WP7 - Digital skills for Therapy Radiographers (TR)- a document analysis

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Background
- EU Digital skills agenda
- Digital Skills for TRs

Literature review
- Methodology
- Results
  - Discussion/Conclusion

Future directions
“Digital skills and related concepts, such as digital competence, have become key terms in the discussion on the kind of skills needed by citizens – in Europe and beyond – to participate and thrive in our society...”

European Commission 2010; Ferrari 2012; Gallardo-Echenique et al. 2015
And Digital Skills for TRs?

- Key role in health care provision
- New technological challenges (diversity of software)
- Role expansion and shift of responsibilities
Digital Skills for TRs

Aim: Assess the literature and identify the relevant digital skills for Trs.
Methodology

Systematic search:
- Databases and Journals:
  - PMC
  - Science Direct
  - ERIC
  - Cochrane Library
  - PubMed.gov
  - IEEE Xplore
  - Radiography Journal
  - TipsRO Journal
- Zotero Software
- Two reviewers

Query:
(digital) AND (competenc* OR task* OR skill*) AND (“therapeutic radiographer” OR “therapeutic radiography” OR radiographer* OR radiotherapist* OR RTT* OR “radiation therapist” OR “radiation technology” OR “radiation therapy technician” OR “Radiological technologist” OR “Radiological technician”) AND (radiotherapy OR “radiation therapy” OR “radiation oncology”)

### Literature Selection Process

**Database search (n=216)**

- Duplicates records removed (n=12)
- Records excluded after review of abstract (n=172)
- Full-text articles assessed for eligibility (n=32)
- Full-text articles excluded (n=14)
- Articles added through snowballing (n=8)

**Records screened (n=204)**

**Full-text articles assessed for eligibility (n=32)**

- Full-text articles included (n=18)

**Studies included (n=26)**

**Inclusion criteria:**
- 10 year period
- Languages: EN/PT
- Focus on TR’s digital skills

**Exclusion criteria:**
- Focus on digital skills of other healthcare professionals
- Irrelevancy to the topic of research
Methods

Radiotherapy
- Benchmarking documents
- Recommendations documents
- Educational guidelines

Digital skills/competencies
- EU’ Digital Programmes
- European projects (reports)
- International frameworks

Technical Publications
- User guide manuals
- Reference guide manuals
Results

I can’t find anything!
Results
<table>
<thead>
<tr>
<th>Transversal</th>
<th>Planning Image</th>
<th>Treatment Planning</th>
</tr>
</thead>
</table>
| • Technologies/ Information Systems (IS)  
• Communication  
• Electronic Patient Record (EPR)  
• Patient Agenda  
• Workstation | • Computerized Tomography  
• 4D Computerized Tomography  
• Image Processing and Enhancement  
• Image Registration and Correlation  
• Image Segmentation and Contouring | • Plan treatment  
• Plan parameters  
• Dose calculation  
• Inverse planning (IMRT/VMAT)  
• 4D planning  
• SRS/SBRT planning  
• Plan evaluation  
• Prerequisites for treatment |
| Treatment | Quality, Safety and Risk Management | Management and Research |
| • System setup  
• Treatment delivery planning  
• Treatment verification: conventional techniques  
• Treatment verification: advanced techniques  
• Image matching  
• Image analysis  
• Treatment delivery  
• Respiratory gating treatment delivery  
• SRS/SBRT treatment delivery | • Quality assurance  
• Security  
• Risk management  
• Data protection  
• Information integrity | • Department administration and management  
• Education and research |
Results

202 Digital Skills

6 Dimensions

34 Sub-Dimensions
Results

<table>
<thead>
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<td>Education and research</td>
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</tbody>
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- Use an internal communication channel
- Create multimedia content for patient education
- Create scan protocols
- Set acquisition parameters
- Select calculation parameters
- Calculate dose distribution
- View online/offline images
- Use analysis tools
- Record all procedures concerning the radiation delivered
- Review LINAC, MLC and imaging system failures/interlocks
- Use data analysis software
- Create training programs
Conclusions

✔ TRs needs to deal with the digital revolution! Digital skills are already in use in daily practice!

✔ Ensure that TRs are trained with the necessary skills (from early education to CPD), to adopt the best practice across Europe.

✔ Closing the digital skills gaps will improve the quality of practice which will result in better patient outcomes.

✔ TRs must have a good level of digital skills, or risk losing autonomy and influence.

✔ Make TRs co-developers of digital solutions for Radiotherapy workflow.

✔ This set of digital skills will also allow for the anticipation of future needs, regarding the new technologies (such as machine learning, big data and cybersecurity).
Future directions - WP7

- Survey distribution (Europe)
- Focus group interviews - design
- Recommendations and webinars
“Digital skills require the mastery of particular relatively complex operations, interfaces, and applications of digital technology...Thus, digital skills are a complex policy problem that calls for both technological and educational solutions.”

Van Dijke, 2014