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Funded by European Commission's Horizon 2020 Research and Innovation Programme (Grant-ID #727552)

# THE VOICE OF GLOBAL EXPERTS ON EHEALTH COMPETENCIES AND GAPS IN EHEALTH EDUCATION

Ursula H. HÜBNER, TIGER International Co-Chair





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# EHEALTH GAPS: SURVEY OF CURRENT NEEDS

- GAP 1: eHealth knowledge and skills of healthcare professionals
- GAP 2: eHealth knowledge and skills of informal care givers
- GAP 3: Knowledge and skills of teachers and trainers
- GAP 4: Availability of courses and programmes at various levels and for various professions
- GAP 5: Quality and quantity of eHealth training material
- GAP 6: Adaptation of job descriptions, training on the job, staff development
- GAP 7: eHealth infrastructure
- GAP 8: eHealth usage
- GAP 9: Acceptance and usability of systems
- GAP 10: Shortage of health professionals and gender disparities



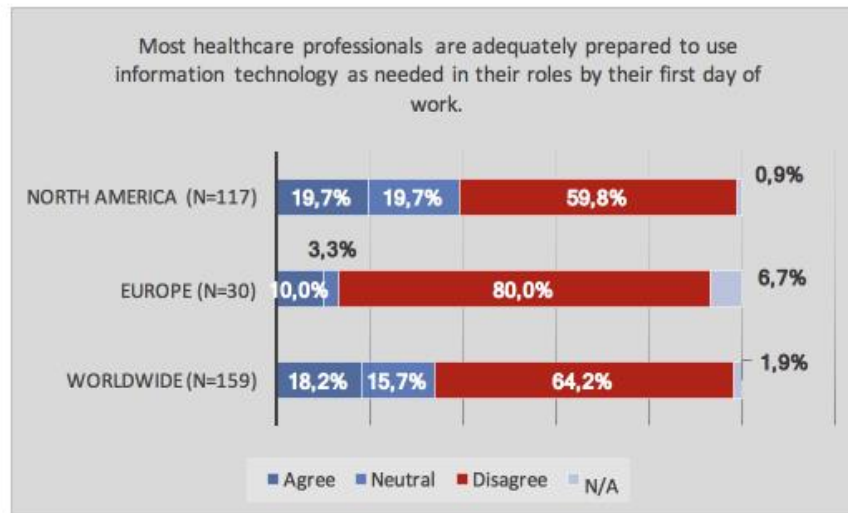


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# EHEALTH GAPS: SURVEY OF CURRENT NEEDS

## GAP 1: eHealth knowledge and skills of healthcare professionals

There is a trend that the majority of healthcare managers and healthcare workers do not have digital skills. Most healthcare professionals are not adequately prepared to use IT.



**Figure 3:** Most healthcare professionals are adequately prepared to use information technology as needed in their roles by their first day of work. Red: modal value





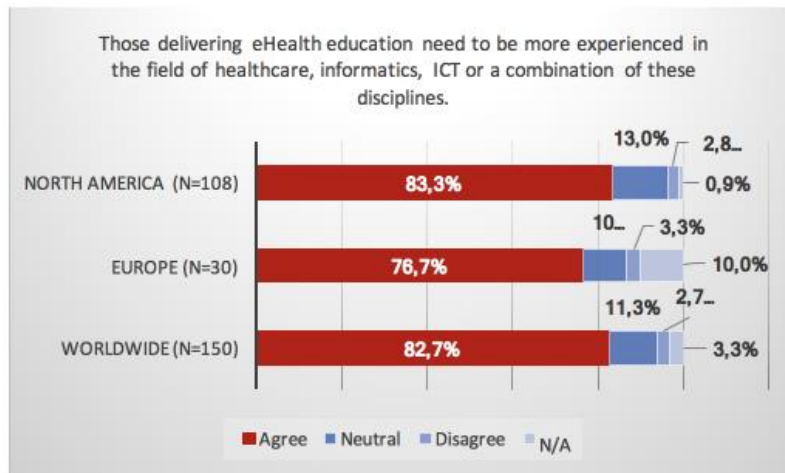
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# EHEALTH GAPS: SURVEY OF CURRENT NEEDS

## GAP 3: Knowledge and skills of teachers and trainers

Also teachers and trainers in this field need to be better prepared to cover the entire field of medical and health informatics.

The experience of educators in the field of healthcare, informatics, ICT or a combination of these disciplines needs to be improved as a large majority worldwide stated (Figure 5).



**Figure 5:** Those delivering eHealth education need to be more experienced in the field of healthcare, informatics, ICT or a combination of these disciplines. Red: modal value



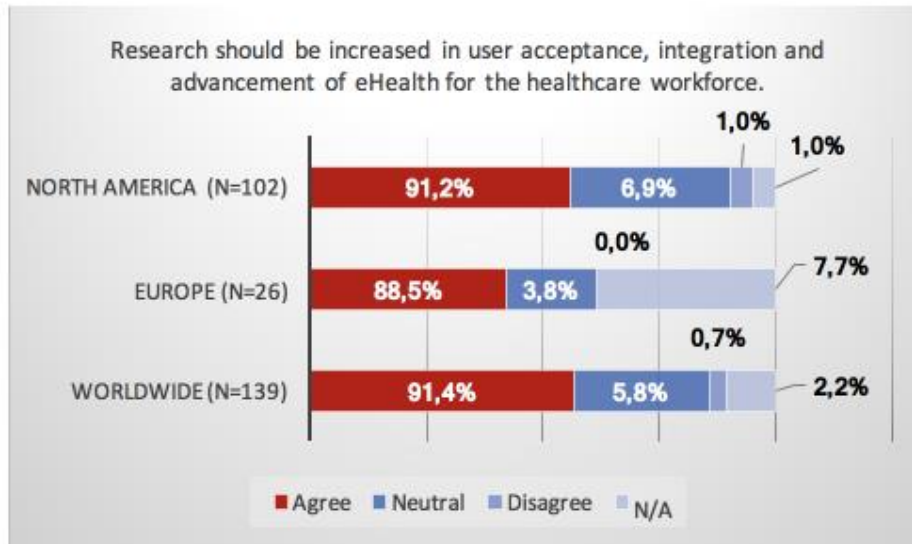


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## GAP 9: Acceptance and usability of systems

Users are not involved in their organisations to participate in the different phases of systems engineering and IT life cycle management.



**Figure 8:** Research should be increased in user acceptance, integration and advancement of eHealth for the healthcare workforce. Red: modal value





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## EHEALTH GAPS: SURVEY OF CURRENT NEEDS

In order to achieve these goals investments must be made. A very large majority voted for an increase in research with regard to acceptance, integration and advancement of eHealth. This should include measures

1. To foster research in usability and other human factors,
2. To push initiatives at national level to select IT standards and to make these standards mandatory,
3. To support activities of (i) awareness raising of existing eHealth solutions, (ii) **education and training of how to use these systems to solve patient problems** and (iii) the evaluation of innovative eHealth systems.





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# EHEALTH COMPETENCIES: SURVEY OF CURRENT NEEDS

## Bringing the best of two worlds together: TIGER and HITCOMP

Competencies match		TIGER	HITCOMP
Interpersonal and social dimensions Communication Leadership Learning technique Clinical focus	New Competencies		
	Principles of management including administration, general management, governance, policies and procedures	Principles of management	Administration/General Management/Governance AND Policies & Procedures
	Process management including workflows, business process design, care coordination and clinical practice	Process management	Business Process Design/Workflows AND Care Coordination AND Clinical Practice & Workflows
	Clinical decision support by IT	Decision support by IT	Clinical Decision Support & Pathways
	Documentation including documentation process, coding, terminologies, clinical standards and protocols	Nursing Documentation	Documentation Process AND Standards and Protocols AND Coding & Terminologies
	Principles of health informatics including general HIT knowledge, system use, coding, terminologies, issue management and resolution	Principles of nursing informatics	General HIT Knowledge/System Use AND Coding & Terminologies AND Issue Management & Resolution AND Informatics Process
	Information and knowledge management in patient care including data collection	Information management and knowledge management in patient care	Collection of Data/Knowledge Management
	Change and stakeholder management	Change management and stakeholder management	Communication & Change Management
	Data protection and security including confidentiality and privacy	Data protection and security	Confidentiality, Protected Health Information, Records Management AND Privacy & Security
	ehealth, mhealth, teleatics and telehealth	eHealth, telematics and telehealth	eHealth/mHealth/Telehealth
	Financial management including account management	Financial management	Financial and Account Management
	Data analytics including data compiling, analysis, modeling, reporting, biostatistics and statistics	Biostatistics / statistics	Data Compiling, Analysis, Modeling & Reporting
	Information and communication technology / systems including access to information, health information management	Information systems and communication systems	Access to Information/PHI/Health Info Management AND Information and Communication Technology/Information Systems/IT
	Interoperability and integration including standards	Information systems and communication systems AND eHealth, telematics and	IE/Interoperability/Interfaces/Integration AND Standards and Protocols
	Applied computer science including issue management & resolution	Applied computer science	Issue Management & Resolution
	Legal issues in health IT including compliance	Neu in anderen Teilen enthalten	Legal - Risk and Compliance
	Clinical process in informatics including order entry concepts, clinical workflows and delivery processes including meds, allergies, immunizations, etc.	Neu	Medications and Allergies AND Order Entry AND Clinical Practice & Workflows
	Consumer health informatics including patient access and engagement and PHRs	Neu	Patient Access & Engagement/PHRs AND Patient Centered Interactions/Patient Identification
	Public health informatics including population health	Neu	Population Management/Public Health
	Ethics in health IT	Ethics and IT	Neu
	Project management including programm management	Project management	Project/Program Management
	Quality and safety management including patient safety management	Quality management	Quality & Safety
	Information management in research including biomedical (inclusive of genomics, etc.)	Information management in research	Research/Biomed
	IT risk management	IT risk management	Risk and Compliance
	System lifecycle management	Neu	Systems Development and Implementation
	Resource planing and management including human resources, materials, room resources, logistics	Human resource management - Resource planning and logistics	Neu
Assistive technology for ageing people (ubiquitous technologies)	Assistive technology for ageing people (ubiquitous technologies)	Neu	
Teaching, training and education in healthcare including elearning and simulation	Information management in teaching, training and education	Neu	
Medical technology including devices, biomeal imaging, signal processing, etc.	Biomedical imaging and signal processing	Neu	
Strategic management	Strategic management and leadership	Neu	





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# EHEALTH COMPETENCIES: RESULTS FROM THE SURVEY

**Part - Relevance of Competencies for Different Health Professions**

On the next page, there is a list of 30 eHealth and health informatics competencies, as well as interpersonal and social dimensions (which can affect/are partly reflected in all competencies). The relevance of these competencies for one or more roles / domains have to be rated.

First, check the domains of your expertise (as many as you want). Next, please rate the relevance of the competencies based on the domains of your background and expertise.

Multiple selection (if you check more than one domain, please make sure you answer the competencies and interpersonal dimensions for each of the selected roles)

- Physician
- Nursing
- Pharmacist
- Engineering, ICT or information systems specialist in healthcare
- Health data management
- Science and research in healthcare
- Education in healthcare
- Chief/Executives (nursing, physician, etc.)
- Chief/Executives (administrative and technical e.g. hospital CEO)
- Chief information officer (CIO - clinical, nurse, physician, etc.)
- Chief information officer (CIO - technical)
- Other healthcare professions (e.g. physiotherapy, podiatry, dietetics, therapeutic care)
- N/A

## Survey of Current State of Needs: Relevance of Competencies

Professional background			
Academic or non-academic teaching and / or education [n=101]		Health data management [n=65]	
Physician [n=25]		Clinical CEOs [n=20]	
Nursing [n=106]		Technical CEOs [n=24]	
Pharmacist [n=5]		Clinical CIOs [n=18]	
Other health care professions (e.g. physiotherapy) [n=22]		Technical CIOs [n=16]	
Other health care institution worker or staff [n=51]		Science & research [n=18]	
Engineering or IT specialist [n=129]		Other [n=118] [?]	
Gender [n=711]	Age [n=713]	Countries by continent [n=718]	
Female 70.6 %	Mean 50 years	Africa (2)	Europe (28)
Male 28.6 %	SD 10.99	Asia (10)	North America (2)
Other 0.8 %		Australia (1)	South America (4)
[?]		Central America (4) [?]	[?]







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# EHEALTH COMPETENCIES: RESULTS FROM THE SURVEY

**Table 1:** Common top ten eHealth competencies for professional roles (number of replies in brackets)

Direct patient care (401)	Executives (132)	IT (172)	Science / education (274)
Leadership	Leadership	Leadership	Leadership
Communication	Communication	Communication	Communication
Ethics in health IT		Ethics in health IT	Ethics in health IT
Documentation		Documentation	Learning techniques
Teaching, training and education in health care		Data protection & security	Teaching, training and education in health care
Quality and safety management		Health care processes and IT integration	Principles of health informatics
Info. / knowledge management in patient care		Interoperability and integration	Info. / knowledge management in patient care
		Process management	Data protection & security
		Project management	
		Info. / communication tech. (applications)	

Green: competencies in all 4 cluster of roles, blue in three clusters, red in two clusters and black in one cluster





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# EHEALTH COMPETENCIES: ENRICHED BY CASE STUDIES

**TITLE** This section contains the title of your case study. You are free to title it according to your main messages.>

**AUTHOR** Please provide a short description of yourself and your role in the organisation. Add co-authors if needed to realise different perspectives.>

**ORGANIZATION** Please give the name of your organisation and describe its type: university/college/academic institution, healthcare provider, IT vendor, healthcare authority, or other), its location, size, types of staff and any specific information that distinguishes your organisation from others.>

**BACKGROUND** Please explain any history or recent developments in your region or country that highlight the need for Health, health informatics\*, or digital skills in health education and workforce development.>

**STATUS/CURRENT DEVELOPMENTS** Please describe current developments in your organisation that show the need to improve/change Health educational activities and workforce development.>

**ACTIVITIES/MEASURES** Please describe the activities/measures being taken around Health education and workforce development.>

**CHANGES** If applicable, please describe what kind of changes/interventions you made compared to the previous situation in your Health education and workforce development initiatives.>

**RESULTS** Please describe the results that happened after your activities occurred or changes took place, or describe the anticipated results.>

**OUTLOOK/LESSONS LEARNT** What are the lessons learnt and how will you proceed in the future? If you did not achieve any results so far, please describe your next steps toward actualizing change.>

## Case Studies in Education: 22 Case Studies from Europe, North America, Africa, Asia

No	author's name	country	organization	micro, meso, macro	professions	educational level	technology supported learning
1	Elise Ammenwerth	Austria	UMT - Private University for Health Sciences, Medical Informatics and Technology	micro - university programme (curriculum)	interprofessional	Masters (curriculum)	fully online
2	Lynn Nagle	Canada	University of Toronto	macro - country	nursing teachers	Continuing Education (stepwise approach)	webinars included
3	Zhuang Yiya (April)	China	Sir Run Run Shaw Hospital	meso - hospital	nurses	Continuing Education (principles of the curriculum)	online tests, systems use
4	Inge Madsen	Denmark	Aalborg University	micro - university programme	nurses	Bachelor (curriculum)	no information
5	Kajsa Saranto	Finland	University of Finland - Kuopio Campus	micro - university programme	interprofessional in clinical social work with focus on nursing	Masters (principles of the curriculum and curriculum)	no information
6	Olli Ahonen, Jonas Tana, Gunn Britt Lajunen, Margi Mahla, Sanita Marnhausa, Elina Rajalahti	Finland, Latvia, Estonia	Lauria University of Applied Sciences, Arcada, Taro Health Care College, Red Cross Medical College Riga	micro - university programme across countries	interprofessional	Bachelor (curriculum)	fully online
7	Ursula Hübner	Germany	University of Applied Sciences, Ostnabrück	micro - university programme	nurses	Continuing Education (curriculum)	eLearning platform
8	Sabu K M	India	Manipal University	micro - university programme	health information management	Masters (curriculum)	predominantly face-to-face
9	Bachelle Kaye	Israel	Assuta	meso - hospital	interprofessional	Continuing Education (principles of the curriculum and curriculum)	partly online
10	Juro Bārdziņš	Latvia	University of Latvia	micro - university programme	physician, nurse	all levels (educational measures are proposed)	n/a
11	Omotayo Omojola	Nigeria	HISN Nigeria	macro - country	interprofessional	Continuing Education (need and common practice)	eLearning platform
12	Ann Kristin Rotegård	Norway	Oslo University Hospital/University of Oslo	decision support system	nurses	Continuing Education	software
13	Anne Moen	Norway	Oslo University Hospital / Institute for Health and Society	Massive Open Online Course (MOOC)	interprofessional	Bachelor and Masters (curriculum of nursing and medicine not informatics)	MROOC
14	Paulino Souza, Alexandra Maria Ramos Cardoso	Portugal	Escola Superior de Enfermagem do Porto	macro - country	nurses	Bachelor and Masters (recommendations)	n/a
15	Taghreed Justina	Saudi Arabia	King Saud bin Abdulaziz University for Health Sciences	micro - university programme	interprofessional	Continuing Education	not yet, in planning
16	Helena Blazun Volner	Slovenia	University of Maribor	micro - university programme	nurses, physicians and patients	educational measures in planning (part of a R&D project on eHealth)	no information
17	Jan Florin	Sweden	Dalarna University	micro - university programme	nurses	Bachelor and Masters (curriculum)	blended learning
18	Paula Procter	UK (England)	Sheffield Hallam University	micro - university programme	interprofessional	Bachelor and Masters (curriculum)	fully online
19	Theofanis Fotis	UK (England)	School of Health Sciences, University of Brighton	micro - university programme	nurses and widwives	Masters (curriculum)	blended learning
20	Siohban O'Connor	UK (Scotland)	Edinburgh Napier University	micro - university programme	nurses	Bachelor (principles of the curriculum and curriculum)	some online elements
21	Jessica Liston	USA (California)	Sutter Maternity and Surgery Center	meso - hospital	nurses	Continuing Education (being developed)	no information
22	Josette Jones	USA (Indiana)	Indiana University - Purdue University Indianapolis	micro - university programme	interprofessional	training for students and health professionals (curriculum)	all types of teaching modes





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# OSNABRÜCK CASE STUDY: INTERPROFESSIONAL EDUCATION

	Thu, 18.05.2017 <sup>1</sup>	Fri, 09.06.2017	Fri, 11.08.2017	Thu, 14.09.2017 <sup>1</sup>
09.00 – 10.30	Welcome, introducing of the team and participants, short introduction to the module, evaluation	eHealth basics and introduction to nursing informatics	Problem-oriented patient transfers	Final exam / presentation
11.00 – 12.30	Campus tour, introduction to library work incl. library tour	eHealth basics and introduction to nursing informatics	Problem-oriented patient transfers	Final exam / presentation
13.30 – 15.00	Scientific working	Electronic transfer documents to support continuity of information	handoverEHR	Final exam / presentation
15.30 – 17.00	Scientific working, blended learning concept	Electronic transfer documents to support continuity of information	Information technology in the context of structured treatment programmes	Closing ceremony (evaluation, feedback, certificate handover)





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# WELCOME TO LEARN MORE ABOUT TIGER ACTIVITIES



TIGER'S TEACHERS INITIATIVE:  
CASE STUDIES FOR  
HEALTH INFORMATICS EDUCATION

MIE2018 GÖTEBORG SWEDEN WORKSHOP 08:30 – 10:00

Thursday 26th April  
8:30 – 10:00

R22

