

The evolving landscape of NCDs mortality: Insights from two decades of global data and the imperative for future action

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Non-communicable diseases (NCDs), characterized by their non-infectious etiology, prolonged duration, and generally incurable nature, represent a major global public health challenge.¹ In 2021, NCDs caused at least 43 million deaths, accounting for 75% of all global deaths excluding those from pandemics.² In 2015, the World Health Organization (WHO) has established Sustainable Development Goal (SDG) target 3.4,³ aiming specifically to reduce premature mortality from NCDs by one-third by 2030 through prevention and treatment, with a primary focus on cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes among adults aged 30 to 70 years.

While the SDG target 3.4 provides a crucial framework, its current configuration may benefit from strategic enhancements to more effectively alleviate the growing burden of NCDs (Figure 1).

First, expanding the surveillance age range for premature NCD mortality beyond the current 30–70-year bracket is warranted, as strict adherence to this metric may lead to an epidemiological underestimation given global trends of rising life expectancy and earlier disease onset. Including younger (e.g., from age 20) and older adults (e.g., beyond age 75) would enable a more accurate assessment of disease burden and support targeted interventions across the lifespan. Implementing this expanded framework will require substantial analytical efforts to harmonize and interpret data across broader age groups.

Second, broadening the spectrum of monitored NCDs is essential for a holistic response. While the focus on four major categories has been impactful, it neglects the significant burden from other prevalent conditions such as mental, neurological, musculoskeletal, and digestive disorders. Integrating a wider range of NCDs into global strategies is crucial for inclusive policy and equitable resource allocation. However, this expansion faces practical challenges, especially in resource-limited settings. Surveillance for many of these conditions relies on complex surveys or specialized diagnostics rather than routine statistics, making integration into existing systems difficult. Success will therefore require phased investments in standardized tools, diagnostic capacity, and interoperable health information systems designed to capture a broader disease set without overburdening frontline services.

Third, the development of regionally or nationally tailored prevention strategies is imperative. The risk factors for NCDs—such as dietary patterns, physical inactivity, tobacco use, and air pollution—are profoundly influenced by local customs, lifestyles, and environmental contexts. A one-size-fits-all global approach is inherently ill-equipped. Formulating context-specific prevention plans that account for these local socioeconomic, cultural, and environmental determinants would significantly enhance the relevance, adoption, and ultimate effectiveness of public health interventions.

Finally, the integration of a sex- and gender-specific perspective into NCDs prevention is crucial. Biological differences between males and females influence disease susceptibility, progression, and response to treatment. Concurrently, gender roles and social norms affect health-seeking behaviors, exposure to risk factors, and access to care. Therefore, developing and implementing sex- and gender-informed prevention schemes would allow for more precise and effective strategies, ultimately improving health outcomes for all individuals.

The latest findings from the NCD Countdown 2030 study provide a critical, dual-lens diagnosis of the global NCD landscape, which fundamentally informs the need for our proposed strategic shifts.⁴ First, the study reveals

not just progress but a dangerous deceleration, with over 60% of countries experiencing a slower decline in mortality from 2010 to 2019 than in the previous decade. This is not merely a statistical observation but a signal of failing implementation systems and insufficient adaptation of policies to evolving challenges. Second, while highlighting stark geographic and sex-based inequities, the study's own methodological constraints—such as the limitation of cause-specific analysis to 63 countries—underscore a core systemic weakness we aim to address: the pervasive lack of high-quality, granular data in the most affected regions. This data gap obscures the true drivers of mortality in many low- and middle-income countries (LMICs) and necessitates the “Optimizing Data Ecosystems” pillar of our CORE framework; a detailed exposition of this pillar follows in the subsequent section. Finally, the study's crucial observation that conditions like neuropsychiatric disorders are worsening mortality trends in many countries directly validates our argument for expanding the NCD agenda beyond the big four, moving from a reactive to a holistic surveillance model. Thus, we interpret these findings not as an endpoint, but as empirical justification for a more integrated, adaptive, and equitable approach to NCD governance. Critically, the study emphasizes that a reduced burden should not justify complacency; rather, the widespread deceleration in progress reflects stagnating coverage of key clinical interventions (e.g., antihypertensives, cancer screening), diminished policy momentum in areas like tobacco and alcohol control, and broader health system constraints linked to macroeconomic pressures.

The global response to NCDs has evolved into a multi-tiered intervention framework integrating clinical, policy, and health-system approaches. At the clinical level, evidence-based guidelines—informed by randomized trials and rigorous observational studies—have standardized and optimized management protocols for major NCDs. This includes widespread utilization of anti-hypertensive, lipid-lowering, and glucose-controlling pharmaceuticals in primary and secondary prevention, systematic improvement in acute care for myocardial infarction and stroke through specialized units and revascularization procedures, and population-based screening programs for cancers such as cervical, breast, and colorectal malignancies. At the policy level, multi-faceted regulatory and fiscal instruments—such as tobacco taxation, marketing restrictions, and alcohol control policies—have effectively reduced exposure to key behavioral risk factors, while environmental and occupational regulations have mitigated harmful pollutant exposure. Furthermore, health-system strengthening has played a foundational role, with countries expanding universal health coverage, reinforcing primary care capacity, establishing specialized treatment centers, and implementing digital health information systems to support continuity of care and monitoring. This integrated approach, when synergized with broader socioeconomic progress—including improved nutrition, sanitation, and education—constitutes a comprehensive paradigm for reducing the burden of NCDs. Continued success will depend on the rigorous implementation, adaptation, and equitable scaling of these strategies across diverse national contexts. Meanwhile, research to precisely quantify the relative and context-specific contributions of clinical, policy, and health-system interventions will be crucial for prioritizing the most effective elements within integrated strategies.

While the aforementioned measures have contributed to reducing the NCD burden, the recent slowdown—and in some contexts, reversal—of this positive trend warrants critical examination. This deceleration may be attributed

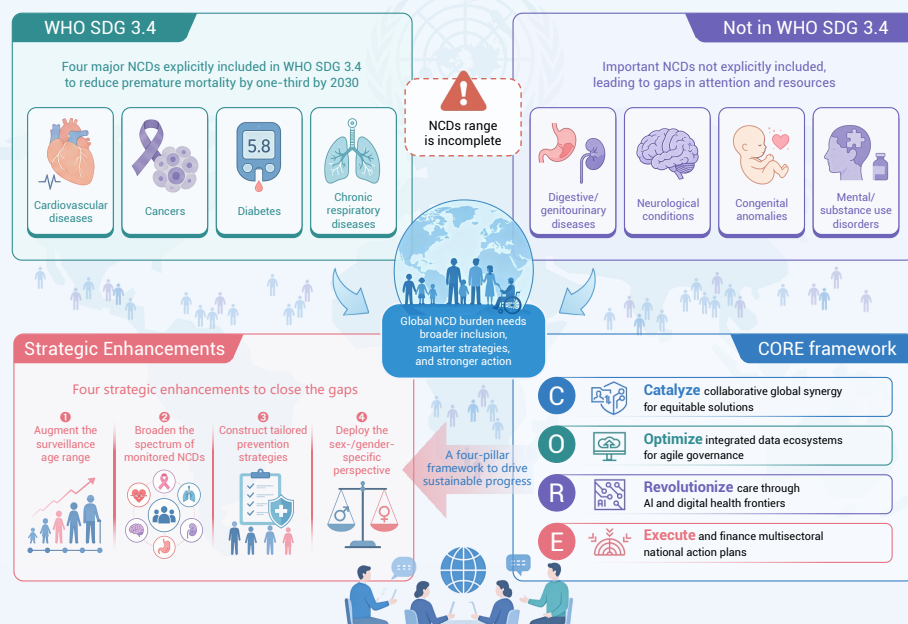


Figure 1. Overview of Non-Communicable Diseases (NCDs) classification, current monitoring frameworks, and proposed strategic enhancements.

Multisectoral National Action Plans: Lasting impact necessitates committed cross-sectoral execution backed by dedicated financing. Evidence from comprehensive tobacco control demonstrates that policies engaging finance, trade, and education sectors are most effective. However, multisectoral national action plans often remain unimplemented without secured budgetary commitments. Therefore, success hinges on operationalizing a "health-in-all-policies" mandate with specific financing mechanisms—such as earmarked taxes or intersectoral budgetary allocations—to ensure plans translate from paper into sustained action across all relevant government departments. The CORE framework proposes a consolidated, evidence-informed pathway to reinvigorate the global NCD agenda. By strengthening Collaborative partnerships, Optimizing data systems,

to a persistent implementation gap. This gap is characterized by slower-than-anticipated policy rollout—exacerbated in many countries by the profound diversion of health system resources and political attention during the COVID-19 pandemic—a pre-existing focus on quantitative coverage at the expense of intervention quality and fidelity, and insufficient agility in updating policies to counter evolving tactics by industries of unhealthy commodity, such as tobacco. In the contemporary era, defined by health globalization and rapid advancements in digital and intelligent technologies, a strategic shift towards more integrated, adaptive, and resilient health systems is imperative.

To address these challenges, we propose the "CORE" framework to reinvigorate global and national NCD prevention and control efforts. (C) Catalyzing Collaborative Global Synergy for Equitable Solutions: Future progress requires moving beyond unidirectional knowledge transfer toward dynamic, equitable partnerships between high- and low-resource settings. Evidence from the adaptation of the WHO PEN package (Package of Essential Noncommunicable Disease Interventions for Primary Health Care) demonstrates that interventions succeed when global technical expertise is systematically integrated with local implementation intelligence and contextual knowledge from LMICs. Such synergy is critical for co-designing scalable models, such as task-shifting programs for hypertension management, which effectively address both biological risk and local health system constraints. (O) Optimizing Integrated Data Ecosystems for Agile Governance: The transition from fragmented, periodic data collection to cohesive, real-time national data ecosystems is fundamental for precision public health. Evidence from countries with advanced health information systems shows that integrated data on epidemiology, risk factors, and care cascades enables accurate subnational burden estimation—as utilized in the Global Burden of Disease collaborations—and facilitates agile policy responses. Such ecosystems create a vital feedback loop, allowing for the continuous monitoring and iterative improvement of intervention programs, thereby transforming data into actionable intelligence. (R) Revolutionizing Care through AI and Digital Health Frontiers: The digital health pillar must be grounded in the most transformative technological advancements. Evidence from the cutting edge of AI in medicine, as outlined in recent analyses,⁵ points to a paradigm shift. Beyond telemedicine, specific applications such as AI-powered predictive analytics for individual risk stratification, algorithm-assisted diagnostics in radiology and pathology, and personalized treatment recommendation engines are poised to revolutionize NCD care. Deploying these tools can democratize access to high-quality, personalized prevention and management, particularly in resource-limited settings. (E) Executing and Financing

Revolutionizing care with technology, and ensuring the Execution of financed multisectoral plans, the global community can address current implementation gaps and build a more resilient and effective architecture for reducing the burden of NCDs.

In conclusion, while the global fight against NCDs has yielded measurable progress, the recent deceleration in mortality reduction signals a critical inflection point. The path forward demands a decisive departure from a one-size-fits-all paradigm. By embracing expanded surveillance frameworks, implementing precision public health strategies tailored to regional and demographic contexts, strengthening health systems through data and technology, and fostering synergistic global cooperation, we can reinvigorate efforts toward achieving global NCD control targets.

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AUTHOR CONTRIBUTIONS

All authors contributed to and approved the manuscript.

DECLARATION OF INTERESTS

The authors declare no competing interests.