

Chapter 15

Laboratory Information Management Systems: Role in Veterinary Activities

Patrizia Colangeli

*Istituto Zooprofilattico Sperimentale
dell'Abruzzo e del Molise "G. Caporale", Italy*

Francesca Cito

*Istituto Zooprofilattico Sperimentale
dell'Abruzzo e del Molise "G. Caporale", Italy*

Fabrizio De Massis

*Istituto Zooprofilattico Sperimentale
dell'Abruzzo e del Molise "G. Caporale", Italy*

Maria Teresa Mercante

*Istituto Zooprofilattico Sperimentale
dell'Abruzzo e del Molise "G. Caporale", Italy*

Lucilla Ricci

Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale", Italy

ABSTRACT

The Laboratory Information Management System (LIMS) is recognized as a powerful tool to improve laboratory data management and to report human health as well as veterinary public health. LIMS plays an essential role in public health surveillance, outbreak investigations, and pandemic preparedness. The chapter aims is to provide an overview of LIMS use in veterinary fields as well as to report 20 years of experience of a Veterinary Public Institute in working with LIMS, illustrating the features of the LIMS currently in use in the institute and highlighting the different aspects that should be considered when evaluating, choosing, and implementing a LIMS. In depth, the chapter illustrates how LIMS simplifies the accreditation path according to ISO IEC 17025 and the role in the epidemiology and veterinary public health. For this aspect, it is very important to collect clear data, and for this reason, a LIMS has to activate formal checks and controls on business rules. To facilitate this issue, an interconnection between LIMS and other applications (internal or external to laboratory) could be improved to allow automatic data exchange. At the same time, the unique data encoding at national/international level should be used.

DOI: 10.4018/978-1-4666-6320-6.ch015

INTRODUCTION

The Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "Giuseppe Caporale" (IZSAM) is a public health institute with administrative and managerial autonomy, which operates as a technical and scientific arm of the Italian State and the Abruzzo and Molise Regions, performing analytical work for the public veterinary services and providing the technical and scientific collaboration necessary to enable them to carry out their functions in the field of veterinary public health.

The main tasks of the Institute, as defined by the Italian legislation, are experimental research into the aetiology and pathogenesis of infectious diseases of domestic and wild animals; hygiene in animal breeding and livestock production; tests for laboratory diagnosis of animal diseases, tests for microbiological and chemical safety of food of animal origin destined for human consumption and livestock; epidemiological surveillance in the field of animal health and hygiene in the production of livestock and food of animal origin; production of vaccines, reagents and immunological products for the prophylaxis and diagnosis of animal diseases; consultancy, technical assistance and health information for breeders for the purpose of improving health standards and hygiene in livestock production; training for veterinarians and other operators in veterinary public health.

All the Institute's activities have been constantly certified and subjected to rigorous quality control since 1995, when the Institute became the first public veterinary body in Italy to be certified in accordance with international quality standards for performing laboratory tests in the chemical, microbiological, virological and serological fields (UNI CEI EN ISO/IEC 17025:2005– former 45001). Since 1991, the Institute uses a LIMS (named SILAB), which has the possibility to be constantly modified to suit the new health care needs and be adapted to the emerging technological innovations.

Taking advantage of these twenty years of experience, the chapter expresses some general considerations about the role played by LIMS in public health surveillance, outbreak investigations and pandemic preparedness.

The main objectives of chapter are to provide an overview of LIMS features, identify strengths, challenges and lessons learnt in terms of development, placement, use and maintenance as well as to illustrate the LIMS role in epidemiology and veterinary public health.

BACKGROUND

Veterinary services are essential to assure the health and welfare of both human and animal populations, as well as an optimal relationship between humans, animals and environment.

The slogan is ONE HEALTH - ONE MEDICINE. This approach recognized, already in the middle of the XX Century, that human and animals health are ONE and that it is more effective and efficient to prevent human disease working on animal population medicine. Moreover, it also led to the understanding that man and animals shared the same world and had a mutual influence with the environment they lived in (ONE PLANET).

The main missions of Veterinary services are to fight animal disease, including zoonosis, and to assure food security and safety worldwide with positive cost-benefit ratio for the international community, in particular:

- To reach the absence of diseases, including zoonosis, as well as food security and food safety, as primary factors for the welfare of human beings.
- To increase the availability and the quality of proteins for the human population and help to decrease crop waste.
- To prevent human affections.

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