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Population growth, longer life expectancy, increasing international travel and trade, and innovations in modern medicine are placing an ever growing demand on healthcare systems

As a result, these systems face new challenges, for example the increased complexity of the measurements involved.

Every health-related measurement follows a predefined method; measurements can be simple (such as body temperature, heart rate and blood pressure or how much active principle a tablet should contain), or much more complex (such as the determination of x-ray or scanner radiation doses).

It is vital that the measurement and test equipment conform to agreed standards or specifications, producing the same results, independent of where the measurements are made. Guidelines and regulations that cover medical equipment and methods can only be enforced if the measurements used to verify their compliance are accurate, traceable to internationally agreed reference measurement standards, and performed using approved and correctly calibrated instruments.

Healthcare professionals and risk assessment experts rely on accurate health-related measurements to identify diseases and prescribe treatments or actions so that patients are treated effectively, safely, and in a cost effective manner. The success of each treatment relies on accurate doses of the right substance delivered to the right place at the right time.

Healthcare plans increasingly include preventive actions in their policies, as opposed to merely disease treatment. Many costly and disabling conditions, such as cardiovascular diseases, cancer, diabetes and chronic respiratory diseases are linked by common avoidable risk factors, while others can be prevented through vaccination. A preventive healthcare plan that relies on accurate measurements and medical procedures can dramatically reduce the cost and demands on healthcare systems.

International trade and travel increase the risk of spreading diseases that threaten human health. The World Health Organization (WHO) publishes the International Health Regulations (IHR), a set of global rules designed to prevent and respond to acute national, regional and global public health risks that have the potential to cross borders and threaten the health of people worldwide. It is essential that countries have infrastructures that can monitor and measure these health risks in order to ensure the wellbeing of their people and to prevent and control the outbreak of global pandemics.

A sound measurement system is an essential element in achieving an efficient healthcare policy. Essential factors for such a system are

- traceability to the International System of Units, or SI (scientific metrology),
- regulated measurements and measuring instruments (legal metrology), and
- confidence in testing and measurement results via certification, standardization, accreditation and calibration (industrial metrology).

At the international level, the national measurement systems must be compatible and harmonized, and mutual confidence and mutual recognitions are necessary. The International Bureau of Weights and Measures (BIPM) helps coordinate arrangements or maintains international reference facilities to ensure the comparability of many of the national measurement standards maintained by the national metrology institutes. The International Organization of Legal Metrology (OIML) works with national legal metrology authorities to develop harmonized regulations on measurements and measuring instruments used in healthcare.

The International Committee for Weights and Measures (CIPM) and the OIML have respectively created a Mutual Recognition Arrangement (CIPM MRA) and a Mutual Acceptance Arrangement (MAA) within which international consistency of measurement and testing can be demonstrated.

As a result, patients, families, health care teams, communities, and policymakers can have confidence in health-related measurements and medicines, irrespective of where they are in the world.