TECHNICAL BRIEFING

CARDIOVASCULAR DISEASE INTERVENTIONS FOR THE APPENDIX 3 OF THE GLOBAL ACTION PLAN FOR NON COMMUNICABLE DISEASE

IDENTIFICATION OF INTERVENTIONS

The interventions considered for analysis are drawn from the Package of Essential Non-Communicable Disease Interventions in low and middle income settings¹, as well as the Global Action Plan for the Prevention and Control of NCDs ².

METHODOLOGICAL ASSUMPTIONS

- The results presented in Appendix 3 represent an update to the previously published WHO-CHOICE analyses for CVD and Diabetes³.
- Cardiovascular disease is modelled via a total risk approach, using the equation underlying the WHO ISH risk prediction charts⁴.
- Country-specific risk factor prevalence data required for the risk prediction equations is sourced from the WHO Global Health Observatory⁵.
- Epidemiology for Ischemic Heart Disease and Stroke is drawn from the Global Burden of Disease 2010 data at the epidemiological regional level⁶, ⁷.
- Epidemiology for Diabetes is drawn from the Global Burden of Disease 2010 data at the epidemiological regional level⁸.
- Disability weights for each health condition were drawn from the Global Burden of Disease 2010 disability weight study⁹.

² http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236_eng.pdf?ua=1
⁵ http://www.who.int/gho/en/
### CARDIOVASCULAR DISEASE MODEL INPUTS

#### TABLE 1 - IMPACT SIZES USED IN WHO CHOICE ANALYSIS

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Effect Size on cardiovascular disease</th>
<th>Comments on evidence</th>
</tr>
</thead>
</table>
| Drug therapy (including glycaemic control for diabetes mellitus and control of hypertension using a total risk approach and counselling to individuals who have had a heart attack or stroke and to persons with high risk (≥ 30%) of a fatal and non-fatal cardiovascular event in the next 10 years) | -1.05 mmol/L change in cholesterol 10  
5.9mmHg reduction in systolic blood pressure 11 | Intervention impact is mediated via the risk prediction equation 3  
Additional supportive evidence suggests a reduction in stroke incidence of 80% and IHD incidence of 88% predicted in use of fixed dose polypill 12 |
| Drug therapy (including glycaemic control for diabetes mellitus and control of hypertension using a total risk approach and counselling to individuals who have had a heart attack or stroke and to persons with moderate to high risk (≥ 20%) of a fatal and non-fatal cardiovascular event in the next 10 years) | -1.05 mmol/L change in cholesterol 13  
5.9mmHg reduction in systolic blood pressure 14 | Intervention impact is mediated via the risk prediction equation 3  
Additional supportive evidence suggests a reduction in stroke incidence of 80% and IHD incidence of 88% predicted in use of fixed dose polypill 15 |
| Treatment of new cases of acute myocardial infarction with either: acetylsalicylic acid, or acetylsalicylic acid and clopidogrel, or thrombolysis, or primary percutaneous coronary interventions (PCI) | acetylsalicylic acid 16  
reduction in CVD mortality 15%, ischemic stroke mortality 30%, haemorrhagic stroke mortality 20%  
acetylsalicylic acid + clopidogrel 17  
reduction in CVD mortality 30% (comparison: placebo)  
acetylsalicylic acid + clopidogrel + streptokinase 18, 19 | |

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12 Wald et al. A strategy to reduce cardiovascular disease by more than 80%.
15 Wald et al. A strategy to reduce cardiovascular disease by more than 80%.
**TABLE - 2 COSTING ASSUMPTIONS USED IN WHO CHOICE ANALYSIS**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Major costing assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug therapy (including glycaemic control for diabetes mellitus and control of hypertension using a total risk approach) and counselling to individuals who have had a heart attack or stroke and to persons with high risk (≥30%) of a fatal and non-fatal cardiovascular event in the next 10 years</td>
<td>A combination of the drugs: hydrochlorothiazide 12.5mg enalapril 20mg atenolol 50mg amlodipine 10mg simvastatin 205mg  Prices are sourced from the MSH drug price database as median buyer price  Additionally the tests included are: cholesterol test urine analysis blood pressure measurement Additionally 3 outpatient visits are included per year</td>
</tr>
<tr>
<td>Drug therapy (including glycaemic control for diabetes mellitus and control of hypertension using a total risk approach)</td>
<td>A combination of the drugs: hydrochlorothiazide 12.5mg</td>
</tr>
</tbody>
</table>

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approach) and counselling to individuals who have had a heart attack or stroke and to persons with moderate to high risk (≥ 20%) of a fatal and non-fatal cardiovascular event in the next 10 years

<table>
<thead>
<tr>
<th>Medication</th>
<th>Price Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>enalapril 20mg</td>
<td>Prices are sourced from the MSH drug price database as median buyer price</td>
</tr>
<tr>
<td>atenolol 50mg</td>
<td></td>
</tr>
<tr>
<td>amlodipine 10mg</td>
<td></td>
</tr>
<tr>
<td>simvastatin 20mg</td>
<td></td>
</tr>
</tbody>
</table>

Treatment of new cases of acute myocardial infarction with either: acetylsalicylic acid, or acetylsalicylic acid and clopidogrel, or thrombolysis, or primary percutaneous coronary interventions (PCI)

<table>
<thead>
<tr>
<th>Medication</th>
<th>Supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td>acetylsalicylic acid 75mg</td>
<td>streptokinase</td>
</tr>
<tr>
<td>clopidogrel</td>
<td>Oxygen m3</td>
</tr>
<tr>
<td>streptokinase</td>
<td>IV line</td>
</tr>
<tr>
<td>Oxygen m3</td>
<td>Saline solution</td>
</tr>
<tr>
<td>IV line</td>
<td>Primary percutaneous transluminal coronary intervention kit (catheters, balloon, wire, dye)</td>
</tr>
<tr>
<td>Saline solution</td>
<td>Bare metal stent</td>
</tr>
<tr>
<td>Primary percutaneous transluminal coronary intervention kit (catheters, balloon, wire, dye)</td>
<td>Specialist care</td>
</tr>
<tr>
<td>Bare metal stent</td>
<td>Radiographer/technician</td>
</tr>
<tr>
<td>Specialist care</td>
<td>Additionally, 2 inpatient bed days and 4 additional outpatient visits are included</td>
</tr>
</tbody>
</table>

Primary prevention of rheumatic fever and rheumatic heart diseases by increasing treatment of pharyngitis at the primary care level

Unit costs were taken from the study by Watkins et al

Secondary prevention of rheumatic fever and rheumatic heart disease (by developing a register of patients who then receive regular prophylactic penicillin)

Unit costs were taken from the study by Watkins et al

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