



Initial user- centred design of an AI- based clinical decision support system for primary care

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Introduction

Why is this subject relevant?

Challenges of General Practitioners (GPs) in Primary Care



Patients with nonspecific symptoms \rightarrow Diagnostic range



Long-term diagnostic process vs. limited time



Unique role of GPs as 'gatekeeper'



Rapidly growing knowledge

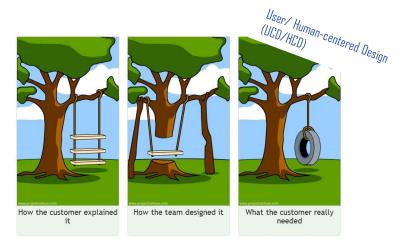
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Background



- Support the diagnostic process
- CDSS for unclear and rare diseases
- 3 different Al methods



The user plays an essential role!

→ Research question: How do general practitioners envision the user interface of an Al-based clinical decision support system for primary care?

Gefördert durch

Bundesministerium

für Gesundheit



2. Review results

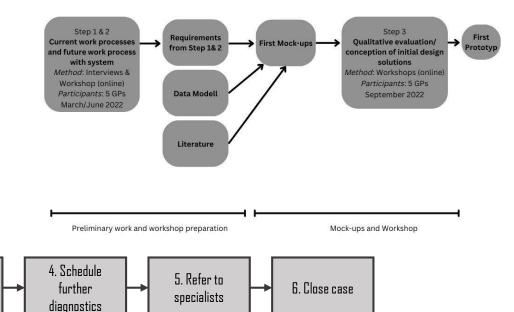
3. Discuss

results

Methods

Conception of an initial design

• Mock-up creation balsamiq* resulted of the preliminary work



• and the designed task model

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1. Perform data

entry



Methods

Evaluation workshop

- 2 workshops : discussing the mock-ups
- online video conference tool (with recording)
- discussion guide and protocol

Result analysis

- 1. Paraphrasing answers to the guideline questions
- 2. **Consolidating** notes and results of the audio analysis
- 3. Summarising and categorizing the key messages

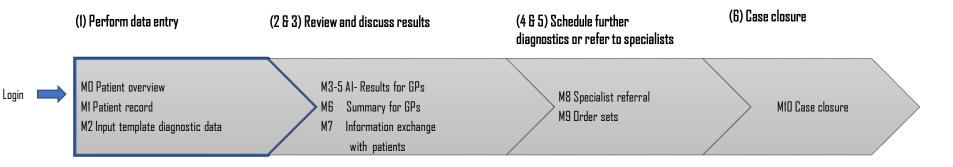






Results

Mock-ups







Results

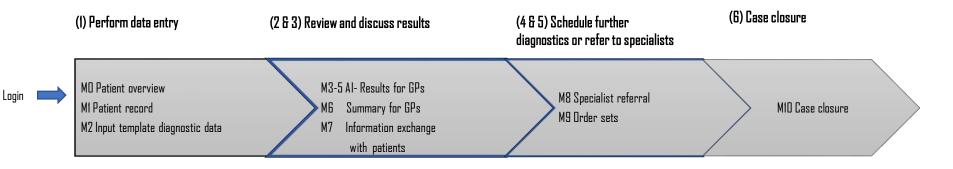
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Mock-ups





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ICD code: EQ6.3

ICD code: E06.4

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Symptom 2 (...)

Lob volue Z

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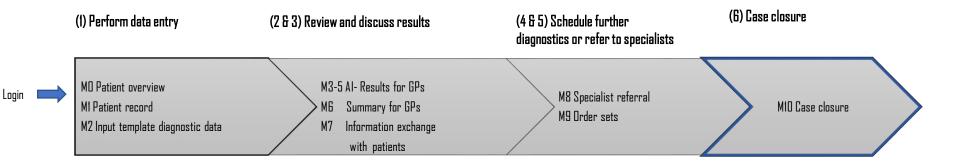
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Results

Mock-ups



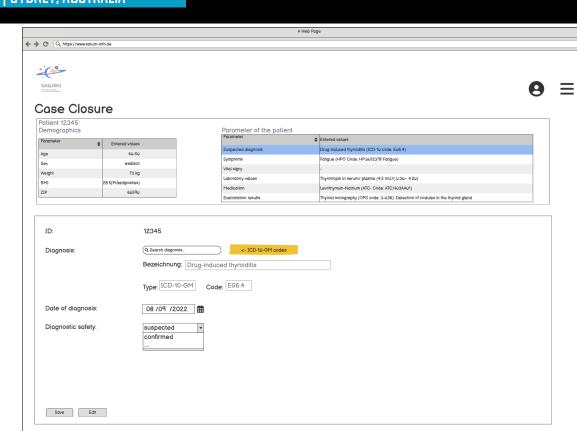
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Results

Mock-ups MID



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Results

Workshop Results

Demographics of participants

- gender: 40% 60%
- mean age: 40.8 years
- general feedback on mock-ups

e.g. relevance of clarity



Key messages for the improvement of the design proposals

No.	Task	Category	Key message	
1	1	Entry and processing	Intelligent request of parameters, based on previous inputs.	
2	1	Entry and processing	No usage of mandatory fields.	
3	1	Entry and processing	Ability to transfer information from other sources.	
4	1	New data fields	Provide basic categories for diagnoses and symptoms.	
5	2	Visualisation	Aggregation of all AI results in a clear presentation.	
6	3	Access authorization	Individual access for patients, controlled by GP.	
7	3	Entry and processing	Patient symptom entry function (portal access provided).	
8	4	Provided information	Brief information on suspected diagnosis (in case of rare disease).	
9	4	Search assistance	Possibility to filter information on specialists according to thei proximity to the place of residence.	
10	6	New data fields	Possibility to document diagnosis history at case closure.	
11	1+ 6	Entry and processing	Possibility to enter and edit file attachments.	
12	1-6	Visualisation	Focus on clarity.	



Discussion

Methods

• 5 GPs:

small group size vs. intensive task-based mock-up discussion

- → Groups of 5-8 people are also described as a good group size by various other sources, e.g. Geis, 2018
- More general presentation of the mock-ups wide range of visualisation methods):

limitation vs. allowing space for ideas

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Discussion

Outcome

- General feedback + key messages for the improvement of a CDSS design proposals for primary care in Germany
- Further course of the project: results -> functional requirements
- Iterative feedback from GPs will be collected regularly
- Feedback reflects findings from other studies

e.g. Importance of integration of CDSS into the work routine of the individual practitioner

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Conclusion and outlook

- Valuable feedback on GPs' expectations of the UI
- Recommendation of further close involvement of GPs

Regular stakeholder involvement in CDSS projects is very valuable!



Thank you!



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