we provide an explanation of each, with some examples from the literature.

**[Table one is about here]**

**Strategy 1. Modifying the eligibility criteria:** This strategy included legislation or regulations to make uninsured populations eligible for health insurance schemes. This was the most commonly reported strategy from the US; but only reported in 2 middle and low income countries. There appeared to be three main categories:

- a) **Increasing income threshold for entering health insurance:** In order to enrol poor or low income populations, many strategies described changing the income level for joining insurance scheme to increase accessibility to low income groups. For example, in US California's poverty expansion programs for Medicaid, infants are eligible for Medicaid for parents with up to 200% of the FPL (Federal Poverty Line), children under 6 years old eligible up to 133%, children 6-15 up to 100% and children 15 and older up to 83% of the FPL (Aizer 2002). In June 1998, the scheme expanded eligibility for public health insurance up to 250% of the FPL through its SCHIP (State Children Health Insurance Program) for children under 19 years old (Aizer 2002).
- b) **Expanding the categories of eligible population groups:** Another approach is to change employee categories eligible for insurance. For example, In US, the legal immigrants who have resided in the United States for more than five years are eligible for Medicaid and SCHIP on the same basis as U.S. citizens; refugees and other humanitarian immigrants—except for parolees and domestic violence victims who are seeking legal status—are eligible for Medicaid and SCHIP regardless of their length of residence in the United States; and immigrants, both legal and undocumented, who meet all of the Medicaid eligibility requirements, except for the immigrant eligibility restrictions, can receive Emergency Medicaid if they need treatment for a medical emergency (Fremstad 2004).

**Strategy 2. Increasing awareness of schemes and their benefits:** government, or the insurance scheme, took steps to make people aware of health insurance scheme and their eligibility through the media or other channels. This was commonly reported (25 documents, 3 in middle and low income countries), with two main categories:

- a) **Mass media campaigns:** Many countries advertise the health insurance to potential eligible population via television, radio, print advertisement, internet, or promoting hot-lines. Some insurers even employ marketing experts or partner with other organizations to organize marketing campaign. In California of US, for example, the advertising campaign via television,

radio, print advertisement in 48 of the California's 58 counties was implemented in both English and Spanish (Aizer 2002).

- b) Mass media at targeted locations:** The State Children Health Insurance Programs in the US (SCHIP) sometimes implemented campaigns in venues where parents and children tend to congregate, including public benefit programs, early childhood centres, schools, hospitals, and religious institutions (Andrulis 1999).

**Strategy 3. Making premium affordable:** Use of subsidies, or setting proper premium levels to make insurance scheme affordable for eligible populations. This was found in 22 documents (6 in middle and low income countries). Two main categories of this strategy are as follows:

- a) Subsidy:** government or other organizations directly or indirectly contribute all or part of premiums for the eligible population, mainly including three patterns, with three approaches to subsidy:
- **Government pay premiums** for eligible populations. In the Philippines, premium of the National Health Insurance Program (NHIP) for an indigent household was covered by government fund. The cost of the premiums is shared by the local government and the NHIP (Bautista 1999).
  - **Tax credit** to subsidize eligible populations indirectly. In US Massachusetts, for example, the "health insurance connector" facilitated the process of small employers' enrolment by offering Section 125 plans, which allowed individuals to purchase health insurance plans using pre-tax dollars (Burton 2007).
  - **Donation to pay premium** for the poor. In Kabutare (Rwanda), the local church paid for the contributions of about 3000 orphans and widows to their family members (Carrin 2005).
- b) Sliding-scale premium:** setting different premium levels based on income level of the target population. In Bangladesh, for example, different contributions in Gonosasthya Kendra scheme were set according to social and economic status of the people ('destitute', 'poor', 'middle class' and 'rich') (Carrin 2005).

**Strategy 4. Modifying enrolment:** maximizing enrolment by improving the enrolment procedures. This category included 51 articles (8 in developing countries) with four mechanisms:

- a) Simplifying enrolment procedure:** here providers reduced the requirements for application; improved their forms; or provided assistants to help complete the forms. An example was in US California in 1998 that the state government worked with a variety of organizations to provide application assistance to families who were potentially eligible for Healthy Families (California SCHIP) or Medicaid (Buchmueller 2007).
- b) Integrating sources for enrolment:** insurance scheme partnered with other organizations or public programs to facilitate enrolment. For example, in SCHIP in US, children could be enrolled without requirement of new application forms so long as another means-tested program has already found that the family was poor or near-poor (Dorn 2007).

- c) **Changing unit of enrolment:** Some schemes changed to the family as unit of membership. An example was BadgerCare in Wisconsin state where whole family members were required to be enrolled (Gavin 2003).
- d) **Improving premium collection approaches:** changing methods and timing of collecting premiums. For example, in the ORT Health Plus Scheme, a community-based health financing programme in the Philippines, premiums were collected flexible, with monthly, quarterly or semi-annual payments. Burial societies in Uganda used their monthly meetings for the collection of premiums, either for the first-time members or for those who renewed their membership (Carrin 2003).

**Strategy 5. Improving health care delivery:** improving uptake of the population by covering a wider scope of health care, controlling price of covered services, or by improving the quality of health care. The category was identified in 16 documents (8 in developing countries).

- a) **Improving the health care package:** insurance schemes met the needs of eligible population by enlarging health care package. In Children's health insurance program (CHIP) in US, Children's health insurance increases Child Health Plus benefits to include emergency, preventive and routine dental care, except orthodontia and cosmetic surgery; emergency, preventive and routine vision care, including eyeglasses; speech and hearing services; durable medical equipment; non-prescription drugs; outpatient mental health services and inpatient mental health, alcohol and substance abuse services (Andrulis 1999).
- b) **Controlling price of services:** by adjusting co-payment, deductible, and/or ceiling, to make the covered service affordable for eligible population. In the US, the amendments to Medicaid's original rules in 1982 eliminated cost sharing for children (Mann 2003).
- c) **Improving quality of services to attract more eligible populations:** In district of Nouna (Burkina Faso), for example, most of the people took part in the community-based health insurance schemes with the expectation that the health insurance management team promised to improve quality of health care (De Allegri 2006).

**Strategy 6. Improving management and organization of insurance programmes:** this category of strategies was included in 30 articles (14 in developing countries).

- a) **Improving the information system:** making use of appropriate information system for measurement of the eligible population, enrolment and management of the schemes. In development of CHIP in US, State Maine in U.S. improved data and information technology and State Vermont created a state-wide integrated delivery system using an electronic database (Sasser 2007).
- b) **Staff training:** improving ability of staff in management office of the health insurance schemes for more effective outreach and management. For example, in order to enrol Latino children, many states in US supported staff development and training in cultural competency to include appropriate families members and to deliver appropriate health care service (Zambrana 2004).
- c) **Transparent management:** making insured population engage in design of insurance schemes. The prepayment schemes (including benefit package, premium level, enrolment



categories, co-payments, and waiting period) in Rwanda were designed, discussed, and agreed upon (by voting) in a series of about 30 workshops in the three districts, which were attended by the local populations (Schneider 2005).

### **Location of the strategies**

Table 2 presents distribution of strategies by region. All categories of strategies for expanding health insurance schemes were found in the literature from US. Most countries appear to strengthen the management of the insurance scheme (strategy 6; 16 countries), although this was often in combination with other strategies. Strategies adopted in developing countries focused on strategy 3 (making premium affordable by subsidy or other methods), strategy 5 (improving health care delivery to attract populations), and strategy 6 (improving management and organization). Except Bangladesh and India, where four and five categories of strategies were implemented for extending health insurance coverage, other developing countries adopted less than three categories of strategies.

**[Table two is about here]**

### **Target population of the strategies**

Rural and low-income populations were targeted in majority of the included countries, especially in middle and low income countries. In US, a wide range of strategies were adopted for the target population, while in other countries only single or limited number of strategies were implemented for the target people (Table 3). For rural and low-income population, studies in Bangladesh, India, the Philippines, and Rwanda were found to use premium subsidies for expanding health insurance coverage.

**[Table three is about here]]**

## **2. What evaluation studies have been done and what have they shown?**

There were 25 studies evaluating strategies for expanding health insurance coverage. All the studies were conducted in US and most of them focus around Medicaid, SHIP and Badgercare. Table 4 summarizes characteristics of those studies.

**Study design:** most were time series analysis; and the remainder were a controlled before and after study, a randomised controlled trial, a non-randomised controlled trial, two prospective intervention studies, and one that used mixed methods, including interviews with policy makers.

**Data sources and analysis:** the data sources were generally routine cross sectional surveys, or cohort analysis using existing databases. For the time series, econometric analysis was the main approach in most studies. All evaluations reported on expansion of coverage (table 5). Follow up was generally from 3-5 years.

**Strategies:** Predominantly these were changing eligible population groups by increasing income threshold of entering health insurance. In addition, some were awareness campaigns, offering subsidies to the low-income people, and modifying the enrolment approaches were the major strategies found from the studies for coverage expansion.

**Outcomes:** The main outcome indicators include changes in coverage of the health insurance schemes or probability of the study sample to be insured by the interventions. Assessed by the authors, all the studies found that interventions were positive in expanding coverage of the health plans.

**[Table four is about here]**

## **Discussion**

We have in this paper synthesised across many papers, using the framework approach, strategies that have been used to expand or improve health insurance plans or community-based health insurance schemes to vulnerable groups. The majority of the literature comes from the US, and studies from MLICs were limited.

Strategies fell into six basic categories, and many schemes used more than one strategy when they set about expanding coverage. This is to be expected-that strategies to expand health insurance coverage within a region or country were likely to be a set of individually complex interventions (Petticrew 2008), and means that findings around the success or others are likely to be specific to the mix of strategies, and to the specific context in which they were designed. This presents a difficulty in trying to apply evidence-based decision making based on reviews of countries or programmes that have used experimental or quasi-experimental methods.

The nature of this review is a descriptive scoping review that aimed to systematically identify the implemented strategies for expanding health insurance coverage, while evaluation studies were summarized. With methods for including eligible documents in this review, documents available on description or evaluation of the actually implemented strategies were included. However, we will only detect an approach if it has been reported on in the grey or published literature.

The value of this approach is that it can provide a summary of the strategies for expanding health insurance coverage that have been used. This provides policy makers with a series of options. Second, this mapping can then prioritise further reviews either on effect review or more detailed descriptive reviews. From all the included studies, evaluation documents could be picked up in an effect review to examine effectiveness of interventions for expanding health insurance coverage. Or, more detailed reviews could be conducted from specific aspects, for example, focusing on low-income countries or focusing on social health insurance schemes.

However, equally one of the weaknesses of the methods used in this review is that it cannot provide a rigorous assessment on the effectiveness of the strategies implemented as the study design constrains this. This potentially could reduce value of the review in informing policy makers and academics of what strategies really work. In addition, the review cannot target single interventions, because most of the included documents presented a combination of strategies, although in reality this is what policy makers will do in practice.

On the other hand, there are a number of challenges in evidence generation for health systems research using effect review approaches such as Cochrane method, and whether this is useful to help inform health systems development (Pawson et al, 2005). We knew from the outset, from the existing

systematic reviews of effects, that there were no rigorous quasi-experimental or experimental studies that had evaluated any strategy in expanding coverage. To carry out a Cochrane review would add little and provide a framework for “evidential nihilism” (Petticrew 2009) which does not help take the debate forward.

Even though we cannot make generic conclusions about the policy implications of strategies in different settings, policy making in expanding health insurance coverage in one context could be stimulated by practice in other contexts. For example, many of the strategies found in US for expanding coverage are non-financial, implying that those strategies are not expensive in implementation from which LMICs could learn. China’s rural health insurance scheme demonstrates a good case in this aspect that its rapid expansion (91.5% of rural population has been covered by the end of 2008 in five years since its inception in 2003) benefited much from education and other non-financial activities to the people, besides increase in government subsidies (MoH 2009; Li 2008). Another value of this review in relation to policy making is that description of strategies for expanding health insurance coverage in LMICs would provide a range of options that countries with similar contexts could consider.

As LMICs move forward with programmes of insurance, it would be worthwhile attempting to generate some standard approaches to describing the various sets of complex interventions that they may adopt. In addition, we need to generate a set of generic context factors to describe the country, health status and people that will help explain the strategies used and their potential to influence whether the strategies are feasible, appropriate and effective. Where possible, in the process of implementing these strategies, quasi randomised methods could be used nested into the implementation package to explore the effectiveness of different approaches. For example, the income threshold could be altered, and this monitored by coverage before and after; and at the same time different approaches to simplifying enrolment evaluated at different sites using cluster randomised or controlled before and after design.

Health systems research is usually conducted with methodologies that are not suitable for effect review. In addition, health systems research usually targets a package of interventions and closely links interventions with complicated contexts. Those challenges make it difficult in selecting of interventions, study types, and study inclusion criteria for an evaluative systematic review. There needs to further methodological development in drawing out the results from one research study in one context and applying it somewhere else This review tries addressing those challenges by conducting a descriptive systematic review of options for policy but not going further into formal effectiveness analysis and this was not relevant to the questions we posed.

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### **Authors' contributions**

MQ contributed to design, methods, review and writing; BBY contributed to methods, review and writing; LJ contributed to review and writing; JW, BY and GJ contributed to methods and review; GP contributed to design and writing.

### **Competing interests**

The authors declare that they have no competing interests.