It's time to invest
in cessation

THE GLOBAL INVESTMENT CASE

FOR TOBACCO CESSATION

Methodology and results summary

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METHODOLOGY

The objective of this document is to describe the methodology used to build a model that estimates the return on investment (ROI) of tobacco cessation programmes. The approach builds largely from previous methodologies and tools developed over the last 20 years to support the implementation of WHO 'best buy' NCD interventions (Johns et al., 2003; WHO, 2011; Bertram et al., 2017; WHO 2018).

The model includes 124 middle-income countries and low-income countries with available gross domestic product (GDP) and United Nations (UN) population data. ROI ratios were individually estimated for each country and then for purposes of reporting totals, the costs and benefits were aggregated separately and a single ROI ratio was generated for each income group. In 2021, the estimated population in these countries totalled 6.5 billion and tobacco users aged 15+ totalled 1.05 billion – overall prevalence of 22% (15+).

The methodology does not propose or evaluate funding options or arrangements for the cessation programmes modelled in this exercise – that is, it simply takes a cost perspective to be able to understand the resources needed to plan, develop and implement cessation programmes. The assumptions used, particularly those related to target coverage, take an evidence-based (when possible), reasonable perspective to the extent they can be met regardless of any specific funding approach.

The following sections describe the data sources used, assumptions and decisions made when estimating the additional investment costs, including those directly related to the cessation interventions or programmes, and the approach taken to estimate the outcomes of the interventions. The document also describes the analyses conducted and briefly presents the main results of the model.

A. DATA SOURCES, SUMMARY OF INTERVENTIONS, AND SCALE-UP PATTERN

The model uses predominately publicly available data from a variety of sources, including the World Health Organization Global Health Observatory, the United Nations Population Division, the World Bank, and the International Labour Organization. The WHO-CHOICE price database was also an important data source used in this modelling exercise. WHO-CHOICE produces global prices for

major cost categories (e.g. personnel, utilities), and alongside a guiding methodology, it aims to facilitate the estimation of disease control programme support costs at the individual country level (Bertram et al., 2017).

Other sources of data and information used in this exercise include major reports (e.g. 2019 and 2021 WHO Report on the Global Tobacco Epidemic), research papers, unpublished data collected by WHO (e.g. cost of cessation medications, national quitline users), and various public websites (e.g. US Bureau of Labor Statistics, numbeo.com).

Table 1. Modeled Cessation Interventions with Coverage Targets and Effect Sizes Used

	Intervention	Definition / Description	Assumed Coverage Target	Impact / Effect Size % of intervention users who quit tobacco
Population-level Interventions	Brief advice	Advice to stop using tobacco, usually taking only a few minutes, is given to all tobacco users during the course of a routine consultation and/or interaction with a physician or health care worker.	An additional 30% of all tobacco users aged 15+ beyond current coverage	2%
	National toll-free quitline	A national toll-free quit line is a telephone counselling service that can provide both proactive and reactive counselling. A reactive quit line provides an immediate response to a call initiated by the tobacco user, but only responds to incoming calls. A proactive quit line involves setting up a schedule of follow-up calls to tobacco users to provide ongoing support.	5% of all tobacco users aged 15+	5%
	mCessation	Tobacco cessation interventions are delivered via mobile phone text messaging. Mobile technologies provide the opportunity to expand access to a wider population, and text messaging can provide personalized tobacco cessation support in an efficient and cost-effective manner.	3.5% of all tobacco users aged 15+	4%

	Nicotine replacement therapy (NRTs)	NRTs are available in several forms including gum, lozenges, patches, inhalers and nasal spray. These cessation tools reduce craving and withdrawal symptoms by providing a low, controlled dose of nicotine without the toxins found in cigarettes. The doses of NRT are gradually reduced over time to help the tobacco user ween off of nicotine by getting used to less and less stimulation.	An additional 5% on top of estimated current NRT use among tobacco users aged 15+ (varies per country)	6%
Pharmacological Interventions	Bupropion	Non-nicotine pharmacotherapy: These pharmacotherapies reduce cravings and withdrawal symptoms and decrease the pleasurable effects of cigarettes and other tobacco products.	An additional 1.5% on top of estimated current NRT use among tobacco users aged 15+ (varies per country)	7%
	Varenicline	Non-nicotine pharmacotherapy: These pharmacotherapies reduce cravings and withdrawal symptoms and decrease the pleasurable effects of cigarettes and other tobacco products.	An additional 1.5% on top of estimated current NRT use among tobacco users aged 15+ (varies per country)	15%

For the purposes of this analysis, ambitious implementation and coverage scale up patterns were modelled, in order to demonstrate the impact that an increased commitment to tobacco cessation could yield. For all interventions, expert opinion was sought from WHO technical groups related to the quickest possible time in which interventions were believed to be implementable. The scale-up pattern was based on current implementation status of cessation interventions, taken from the 2021 WHO Report on the Global Tobacco Epidemic. For countries considered to have little to no implementation of a particular intervention, one year was allotted for planning, next for development, and only on Year 3 would there be full implementation according to the target coverage. For countries already implementing at a level close to the target, then full implementation would be from year 1.

B. INVESTMENT COSTS

The investment costs build from the NCD costing tool and approach (WHO, 2011), and are grouped into two major categories: supporting and programme management costs and intervention costs. Given the comprehensive scope of cessation interventions, for most countries, intervention costs account for more than 95% of total investment costs – and for many up to 99%.

B.1. Supporting and programme management costs

This category incorporates all costs directly associated with supporting and managing the planning, development and implementation of the cessation programmes. Major sub-categories within this group include human resources, training & meetings, media, and rent, supply and equipment. For example, training sessions need to be coordinated and provided to quitline counsellors and for those directly involved with providing brief advice in the community and/or across the health care system. Similarly, public health specialists and officers, policy advisors, and epidemiologists and economists are needed to support policy development, research, guidelines development, and/or the development of programme funding models.

The NCD costing tool accounts for population size when it comes to these costs of the investment exercise. That is, supporting and programme management activities are costlier (in absolute terms) in countries with larger populations – given the need for more quitline counsellors, training sessions, and more oversight, monitoring and reporting activities. For the purpose of this modeling exercise, some changes were introduced. The first one relates to the use of a band that allows human resources (needed for every aspect of the programme development process) to vary by population size within certain limits. The lower limit captures the concept of a baseline or minimum number of full-time equivalents (FTEs.) needed to implement and manage the programmes. For example, a minimum amount of public health specialists' time will be needed regardless of the size of the country. Similarly, an upper threshold was also incorporated to limit the number of FTEs so that they do not increase unreasonably. A similar rational was likewise applied for quantities used to estimate the cost of training and meetings, so that the number of meetings and attendees was not unreasonably low or high.

These cost categories rely importantly on the WHO CHOICE price database. Updates were introduced, however, to reflect more up-to-date price levels – i.e. from 2019 and 2020 when available. For example, the latest information on world salaries available from the International Labour Organization is from 2019, and World Bank purchasing power parity (PPP)-related rates are from 2019 – although estimated using 2021 price levels. Other estimations used in this section incorporate the use of the UN Daily Subsistence Allowance (DSA) – which is available for every UN member state. For this purpose, the UN 2021 DSA was used to reflect current price levels. For example, the office space rental price (in US$ per square foot per year) for a premium location was estimated to be 19% of the UN DSA.

B.2. Intervention costs

This category includes costs directly related to the cessation interventions or programmes – these costs are largely variable. For example, for a national toll-free quitline the most relevant direct costs

include the unit cost per call and the salary of the counsellors – the larger the number of tobacco users to be reached, the higher the cost.

These direct intervention cost estimates capture additional (or expanding) programme costs required to reach a target coverage. For example, if a country is currently counselling 1% of current tobacco users through a national toll-free quit line and the target coverage is set at 5%, then the cost estimates in this modelling exercise would capture the costs needed to reach the additional 4% of tobacco users. Similarly, if the target coverage is set at 5% and a country is already counselling 5% of tobacco users, then the cost estimates would theoretically be nil – however, this was not the case in any of the countries included in this analysis. The following section details the costs directly related to each of the six cessation programmes modelled in this exercise, and the decisions made about target coverage.

National toll-free quitline:

The target coverage for this intervention was set at 5% for all countries. That is, either reactively and/or proactively, countries should reach 5% of yearly tobacco users through this cessation service. This assumption is based on the case of New Zealand, where the national quitline has been able to reach 5% of tobacco users (WHO, 2011). Evidence from a limited number of countries also shows that currently quitline users account for less than 0.5% of tobacco users. For the purpose of this modelling exercise, current coverage was set at 0% in countries where there is no quitline available, as reported to WHO in the 2021 Report on the Global Tobacco Epidemic, and at 0.5% in countries reporting a quitline service.

The main cost drivers for this service include the direct cost of the call (i.e. the telecom provider cost), and salaries of quitline counsellors. Call cost assumes 40 minutes per tobacco user reached. That is two calls per smoker at 30-min initial and 10-min follow-up calls. Unit price was derived from ITU (Bertram et al., 2017) in combination with US information on costs associated with toll-free 800 call services. Quitline counsellors were assumed to take 5,280 calls per year in an 8-hour/day shift, five days per week. Salaries were modelled using data available from the ILO up to 2019.

Brief advice:

Brief advice takes advantage of encounters within the healthcare system. Following the current tobacco cessation support reported across various providers within the healthcare system (WHO, 2021), countries were arbitrarily classified into 5 groups to represent current coverage – which was estimated to range from 0% to 40%. For example, a coverage of 20% means that through this intervention, 20% of tobacco users are currently receiving tobacco cessation counselling by a healthcare provider per year. This assumption depends on various factors, however, including the

current capacity of the healthcare system in a country and the extent of patient access to healthcare services within. The target coverage was set at an additional 30% increase beyond current coverage. The costs used in this intervention involve only those directly related to providing the counselling – that is a fee to the healthcare provider. It does not incorporate expansions in capacity the healthcare system may need to actually meet the needs for additional counselling (e.g. increased number of GPs per capita).

The costing approach for this intervention follows the Canadian model (MOH, 2021). It uses an incentive approach based on a flat fee (CAD$ 15.6) paid to a general practitioner if counselling is provided to the patient within a regular consultation visit. It is covered every 12 months per tobacco user (and/or patient) and has the option of 2 follow-ups after the initial consultation within the 12-month period. To standardize this approach across countries, the fee was combined with data reported by Moses et al. (2019), who estimated the average cost of an outpatient visit in 188 countries. For Canada, the counselling fee was estimated to represent 13% of the average cost of an outpatient visit. This percentage was then applied to all countries to estimate the unit cost of a brief advice. For the purpose of this analysis, only one counselling or advice per year per tobacco user was modelled.

mCessation:

This intervention was modelled following a smoking cessation programme delivered in the United Kingdom by mobile phone text messaging (Guerriero et al., 2013) – participants received five text messages per day for the first five weeks and three per week for the next 26 weeks. Given that participation in this type of intervention requires that smokers actually subscribe to the programme (the equivalent of what smokers would do when calling the quitline), coverage should be expected to be relatively low – In India, for example, mCessation subscribers represent slightly less than 1% of total tobacco users. For this modelling exercise, target coverage was set a bit higher at 3.5% of the yearly base of tobacco users. For virtually every country, current coverage was assumed to be 0%.

The total cost of this programme was estimated at GBP$ 16.12 per smoker – largely driven by the