



Co-funded by the
Erasmus+ Programme
of the European Union

The Curriculum of:
ICARE In-Service Training & Capacity Building
(20 ECTS) — WP5

Erasmus+ 618674-1-2020-1-SE-EPPKA2-CBHE-JP

About this In-Service & Capacity Building Program

This booklet presents the ICARE WP5 In-Service Training & Capacity Building program. . It complements the WP4 Professional Diploma by providing short, practice-oriented modules that upgrade the digital, clinical, and pedagogical competencies of healthcare professionals and senior students. The program is grounded in the Knowledge Triangle Education–Research (KTER) platform and the inter-professional, student-run primary care clinics model, linking universities, healthcare providers, and enterprise partners.

The program consists of four 5-ECTS modules (total 20 ECTS). Participants may complete the full certificate or select individual modules. In line with the original application, WP5 emphasizes moving from teaching to learning, innovative assessment, and the use of ICT in health education. Training materials are hosted on the ICARE digital portal and aligned with WP4 curricula where appropriate (e.g., shared ethics content).

Entry & Admission

Target groups:

Medicine, pharmacy, dentistry, bioengineering, nursing, public health, computer science and IT professionals; senior undergraduate and postgraduate students in the health sciences.

Entry requirements:

Suitable for medical and health professionals and senior health-science students. Also appropriate for information/medical informatics professionals seeking to enhance competence with health ICT.

Admission:

- Health students: completion of at least 3 study years or a degree.
- Other applicants: a three-year degree in a health-related or ICT field, or equivalent experience as approved by the program committee.

Program Structure

Module Code	Module Title	ECTS	Focus
ISM1	Basics of eHealth: Information, Informatics, Communication & Technologies	5	Foundations of eHealth, health data & coding, biomedical tech.
ISM2	Computerization/Digitalisation of Medical Records & eHealth Services	5	EHR/EMR, health informatics, HIS design & adoption.
ISM3	Artificial Intelligence, eHealth, Big Data & Medical Informatics	5	AI tools, big data analytics, imaging & decision support.
ISM4	Medical Ethics, Patient Safety, Rights & Risk Management	5	Ethics-legal, incident reporting, safety and risk management in eHealth.

Elective Module (eISM). BM1: Primary Care & Family Medicine. Covers PHC principles, holistic care, communication & counselling, common acute & chronic conditions

Program Objectives & Expected Learning Outcomes (ELOs)

Objectives:

- Build thorough knowledge of eHealth policies, ethics, equity and legal issues.
- Develop applied competence in complex eHealth systems and workflows.
- Strengthen enterprise–university collaboration and practical skills.

On completion, participants will be able to:

- Explain core concepts in eHealth and health informatics.
- Give examples of digital technologies used in prevention, diagnosis and treatment.
- Critically discuss eHealth opportunities and challenges at individual, organizational and system levels.
- Argue for the importance of information structure, interoperability, design, implementation and evaluation.
- Identify and appraise research in health informatics.

Teaching, Learning & Assessment

Delivery methods include interactive lectures, seminars, guided literature analysis, group work, case discussions, videos and quizzes. Assessment typically combines short quizzes, applied tasks, participation, and a short project or reflection aligned with each module's aims. In more details:

- ***Explicitly integrate innovative T&L methods*** (problem-based learning, simulation, blended e-learning, workflow modeling tools, digital health platforms, interdisciplinary team training, etc.) into both the program overview and each module's teaching methodology section.
- ***Showcase assessments*** that reflect modern practice — not just written exams, but case-based evaluations, competency checklists, reflective journals, peer feedback, simulation-based OSCEs, and e-assessment tools.
- ***Make the capacity-building angle clear*** — linking it to WP5's purpose (moving from teaching to learning, upgrading ICT/digital skills, ensuring sustainability, KTER alignment).

Program-Wide Indicative Contents

- Definitions and global strategies for eHealth
- Structures of eHealth services and health systems across countries
- Scope and limits of e-services in healthcare; cost-effectiveness
- Digital vs. analogue processes, interoperability and standards
- Medical ethics, patient rights and safety; risk management
- Examples of research areas in eHealth and informatics

ISM1. Basics of eHealth: Information, Informatics, Communication & Technologies — 5 ECTS

Module description & aims

Introduces how electronic data from public health, medical and biomedical sources is structured, coded, validated and used across clinical and population settings. Provides an overview of biomedical technologies and the interface between clinical investigation and engineering.

Indicative content

- Health information principles and structures of health data
- Integration of objective/subjective data; validation within hospital information systems
- Standardization and coding (e.g., ICD) and international disease classifications
- Overview of biomedical technology; links between physiology, clinical methods and engineering

Expected learning outcomes

Upon completion, participants can:

- Describe the eHealth sector and its roles at individual, organizational and societal levels
- Use health information from public health, medical and biomedical perspectives
- Assess applicability and cost-effectiveness of eHealth services
- Explain medical coding and international classification systems
- Outline how dysfunction of major organ systems is investigated and documented

ISM2. Computerization/Digitalisation of Medical Records & eHealth Services — 5 ECTS

Module description & aims

Explores adoption and optimization of EMR/EHR and related health information technologies. Focuses on selecting the right tools and workflows to improve quality, safety and value rather than technology for its own sake.

Indicative content

- Added value of electronic health services; communication & information systems
- Electronic health and medical records; patient information systems
- Health/medical informatics concepts; telemedicine and m-health overview
- Static and dynamic graphical models; signals; basics of linear dynamical systems

Expected learning outcomes

Upon completion, participants can:

- Explain how eHealth supports patient safety and care quality
- Differentiate eHealth record types and related services
- Evaluate applicability and cost-effectiveness of new services
- Recognize limitations of e-services and digital vs. analogue processes

Teaching & assessment

Short quiz; applied EMR/EHR task; participation; brief reflection on workflow redesign

ISM3- Artificial Intelligence, eHealth, Big Data & Medical Informatics in Primary Health Care (PHC)- Credits: 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.

Module contents

- 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

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
- Interprofessional 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

ISM4. Medical Ethics, Patient Safety, Rights & Risk Management — 5 ECTS

Module description & aims

Covers ethical, legal and safety imperatives in eHealth, telehealth and digital transformation. Explores incident reporting systems, risk management and the role of EHRs in preventing medical and medication errors.

Indicative content

- Ethics-legal issues in digitized health systems; privacy, confidentiality, integrity
- Medical incidents and errors; reporting systems and safety culture
- Patient rights and advocacy; eHealth-enabled safety interventions
- Risk management frameworks and governance

Expected learning outcomes

Upon completion, participants can:

- Identify and report incidents using effective systems
- Apply risk management principles in eHealth contexts
- Explain key legal/ethical domains in medical data usage
- Anticipate adverse consequences of eHealth and design mitigations

Teaching & assessment

Policy/ethics case brief; safety incident mapping task; short quiz; participation

Alignment with WP4 & KTER Platform

WP5 modules are interoperable with WP4 diploma content: participants may take ISM4 alongside the WP4 ethics module, and ISM3 aligns with the eBM1 elective (AI/eHealth/Big Data). Learning resources and updates are delivered through the KTER platform to sustain cross-institutional collaboration and continuous improvement.