Towards the TIGER International Framework for Recommendations of Core Competencies in Health Informatics 2.0 – Extending the Scope and the Roles

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TIGER Technology Informatics
Guiding Education Reform

Focus:
Engaging and preparing the global workforce in using technology and informatics to improve the delivery of patient care

History:
• 2006: TIGER began as a grassroots initiative within the nursing community - gradually extending the scope to include other clinical disciplines and move into the inter-professional arena
• 2012: Expanded the TIGER vision globally by establishing the International Committee
• 2014: TIGER transitioned to HIMSS and today is supported by the Professional Development Department
• 2019: TIGER International Task Force now represented by 29 countries worldwide; Paula Procter and Bob Brookshire serve as co-chairs

Hübner et al. Towards the TIGER International Framework 2.0
Is Health Informatics education for the workforce still necessary?

**User interfaces 1980**

But is it really less complex

**to user interfaces 2019**

or more safe?

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Hübler et al. Towards the TIGER International Framework 2.0.

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![Diagram](image-url)
Where are the priorities and examples in an ocean of options and needs?

What are high priority core competencies in health informatics?
Do they depend on the (future) role of the health professional?
Is this competency relevant because it is innovative?
Should I teach / learn basic stuff or advanced methods?
How do I know?

What can I learn from colleagues and faculty of other institutions?
What courses are they offering?
Can I get hands-on experience?
How do I deliver the content?
How often do I need to update content?
Two projects to show the priorities and provide examples

**International Competency Synthesis Project**

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

**EU*US eHealth Work Project**

- Hübner et al. Towards the TIGER International Framework 2.0

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**TIGER International Recommendations Frameworks**

1.0 nurses

2.0 multiple professionals
TIGER International Recommendation Framework 1.0

Original Articles

Technology Informatics Guiding Education Reform – TIGER*

An International Recommendation Framework of Core Competencies in Health Informatics for Nurses

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7School of Nursing, The University of Auckland, Auckland, New Zealand;
8Omni Micro Systems, Omni Med Solutions GmbH, Hamburg, Germany;
9eHealth Education Pty Ltd and Global eHealth Collaborative, East Melbourne, Australia;
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Methods Inf Med 2018; 57(Open 1): e30–e42
https://doi.org/10.3414/ME17-01-0155
Mixed Methods Approach

sources of core competency areas

global perspective

local perspective

International recommendation framework

sources of core competency areas

relevance rating of core competency areas

validation and illustration of core competency areas

relevance score

core competency

role 1
role 2
role 3
role n

area 1

area 2

area 3

area m

validation and illustration of core competency areas

sources of core competency areas

relevance score

case study

• AMIA Board White Paper: definition of biomedical informatics and specification of core competencies for graduate education in the discipline
• German NKLM
• Global Academic Curricula Competencies for Health Information Professionals Draft for Public Comment
• Health Informatics Scope, Careers and Competencies Version 1.9 from Australia
• Informatics Professional Core Competencies v3.0 from Canada
• Informatics Competencies for Every Practicing Nurse: Recommendations from the TIGER Collaborative
• Recommendations of the International Medical Informatics Association (IMIA) on Education in Biomedical and Health Informatics First Revision
Recommendations of the International Medical Informatics Association (IMIA) on Education in Biomedical and Health Informatics

Focus on Biomedical/Health Informatics specialist (BMHI)

Distinction between the two roles: IT-user and BMHI specialist
Workforce: What are the roles?

Physicians, nurses and other clinicians

Direct Patient Care

Data management and data analysis

Health information management

Board members

Clinical and Administrative Executives
Clinical and Technical Chief Information Officers

Biomedical and health informatics specialists and engineers

Engineering / Health IT specialists

Biomedical and health informatics researchers and educators

Science and Education
Survey Sample

- A total of **718 experts** from 51 countries responded following an individual and institutional online invitation world wide.

- The **51 countries** were composed of
  - 28 European countries,
  - 10 Asian countries,
  - 8 countries from Middle and South America,
  - 2 African countries and the USA, Canada and Australia

- These answers corresponded with **1,571 relevance ratings** for professional roles.

- **Not** meant for country comparisons.

- **Convenience sample** in cross-sectional study.
# Multiple Health Professionals: Global relevance ratings (1)

<table>
<thead>
<tr>
<th>Direct Patient Care [phys, nurs, etc.] (DPC)</th>
<th>Health Information Management (HIM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Communication</strong> [n=335]</td>
</tr>
<tr>
<td>2</td>
<td><strong>Documentation</strong> [n=337]</td>
</tr>
<tr>
<td>3</td>
<td>Information &amp; knowledge management in patient care [n=335]</td>
</tr>
<tr>
<td>4</td>
<td>Quality &amp; safety management [n=333]</td>
</tr>
<tr>
<td>5</td>
<td>Leadership [n=336]</td>
</tr>
<tr>
<td>6</td>
<td>Learning techniques [n=334]</td>
</tr>
<tr>
<td>7</td>
<td>Teaching, training &amp; education in healthcare [n=333]</td>
</tr>
<tr>
<td>8</td>
<td>Ethics in health IT [n=334]</td>
</tr>
</tbody>
</table>

First eight out of 33 core competency areas.
## Multiple Health Professionals: Global relevance ratings (2)

<table>
<thead>
<tr>
<th>Executives [clinical, administrative] (EXE)</th>
<th>Chief Information Officers [clin, tech] (CIO)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Leadership [n=55]</td>
<td><strong>1</strong> Leadership [n=62]</td>
</tr>
<tr>
<td>96.4 ± 7.8</td>
<td>93.8 ± 9.6</td>
</tr>
<tr>
<td><strong>2</strong> Communication [n=55]</td>
<td><strong>2</strong> Communication [n=62]</td>
</tr>
<tr>
<td>95.8 ± 8.3</td>
<td>93.2 ± 10.7</td>
</tr>
<tr>
<td><strong>3</strong> Quality &amp; safety management [n=55]</td>
<td><strong>3</strong> Care processes &amp; IT integration [n=62]</td>
</tr>
<tr>
<td>90.4 ± 16.1</td>
<td>91.8 ± 13.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Engineering/Health IT specialist (ENG)</th>
<th>Science and Education (S&amp;E)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Communication [n=172]</td>
<td><strong>1</strong> Communication [n=218]</td>
</tr>
<tr>
<td>91.3 ± 14.3</td>
<td>91.6 ± 16.1</td>
</tr>
<tr>
<td><strong>2</strong> Care processes &amp; IT integration [n=171]</td>
<td><strong>2</strong> Teaching, training &amp; education in health care [n=220]</td>
</tr>
<tr>
<td>87.5 ± 18.9</td>
<td>89.2 ± 17.9</td>
</tr>
<tr>
<td><strong>3</strong> Information &amp; communication technology (applications) [n=171]</td>
<td><strong>3</strong> Leadership [n=218]</td>
</tr>
<tr>
<td>87.2 ± 18.0</td>
<td>88.2 ± 17.3</td>
</tr>
</tbody>
</table>

First three out of **33 core competency areas**.
Priorities in core competency areas: Summary

Communication among Top 3 for all roles

Leadership and Ethics in health IT among Top 10 for all roles

Quality & safety management, Documentation and Care processes & IT integration among Top 10 for four of the six roles

Data analytics among Top 10 for three of the six roles
Case Study Highlights

- All case studies were developed by the local experts using the same template and guiding questions to become comparable.
- Examples of successes and best practices in education & training, skills preparation, competency assessment/workforce development
  - 22 studies with 50 contributing authors/co-authors from
  - Europe representing 10 EU States
  - Asia and the Middle East: Israel, India and China
  - North America: Canada, United States
  - Africa: Nigeria
- Available at: https://www.himss.org/professional-development/tiger-case-studies
Baltic Case Study: Laurea, Arcada, Red Cross Medical College

The curriculum developed by a Finish, Latvian and Estonian university, is multi-professional and combines health and welfare with IT and service design. In the three study units (15 credit points), future professionals from different fields of study (IT, social care, economics and health care) are developing their own unique competencies according to the pedagogical principle “learning by developing”.

**Ethics**

- Understand ethical theories, safety procedures, principles and laws affecting digital health and welfare as well as customer privacy
- Have the skills to practice ethical and high quality customer service taking responsibility for the safety and integrity of the client

The EU*US project has received funding from the European Union’s Horizon 2020 research and innovation programme under Grant Agreement No. 727552 EUUSEHEALTHWORK
Recommendation Framework in action: example Ethics in health IT

### International recommendation framework

<table>
<thead>
<tr>
<th>core competency area</th>
<th>DPC</th>
<th>HIM</th>
<th>EXE</th>
<th>CIO</th>
<th>ENG</th>
<th>S&amp;E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethics in health IT</td>
<td>83,8</td>
<td>85,6</td>
<td>87,0</td>
<td>88,7</td>
<td>83,4</td>
<td>86,5</td>
</tr>
<tr>
<td>competencies from Baltic case study</td>
<td>Understand ethical theories, safety procedures, principles and laws affecting digital health and welfare as well as customer privacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Have the skills to practice ethical and high quality customer service taking responsibility for the safety and integrity of the client</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Conclusions

(1) **Inter-professional** education is possible and necessary particularly regarding communication, leadership, ethics, quality & safety management, documentation and care processes & IT integration

(2) Different **roles**, however, also require a specific **skill set**.

(3) The **International Recommendation Framework** with its priorities and case studies can serve as a compass for educators and learners to find their path through the jungle of options.
TIGER and Project Links

• HIMSS TIGER Initiative: https://www.himss.org/professionaldevelopment/tiger-initiative

• International Competency Synthesis Project: https://www.himss.org/professional-development/tiger-initiative/tiger-international-informatics-competency-synthesis-project

• EU*US eHealth Work Project: http://ehealthwork.eu