

# Unveiling the Significance and Challenges of Integrating Prevention Levels in Healthcare Practice

Journal of Primary Care & Community Health  
Volume 14: 1–6  
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DOI: 10.1177/21501319231186500  
journals.sagepub.com/home/jpc



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## Abstract

In recent years, there has been a global increase in human life expectancy, but preventable morbidity and mortality remain significant concerns. To address these issues, preventive healthcare practice has gained importance in various healthcare disciplines. Its goal is to maintain and promote health, reduce risk factors, diagnose illnesses early, and prevent complications. This approach encompasses different stages of disease progression, including primordial prevention, primary prevention, secondary prevention, tertiary prevention, and quaternary prevention. Primordial prevention focuses on addressing root causes and social determinants of diseases to prevent the emergence and development of risk factors. Primary prevention aims to prevent diseases before they occur by implementing interventions such as vaccinations and health education. Secondary prevention focuses on early detection and prompt intervention to prevent the progression of diseases. Tertiary prevention manages the consequences of diseases by restoring health and providing rehabilitation. Lastly, quaternary prevention aims to protect patients from unnecessary medical interventions and harm caused by excessive medicalization. Despite the recognition of the cost-effectiveness of preventive measures, a significant portion of healthcare resources and attention is still allocated to disease management, and only a small percentage of individuals receive all recommended preventive services. Healthcare providers need to prioritize the implementation of preventive care services, even when clinical interventions are necessary, and overcome barriers to preventive care. By investing in preventive care and implementing these strategies, healthcare practitioners can play a crucial role in disease prevention and contribute to the well-being of individuals, families, communities, and countries.

## Keywords

prevention, healthcare, clinical, quaternary, promotion

Dates received: 12 June 2023; revised: 18 June 2023; accepted: 20 June 2023.

## Introduction

Despite a tremendous increase in global life expectancy in recent years, millions of preventable morbidity and mortality have been recorded each year. Both acute (communicable, together with maternal, perinatal, and nutritional problems), and chronic (non-communicable diseases, along with injuries), contribute to the loss of life or reduced life expectancy among those affected.<sup>1,2</sup> All of these diseases and health issues, or at least their precipitating factors or sequels, are preventable. Chronic non-communicable diseases, such as cerebrovascular disease, cardiovascular disease, diabetes, cancer, chronic respiratory disease, and unintentional accidents are the leading preventable causes of death. These diseases are predominantly influenced by individuals' lifestyles and behaviors, and their negative

consequences are strongly managed by prevention.<sup>3</sup> Furthermore, individuals who suffer from mental illness, 1 in every 8 people in the world, experience significantly elevated rates of preventable morbidity and mortality, leading to a reduced life expectancy of up to 30 years when compared to those without such illnesses.<sup>4</sup>

Preventive healthcare practice focuses on preserving and enhancing health, mitigating risk factors that contribute to injury and disease, and encompassing a continuum of care

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beyond individual physician visits.<sup>5</sup> And, in response to the alarming number of preventable illnesses and fatalities, healthcare providers across diverse healthcare disciplines prioritize promoting health and preventing disease or adverse health events at every stage of their continuum, including risk factors, susceptibility, subclinical, clinical, and recovery/disability stages.<sup>6</sup> This approach transcends individual, familial, community, and national contexts. The adoption of preventive services has been associated with lower rates of illness and mortality, specifically in areas such as cancer, chronic diseases, immunizations against infectious diseases, mental health, substance abuse, vision, and oral health.<sup>3,7</sup>

Consequently, the healthcare sector is undergoing a noteworthy shift toward prioritizing prevention not only in population-based (public health prevention) activities but even in individual-based (clinical prevention) care. Preventive services are now highly valuable, not only at the population level where their significance is apparent, but also at the clinical and individual levels. Providers acknowledge the potential of preventive care in reducing the incidence and impact of both acute and chronic diseases but often prioritize other aspects of care.<sup>8,9</sup>

Furthermore, esteemed organizations that represent diverse clinical health professions acknowledge the essential role of preventive services as integral elements of clinical care. Consequently, initiatives have been undertaken to integrate clinical prevention and population health activities and services into educational curricula, accreditation processes, and training programs, thus influencing the practice of clinical professionals.<sup>5,9</sup>

## The Standard Levels of Prevention

Preventive activities over the last 50 years have been classified into 3 main classes: primary, secondary, and tertiary. The focus of primary prevention activities is to prevent the onset of diseases or adverse events before they occur.<sup>5</sup> These activities can be categorized into 2 main components and depend largely on healthy lifestyles and are best recognized when applied on a population level. The first component of primary prevention entails health promotion activities (such as health education, promotion of a healthy diet, encouragement of physical activity, etc.) that aim to enhance the overall health and well-being of the general population.<sup>6</sup> The second component involves specific protection measures (such as vaccination, utilization of iron-fortified food, administration of prophylactic medications, utilization of personal protective equipment, etc.) which target particular diseases or health events to prevent their occurrence within specific areas or populations.<sup>5,10</sup>

Secondary prevention aims to detect a disease or condition in an asymptomatic stage and prevent progression to symptomatic disease. Early diagnosis and prompt treatment preserve health, as most diseases diagnosed early can be

cured without residual pathologies, and patients can return to full health rapidly. This level of prevention also aims to prevent the spread of disease to other individuals and limit the expected disability to prevent potential future inactivity and dependence.<sup>5,11</sup>

Screening for diseases within a population or conducting periodic health examinations at an individual level exemplifies secondary prevention. Within this context, cancer treatment serves as a prominent and distinctive example. Early detection in cancer presents notable benefits as it enables timely intervention, expands treatment possibilities, enhances survival rates, reduces treatment intensity and costs, improves quality of life, facilitates personalized care, and increases the likelihood of a cure. These advantages underscore the significance of regular screenings, awareness of cancer symptoms, and prompt medical attention for any signs or symptoms of concern in clinical healthcare practice.<sup>11,12</sup>

Tertiary prevention aims to modify the adverse consequences of an already established clinical disease and restore function through mental, physical, and social restoration and rehabilitation. This level of prevention improves the quality of life by reducing disability, limiting or delaying complications, and restoring function. The following are some examples of tertiary prevention<sup>5</sup>:

- 1) Disease Management Activities: Disease management activities of chronic conditions such as hypertension, diabetes, asthma, or heart disease are best examples. These actions, include lifestyle changes, medication management, and regular check-ups, are carried out through the provision of education, self-care practices, and regular monitoring in order to assist persons in properly controlling their condition and avoiding future consequences.
- 2) Rehabilitation activities: Rehabilitation interventions play a crucial role in supporting individuals who have experienced a stroke or a significant injury, aiding them in regaining lost functions and skills. These interventions may encompass physical therapy to restore mobility, occupational therapy to regain independence in daily activities, and speech therapy to enhance communication abilities.
- 3) Pain Management: Pain management strategies constitute tertiary prevention measures for individuals coping with chronic pain conditions like arthritis or cancer. The primary goal of comprehensive pain management approaches is to alleviate pain and enhance the overall quality of life for those affected.<sup>11,13</sup>

## The Additional Levels of Prevention

In recent times, the concept of prevention has evolved to encompass 2 additional levels known as primordial

prevention and quaternary prevention, distinct from the traditional primary, secondary, and tertiary levels.<sup>5</sup>

Primordial prevention focuses on addressing the root causes and social determinants of disease to prevent the emergence and development of risk factors, in a group of the population, in the first place. It is based on “as early as possible” intervention to create healthy environments, promote health equity, and foster policies that support health and well-being. The following are some examples of primordial prevention:

- 1) **Promoting Healthy Lifestyles:** Deploying public health initiatives and educational campaigns that promote the adoption of health-conscious behaviors, including regular physical activity, a balanced diet, and tobacco cessation. The objective is to prevent the emergence of risk factors associated with chronic conditions such as obesity, atherosclerosis, and low immune response.
- 2) **Socioeconomic Interventions:** Addressing social determinants of health such as poverty, income inequality, and lack of access to education. Implementing policies and interventions that aim to reduce socioeconomic disparities and provide equal opportunities for all individuals, which can have a profound impact on overall health and well-being.
- 3) **School-Based Health activities:** Implementing comprehensive health education programs in schools that promote healthy behaviors, emotional well-being, and provide access to healthcare services. These programs can help instill lifelong healthy habits and empower students to make informed decisions about their health.<sup>11,14,15</sup>

The last, yet not least, level of prevention is referred to as “quaternary prevention,” which targets the iatrogenic disease or diseases that occur in medical interference. It aims to safeguarding patients from unnecessary or excessive medical interventions, and the harm caused by over medicalization as in patients with chronic conditions or medically unexplained symptoms. The scope of quaternary prevention would be more obvious with following examples<sup>16</sup>:

- 1) **Avoiding over diagnosis:** Healthcare providers exercise caution in evaluating the potential risks and benefits of diagnostic tests to prevent deviation in diagnoses (false positive and false negative). This approach safeguards patients from the physical, psychological, and financial burdens associated with unwarranted medical interventions.
- 2) **Minimizing Unnecessary Treatments:** Quaternary prevention emphasizes the importance of minimizing excessive or unnecessary treatments that offer limited or no benefits to patients. This involves avoiding aggressive interventions, surgeries, or medications

when their efficacy is questionable or when the potential harm outweighs potential benefits.

- 3) **Empowering Patient Education:** Providing patients with accurate and unbiased information about their health conditions, available treatment options, and potential risks enables them to make informed decisions. Patient education empowers individuals to actively engage in their healthcare choices, reducing the likelihood of unnecessary or inappropriate interventions.
- 4) **Ensuring Continuity of Care:** Maintaining continuity of care and regular follow-up appointments can help prevent avoidable hospitalizations, emergency department visits, and interventions. Consistent monitoring and management of chronic conditions play a vital role in preventing unnecessary treatment escalations and promoting patient-centered care.
- 5) **Adhering to Ethical Guidelines:** Developing and adhering to ethical guidelines assists healthcare professionals in navigating complex situations and making decisions that prioritize patients’ well-being. These guidelines provide a framework for assessing the appropriateness of interventions, particularly in cases where potential harm outweighs potential benefits.<sup>16-18</sup>

### **Current Application of Preventive Measures in Healthcare Practice**

Although there is a global recognition of the cost-effectiveness of preventive measures in healthcare practice, a substantial allocation of healthcare resources and attention is still directed toward disease management and only a small percentage of individuals receive all the recommended preventive services.<sup>19,20</sup> The prevailing approach to managing patients’ illnesses revolves around addressing their immediate health concerns, with a primary emphasis on finding cures. However, as the limitations of curative medicine become more evident, there is a growing recognition of the importance of disease prevention. Healthcare systems worldwide are experiencing increasing pressures that lead to suboptimal performance and disparities in care. These pressures include a growing burden of chronic diseases, escalating healthcare costs, and the complexities of healthcare delivery.<sup>17,21</sup>

It is crucial to investigate the factors that hinder the consistent delivery of a comprehensive healthcare system. In industrialized countries, integrating preventative levels into healthcare practice faces unique hurdles due to prominent health issues. Age-related care and non-communicable diseases such as cardiovascular disease, diabetes, and cancer are major health burdens in these countries. Preventive approaches, such as regular screenings, health education, and lifestyle changes, are critical to lowering the prevalence and effect of these diseases.<sup>20</sup>

In addition to the health problems mentioned earlier, developed countries also face the challenge of cross-border migration, including refugees and economic migrants, as a burden on their healthcare systems. Migration, both voluntary and forced, can put significant strain on healthcare resources and preventive healthcare services in destination countries. These individuals often arrive with unique health needs, including infectious diseases, mental health conditions, and chronic illnesses.<sup>22</sup> Though, barriers to integrate prevention to healthcare access may occur as a result of factors such as insufficient public health infrastructure, restricted healthcare resources, or discrepancies in healthcare access. Despite these obstacles, industrialized countries frequently have well-established healthcare systems and larger financial resources, allowing them to devote resources to preventative measures.<sup>23</sup>

In contrast, developing countries, characterized by limited healthcare infrastructure, inadequate financial resources, and resource constraints, face a distinct array of challenges when it comes to preventive healthcare due to their specific health landscape. These nations often grapple with a high prevalence of communicable diseases like tuberculosis, malaria, HIV/AIDS, neglected tropical diseases, and inadequate access to proper sanitation and hygiene facilities. The emphasis in these countries is frequently on acute treatment and resolving immediate health concerns, making allocating resources and prioritizing preventive healthcare services more difficult.<sup>13,15</sup>

Despite differences, both developed and underdeveloped countries encounter similar barriers, including social disparities such as wealth inequality, limited education, and unequal access to healthcare. Socioeconomic challenges hinder marginalized communities in affluent countries from accessing preventive care. Addressing these discrepancies and ensuring equitable access to prevention programs are vital for improving global healthcare outcomes, highlighting the complexity and diversity of preventive care services worldwide.<sup>16,23</sup>

Additionally, numerous studies have identified further reasons and obstacles contributing to the low utilization of preventive services on a global scale. These include:

- 1) Time Constraints and Workload: Healthcare providers often face time constraints and heavy workloads, which may limit their ability to prioritize preventive care within limited appointment times.
- 2) Resistance to change, skepticism about the effectiveness of preventive interventions, and competing priorities may hinder the integration of preventive practices into routine healthcare.
- 3) Limited awareness and knowledge about the importance of preventive measures among healthcare providers can hinder their adoption.<sup>18,22</sup>

- 4) The prevention paradox, as proposed by Geoffrey Rose, refers to the phenomenon where preventive measures that offer significant health benefits at a population level may yield fewer benefits when applied to individuals. This paradox arises due to the variation between individuals and populations in terms of risk factors and health outcomes. While targeting high-risk individuals can be effective, the majority of cases often arise from individuals with lower exposure to risk factors.<sup>23</sup>

Healthcare industry experts highlighted that stakeholders within the healthcare system are generally aware of recommended preventive care services and recognize the advantages of disease prevention for both patients and the broader healthcare system. However, the underutilization of preventive services is primarily attributed to the above barriers in implementation rather than a lack of information.<sup>20</sup>

To effectively address these barriers, a comprehensive and collaborative approach is necessary. This approach entails multiple strategies, including raising awareness, improving access to preventive services, enhancing care coordination, and fostering a shift in attitudes and beliefs among healthcare providers and patients. Every healthcare profession has a distinct role to play in the realm of clinical prevention and population health. Analyzing the contributions of various health professions reveals several overarching themes. Policymakers, healthcare organizations, and communities must work together to overcome these barriers and prioritize the integration of preventive measures in healthcare practice.<sup>5,21</sup>

In addition, it is crucial to implement preventive care services comprehensively, involving teamwork across medical specialties, even when pure clinical intervention is required. However, it is important to note that upstream approaches, such as primordial and primary prevention, are often more cost-effective and efficient. These preventive measures have the potential to significantly reduce morbidity, disability, and mortality rates, making them essential components of healthcare practice.<sup>7,19</sup>

### **Allocating Resources Toward Preventive Healthcare Services**

Various studies have demonstrated the importance of investing in preventive measures, highlighting their cost-effectiveness and long-term savings in healthcare expenditures. By focusing resources on screenings, vaccinations, and health counseling, both individuals and healthcare systems can proactively identify and address health risks, preventing the progression of conditions to more severe states.<sup>15,20,22</sup> This proactive approach not only leads to improved health outcomes but also reduces the incidence



of diseases and enhances overall well-being. Moreover, prioritizing prevention plays a crucial role in elevating the quality of life by preventing illnesses, reducing disability rates, and promoting better overall health for individuals. Beyond the individual level, implementing preventive services on a larger scale, at the population level, yields enhanced population health outcomes by effectively targeting underlying risk factors and alleviating the burden of diseases. Collectively, these findings highlight the substantial significance of preventive services, not only in terms of cost savings but also in enhancing the health of individuals and populations alike. Incorporating preventive measures into healthcare strategies is pivotal in maximizing the value of healthcare.<sup>24,25</sup>

Significant advancements have been achieved in the realm of clinical prevention over the past 5 decades. Clinical prevention encompasses various components, including screening tests, counseling interventions, immunizations, and the utilization of chemoprophylaxis—the administration of drugs or biologics to asymptomatic individuals to lower their risk of developing a disease. Notably, remarkable progress has been observed in the reduction of mortality caused by coronary heart disease, with a decline of approximately 50%. A substantial portion of this decline can be attributed to preventive interventions such as the reduction of cigarette smoking and the identification and treatment of hyperlipidemia. Furthermore, the widespread implementation of mass vaccination programs has resulted in extraordinary success stories, with morbidity and mortality reductions of over 90% in diseases such as measles, mumps, rubella, smallpox, pertussis, tetanus, and *Haemophilus influenzae* type b.<sup>26,27</sup>

## Conclusion

Preventive healthcare practice involves the holistic approach of maintaining and promoting health, minimizing risk factors, and extending, along the health continuum, beyond individual healthcare visits. It encompasses efforts at every stage of disease or health event from susceptibility to recovery, regardless of individuals, families, communities, or countries. The preventive healthcare measures have been categorized into corresponding stages to specifically target the prevention of these phases. These preventive stages, namely primordial prevention, primary prevention, secondary prevention, tertiary prevention, and quaternary prevention, collectively strive not only to avert the adverse consequences of diseases or health events but also to mitigate the complications associated with medical interventions required to restore health. Acknowledging the gap in the application of preventive healthcare services and investing in their implementation is vital. The evidence consistently highlights the cost-effectiveness of preventive interventions and the long-term savings they can generate.

## Author Contribution

Only 1 author.

## Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author received no financial support for the research, authorship, and/or publication of this article.

## Ethical Approval

There is no ethical issue.

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