MEDICAL COUNCIL OF CANADA | LE CONSEIL MÉDICAL DU CANADA

Clinical informatics

(March 2022)

Definition

Health informatics is the study of information design and use in health care. Clinical informatics is the application of health informatics knowledge in the clinical setting to promote quality care. Digital health is the use of information technology and electronic communication tools, services and processes to deliver health care services and facilitate better health.

Rationale

Rapid advancements and the broad adoption of digital technology (notably the advent of electronic health records [EHRs], virtual care, and advanced analytics [e.g., artificial intelligence and machine learning]) have fundamentally changed the practice of medicine, necessitating a new set of skills and knowledge to practise safely, efficiently and competently in the digital age.

Causal Conditions

(list not exhaustive)

A lack of digital health literacy and gaps in foundational knowledge about the effective use of health information and digital technologies are adversely affecting both patient and provider wellness.

Key Objectives

To use health information safely and effectively, the candidate will manage health information while recognizing and adapting to the limitations of current digital technology systems.

Enabling Objectives

To use health information safely and effectively, the candidate will

- have sound foundational knowledge of the theory, lexicon and taxonomy of health information, including

a. defining and differentiating
    1. health informatics,
    2. clinical informatics,
    3. digital health,
    4. virtual care,
    5. health information exchange,
    6. analytics and
    7. circle of care;

b. describing the three functional domains of clinical informatics and the interrelationship between them, including the capacity to
    1. collect longitudinal personal health information for direct patient care,
    2. exchange health information between services and locations and
    3. aggregate health data for analysis using analytics, artificial intelligence and machine learning;

- describe the differences between digital health technologies and modalities of digital care, including
    a. technologies, such as
        1. electronic medical record (EMR),
        2. electronic health record (EHR),
        3. picture archiving and communication system (PACS) and
        4. laboratory information system (LIS); and

    b. modalities of digital care, such as
        - virtual care, including
            a. telephone care,
            b. asynchronous messaging,
            c. video care and

    d. remote monitoring; and

- analytics to improve quality of care, such as
    a. panel management,
    b. clinical decision support,
    c. artificial intelligence and
    d. machine learning; and

- have a practical understanding of
    a. the relationship between health information and quality of care;
    b. the evaluation of how the choice of communication technology and/or modality of care has a bearing on the quality of a patient outcome;
    c. the appropriate use of communication technology or modality of digital care to optimize a patient outcome, including considering factors such as
        1. clinical needs,
        2. patient readiness,
        3. practice readiness and
        4. patient location; and
    d. the integration of communication technology and modalities of digital care into core continuity of health service;
    e. the collection, retention and exchange of health data to promote quality of care;
    f. the basic concepts of data analysis and panel management and how to integrate them into care;
    g. the assurance of privacy and security of all personal health information;
    h. the rights of the patient to the control of their personal health information;
    i. the obligations of the custodian to manage personal health information; and
    j. the digital divide, and the need to actively assure equity of care in digital health.