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eBM1 & also ISM3: In-Service Training Module

Artificial Intelligence, eHealth, Big Data & Medical Informatics in Primary Health Care (PHC)- 5 ECTS

Target Group

Primary healthcare professionals including physicians, nurses, health informatics staff, allied health professionals, and senior undergraduate or postgraduate students in health sciences.

Module Description

This module introduces participants to the concepts, tools, and applications of Artificial Intelligence (AI), eHealth, Big Data, and medical informatics within the primary healthcare (PHC) setting. It provides both theoretical foundations and practical demonstrations aimed at enhancing healthcare delivery, diagnostic accuracy, patient monitoring, and data-driven decision-making. Through interactive lectures, simulations, and case-based learning, participants will explore how these technologies can improve access, quality, and efficiency of care, while also considering ethical, legal, and policy implications.

Learning Outcomes

- Explain the fundamental concepts and principles of AI, eHealth, Big Data, and their relevance to PHC.
- Identify and evaluate AI tools for clinical decision support, diagnostics, and predictive analytics.
- Understand Big Data acquisition, management, analysis, visualization, and the associated ethical and legal considerations.
- Apply telemedicine and telepathology solutions to improve healthcare delivery in remote or underserved areas.
- Demonstrate proficiency in using electronic health records (EHRs), teleconsultation systems, and AI-supported applications in PHC.

Indicative Content

- Introduction to AI, eHealth, Big Data, and medical informatics in PHC
- AI applications in diagnosis, treatment planning, and predictive modelling
- Big Data collection, integration, and visualization in health systems
- Data protection, privacy regulations, and ethical frameworks for AI and eHealth
- Telemedicine, telepathology, and virtual health services: models and best practices
- Policy frameworks and adoption strategies for AI and eHealth in PHC systems
- Barriers and facilitators to implementation in low- and middle-resource settings



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Teaching & Learning Methods

- Interactive lectures and expert seminars
- Case-based learning and group discussions
- Simulations and live demonstrations of AI-powered diagnostic tools
- Hands-on exercises with EHRs and teleconsultation platforms
- Problem-solving workshops to address real-world PHC technology challenges

Assessment Methods

- Short multiple-choice quiz on theoretical concepts
- Group project analysing a case scenario involving AI/eHealth in PHC
- Practical demonstration of an AI or telehealth tool application
- Participation in discussions and problem-solving workshops