Measurement of trends and equity in coverage of health interventions in the context of universal health coverage

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Background

Universal health coverage has been defined as all people who need health care receive it, without incurring financial hardship (World Health Report 2010). It consists of two inter-related components: coverage with needed health services and coverage with financial risk protection, for everyone. The former captures the aspiration that all people obtain the health services they need, while the latter aims to ensure that they do not suffer financial hardship linked to paying for these services. People value the fact that good quality health services are available and that they do not have to fear suffering severe economic consequences should they need to use them. The level and distribution of coverage of interventions and financial risk protection have been proposed as the focus of monitoring progress towards universal health coverage (UHC). The meeting focused on the measurement of health intervention coverage, with a focus on equity, in the context of UHC, guided by a background paper.[1]

General points

- The need to come up with simple and sound measures of progress towards UHC is paramount, given the current emphasis on UHC as one of the possible goals of the post 2015 development agenda.
- Water and sanitation and nutrition interventions were not considered in this meeting because they have been listed as potential separate goals in the post 2015 development agenda. Other risk factors, such as those for non-communicable diseases, were considered to be part of UHC and included in the discussions on measurement.
- In the background paper UHC is considered both an instrumental and intrinsic goal of health systems. All participants agreed that affordability of health services is instrumental to high levels of coverage of interventions among all population groups, but they did not reach a consensus on whether financial protection was integral to the definition and hence an intrinsic goal of UHC. In other words, financial hardship was considered only a consequence of health service use. Others argued that using measurements for both coverage of services and financial risk protection would reflect the actual goal of universal health coverage, which explicitly highlights these two domains and has been well accepted by international as well as national stakeholders (e.g. in the World Health Assembly 2012).
- The background paper argues that both components of UHC – service coverage and financial protection - need to be taken into account at the same time, but it may not be useful to try to put them together into a single index. There is a dynamic relationship between the two. At low levels of intervention coverage because of poor physical access, the financial

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[1] Measuring Progress towards Universal Coverage. David B Evans, Priyanka Saksena, Riku Elovainio, Ties Boerma. July 2012. WHO, Geneva.

consequences of using health services are not felt by the majority of the population. Some participants expressed concern that financial protection measures by definition affect only those who have used health services in their denominator, limiting their relevance to UHC measurement. The dynamics between the two can plausibly arise when, for example, a country raises services coverage and "uncovers" previously latent financial hardship.

- There is a risk that UHC is perceived to be too supply-driven. The demand side should cover what people understand to be their entitlement, and measurement and monitoring should include this dimension. The challenge is to come up with meaningful measures. Intervention coverage measures capture aspects of both supply (access) and demand (people choosing to use services), but this falls short of measuring people's expectations and satisfaction with the health system.

Global and country measurement

The country presentations from Bangladesh, Brazil, Ghana and South Africa provided a very diverse picture of epidemiological situations, health systems and health financing, the meaning and implementation of UHC or UHC-like approaches, and ways in which progress is measured. Importantly, countries are not likely to just focus on coverage indicators and financial protection measures to monitor progress towards UHC. As part of regular progress and performance assessment of their health systems, the countries will include measures of health system inputs (such as financing, infrastructure, human resources and drugs), health system outputs (such as availability and quality of services), and health impact (such as mortality). The primary focus in countries is often on subnational variation, e.g. by district or municipality, or by province or region.

Therefore, it would be better to provide general but flexible guidance to countries about the best candidate tracer indicators, potential additional or alternative indicators and measurement approaches for monitoring UHC. Such guidance, using a common measurement framework for UHC that can be adapted by countries, should be in line with international measurement standards so that comparable data (in time and between populations) are generated.

Global goals, indicators and targets are also an important instrument for countries and can be used within countries by government and civil society to prioritize the UHC agenda. The global goals may have a critical impact on government commitment to successful implementation of global declarations (e.g. as is the case MDGs in several countries). A global measure of progress can only be synthesized from the country data, if there is a common set of tracer indicators. This implies that all countries would have to include this information, and measure these indicators on a regular basis using global measurement standards, allowing a "roll-up" of the country data into global monitoring.

Measurement of service coverage

Tracer indicators and indexes

Both a set of tracer indicators as well as an index can be useful for monitoring UHC. Tracer indicators have the disadvantage of potential "gaming" but are easier to understand. An index is often more difficult to understand. The following criteria are proposed to select tracer

indicators: (1) the condition should have high epidemiological relevance, including prevalence and severity (2) there should be an evidence base that the intervention is effective (3) the indicator should be measurable: both numerator and denominator, with minimal reliance on modelling for the denominator (4) its results should be easy to understand and communicate (5) universality needs to be taken into consideration: bearing relevance in many settings (this does exclude major regional conditions such as malaria) . The matrix or framework presents an initial set of examples of potential indicators that are closest to meeting the criteria, but more work is needed to establish the evidence base (reliability, validity, relevance etc.) (see also Annex A).

Tracer indicators or an index can be selected from the rows or the columns. For each health/disease priority tracer coverage indicators can be defined, as well as additional coverage indicators which can be selected for country monitoring. For the levels of the health services it should be considered to use indicators such as service utilization (for outpatient or inpatient care).

An indicator or index is more meaningful if clear targets can be set. Ideally such targets, with an annual rate of progress and target year, are based on historical data from best performing countries. For the dimensions of health service coverage the targets should be clear, at least in theory. The ultimate goal would be to achieve complete coverage for key interventions, or in the shorter run rates above, say, 80% or 90% in all population strata. Also, coverage indicators should be 'monotonic' with an ultimate target of 100%.

Contents of coverage monitoring: a framework

The contents of the interventions that should be considered as part of UHC needs to take into account the country epidemiology – leading causes of death and ill-health -, contents of health programmes and the current coverage of interventions as these may affect the disease pattern (e.g. vaccine-preventable diseases controlled by high levels of intervention coverage). Future health threats also need to be taken into account as part of for instance a epidemiological transition. Indicators should cover a broader set of interventions than the MDG indicators focused on MNCH and HIV/TB/malaria, and should include NCD and other interventions. An index based on a range of disease/burden/intervention areas would be able to capture the full range of services that are part of universal coverage, similar to the coverage (gap) index used by the Countdown 2015 for equity monitoring of MNCH interventions. A (set of) tracer indicators should also be considered for country or global monitoring, including a built-in equity dimension.

UHC needs to deliver at different levels of the health system: non-personal or population health measures, community-based delivery, primary health facility services, secondary health facility (hospital) services and tertiary hospital services. As the population in need of services reduces from non-personal health interventions to tertiary care, the costs per capita go up dramatically.

A framework of the potential health and disease priorities by the different levels of the health system provides an overview of the different interventions and services (see Annex). Figure 1 shows the framework with the associated measurements. Annex A illustrates potential interventions and indicators. It is proposed to measure progress towards UHC along the two axes of the matrix. For specific health priority areas, and their interventions at different levels of

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the health system, it is possible to identify a set of tracer indicators and use these for monitoring progress towards UHC, with reports of indicator levels disaggregated by equity variables where relevant and feasible an equity dimension. The tracer indicators covering the key intervention areas could also be summarized in a simple transparent index.

Figure 1

Framework for measurement and monitoring of the service coverage component of Universal Health Coverage
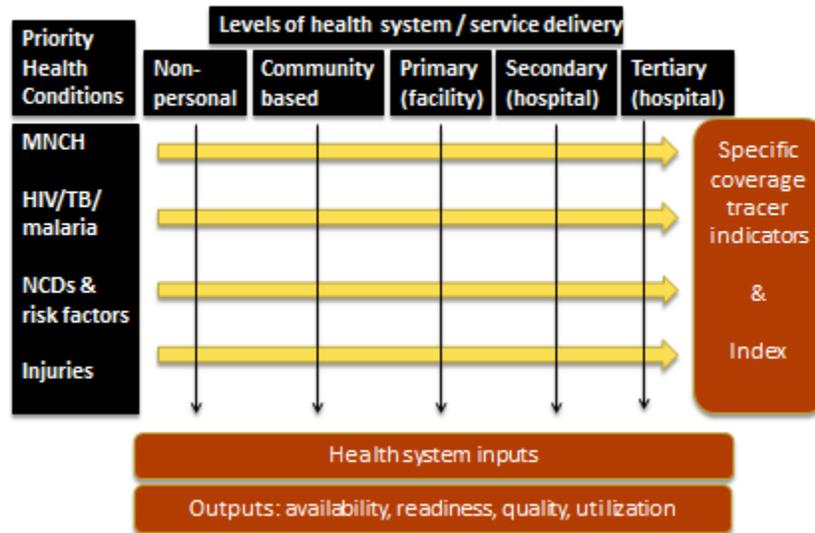
* Non-personal health services are here defined as actions applied either to collectives or populations, such as mass health education, policy development or taxation or to the non-human components of the environment, such as environmental health measures. Community-based health services are defined as individual and community health actions delivered in the community (e.g. community health workers) and not through static health facilities.

The prevalence of risk factors for NCDs (tobacco use, obesity, hypertension, salt intake, physical inactivity etc.) and communicable and nutritional disorders (water and sanitation, under nutrition, unsafe sex etc.) can be influenced by policy measures both within and outside the health sector. Interventions such as treatment of hypertension are provided through the health services and should be considered part of UHC. Others, such as safe water supply and sanitary facilities, are largely outside of the health sector (and dealt with elsewhere in the post 2015 agenda- see above) and are not included. In others, such as condom use at higher risk sexual intercourse, the health sector can play a variable role through enhancing access and health promotion. The framework includes efforts to reduce the population exposure to relevant risk factors as part of UHC. This will also amplify that UHC is not about just medical care but health care coverage.

Many indicators for monitoring UHC are based on the coverage of interventions which are needed by the whole population (preventive measures such as immunization) or which are for common conditions (e.g. hypertension, vision problems). Often, the costs of such interventions are limited. The costs for the treatment of rarer chronic conditions, such as cancer or chronic renal dysfunction or sever injury with long term health consequences, are often much higher as

it requires specialist care. Such indicators should also be included in the measurement of progress towards UHC, even though the data may be harder to obtain. Annex A does not cover such indicators yet.

Intervention coverage indicators measure the combined result of all levels of the health system but cannot fully capture the different modalities of service delivery. The columns of the framework in Figure 1, i.e. the levels of the health system for the delivery of interventions and services, can be monitored using a few tracer indicators or summary measures that capture inputs and outputs of the health system at the different levels. Inputs to health services cut across all delivery areas and include financing, health work force, medicines, governance etc. Governance includes policies and regulatory and legal measures to reduce risk factors and improve prevention and treatment access and use. In some areas policy indexes have been used to measure the situation and trends. The gap between policies and implementation is a common weakness. Outputs include indicators of service availability and readiness as basic supply side measures of the density and distribution of services. For instance, the service availability and readiness in primary health care facilities can be used to monitor the middle column of the framework. The facility readiness provides a measurement of the basic quality of care. Further data for quality of services are needed, especially in more advanced health systems.

Outpatient indicators (e.g. number of Outpatient Department (OPD) visits per person per year) have a number of advantages: they are relatively easy to measure (if the definitions are clear), are collected in many health and economic household surveys (although quality tends to be variable in such surveys) and can also be obtained from facility reporting systems. The disadvantages include that it is not a coverage indicator and there is no optimal value that can be used as target, and need is difficult to determine (OECD work has focused on estimating need from survey questions or from modelling). In South Africa, the need was estimated at 3.75 visits per person per year, based on an analysis by specific programme needs and population prevalence of common conditions. OECD has also been using OPD indicators with estimated need, based on self-reported health in surveys.

Effective coverage and quality of care

There are several ways in which the quality of care dimension can be brought into the monitoring of UHC. Ideally, the quality of care dimension is captured in the coverage indicator itself. Effective coverage has been defined as the fraction of maximum possible health gain an individual with a health care need can expect to receive from the health system. This implies that simply receiving an intervention is not sufficient – the intervention needs to be delivered with quality. The measurement of effective coverage is difficult but can be approximated for some indicators. This can best be done through health examination surveys. A good example is hypertension and vision problems.

"Treatment"	Yes	No
Test		
Positive (e.g. high BP)	a	c
Negative	b	d

Coverage intervention = (a+b) / (a+b+c); Effective coverage = b / (a+b+c).

Second, specific quality of care indicators have been developed. For instance the OECD developed a set of indicators based on their relevance in linking quality of health services and health system performance. The indicators range from health impacts (e.g. five year survival rates for different cancers), to outcomes (e.g. coverage with a set of key preventive services such as mammography screening) to outputs (avoidable hospital admissions for asthma), covering selected tracer areas: cancer care, mental health, prevention and promotion, patient safety and patient experience. The measurement and comparability of statistics remains a challenge, even in high income countries, as common standards for measurement are complicated and often lacking.

A third way is to use availability and readiness. For instance, the availability of tracer drugs (WHO uses a list of 14 generic drugs) is a very simple basic indicator of the quality of care. If the drugs are present it does not guarantee good quality of care, but if they are not available good quality of care is not likely. These data can be collected on a regular basis through facility surveys. Fourth, regular research studies are needed to understand quality of care issues, but are not easily translated into indicators for monitoring.

Measurement of financial hardship

The focus of this meeting was on health intervention coverage but the topic of financial risk protection was also discussed briefly. Indeed, many of the issues raised previously regarding measurement of service coverage were thought to be equally relevant in the measurement of financial hardship associated with seeking care. This section will highlight some additional issues that are specific to measurement of financial hardship.

There is considerable literature to draw on when considering which financial hardship indicators may be best suited to monitor progress towards UHC at the global as well as national level. However, one group of indicators has a particularly intuitive appeal in this context – these are indicators related to financial impoverishment that households face as a result of using health services. Measures in this group of indicators include headcounts of how many people may be affected, as well as depth metrics that document how important health expenditures are to the poverty situation of these people.

Impoverishment indicators are also relevant in all countries and can be measured using internationally comparable absolute or relative poverty lines. Information on impoverishment can be available in a variety of household survey instruments. Lastly, these indicators are particularly attuned to the larger sustainable and equitable development agenda. Thus, a strong case for relying on these indicators to measure financial hardship associated with seeking care can be made.

If possible, it could also be interesting to try to link any financial hardship to service coverage such that impoverishment due to spending on non-beneficial health services was disregarded. This may be particularly relevant if a trade-off is observed between service coverage and financial hardship at the population level. In the short-run policymakers may wish to continue increasing service coverage even at the cost of impoverishment as they would like to see health status rise. This is undoubtedly a less than ideal outcome and a better case may be made for respecting the objective of financial risk protection if impoverishment was only considered for

beneficial health services, such as services that are included in the measurement of UHC. However, the scope of doing this is limited due to current data availability.

Lastly, financial hardship is largely due to out-of-pocket payments, which are particularly burdensome for the poor as well as sick, who are likely to use health services the most. However, some financial burden may arise due to expenditure on pre-payment for health, such as through insurance premiums. On an international level, pre-payment is difficult to measure in a comparable way as there is much diversity in the sources of revenue that feed into financing health. However, on a national level, if countries have adequate information to monitor the burden from pre-payment, it could be added to the burden from out-of-pocket payments to arrive at a more complete picture of financial hardship.

Equity

To progress towards UHC, regular measurement of equity is paramount. Average levels of the indicators are critical measures of overall progress but must be supported by disaggregated measurements to redress inequalities across different population groups. This includes disaggregation by income/wealth, education, sex, age, place of residence (e.g. rural/urban), migrant status and ethnic origin (e.g. indigenous groups).

The goal of UHC is full coverage of the population in need for the key interventions, without experiencing financial hardship. Theoretically, should a country attain UC, there would be no particular need to consider equity considerations separately – all people would have access to the services they need without the risks of financial ruin linked to paying for them. However, on the path to UC, equity is paramount.

The absolute performance of the most disadvantaged - those with the lowest levels of coverage-, no matter what stratifiers are used to identify and target the low coverage population, is most critical. Both absolute and relative differences between most advantaged populations and most disadvantaged population as well as the gradient of inequality through the whole population are of interest on the path towards universal coverage, but ultimately all population groups should have high coverage. For monitoring, this implies that trends in absolute levels in the least performing populations (e.g. poorest wealth quintile, rural populations) should receive at least as much attention as the whole distribution in UHC monitoring. The size of the gap between the poorest and best-off and the gradient through the populaiton, captured by statistical measures such as simple ratio and difference measures, concentration index and slope index of inequality, should continue to be used but the absolute levels and trends in all population groups, focused on those with the lowest coverage, are equally relevant. This also paves the way for more attention to all kinds of stratifiers that are relevant in the country context. In addition, measures need to take account of both the difference of the coverage in the most disadvantaged groups from a target.

Geographic or administrative inequalities are of critical importance to countries. They may be less attractive for global monitoring because they are not comparable across countries. Such coverage statistics can be obtained from very large household surveys with district representative sampling or health facility reporting. The latter often has serious data quality

problems and many countries need to improve these systems before such data can be used with confidence.

Measurement investments

Household surveys are the most important source of data of UHC coverage monitoring. They are also used to obtain insights into financial protection. There is some progress in the measurement of need for specific chronic conditions but much more work needs to be done to validate the proposed approaches. There is also scope for including general questions on health services utilization in the recent past.

In most low and lower-middle income countries, the DHS or MICS household surveys have been the mainstay of monitoring progress towards MDG targets, especially maternal, newborn and child health (MNCH). In upper middle and higher income countries the household survey picture is often much more heterogeneous and there are many countries that do not have a well-established system of health surveys. To obtain data on the coverage of several NCD related intervention areas measurement of individual biological or clinical parameters such as blood pressure or vision is necessary. These sorts of measures are typically found in national health examination surveys. Health surveys also provide critical data on equity in coverage rates, including gender, socioeconomic position, and place of residence. A regular national health survey to monitor coverage trends is needed at a frequency of at least two times every five years. At least one health examination survey would be needed every five years.

Similarly, there is much heterogeneity in surveys containing information on out-of-pocket health expenditures and overall household expenditures, which are crucial to understanding financial hardship faced by households. In developing countries, Living Standards Monitoring Surveys (LSMS) are sometimes conducted, but other types of surveys such as household budget surveys and income and expenditure surveys often also have useful information. While all available surveys have been used to document financial hardship as usually only one source of data exists in one country at any time, there are concerns about the comparability of results from different surveys. Where possible, integration of instruments collecting information on service coverage and the costs associated with accessing these services could also provide rich information to monitor progress towards UHC, particularly in relation to the point raised earlier about trade-offs between service coverage and financial risk protection.

Standardization of data collection on maternal and child health has greatly benefited monitoring globally and within countries. Data collection for adult health through surveys is not yet at the same level of standardization. It will be critical to invest in developing standard modules for such data collection, based on evidence with explicit and defensible criteria for reliable, valid and practical measures. WHO should work with experts on developing, updating and disseminating such a set of modules, building upon the experience of national surveys and international survey programmes including DHS, MICS, LSMS, SAGE, WHS and STEPS. Similarly for routine (facility) data sources there is need to standardize what would be useful and practical to collect. Both data sources can be useful and used for cross validation.

Where possible, adult health / chronic disease modules should be added on to existing surveys. Often, this results in overburdening the existing survey instrument (e.g. a DHS), especially if no

cuts are made to the existing questionnaires. In such cases a separate survey instrument may be needed. To avoid the risk of overburdening a comprehensive survey (e.g. a DHS), however, it is often necessary to add a major module only after removing another module.

Harmonization of surveys in countries, including a well-coordinated survey plan to meet country needs, is important. In addition, adding questions on general health service utilization to health surveys would be useful. Economic surveys commonly include such questions but more needs to be done to improve the standardization and quality of such data.

Standardization of economic surveys such as LSMS and household budget surveys on information related to financial hardship may be difficult to achieve in the short run due to the numbers of stakeholders involved in conducting and using these surveys. However, WHO can take a lead in convening and working with experts to develop standard guidelines for collecting information on financial hardship, which is also something that is greatly needed at this time.

In addition, regular health facility assessments are needed to monitor outputs of the health system including availability and readiness plus quality of the services provided. Such data need to be supported by reliable information on level and distribution of health workforce, infrastructure, etc. A research component on the quality of care need to be an integral part of monitoring UHC.

Finally, health facility reports are another important source of data for indicators where the data cannot be collected through surveys (e.g. antiretroviral (ARV) therapy use, tuberculosis treatment success rates), or where annual statistics need to be computed (e.g. for immunization and institutional delivery rates reported as part of annual health sector reviews). Health facility reports are also needed to develop district-level estimates of coverage. The main challenge is data quality for the event (numerator) reporting, and the reliance on projections to determine target populations (denominators). More work is needed to improve the quality and the comparability across countries of such data.

Annex A Illustrative contents of the framework

The table below is intended to illustrate the approach in terms of priority health conditions, major intervention areas by level of the health system and potential global coverage indicators as well as additional coverage indicators. All selected coverage indicators would have to be reviewed systematically, using the criteria listed in the main part of this workshop report.

Conditions / intervention areas	Non-personal health measures	Community-based	Primary (ambulant)	Secondary (inpatient)	Tertiary	Potential global coverage indicators	Additional coverage indicators
Unintended pregnancy	Population policies	Community based distribution	Contraceptive access and use			Need satisfied for FP	Contraceptive use
Maternal and newborn mortality			Ante- and postnatal care access and use	Emergency obstetric care (BEMOC/ CEMOC)	CEMOC	Skilled birth attendance	ANC 4+ visits, institutional delivery, postnatal care
Vaccine-preventable diseases	Immunization policies		Vaccination access and use			DPT 3 coverage	measles, BCG, polio, hepB Influenza vaccination coverage among older people
Childhood illness (pneumonia, diarrhea)		Treatment of sick children	Treatment of sick children access and use	Treatment of complicated cases		Serious acute child illness coverage (suspected pneumonia, diarrhoea etc.)	Suspected pneumonia treated with antibiotics Diarrhea treated with ORS
Child undernutrition	Regulation and policies for substitutes; salt iodinization	Breastfeeding practices, infant and young child feeding; micronutrient supplements	Micronutrient (vit A, zinc supplemen-tation); anemia treatment	Treatment of severe acute malnutrition			Coverage of exclusive BF
Malaria		Indoor residual spraying; ITN provision	IPT during pregnancy; treatment of fever	Treatment of complicated cases		Household ownership of ITN	IPT during pregnancy, fever treated with antimalarials, households with IRS
Tuberculosis			TB Case detection; TB treatment access and use	TB treatment	Multi-drug resistant TB treatment	TB treatment coverage	TB case detection rate
HIV/AIDS	HIV/AIDS laws, policies; behavioural change commun-ication	Condom distribution; treatment compliance	ART, PMTCT, counselling & testing access and use	Treatment of OI; PEP; treatment major side effects	Management terminal stages and severe complications	ART coverage; PMTCT coverage	Male circumcision rate Condom use at higher risk sex

Conditions / intervention areas	Non-personal health measures	Community-based	Primary (ambulant)	Secondary (inpatient)	Tertiary	Potential global coverage indicators	Additional coverage indicators
Common risks for NCDs	Tobacco tax, advertising bans; alcohol tax & availability regulation	Smoking cessation					Smoking cessation rate
Cardio- and cerebro-vascular diseases	Salt reduction laws; DHVO ban	Rehabilitation stroke / AMI	Treatment for raised blood pressure and raised cholesterol	Stroke management & rehabilitation; surgerical treatment for coronary heart disease	Intensive care cardiovascular disease	Hypertension tx coverage	Angina tx coverage, CVD preventive drug therapy for higher risk groups
Diabetes	Sugar-sweetened beverage tax / ban	Diabetes care, rehabilitation	Diabetes treatment access & coverage	Diabetes complications	Diabetes severe complications		Diabetes treatment coverage
Cancers	Environmental laws and policies	Hospice care	HPV, hep B vaccination, screen and treat for cervical cancer		Cancer treatment through surgery, radiation, chemotherapy	Hepatitis B vaccination coverage	HPV vaccination coverage
Chronic pain (terminal disease, musculoskeletal etc.)		Palliative care (opioids)	Pain relief treatment access and use	Palliative care	Palliative care		Coverage of pain relief
Chronic respiratory conditions		Pulmonary rehabilitation	COPD and asthma treatment access and use	Treatment of severe episodes			Asthma / COPD treatment coverage
Mental illness	Laws to protect people with mental illness	Community treatment	Depression treatment access and use	Mental illness treatment	Severe mental illness treatment		Depression treatment coverage
Musculoskeletal conditions		Community management & treatment	Arthritis treatment access and use	Arthritis treatment in hospitals		Arthritis treatment coverage	
Vision problems			Spectacle coverage	Cataract surgery		Spectacle coverage	Cataract surgery coverage
Hearing problems			Hearing aid provision, cerumen removal		Provision of cochlear implants		
Dental / oral			Dental care			Dental care coverage	
Injuries	Seat belt use; bike paths; gender violence laws; alcohol policy	Rehabilitation		Road trauma	Road trauma (ICU)		Coverage with rapid emergency response
Examples of measurement	Policy index	Community based service availability	Primary service availability	Sec. hospital service availability	Tert. hospital service availability		
		Readiness	Readiness	Readiness	Readiness		
		Quality	Quality	quality	quality		

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