22-23 June 2015
WHO Headquarters – Geneva, Switzerland (E 110 on 22nd June and Salle G on 23rd June)

Meeting Report

Background
In the Director General’s report to the 68th World Health Assembly in May 2015, the WHO Secretariat committed to update Appendix 3 to the Global Action Plan for the Prevention and Control of Noncommunicable Diseases (NCD) 2013-2020 to consider new scientific evidence since the initial list was prepared. Appendix 3 consists of a menu of policy options for each of the 6 objectives of the Global NCD Action Plan. These 81 policy recommendations include 14 policy interventions which are classified as “very cost-effective and affordable interventions for all Member States” (previously referred to as the “best buys”), as well as other cost-effective interventions (previously referred to as “good buys”).

An expert consultation meeting was held 22-23 June 2015, to advise the WHO Secretariat on a suitable methodology for conducting the update of Appendix 3. Participants included topic experts in cardiovascular diseases and stroke, diabetes, cancer, chronic respiratory diseases, tobacco control, alcohol harm reduction, obesity, salt reduction, and physical activity, as well as experts in economic evaluation methodology. As background to the task of the meeting, the WHO Secretariat prepared a discussion paper outlining the methodology used for generating the current Appendix 3, including new thinking on criteria for assessing interventions.

Objectives of the meeting
The overall goal of the consultation was to identify a methodology to update Appendix 3 of the Global NCD Action Plan. The specific objectives were to identify:

1. whether the set of very cost-effective and affordable interventions for all Member States for Objective 3 and 4 requires updating in light of new scientific evidence;
2. whether the other set of cost-effective interventions included in Appendix 3 requires updating in light of new scientific evidence;
3. additional interventions which have not been included, and should be considered (including areas where new systematic reviews are required);
4. the process for updating the list for 2016 and beyond;

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2 Generate an extra year of healthy life for a cost that falls below the average annual income or GDP per person
5. options to support implementation of the most cost-effective recommendation in countries (e.g. whether the WHO Secretariat should develop a “prioritised list” of interventions as future complement to the Appendix 3).

**Format of the meeting**

The meeting was divided into two main components: on the first day, after introductory presentations from the Secretariat on the scope and purpose, the experts were invited to make brief presentations on the interventions in their areas in the current Appendix 3 including any new developments or evidence for interventions which are not included. A summary of this discussion is included in Annex 2. The methodological experts were invited to share reflections on the various approaches to economic evaluation and other dimensions that could be considered as part of a methodology. On the second day, the group worked on developing a proposed methodology for the WHO secretariat to update Appendix 3.

**Methodological considerations for updating Appendix 3: cross-cutting themes from discussion**

1. **Recommendations for countries with vastly different contexts**

It was felt that the menu of policy options should contain recommendations relevant for all countries with a particular focus on LMIC. There needs to be consideration of interventions that can be implemented successfully in low resource settings, but also more advanced and aspirational interventions for countries that have already implemented a comprehensive package of interventions. It was also noted that the cost-effectiveness of interventions varies greatly, depending on context, local prevalence and characteristics of the patient population, and health system factors. A number of options and limitations were discussed, including producing tailored recommendations for geographic regions, country income groupings or stage of health system development. Stratifying health service interventions may not be that complicated, if only two categories were used (basic and expanded) but there was appreciation that even defining such simple strata could be contentious.

2. **Multisectoral interventions**

It was noted that many interventions for NCD prevention have benefits (and costs) beyond the health sector, and that it is challenging to account for this in cost-effectiveness analyses. Appendix 3 should seek to account more for the co-benefits and averted expenditure in other sectors from policies that also prevent NCD (e.g. transport policies). Also the implementing sector for many of these interventions is not necessarily the health sector, and cost-effectiveness expressed purely based on a health care perspective may miss a more powerful message. Where this cannot be accounted for in the quantitative assessment, a qualitative assessment of multi-sectoral considerations will be included.

3. **Synergies and interactions between risk factors**

The Global NCD Action Plan has very little on the synergies and interactions between interventions – between risk factors and between diseases. The synergistic effect of certain interventions needs to be considered. Economic analyses must also take into account some of the multi-morbidities and interactions between risk factors and diseases. WHO CHOICE team are working on a correlation
matrix: it is erroneous to assume that all risk factors are additive, but there is a need to make some assumptions with regard to overlap. Other root determinants (e.g., poverty) that may explain co-morbid risk factors are not accounted for in the current model.

There are also interactions between some interventions that are not yet well understood, e.g., food substitutions can have unforeseen consequences. Different scenarios are needed, to factor in substitution effects in public health models—e.g., switching from sugar-sweetened beverages to full-fat milk, from cigarettes to e-cigarettes.

Many interventions for separate NCDs/risk factors are best considered together at the implementation level—the menu of policy options could be better categorised around the end user or target population rather than specific diseases/risk factors. For the NCD management interventions, this is especially relevant. Arranging interventions according to single diseases is not helpful when many of the patients are the same, and primary health care is a common delivery platform. It also means that there is no mention of the essential health system components and intermediary steps required to deliver these interventions successfully. This could be improved by better structuring of the interventions in the Appendix, and accompanying implementation guidance for how to scale up these interventions successfully. Specific health system strengthening actions could be also added to the list of interventions.

4. Limitations to evidence base

Major limitations with the evidence base remain for some areas of NCD prevention— influenced by the heterogeneity of interventions and existing health care systems, challenges with outcome interventions, challenges with outcome measures, limited follow up, interventions poorly described and lack of evidence from LMIC. In terms of evidence of effectiveness, it is important to recognise there are unlikely to be randomised controlled trials in relation to many NCD risk factors (e.g., obesity prevention). There is a need to consider different sources of evidence, including:

- Logic
- Extrapolation from experience in comparable circumstances (such as drawing upon experiences with respect to tobacco and salt in the context of other risk factors)
- Observational studies of determinants (if we have clear evidence of causes)
- Small-scale experimental studies
- Evaluation of natural experiments
- Modelling

The existing WHO guidelines development process does allow for consideration of a broader range of evidence types. Based on existing WHO process the following aspects are needed to formulate recommendations:

- Explicit consideration of quality of evidence, although this does not mean there must be randomised controlled trials.
- Explicit consideration of level of confidence that the balance of benefits and harms consistently is in the direction of benefits
- Specification of the values and preferences on which the objectives are based
- Resource implications— including how they vary across settings
It is important to recognise that process will inevitably involve judgements. Criteria for judgements must be applied consistently and explicitly, and judgements must be reported transparently. Whilst transparency about the process is critical, public consultation is not a routine requirement of the WHO guidelines process. Public consultation should not be seen as an effective method to collect new evidence – it should only be done with a logical reason.

5. Approach to cost-effectiveness analysis
WHO CHOICE uses a generalised cost-effectiveness methodology. In some contexts incremental cost-effectiveness analysis would be more useful, although in practical terms this would mean calculating separate cost-effectiveness analyses for all jurisdictions. A number of other features may be desirable to include in cost-effectiveness analysis:

- Including the costs of disinvestment.
- Factoring differences in engagement/uptake rates for public health interventions
- Adapting models to take account of cultural complexity and different approaches to promote behaviour change.
- Implementation constraints (supply side, demand side, health care system, human resource). These can either be ignored or dealt with in the cost-effectiveness analysis or in the decision rules (not deciding in favour of cost-effective interventions that are difficult to implement), or solutions can be proposed to relax constraints.
- Opportunity cost
- Disaggregation by costs and resource use
- Disaggregation by costs within different societal (or budget) sectors
- Transparency regarding interventions that were modelled but did not reach threshold for cost-effectiveness. What is not recommended is also important.

Whilst many additional features could allow a broader range of conclusions to be drawn from cost-effectiveness analysis, it is also clear that this would make the process significantly more complex and time-consuming, and make it impossible to produce an update of Appendix 3 within a timeframe to give Member States refined guidance to help them achieve the global NCD targets. It was also accepted that a more sophisticated model may not yield tangible differences in terms of the specific policy recommendations. All models have limitations, and greater transparency with regards to the assumptions and design of the model would be very helpful in disaggregating and explaining the outcomes of the analysis.

There was debate reading the question of whether implementation constraints should be considered as part of a cost-effectiveness analysis, or separately. There was agreement that it was not useful to set priorities based on cost-effectiveness analysis alone without any measure of ease of implementation. The question remained regarding the best stage to include implementation considerations. It is possible to undertake an analysis that combines cost-effectiveness with ease of implementation. It is also possible to consider these concerns in a subsequent step, as discussed below.

6. Additional Dimensions to cost-effectiveness
Multiple factors affect decision making, and economic concerns are only one. The universal health coverage criteria are an explicit attempt to include other important elements of equity/fairness, and
financial risk protection, and size of impact. Implementation issues must be considered - the success of these interventions stands or falls depending on their uptake in real practice. Contextual factors, including resource levels, cultural aspects, population and patient characteristics, and level of health system development all influence the ease of implementation of certain interventions.

Other criteria that could be considered include:

- Individual and societal burden of disease
- Size of health impact
- Feasibility - technical and legal restraints
- Acceptability – political, alignment amongst stakeholders, public acceptance
- Total cost/Budget impact
- Fairness and financial risk protection

It is very difficult to find an appropriate metric for fairness and financial protection. These could be taken into account instead through monitoring (disaggregated data).

In the original Appendix 3, feasibility was a qualitative judgement based on access, technical complexity, capital required, cultural acceptability. Greater explanation about what these criteria mean is needed. There is an essential competing tension between these four criteria and there is caution not to make the feasibility list too complex as it will give an easy way out to politically contentious options. Also there was consensus to be realistic, but not overly descriptive/rigorous in feasibility filter as we are really talking about non-financial constraints to implementation. This is a more practical and doable lens and could be rephrased as implementation considerations. However clear criteria/domains are still required.

7. Presentation of Appendix 3
Given that the existing Appendix 3 was developed through consultation with Members States and has political feasibility, and has achieved good traction, it would be undesirable to deviate too far from the initial concept and list. Irrespective of any limitations of the initial process, this is a good starting point to further improve the list of recommended interventions. Some changes to the grouping of interventions could be considered, to make the structure of the Appendix align more logically with implementation (eg by typology, or by implementation setting). In the revised Appendix, a more explicit link for each intervention could be made to the Global NCD targets – to better indicate which interventions are core to achieving targets.

Conclusions
In relation to the specific objectives of the consultation, there was agreement that the list of interventions included in Appendix 3 could benefit from updating in light of new scientific evidence, and that improvements could also be made to the transparency of the process and presentation of the final list of interventions. There was consensus on a number of key points:

- The existing Appendix 3 should be used as the starting point for the update, and the process should align with the existing WHO guidelines development criteria and principles.
- There are some interventions already on the list that warrant a “re-doing” of the cost-effectiveness analysis, because of new evidence, or changing cost (eg drug coming off
patent), and some new interventions that were not on the list that should be analysed for inclusion.

- The existing generalised WHO CHOICE methodology for undertaking the cost-effectiveness remains a valid approach approach to continue to use for the next round, although it should be realised that this model does not take into account features of the existing health care systems.

- The affordability and feasibility criteria could be better defined. Additional information and guidance should be provided to accompany the Appendix, to provide context regarding implementation, health system and equity considerations.

- The process needs to be transparent: a clear algorithm of which interventions are considered and where they end up in the process, needs to be included. – even for interventions that do not make the final list

- A number of improvements to the presentation of the Appendix were suggested, and it is clear that we could do a lot more to group interventions by typology, and to make it clearer for countries to understand which interventions link to which targets. This should include a decision on whether the differentiation between a very cost-effective and cost-effective intervention is maintained.

The proposed methodology that emerged from the meeting is included in Annex 1.

1. General principles

1. The existing Appendix 3 should be used as the starting point for the update, and the process should align with the existing WHO guidelines development criteria and principles.

2. The update process needs to be transparent: a clear algorithm showing which interventions are considered, and where they end up in the process, needs to be included – including for interventions that do not proceed to the final list.

3. Improvements need to be made to the presentation of the Appendix to make it clearer and easier for countries to assess interventions in relation to their national context (see section on “Presentation of Appendix 3” below).

4. Additional information and guidance will be developed to accompany the updated Appendix 3, to provide context regarding implementation, health system and equity considerations.

5. The list of interventions will need ongoing updating.

6. Once the list of interventions is finalised, the list of WHO tools in the website http://www.who.int/nmh/ncd-tools/en/ will be updated with any additional resources, and there will be linkage between the interventions and the tools.

2. Identifying interventions for analysis

1. Some interventions already in the current Appendix 3 warrant a “re-doing” of the cost-effectiveness analysis, because of new evidence, or changing cost (eg drug coming off patent).

2. Some interventions in the existing Appendix 3 can be replaced – because they can be expressed by more specific interventions, such as in the area of physical activity or salt.

3. There are some new interventions that were not included in Appendix 3 that should be analysed for inclusion.

4. Process and criteria for identifying new interventions to be analysed:
   a) Action areas of Global NCD Action Plan that are not reflected in existing Appendix 3
   b) Areas covered by new WHO guidelines, published since the first list was developed
   c) Other interventions proposed, through WHO global expert consultation meetings and expert advisory panels.

5. To be considered for further analysis, all new interventions must meet the following effectiveness criterion:
   a. A demonstrated and quantifiable effect size, from at least one published study in a peer reviewed journal.
   b. A clear link to one of the global NCD targets
3. Analysis of interventions
   1. For interventions that meet the effectiveness criteria, the following parameters will be considered, according to the algorithm outlined in Figure 2:
      a. Cost effectiveness
      b. Size of health gain
      c. Total cost/budget required
      d. Implementation considerations

2. Cost-effectiveness
   a. It is recognised that for some interventions, a robust cost-effectiveness analysis is not possible. Robust cost-effectiveness analysis requires:
      i. Health impact is measured for the range of likely health outcomes
      ii. Health impacts over the life course are able to be modelled
      iii. An ability to identify the cost function of the intervention

   b. Interventions where robust cost-effectiveness analysis is not considered possible at this time, will proceed directly to consideration of implementation constraints (see Figure 2)

   c. For interventions where robust cost-effectiveness analysis is considered possible, they will be analysed using the generalised WHO CHOICE methodology (http://www.who.int/choice/cost-effectiveness/en/)

   d. Interventions will be listed in order of their cost-effectiveness ratio. No distinct threshold is considered to indicate if an intervention is “cost effective” or “not cost-effective”. Recommendations can be made based on the relative cost-effectiveness of the different policy options.

3. Size of health gain
   a. The expected size of population health impact for each intervention will be calculated based on total DALY averted in a standardized population of 10 million people.

   b. The effect size for each intervention is taken from published literature. Where feasible, a meta-analysis of trials is used. The minimum requirement is one published study showing an intervention impact on a quantifiable health outcome.

   c. Health gain is measured using an epidemiological model which includes all of the health outcomes likely to be impacted by the intervention. Two scenarios, one in which the intervention is implemented and one where there is no intervention are compared. The difference in DALYs between the two scenarios represents the health gain.

   d. The prevalence of the relevant conditions/risk factors, based on global averages, or averages for each country income grouping (low, lower middle, upper middle, high) will be applied to the standardized population of 10 million people. The prevalence figures used will be listed to make it easier for Member States to assess how the estimate may compare to their national situation.
4. **Total costs/budget required**
   a. The total cost required to implement each intervention will be estimated, based on cost to implement in a standardized population of 10 million people.

   b. Costs are calculated using an “ingredients approach” whereby each item required to implement the intervention is identified (e.g. drugs, syringes, police officer training, legislation drafting), quantities (q) are estimated based on WHO guidelines or other country experience, and a price (p) for each comes from WHO CHOICE Price database [www.who.int/choice/en/unit_prices](http://www.who.int/choice/en/unit_prices). The multiplication of q and p gives the total cost.

   c. The prevalence of the relevant conditions/risk factors, based on global averages, or averages for each country income grouping (low, lower middle, upper middle, high) will be applied to the standardized population of 10 million people. The prevalence figures used will be listed to make it easier for Member States to assess how the estimate may compare to their national situation.

5. **Feasibility/ implementation constraints**
   a. Feasibility will be defined as non-financial implementation constraints, and rather than making an eliminatory judgement, this dimension will be addressed by providing qualitative comments in the Appendix 3 table of interventions – to indicate the main implementation considerations policy-makers should bear in mind (eg health system capacity requirements, regulatory capacity etc).

6. Additional dimensions of fairness, financial risk protection and more detailed discussion of implementation constraints will be provided in the qualitative “Annex to the Appendix 3”

4. **Presentation of Appendix 3**
   1. Interventions will be presented in the order of cost effectiveness. No effort will be made to classify them using an arbitrary threshold.

   2. Instead of grouping interventions on the basis of each objective of the Global NCD Action Plan, interventions will be grouped by typology (eg regulatory/fiscal interventions, clinical management etc), to present interventions in a more logical grouping for implementation.

   3. For health service interventions, effort will be made to further group these interventions according to the level of the health system (primary health care, tertiary care etc).

   4. Interventions relevant for achieving specific targets will be indicated.

5. **“Annex to the Appendix 3”**
   To address a number of other important considerations (implementation challenges in different resource/health system contexts, fairness considerations, and the need for greater transparency about the methodology for deriving the list of interventions), an “Annex to Appendix 3” is recommended. The title and format of this document would be finalised by the Secretariat, but the contents would include:
1. Methodological issues
   a. The technical details of the WHO CHOICE model and how the cost-effectiveness analysis was done, including assumptions and methods, or a link to an online resource containing this information.
   b. The full list of interventions considered for inclusion (including those which were found to be not cost-effective), and an algorithm explaining how the interventions progressed through to different stages of analysis (see Figure 2).
   c. Multi-sectoral co-benefits – explicit discussion is needed of interventions which are likely to have broader social benefits through improved outcomes outside the health sector (e.g. increased economic productivity by reduced traffic congestion from improved public transport policy, increased government revenue from tobacco tax increases).

2. Implementation issues
   a. Fairness and financial risk protection implications vary by country, so overall guidance on applying these principles will be given, rather than an application to each policy option.
   b. To support the successful implementation of the policy options in Appendix 3, a programme managers guide for implementation could be developed as a separate document, which could consider differences within populations in implementation guide.

Figure 1 - Timeline for updating Appendix 3

* Dates are indicative
Figure 2: Flowchart depicting analytic steps in the process of identifying appropriate policy options for Appendix 3 update.

Current menu of policy options in Appendix 3

New policy option identified via WHO Guidelines, WHO Essential Medicines List or expert review

Evidence of effect:
- A demonstrated effect size, from at least one published study in a peer reviewed journal.
- A clear link to one of the global NCD targets

Cost-effectiveness:
- Generalized cost-effectiveness will be used to estimate the cost-effectiveness ratio
- Metric: USD/DALY\(^i\) averted

Size of health gain:
- Expected size of health impact from the intervention (estimated as DALYs averted) in a standardized population of 10 million people using the global average prevalence for the conditions/risk factors of interest.
- Metric: DALY averted

Total cost/budget required:
- Size of budget required to implement the intervention in a standardized population of 10 million people using the global average prevalence for the conditions/risk factors of interest.
- Metric: USD millions

Implementation Considerations (qualitative description):
- Health system requirements
- Regulatory capacity requirements
- Multisectoral action requirements

Menu of policy options for inclusion in Appendix 3

\(^i\)DALYs for a disease or health condition are calculated as the sum of the Years of Life Lost (YLL) due to premature mortality in the population and the Years Lost due to Disability (YLD) for people living with the health condition or its consequences.
<table>
<thead>
<tr>
<th>Intervention name and description</th>
<th>Cost-effectiveness (USD/DALY averted)</th>
<th>Health gain (DALY averted in standardized population of 10 million people*)</th>
<th>Total cost to implement (Cost of implementation in a standardized population of 10 million*) in USD millions</th>
<th>Implementation considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco taxation: (in this example calculated based on increasing taxation from 40% to 60% of retail price)</td>
<td>$87/DALY averted</td>
<td>30,430</td>
<td>$2.70</td>
<td>Health System Considerations: • Legislation needed  Regulatory capacity considerations: • Needs ministries of trade &amp; finance</td>
</tr>
<tr>
<td>Multi-drug therapy to those with 30% or greater risk of CVD event</td>
<td>$104/DALY averted</td>
<td>31,630</td>
<td>$3.30</td>
<td>Health System Considerations: • Identification of people at high risk  Regulatory capacity considerations: • Availability of medicines and technology</td>
</tr>
</tbody>
</table>

*Using global average disease & risk factor prevalence, which will be listed so that countries can assess how this compares to national contexts

**Notes:**
- Rather than setting any arbitrary thresholds for "cost-effectiveness", it is proposed that the interventions will be listed in descending order of cost-effectiveness (with most cost-effective interventions listed first).
- The estimates for each dimension in the table above are based on a global aggregate figure, which does not reflect the huge variation among countries in relation to all inputs in this calculation (disease prevalence, costs of intervention etc). To provide a more realistic estimation for countries, these 3 columns could be further disaggregated into income categories (eg low, lower middle, upper middle and high income).
- The costs of population wide interventions will not increase linearly with population size (i.e. the cost in a population of 50 million is not 5 times the cost in a population of 10 million). Costs of individual interventions will increase based on the number of people in need, but also not in a linear fashion.
Annex 2: Emerging issues in selected NCD prevention and control interventions areas

Experts present at the meeting discussed some of the challenges in identifying interventions and a summary of the discussion under the four diseases and four risk factors is presented. These suggestions will not be taken up as it is, but all interventions will be considered as per the agreed approach for updating the Appendix 3.

Cardiovascular diseases
For the management and secondary prevention of cardiovascular disease, the interventions in Appendix 3 are based on guidelines in WHO Package of Essential NCD Interventions (WHO PEN), and have a solid evidence base. Implementation and coverage of these effective interventions remains a major challenge. Rather than revising the interventions, priority focus areas should be refining the existing tools for risk assessment (and the best way to implement them in clinical practice), and also guidance on how to scale up cardiovascular disease management (i.e. provide policy options to implement cardiovascular disease “best buys” in different contexts).

Specific intervention areas which could also be considered for review include:
- Highlight the importance of smoking cessation support
- Re-evaluating the hypertension threshold, targets and antihypertensive selection.
- Re-evaluating the medicines on the WHO Essential Medicine List (eg Clopidogrel, bisoprolol replaced atenolol)
- Polypill for secondary prevention (to be re-submitted for consideration on WHO Essential Medicine List)

Stroke
Existing interventions specifically for stroke are listed under the cardiovascular diseases section in Appendix 3. It was recommended that stroke should be positioned as a separate section within Appendix 3, and existing interventions for stroke be listed under that heading. In addition there are several addition interventions which could be considered for review include:
- Stroke units
- Thrombolytic therapy for acute stroke
- Dysphagia screening of all acute strokes to reduce pneumonia and aspiration

It was noted that not all interventions are possible in all resource settings – in particular interventions such as thrombolysis require sufficient health system capacity to be safely administered. To address these concerns, the World Stroke Organization has developed a list of stroke interventions classified into “minimal”, “essential” and “advanced” categories.

Diabetes
No new interventions were proposed, although access to existing cost-effective interventions remains the biggest challenge. Equity, fairness and financial risk protection need to be key considerations. There is persisting global inequity in access to insulin: the poorest billion must be a focus, to address treatment gap. The glucose-centric approach to insulin has probably led to over-treatment with insulin, thus the inclusion of intensive glucose control as a “good buy” in the previous appendix should be re-assessed.
Cancer
It was highlighted that many of the other NCD prevention interventions (including tobacco control, salt reduction, alcohol, diet and physical activity) potentially reduce the incidence of cancer. In terms of new developments and interventions to consider for Appendix 3:

- Some cancer specific prevention interventions can be highly cost-effective in specific populations, eg aflatoxin post-harvest reduction in sub-Saharan Africa
- The cost of human papillomavirus (HPV) vaccines and HPV testing have diminished substantially since 2013, which will impact on cost-effectiveness analysis. Likewise, new evidence that a two dose regime is as effective as three doses, will reduce costs.
- Increased evidence that radiation therapy is cost-effective and simple, including chemoradiation for advanced cervical cancer and external beam radiation.
- Oral morphine for palliation should be part of the most basic cancer package

It was noted that cancer recommendations cannot be considered outside of the health system context. A number of frameworks are available that classify cancer interventions according to different resource environments, eg basic, limited, enhanced, advanced. Health system constraints are significant when comparing the time to see results, eg cervical cancer screening can theoretically produce faster results than HPV vaccination, but if a country is starting from scratch it can take decades to implement an effective population based screening programme.

Chronic respiratory diseases
Problem with under-recognition of chronic respiratory diseases, and under-recognition of co-morbidities/associated conditions. Better algorithms for assessment and identification of patients need to be developed. The burden of chronic obstructive pulmonary disease (COPD) is unevenly distributed, so the benefit of interventions would be far more significant in China, India and South America. Interventions to reduce indoor air pollution have an important gender equity dimension: and impacts not restricted to COPD, but are also related to cancer and cardiovascular disease. In terms of new developments and interventions to consider for Appendix 3:

- Access to spirometry
- Regular bronchodilator therapy: long-acting are far superior – and although expensive are coming off patent.
- Specify targets: eg 50% of symptomatic asthmatics have access to treatment, at least 40% of COPD patients have access to short-acting bronchodilator
- Intersectoral action to address air pollution
- Asbestos exposure as a risk factor for lung disease (including lung cancer)

Physical inactivity
There are a number of challenges with quantifying the impacts of interventions to address physical inactivity, including the heterogeneity of interventions and outcome measures, difficulties in measurement, poor description (and rarely any costing) of intervention(s), limited reporting of implementation fidelity, short follow up, limited published evidence from low- and middle-income countries (LMIC). These make it more difficult to produce evidence of cost-effective interventions. The current Appendix 3 merges physical activity with diet – physical activity should be separate as the evidence basis for awareness campaigns is not based on campaigns dealing with diet and physical activity together.
There are seven areas of interventions in physical activity that could be the subject of more detailed review, namely transport policies, public education, urban design, sport for all, health care, whole of school programs, community programs and most of these requires efforts of sectors outside of health. There is now more evidence in some of these areas including from LMIC e.g increased evidence base on the built environment (urban design) and transport and physical activity (walking and cycling). There is also a large and interested scientific community that is better connected to engage in this global task.

The text of Global NCD Action Plan includes interventions in these areas that did not make the Appendix 3, which could be the most logical place to start for reviewing evidence for Appendix 3 update:

- Urban planning and transport policies
- Quality physical activity and physical education at and after school
- Sport for all

**Harmful use of alcohol**

Recommendations in Appendix 3 come from the WHO Global Strategy to reduce the harmful use of alcohol. Since Appendix 3 was developed, new evidence can be taken into account for the following interventions:

- Brief interventions in health care settings
- Treatment of alcohol use disorders
- Drink driving policies (at least 3 different interventions, including blood alcohol limits)
- Reducing unrecorded alcohol
- Stronger evidence for availability restrictions, especially in high income countries
- Pricing – minimum pricing techniques may need to be discussed separately from taxation. Increasing evidence base, now also from LMIC.

Evidence of effectiveness of market and advertising bans is quite variable – this has implications for cost-effectiveness calculations. It is unclear if “very cost-effective” recommendations will apply to all countries – eg Saudi Arabia and countries with high abstainer levels.

**Salt reduction**

Current Appendix 3 just lists “reduce salt intake” which is not an intervention but rather an objective. Source of dietary sodium (eg in processed foods versus added in the home) varies widely between countries - cost-effectiveness of strategies will vary depending on source.

More specific interventions to consider include:

- Reducing salt at the table and in cooking (eg reductions, salt substitutes)
- Reformulation of products: Reducing levels of salt in retailed foods (mandatory or voluntary)
- Labelling interventions
  - Nutrition labelling (codex alimentarius)
  - Warning labels for food “high” in sodium
- Education programmes (evidence for consumer education alone is weak)
- Taxation programmes – eg sodium as a component of junk food taxes
Not all of these have been subject to cost-effectiveness analyses but there has been increasing research, in particular on reformulation of products.

**Obesity prevention**

The obesity system is complex and interventions multifaceted that it would be helpful to consider frameworks of classification and the “4 P’s” of social marketing and NOURISHING frameworks were presented as examples. Different cost-effectiveness analyses have given different rankings to the interventions and there is a need to go beyond cost-effectiveness analysis and also consider Affordability, Impact, Practicality/feasibility and Acceptability. Based on these a greater range of population based interventions for obesity prevention could be considered, including:

- Reformulation (of products high in added sugar)
- Marketing restrictions (on unhealthy foods)
- Limiting the access of children to fast-food outlets around schools
- Sugary drinks taxes

In discussion it was highlighted that new evidence on trans-fats may enable greater quantitative analysis than the previous Appendix 3 allowed.

**Tobacco use**

Global coverage of MPOWER package of tobacco control interventions is increasing, however implementation/enforcement of these measures is variable. As countries progressively implement MPOWER interventions in line with the WHO FCTC, there is a need for additional measures to accelerate the full implementation of the WHO FCTC in all Parties to the treaty, especially for countries where MPOWER interventions are all well implemented. In considering additional cost- interventions, assessing the specific implications for cost-effectiveness in different settings of already well-known cost- efficacious measures of the WHO FCTC is necessary to plan for adequate resources as there might be decreasing returns as tobacco use prevalence decreases.
## Annex 3: Meeting agenda

### MONDAY 22 June 2015: Venue – Room E110

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Chair/Authors</th>
</tr>
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| 09:00 – 09:15 | Welcome and opening remarks  
Adoption of meeting programme and objectives  
Introduction of participants                      | Dr Etienne Krug  
Dr Douglas Bettcher                             |
| 09:15 – 10:00 | Appendix 3 : Menu of policy options and very cost-effective interventions | Dr Daniel Chisholm  
Dr Melanie Bertram  
Dr Cherian Varghese                             |
| 09:15 – 09:30 |                                                                                   |                                                                               |
| 09:30 – 09:45 |                                                                                   |                                                                               |
| 09:45 – 10:00 |                                                                                   |                                                                               |
| 10:00 – 10:30 | COFFEE BREAK                                                                 |                                                                               |
| 10:30 – 11:30 | Interventions for NCD management - Update  
• Cardiovascular diseases  
• Stroke  
• Diabetes  
• Cancer  
• Chronic respiratory diseases  
Discussion                      | Dr Pablo Perel  
Dr Patrice Lindsay  
Professor John Yudkin  
Dr Silvia Franceschi  
Dr May Abdel-Wahab  
Professor Peter Calverley |
| 11:30 – 12:30 | Interventions for NCD prevention - Update  
• Physical inactivity  
• Harmful use of alcohol  
• Unhealthy diet  
  • Salt reduction  
  • Obesity prevention  
• Tobacco use  
Discussion                      | Dr Mary R. L’Abbé  
Professor Mike Rayner  
Professor Geoffrey T. Fong |
| 12:30 – 13:30 | LUNCH                                                                   |                                                                               |
### MONDAY 22 June 2015: Venue – Room E110

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Chair</th>
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<tbody>
<tr>
<td>13:30 – 14:30</td>
<td>Methods for identifying evidence-based, cost-effective and feasible interventions (what are the lessons learned?)</td>
<td>Prof. JL Hans Severens</td>
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<tr>
<td></td>
<td>- Economic evaluation in health and the role of cost effectiveness</td>
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<td></td>
<td>- Decision making in health and the role of implementation constraints</td>
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<td></td>
<td>- Lessons from country work: what type of issues do we need to consider?</td>
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<td></td>
<td>- From theory to practice: taking into account multiple considerations</td>
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<tr>
<td></td>
<td><strong>Discussion</strong></td>
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<tr>
<td>14:30 – 16:30</td>
<td>Group work to identify a methodology for updating Appendix 3</td>
<td></td>
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<td></td>
<td>- Group 1. Effectiveness and cost effectiveness</td>
<td></td>
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<td></td>
<td>- Group 2. Implementation constraints</td>
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<tr>
<td>15:00 – 15:30</td>
<td><strong>COFFEE BREAK</strong></td>
<td></td>
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<tr>
<td>16:30 – 17:30</td>
<td>Group presentation and discussion</td>
<td></td>
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<tr>
<td>17:45 – 19:30</td>
<td><strong>RECEPTION</strong></td>
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### TUESDAY 23 June 2015: Venue - Salle G

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Chair</th>
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</thead>
<tbody>
<tr>
<td>09:00 – 09:15</td>
<td>Recap of Day 1</td>
<td>Dr Cherian Varghese</td>
</tr>
<tr>
<td>09:15 – 10:30</td>
<td>Group work</td>
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<tr>
<td></td>
<td>To develop an initial draft document which sets out the proposed methodology and work plan for updating Appendix 3 in 2016</td>
<td></td>
</tr>
<tr>
<td>10:30 – 11:00</td>
<td><strong>COFFEE BREAK</strong></td>
<td></td>
</tr>
<tr>
<td>11:00 – 12:00</td>
<td>Presentation and discussion</td>
<td>Dr David McDaid</td>
</tr>
<tr>
<td>12:00 – 13:30</td>
<td><strong>LUNCH</strong></td>
<td></td>
</tr>
<tr>
<td>13:30 – 14:45</td>
<td>Working session</td>
<td>Dr Etienne Krug</td>
</tr>
<tr>
<td></td>
<td>To finalize the initial Draft document on the proposed methodology and work plan for updating the Appendix 3 of the Global NCD Action Plan 2013-2020 in 2016.</td>
<td>Dr Douglas Bettcher</td>
</tr>
<tr>
<td>14:45 – 15:00</td>
<td><strong>Closing session</strong></td>
<td></td>
</tr>
</tbody>
</table>
Annex 4: List of participants

Dr May ABDEL-WAHAB
Director, Division of Human Health
Department of Nuclear Sciences and Applications
International Atomic Energy Agency
Vienna International Centre
Austria
Email: m.abdel-wahab@iaea.org

Professor Fiona BULL
Director, Centre for Built Environment and Health
School of Earth and Environment &
School of Sports Science, Exercise and Health
The University of Western Australia
Western Australia  6009
Email: Fiona.bull@uwa.edu.au

Professor Peter CALVERLY
Professor of Respiratory Medicine
Clinical Science Centre
University Hospital Aintree
Longmoor Lane
Liverpool
UK
E-mail: pmacal@liverpool.ac.uk

Professor Geoffrey FONG
Founder and Chief Principal Investigator
International Tobacco Control Project
University of Waterloo
Department of Psychology
Waterloo, Ontario  N2L 3G1
Canada
Email: geoffrey.fong@uwaterloo.ca

Dr Mary R. L'ABBE
Earle W. McHenry Professor and Chair
Department of Nutritional Sciences
Faculty of Medicine
University of Toronto
Toronto, ON  
E-mail. mary.Labbe@utoronto.ca

**Dr Mary Patrice LINDSAY**  
Director Best Practices and Performance, Stroke  
Heart and Stroke Foundation  
Ottawa, ON  
Canada  
E-mail: plindsay@hsf.ca

**Mr David MCDAID**  
Research Fellow in Health Policy and Health Economics  
LSE Health and Social Care, and  
European Observatory on Health Systems and Policies  
London School of Economics and Political Science  
London  
UK  
E-mail: d.mcdaid@lse.ac.uk

**Professor Shanthi MENDIS**  
Consultant Cardiologist and Public Health Specialist  
Geneva  
Switzerland  
E-mail: prof.shanthi.mendis@gmail.com

**Dr Pablo PEREL**  
Director Centre for Global Noncommunicable Diseases  
Faculty of Epidemiology and Population Health  
London School of Hygiene & Tropical Medicine  
London WC1E 7HT  
UK  
E-mail: pablo.perel@lshtm.ac.uk

**Professor Jürgen REHM**  
Director, Social and Epidemiological Research (SER) Department  
Head, PAHO/WHO Collaborating Centre for Mental Health & Addiction  
Centre for Addiction and Mental Health (CAMH)  
University of Toronto Canada  
Ontario  
Canada M5S 2S1  
E-mail: jtrehm@gmail.com
Mr Mike RAYNER
Director, British Heart Foundation Centre on Population Approaches for Non-Communicable Disease Prevention
Nuffield Department of Population Health
University of Oxford
Oxford, OX3 7LF
E-mail: mike.rayner@dph.ox.ac.uk

Professor Hans L. SEVERENS
Professor of Evaluation in Health Care at iMTA
Erasmus University Rotterdam
Institute for Medical Technology Assessment
Bayle Building - Campus Woudestein
3000 DR Rotterdam
The Netherlands
Email: severens@bmg.eur.nl

Professor David A. WOOD
World Heart Federation President Elect 2015-16
Chair, Garfield Weston Foundation
Professor of Cardiovascular Medicine
Imperial College
E-mail: d.wood@imperial.ac.uk

Professor John S. YUDKIN
Emeritus Professor of Medicine, University College London
28 Huddleston Road
London N7 0AG
UK
E-mail: j.yudkin@ucl.ac.uk

IARC

Dr Silvia FRANCESCHI
Special Advisor
Head, Infections and Cancer Epidemiology Group
International Agency for Research on Cancer
69372 Lyon
France
Email: FranceschiS@iarc.fr
WHO SECRETARIAT

Dr Timothy ARMSTRONG
Programme Manager
Surveillance and Population-based Prevention
Prevention of NCDs
E-mail: armstrongt@who.int

Dr Melanie BERTRAM
Technical Officer
Costs, Effectiveness, Expenditure & Priority Setting
Health Systems and Innovation
E-mail: bertramm@who.int

Dr Douglas BETTCHER
Director
Prevention of NCDs
E-mail: bettcherd@who.int

Dr Oleg CHESTNOV
Assistant Director-General
Noncommunicable Diseases and Mental Health
E-mail: chestnovo@who.int

Ms Marilys CORBEX
Technical Officer
Management of NCDs
E-mail: corbexc@who.int

Dr Tessa EDEJER
Coordinator
Costs, Effectiveness, Expenditure & Priority Setting
Health Systems and Innovation
E-mail: tantorrest@who.int

Dr Suzanne HILL
Senior Adviser
Policy, Access and Use
Health Systems and Innovation
E-mail: hills@who.int
Ms Melitta JAKAB
Health Policy Analyst
Barcelona Office for Health System Strengthening
WHO Regional Office for Europe
Barcelona
Spain
E-mail: JAM@euro.who.int

Dr Etienne KRUG
Director
Management of NCDs, Disability, Violence and Injury Prevention
E-mail: kruge@who.int

Dr Jeremy LAUER
Economist
Costs, Effectiveness
Health Systems and Innovation
E-mail: lauerj@who.int

Dr Belinda LORING
Technical Officer
Management of NCDs
E-mail: loringb@who.int

Dr Bente MIKKELSEN
Head of Secretariat a.i
Global Coordination Mechanism
Office of Assistant Director General
Noncommunicable Diseases and Mental Health
E-mail: mikkelsenb@who.int

Dr Armando PERUGA
Programme Manager, National Capacity
Prevention of NCDs
E-mail: perugaa@who.int

Ms Leanne RILEY
Team Leader
Surveillance and Population-based Prevention
Prevention of NCDs
E-mail: rileyl@who.int
Dr Gojka ROGLIC  
Technical Officer  
Management of NCDs  
E-mail: roglicg@who.int

Dr Ruitai SHAO  
Programme Management Adviser  
Management of NCDs  
E-mail: shaor@who.int

Dr Edouard TURSAN D'ESPAIGNET  
Coordinator  
Comprehensive Information Systems Tobacco  
Prevention of NCDs  
E-mail: tursandespaignet@who.int

Dr Andreas ULLRICH  
Medical Officer  
Management of NCDs  
E-mail: ullricha@who.int

Mr Menno VAN HILTEN  
Technical Officer  
Office of Assistant Director General  
Noncommunicable Diseases and Mental Health  
E-mail: vanhiltenm@who.int

Dr Cherian VARGHESE  
Coordinator  
Management of NCDs  
E-mail: varghesec@who.int

Dr Temo WAQANIVALU  
Programme Officer  
Surveillance and Population-based Prevention  
Prevention of NCDs  
E-mail: waqanivalut@who.int