

**Multimedia Appendix 3: Barriers to and facilitators of patient portal implementation for each stakeholder group and ranked by number of subjects.**

Barrier and facilitators	Stakeholders			Total (n=21), n (%)
	Medical professionals <sup>a</sup> , n (%)	Managers <sup>a</sup> , n (%)	IT <sup>b</sup> employees <sup>a</sup> , n (%)	
<b>Innovation: patient portal</b>				
<b>Barriers</b>				
Guaranteeing privacy and security	1 (14)	5 (71)	5 (71)	11 (52)
Lack of accessibility	2 (29)	4 (57)	3 (43)	9 (43)
Lack of perceived usefulness	4 (57)	1 (14)	2 (29)	7 (33)
Lack of interoperability	0 (0)	1 (14)	1 (14)	2 (10)
Lack of attractiveness	0 (0)	1 (14)	0 (0)	1 (5)
Lack of tailored content	1 (14)	0 (0)	0 (0)	1 (5)
<b>Facilitators</b>				
Perceived usefulness	7 (100)	7 (100)	7 (100)	21 (100)
Perceived ease of use	2 (29)	2 (29)	1 (14)	5 (24)
Attractiveness	1 (14)	1 (14)	2 (29)	4 (19)
Participation of end users during implementation	1 (14)	1 (14)	1 (14)	3 (14)
Privacy and security	2 (29)	0 (0)	1 (14)	3 (43)
Good accessibility	0 (0)	2 (29)	0 (0)	2 (10)
Credibility	0 (0)	2 (29)	0 (0)	2 (10)
Content tailored to patients	0 (0)	1 (14)	0 (0)	1 (5)
Interoperability with EHR	0 (0)	0 (0)	1 (14)	1 (5)

**Individual professional**

**Barriers**

Lack of knowledge	0 (0)	2 (29)	2 (29)	4 (19)
Lack of motivation to change	1 (14)	0 (0)	0 (0)	1 (5)

**Facilitators**

Positive attitude	3 (43)	7 (100)	3 (43)	13 (62)
Motivation to change	4 (57)	2 (29)	2 (29)	8 (38)
Having knowledge	1 (14)	2 (29)	2 (29)	5 (24)

**Patient****Barriers**

Lack of sufficient eHealth literacy	4 (57)	5 (71)	4 (57)	13 (62)
Negative attitude/lack of need	0 (0)	2 (29)	0 (0)	2 (10)

**Facilitators**

Sufficient eHealth literacy	2 (29)	2 (29)	0 (0)	4 (19)
Positive attitude/demand	1 (14)	0 (0)	1 (14)	2 (10)

**Social context****Barriers**

Negative attitude or opinion of medical professionals	4 (57)	3 (43)	1 (14)	8 (38)
Negative attitude or opinion of colleagues in general	3 (43)	0 (0)	3 (43)	6 (29)
Varying opinions about IT security	0 (0)	0 (0)	1 (14)	1 (5)

**Facilitators**

Positive attitude or opinion of colleagues in general	0 (0)	2 (29)	4 (57)	6 (29)
Positive attitude or opinion of medical professionals	1 (14)	2 (29)	2 (29)	5 (24)
Good collaboration with colleagues	0 (0)	2 (29)	2 (29)	4 (19)
Early adopters	0 (0)	3 (43)	0 (0)	3 (14)
Varying opinions about implementation	1 (14)	0 (0)	0 (0)	1 (5)

## Organizational context

### Barriers

Lack of resources	4 (57)	5 (71)	6 (86)	15 (71)
Lack of time and increased workload	4 (57)	3 (43)	1 (14)	8 (38)
Innovation-averse culture	1 (14)	4 (57)	1 (14)	6 (29)
Lack of suitable specialist staff	1 (14)	2 (29)	3 (43)	6 (29)
Adjusting organization of care processes is difficult	2 (29)	1 (14)	2 (29)	5 (24)
Structure of the organization	2 (29)	1 (14)	2 (29)	5 (24)
Change in task and new responsibilities	1 (14)	1 (14)	2 (29)	4 (19)
Organization is not ready for implementation	2 (29)	2 (29)	0 (0)	4 (19)
No strategic plan and lack of organizational priority	0 (0)	2 (29)	0 (0)	2 (10)

### Facilitators

Management support	2 (29)	3 (43)	3 (43)	8 (38)
Communication to promote the portal	1 (14)	4 (57)	1 (14)	6 (29)
Sufficient resources	1 (14)	0 (0)	5 (71)	6 (29)
Innovation-oriented culture	2 (29)	2 (29)	1 (14)	5 (24)
Suitable specialist staff	0 (0)	1 (14)	0 (0)	1 (5)

## Economic and political context

### Barriers

Financial difficulties	5 (71)	6 (86)	3 (43)	14 (67)
Restrictions imposed by laws and regulations	0 (0)	3 (43)	1 (14)	4 (19)
Third-party dependency	0 (0)	1 (14)	1 (14)	2 (10)
Lack of generic guidelines	0 (0)	1 (14)	0 (0)	1 (5)

### Facilitators

Facilitating laws and regulations	1 (14)	2 (29)	1 (14)	4 (19)
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Conducive financial arrangements	0 (0)	2 (29)	1 (14)	3 (14)
Good collaboration with third parties	0 (0)	1 (14)	1 (14)	3 (14)
Supporting healthcare policies	0 (0)	3 (43)	0 (0)	3 (14)

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<sup>a</sup>n=7

<sup>b</sup>IT: information technology