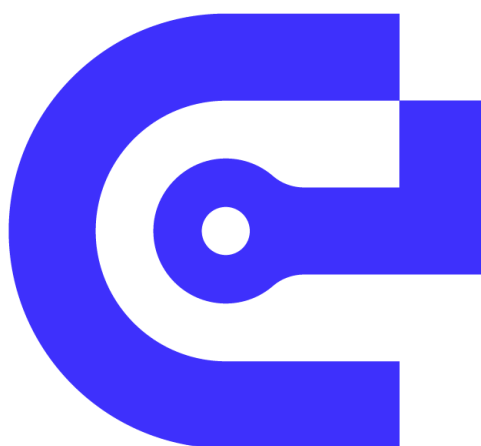




Cooperation and training on innovation and entrepreneurship in
the eHealth community (CONNECT)

2020-1-RO01-KA203-080244

IO1 - Innovation in health

[Partner: Asociatia INIT]

[May 2021 / Cluj-Napoca]

Desk Review Template – Purpose of this tool

Babeş-Bolyai University has developed this tool as a guide and generic template for creating a desk research report. We have tried to make it user-friendly by providing explanations and examples under each heading.

The desk research report is a compilation of existing secondary data in a readable and usable format related to the existing curriculums on the topic of each module component from the eHealth Interdisciplinary Curriculum developed under IO1.

The research team from Babeş-Bolyai University is available to support any efforts to compile this desk research report and is responsible for overseeing the compilation of the final desk research report. The contact info for the coordination team for this task is provided here: madalina.coman@publichealth.ro and alina.forray@publichealth.ro. Please name the final document using the following strategy “CONNECT Project_IO1_Desk Research_Module name_Institution Acronym” (e.g. CONNECT Project_IO1_Desk Research_mHealth_BBU)

Some tips for compiling the Country Desk Research Report:

- Review the existing eHealth educational curriculums existent at international level and in your own countries (targeted for your module);
- Extract information from the existent eHealth educational curriculums that can be useful in developing our own eHealth Interdisciplinary Curriculum (targeted for your module);
- Review the existent non-formal education activities related to the module allotted to your institution (targeted for your module);
- Identify gaps in knowledge related to the module/s assigned to your institution;
- Explain how those gaps are going to be addressed in our eHealth Interdisciplinary Curriculum developed under IO1 (targeted for your module).

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1. Summary

- There are several existent curriculums about Innovation in health at international level
- There are no existent curriculums about Innovation in health in Romania
- There are several non-formal activities and online courses about Innovation in health
- In the existing curriculums we identified a lack of information about stakeholders management and about the validation process.

2. General information about the *Innovation in Health* module from the eHealth Interdisciplinary Curriculum

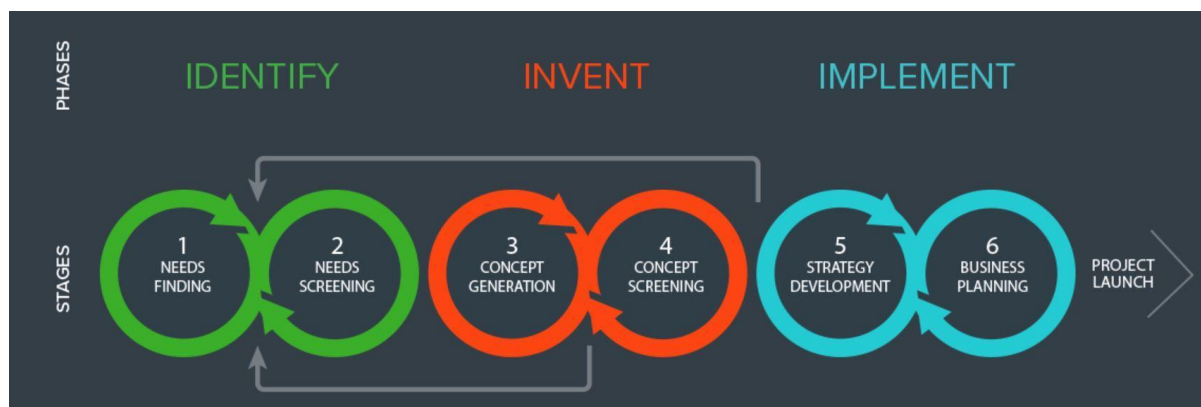
Definition of *Innovation in health*

Innovation is a process by which a domain, a product, or a service is renewed and brought up to date by applying new processes, introducing new techniques, or establishing successful ideas to create new value. Innovation requires more creativity and more willingness to take risks than the implementation of typical projects. To successfully realize innovation projects, a different mindset is needed.

The term “innovation” has made its way into healthcare as a concept adopted from other fields, with a similar definition to those used in business, technology, and marketing. The World Health Organization (WHO) explains that ‘health innovation’ improves the efficiency, effectiveness, quality, sustainability, safety, and/or affordability of healthcare. This definition includes ‘new or improved’ health policies, practices, systems, products and technologies, services, and delivery methods that result in improved healthcare. Improvements in research, patient satisfaction, education, and access to care are additional factors to keep in mind. The ultimate goal of health innovation is to improve our ability to meet public and personal healthcare needs and demands by optimising the performance of the health system.

Key components of *Innovation*

BIODESIGN INNOVATION PROCESS (STANFORD UNIVERSITY)



(<https://biodesign.stanford.edu/about-us/process.html>)

MIT HACKING MEDICINE MODEL



Figure 1. Phases of the MIT Hacking Medicine Hackathon Model Using a Systems Approach

(<https://hackingmedicine.mit.edu/>)

State of the art models and knowledge for the *Innovation*

BIODESIGN INNOVATION PROCESS (STANFORD UNIVERSITY)

1. Identify

The identify phase is first and foremost about finding important unmet health needs. By directly observing the full cycle of care from diagnosis and treatment to recovery and billing. In this way you have to watch what's done and how it affects the provider, the patient, and the system, while asking pointed questions that challenge the status quo.

During this first-hand observation period, it's ideal to collect hundreds of needs, initially without judging or prioritizing. Then, it's time to filter the list with rigorous objectivity, taking into account

everything from the different stakeholders affected by each need to how much potential it has to improve care and/or save the system money. This is an intense and iterative process, with progressively deeper dives into the needs that have the most potential. Ultimately, the trainees arrive at the two or three most promising needs which—if they can be solved—will have major impact on health and wellness.

2. Invent

Next, Stanford Biodesigners begin to invent. They brainstorm hundreds of potential solutions for each of their top needs. Then, they organize their ideas and objectively compare them against key criteria for satisfying the needs. During this phase, rough prototypes are created in a rapid “think-build-rethink” sequence, so failures emerge early and iteration can lead to better solutions. They then filter the surviving solutions by researching everything from intellectual property issues and business models to reimbursement and regulatory pathways. In the end, the process produces a lead concept that has done battle with a number other ideas that were almost as good. It’s survival of the fittest—and it guarantees that the lead concept has a good chance of actually reaching and improving patient care.

3. Implement

In the implement phase, the next steps are prototyping and testing the technology, developing the approach to patenting, regulatory approval, and reimbursement, charting the market potential for the innovation, and exploring sources of funding.

MIT HACKING MEDICINE MODEL

1. Identification

Teams are asked to focus on understanding the context and stakeholder perspectives around the problem they are studying without discussing solutions. Teams identify the relevant stakeholders in the healthcare system (e.g., patients, clinicians, hospitals, pharmacies, healthcare insurance organizations) relevant to a specific clinical need. This allows teams to understand existing barriers to implementing a solution. Teams are encouraged to closely scrutinize the incentives and preferences of these stakeholders, and to seek early feedback from these groups.

2. Description

Following discussion of the problem space, teams analyze and describe the highest value points of intervention among the identified key stakeholders. In systems thinking methodology, these highest value points are known as the levers that allow for the creation of a virtuous cycle of change (Senge, 2006). Teams should specifically target particular stakeholders to be the likely users and/or payers for the solution they will develop and identify the needs that are addressed by their particular innovation.

3. Alteration

Based on the incentives and needs identified in this analysis, teams design initial solutions to their selected clinical challenge. We encourage teams to prototype potential solutions for unmet needs as proposed alterations to the existing standard of care. Expert mentors were recruited from patient advocacy groups, local hospitals, and industry to supplement, evaluate, or assist teams. With rough prototypes, teams can receive feedback directly from users, such as patients or providers, and rapidly iterate upon their proposed solutions. Teams use their refined understanding to develop increasingly focused solutions with greater clarity for their potential impact on relevant stakeholders and workflow.

4. Implementation

Teams are asked to present a concise summary of their clinical challenge, stakeholder analysis, and proposed solution. In addition to directly addressing the technical feasibility of their proposals, teams must demonstrate a plan for implementing, distributing, and scaling their solution. Final team evaluation is based on a comprehensive, systems-level description of the need and the likelihood of successful implementation.

3. Existent curriculums on the Innovation in health module

Existent Curriculums at international and national levels

1. Certificate in Innovation in Healthcare Management - Thunderbird School of Global Management

Unit 1: Megatrends in Healthcare

Unit 2: Ideation Best Practices

Unit 3: Effective Validation

Unit 4: Understanding Resource Constraints

Unit 5: Planning for New Innovations

Unit 6: Creating Valuable Advantages

Unit 7: Winning Adoption for New Ideas

Unit 8: Delivering Rapid Results

(<https://dhge.org/our-programs/innovation-healthcare-management-certificate-asu-thunderbird-school-of-global-management>)

2. Health Innovation Program - UW-Madison School of Medicine and Public Health

N/A

(<https://hip.wisc.edu/>)

3. Master of Health Care Innovation - Department of Medical Ethics & Health Policy Perelman School of Medicine at The University of Pennsylvania

- The American Health Care System
- Behavioral Economics and Decision Making
- Evaluating Health Policy and Programs
- Health Care Operations
- Health Economics
- Leading Change in Health Care
- Translating Ideas into Outcomes

(<https://improvinghealthcare.mehp.upenn.edu/master-of-health-care-innovation/curriculum/core-courses>)

4. MS IN HEALTH CARE INNOVATION - University of St. Thomas (Minneapolis)

- Leading Self and Others
- Overview of Health Care Systems
- Accounting in the Health Care Industry
- Strategic Management in Health Care
- Practicum for Health Care Innovators
- Financial Literacy in the Health Care Industry
- Operations Management
- Innovation and Corporate Entrepreneurship
- Storytelling: Influencing Organizations
- Marketing Management
- Leading Change and Human Capital
- Health Care Integrated Study

(<https://business.stthomas.edu/degrees-programs/specialized-masters/ms-health-care-innovation/>)

5. MSc in Business Administration and Innovation in Health Care - Copenhagen Business School

- Health Care Innovation Management
- Managerial Statistics for Innovation
- Health Systems and Innovation
- The Organization of Health Care Innovation

- Innovation in clinical processes and Health Care delivery
- Foundations of Health Care IT
- The Health Care Innovation Project
- Digital Innovation in Health Care
- Health Technology Assessment
- Bio and Health Care Entrepreneurship

(<https://www.cbs.dk/en/study/graduate/msc-in-business-administration-and-innovation-in-health-care>)

Core competencies of the identified curriculums

1. Certificate in Innovation in Healthcare Management - Thunderbird School of Global Management

- Learn to ideate, innovate, and deliver results from innovation
- Access to thought leadership pieces from healthcare professionals

(<https://dhge.org/our-programs/innovation-healthcare-management-certificate-asu-thunderbird-school-of-global-management>)

2. Health Innovation Program - UW-Madison School of Medicine and Public Health

N/A

(<https://hip.wisc.edu/>)

3. Master of Health Care Innovation - Department of Medical Ethics & Health Policy Perelman School of Medicine at The University of Pennsylvania

- Learners who successfully complete this course will be able to apply this information as context to understand and advocate for reforms and innovation in health care-related fields.
- Learners will be able to demonstrate how key concepts in behavioral economics are used, critique existing programs, design new approaches, and apply lessons to challenges they face in their work environments.
- Learners who successfully complete this course will be able to critique common methodologies and approaches to studying the impact of policy and programmatic changes, and apply concepts to evaluating—and recommending—real-world policies and programs.

- Learners will be able to use a systematic approach for analyzing and improving their work in health care settings.
- Learners who successfully complete this course will be able to identify critical economic issues, evaluate determinants of demand for medical care, describe the role of physicians in resource allocation, compare competition in medical care markets, and assess policy instruments.

(<https://improvinghealthcare.mehp.upenn.edu/master-of-health-care-innovation/curriculum/core-courses>)

4. MS IN HEALTH CARE INNOVATION - University of St. Thomas (Minneapolis)

- Understand the interconnected health care system from multiple perspectives and learn how to lead in terms of value, resources and innovation.
- Focus on creating customer value-based health care, delivering innovation, and executing in a lean and effective manner.
- Demonstrate your mastery of gained skills within a real work context and explore your abilities to create change through innovative processes.

(<https://business.stthomas.edu/degrees-programs/specialized-masters/ms-health-care-innovation/>)

5. MSc in Business Administration and Innovation in Health Care - Copenhagen Business School

N/A

(<https://www.cbs.dk/en/study/graduate/msc-in-business-administration-and-innovation-in-health-care>)

Elements of potential use in our eHealth Interdisciplinary Curriculum

- **Health Systems and Innovation**
- **Evaluating Health Policy and Programs**
- **Health Economics**
- **Ideation Best Practices**
- **Effective Validation**
- **Understanding Resource Constraints**
- **Planning for New Innovations**

- **Creating Valuable Advantages**
- **Winning Adoption for New Ideas**
- Digital Innovation in Health Care

4. Non-formal education related to the Innovation in health module

Existent non-formal education at international and national levels

1. MSc Innovation in Health Care (IHC) - EIT Health

- The first semester presents the main disciplinary building blocks: A 15 ECTS course introduces students to a comparative approach to health care systems, followed by two 7.5 ECTS courses in economics and the organization of health care innovation
- In the second semester, students work on an innovation project, organised in a 15 ECTS project course. This course also includes workshops on specific innovation tools referring e.g. to market analysis or IPR. Alongside the project course, students follow courses introducing them to digital health and to innovations in clinical processes
- In the third semester the student chooses one of three elective tracks (of 30 ECTS). The first track is focused on digital health; the second on advanced quantitative tools for health care innovation; the third on entrepreneurship in health care.

(<https://degree-programmes.eithealth.eu/msc-innovation-in-health-care-ihc/>)

2. Health Care Innovation - Coursera

Module 1

- Introduction: The Patient Perspective
- Introduction: The Provider Perspective
- Trade-offs, Strategy, System Inhibitors
- Inventory, Flow Rate, and Flow Time
- Mapping Processes with Flow Diagrams
- Lean Operations and Waste
- The Curse of Variability
- Financial Viability Finding the Value Drivers

Module 2

- Introduction to Health Care Innovation
- Spotlight on Success
- Researchers and Clinicians as Innovators
- Changing Approaches to Health Care
- Crafting a Hypothesis

Module 3

- Introduction to Evaluation
- Evidence-Based Policy Making
- What is Evaluation
- Approaches to Evaluation
- Efficacy and Effectiveness
- Alternative Designs

Module 4

- Why Studying Behavioral Economics is Important
- Economics, Rationality, and Prospect Theory
- Behavioral Biases and Asymmetric Paternalism
- Introduction to Choice Architecture
- Standard Incentives
- Introduction: Framework for Intervention
- Nudge Units and Some of Their Successes

(https://www.coursera.org/learn/wo-pmo-healthcareinnovation?fbclid=IwAR17Vs4S_QyUHYaG-mS71W9tJCAg5LNlImYzOqv368fdpAv4YI_n9H8zXNY#syllabus)

3. Innovating in Health Care - online course Harvard University

N/A

(<https://online-learning.harvard.edu/course/innovating-health-care?delta=0>)

4. An Introduction to Innovation in Healthcare (online) - University of Bath

Week 1 defines the key concepts associated with the process of innovation and diffusion. We will also discuss the importance of, and opportunities for, innovation.

Week 2 examines how individuals and organisations can develop, test, and make the case for their healthcare innovation.

Week 3 considers the organisational and financial hurdles that must be overcome in order to bring healthcare invention to the market. We will also examine how to evaluate healthcare innovation.

Week 4 examines how innovation can be spread and sustained, concluding our course.

(<https://www.futurelearn.com/courses/innovation-in-healthcare>)

Core competencies of the identified non-formal education activities

1. MSc Innovation in Health Care (IHC) - EIT Health

- comparative approach to health care systems
- economics and the organization of health care innovation
- market analysis or IPR
- innovations in clinical processes
- entrepreneurship in health care

(<https://degree-programmes.eithealth.eu/msc-innovation-in-health-care-ihc/>)

2. Health Care Innovation - Coursera

- practical understanding of the theoretical frameworks of behavioral economics and operations management in the health care setting

(https://www.coursera.org/learn/wo-pmo-healthcareinnovation?fbclid=IwAR17Vs4S_QyUHYaG-mS71W9tJCAg5LNIImYzOqv368fdpAv4YI_n9H8zXNY#syllabus)

3. Innovating in Health Care - online course Harvard University

- How innovation in health care can improve cost, quality, and access
- The six factors that critically shape competitive strategies for innovative health care ventures
- What other elements combine to create a feasible business model for an innovative health care venture
- How to distinguish the key to successful innovations from those likely to fail
- How to apply the IHC framework to evaluate business models across different kinds of innovations
- How to craft your own business plan for your next innovation venture

(<https://online-learning.harvard.edu/course/innovating-health-care?delta=0>)

4. An Introduction to Innovation in Healthcare (online) - University of Bath

- Understand the need to engage in innovation
- Evaluate how individuals and organisations might be encouraged to develop an innovation mindset.
- Evaluate the challenges of healthcare innovation in relation to your own organisation.
- Understand and apply the key steps involved to take an innovation from idea to realisation
- Understand the importance of teamwork and collaboration
- Recognise healthcare innovation initiatives

(<https://www.futurelearn.com/courses/innovation-in-healthcare>)

Elements of potential use in our eHealth Interdisciplinary Curriculum

- Introduction to Health Care Innovation
- Researchers and Clinicians as Innovators
- Changing Approaches to Health Care
- Inventory, Flow Rate, and Flow Time
- Mapping Processes with Flow Diagrams
- Lean Operations
- The Curse of Variability
- Financial Viability Finding the Value Drivers
- Tools for health care innovation
- Entrepreneurship in health care

5. Identified gaps for the Innovation in health module

Gap 1

In the existing curriculums there isn't a dedicated module in which to discuss about who are the telemedicine stakeholders (doctors, patients, institutions), about their particular interests, and how they can align in order to improve the telemedicine efficiency.

Solution: To introduce such a module in our curriculum.

Gap 2

In the existing curriculums there isn't enough information about the validation process when it comes to innovating in the healthcare domain.

Solution: To introduce an explicit module about the validation process.

6. Appendices

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<https://biodesign.stanford.edu/about-us/process.html>.

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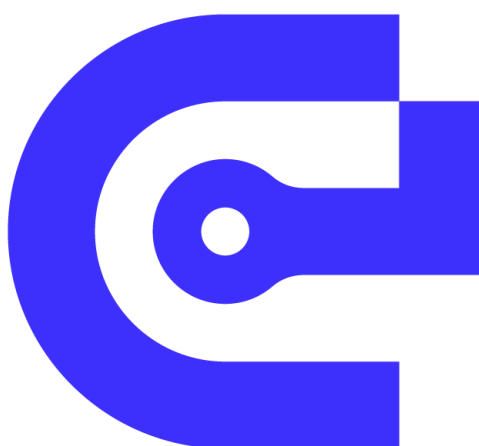
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Cooperation and training on innovation and entrepreneurship in
the eHealth community (CONNECT)

2020-1-RO01-KA203-080244

IO1 - Desk Research Report - Human Resources in Health and e-Professionalism

Partner: Babes-Bolyai University

Cluj-Napoca, June 25, 2021

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1. Summary

- There are existent curriculums on Human Resources in Health mostly from United States;
- No curriculums were identified in the e-Professionalism field;
- No curriculums of Human Resources in Health and e-Professionalism were identified in Romania and only one curriculum was identified for Europe on Human Resources in Health
- A component of multidisciplinary work in the human resources field should be added to the CONNECT curriculum.

2. General information about the Human Resources in Health and e-Professionalism module from the eHealth Interdisciplinary Curriculum

Definition of Human Resources in Health and e-Professionalism

Human Resources in Health deals with issues such as planning, development, performance, management, retention, information, and research on human resources for the health care sector. Human Resources in health include the clinical and non-clinical staff whose intent is to enhance health and the healthcare system performance. This includes physicians, allied health professionals, health services managers, medical records, and health information technicians etc. e-Professionalism is the attitudes and behaviors seen in traditional professionals, showcased in digital media. It represents the electronic professional identity of an individual.

Key components of Human Resources in Health and e-Professionalism

- Recruitment
- Induction
- Working Environment
- Staff Relations
- Staff Development.
- Professional identity

State of the art models and knowledge for the Human Resources in Health and e-Professionalism

- Implementation:
 - o e-Professionalism as a new frontier in medical education (Kaczmarczyk et al. 2013)
- Human Resources in Health
 - o Barriers to online medical and nursing education (Regmi and Jones 2020)

3. Existent curriculums on the Human Resources in Health and e-Professionalism module

Existent Curriculums at international and national levels

- 1) [NYU Wagner: Human Resources management for Healthcare organizations](#)
 - Introduction
 - Strategic human resources in healthcare organization
 - Professional staff & workforce planning
 - Healthcare professionals/credentialing
 - Workforce planning
 - Job Design and recruitment
 - Job design and job analysis
 - Recruitment
 - Interview & Selection
 - Interview and selection
 - Staff Retention
 - EEO-Diversity and Compliance
 - Compensation, Performance & Staff Development
 - Compensation
 - Performance and accountability
 - Staff development
- 2) [KIT: Royal Tropical Institute Amsterdam: Human Resources in Health](#)
 - Introduction to HRH
 - Strategic planning of HRH
 - Workload
 - Retention, motivation and performance of health workers
 - Governance and HRH, including migration
 - Addressing gender and rights in HRH policies and plans
 - Training
 - Leadership and organizational change
- 3) [Human Resource Management in Healthcare](#)
 - Human Resource Management in Healthcare
 - Strategic Human Resource Management overview
 - Legal and Ethical Issues for Health Human Resource Management
 - Job Analysis & Design for Human resource Management in Healthcare
 - Recruiting & Hiring for Human Resource Management in Healthcare
 - Careers & Roles in Healthcare
 - Human Resource Management Benefit Plans
 - Human Resource Management & Healthcare Employee Development
 - Labor Unions, Mediation & Arbitration in Healthcare
 - Impact of Current Healthcare Trends on Human Resource Management

4) [Phoenix University: Human Resources in Health Care](#)

- Week 1:
 - Identify human resource management's role in the health care industry.
 - Describe the functional roles of the human resource department.
 - Examine the effect of legal, safety, and regulatory requirements on human resource processes
- Week 2:
 - Identify recruitment strategies and methods as part of workforce planning needs.
 - Identify the different components of the selection process.
 - Differentiate between job analysis, job description, and job specification.
- Week 3:
 - Explain why training and education are vital in health care.
 - Explain the importance of measuring competencies in the health care profession.
 - Describe the process for tracking and evaluating training effectiveness.
- Week 4:
 - Describe performance appraisal standards.
 - Identify barriers and guidelines for effective performance appraisals.
 - Recognize the due diligence of progressive discipline of employees
- Week 5:
 - Identify current and future human resource issues in health care.
 - Examine the changing role of human resource management in response to changes in the health care industry.

5) [Global Health: Human Resources for Health \(HRH\): Principles and Practices](#)

- Introduction: Global View of Human Resources for Health (HRH)
 - What is HDR
 - What is the current health workforce availability?
 - How does HDR contribute to reaching health goals?
 - The global health agenda: a brief timeline
 - Global health strategy on HRH: Workforce 2030
 - The health labor market framework
 - What is the value of investing in the health workforce?
- Optimizing HRH Performance, quality and impact
- Aligning HRH investments with current needs
- Aligning HRH investments with future needs
- Building HRH institutional capacity, policy, leadership and governance
- Strengthening data, monitoring and accountability

Core competencies of the identified curriculums

1) [NYU Wagner: Human Resources management for Healthcare organizations](#)

The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

- Manage and lead people, teams and organizations
- Ability to work effectively with diverse colleagues and build inclusive programs
- Develop strategies and align organization design to support and achieve an organizations mission and vision
- Apply knowledge about the social determinates of heath and work collaboratively with leaders across sectors
- Use data and evidence-based management practices to improve managerial decision making
- Provide effective finical management for healthcare organizations
- Influence and respond to policies that promote the performance of the US healthcare system and healthcare organization
- Communicate effectivity
- Develop and manage innovations to improve organizational performance and population health
- Manage and behave legally and ethically in a complex, high-regulated healthcare movement

*Core competencies were not identified for remaining curricula. Identified learning objectives is listed below:

2) [KIT: Royal Tropical Institute: Human Resources in Health](#)

- explain the concept of Human Resources in the health sector
- analyze and discuss the various issues in human resources in the health sector
- discuss different strategies to assure sufficient and qualified staff are equitably distributed
- critically appraise staff performance, identify performance problems and suggest appropriate solutions
- critically assess training programs for health care workers and provide appropriate recommendations for improvement
- analyze organizational behavior and discuss strategic options and leadership styles for change

3) [Human Resource Management in Healthcare](#)

- Describe Human Resource Management (HRM) including history, milestones, factors and fit within healthcare.
- Define Strategic Human Resource Management, and discuss/detail tools, techniques and concepts as they relate to designing and implementing effective HRM departments.
- Interpret and explain significant employment laws and ethical considerations as they relate to HRM and healthcare.
- Apply the basic skills of job analysis and design, recruiting methods, and valid selection practices to facilitate effective organizational staffing for varied healthcare careers.
- Select, construct, and critically analyze organizational training and development programs to assist employees meet performance goals and maximize organizational HRM.

- Create a basic employee handbook that will identify employee rights, appropriate organizational discipline policies, and legal termination practices.
- Integrate knowledge regarding Labor Unions and conflict resolution practices such as mediation and arbitration in HRM.
- Integrate HRM theory, materials, tools, and techniques in health care considerations and new/changing trends.

4) [Phoenix University: Human Resources in Health Care](#)

N/A

5) [Global Health: Human Resources for Health \(HRH\): Principles and Practices](#)

- Understand the global HRH situation, including a timeline of initiatives and strategies, main challenges, and opportunities in low- and middle-income countries.
- Describe promising practices for developing and strengthening the health workforce within the health system, education sector, and labor market that can respond to contextual needs.
- Identify specific resources and tools for HRH development and strengthening for uptake by diverse HRH stakeholders.

Elements of potential use in our eHealth Interdisciplinary Curriculum

- Introduction to HRH
 - Human Resource Management in Healthcare
- Strategic Human Resource Management
- Legal and Ethical Issues for Health Human Resource Management
- Job Analysis & Design for Human resource Management in Healthcare
 - Recruiting & Hiring for Human Resource Management in Healthcare
 - Retention, motivation and performance of health workers
- Impact of Current Healthcare Trends on Human Resource Management
- Optimizing HRH Performance, quality and impact
- How does HDR contribute to reaching health goals?

4. Non-formal education related to the Human Resources in Health and e-Professionalism module

Existent non-formal education at international and national levels

- 1) [Global Health Workforce Alliance: The human Resource for Health Toolkit](#)
 - Components of HRH:
 - Leadership
 - Partnership
 - Policy
 - Finance
 - Education
 - HRH management systems

Core competencies of the identified non-formal education activities

N/A

Elements of potential use in our eHealth Interdisciplinary Curriculum

- Components of toolkit

5. Identified gaps for the Human Resources in Health and e-Professionalism module

Gap 1

Not necessarily a gap, but a point of discussion can represent adding a component of multidisciplinary work in the human resources field.

Gap 2

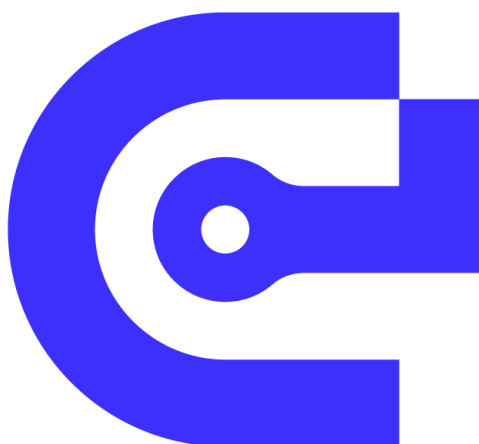
No curriculums on e-Professionalism were identified.

Solution: Include an e-Professionalism component in the curriculum to be developed on the CONNECT project.

6. Appendices

Kaczmarczyk, Joseph M., Alice Chuang, Lorraine Dugoff, Jodi F. Abbott, Amie J. Cullimore, John Dalrymple, Katrina R. Davis, et al. 2013. "E-Professionalism: A New Frontier in Medical Education." *Teaching and Learning in Medicine* 25 (2): 165–70. <https://doi.org/10.1080/10401334.2013.770741>.

Regmi, Krishna, and Linda Jones. 2020. "A Systematic Review of the Factors - Enablers and Barriers - Affecting e-Learning in Health Sciences Education." *BMC Medical Education*. BioMed Central Ltd. <https://doi.org/10.1186/s12909-020-02007-6>.



Cooperation and training on innovation and entrepreneurship in
the eHealth community (CONNECT)

2020-1-RO01-KA203-080244

IO1 - Desk Research Report

Partner: European Initiative for Education

Wiener Neustadt, May 17th, 2021

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1. Summary

- We did not find specific eLearning curriculum offered in the frame of international health studies
- In Austria, several universities offer eHealth bachelor and master studies
- Focus of these master studies is technology, technical developments (like apps), management, data bases, and similar

2. General information about the eLearning module from the eHealth Interdisciplinary Curriculum

The eLearning module will rely on current and state-of-the-art research results with a focus on eLearning. Elearning has been described recently by the Economic Times¹ as “A learning system based on formalised teaching but with the help of electronic resources is known as E-learning”. In the frame of this project, we will use the term “technology enabled Learning” with the included meaning of eLearning. This is the approach to the use of technology in learning as it is taught by the Athabasca University (in Canada)

Definition of eLearning (*Technology Enhanced Learning*)

Elearning basically is an outdated term that is more than 20 years old and is not used consistently with a clear meaning. In this document we use the definition² of Commonwealth of Learning (COL):

Technology-enabled learning aims to focus on increasing access to quality teaching and learning by supporting policy formulation and innovation in the application of ICT in education, and the development of ICT skills.

This concept includes

- The use of technology in learning
- The problem of “Multiple Devices”³
- The delivery method
- The pedagogical approach

Key components of eLearning (*Technology Enhanced Learning*)

The approach to Technology Enhanced Learning draws on several tried and tested elements from educational delivery.

¹ <https://economictimes.indiatimes.com/definition/e-learning>

² <https://www.col.org/programmes/technology-enabled-learning>

³ Multiple devices are electronical tools to process and display data, information and multimedia content. Currently we can distinguish several types of devices, most of them are portable today.
Source: <https://www.tibl-project.eu/web/en/what-are-multiple-devices/>

[A]. Delivery method

The delivery method will be Blended Learning which enabled an onsite teaching and a Distance Learning phase. The center of the delivery of content will be a versatile learning platform.

[B]. Learning Platform

The learning platform will be a MOODLE server. This Open Source and free-to-use platform offer (almost) all to provide a modern, effective and efficient learning

[C]. Flipped Learning 3.0 Framework

Jon Bergman and Errol Smith developed this modern framework, presented 2018 at the Flipped Learning Summit in Istanbul. The framework is based on 12 major fields in the teaching and training and includes finally 187 Global Elements of Effective Flipped Learning.

Note: Flipped Learning 3.0 is currently used in numerous universities worldwide.

[D]. The “Multiple Device Concept”

This concept originates from several studies done in School Education, Adult Education, and VET Education and enables the consequent use of different electronic devices in Technology Enabled Learning.

State of the art models and knowledge for the eLearning (Technology Enhanced Learning)

State of the Art models are described in the paragraphs above.

3. Existent curriculums on the eLearning (Technology Enhanced Learning) module

The EBI did a deep search but could not retrieve either eLearning modules in an eHealth curriculum nor identify universities providing related competences in their learning and training.

Existent Curriculums at international and national levels

We currently did not identify international eHealth curriculums. Teaching or practicing eLearning (Technology Enabled Learning) obviously is not an issue in the checked programs of eHealth teaching universities.

Core competencies of the identified curriculums

There could not be identified relevant curriculums containing Technology Enabled learning.

Elements of potential use in our eHealth Interdisciplinary Curriculum

There could not be identified relevant elements containing Technology Enabled learning.

4. Non-formal education related to the eLearning (Technology Enabled Learning) module

EBI is managing an ERASMUS+ project with a focus on use of Flipped Learning in Adult Education. Parts of the guide developed during the project's lifetime can be transferred to an eHealth eLearning strategy.

Existent non-formal education at international and national levels

The research did not show up specific eLearning strategies. We missed consistent framework. Some issues of the eLearning process are available from various universities (for example "Technology Enabled Learning", a MOOC from the Athabasca university).

Core competencies of the identified non-formal education activities

No information available

Elements of potential use in our eHealth Interdisciplinary Curriculum

Concepts of the "Guide to Flipped Adult Education"⁴ are fitting to be transferred to the project.

⁴ <https://www.fade-in.eu/>

5. Identified gaps for the eLearning (Technology Enabled Learning) module

Elearning - as a term – should be replaced by “Technology Enabled Learning”. This term describes the basic process of learning using technology. It is kept open and does not focus on any pedagogical method or the used delivery method. In this context, the missing components must be defined.

Gap 1

Elearning is a buzz word without any real information about the learning process. It can be seen as a general name for a methodology explaining that learning is based on electronical means.

Solution: Definition of a learning framework based on technology)

Gap 1

Concrete frameworks based on “eLearning” do not exist. Over the last few decades a patchwork of different methods and techniques has been developed that are combined in different contexts.

Solution: Definition of a well-structured framework describing means, pedagogical approach, delivery method, quality enhancement methods

6. Appendices

FH Technikum Vienna (University for applied studies)

Medical Engineering & eHealth: Lehrveranstaltungen und Informationen zum Studium - Curriculum

Master-Program Medical Engineering and eHealth (MME)

technical courses 
non-technical courses 
Master's Thesis 

1 st Semester	2 nd Semester	3 rd Semester	4 th Semester
Applied Research & Development 1* Project Related Teamwork 1 Team Management Skills Workflows in Medicine 8,5 ECTS	Applied Research & Development 2* Project Related Teamwork 2 Project Management and Leadership Skills* 7 ECTS Scientific Methodology in Healthcare* English Writing Skills Study Design and Biostatistics Ethics Scientific Publishing* 7 ECTS	Methods of Scientific Research Research and Development Skills Research and Development Seminar* 10 ECTS Exploring the Health Ecosystems* Selected Problems in Medical Engineering & eHealth* Economics and Marketing 4 ECTS	Master's Thesis 28 ECTS
Economic & Legal Issues Advanced English Corporate Management in Life Science Technologies EU-Law 5,5 ECTS	Quality and Policies for Healthcare* Quality and Regulatory Affairs Management* eHealth Applications* 8 ECTS	Advanced Clinical and Data Engineering Advanced Analysis of Medical Data* Clinical Engineering 8 ECTS	
Engineering in Medicine Cellular Electrophysiology and Bioimpedance Microprocessor Applications in Medicine* 8 ECTS	Elective Module 2 Bioinformatics* Artificial Intelligence Electromagnetic Compatibility Advanced Optics choose 2 of the listed electives 8 ECTS	Elective Module 3 Applied Optics in Medical Devices Respiration Technologies* Biosignal Processing* Image Analysis choose 2 of the listed electives 8 ECTS	
Elective Module 1 Applications for Crowdsourced Healthcare* Engineering for Therapy & Rehabilitation* Medical Information Systems Modelling in Cardiovascular Systems choose 2 of the listed electives 8 ECTS			Seminar for Degree Candidates 2 ECTS

ECTS

*vorausgesetzt Genehmigung durch das Kollegium der FH Technikum Wien

Medical Engineering & eHealth: Lehrveranstaltungen und Informationen zum Studium – Curriculum

Master-Program Medical Engineering and eHealth (MME)

technical courses ☐
 non-technical courses ☐
 Master's Thesis ☐

1 st Semester	2 nd Semester	3 rd Semester	4 th Semester
Applied Research & Development 1* Project Related Teamwork 1 Team Management Skills Workflows in Medicine 8,5 ECTS	Applied Research & Development 2* Project Related Teamwork 2 Project Management and Leadership Skills* 7 ECTS Scientific Methodology in Healthcare* English Writing Skills Study Design and Biostatistics Ethics Scientific Publishing* 7 ECTS	Methods of Scientific Research Research and Development Skills Research and Development Seminar* 10 ECTS Exploring the Health Ecosystems* Selected Problems in Medical Engineering & eHealth* Economics and Marketing 4 ECTS	Master's Thesis 28 ECTS
Economic & Legal Issues Advanced English Corporate Management in Life Science Technologies EU-Law 5,5 ECTS	Quality and Policies for Healthcare* Quality and Regulatory Affairs Management* eHealth Applications* 8 ECTS	Advanced Clinical and Data Engineering Advanced Analysis of Medical Data* Clinical Engineering 8 ECTS	
Engineering in Medicine Cellular Electrophysiology and Bioimpedance Microprocessor Applications in Medicine* 8 ECTS	Elective Module 2 Bioinformatics* Artificial Intelligence Electromagnetic Compatibility Advanced Optics choose 2 of the listed electives 8 ECTS	Elective Module 3 Applied Optics in Medical Devices Respiration Technologies* Biosignal Processing* Image Analysis choose 2 of the listed electives 8 ECTS	
Elective Module 1 Applications for Crowdsourced Healthcare* Engineering for Therapy & Rehabilitation* Medical Information Systems Modelling in Cardiovascular Systems choose 2 of the listed electives 8 ECTS			Seminar for Degree Candidates 2 ECTS

ECTS

*vorausgesetzt Genehmigung durch das Kollegium der PH Technikum Wien

University of Technology Vienna

033 533 Bachelorstudium Medizinische Informatik⁵

⁵ <https://tiss.tuwien.ac.at/curriculum/public/curriculum.xhtml?dswid=3393&dsrid=460&key=45860>



English Hilfe
Login

033 533 Bachelorstudium Medizinische Informatik

Strukturansicht | Semesteransicht

2020W-2021S (2017U)

2021S | ☒ Studienjahr anzeigen

[Allgemeine Informationen zu diesem Curriculum](#) | [Verordnungstext](#)

Titel	Anm.Bed.	Stunden	ECTS
Bachelorstudium Medizinische Informatik			180.0
Prolog			
VU Propädeutikum für Informatik		2.0	3.0

Health Care Informatics FH Wiener Neustadt

The Health Care Informatics⁶ is newly established in Wiener Neustadt and will start with the winter semester 2021

22 Wiener Neus



Anne Busch leitet den Studiengang Health Care Informatics. Foto: Kamiki

Anne Busch leitet neuen Studiengang

Health Care Informatics |
Start im September,
Bewerbung bis 16. Juni.

FH WIENER NEUSTADT | Im Dezember wurden an der FH die Weichen für einen neuen, innovativen Studiengang gelegt, der den Bedarf an ausgeprägter technologischer Kompetenz in der Informatik und konkreter Anwendungsorientierung für den

gesamten Gesundheitssektor abdecken wird. Nun konnte Anne Busch als Studiengangsleiterin für den Master-Studiengang Health Care Informatics gewonnen werden.

„Ich sehe in meiner neuen Tätigkeit die ideale Möglichkeit, meine gesundheitsökonomischen, technischen sowie unternehmerischen Kenntnisse, Denkweisen und Interessen zu verbinden“, so Busch.

Die promovierte Gesundheitsökonomin absolvierte ihr Bachelor-Studium für Wirtschaftsingenieurwesen mit Vertiefungsrichtung Automatisierungstechnik an der Leuphana Universität in Lüneburg und schloss daran das Masterstudium mit Vertiefungsrichtungen Mechatronik und Messtechnik sowie Finanzwirtschaft und Volkswirtschaftslehre an.

Interessenten haben bis 16. Juni die Möglichkeit, sich unter [onlinebewerbung.fhwn.ac.at](https://www.fhwn.ac.at/onlinebewerbung.fhwn.ac.at) für den im September beginnenden Studiengang zu bewerben.

⁶ <https://www.fhwn.ac.at/studiengang/health-care-informatics>



UNIT Tirol

Health Information Management⁷



Newsletter bestellen Infomaterial Servicecenter Datenschutz Impressum/Kontakt english

Studien Departments Universität Alumni & Partner



Health Information Management

Home > Studien > Universitätslehrgänge > Health Information Management

Bachelor **Health Information Management** Download

⁷ <https://www.unit-tirol.at/page.cfm?vpath=studien/universitaetslehrgaenge/health-information-management>

Tab. 1: Modulübersicht des Universitätslehrganges „Health Information Management“

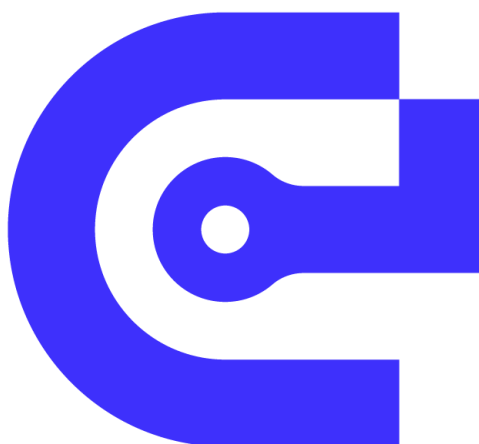
Semester	Modulname	ECTS-Credits Gesamt	Kontaktstudium & individuelles Selbststudium (ECTS-Credits)	Begleitetes Selbststudium ¹ (ECTS-Credits)	Virtuelle Interaktions- zeit ² (UE)	Institution
1. Semester	A Professionelles Projektmanagement	6	1	5	60	UMIT TIROL
	B IT-gestütztes Prozessmanagement im Gesundheitswesen	6	1	5	60	UMIT TIROL
	C Angewandte Informatik ³ oder	6	1	5	60	LFUI
	D Klinische Entscheidungsfindung und Organisation des Gesundheitswesens ³	6	1	5	60	UMIT TIROL
	GESAMT	18	3	15	180	
2. Semester	E Informationssysteme des Gesundheitswesens und ihr Management	6	1	5	60	UMIT TIROL
	F eHealth und elektronische Gesundheitsakten	6	1	5	60	UMIT TIROL
	G Klinische Ordnungssysteme und semantische Interoperabilität	6	1	5	60	UMIT TIROL
	GESAMT	18	3	15	180	
3. Semester	H Datenschutz und Informationssicherheit im Gesundheitswesen	6	1	5	60	UMIT TIROL
	I Evidence-Based Medical Informatics and Evaluation of Information Systems	6	1	5	60	UMIT TIROL
	J Software Quality Engineering	6	1	5	60	LFUI
	GESAMT	18	3	15	180	
4. Semester	K Clinical Knowledge Discovery und Data Warehousing	6	1	5	60	UMIT TIROL
	L Zertifizierung und rechtliche Grundlagen von Medizinssoftware	6	1	5	60	UMIT TIROL
	M Aktuelle Themen in der Medizinischen Informatik	6	1	5	60	UMIT TIROL/
	GESAMT	18	3	15	180	
5. Semester	N Wissenschaftliches Arbeiten	3	1	2	30	UMIT TIROL
	O Abschlussprüfung (schriftlich/mündlich)	15 (13/2)	2	13	20	UMIT TIROL/LFUI
	GESAMT	18	3	15	50	
	GESAMT	90				

Joanneum Graz

Gesundheitsinformatik / eHealth⁸

The curriculum is available from the website only.

⁸ <https://www.fh-joanneum.at/gesundheitsinformatik/bachelor/im-studium/studienplan/>



Cooperation and training on innovation and entrepreneurship in
the eHealth community (CONNECT)

2020-1-RO01-KA203-080244

IO1 - Desk Research Report – Social media in health

Partner: Babes-Bolyai University

Cluj-Napoca, 25th of June, 2021

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1. Summary

- There are several existent curriculums on social media in health at international level.
- There are no existent curriculums on social media in health in Romania.
- We identified several non-formal activities for social media in health.
- In the identified curriculums there is a lack of concepts that explain how social media in health works (algorithms and other relevant computer-based technology).

2. General information about the social media in health module from the eHealth Interdisciplinary Curriculum

Definition of social media in health

Social media refers to internet-based platforms used for communication, the gathering of information and or sharing of information/content. Social media platforms include Facebook, Twitter, LinkedIn etc. Social media can be used by health care professionals to share health information, promote health behaviors, or educate and interact with patients. Social media is used in health primarily as a tool to improve upon health outcomes both on a national and international level, to professionally network and or to increase awareness of health issues (Ventola 2014).

Key components of social media in health

- Health Education
- Knowledge and information aggregation
- Professional networking
- Social Networking
- Patient care
- Healthcare promotions

State of the art models and knowledge for social media in health

- Interventions/use
 - Usage of social media for health awareness among health educators and students (Giustini et al. 2018; Gomes et al. 2017)
 - Use of social media for professional purposes (Chan et al. 2020; Vu, Trieu, and Nguyen 2020; Wagner et al. 2018)
 - Healthcare professionals correcting health information on social media (Walter et al. 2020; Bode and Vraga 2018; Bautista, Zhang, and Gwizdka 2021)
 - Using social media to detect poor quality healthcare (Moorhead et al. 2013; Convertino et al. 2018; Nguyen et al. 2017)

3. Existent curriculums on the social media in health module

Existent Curriculums at international and national levels

- 1) [Social for healthcare certificate \(Mayo Clinic\)](#)
 - Introduction to Social Media and Healthcare
 - Introduction to social media in health care
 - Social media platforms
 - Elements of a social media account
 - Social media strategy and tactics
 - Health care and social media in practice
 - Facebook Basics
 - Twitter Basics
 - LinkedIn Basics
 - Visual Social Media
 - Monitoring and Measurement
 - Professionalism
- 2) [Ontario College of Pharmacists Social Media Awareness for regulated healthcare professionals](#)
 - Social Media
 - Social media environment
 - Professional services
 - Top uses of social media
 - What professionals want
 - Benefits of social media
 - Protect public interest
 - Maintaining professionalism
 - Managing social media
 - Practice scenarios
 - Informed Consent
 - Privacy and Confidentiality
 - Maintain Professionalism
 - Conflict of interest
 - Ensuring Communications
- 3) [Taipei Medical University, Social Media in Healthcare](#)
 - Introduction to social media and networking
 - Social media generated big data
 - Gamification and social media for health behavior change
 - Use of social media by hospitals and health authorities
 - What can patients do for themselves via social media

- 4) [Social Media for Healthcare Marketing](#)
 - Social Media for Health Care
 - Business Case: Why use Social Media
 - Official v. Personal Social Media Sites
 - The HIPPA Privacy Rule: Overview
 - Who is Covered by the HIPPA Privacy Rule?
 - What is Covered by the HiPPA Privacy Rule?
 - Permitted v. Authorized Users
 - Limiting Uses & Notice to Patient
 - Patient/clients and Social Media
 - The HIPPA Security Rule
 - Risk Management Escalation Procedures
- 5) [Udemy: Social Media for Healthcare Providers](#)
 - Introduction to Social Media for Health Care Providers
 - Overview of Social Media in Health Care
 - Why Health Care Providers Should Use Social Media
 - Posting on Official v. Personal Social Media Accounts
 - Complying with HIPPA on Social Networks
 - Understanding HIPPA Privacy Rule
 - Who is covered by HIPPA Privacy rule
 - What is covered by the Privacy rule
 - When Patient Information Can Be Disclosed
 - Understanding the “Minimum Necessary” Requirement
 - Rules Concerning Liking, Friending & Retweeting
 - Satisfying Administrative, Technical & Security Standards
 - Risk Management Escalation Procedures
- 6) [Social Media for Health and Development](#)
 - Introduction to social media
 - The power of social media
 - Defining social media
 - The state of social media
 - Social media in Global Health
 - Using social media for global health and development
 - How to make social media work for you
 - Social media resources for global health and beyond
 - Facebook
 - Twitter
 - Developing a Social Media Strategy for Your Organization
 - Measuring social medias success
- 7) [Social Media Rules for Nurses and Healthcare Providers](#)
 - Privacy & Security Regulations and Internet Challenges
 - Big Enemies in Carelessness & Neglect
 - Put Safeguards in Place
 - Protecting Patient Information

8) [Social media and networks in health and social care](#)

- The internet
 - Advantages and disadvantages
 - Health and care on the internet
 - Children, young people and the internet
 - Working with vulnerable young people online
- The internet, social media and me
 - Defining online social networks
 - Reflecting on your digital footprint
 - The ethical debate: googling service users and patients?
 - The ethical debate on PTG

9) [Western University School of Health Studies: Social Media & Health](#)

- A history of Social Media
- Digital Health Technologies
- Social media and mental health
- Social media and interpersonal relationships
- Social media and public health
- Social media and health promotion
- Social media and medicine
- Social media and parenting

10) [Social Media Training for Doctors](#)

- Concepts and users behavior online
 - Introduction
 - Ethical use of social media
 - Understanding User Behavior Online
 - Buying cycle/ user behavior
 - How users are using digital and social media
 - A shift on how users use the internet
 - Trends and changes on how users behave online
 - How social media is playing a role
 - How users are using online tools for health related research
 - Introduction to social media
 - Digital concepts
 - Advantages and disadvantages of social media
 - What platforms are users active
 - How each platform works
- Google and social media
- Personal Branding online
- LinkedIn
- Facebook
- Instagram
- Youtube
- Twitter

- Quora
- Content
- TikTok

11) [Ohio State University College of Public Health: Social Media in Public Health](#)

- Digital Citizenship
- Social Media Basics
- Using Twitter
- Using Facebook
- Using LinkedIn
- Using YouTube
- Social Media and Public Health Communication

Core competencies of the identified curriculums

*Core Competencies were not identified. Identified learning objective is listed below:

1) [Social for healthcare certificate \(Mayo Clinic\)](#)

- Describe applications and benefits of using social media in healthcare
- Distinguish among various social media platforms and identify the strengths and weaknesses of each.
- Describe characteristics of effective and professionally appropriate engagement in online healthcare discussions.

2) [Ontario College of Pharmacists Social Media Awareness for regulated healthcare professionals](#)

- Enhance your awareness of the benefits and risk of social media in health care
- Provide you with the opportunity to reflect on your use of social media and professional behaviors
- Apply sound principles from professional standards of practice and related legislation to ensure risk management strategies are in place
- Reflect on your personal use of social media and its impact on your professional practice, relationships and reputations

3) [Taipei Medical University, Social Media in Healthcare](#)

- Describe what social media is in the context of healthcare
- Interpret what is good or bad through social media
- Reflect on the patient's role in modern healthcare ecosystems

4) [Social Media for Healthcare Marketing](#)

- Advantages and benefits of social media communications to health care professionals
- Business case for effective, responsible social media use in the medical workplace
- Who and what is covered under the HIPAA Privacy Rule and the HIPAA Security Rule

- Permitted disclosures, the minimum necessary requirement and rules on endorsements
 - Examples of HIPAA violations resulting in fines from Dept. of Health & Human Services
- 5) [Udemy: Social Media for Healthcare Providers](#)
- How the HIPAA Privacy Rule and HIPAA Security Rule apply to social networking
 - Understand the advantages and benefits of social media communications to health care professionals
 - Learn about permitted disclosures, the minimum necessary requirement and rules on endorsements
 - Hear examples of prior HIPAA violations that resulted in fines from Dept. of Health & Human Services
- 6) [Social Media for Health and Development](#)
- Define the common principles of social media
 - Identify ways in which social media can be (and is currently) used in global health and development
 - Describe some of the features and functionalities of the most popular social media platforms
 - Understand how to create professional social media accounts
 - Learn how to write and synthesize content to fit different social media platforms
 - Recall the steps involved in developing a social media strategy and linking it to programmatic goals and budget
 - Identify different social media strategies for increasing followers and engaging health and development agencies
- 7) [Social Media Rules for Nurses and Healthcare Providers](#)
- Define Protected Health Information (PHI)
 - Identify the kind of daily carelessness that threatens PHI
 - State the role of staff in protecting PHI
 - Recognize obvious risks that should be reported to appropriate supervisors
 - List 3 personal responsibilities that contribute to a culture of vigilance in protecting PHI
- 8) [Social media and networks in health and social care](#)
- identify the advantages and disadvantages of using the internet in health and social care
 - evaluate your own use of online social networks and the implications of these for workers in health and social care
 - evaluate the impact of the internet on the experiences of users of health and social care services
- 9) [Western University School of Health Studies: Social Media & Health](#)

- Depth and Breadth of Knowledge: Understand how and why social media has become a significant tool in our society and examine its overall impact on our health, beliefs, health behaviors and provision of health care
- Application of Knowledge: Assess real-world scenarios and situations to predict how people will use digital health technologies and interpret the health information found on social media
- Application of Methodologies: Explain the scientific models, concepts and theories that have been used to understand the relationship between social media and health

10) [Social Media Training for Doctors](#)

N/A

11) [Ohio State University College of Public Health: Social Media in Public Health](#)

- Understand the tenets of digital citizenship
- Understand the various social media platforms
- Understand social media's application in public health
- List best practices for social media use

Elements of potential use in our eHealth Interdisciplinary Curriculum

- Introduction to Social Media and Healthcare
 - Introduction to social media in health care
 - Social media platforms
 - Elements of a social media account
 - Social media strategy and tactics
 - Health care and social media in practice
- Why Health Care Providers Should Use Social Media
- Social media platforms
 - Using Twitter
 - Using Facebook
 - Using LinkedIn
 - Using YouTube
- Posting on Official v. Personal Social Media Accounts
- Social Media
 - Social media environment
 - Professional services
 - Top uses of social media
 - What professionals want
 - Benefits of social media
 - Protect public interest
 - Maintaining professionalism
 - Managing social media
- Complying with HIPPA on Social Networks
- Social Media and Public Health Communication
- Social media in Global Health

4. Non-formal education related to the social media in health module

Existent non-formal education at international and national levels

- 1) [The Social Media Course: Social Media in Health care](#)
 - How hospitals can use social media
 - Social Media Adoption Curve
 - Dealing with Conflict
 - Potential Benefits
 - Medial Practices in Social Media
 - What do you need for a proper social media presence?
- 2) [Social Media Support for Public Health professionals: Interactive Webcast Series](#)

Webcast Topics:

 - Facebook & Image Sharing
 - Gaming & Mobile
 - Google+ and YouTube
 - LinkedIn & SlideShare
 - Measurement and Evaluation
 - The cycle of Social Media Plan
 - Twitter
 - What's New in Image & Video Sharing
 - What's New in Social Media

Core competencies of the identified non-formal education activities

N/A

Elements of potential use in our eHealth Interdisciplinary Curriculum

- How hospitals can use social media
- Social Media Adoption Curve
- Dealing with Conflict
- Potential Benefits
- Medial Practices in Social Media

5. Identified gaps for the social media in health module

Gap 1

There is a lack of explanations of how social media platform functions and the algorithms behind them and there is no connection on how those algorithms might be used to transmit health information or to improve health.

Solution: Include elements of from the IT field (such as social media algorithms and other relevant computer-based technology) into the module of social media.

6. Appendices

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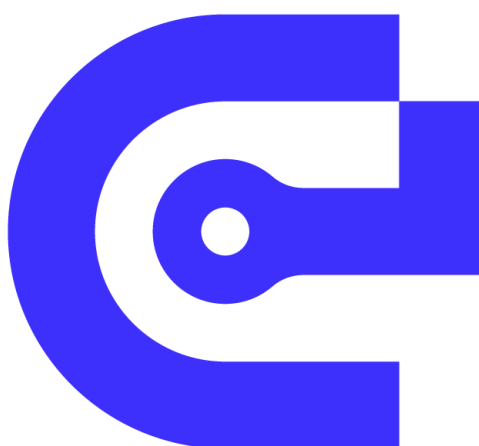
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Cooperation and training on innovation and entrepreneurship in
the eHealth community (CONNECT)

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IO1 - Desk Research Report - mHealth module

Partner: Babes-Bolyai University

Cluj-Napoca, June 25th, 2021

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1. Summary

- There are existent mHealth curriculums at international level, mostly in the United States.
- No mHealth curriculum was identified for Romania or Europe.
- We identified several non-formal mHealth activities, being done mostly in the US.
- There is a gap in bridging IT and health domain in the existent mHealth curriculums.

2. General information about the mHealth module from the eHealth Interdisciplinary Curriculum

Definition of mHealth

Mobile Health (mHealth) refers to the use of mobile/wireless technologies, such as mobile phones, tablets, and smart watches for medical and public health services and for the support of health objectives. mHealth applications include SMS, apps, data collection software, patient monitoring devices etc.

Key components of mHealth

- Wellness apps
- Wearable technology
- Mobile phones
- Wireless devices
- Cloud computing and smart sensors
- Medical sensors
- Health Condition Management apps
- Big data
- Data Collection Software
- Patient monitoring devices

State of the art models and knowledge for the mHealth module

- Recent mHealth innovations
 - o Pregnancy (Amoakoh-Coleman et al., 2016; Overdijkink et al., 2018; Saronga et al., 2019; Sondaal et al., 2016)
 - o Self-harm (Cliffe et al., 2021; Melia et al., 2020; Tighe et al., 2018)
 - o Promotion of physical activity (Elavsky et al., 2019; Najm et al., 2019)
 - Fitbit (Balbim et al., 2021)
 - BAILA TECH – dance program for Latinxs (Marques et al., 2021)
 - o Social comparison
 - effective technique for engaging the general population in mHealth Interventions (Nuijten et al., 2020)

- Mental health (Berrouiguet et al., 2016; Gire et al., 2017; Inal et al., 2020; Marcolino et al., 2018; Rathbone & Prescott, 2017; Wang et al., 2018)
- Clinical workflow (Gagnon et al., 2016; Hamine et al., 2015; White et al., 2016)
- Models (Godinho et al., 2020)
 - Readiness – value model (Cho et al., 2018; Kaium et al., 2019; Slater et al., 2017; Yusif et al., 2017)
 - Model significantly predicts user's subjective well-being (Aboelmaged et al., 2021)

3. Existent curriculums on mHealth module

Existent Curriculums at international and national levels

1) [Northwestern University: Wireless and Mobile health](#)

- Foundational knowledge and topical work in mHealth
- Steps to creating mHealth systems
- Literature in Human-computer interaction, wearable systems, machine learning, and health

2) [Global Health Learning Center: mHealth Basics: introduction to Mobile Technology for Health](#)

- What is mHealth
 - Defining mHealth
 - Uses of mHealth
 - mHealth Potential Benefits
 - mHealth, eHealth and ICT
 - mobile Technology in mHealth
 - Common Mobile Phone and Tablet Features
 - The Power of a Basic Mobile Phone
- Why mHealth is important
 - Importance of mHealth: Four Factors
 - Factor 1: Growth of Mobile Phone Users
 - Factor 2: Expansion of Mobile Networks
 - Factor 3: Innovation in Mobile Technology
 - Factor 4: Task Shifting and Other Health System Needs
 - mHealth Potential: Example and Summary
 - Limitations of mHealth
- Types of mHealth applications
 - Overview of mHealth Applications
 - Social and Behavior Change Communication
 - SBCC- Support for Treatment Adherence
 - Workforce Development and Support

- Service Delivery
- Financial Transactions and Incentives
- Supply Management
- Information Systems
- A tool for strengthening Health Systems
- Evidence on the effect of mHealth
 - What is the Evidence Base for mHealth
 - What Do We Know About the Effects of mHealth Solutions?
 - Social and Behavior Change Communication
 - Youth Responses to m4RH
 - Support for Treatment Adherence
 - Supply Management
 - Service Delivery
 - Information Systems
 - mHealth Evidence (initial conclusions)
 - mHealth Evidence Gaps and Priorities
- Overview of mHealth solution development
 - Introduction to mHealth Solution Development
 - Steps to mHealth Sustainability
 - mHealth Solution Development is Iterative!
 - View of an mHealth Solution
- Initial planning and concept development
 - Initial Planning and Concept Development Overview
 - Define the Problem and Ensure that mHealth is Appropriate
 - Coordinate with Programs, Health Systems
 - Assess the Context and Select the Mobile Technology Solution
 - The importance of Assessing Mobile Phone use
 - Build a Board Base of Key Partnerships
 - Develop a Logical Framework Based on Existing Logic Models
- Solution design and tracking
 - Solution Design and Testing Overview
 - Ensure Shared Understanding of Technology Components
 - Design and Monitoring and Evaluation Plan
 - Design the Technological Platforms
 - Consider Potential for Scale Up
 - Design and Test Content and User Interface
- mHealth solution monitoring and evaluation
 - Monitoring and Evaluation Phase Overview
 - Gather Evidence that Stakeholders need
 - Collect feedback from users
 - Analyze and Report on System Data
 - Evaluate Project Impact
- Scale-up and sustainability
 - Scale-Up and Sustainability Overview
 - Make the Solution Easy to Adopt
 - Integrate the Solution with Programs
 - Health Ensure Human and Technical Resources for Scale-Up

- Explore Sustainability Models or Make a Business Case for the Intervention

3) [AME: mHealth: innovations in the periphery](#)

- Clinical Documentation in Telehealth Environment: Are We Collecting Appropriate and Sufficient Information for Best Practice?
- mHealth approaches in Case Management
- Challenges in implementing Telehealth in a Rural Setting
- Distribution Model to Deploy mHealth Devices and Equipment for Remote Patient Assessment and Care Delivery
- Virtual Wellness Program for OT Fieldwork
- mHealth Tracking for Food Insecurity
- mHealth: Periphery & New Frontiers

4) [St. Peterburg University: The Development of Mobile Health Monitoring Systems](#)

- Remote health monitoring system hardware
- Data Exchange Between Device and Personal Computer
- Preprocessing of Biomedical Signals
- Event Detection in Biomedical Signals
- Developing Data-Driven Recommendation System

5) [TechChange: mHealth – Mobile Phone for Public Health](#)

- Introduction to Mobile Phones for Public Health
- Strengthening Health Systems
- Citizen Centered Health
- The future of mHealth

6) [John Hopkins Bloomberg School of Public Health: Digital and Mobile Research in public Mental Health](#)

- Theories and mHealth
- mHealth Trial Designs and Treatment Optimization
- Ethics and Social Media
- Online Recruitment of Research Participants
- UX Design and Remote Qualitative Data Collection
- Using Online Focus Groups to Study Mentoring During COVID-19
- Programmatic Development of Learn to Quit: A smoking Cessation App Tailored to Patients with Serious Mental Illness
- Online Data Mining
- Ecological Momentary Assessment: Introduction to Applied Areas
- Ecological Momentary Assessment Applications for Pain Research
- Ecological Momentary Assessment Methods
- mHealth Data to Inform Interventions
- mHealth Interventions
- Social Medica Interventions

7) [University of California San Diego: Mobile Health Sensing](#)

*Course topics:

- Mobile Health- data in the wild to understand human health
- Tracking Human Behavior
- Anticipatory Ethics & Tracking the Environment
- Personal Tracking
- Sensing from Afar
- Low-cost Health Care
- “in- the background” & Mobile Intervention
- Digital Phenotyping and Epidemiology

8) Case school of Engineering: Mobile Health Technology

- Overview of mHealth Technology and Applications
- Mobile Computing and Application Development using Andorid
- Android User Interface and Data Collection
- Mobile-Health: Using Mobile Computing for Remote Monitoring
- Machine Learning Algorithms for Data Analysis
- Vision- Based Technologies for human Computer Interaction
- Big Data Analysis Toll and Evaluation Metrics
- Smartphone and Microcontroller Communication
- Limitations of the Mobile and IoT Environment

9) Drexel University Dornsife School of Public Health: mHealth Methods & Applications

*Course content:

Introduction to concepts and methods in mobile health communication, including mobile and electronic data collection and analysis of mHealth strategies

10) The Healthcare Informatics Society of Ireland mHealth for Healthcare Professionals Certificated Training Course

- Introduction to mHealth
 - How everything that should be connected should be
 - Smart Mobile Services- case studies
 - Overview of apps used by patients
 - Overview of apps used by doctors
 - Case study” how apps enable new services
- Privacy and Quality
 - Overview of how to judge the quality of an app
 - Overview of major privacy challenges
 - Case study: how patients’ information is being abused by app developers
 - Steps to take to help prevent data leaks
 - Why Health Information Technologies need to be certified

11) National Institutes of Health (NIH) mHealth Online Training Course and mHealth at the NIH

- What is mHealth
- Beyond Telemedicine
- The Potential (of mHealth)
- Who uses Mobile?

- Components of a cell phone
 - SMS Text messaging
- Continuum of mHealth
 - Measurement
 - Implantable biosensors
 - Wearable Chemical Sensor Systems
 - Stress Hormone Detection
 - Population Scale Activity Measures
 - Diagnostic
 - Lucas Mobile Microscope
 - High Resolution Fiber Optic
 - Pulmonary Function: Wireless Capnograph
 - Treatment
 - Body Sensor Networks
 - Chronic Disease Management
 - Cardiac Disease Management
 - Aging in Place: Smart Environment/Mobile Technologies
 - Global
 - Necessity for Global Health
 - Adherence Monitoring (Uganda)
 - Adverse Event Monitoring (Peru)
- Other Considerations
 - High Throughput Exposomics
 - “Do it right”
 - Moving “hype” Productivity
- Research/Funding Challenges
- Current Evidence on mHealth
- Problems with current (mHealth) Literature
- Resources for mHealth Evidence

12) [Medgineering: Mobile Health 101 Crash course](#)

- Mobil health defined
- Mobile health trends and landscapes
- FDA regulatory pathways
- FDA compliance and guidance review
- Tips and Tricks for mHealth Manufacturers

Core competencies of the identified curriculums

Core competencies were not identified. Identified learning objective is listed below:

1) [Northwestern University: Wireless and Mobile health](#)

- Understand the process of creating and evaluating a mHealth system
- Critically examine the impact of mHealth systems on people and society
- Analyze different types of data obtained from mHealth systems
- Design experiments to validate mHealth systems

- Write a proposal for an mHealth system or framework
- 2) [Global Health Learning Center: mHealth Basics: introduction to Mobile Technology for Health](#)
 - Define mHealth and its relationship to eHealth and ICT
 - Explain the importance of mHealth
 - Explain potential benefits and limitations of mHealth
 - Describe the mobile devices and features commonly used in mHealth in low-resource settings
 - Describe the six types of mHealth applications
 - Describe preliminary conclusions from the evidence on mHealth
 - Describe recommended best practices for each phase of mHealth solution development
 - Identify examples of best practices in mHealth solution development scenarios
 - Identify and obtain resources for additional information about mHealth
- 3) [AME: mHealth: innovations in the periphery](#)
N/A
- 4) [St. Peterburg University: The Development of Mobile Health Monitoring Systems](#)
N/A
- 5) [TechChange: mHealth – Mobile Phone for Public Health](#)
 - critically analyze both the opportunities and the pitfalls that emerge when working with mobile technology to improve public health outcomes
 - connect relevant development theories to the technological strategies and tools discussed in the course
 - manage specific mHealth software platforms and tools
 - design dynamic and effective strategies for using tools and platforms to improve mHealth efforts
 - become more confident using mobile technology to address public health challenges
- 6) [John Hopkins Bloomberg School of Public Health: Digital and Mobile Research in public Mental Health](#)
 - Explain different study designs and approached of digital health research studies.
 - Discuss common strengths and shortcomings impacting study quality in the digital health space.
 - Identify how digital health methods can be applied in the student's own area of interest.
 - Plan, design, and conduct their own digital health data collection projects.
- 7) [University of California San Diego: Mobile Health Sensing](#)
 - Hands-on development of software solutions for mHealth sensing systems.
 - Survey mHealth applications through a set of curated reading from recent publications in the field of mobile health. Student pairs will lead paper discussions. Written responses of select readings will be required.
 - Design a proposal and develop of a mHealth device in a final group project. The role of this final project is for the student to potentially reproduce a paper

from recent publication, design a new device, or potentially find a way to apply their current research in the context of mobile health.

- 8) [Case school of Engineering: Mobile Health Technology](#)
 - Draw the general model of a personalized health system, describe the function of each of the blocks, define technical terms relevant to the model, and data mining modules
 - Design mobile app to transmit medical and health data across wireless channels and understand the wearable sensor sensing, sampling, and communication principles.
 - Survey state-of-art wireless-sensor-based hardware. This includes wearable IMU, force sensor, head mounted display, and other warble sensor design.
 -
 - Learn to search scientific studies using CWRU library resources and use latex for technical writing
- 9) [Drexel University Dornsife School of Public Health: mHealth Methods & Applications](#)
N/A
- 10) [The Healthcare Informatics Society of Ireland mHealth for Healthcare Professionals Certificated Training Course](#)
N/A
- 11) [National Institutes of Health \(NIH\) mHealth Online Training Course and mHealth at the NIH](#)
N/A
- 12) [Medgineering: Mobile Health 101 Crash course](#)
N/A

Elements of potential use in our eHealth Interdisciplinary Curriculum

- What is mHealth
 - Defining mHealth
 - Uses of mHealth
 - mHealth Potential Benefits
- Types of mHealth applications
 - Mobile Computing and Application Development
 - Mobile-Health: Using Mobile Computing for Remote Monitoring
 - Machine Learning Algorithms for Data Analysis
 - Vision- Based Technologies for human Computer Interaction
- Continuum of mHealth
 - Measurement
 - Diagnostic
 - Treatment
 - Global
- Privacy and Quality
 - Overview of how to judge the quality of an app
 - Overview of major privacy challenges
- Introduction to Mobile Phones for Public Health

- The future of mHealth

4. Non-formal education related to the mHealth module

1) [mHealth Training Institute](#)

“The mHTI is a national connector/incubator/facilitator for advancing mHealth researchers with the transdisciplinary expertise and networks for co-creating practical healthcare solutions with societal impact.”¹

Lectures (May 10th, 2021- June 7th, 2021):

- Overview of mHTI activities
- Review of the Team Science Process
- Developing impactful mHealth Solutions
- Understanding Health Behaviors
- Changing Health Behaviors
- Sensing the Human Condition
- Sensing the Human Condition: An Engineers Perspective
- Machine Learning Approaches in mHealth
- From sensed Data to Digital Biomarkers
- Experimental Designs for Personalized Interventions
- Promises and Pitfalls of Platforms for mHealth Studies
- mHealth Interventions in Vulnerable Populations
- An Ethics Framework for mHealth Studies
- Behavioral Economics to Personalized Behavioral Interventions
- User-Centered Design for mHealth Interventions

2) [Global mHealth Research Training Institute](#)

One-Time, short-Term, scenario-based Training opportunity for those interested in global mHealth research.

Lectures:

- [Defining the problem: Understanding and changing behavior \[PDF <1M, 36 slides\]](#)
Donna Spruijt-Metz, M.F.A., Ph.D.
- [Defining the problem: The health system \[PDF 1M, 32 slides\]](#)
Magaly Blas, M.D., M.P.H., Ph.D.
- [Needs assessment and asset analysis: Framing ethical interventions with impact \[PDF 1M, 29 slides\]](#)
Rachel Hall-Clifford, Ph.D., M.P.H., M.Sc.
- [User-centered design of mobile and wearable health applications \[PDF 2M, 9 slides\]](#)
Maribeth Gandy, Ph.D.

¹ <https://mhti.md2k.org/>

- [Technology and sensors \[PDF 1M, 28 slides\]](#)
Gari Clifford, Ph.D.
Omer Inan, Ph.D.
- [Signal processing and machine learning \[PDF 1M, 49 slides\]](#)
Gari Clifford, Ph.D.
- [Health informatics \[PDF <1M, 18 slides\]](#)
Martin C. Were, M.D. M.S.
- [Experimental designs for optimizing interventions \[PDF <1M, 33 slides\]](#)
Inbal (Billie) Nahum-Shani, Ph.D.
- [Implementation science and mHealth: Insights at the intersection? \[PDF 3M, 28 slides\]](#)
Elvin Geng M.D., M.P.H.
- [Engaging multidisciplinary teams \[PDF <1M, 21 slides\]](#)
Donna Spruijt-Metz, M.F.A., Ph.D.
Thomas Odeny, M.D.
Gari Clifford, Ph.D.
- [mHealth funding opportunities from NIH \[PDF <1M, 11 slides\]](#)

3) [An introduction to mHealth \(Digital Health Summit 2013 Istanbul\)](#)

Core competencies of the identified non-formal education activities

N/A

Elements of potential use in our eHealth Interdisciplinary Curriculum

- mHealth Interventions in Vulnerable Populations
- An Ethics Framework for mHealth Studies
- User-Centered Design for mHealth Interventions

5. Identified gaps for the mHealth module

Gap 1

There are no curriculums or activities that bridge the IT and health domain. A curriculum encompassing elements from both domains would be needed.

Solution: Build a curriculum/framework that takes into account both the IT and the health domain and bridge the gap.

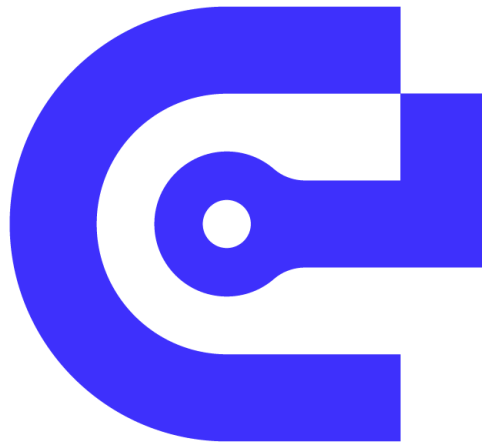
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Cooperation and training on innovation and entrepreneurship in
the eHealth community (CONNECT)

2020-1-RO01-KA203-080244

IO1 - Telemedicine

[Partner: Asociatia INIT]

[May 2021 / Cluj-Napoca]

Desk Review Template – Purpose of this tool

Babeş-Bolyai University has developed this tool as a guide and generic template for creating a desk research report. We have tried to make it user-friendly by providing explanations and examples under each heading.

The desk research report is a compilation of existing secondary data in a readable and usable format related to the existing curriculums on the topic of each module component from the eHealth Interdisciplinary Curriculum developed under IO1.

The research team from Babeş-Bolyai University is available to support any efforts to compile this desk research report and is responsible for overseeing the compilation of the final desk research report. The contact info for the coordination team for this task is provided here: madalina.coman@publichealth.ro and alina.forray@publichealth.ro. Please name the final document using the following strategy “CONNECT Project_IO1_Desk Research_Module name_Institution Acronym” (e.g. CONNECT Project_IO1_Desk Research_mHealth_BBU)

Some tips for compiling the Country Desk Research Report:

- Review the existing eHealth educational curriculums existent at international level and in your own countries (targeted for your module);
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1. Summary

- There are several existent curriculums about telemedicine at international level.
- There are no existent curriculums about telemedicine in Romania.
- There are several non-formal activities and online courses about telemedicine.
- In the existing curriculums we identified a lack of practical examples and use cases discussions.

2. General information about the *Telemedicine* module from the eHealth Interdisciplinary Curriculum

Definition of Telemedicine

Telemedicine is a subset of telehealth, and it refers to the use of communication networks to deliver healthcare services at a distance. The communication and networking technologies also vary, such as satellite communications, the internet, Global System for Mobile Communications (GSM). The COVID-19 pandemics led to such a need for socially distanced health care that telemedicine visits increased 683% at the height of the pandemic. It seems that telemedicine will permeate pervasively into healthcare delivery over time.

World Health Organization (WHO) defines telemedicine as “the delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for the diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities”. What we recognize as telemedicine today started in the 1950’s when a few hospital systems and university medical centers started to try to find ways to share information and images via telephone. In one of the first successes, two health centers in Pennsylvania were able to transmit radiologic images over the phone.

When it comes to patients, the main benefits of telemedicine are less time away from work, no travel expenses, less interference with a child or eldercare responsibilities, privacy, and no exposure to other potentially contagious patients. On the other hand, in the case of providers, their benefits are an increase in revenue, improvement in office efficiency, better patients follow through and improved health outcomes, fewer missed appointments and cancellations, and private payer reimbursement.

There are few limitations to how telemedicine can be applied. Some examples of how it is being used today are follow-up visits, remote chronic disease management, remote post-hospitalization care, preventive care support, school-based telehealth, and assisted living centre support.

According to an economic forecast organization, the size of the telemedicine market was around \$45 billion in 2019, and it is projected to reach \$175 billion by 2026. The reasons for this growth are the

increasing healthcare cost, geriatric population, government funding and grants for telemedicine, medical tourism, the prevalence of chronic and lifestyle-associated diseases, the medical requirement in remote areas, and the need for remote patient monitoring services in developing countries. In the European Union, five projects related to telemedicine are carried out. The scope of these projects is teleradiology, teledermatology, teleneurology, telemonitoring for diabetes and chronic heart failure, but there is no topic on education.

Key components of *Telemedicine*

Teleconsultation

Telementoring

Telemonitoring

Teleassistance

State of the art models and knowledge for the *Telemedicine*

Telemedicine, or the electronic transmission of medical information via digital communications, has become an essential tool. It has led to a significant increase in the utilization of remote telemedicine and telehealth interventions, with many physicians in some regions using these technologies to manage patients remotely. Expanded use of telemedicine in medical care and teleradiology occurred in tandem with the increased need for social distancing. Telemedicine tools are more commonly used for remote treatment, particularly in the United States, where 63% of health care practitioners have used it. Among physicians currently using telemedicine for consultation, nearly half (48%) are using it for the first time. When the outbreak ends, one-fifth of physicians using telemedicine tools expect to use them significantly more than before the pandemic.¹ The COVID-19 pandemic has shone a spotlight on the innovative degree to which eHealth can empower health systems to avoid cross-infection of COVID-19 patients and ensure continuity of essential health services.

3. Existent curriculums on the Telemedicine module

Existent Curriculums at international and national levels

1. “Clinical Telemedicine/ e-Health” in the Curriculum of Medical Students at the University of Zurich in the Autumn Semester 2016

Day 1

- Introduction to the module
- Sensoring E-health in the field of radiology
- Medical support in Africa

Day 2

- Teleconsultation in vascular surgery
- Mobile health Clinical telemedicine in the University Hospital Zurich

Day 3

- Key points in telemedicine and e-health
- Legal points
- Online consultation for dermatologic problems
- Introduction workshop online consultation

Day 4

- First workshop online consultation
- Telemedicine in integrated healthcare
- Digital pharmacology

Day 5

- Second workshop online consultation
- Patient empowerment
- Data protection

Day 6

- Telemedicine for the elderly
- Telemetric blood pressure intervention and weight measurement Teleconsultation for psychiatric problems

Day 7

- Electronic pass for pregnant woman
- Telephone consultation
- Conclusion of the module

(<https://sci-hub.se/https://pubmed.ncbi.nlm.nih.gov/28498779/>)

2. DIU de telemedicine - University of Bordeaux

Module 1 - Definition, regulations, legal and economic frameworks for telemedicine

Module 2 - Technical aspects of telemedicine

Module 3 - Literature review on telemedicine

Module 4 - Innovation and general interest model

Module 5 - Feedback from national experiences in telemedicine

Module 6 - Feedback from regional experiences in telemedicine

(<http://www.diu-telemedecine.fr/>)

3. Telehealth Providers of the Future - Medical University of South Carolina**Course Introduction**

- The application of technology to health: the evolution of telephone to telemedicine and telepsychiatry: a historical review and look at human factors
- The current state of telehealth evidence: a rapid review
- Challenges and opportunities faced by large health systems implementing telehealth

- Clinical examination component of telemedicine, telehealth, mhealth, and connected health medical practices
- Telemedicine: It's a No Brainer
- Telemedicine: The Road to Improved Rural Health Care?

Module 1: History & Changing Models of Care

- Application of telemedicine and eHealth technology for clinical services in response to COVID 19 pandemic
- A Qualitative Study of Primary Care Physicians' Experiences With Telemedicine During COVID-19
- Innovative Approaches to Delivering Telehealth
- Telehealth Technology, Information, and Data System Considerations
- Introduction to VA Telehealth Services (VA=Veterans Health Administration)
- FCC funds Telehealth to help Rural America (FCC=Federal Communications Commission)
- MUSC Pediatric Emergency and Critical Care Telemedicine Program

Module 2: Access & Population Health

- The Pandemic of Health Care Inequity
- Growth of ambulatory virtual visits and differential use by patient sociodemographics at one urban academic medical center during the COVID-19 pandemic: Retrospective analysis
- Description, utilisation and results from a telehealth primary care weight management intervention for adults with obesity in South Carolina
- Efficacy of telemedical interventional management in patients with heart failure (tim-hf2): A randomised, controlled, parallel-group, unmasked trial
- Treatment of Opioid Use Disorder in Pregnant Women via Telemedicine: A Nonrandomized Controlled Trial
- Telehealth Is a Sustainable Population Health Strategy to Lower Costs and Increase Quality of Health Care in Rural Utah
- Electronic Visits for Common Acute Conditions: Evaluation of A Recently Established Program
- The Current Pediatric Telehealth Landscape

Module 3: Technology: Infrastructure and Applications

- Telemedicine Solution Developed by MUSC Researcher
- Facilitating the informed consent process using teleconsent: Protocol for a feasibility and efficacy study
- The doctor will see you now: How machine learning and artificial intelligence can extend our understanding and treatment of asthma
- Remote patient monitoring for ED discharges in the COVID-19 pandemic
- Digital Health Equity as a Necessity in the 21st Century Cures Act Era
- Challenges and opportunities for coping with the Smart Divide in rural America
- Backslide or forward progress? Virtual care at U.S.healthcare systems beyond the COVID-19 pandemic

Module 4: Legislation & Regulation

- SC Telehealth Legislation- What you should know...

- SC APRN & PA Legislation
- Center for Connected Health Policy
- Understanding Telemedicine's "New Normal": Variations in Telemedicine Use by Specialty Line and Patient Demographics
- Telehealth beyond COVID-19
- Role of Telehealth in the Management of COVID-19: Lessons Learned from Previous SARS, MERS, and Ebola Outbreaks
- Are state telehealth policies associated with the use of telehealth services among underserved populations?
- An Economic Framework to Measure Value of Pediatric Telehealth
- Balancing Health Privacy, Health Information Exchange and Research in the Context of the COVID-19 Pandemic
- Benefits and Barriers to Telehealth Credentialing by Proxy
- Telehealth demand trends during the COVID-19 pandemic in the top 50 most affected countries: Infodemiological evaluation

Module 5: Team-Based Care & Community Partnerships

- Impact of Interprofessional Telehealth Case Activities on Students' Perceptions of Their Collaborative Care Abilities
 - "They Don't Trust Us": The influence of perceptions of inadequate nursing home care on emergency department transfers and the potential role for telehealth
 - Telehealth and sustainable improvements to quality of life
 - Feasibility and effectiveness of a telehealth service delivery model for treating childhood posttraumatic stress: A community-based, open pilot trial of trauma-focused cognitive-behavioral therapy
 - Feasibility assessment for using telehealth technology to improve access to dental care for rural and underserved populations
 - Population health indicators associated with a statewide telestroke program
 - Development and Evolution of a Statewide Outpatient Consultation Service: Leveraging Telemedicine to Improve Access to Specialty Care
- (<https://musclibguides.com/telehealth/modules>)

1. Telehealth for the Resident Physician - Medical University of South Carolina**Module 1:** History & Changing Models of Care**Module 2:** Access & Population Health**Module 3:** Technology: Infrastructure and Applications**Module 4:** Legislation & Regulation**Module 5:** Team-Based Care & Community Partnerships

(<https://muschealth.org/-/sm/health/telehealth/f/telehealth-resident-syllabus-7-18.ashx>)

5. TELEMEDICINE Cornell Course - Weill Cornell Medicine

- Set the stage (e.g., lighting, presentation, and body language) effectively with patients in a virtual space
- Demonstrate effective communication (including nonverbal) with patients in a virtual space
- Create a personal action plan for troubleshooting and overcoming technical challenges in a telemedicine encounter

- Prepare to perform a basic physical exam virtually
- Identify how to modify your medical decision-making process in the virtual space
(<https://ecornell.cornell.edu/courses/healthcare/telemedicine/>)

6. Introduction to Telemedicine and Virtual Health - Michigan State University

- Define telehealth
- Describe the following features of telemedicine: real time interaction, data storage, remote monitoring
- Understand issues associated with telemedicine use including:
 - Forces driving the adoption of telemedicine
 - Liability and insurance
 - Reimbursement
 - Career opportunities
- Become familiar with clinical use of telemedicine in a range of production environments, through observation of use and discussion with users.
(<https://www.justintimemedicine.com/curriculum/6215>)

Core competencies of the identified curriculums

1. “Clinical Telemedicine/ e-Health” in the Curriculum of Medical Students at the University of Zurich in the Autumn Semester 2016

- that the students are able to describe the basic principles of telemedicine, specifics of the telemedical consultation, including legal aspects, data protection, and potentials, as well as limits and sources of errors
- that the students are able to judge important symptoms of diseases, when the patient is separated from the doctor, to match the symptoms to a disease, as well as to create an appropriate consultation for the patients

(<https://sci-hub.se/https://pubmed.ncbi.nlm.nih.gov/28498779/>)

2. DIU de telemedicine - University of Bordeaux

- Deepen the theoretical knowledge about telemedicine
- Design a medical telemedicine project
- Have a global approach to telemedicine thanks to a transversal university vision
- Experiment with clinical cases

(<http://www.diu-telemedecine.fr/>)

3. Telehealth Providers of the Future - Medical University of South Carolina Course Introduction

N/A

(<https://musc.libguides.com/telehealth/modules>)

4. Telehealth for the Resident Physician - Medical University of South Carolina

- Residents will explore the role of telehealth in current and future healthcare settings.

(<https://muschealth.org/-/sm/health/telehealth/f/telehealth-resident-syllabus-7-18.ashx>)

5. TELEMEDICINE Cornell Course - Weill Cornell Medicine

- Set the stage (e.g., lighting, presentation, and body language) effectively with patients in a virtual space
- Demonstrate effective communication (including nonverbal) with patients in a virtual space
- Create a personal action plan for troubleshooting and overcoming technical challenges in a telemedicine encounter
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 - Forces driving the adoption of telemedicine
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 - Career opportunities
- Become familiar with clinical use of telemedicine in a range of production environments, through observation of use and discussion with users.

(<https://www.justintimemedicine.com/curriculum/6215>)

Elements of potential use in our eHealth Interdisciplinary Curriculum

- **Definition, regulations, legal and economic frameworks for telemedicine**
- **Technical aspects of telemedicine**
- **Innovation and general interest model**
- **Demonstrate effective communication (including nonverbal) with patients in a virtual space**
- **Access & Population Health**
- **Understand issues associated with telemedicine use**
- **Career opportunities**
- **Experiment with clinical cases**

4. Non-formal education related to the Telemedicine module

Existent non-formal education at international and national levels

1. **STFM (Society of Teachers of Family Medicine) Telemedicine Pilot Project**
Module 1: Intro to Telehealth
 - **Benefits and Barriers**

- Telemedicine Research

Module 2: The Telehealth Encounter

- Setting/Environment
- Webisode Manner
- History and Environmental Exam
- Physical Examination
- Medical Decision Making
- Patient Safety
- Documentation

Module 3: Requirements for Telehealth

- Technology Requirements
- Compliance, Regulations, and Documentation

Module 4: Access and Equity in Telehealth

- Our Case Family (Clinical case)
- Telehealth for Special Populations

Module 5: Future of Telehealth

- Trends and the Future
- Remote Diagnostics
- Health Care Data Acquisition
- Evaluation of Innovation

(<https://www.stfm.org/about/keyinitiatives/telemedicine/telemedicinepilot/>)

2. Online Telemedicine Training Courses for Doctors by TSI**Module I.** Introductory Primer for Telemedicine

Telemedicine Practice Guidelines by GOI

Basic Understanding of Tele-Triage

Module II. Legal & Ethical Aspects of Telemedicine

Ethical Code of Conduct INDIAN MEDICAL COUNCIL

Medico-legal Aspects of the Guidelines

Module III. Setting up a Telemedicine Practice

Telemedicine - Triggers, Etiquettes & Tips - Highly Recommended

How to set up a Telehealth Consultation

Module IV. Optional Reading

FAQ's of BoG from MCI

IT act

Data Privacy Act - Europe / India

Indian Penal Code as applying to doctors

(<https://telemed4u.com/>)

3. Telemedicine Basics - Online CME Course

- Summarize the significance of telemedicine in providing remote delivery of healthcare
 - Recall the similarities and the differences between asynchronous and synchronous delivery of telemedicine
 - Recall the benefits of telemedicine
 - Summarize the steps required for an effective patient encounter using telemedicine
 - Summarize the disadvantages of delivering care by telemedicine
 - Summarize how telemedicine enhances the management of patients with COVID-19
 - Recall the strategies of managing patient expectations via telemedicine
 - Recall the strategies of managing patient anxiety via telemedicine
 - Summarize the use of telemedicine in pandemic
 - Summarize the process of setting up telemedicine in healthcare setting
- (<https://ce.mayo.edu/online-education/content/telemedicine-basics-online-cme-course>)

4. Telemedicine and Teleconsultation - Udemy

- Introduction to Telemedicine course
 - Applications of Telemedicine
 - Modes of Communication available in Telemedicine
 - Benefits of Telemedicine to patients
 - Limitations of Telemedicine
 - Telemedicine in India
 - Answering Frequently asked questions (FAQ's) in Telemedicine
 - Sample prescription for Telemedicine consultation
 - Quick Recap and Flowcharts
 - Conclusion of course
- (<https://www.udemy.com/course/online-course-in-telemedicine-teleconsultation/>)

Core competencies of the identified non-formal education activities

1. STFM (Society of Teachers of Family Medicine) Telemedicine Pilot Project

N/A

(<https://www.stfm.org/about/keyinitiatives/telemedicine/telemedicinepilot/>)

2. Online Telemedicine Training Courses for Doctors by TSI

N/A

(<https://telemed4u.com/>)

3. Telemedicine Basics - Online CME Course

- Summarize the significance of telemedicine in providing remote delivery of healthcare
 - Recall the similarities and the differences between asynchronous and synchronous delivery of telemedicine
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- (<https://ce.mayo.edu/online-education/content/telemedicine-basics-online-cme-course>)

4. Telemedicine and Teleconsultation - Udemy

- Approach to Telemedicine
- Teleconsultation
- Digital health
- e-Health
- Telehealth

(<https://www.udemy.com/course/online-course-in-telemedicine-teleconsultation/>)

Elements of potential use in our eHealth Interdisciplinary Curriculum

- **Introduction to Telemedicine**
- **Applications of Telemedicine**
- **Modes of Communication available in Telemedicine**
- **Benefits of Telemedicine to patients**
- **Limitations of Telemedicine**
- **Challenges in Telemedicine implementation**
- **Future of Telemedicine**

5. Identified gaps for the Telemedicine module

Gap 1

In the existing curriculums there are many theoretical modules about telemedicine, but there is a lack of practical learning.

Solution: The integration of use cases and practical learnings in our curriculum in order to help students to improve their critical thinking and their decision making skills.

Gap 2

In the existing curriculums there isn't a dedicated module in which to discuss about who are the telemedicine stakeholders (doctors, patients, institutions), about their particular interests, and how they can align in order to improve the telemedicine efficiency.

Solution: To introduce such a module in our curriculum.

6. Appendice

AAFP news. “What’s the Difference between Telemedicine and Telehealth?”

<https://www.aafp.org/news/media-center/kits/telemedicine-and-telehealth.html>.

Author, The. “COVID-19 Transforms Health Care through Telemedicine : Evidence from the Field
Author Affiliations :”

Brockes, Christiane, Thomas Grischott, Magdalena Dutkiewicz, and Sabine Schmidt-Weitmann.
2017. “Evaluation of the Education ‘Clinical Telemedicine/e-Health’ in the Curriculum of
Medical Students at the University of Zurich.” *Telemedicine and e-Health* 23(11): 899–904.

Budakoğlu, Işıl İrem et al. 2021. “Telemedicine Curriculum in Undergraduate Medical
Education: A Systematic Search and Review.” *Health and Technology* 11(4): 773–81.

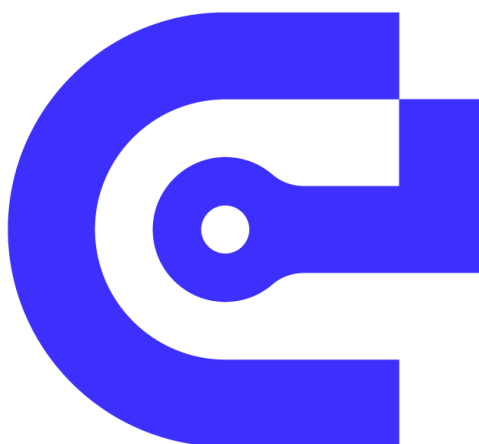
CHIRON. “What Is Telemedicine?”

<https://chironhealth.com/telemedicine/what-is-telemedicine/>.

Commission, European. 2018. “Market Study on Telemedecine.” *European Commission*
(October):132.https://ec.europa.eu/health/sites/health/files/ehealth/docs/2018_provision_marketstudy_telemedicine_en.pdf.

Kimberly Charleson. 2021. “Telehealth Statistics and Telemedicine Trends 2021.”

<https://www.singlecare.com/blog/news/telehealth-statistics/>.



Cooperation and training on innovation and entrepreneurship in
the eHealth community (CONNECT)

2020-1-RO01-KA203-080244

IO1 - Health analytics and big data in health module

[Partner: University of Porto]

[Porto, 17th May 2021]

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- Review the existent non-formal education activities related to the module allotted to your institution (targeted for your module);
- Identify gaps in knowledge related to the module/s assigned to your institution;
- Explain how those gaps are going to be addressed in our eHealth Interdisciplinary Curriculum developed under IO1 (targeted for your module).

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1. Summary

[To be developed at the end of the desk review with the key messages from the desk review. Should not exceed a page]

- There are several formal and informal courses on health analytics and big data at the international level.
- Most curricula's present very similar content.
- Big data security and privacy, as well as ethical questions, are the big challenges for the future, which should be addressed.

2. General information about the Health analytics and big data in health module from the eHealth Interdisciplinary Curriculum

Definition of *Health analytics and big data in health*

Nowadays, staff records, electronic patient records, clinical results, diagnoses, prescription medications, medical imaging techniques, mobile health, available resources, and so on are all available to health facilities. Managers and healthcare professionals face a problem in managing data and evaluating it in order to fully comprehend it and use it to make well-informed decisions.

So this is where health analytics comes into play, in order to grasp the potential of all this data. The systematic access, organisation, transformation, extraction, analysis, and visualisation of data utilising computational power to aid decision-making is known as data analytics. So, analytics involves the use of data, analysis, and modelling to arrive at a solution to a problem or to identify new opportunities. Data analytics can answer questions such as (1) what has happened in the past and why, referred to as descriptive analytics; (2) what could happen in the future and with what certainty, referred to as predictive analytics, and (3) what actions can be taken now to control events in the future, referred to as prescriptive analytics.

Parallel to this, the data provided and generated in the healthcare institutions have been suffering a gradual but steady change over the last few years. Nowadays, the term 'Big Data' is nearly omnipresent within articles and reports issued by Information Technology practitioners and researchers. It has adopted a lot of meanings and definitions over the years and may adopt a few more in the next few. However, there is a raw definition that usually is present within all definitions, which relates with the 5 Vs - Variety, Velocity, Volume, Veracity and Value. These 5 words are key to understanding big data, especially in the healthcare scenery. Its volume increased, being produced now more data and ever; its complexity, since nowadays we have image, text, tabular data, genetic data, sound data, video data, etc, and all of them may be suitable to understand health and drive decisions. Data's velocity also increased, since more machines and devices are connected and producing information by the second. Veracity is also key to deal with healthcare data since we are almost always dealing and extracting knowledge from secondary databases with information that was not collected to analyze it but to support clinical practice. This is fundamental to adequately collect valuable information from healthcare data. Finally, we have value, which wraps up pretty much every other term, since this is the goal - create valuable insights from big data.

Key components of *Health analytics and big data in health*

Data generation

Security and Privacy of Big Data

Data acquisition

- Data collection

- Data transmission

- Data pre-processing

Data linkage and storage

Interoperability

Data quality

Security and privacy of big data

Data analysis

- Data Mining

- Visualization

- Analyses (diagnostic, descriptive, predictive and prescriptive)

Big Data technologies

- Artificial Intelligence

- Machine Learning

User training and information systems

State of the art models and knowledge for *Health analytics and big data in health*

- Defining big data
- Healthcare as a big-data repository
- Big data in biomedical research
- Nature of the big data in healthcare
- Management and analysis of big data
- Machine learning for information extraction, data analysis and predictions
- Platforms for healthcare data analytics
- Challenges associated with healthcare big data
- Big data analytics for cutting costs
- Quantum mechanics and big data analysis

3. Existent curriculums on the Health analytics and big data in health module

Existent Curriculums at international and national levels

1. MS in Big Health Data Analytics, University of Illinois

(<https://publichealth.uic.edu/academics/public-health-degrees/master-science-degrees/ms-health-analytics/>)

Biostatistics

Introduction to Epidemiology: Principles and Methods

2. MS in Health Data Analytics and Machine Learning, Imperial College of London

(<https://www.imperial.ac.uk/study/pg/medicine/health-data-analytics/>)

Introduction to Statistical Thinking and Data Analysis

Principles and Methods of Epidemiology

Clinical Data Management

Molecular Epidemiology

Translational Data Science Part I

Machine Learning

Computational Epidemiology

Translational Data Science Part II

Population Health Analytics

Research seminar series

3. MS in Health Data Analytics, University of Louisville

(<https://louisville.edu/sphis/departments/hmss/academics-1/ms-in-health-data-analytics>)

Public Health in the U.S.

Introduction to Statistical Computing

Biostatistical Methods I

Biomedical Foundation for Health Data Analytics

Statistical Data Management

Data Mining I

Data Security & Electronic Health Records

Health Data Analytics Practicum

Statistical Analysis for Population Health

Data Management In Health Service Research

Data Mining II

4. MS in Health Data Science, Harvard University

(<https://www.hsph.harvard.edu/health-data-science/>)

Basics of Statistical Inference

Introduction to Data Science
Data Science II
Computing for Big Data
Applied Machine Learning
Introduction to Data Structures and Algorithms
Genomic Data Manipulation
Computational Statistics for Biomedical Science
Privacy and Technology
Visualization
Computational Linguistics
Introduction to Stochastic Processes

5. MSc in Health and Medical Data Analytics, EIT Health

(<https://degree-programmes.eithealth.eu/msc-health-and-medical-data-analytics-hmda/>)

FAU: knowledge acquisition in image processing in computational tomography and magnetic resonance imaging;
UPM: data mining and artificial intelligence techniques;
UL: precision medicine with a focus on bioinformatics and biostatistics;
UGA: foundations of medical imaging and bio-health computing.

6. MS in Health Data Analytics, University College London

(<https://www.ucl.ac.uk/prospective-students/graduate/taught-degrees/health-data-analytics-msc>)

Health Analysis Principles
Research Methods in Healthcare
Statistical Methods for Health Data Analytics
Optional modules
Advanced Statistical Analysis
Economic Evaluation in Health Care
Essentials of Informatics for Healthcare Systems
Key Principles of Health Economics
Learning Health Systems
Machine Learning in Health Care (Blended Learning)
Patient Safety and Clinical Risk
Public Health Data Science

7. MSc Health Data Science, University of Manchester

(<https://www.manchester.ac.uk/study/masters/courses/list/10076/msc-health-data-science/>)

Principles of Digital Biology
Introduction to Health Informatics
Tutorials in Health Data Science
Understanding Data and Decision Making
Fundamental Mathematics & Statistics for Health Data
Biomedical Modelling for Health Data
Introduction to Health Data Science
Fundamentals of Epidemiology
Principles of Digital Biology

8. PhD in Health Data Science, University of Porto

(https://sigarra.up.pt/fmup/en/CUR_GERAL.CUR_VIEW?pv_ano_lectivo=2021&pv_origem=CUR&pv_tipo_cur_sigla=D&pv_curso_id=19321)

- Introduction to Health Informatics
- Introduction to Health Interventions, Policy and Services
- Introduction to Intelligent Data Analysis
- Principles of Health Research Methodology
- Principles of Health Data
- Principles of Health Data Science
- Bioethics and Legislation

9. PhD in Health Data Sciences, Charité - University of Medicine of Berlin

(https://iph.charite.de/en/academic_programs/phd_in_health_data_sciences/)

- Advanced Methods in Health Data Sciences

10. PhD in Health Data Science, University of Oxford

(<https://www.ox.ac.uk/admissions/graduate/courses/health-data-science>)

- Ethics of Health Data Science
- Introduction to Computational Statistics
- Modern Statistical Methods
- Bayesian Modelling
- Introduction to Machine Learning
- Machine Learning Topics
- Deep learning, Databases
- Data Modelling
- Process Modelling
- Data Governance
- Wearables
- Medical Image Analysis
- Epidemiology and Clinical Trials
- Genetics
- Infectious Disease Epidemiology
- Pathogen Evolution and Phylodynamics.

Core competencies of the identified curriculums

Most curricula include biostatistics and epidemiology, as well as informatics or computer sciences, mostly related to Artificial Intelligence and Machine Learning.

In terms of Health analytics and big data in health contents, most of the courses include content on data generation, security and privacy, data acquisition, linkage and storage, interoperability, data quality, data analysis and associated technologies (Artificial Intelligence and Machine Learning).

Elements of potential use in our eHealth Interdisciplinary Curriculum

- Definition of Health analytics and big data
- Healthcare systems as a source of big data
- Management and analysis of big data
- Machine learning for information extraction, data analysis and predictions
- Platforms for healthcare data analytics
- Challenges associated with healthcare big data
- Privacy, security and ethics of Health Data Science
- Big data in biomedical research

4. Non-formal education related to the Health analytics and big data in health module

Existent non-formal education at international and national levels

1. Big Data Analytics in Healthcare, Free online course at udacity

<https://www.udacity.com/course/big-data-analytics-in-healthcare--ud758>

(Big Data)
Predictive Modeling
Dimensionality Reduction & Tensor Factorization
Graph Analysis
(Healthcare)
Computational Phenotyping
Patient Similarity Metrics
Medical Ontology
(Technologies)
MapReduce
Spark
Hadoop

2. Health Data and Analytics, Online course by EIT InnoEnergy

<https://www.futurelearn.com/courses/health-data-analytics>

This online course explores the intersection of data analytics and healthcare. By the end of the course, you will know how to apply common frameworks and key concepts in data analytics, systems theory and information governance. The course starts by examining how healthcare data is collected and stored. It then goes on to explore how information management methods, machine learning and data visualisation are used in data analysis.

3. Data analytics for health, Short course by the Imperial College of London

<https://www.imperial.ac.uk/continuing-professional-development/short-courses/medicine/public-health/data-analytics/>

Define a range of approaches, tools and methodologies for analysing healthcare data.
Discuss methods for data analysis suitable for specific healthcare data sets.
Apply data analysis and visualisation techniques to extract insights from healthcare data.
Compare effectiveness of data visualisation and analytics methodologies for extrapolating information from datasets.
Link, visualise and interpret healthcare data from a variety of data sources.

4. Certificate in Health Analytics & Data Science, University of Colorado

(<https://coloradosph.cuanschutz.edu/education/degrees-and-programs/certificates/certificate-in-health-analytics-and-data-science>)

Applied Biostatistic
Biostatistical Methods I

Advanced Data Analysis
Causal Inference
Predictive Analytics
Introduction to Biomedical Data Science
Machine Learning
Deep Learning
Data Science
Big Data Science
Advanced Statistical Methods for Research

5. Digital Health, University of Porto

(https://sigarra.up.pt/ffup/en/CUR_GERAL.CUR_VIEW?pv_curso_id=21802)

Introduction to digital health
Active and healthy ageing using AAL solutions
Longevity, chronic disease and co-morbidities
Digital transformation of health and care
Internet of things and artificial intelligence
Open and accessible health databases FAIR
Patient-centred design
Pilot studies and validation of digital
Ethics and digital health
Citizen science and citizen engagement
Good practices in digital health

Core competencies of the identified non-formal education activities

Due to its expertise area, most non-formal courses on Big Health and Health Analytics are offered by or in partnership with universities and other institutions and tend to focus on data analyses (tools and methods). Predictive modelling and analysis is present in most of them, as well as machine learning / artificial intelligence. There are also subjects concerning data quality and usages, such as FAIR data and data science.

Elements of potential use in our eHealth Interdisciplinary Curriculum

- Tools and methods for data analyses.
- Predictive modelling and analyzes .
- Machine learning / artificial intelligence.
- Data quality and usage.

5. Identified gaps for the Health analytics and big data in health module

Gap 1

There is little training in human resources for dealing with big data in healthcare, most experts coming from other big data areas.

Gap 2

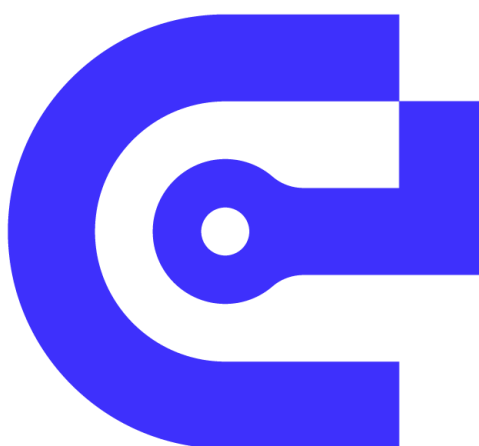
Ethical questions related to Health analytics and big data in health

Gap 3

Big data security and privacy are some of the biggest challenges, but there are very few courses addressing the issue. FAIR data could be an interesting approach to this topic.

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Cooperation and training on innovation and entrepreneurship in
the eHealth community (CONNECT)

2020-1-RO01-KA203-080244

IO1 - Desk Research Report - Electronic Health Records

Partner: Babes-Bolyai University

Cluj-Napoca, July 2, 2021

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1. Summary

- There is a lot of interest at global level in the Electronic Health Records (EHR) field, especially regarding implementation of EHR.
- There are multiple curriculums on EHR existent at international level.
- No curriculums were identified for Romania and only a few were in Europe.
- The new curriculum should focus on incorporating implementation of EHR practices in its content.

2. General information about the Electronic Health Records module from the eHealth Interdisciplinary Curriculum

Definition of Electronic Health Records

Electronic Health Records (EHR) is a health information technology database. EHR is a comprehensive, real-time record of an individual's health/healthcare information in a digitized format. EHR data is recorded and maintained by healthcare providers over time and includes information on patient's medical history, treatments, medication, immunizations, radiology images, lab, and test results, as well as progress notes, demographic data, and insurance information. EHR are instantly and securely accessible to authorized personal (healthcare providers, the patient etc.) and can be shared across practices and organizations (clinicians, laboratories, pharmacies e.g.) In addition to storing health data, the EHR system automates access to information, streamlines providers workflow and includes evidence-based decision support, outcome reporting and quality management interfaces.

Key components of Electronic Health Records

- Health Information and Data
- Result Management
- Order Management
- Decision Support
- Electronic Communication and Connectivity
- Patient Support
- Administrative Processes Reporting
- Reporting and Population Health

State of the art models and knowledge for the Electronic Health Records

Majority of up to date information regarding Electronic Health Records surrounds implementation practices. Overall, there is an international increase in programs/laws supporting the use of Electronic Health Records.

Europe:

The use of Electronic Health Records is implemented within each EU country to some degree through government led programs. At baseline, citizens of EU countries are assigned a unique electronic identifier that is used in healthcare databases. Patients and healthcare providers have access to these EHR. In their 2018 report, the European Commission and the Organisation for Economic CO-operations and Development (OECD), showed that the adoption of EHR is increasing in the EU (Health at a Glance: Europe, 2018). Currently, the European Commission has adopted a Recommendation on a European electronic health record exchange format, which seeks to “facilitate the cross-border interoperability of EHRs in the EU” (European Commission, 2021). Exchangeable health data includes patient summaries and ePrescriptions. During 2021, twenty-two EU countries are expected to be able to exchange this set of health information. Overall, the Recommendation aims to support EU countries in their efforts to ensure that citizens can access and exchange their health data across EU borders.

Australia:

The implementation of HER in Australia is led by the Australian Digital Health Agency. Currently, 6 million patients and 13.4 million healthcare providers are registered in the nation's interoperable, e-health program (Commonwealth Fund, 2020). Since 2019, all Australian citizens have access to an interactive “My Health Record” (Commonwealth Fund, 2020). This EHR includes prescription information, medical notes, imaging reports and referrals.

Asia:

In Asia, the adoption of Electronic Health Records (EHR) and the level to which EHRs are implemented varies across countries. In developed countries (e.g. China, Israel, Singapore), EHR systems are utilized by health care providers and are linked to other providers (e.g. insurance companies, pharmacies). However, EHR systems vary significantly by hospital, making EHR integration or interoperability difficult. Currently, the Ministry of Health is leading the efforts of a major national health information exchange project to create a system for sharing health information across all hospitals and health plans (Commonwealth Fund, 2020). The adoption of EHR in less developed countries (e.g. India), although supported by the Ministry of Health, has been slower compared to other wealthier countries.

United States:

In the United States, the advancement of health technology and the electronic exchange of health information, including the adoption of EHR, is supported by federal and state governments. The nationwide initiative is overseen by The Office of the National Coordinator for Health Information Technology. The adoption of EHR is specifically promoted through the Health Information Technology for Economic and Clinical Act (HITECH Act), the 2016 Cures Act and the 2018 MyHealthEData initiative. A goal of the HITECH act is to “create a nationwide network of EHR”. To date, 85.9% of office-based physicians utilize EHR systems, 79.7 percent utilize a certified EHR record (Center for Disease Control, 2021). The Cures Act requires all health care providers to offer patients an accessible electronic copy of their health record. Similarly, MyHealthEData is an initiative to further allow patients access to their health records. The 2021 annual HITAC report (formed by the Cures Act), evaluated the current status of Health IT in four target areas: use of technology to support public health, interoperability, privacy and security, and patient access to health information. In relation to EHR, it is stated that most Americans have access to their health records, however, interoperability is fragmented. Current recommendations focus on “improving bidirectional interoperability between public health information systems and EHRs”.

South America:

In South America, the implementation of EHR has previously been a slow process. Additionally, because of variations between information systems used in each country, there have been challenges in data integration/interoperability. Currently, there are efforts to create a digital transformation of the health sector in Latin America. Recommendations for combating these challenges were provided in 2018 during Regional Policy Dialogue hosted by the Inter-American Development Bank (IDB). The event included 18 Latin American countries and covered topics such as governance, interoperability, change management, and intra - regional collaborative networks. Statistical information on the use of EHR in South America is unclear, however between 2014-2019 the EHR systems market in this region has reached a compound annual growth rate of 7.5%. (Morales, 2021). Further, due to the impacts of COVID-19, EHR systems have become of growing importance. It is stated that an increasing number of hospitals have switched to EHR systems (Morales, 2021).

Africa:

Information regarding the implementation of Electronic Health Records (EHR) in Africa is limited. Current information relates specifically to sub-Saharan Africa. In this region, EHR has not been widely adopted. African countries that have tried to implement EHR have had varying results. Some projects have completely failed, while others have reported limited amounts of success (Katurura & Cilliers, 2017). Wide adoption of EHR in Africa is assumed to be difficult due to poor technology development, limited resources, as well as the political and economic status in most African countries (Katurura & Cilliers, 2017). In a 2018 study, Odekunle et al. identified factors that are affecting the adoption of EHR in sub-Saharan Africa and strategies for improving the adoption of EHR in this region. Factors affecting the adoption of EHR include: “high costs of procurement and maintenance of the EHR system, lack of financial incentives and priorities, poor electricity supply and internet connectivity, and primary user’s limited computer skills”. Authors state that implementation planning, financial support, support in EHR system selection and training of primary users would aid in the adoption of EHR.

*Current efforts/projects to utilize these recommendations to ensure the adoption of EHR in Africa is unclear.

3. Existent curriculums on the Electronic Health Records module

Existent Curriculums at international and national levels

- 1) [Grantham University: Electronic Health Records \(Certificate Program\)](#), Lenexa, Kansas
 - Computer software applications in healthcare
 - Medical terminology
 - Intro to health information management
 - Basic diagnosis coding systems
 - **Electronic health records**
 - Framework for chart related functions in electronic health record (EHR)
 - Basic components, functions, and terminology essential to EHR systems
 - Audits, entering live data, maintain chart integrity

- Electronic health records specialist
- 2) [Ashworth College: Electronic Health Records Management](#), Norcross, GA
- Medical and Body Systems Terminology
 - Health Information content, structure, and processing
 - Health care delivery systems and data collection
 - Electronic health records, acute care records and information processing
 - Health information management, analysis, and legal issues
 - HIM issues, managing health records, statistics
 - Quality, confidentiality, compliance, and department management
 - Electronic Medical Records
 - EMR applications and equipment
 - EMR practice management
 - EMR insurance and billing
 - EMR charting
- 3) [Penn Foster College: Electronic Health Records Training](#), Scottsdale, Arizona
- Introduction to Allied Health
 - **Electronic Health Records**
 - Discuss the history of electronic health records
 - Perform administrative health information management functions
 - Build an electronic health record
 - Enter information into an electronic health record
 - Utilize templates to increase productivity
- 4) [Excelsior College: Electronic Health Records Specialist](#)
- Overview of EHR and CEHRS
 - Introduction to Harris Care tracker
 - History of EHRS
 - Steps to EHR implementation
 - The EHR framework
 - HIPPA requirements and EHR systems
 - EHR and record content
 - List, Treatment plans, orders, and results
 - Patient Visits management
 - Coding, billing, and practice reports
 - Patients communication
 - Practice reports, research registries reportable events
 - Personal health records and continuing care records
- 5) [Udemy: Certified Electronic Health Records Specialist:](#)
- Unit one: Introduction
 - Introduction to Electronic Health Records
 - Unit two: The health care system
 - Unit three: Medical Terminology
 - Unit four: Anatomy & Physiology

- **Unit 5: Introduction to Electronic Health Records**

- History of EHR
- EHR Framework
- EHR record and content
- Patient visit management
- Consent & acknowledgement
- Problem, Medication and Allergy List
- Examination/Assessment notes, graphics, and charts
- Treatment Plans, orders, and results
- Medication orders and administration
- Patient communication
- Coding, billing, and practice reports
- Research, registries, and reportable events
- Personal health records and continuing care records

6) [University of Montana: Electronic Health Records in the Medical Practice](#)

- ONC and EHR terminology
- Overview of electronic health records
- Clinical workflow
- Coding systems
- Data capture & functional benefits
- Data entry at the point of care
- Electronic orders
- Longitudinal patient records, problem list, flow sheets and anatomical drawings
- Using the EHR to improve patient care
- Privacy
- Security
- Using the internet to expedite patient care
- EHR coding for reimbursement
- EHR & health information
- Population health functions of the EHR

7) [Townson University: Electronic Health Record Specialist Course](#)

- Module one: An overview of EHR and CEHRS
 - What is an EHR
 - The importance of EHR
 - Efforts to encourage EHR adoption
 - EHR in the future
 - Role of a CEHRS in medical practice
- Module two: Steps to EHR implementation
 - Step one: assess
 - Step two: plan
 - Step three: select
 - Step four: implement
- Module three: The EHR framework
 - EHR architecture, hardware, software, networks, and interfaces

- Human- Computer interface (user) devices
 - Functional, data content, and vocabulary standards
 - Feature and data formats
 - Security controls
 - Hybrid health records
 - Disaster recovery
- Module 4: HIPPA requirements and EHR systems
 - What is HIPPA
 - HIPPA and CEHRS
 - HIPPA privacy rules
 - HIPPA security rules
- Module 5: The EHR and Record Content
 - Record Purposes
 - Record formats and types of data
 - Record standards
 - Medical record content
 - Documentation practices
- Module 6: Patient visit Management
 - The EHR in an office workflow
 - Master patient index
 - Service payment information
 - Scheduling
 - Consent, acknowledgments, advance directives and authorizations
- Module 7: Problem, Medication and Allergy List
 - The List
 - Summary List in the office Workflow
 - Standards- functional, content and vocabulary
- Module 8: Examination/Assessment Notes, Graphics and Charts
 - Examination and assessment notes in the office workflow
 - Functional and content standards
 - Documentation
- Module 8: Treatment Plans, Orders and Results
 - Treatment plan
 - Treatment Plans in the office Workflow
 - Functional and Content Standards of Treatments
 - Documentation of Treatment Plans, Orders and Results
- Module 10: Medication orders and Administration
 - Medication orders workflow
 - Functional, content and vocabulary standards for medication orders
 - Medication reference information
 - Medication alerts and reminders
- Module 11: Patient Communications
 - Patient-focused communication
 - Patient Portals
 - Personal health records
- Module 12: Coding, Billing and Practice Reports
 - Coding and Billing Workflow

- Code Sets and Clinical Vocabularies
 - Coding, Billing, and the EHR
 - Encoders and computer- assisted coding
 - Electronic bill submission
 - Module 13: Research, Registers and Reportable Events
 - Medical product development
 - Practice requirements
 - Standards that support research
 - Registers and reportable events
 - Module 14: Personal Health Records and Continuing Care Records
 - Personal health record
 - Communication among providers for containing care
 - Continuity of care record
 - Ongoing training and technical support of EHR software
 - Medical Terminology
- 8) [University of Arizona: Citified Electronic Health Records Specialist](#)
- Introduction to Electronic Health Records
 - Overview of SimChart for the medical office
 - Privacy, confidentiality, and security
 - Administrative use of the Electronic Health Record Patient Letter
 - Clinical use of the Electronic Health Record
 - Using the Electronic Health Record for Reimbursement
 - The Personal Health Record and Patient Portals
- 9) [Barry University: Certified Electronic Health Records Specialist](#)
- Introduction to HIPPA standards in the development of interoperable electronic health records
 - Regional health information organizations
 - the importance of privacy and security of electronic health information
 - Demographics and clinical health information
 - Physician order entry and electronic prescription methods
 - Exchanging and sharing health information
 - Managing security in an EHR environment
 - Workflow management
 - Electronic health records in the hospital and physician office
 - Electronic health record and the need or clinical standards
- 10) [The Medical Institute of Kentucky: Electronic Health Records](#)
- Health data structure
 - Insurance and Billing Functions
 - Privacy, Security, Confidentiality and Legal issues
 - Management of information and communication
 - Compliance support
 - Electronic health record software
- 11) [Ocean County College: Electronic Health Records Certificate](#)

- Medical Terminology I
- Medical Terminology II
- Medical Insurance & Billing Practices
- Anatomy and Physiology for the health care professional
- Computerized Medisoft billing
- The electronic health record exam

12) [University of San Diego \(Professional and Continuing Education\): EHR Meditech systems](#)

- Care Coordination- Acute
- Care Coordination – Ambulatory
- Diagnostic EHR support
- Financial & Decision Support
- Patient Access & Revenue Cycle
- Post- Acute Care Coordination
- Provider Experience

13) [Portland Community College: Introduction to Electronic Health Records](#)

*Course content:

- Understand basic concepts and functionality of EHR's and PMR's
- Understand how EHR functionality may differ depending on what environment you work in.
- Understand basic concepts of recent federal and state policies supporting adoption of EHR's and Meaningful Use.
- Understand basic concepts of implementation process
- Understand Personal Health Records history, use and current adoption in the Portland Metro community.
- Understand HIPAA and what that means for practices with EHR's and HIE.
- Analyze trends in using EHR's and the data derived from them to improve patient care and population health.
- Explore how technology influences implementation and use of EHR
- Apply learning to work environments using and/or implementing EHRs

14) [Thomas Edison State University: Electronic Health Records course](#)

- Module 1: introduction to EHR management
- Module 2: electronic health record software
- Module 3: electronic order entry
- Module 4: privacy, security, confidentiality, and legal issues of health records
- Module 5: management of information and financial of EHR
- Module 6: the future of EHR in health information technology

15) [Minnesota State Community and Technical College: Fundamentals of Electronic Health Records](#)

*Course Content:

- Computer systems used in healthcare
- Software applications
- System selection and implementation

- Data quality, storage, and retrieval
- Security and privacy how these systems and issues affect and are affected by the health information management profession.

16) [Wake Tech: Electronic Health Records](#)

- Registering a new patient in the Electronic Health Record.
- Scheduling appointments for new and existing patients.
- Entering patient data, physician orders, and ordering prescriptions.
- Ordering doctor referrals, reviewing pending results, and entering patient discharge instructions.
- The payment collection process and financial refunds for a medical office.

17) [Hagerstown Community College: Electronic Health Records, Certificate](#)

- Human Anatomy and Physiology for Allied Health
- Introduction to Information Technology
- **Fundamentals of Electronic Health Records**
 - Utilization, functionality, confidentiality, and security of EHR
 - Types of electronic management systems, their implementations, and their impact on various areas of the healthcare system
- Pharmacology and Pathophysiology
- Healthcare Delivery Systems
- **Electronic Health Records Software Application**
 - Use and application of EHR software.
 - Learn how different healthcare entities (labs, doctors' offices, hospitals, pharmacies) can be integrated in various types of EHR software
 - Hands on learning on the use of EHR software, including inputting medical record data, reviewing medical orders, compiling patients' clinical summaries
- Medical Terminology
- Medical Records Analysis and Coding
- Advance Coding

[Texas A&M International university: Medical Assistant and Electronic Health Records Course](#)

- Medical Terminology
- Certified Clinical Medical Assistant
- **Certified Electronic Health Records Specialist**
 - An Overview of EHR and CEHRS
 - Steps to EHR Implementation
 - The EHR Framework
 - HIPAA Requirements and EHR Systems
 - The EHR And Record Content
 - Patient Visit Management
 - Problem, Medication, And Allergy Lists
 - Examination/Assessment Notes, Graphics, And Charts
 - Treatment Plans, Orders, And Results
 - Medication Orders and Administration

- Patient Communications
- Coding, Billing, And Practice Reports
- Research, Registries, And Reportable Events
- Personal Health Records and Continuing Care Records

18) [Global Health: Electronic Health Records Specialist](#)

- Introduction to Electronic Health Records
- Using Electronic Health Records
- EHRs in the Physician's office
- 400 Patient rights, HIPPA
- Medical Terminology
- Basic Computer Skills
- Career Development Certification Exam Review
-

19) [St. Charles Adult and Community Education: EHR Specialist](#)

*Course Content:

- Content of the electronic health records
- Role of a healthcare professional using the electronic record
- How to collect and record information
- Finding codes in the database
- Privacy, confidentiality, and security
- Running and executing reports
- Recognizing insurance forms
- Understanding key terms, medical terminology, and insurance
- Medical office procedures

20) [University College London: Electronic Health Records](#)

*Course content:

- Learning from paper records
- History and evolution of health records
- Evolution of hospital and general practice computing
- Case study of example clinical information systems
- Models of shared care and integrated care, eHealth challenges in delivering person centered care
- Towards delivering the EHR: challenges and eHealth programmes
- Clinical engagement with the EHR
- EHR requirements statements.
- EHR interoperability standards to support shared patient care, including the current international
- Standard for EHR Communication and HL7 version 3 Reference Information Model.
- Clinical data structures, EHR archetypes, and how shared definitions of these contribute to good practice and to meaningful record sharing.
- EHR architectures and an example model of shared care in north London.
- Personal health records and models of shared care
- EHR archetypes: practical exercise: review clinical examples and compose an archetype

- Semantic interoperability
- Terminology binding to archetypes
- Reflection and discussion relating to the assignment

21) [Ed4career: Electronic Health Records Specialist with Medical Billing Program:](#)

- **Electronic Health Records**
 - Introduction to EHR
 - What is a Medical Record?
 - Who Documents in the Medical Record?
 - Who Owns the Medical Record?
 - The Electronic Health Record
 - Advantages of Electronic Health Records
 - Disadvantages of Electronic Health Records
 - Role of the Healthcare Professional Using the Electronic Health Record
 - Professional Organizations
 - Overview of SimChart
 - The Medical Practice Goes Digital
 - Accessing SCMO Through Evolve
 - Getting Comfortable with Electronic Health Records
 - SCMO Assignment View
 - Features in SCMO
 - Establishing and Maintaining a Patient Registry
 - Internet Use in the Medical Practice
 - Privacy, confidentiality, security
 - HIPAA Law
 - Confidentiality vs. Privacy
 - Security Safeguards for the Medical Practice
 - Patients' Rights Under HIPAA
 - Access to Protected Health Information
 - Patients Protecting Health Information
 - Administrative use of the Electronic Health Record
 - Role of the Front Office Assistant
 - Communication in the Medical Office
 - Incident Reports
 - Managing Electronic Health Records
 - Calendar
 - Clinical Use of the Electronic Health Record
 - Documentation in the Electronic Health Record
 - Clinical Documentation in the Patient Record
 - Tracking Health Screenings and Immunizations
 - Using the Electronic Health Record for Patient Education
 - The Progress Note
 - Using the Electronic Health Record for Reimbursement
 - Healthcare Reimbursement

- Revenue Cycle
- Coding Systems
- HCPCS
- Pay for Performance
- SuperBill
- Patient Ledger
- HIPAA 5010 Claim Processing
- Medical Necessity
- Fraud and Abuse
- Patient Statements
- Reporting Features of an EHR
- The personal Health Record and Patients Portals
 - What is a Personal Health Record?
 - Innovative Features of Personal Health Records
 - Benefits to Providers
 - Steps in Creating the Personal Health Record
 - Maintaining the Personal Health Record
 - Patient Portals
- Medical Billing

22) [Academy of Learning: EHR, Billing and Coding](#)

- Introduction to Electronic Health Records
- Overview of EHR software
- Privacy, confidentiality, and security
- Transitioning from paper charts to Electronic Health Records
- Administrative use of Electronic Health Records
- Clinical use of Electronic Health Records
- Health Promotion, Patient Education, and Clinical Decision Support

Core competencies of the identified curriculums

1) [Grantham University: Electronic Health Records \(Certificate Program\)](#), Lenexa,

Kansas

- Communication
- Distributed Collaboration
- Professional and Social Responsibilities
- Critical thinking/problem solving
- Career Management
- Data Aptitude

***Remaining programs did not specify core competencies – identified learning/program objectives are listed below:**

2) [Ashworth College: Electronic Health Records Management](#), Norcross, GA

*Not listed

3) [Penn Foster College: Electronic Health Records Training](#), Scottsdale, Arizona

- Process patient admission and discharge documents
- Enter, record, store and maintain information
- Retrieve patient medical records for physicians
- Compile, code, categorize, calculate, tabulate, audit and maintain and verify information or data
- Understand terminology and concepts related to third-party reimbursement
- Use computer hardware and software
- Retrieve patient medical records

4) [Excelsior College: Electronic Health Records Specialist](#)

- Pass CEHR exam
- Receive broad overview of EHR systems
- Gain hands-on experience using real EHR software
- Summarize the HIPAA and privacy rules
- Explain information contained in medical records
- Demonstrate how to write a chief complaint and obtain patient history
- Establish appropriate EHR procedure for healthcare practices
- Track of vital information such as patient allergies and medication
- Communicate with patients about report public health information

5) [Udemy: Certified Electronic Health Records Specialist](#)

*Not listed

6) [University of Montana: Electronic Health Records in the Medical Practice](#)

- Define terminology associated w/ EHR
- Describe how implementation of the EHR improves patient quality
- Analyze the Characteristics of the EHR as a component of a comprehensive HIS
- Understand role of the EHR software for improving workflow efficiency
- Identify privacy and security concerns involved in the adoption and use of the EHR
- Utilize EHR software package to: document patient care, create electronic orders, search, sort and filter data, analyze clinical trends, improve workflow efficiency, generate reports, flow sheets and anatomic drawings, improve patient safety through clinical accuracy

7) [Townson University: Electronic Health Record Specialist Course](#)

- Prepare to take and pass the CEHR exam, offered by the National Health career Association
- Receive a broad overview of the electronic health records (EHR) systems
- Gain hands-on experience using real EHR software
- Summarize the HIPAA Privacy Rule and HIPAA Security Rule
- Explain the information contained in various medical records
- Demonstrate how to write a chief complaint and obtain a patient history
- Establish the appropriate EHR for a healthcare practice
- Track of vital information such as patient allergies and medications
- Communicate with patients and report public health information

8) [University of Arizona: Certified Electronic Health Records Specialist](#)

*Not listed

9) [Barry University: Certified Electronic Health Records Specialist](#)

*Not Listed

10) [The Medical Institute of Kentucky: Electronic Health Records](#)

- Develop the ability to elaborate on the personal qualities and job responsibilities of an Electronic Health Record employee.
- Show with examples, how the healthcare employee should communicate effectively with patients, using both verbal and non-verbal communication.
- Assess the impact of OSHA and HIPAA on a medical office.
- Describe different types of appointment scheduling systems and ways of maintaining a physician's schedule.
- Explain how to create and maintain accurate patient records.
- Explain and demonstrate each step in the filing process.
- Learn skills in telephone techniques.
- Learn skills in scheduling appointments.
- Obtain basic knowledge of daily operations in a medical office.
- Gain knowledge of various written communications needed in a medical office and apply knowledge in processing and maintaining patient medical records.
- Demonstrate skills using Electronic Medical Records (EMR)

11) [Ocean County College: Electronic Health Records Certificate](#)

*Not Listed

12) [University of San Diego \(Professional and Continuing Education\): EHR Meditech systems](#)

- Understand basic concepts and functionality of EHR's and PMR's
- Understand how EHR functionality may differ depending on what environment you work in.
- Understand basic concepts of recent federal and state policies supporting adoption of EHR's and Meaningful Use.
- Understand basic concepts of implementation process
- Understand Personal Health Records history, use and current adoption in the Portland Metro community.
- Understand HIPAA and what that means for practices with EHR's and HIE.
- Analyze trends in using EHR's and the data derived from them to improve patient care and population health.
- Explore how technology influences implementation and use of
- Apply learning to work environments using and/or implementing EHRs

13) [Portland Community College: Introduction to Electronic Health Records](#)

- apply basic conceptual framework of a medical charting system to the organization and use of an EHR.
- Navigate, complete data entry, and use data of EHR at an entry level capacity.
- Apply relevant ethical, legal, security and policy principles to the use of EHR's within the healthcare delivery environment.
- Apply relevant safety, confidentiality, and policy concepts to the use of EHR's within the clinical/hospital setting.

- Utilize reporting functions in an EHR to improve patient care and outcomes.
- 14)** [Thomas Edison State University: Electronic Health Records course](#)
- Explain concepts, principles and methodologies used in electronic health record management
 - Operate on EHR software based on given technical guideline
 - Examine various functions of medical order entry for efficiency
 - Assess the measurement in EHR management
 - Utilize EHR to improve patient health outcome
 - Ensure privacy and security of EHR
- 15)** [Minnesota State Community and Technical College: Fundamentals of Electronic Health Records](#)
- Understand the transition of records from paper-based to electronic.
 - Discuss forces driving electronic health record (EHR) adoption.
 - Discuss importance of EHR data quality.
 - Define EHR terms.
 - Identify the standards for electronic data and electronic data exchange.
 - Discuss the purpose and function of EHRs for administrative support.
 - Describe the elements of a data security program.
 - Collect and maintain health data.
 - Explain the difference between data elements, data sets, databases and indices.
 - Explain the difference between data warehouse and data repository.
 - Explain data mapping.
 - Describe the use of document imaging in the transition to EHRs.
 - Explain policies and procedures of networks, including Intranet and Internet, to facilitate clinical and administrative applications.
 - Explain the process used in the selection and implementation of health information management systems.
 - Explain current trends and future challenges in health information exchange.
 - Explain vendor contract management.
 - Apply retention and destruction policies for electronic health information.
 - Apply system security policies according to departmental and organizational data and information standards.
 - Examine natural language processing, document imaging and EHR certification.
 - Explain the importance of EHR system testing and integration tools.
 - Apply knowledge of database architecture and design.
 - Understand the use of data interchange standards.
 - Report staffing levels and productivity standards for health information functions.
- 16)** [Wake Tech: Electronic Health Records](#)
- Demonstrate how to register a new patient in the Electronic Health Record.
 - Demonstrate how to schedule appointments for new and existing patients.
 - Demonstrate how to enter patient data, physician orders, and order prescriptions.
 - Demonstrate how to process doctor referrals, review pending results, and enter patient discharge instructions.
 - Demonstrate how to use the payment collection process and financial refunds for a medical office.
- 17)** [Hagerstown Community College: Electronic Health Records, Certificate](#)

- Provide patient centered care and information management within the legal, ethical, and regulatory framework of the electronic health records profession.
- Demonstrate competency in the use of standard medical office equipment including bar code and scanning devices.
- Use the common features and functions of specialized electronic health records applications.
- Apply quality improvement and utilization review principles to ensure the highest quality of information management according to professional standards.
- Apply knowledge of policies and regulations relating to the organization of health care delivery to ensure compliance and protect confidentiality and privacy of patient data.
- Use technology and information systems to meet health care organization needs.

18) [Global Health: Electronic Health Records Specialist](#)

*Not listed

19) [St. Charles Adult and Community Education: EHR Specialist](#)

*Not listed

20) [University College London: Electronic Health Records](#)

*Not listed

21) [Ed4career: Electronic Health Records Specialist with Medical Billing Program:](#)

- Identify the developmental challenges associated with creating electronic health records
- Define electronic health record and its advantages and disadvantages
- Recognize the importance of patient data privacy
- List the steps for basic coding techniques
- Name the steps for documenting in the EHR

22) [Academy of Learning: EHR, Billing and Coding](#)

*Not listed

Elements of potential use in our eHealth Interdisciplinary Curriculum

- Introduction to Electronic Health Records/ Content of the electronic health records
 - Advantages of Electronic Health Records
 - Disadvantages of Electronic Health Records
 - Role of the Healthcare Professional Using the Electronic Health Record
- Administrative use of electronic health records
- Clinical use of electronic health records
- HIPPA requirements/security and privacy with EHR
- Electronic health record software
- Framework for chart related functions in electronic health record (EHR)

- Exchanging and sharing health information
- EHR terminology
- Population health functions of the EHR
- Using the EHR to improve patient care
- Understand basic concepts of implementation proces

4. Non-formal education related to Electronic Health Records module

Existent non-formal education at international and national levels

[Clinician EHR training video](#)

Core competencies of the identified non-formal education activities

N/A

Elements of potential use in our eHealth Interdisciplinary Curriculum

N/A

5. Identified gaps for the [please insert name of the module] module

Gap 1

Not a lot of focus was dedicated to the implementation of EHR in the curriculums analyzed.

Solution: The new curriculum should focus on incorporating implementation practices in its content.

6. Appendices

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