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CARDIOVASCULAR DISEASE PREVENTION LEVELS

NÍVEIS DE PREVENÇÃO CARDIOVASCULAR

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ABSTRACT

Clinical Epidemiology is the field of knowledge that studies the best care practices, focusing on the patient's interest in sharing decisions with physicians and other health professionals who provide treatment or health care. It employs the same methodology used by traditional epidemiology to qualify and develop research applied to clinical practice. Vaccination against yellow fever clearly shows the difference between the interests of clinical epidemiology and those of traditional epidemiology. Population strategy can produce many benefits for society as a whole, which generally involves a lower risk, to the detriment of a much smaller group of high-risk individuals. Preventive care patterns change according to temporal evolution. In addition to primordial, primary, secondary and tertiary prevention, this text also discusses quaternary prevention through actions aimed at avoiding the damage associated with the excessive use of diagnostic and therapeutic procedures. The dialogue on health is a counterpoint between scientific knowledge and common knowledge. Information produced from the prior knowledge of the individual and the community must respect their values, as exemplified by work carried out in elementary schools.

Keywords: Preventive Health Services; Practice Patterns, Physicians; Epidemiology.

RESUMO

Epidemiologia clínica é o campo de conhecimento que estuda as melhores práticas assistenciais, com foco nos interesses do paciente de compartilhar as decisões com os médicos e demais profissionais de saúde que realizam o atendimento ou prestam cuidados. Vale-se da mesma metodologia usada pela epidemiologia tradicional para qualificar e desenvolver a pesquisa aplicada à prática clínica. A vacinação contra a febre amarela, mostra bem a diferença entre os interesses da epidemiologia clínica e os da epidemiologia tradicional. A estratégia populacional pode trazer muitos benefícios para a coletividade que, no geral, apresenta baixo risco e muitos malefícios para um grupo muito menor de indivíduos de alto risco. Os padrões de ações preventivas modificam-se de acordo com a evolução no tempo. Além da prevenção primordial, primária, secundária e terciária este texto discute a prevenção quaternária por meio de ações que visam evitar os danos associados ao uso excessivo de procedimentos diagnósticos e terapêuticos. O diálogo sobre saúde é um contraponto entre o saber científico e o saber popular, a informação dada a partir do conhecimento prévio do indivíduo e da comunidade deve respeitar seus valores, como exemplificado por trabalhos realizados em escolas de ensino fundamental.

Descritores: *Serviços Preventivos de Saúde; Padrões de Prática Médica; Epidemiologia*.

Clinical epidemiology is the field of study dedicated to best healthcare practices and their orientation with a focus on individual interests. Its means of action apply to doctors and healthcare professionals who practice or provide care. Unlike epidemiology, which traditionally implements instruments, strategies, and analyses for public health, clinical epidemiology, as a branch of knowledge and academic discipline, draws on the same methodology adopted by the related traditional field to qualify and develop research for application to clinical practice and care provided directly to patients.[1]

Findings from observational and experimental studies, statistical tools, information technology, and bench research serve to establish and standardize procedures in both areas. However, clinical epidemiology focuses on individual care provided by healthcare professionals, which differs from the focus of traditional epidemiology on serving healthcare managers and specialists who set policies regarding public health.

The repercussion of this distinction may signify opposing results between benefits and damages that might have considerable impact on the survival of people living in certain communities. It is somewhat like the principle of "the difference between medicine and poison is in the dose," and, to complicate matters further, it may be in the individual who uses it. The yellow fever vaccine, a topic that arouses immense interest in

society in general due to its high mortality, is a good example for understanding the differences between the interests of clinical epidemiology and those of traditional epidemiology. On the one hand, vaccination is mandatory and unquestionable in the field of public health. However, in the individual conduct of clinical practice, it is contraindicated for certain groups of individuals in whom the vaccine's harmful effects outweigh the expected benefits. Similar to the "prevention paradox,"[2] population strategies might offer many benefits to the general public, which is generally at low risk, and harmful effects to a much smaller group of individuals at high risk.

The development of clinical epidemiology in the 1990s is due to the vast expansion of the Internet, the variability of clinical practices, the absence of substantial differences in clinically significant results, the exponential growth of knowledge, the volume of scientific publications, and the qualitative heterogeneity of publications. These factors contributed to increasing health care expenses, which have a corresponding increasing impact on the financial balance of healthcare systems. In the last 25 years, centers around the world have provided critical contributions to clinical practice and the management and development of health policies.[3] The "Oxford Centre for Evidence-Based Medicine" website[4] and corresponding "Email Discussion Lists[5], with nearly 1500 participants, provide information related to the critical evaluation of research quality and tools for the automatic calculation of risk measures, the necessary number required for treatment, sensitivity, specificity, and predictive value. Similarly, the "Interactive Statistical Pages"[6] website provides access to hundreds of schedules needed to perform specific calculations or analyses, which facilitate their use by those interested in clinical research regardless of their formal knowledge of statistics. Volunteers worldwide connected through the web to develop and maintain the site, which is free to access. In addition to the analysis tools, the website includes explanatory content, examples, tutorials, and conceptual information.

Diagnosis and treatment often pose new challenges to professionals, no matter their level of experience. The decision-making process requires conceptual knowledge that must be constantly updated, as well as the development of specialized techniques and practices and human relations skills to provide healing, rehabilitation, palliative measures, and preventive actions.

"Preventive Healthcare Actions" studies the determining factors of the health-disease process and provides information to support public and individual health measures. These actions aim to prevent, control, or eradicate diseases.[7]

Preventive action patterns change over time in the continuum between birth and death. In healthcare, two preventive categories concern the population, while three categories concern the individual in a sequence determined by the presence of risk factors for a disease, the disease, its complications, and iatrogenesis resulting from the excessive and inappropriate use of diagnostic and therapeutic procedures (Table 1).

Primordial prevention is the set of activities intended to prevent the emergence of social, economic, and cultural patterns associated with an increased risk of becoming ill.

Primary prevention is the set of actions aimed toward preventing disease in the population and removing its causal factors. Its purpose is to promote health or to specifically protect population groups.

Secondary prevention is the set of actions which sets out to identify and correct deviations from normality as early as possible to maintain individual health. Early diagnosis is used to anticipate therapeutic measures.

Tertiary prevention is the set of actions that attempts to reduce damage and disability arising from the disease and to reintegrate the individual into society. It makes use of clinical, surgical, and rehabilitation treatments.

Quaternary prevention is the set of orientation and management actions intended to prevent damage associated with the inappropriate, unnecessary, or excessive use of diagnostic, medication, or surgical procedures. Although the overuse of resources has been reported mainly in high-income countries, low- and middle-income countries are not immune. Evidence suggests the presence of overuse where excess coexists with unattended health needs in countries such as Australia, Iran, Israel, Spain, and Brazil.[8] A Brazilian study reported a rate of inappropriate coronary catheterization of nearly 20%.[9] Another study showed that one in five patients with advanced cancer in Brazil use unnecessary medication, usually statins.[10]

There is limited evidence to support the effectiveness of campaigns to reduce requests for unnecessary exams, treatments, or other procedures. The "Choosing Wisely" campaign in the US achieved only modest success. Of seven interventions in the first list published in 2012, only two had

Table 1. Preventive action strategies based on risk exposure and natural history of the disease.

Type of prevention	Preventive action	Field of action	Opportunity	Objetivo	Examples of procedures/ interventions
Primordial	Health promotion	Community/ Public Health	General population with less exposure to risks	Prevent exposure to risk factors	Social demographic census/ Health education
Primary	Specific protection	Community/ Public Health	General population with variable exposure to risks	Protection from biological, environmental risk / Promote healthy lifestyle	Population health databases/ Vaccination
Secondary	Early treatment	Public Health/ Individual	Asymptomatic individual with relevant exposure to risks	Prevent cardiovascular diseases, other chronic degenerative diseases	Tracking/Removing risk factors
Tertiary	Healthcare assistance	Clinical/ Individual	Individual with symptomatic disease in progressive phase	Control disease progression and prevent complications	Healthcare assistance database/More complex treatment
Quaternary	Healthcare assistance	Clinical/ Individual	Individual with adverse diagnostic or therapeutic event	Control excessive or inappropriate procedures	Healthcare assistance management and pharmacovigilance

significant reduction in use: imaging testing for cephalgia and cardiac imaging testing in patients without a history or typical symptoms of coronary ischemia.[11] These results suggest that the term "overuse" must be redefined to include medical procedures that either do not provide benefits or that have risks that outweigh their benefits, in addition to the high healthcare costs associated with them.[12]

One of the initiatives for transforming healthcare in the United States in 2011 was to partner with national priorities to eliminate the excessive use of procedures and ensure more appropriate care. Coronary circulation procedures, including myocardial revascularization surgery and percutaneous coronary intervention, were among the top priorities. The adoption of clinical guidelines failed to establish more rational patterns of use. Simultaneous data collection tools to support real-time clinical decision-making may be more useful, along with financial incentives such as performance-based pay plans.[13]

Criticism regarding the use of evidence-based tools to improve the dialogue between patients and healthcare professional begs the question: How many physicians and patients use the 23-page statin choice decision aid intended to reduce the risk of heart disease or stroke? Before recommending these tools, they need to be assessed in actual clinical settings.[14]

Health education, which permeates the five different types of prevention, seeks to reduce diseases. Its priority is to minimize damage arising from illness. Moreover, it provides individuals with the opportunity to reflect on what is best for their health and to make choices based on their judgment, values, and preferences.[15] Well-conducted educational action facilitates the incorporation of health technologies. Tools that support a shared decision with the patient can change the cultural value of health, not only through individual engagement but also through their increased autonomy and responsibility for their own health. According to Lalonde[16], the main causes of diseases affecting the population as a whole include lifestyle factors (53% of the population), biological factors (17%), environmental factors (20%), restricted or excessive access to healthcare procedures (10%).

InCor's Clinical Epidemiology Team, in partnership with the Regional Board of Education, conducted an epidemiological survey through random sampling of classrooms in 29 state, municipal, and private schools in the Central and Central-West Region of the Municipality of Sao Paulo. In this survey, six cardiovascular risk factors were associated with the lifestyles of 2,393 students corresponding to 1.83% of all students enrolled in this region's schools between 1999 and 2001. Cigarette experimentation presented a respective prevalence of 12%, 19%, 24%, and 46% in the fifth, sixth, seventh, and eighth years of primary school. The mean age for cigarette experimentation was 11.6 ± 1.9 years. The increases in the numbers of adolescents who tried cigarettes suggests the opportunity for primordial preventive actions with more effective and penetrating interventions at around 10 years of age.[17]

Health dialogue is a counterpoint between scientific and common knowledge. Information based on prior knowledge of the individual and the community should respect social imaginary, religion, myths, and cultural values. Personal autonomy in the control of one's health in the social context may strengthen or empower the decision-making process and changes in habits. To incorporate dialogue into the management of information to generate awareness is to recognize the population's life context in their community, reflect on possible outcomes, strengthen one's autonomy over their lifetime, share the process of change, and as a consequence, transform the cultural pattern.[18]

GIVING NEW MEANING TO KNOWLEDGE – PROMOTING HEALTH

In order to modify their habits, individuals must give new meaning to the values they have (usually tacitly) incorporated into their lives from an early age. They need to share information and acquire new knowledge which will lead them to make explicit and conscious decisions based on the preventive orientation they receive. The explicit process makes use of reflexive information and allows individuals to share decisions and multiply the culture of prevention with their peers and social environments. Therefore, with the support of their social context, individuals decide the best way to incorporate healthy habits into their lifestyles without giving up their beliefs, myths, and sociocultural values and creating the understanding that changing habits gives new meaning to knowledge and does not imply giving up culture. Rather, it implies incorporating new values.

In another study, our team carried out an educational intervention in primary schools. Health education practices are fundamental to the prevention of heart disease. The greatest challenge remains in promoting healthy behaviors that might reduce the risk factors of heart disease. The "Students Multiplying Healthy Lifestyles" program is based on studies wherein older students, trained as "multipliers," pass on educational content to their younger peers. These students influence individuals' cultural development and psychosocial growth, encourage each other to diversify their social relationships, and transform teaching-learning experiences. This intervention focused on physical activity, healthy eating, and the effects of cigarette and alcohol consumption on health. The professionals who were involved provided the concept, while the multiplying students created and executed ways to transmit it. The activities they created included games and interpretations in the form of live theater with dialogues, poems, and songs. The songs, whose lyrics were adapted from familiar melodies, gave students the opportunity to use humor to present the concept of healthy habits. The interaction and response from the students indicate that well-developed creativity is effective for reflection, dialogue, and discussion of habits and behaviors that present health risks.[19] We filmed the activities that the multiplying peers performed in the schools, and the videos are available on the PubMed website.[20] Video four illustrates the educational content created by the older students in their interaction with younger classmates, while video five contains a television report about InCor's project.

CONFLICTS OF INTEREST

The author declares that he has no conflicts of interest in this work.

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