

New Biomedical Standards and Quality Measures in Clinical Measurement

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Abstract

Clinical research involves different types of measurements and, therefore, quality of data is required to be obtained and maintained properly for field applications. Day by day, science is progressing fast and new biomedical standards are being developed for better quality measures in clinical measurements. However, new biomedical standards and quality measures are still needed to be developed further and updated to use them as health care standards and global standards. New biomedical standards and quality measures are discussed here for better clinical measurements for using them in different environments.

Keywords: Biomedical Standard; Quality Measures; Clinical Study; Patient Care

Introduction

Standards play a great role in everyday life and in science [1-3]. However, new standards, though, expensive, are important to be adopted for better results in biomedical and industrial applications, for reliable outcome with AI (Artificial Intelligence). In science, conventional standards are available for carrying out research and for design and measurement of devices and tools in clinical field or in other associated areas [4-8]. Existing standards can be used easily for basic study, for design of techniques and for comparison with planned layout of the system, and for proper regular data collection and dissemination [9-19]. The standards are thus developed and updated, from time to time, to maintain track with time.

Clinical standards and measurement

The clinical standards are used to get small quality measures [20-24] in care patients to report to health officials and service staff for a particular clinical case.

Clinical measurement includes design, fabrication, support tool, material and maintenance of the system or equipment for patient treatment with clinical examination [25-27].

A particular instrument or technique is used for the clinical measurement to get data to be evaluated by the clinician or physiologist.

The patient care having standard data is clinical practice standard with appropriate measurements.

Quality measures in healthcare

Standards for performance evaluation are called quality measures or healthcare providers to patients to identify safety, timeliness, effectiveness and fairness [28-31].

The outcome measure is the output of evaluation or intervention to find the baseline function of a patient at the start of a clinical trial. The progress and efficacy of the treatment or intervention is decided from the start to trial point, with the same instrument.

Health care standards

Different organisations with or without partners develop such world-class standards to give highest quality measures for patients. There are many biomedical care standards in use, as shown in figure 1. These are dependent on different factors of physiology, cancer biology, pharmacology, immunology, microbiology and neuroscience, etc. [28-30].

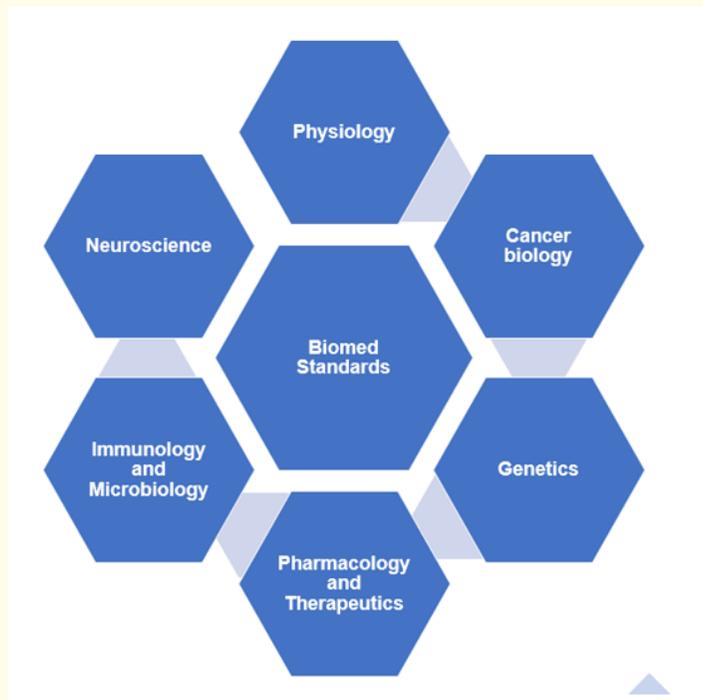


Figure 1: Basic biomedical standards for clinical measurements.

Such standards have been developed by using the main concepts like dignity and respect, compassion, responsive care and support help and wellbeing of the patient.

Quality standards

Quality standards identify documents to give technical specifications, guidelines or characteristics to use type of materials, products, processes and services for a particular application.

On the other hand, 'Health Care Quality Measures' are used to differentiate health care units according to process or structure, based on conventional Donabedian model [24,27,29].

Diagnostic Clinical Measurement are based on physiological tests with techniques like ECG (Electrocardiograph) within 24 hours for diagnosis and therapeutic management, in hospitals or clinics, for better health care monitoring.

New standards for devices used for the measurement of human body temperature

The clinical importance of measuring the human body parameters like temperature or human body composition for say, body tissues and organs, in living condition, without any harm.

Human body temperature is changing these days, world over. Now, digital clinical thermometers are used for body temperature measurement and radiometer devices for recording tympanic membrane temperature. Also, the infrared thermal imaging system is used for fever screening. During the pandemic H1N1 outbreak, new standards at international level have been used for clinical and fever screening applications in clinical medicine [25-27].

WHO global standards and guidelines

WHO (World Health Organisation) has developed global guidelines for appropriate diagnosis and treatment, related to use of any product for clinical practice and public health policy for clinical interventions and public health measures [28-33]. These WHO guidelines are of high methodological quality with good decision making with international standards. All such standards are maintained and developed by NMIs (National Measurement Institutes) of each country in the world.

Latest WHO guidelines cover the following clinical issues:

1. Clinical management guidelines of exposure to lead.
2. Use of nutritional problems of say zinc during pregnancy.
3. HIV prevention, testing, treatment, service delivery and monitoring for public health solution.
4. Control of symptomatic sexually transmitted infections.
5. Control of hepatitis C virus with self-testing WHO rules for self-care interventions for health and well-being.
6. WHO steps for screening and treatment of cervical pre-cancer lesions in cervical cancer prevention.
7. WHO rules for school health services.

Thus, novel biomedical standards and quality measures give an impact in clinical measurements for reliable and accurate diagnosis and therapeutic treatment. Guidelines for global standards are important for inter-comparison of the data at international level. Clinical standards and measurements, quality standards in health care, health care standards, quality standards and global standards and their management have been discussed here for better future progress in quality measurement in science and particularly in clinical medicine.

Conclusion and Significance

Clinical measurement has been discussed in medicine with the importance of the use of standardisation methods. Quality measures have also been presented for getting characterisation data for a particular clinical system with management plan of the data, Clinical standard, health care standard, quality measures and global level standards are defined and explained for better calibration of the measurement techniques, processes and systems for reliable and stable output performance. The development of new standards has been given for calibration of the tools and techniques. New standards would be helpful in examining of the patients quickly and reliably.

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