Commentary

The Need for New Models to Measure the Impact of Prevention


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Ever since the Declaration of Alma-Ata of 1978, and later reconfirmed in the Declaration of Astana in 2018, health promotion and disease prevention was recognized as central to the role of primary healthcare [1,2]. However, despite longstanding and widespread agreement on the centrality of prevention to the public health agenda [3], and except for immunization, the health sector remains challenged to meaningfully include prevention, focusing more on conspicuous health issues. This has meant preventive interventions were not translated into viable models for service delivery. We argue this is in part due to an unrealistic expectation to show an impact on mortality and/or morbidity and that new models are needed to measure the impact of preventive interventions.

In primary care, three approaches have emerged to organize promotive and preventive care for adolescents (Figure 1).

However, this care is still largely unavailable or substandard, which leads to excess morbidity and mortality in children and adolescents [4]. With adolescents being less likely to report having a usual source of care than are older individuals, and generally having less contacts with health services due to both supply side factors such as low availability and poor quality and demand side factors such as mistrust and low confidence [5], the possibilities of opportunistic prevention are limited. In the past decade, many countries have devoted attention to optimizing systematic approaches to preventive care for adolescents. For example, the American Academy of Pediatrics Bright Futures is a national health promotion and prevention initiative for children and adolescents supported by the U.S. Department of Health and Human Services [6]. Similarly, to date, World Health Organization (WHO) has developed numerous guidelines recommending a preventive action for adolescents. Although many countries have routine check-ups, usually as part of their school health services, only few use these contacts at the critical junctions in adolescent life to move beyond screening of high burden outcomes toward a more holistic focus on wellbeing including psychosocial assessment and anticipatory guidance [5].

With the renewed attention to adolescent wellbeing, defined by five interconnected domains (Figure 2), the issues of the health sector contribution gain a new dimension. The wellbeing framework sets the agenda for what matters for adolescents focusing not only on their survival but also, in addition, support for them to thrive as they age and empower them with the tools to transform themselves and society at large [7]. To promote the thrive and transform agendas, the framework necessitates a look beyond medical interventions, to engage with ecological approaches. This means due attention to promotion and prevention is required, including rethinking health sector responses in the context of Universal Health Coverage. Although social systems, such as schools, communities, families, and digital platforms, have a role to play in promoting adolescent wellbeing [4], the role of health systems in promoting wellbeing needs to be better articulated.

WHO is making advances to bridge this gap through a focus on well-child and well-adolescent visits. These visits move beyond common screening tests for common conditions toward integrating other wellbeing dimensions through a broader evaluation of social risks, emotional state, and individual and family resources delivered with context-specific recommendations at key moments during the first two decades of life. The services provided assist families and communities to improve and protect their children’s and adolescents’ health. They also serve as an important gateway to targeted and specialist health, education, and social services including for those with additional needs. This is an important step in the realization of the vision of primary healthcare that is an approach to ensure that all people have integrated an access in their everyday environments to the full range of quality services and products they need for their health and wellbeing. The visits include health and development assessments for children and adolescents and are undertaken at each core contact as prescribed; care and support for families and communities including interventions and referrals to services that operate within the context in which the child or adolescent lives. The strengths and needs of the family are assessed. Interventions and referrals are offered in response; and finally...
health education activities are delivered appropriate to the core contact age bands. These activities are undertaken at appropriate developmental stages, using professional judgment and the needs assessment and care plan that is reviewed with the family. WHO is investing in generating evidence for a model of these visits across the first two decades of life that encompasses detection of morbidities and risk factors for future disease and preventive interventions.

However, evaluation of the effects of such interventions is challenging, particularly in light of the following five issues. First, often long time periods elapse between exposure to the preventive intervention and the time when the disease (if not prevented) manifests itself (e.g., noncommunicable diseases). Whereas for conditions such as iron deficient anemia, the effect of the preventive intervention is relatively promptly evident; for the prevention of obesity, the effects of nutritional counseling, for example, are less obvious. The elapsed duration makes it nearly impossible to measure impact, using traditional measures of mortality, for example, over the life of a public health intervention for conditions whose emergence is the result of life-long accumulation of risks. Increasingly sophisticated modeling, forecasting, and related analytic methods have been developed; however, these too rely on multiple assumptions and have rarely been validated. Second, intervention success can be cumulative over the life course. Just as risk factors may be cumulative, some interventions, such as those addressing improvements in health literacy, can have cumulative positive effects over the life course which are not accounted for in short-term evaluations. It is important to note that multiple life-long health behaviors are established during adolescence making it an important stage for reinforced early intervention. Third, positive health outcomes are well understood to be the function of potentially multiple biological mechanisms; multiple and interacting individual, social, and structural determinants; and drivers for which various sectors and public policies are responsible. It is therefore often difficult to disentangle the effects of one program (e.g., well-child visits) from other influences. This means that the traditional research tool of an impact evaluation may show a nil effect of a program but might still tell nothing about its effectiveness, which may have been extinguished by other factors. Interventions to improve self-management for different conditions are an illustrative example. Their impact on reducing emergency department visits and hospital admission rates was demonstrated for school-based programs for the self-management of children with asthma, but similarly conclusive results were not obtained for the self-management of HIV in adolescents [4]. In the latter case, a more complex causation between the intervention and impact might have played a role. Fourth, in research determining the impact of preventive interventions, there is often an absence of a counterfactual. Counterfactual analysis
involves a comparison between what actually happened and what would have happened in the absence of the intervention. This is an approach often employed in impact evaluations using randomized control trials, often considered the gold standard for assessing the effectiveness of an intervention. However, withholding an intervention can risk being unethical or unfeasible in any given context. Many studies will use plausibility as a way to support causal inference in the absence of true counterfactuals. Finally, many research studies are not sufficiently powered nor funded to generate findings at a scale that allows valid conclusions beyond community or district level. This limits the ability to measure a genuine public health impact prior to scale up.

Despite these challenges, many donors, partners, and policymakers favor a demonstration of health impact, ideally during the lifetime of a research or intervention program before investing further.

Undoubtedly, there is a need to build the evidence base to convince policy makers and donors that investing in preventive visits in adolescence is a worthwhile investment. This cannot be done without identifying what the measures of success are. WHO is working toward proposing indicators to measure adolescent wellbeing. An initial mapping of relevant indicators, already in use by various initiatives, was completed in 2022 [8], and work is in progress to achieve a global consensus on core indicators to measure adolescent wellbeing. However, the case for investment will not be convincing if it does not include a good understanding of delivery models that are feasible and acceptable in all settings. Implementation of recommended models will be a key. It is clear that viable models should be based on an effective multisectoral action. A successful example can be seen in the implementation plan for South Africa’s National Program of Action for Children which delineates clear responsibilities across sectors [9]. A second example is the United Kingdom’s Healthy Child Program which specifies the commissioning of health visitors and school nurses for public health services for children and adolescents, including linkages across a broad set of social services [9].

With the expectation that WHO guidance on well-child, well-adolescent visits will be published next year, more countries might wish to invest in them. To better demonstrate the success of such initiatives, we suggest that a new conceptualization is required of measurement to assess the impact of adolescent health and wellbeing preventive check-up visits across the life course in a rigorous yet reasonable and attributable way. Such a framework will shift the definition of what impact means from a health condition approach to a wellbeing approach. It will do so by recognizing the equal importance of wellbeing domains and by providing practical guidance on what are the right measures (including via robust models) to assess the impact across the life course at various time points and depending on the nature of both the intervention and the condition to be prevented or wellbeing area to be boosted. Such a framework will ultimately contribute to strengthen the case for investment in preventive interventions in adolescence.

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References