Prevention of Rheumatic Diseases

Strategies, Caveats, and Future Directions

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KEYWORDS

• Prevention • Rheumatic diseases • Prediction

KEY POINTS

- A growing understanding of a preclinical period of many rheumatic diseases suggests that they could be approached in a preventive fashion.
- Prevention of rheumatic diseases may be through primary prevention of initial autoimmunity or tissue injury, or through secondary prevention to halt progression of autoimmunity and/or tissue injury while subjects are still in an asymptomatic or minimally symptomatic phase.
- Prevention may be approached through combinations of risk-factor modification, induction of tolerance, or pharmacologic interventions.
- Additional research is needed to identify effective biological targets and methods for prevention of rheumatic diseases, as well as to learn how to apply effective screening and prevention strategies that are able to improve public health in a cost-effective fashion.

INTRODUCTION

Across the multiple fields of medicine there is increasing interest in preventive approaches to disease. To help guide preventive approaches to disease, in the 1960s, the World Health Organization (WHO) put forward recommendations for disease screening and prevention, as listed in **Box 1**.[1] Overall, these recommendations suggest that diseases targeted for screening and prevention should have an important impact on health, an identifiable asymptomatic (or minimally symptomatic) period

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Box 1
WHO recommendations regarding screening and prevention for a disease

- The disease should represent an important health problem
- A treatment should be available for the disease
- Facilities for diagnosis and treatment of the disorder should be available
- A latent (preclinical) stage of the disease should be detectable
- A test or examination for the condition should exist
- The screening test should be acceptable to the general population
- The natural history of the disease should be adequately understood
- An agreed policy on whom to treat is required
- The total cost of identifying a case among the population should be economically balanced in relation to medical expenditure as a whole
- Case finding should be a continuous process, necessitating regular repeat testing, and not just a once-and-for-all project

Adapted from Wilson JMG, Jungner G. Principles and practice of screening for disease. WHO Public Health Papers 1968;34:1–163.

during which individuals at high risk for future disease can accurately be identified, and that there be available an effective means for preventing the further evolution of disease. Screening and prevention approaches that follow these guidelines are in action for many diseases. For example, across the globe there is considerable effort put into to screening and preventing adverse outcomes from cardiovascular disease and many types of cancer, as well as programs to prevent many infectious diseases.

Although most rheumatologists agree that rheumatic diseases are important health problems and meet several of the other WHO criteria for screening, many key questions regarding prevention of rheumatic diseases are still unanswered. However, given the growing understanding of the causes of rheumatic disease, and, as discussed herein, a growing awareness that many rheumatic diseases have a period of largely asymptomatic disease development during which there are abnormalities of biomarkers that can be used to predict future risk for disease,[2] there is hope that rheumatic diseases may join the list of preventable diseases.

This article discusses some general principles of disease prevention applicable to rheumatic disease, and outlines a potential research strategy for the development of effective preventive strategies that will be able to reduce the adverse impact of these diseases.

GENERAL STRATEGIES FOR DISEASE PREVENTION

Prevention strategies are typically categorized into primary, secondary, or tertiary interventions (**Fig. 1**).[3,4] The aim of primary prevention is to avoid the development of disease by eliminating specific risk factors or increasing an individual's resistance to the condition. An example of this type of approach is vaccines against infections. The aim of secondary prevention is to reduce the progression from a latent or asymptomatic phase of disease to symptomatic disease. Thus a secondary preventive intervention attempts to interrupt the mechanisms of disease development before they evolve into an apparent illness. Examples of this type of approach include early identification of cancers through programs such as mammograms and colonoscopies.