This working paper outlines a set of indicators at the outcome and impact level for the health sector. It does not focus on implementation (e.g. output level indicators such as recruitment and training of doctors), or indicators at the global level (e.g. economic growth and poverty reduction) but aims to improve the development of indicators between these two levels (i.e. the 'missing middle').

It is hoped, by setting out a clear set of indicators, that this work can be used to guide the development and monitoring of programming level tools, such as CSP's. These indicators should also increase our understanding of the wider impact of development assistance.

This work builds upon existing international best practices (e.g. WHO key indicators).
HEALTH SECTOR: OUTCOME AND IMPACT INDICATORS

Introduction

This short paper outlines a key set of effects and indicators covering expected outcomes and impacts of country support to the health sector. It is designed to assist country teams to develop a set of indicators for the programming level and guide the production of documents such as Country Strategy Papers (CSP). It also aims to fill, as much as possible, the 'missing middle' between implementation indicators (e.g. recruitment of doctors) and global impact indicators (e.g. poverty reduction).

Methodology

This paper is based on intervention logic that outlines a chain of expected effects (outputs, outcomes and impacts) for a successful intervention. For each outcome and specific impact, a set of indicators has been identified that can measure their achievement. A full set of effects is outlined in the intervention logic diagram on page 3 and the indicators are summarised in Annex A. For full details on the methodology used for this working paper, please see the 'methodological approach' paper.

This paper is predominately based upon the Millennium Development Goals (MDG)\(^1\), current thinking within the Health Metrics Network of the World Health Organisation (WHO)\(^2\) and draws its key indicators from the WHO Statistical Information System\(^3\) and internationally agreed MDG targets.

Output Clusters

Output clusters cover products resulting from development interventions:

a) **Health Care Worker Recruitment and Training** – "Increased number of qualified health care workers recruited and trained to an acceptable standard"

b) **Essential Medicines and Equipment** – "Improved research and development and reduced cost of essential drugs and equipment"

c) **Infrastructure** – "Increased number and improved maintenance of hospitals and health centres, alongside vital supporting infrastructure (e.g. roads)"

d) **Institutional Reform** – "Reforms to improve the governance of health sector in order to improve public sector performance, fair financing and ensure effective targeting of key health issues"

e) **Regulation of Private Sector** – "Effective regulation of health sector to improve performance and provision from private sector health providers (including research and development)"

f) **Education** – "Improved education on health problem identification, treatment and mitigation"

g) **Mitigation of External Risks** – "Mitigation of external environmental risks (including water and sanitation, climate change, conflict and pollution) that effect health outcomes"

---


\(^2\) The intervention logic is largely based upon the 'three domains of measurement for health information systems' outlined in the WHO 'Framework and Standards for Country Health Information Systems' ([http://www.who.int/healthmetrics/documents/hmn_framework200803.pdf](http://www.who.int/healthmetrics/documents/hmn_framework200803.pdf))

\(^3\) WHO SIS ([http://www.who.int/whosis/en/index.html](http://www.who.int/whosis/en/index.html))
Outcomes

Outcomes relate to the likely or achieved short-term and medium-term effects of an intervention's outputs:

**Increased Affordability of Health Care**

1. Household expenditure (out-of-pocket)
   - Examples: Proportion of population with access to affordable essential drugs on a sustainable basis
   - Proportion of out-of-pocket spending in total health spending
   - Proportion of population making out-of-pocket payment for health
   - Average out-of-pocket budget share amongst those who have spent out-of-pocket
   - Proportion of population incurring catastrophic health expenditures
   - Proportion of the population pushed into poverty because of out-of-pocket payments
   - Proportion of population that has been sick and could not afford care
   - Distribution of out-of-pocket spending across socio-economic groups

**Enhanced Service Availability & Quality**

2. Qualification of health care workers
   - Example: Proportion of qualified health care workers (based on academic qualifications)

3. Well equipped health facilities
   - Example: Proportion of health facilities that meet basic service capacity standards (e.g. basic amenities, equipment, infection control, human resources, tracer drugs and diagnosis)

4. Access to health facilities
   - Example: Proportion of population within 1 hour of primary health care and 2 hours from hospital

5. Hospital beds
   - Example: Hospital beds per 10,000 population

6. Availability to health care workers
   - Examples: Density of health care workers such as: community and traditional health workers; dentistry personnel; environment and public health workers; nursing and midwifery personnel; pharmaceutical personnel; and physicians
   - Level of health worker absenteeism
   - Average waiting time at health facility or provider
   - Gender mix of health care workers dealing with reproductive health services

7. Availability of drugs
   - Examples: Proportion of population with advanced HIV infection with access to antiretroviral drugs
   - Stock-out rates (absence) of essential drugs in health facilities

---

4 MDG Indicator 8.13 (linked to MDG Target 8e which is focused on cooperation with pharmaceutical companies, in order to provide access to affordable essential drugs in developing countries)

5 All but the first indicator have been taken from the EC report 'Out-of-pocket Health Expenditure and Household Surveys in Developing Countries' (http://www.cc.cec/daintranet/europeaid/activities/thematic/e3/documents/monitoringoop_.pdf). Please see Annex 7 of this report for more detailed information on these indicator examples.

6 Taken from WHO Toolkit for Monitoring Health Systems Strengthening – Service Delivery

7 WHO Health Systems Resources Indicator. Normally >1/1,000 population but needs to be adapted to needs, population density and other local variables.

8 WHO Health Systems Resources Indicators. The WHO standard is 20 doctors and 100 nurses per 100,000 population.

9 MDG Indicator 6.5 (linked to MDG Target 6b which looks to achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it). Also linked to WHO Health Service Coverage Indicators on antiretroviral therapy coverage.

10 Taken from WHO Toolkit for Monitoring Health Systems Strengthening – Governance. <5% of health centres are during >10 days in the year with out-of-stocks of selected essential medicines.
Improved Health Awareness

8. Awareness of infant and maternal care
   Examples: Correct knowledge of infant and maternal care

9. Awareness of HIV/AIDS
   Examples: Correct knowledge of HIV/AIDS

10. Awareness of water borne diseases
    Examples: Correct knowledge of how water borne diseases are transmitted

Other key health awareness issues, which are very much country specific according to their wealth, demographics, culture, climate and stability could include:
- Understand the need for a balanced diet of food
- Understand the dangers of drug use and excess alcohol/tobacco consumption
- Understand the dangers of being exposed to harmful chemicals
- Aware of family health problems

Efficient Employment

11. Employment in health sector
    Example: Optimal number of health care workers employed in the health sector (based on needs and capacity of existing facilities)

Specific Impact

Specific impacts cover positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended:

Increased Service Utilization & Intervention Coverage

12. Antenatal care coverage
    Examples: Antenatal care coverage (at least one visit and at least four visits)\textsuperscript{12}
    Proportion of births by caesarean section\textsuperscript{13}

13. Births attended by skilled personal
    Examples: Proportion of births attended by skilled health personnel\textsuperscript{14}
    Proportion of births by caesarean section\textsuperscript{15}

14. Child immunisation
    Example: Proportion of 1 year-old children immunised against measles, diphtheria and hepatitis B\textsuperscript{16}

15. Family planning
    Example: Unmet need for family planning\textsuperscript{17}

16. Malaria treatment
    Example: Proportion of children under 5 with fever who received treatment with any antimalarial\textsuperscript{18}

\textsuperscript{11} MDG Indicator 6.3
\textsuperscript{12} MDG Indicator 5.5
\textsuperscript{13} WHO Health Service Coverage Indicator (please note that care must be taken with this indicator, as if the proportion is too high bad incentives maybe in place that are encouraging providers to provide more caesarean births than is required)
\textsuperscript{14} MDG Indicator 5.2 and WHO Health Service Coverage Indicator
\textsuperscript{15} WHO Health Service Coverage Indicator (please note that care must be taken with this indicator, as if the proportion is too high bad incentives maybe in place that are encouraging providers to provide more caesarean births than is required)
\textsuperscript{16} MDG Indicator 4.3 (just covers measles) and WHO Health Service Coverage Indicators
\textsuperscript{17} MDG Indicator 5.6
17. Tuberculosis (TB) detection and treatment
   Examples: TB detection rate (%) under directly observed treatment, short-course (DOTS)\(^ {19}\)
   TB treatment success (%) under DOTS\(^ {20}\)
   Children under 5 with acute respiratory infections (ARI) symptoms taken to facility\(^ {21}\)
   Proportion of tuberculosis cases detected and cured under directly observed treatment short course\(^ {22}\)

18. Antiretroviral therapy coverage
   Example: Antiretroviral therapy coverage (%)\(^ {23}\)

19. Diarrhoea treatment
   Example: Proportion of children under 5 with diarrhoea receiving oral rehydration therapy (ORT)\(^ {24}\)

20. Child vitamin supplementation
   Example: Proportion of children aged 6-59 months who received vitamin A supplementation\(^ {25}\)

Improved Health Behaviour

21. Contraceptive use
   Examples: Contraceptive prevalence rate\(^ {26}\)
   Adolescent birth rate\(^ {27}\)

22. Malaria prevention
   Examples: Use of insecticide-treated bednets and appropriate anti-malarial drugs (especially children under 5)\(^ {28}\)

23. Hand washing
   Example: Proportion of people hand washing

24. Road safety
   Example: Percentage of drivers wearing safety belt

Other key health behaviour issues, which are very much country specific according to their wealth, demographics, culture, climate and stability could include:
- Women who have had regular mammography\(^ {29}\) and PAP smear\(^ {30}\) tests\(^ {31}\)
- Prevalence of tobacco use among adolescents and adults\(^ {32}\)
- Per capita recorded alcohol consumption among adults\(^ {33}\)
- Prevalence of adults who are obese\(^ {34}\)
- Proportion of people boiling water before usage
- Proportion of people who visit their doctor on a regular basis

\(^{19}\) WHO Health Service Coverage Indicator
\(^{20}\) WHO Health Service Coverage Indicator
\(^{21}\) WHO Health Service Coverage Indicator
\(^{22}\) MDG Indicator 6.10
\(^{23}\) WHO Health Service Coverage Indicator
\(^{24}\) WHO Health Service Coverage Indicator
\(^{25}\) Who Health Service Coverage Indicator
\(^{26}\) MDG Indicators 5.3 & 6.2 and WHO Health Service Coverage Indicator (contraception prevalence) and WHO Risk Factor Indictor (condom use for 15-24 year olds)
\(^{27}\) MDG Indicator 5.4 and WHO Demographic and Socioeconomic Indicator
\(^{28}\) Covers MDG Indicators 6.7 and 6.8 and WHO Health Service Coverage Indicators which focus on children under 5
\(^{29}\) Test conducted to detect signs of breast cancer
\(^{30}\) Test conducted to detect signs of cervical cancer
\(^{31}\) WHO Health Service Coverage indicators (usually associated with more developed countries)
\(^{32}\) WHO Risk Factor Indicators
\(^{33}\) WHO Risk Factor Indicator
\(^{34}\) WHO Risk Factor Indicator (splits by men and women)
Reduced Health Risks

25. Safe drinking water and basic sanitation\textsuperscript{35}
   Examples: Proportion of population using an improved drinking water source\textsuperscript{36}
   Proportion of population using an improved sanitation facility\textsuperscript{37}

26. Food safety complimented
   Examples: Reported incidence of infections caused by key food borne pathogens (e.g. salmonella, campylobacter jejuni, listeria monocytogenes, shigella and hepatitis A)
   Reported outbreaks of infections caused by key food borne pathogens

27. Air pollution
   Example: Proportion of population using solid fuels\textsuperscript{38}
   Levels of lead and carbon monoxide in the air

Intermediate Impacts

Intermediate impacts are similar to specific impact but are longer-term in nature and are the last cause and effect chain level that can be monitored effectively and at the same time demonstrative sufficient attribution to the output clusters:

Reduction in mortality

28. Life expectancy
   Examples: Life expectancy at birth\textsuperscript{39}

29. Maternal mortality\textsuperscript{40}
   Examples: Maternal mortality ratio\textsuperscript{41}
   Neonatal mortality rate\textsuperscript{42}

30. Child mortality\textsuperscript{43}
   Examples: Under-five mortality rate\textsuperscript{44}
   Infant mortality rate\textsuperscript{45}
   Adult mortality rate\textsuperscript{46}

31. Adult mortality
   Examples: Deaths due to HIV/AIDS\textsuperscript{47}
   Death rates associated with malaria\textsuperscript{48}
   Death rates associated with tuberculosis\textsuperscript{49}

Other key mortality issues, which are very much country specific according to their wealth, demographics, culture, climate and stability could include:

- Age standardized mortality rate for cancer, cardiovascular diseases, non-communicable diseases\textsuperscript{50} and injuries\textsuperscript{51}
Number of road injuries and deaths
Number of occupational injuries and deaths

Reduction in morbidity and disability

32. Spread of HIV/AIDS
Examples: HIV prevalence among population aged 15-24 years

33. Spread of malaria
Example: Incidence rates associated with malaria

34. Spread of TB
Examples: Incidence, prevalence rates associated with TB

35. Disability levels
Examples: Healthy life expectancy (HALE) at birth
Disability Adjusted Life Years (DALYs) rate

Other key morbidity issues, which are very much country specific according to their wealth, demographics, culture, climate and stability could include:
- Rate of sexually transmitted diseases in adult population
- Number of confirmed cases for: poliomyelitis (polio), cholera, diphtheria, H5N1 influenza, Japanese encephalitis, leprosy, measles, meningitis, mumps, pertussis (whooping cough), plague, congenital rubella syndrome, rubella, neonatal tetanus, total tetanus and yellow fever
- Years of life lost to communicable diseases, non-communicable diseases and injuries

The 'stronger labour market' effect is presented in the intervention logic for illustrative purposes only, as the contribution of health towards its achievement is too difficult to verify.

Global Impacts

Finally, the effects of support to the health sector should contribute to the longer term global impacts of social development, economic growth and poverty reduction. However, due to the complexity of their achievement and the numerous factors influencing them, it is not possible to draw a direct cause and effect link to the health sector. As a outcome, no health sector related indicators have been identified for this level.

50 Non-communicable diseases are spread by: heredity, surroundings and behaviour
51 WHO Mortality and Burden of Disease Indictors (associated with more developed countries)
52 MDG Target 6a
53 MDG Indicator 6.1 and WHO Mortality and Burden of Disease Indicator, which covers all cases above 15 years old
54 MDG Indicator 6.6
55 MDG Indicator 6.9 and WHO Mortality and Burden of Disease Indicators (WHO also splits data between those that are HIV negative and positive)
56 WHO Mortality and Burden of Disease Indictor
57 Calculated by the WHO
58 Communicable diseases are diseases which are transmitted by infections.
59 WHO Mortality and Burden of Disease Indicators
# Annex A: List of Key Indicators for Health Sector

<table>
<thead>
<tr>
<th>Affordability Outcomes</th>
<th>Health Behaviour Specific Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Service Availability &amp; Quality Outcomes</strong></td>
<td>22. Malaria prevention</td>
</tr>
<tr>
<td>2. Qualification of health care workers</td>
<td>23. Hand washing</td>
</tr>
<tr>
<td>3. Well equipped health facilities</td>
<td>24. Road safety</td>
</tr>
<tr>
<td>4. Access to health facilities</td>
<td></td>
</tr>
<tr>
<td>5. Hospital beds</td>
<td></td>
</tr>
<tr>
<td>6. Availability to health care workers</td>
<td></td>
</tr>
<tr>
<td>7. Availability of drugs</td>
<td></td>
</tr>
<tr>
<td><strong>Health Awareness Outcomes</strong></td>
<td></td>
</tr>
<tr>
<td>8. Awareness of infant and maternal care</td>
<td></td>
</tr>
<tr>
<td>9. Awareness of HIV/AIDS</td>
<td></td>
</tr>
<tr>
<td>10. Awareness of water borne diseases</td>
<td></td>
</tr>
<tr>
<td><strong>Employment Outcomes</strong></td>
<td></td>
</tr>
<tr>
<td>11. Employment in heath sector</td>
<td></td>
</tr>
<tr>
<td><strong>Service Utilization &amp; Intervention Coverage Specific Impacts</strong></td>
<td></td>
</tr>
<tr>
<td>12. Antenatal care coverage</td>
<td></td>
</tr>
<tr>
<td>13. Births attended by skilled personal</td>
<td></td>
</tr>
<tr>
<td>14. Child immunisation</td>
<td></td>
</tr>
<tr>
<td>15. Family planning</td>
<td></td>
</tr>
<tr>
<td>16. Malaria treatment</td>
<td></td>
</tr>
<tr>
<td>17. TB detection and treatment</td>
<td></td>
</tr>
<tr>
<td>18. Antiretroviral therapy coverage</td>
<td></td>
</tr>
<tr>
<td>19. Diarrhoea treatment</td>
<td></td>
</tr>
<tr>
<td>20. Child vitamin supplementation</td>
<td></td>
</tr>
<tr>
<td><strong>Reduced Health Risks</strong></td>
<td></td>
</tr>
<tr>
<td>25. Safe drinking water and basic sanitation</td>
<td></td>
</tr>
<tr>
<td>26. Food safety</td>
<td></td>
</tr>
<tr>
<td>27. Air pollution</td>
<td></td>
</tr>
<tr>
<td><strong>Mortality Intermediate Impacts</strong></td>
<td></td>
</tr>
<tr>
<td>28. Life expectancy</td>
<td></td>
</tr>
<tr>
<td>29. Maternal mortality</td>
<td></td>
</tr>
<tr>
<td>30. Child mortality</td>
<td></td>
</tr>
<tr>
<td>31. Adult mortality</td>
<td></td>
</tr>
<tr>
<td><strong>Morbidity &amp; Disability Intermediate Impacts</strong></td>
<td></td>
</tr>
<tr>
<td>32. Spread of HIV/AIDS</td>
<td></td>
</tr>
<tr>
<td>33. Spread of malaria</td>
<td></td>
</tr>
<tr>
<td>34. Spread of TB</td>
<td></td>
</tr>
<tr>
<td>35. Disability levels</td>
<td></td>
</tr>
</tbody>
</table>