

Epidemiological Surveillance System for Salt Fluoridation Programs in the Region of the Americas

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1. Purpose and Goal

Health surveillance is "the continuous collection, analysis and interpretation of data on individuals or groups to detect the occurrence of certain events and their putative causes for the purpose of control or intervention"¹. Progress toward the broad goal of reducing the heavy human and economic costs imposed on populations by preventable disease demands action on many fronts². The goal is to serve the community by a surveillance and epidemiology system that detects, monitors, and investigates conditions contributing to morbidity and mortality in the community and provides the necessary data for analysis appropriate to the development of prevention and control measures and research strategies. Epidemiological surveillance systems of salt fluoridation aim to determine public health actions that might be necessary prior to, during, and after program implementation. Progress toward preventing dental disease or reducing risks of occurrence of fluorosis can only be followed over a period of time when good baseline data exist and where such data are available in the future. Decisions for program modifications or regulatory actions are based on data relevant to these conditions and quality of the fluoridation process.

1.1 Essential elements

Organizational and administrative cores to coordinate and supervise the required work are essential in any surveillance system. The system requires adequate establishment and maintenance; perhaps the most important consideration for their establishment relates to why and how they will be

used³. Thus, clear objectives and selection of indicators are of utmost importance. The Pan American Health Organization (PAHO) provides technical assistance for the establishment of surveillance systems in each country participating in salt fluoridation programs. Preliminary activities focus on situation analysis of oral health programs, disease prevalence, dental health prevention and service policies for controlling disease. Further studies aim to collect data on level of existing technology, human and economic resources and institutions that may support a fluoridation program. These data are used as indicators to decide its feasibility, estimate its sustainability and to illustrate the program anticipated cost-benefit ratio over a period of time.

After a country decides to start salt fluoridation, PAHO⁴ provides assistance for developing program activities. A national commission on salt fluoridation is organized with representation of public and private sectors to act as advisory body and assist with the surveillance process. Surveillance can be passive or active. Passive surveillance refers to routine reporting of special health events (e.g., notifiable diseases) to authorities by health care institutions and practitioners, usually mandated by law⁵. A system for routine reporting of conditions pertinent to salt fluoridation is not mandatory, however, the commission may be helpful for reporting program irregularities on process quality and distribution network. Also, since the dental profession and other organizations are represented. The commission may assist on reporting secondary problems of concern such as occurrence of dental fluorosis, thus, exerting a passive surveillance.

Active surveillance is more resource-intensive but tends to be more complete. It involves reaching out to various sources to solicit information on a regular basis⁵. This is achieved by evaluation of biological indicators, laboratory tests or questionnaires.

1.2 Biologic and chemical monitoring

PAHO recommends the systematic recording of existing conditions in age-specific population groups via surveys, laboratory and questionnaires collected at standardized periods. Specific indicators are studied using two main systems of monitoring, biological and chemical. Biological monitoring determines both the occurrence of exposure and the uptake or presence of a substance in the organism. Having established baseline conditions of dental caries and fluorosis, oral examinations conducted in children at 7 (1st evaluation) and 14 years (long-term evaluation) after implementation of salt fluoridation serve as indicators of the clinical impact of Fluoride uptake. Total Fluoride exposure is monitored via urinary excretion studies in age-specific population groups. Chemical monitoring is a form of supplemental surveillance system that focus on the concentration of Fluoride in water for human consumption at baseline and periodically. It also focuses on quality control of both the salt fluoridation process and distribution network. Two levels of control are exercised: Internal, is conducted at the salt plant focusing on chemical compound characteristics and the production process, assuring the correct Fluoride concentration (currently, 200-250 mg F/Kg salt). Quality of the distribution network relates to controlling that fluoridated salt reaches only the communities targeted. Tests are conducted on samples obtained within the distribution network. Plant operators should be protected for unnecessary exposure to Fluoride. Urinary excretion tests are recommended at six months intervals. Government agencies exert external quality control overseeing occupational safety and analyzing salt samples at random. Results are shared with industry, and corrections recommended. In addition, government agencies prepare periodic reports, prepare and promote educational material on salt fluoridation and facilitate training and continued education on techniques and research findings to the salt industry and personnel in charge of the salt fluoridation program. A national registry of all processing plants is prepared and updated periodically. The PAHO also recommends conducting surveys on use of Fluoride supplements and fluoridated dentifrice by

children 3-5 years of age. Other elements of the surveillance system comprise the precise methodology to be followed for collecting, analyzing and interpreting the data generated, and the dissemination of useful information from these activities.

2. Summary

Epidemiological surveillance systems are essential for monitoring health status and risk factors, identify, evaluate resources and to advise policymakers and the public on a particular health program³. Surveillance activities for salt fluoridation recommended by the PAHO⁶ could be summarized as follows a) Survey on dental caries and fluorosis in children 6-8; 12 & 15 years (Feasibility, 1st evaluation & Long-term evaluation). b) Urinary Fluoride excretion: children 3-5 years (recommended initially, 7 and 14 years). c) Survey on use of Fluoride supplements and fluoridated dentifrice. Initially and periodic monitoring of products in the market. d) Water census and determination of Fluoride in water. Initially and periodic monitoring. e) Continuous quality control of salt fluoridation and distribution process.

An advisory board and individuals from participating countries provide input to the PAHO program. Guidelines are periodically updated as data from the participating countries and regional research findings indicate needs for changes. Regional workshops are held for disseminating information. The PAHO surveillance system for salt fluoridation in the region of the Americas has been designed to assist countries to fully achieve the benefits of a safe, efficient and inexpensive program for prevention of dental caries with minimum risk of occurrence of fluorosis.

References

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