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The screenshot shows a medical dashboard with several panels. On the left, there is a table with columns labeled A, B, C, D, and E. The first row contains the text '10:31 Fri Besværet Upåvirket Pupil Normal Pupil Højre Normal Sineter. Stærke'. Below this table, there are two sections: 'Anden Behandling' with the value 'Spineboard, Halskrave' and 'B Respiration' with the value 'Ilt næsebrille'. On the right side, there is a panel titled 'Vital signs & observations' with a table of data:

GCS	Puls	Blodtryk	Respiration	Saturation	Medicin
11:26:06	11:33:09	11:33:09	11:25:42	11:22:50	
13(E3+V5+M5)	100 Bpm	90/51 mmHg	17 rpm	91% SpO2	
10:31:50	10:33:11	10:32:45	10:33:33	10:32:35	
			18 Rpm	89% SpO2	



The screenshot shows a 'Notes' panel in a medical dashboard. The text in the notes reads: 'Indtastet af bruger XX 22-03-2018 10:10 Mathilde Busk (MB) på 21 år har været fastklemt i trafikuheld. Undersøgelserne på ulykkesstedet viser, at MB har smerter fra abdomen og brystet samt dårlig vejrtrækning, som viser sig at være lungekontusion og nyrekontusion. MB er vågen men panisk og kan selv identificere sig. MB har et blodtryk på 90/50 mmHg, puls på 100/min., respiration på 18/min. og en saturationsgrad på 89%.' Below the text, there is a small image of a human torso with a blue area on the abdomen, likely representing a medical condition or injury.

The screenshot shows an 'Injuries' panel in a medical dashboard. The panel is titled 'Pain' and features a 3D anatomical model of a human figure. The model is shown from the front and back, with a blue area on the abdomen, likely representing a medical condition or injury. The model is positioned on a dark surface.

Designing a dashboard to visualize patient information

Background

Handover of patient information at traumas

Prehospital

- Comprehensive amount of data e.g.
 - Incident location
 - Patient status
 - Vital signs



Patient data
handover

Support

- Trauma clinicians in decision making
- Increase patient safety

Trauma care

- Complex patient handovers from prehospital care
- Decision making processes are challenged by stress
- Verbal handovers may not include all key data



Phase 1 – Designing a dashboard prototype

Prioritize key prehospital data for use in trauma care

Field study

- Qualitative observations
 - Conducted in an ED with a trauma room
 - Two observers
 - Analysis of the workflow and physical surroundings in a trauma room
 - Inquiring into the needs of relevant prehospital patient information

Visualize data simplistically

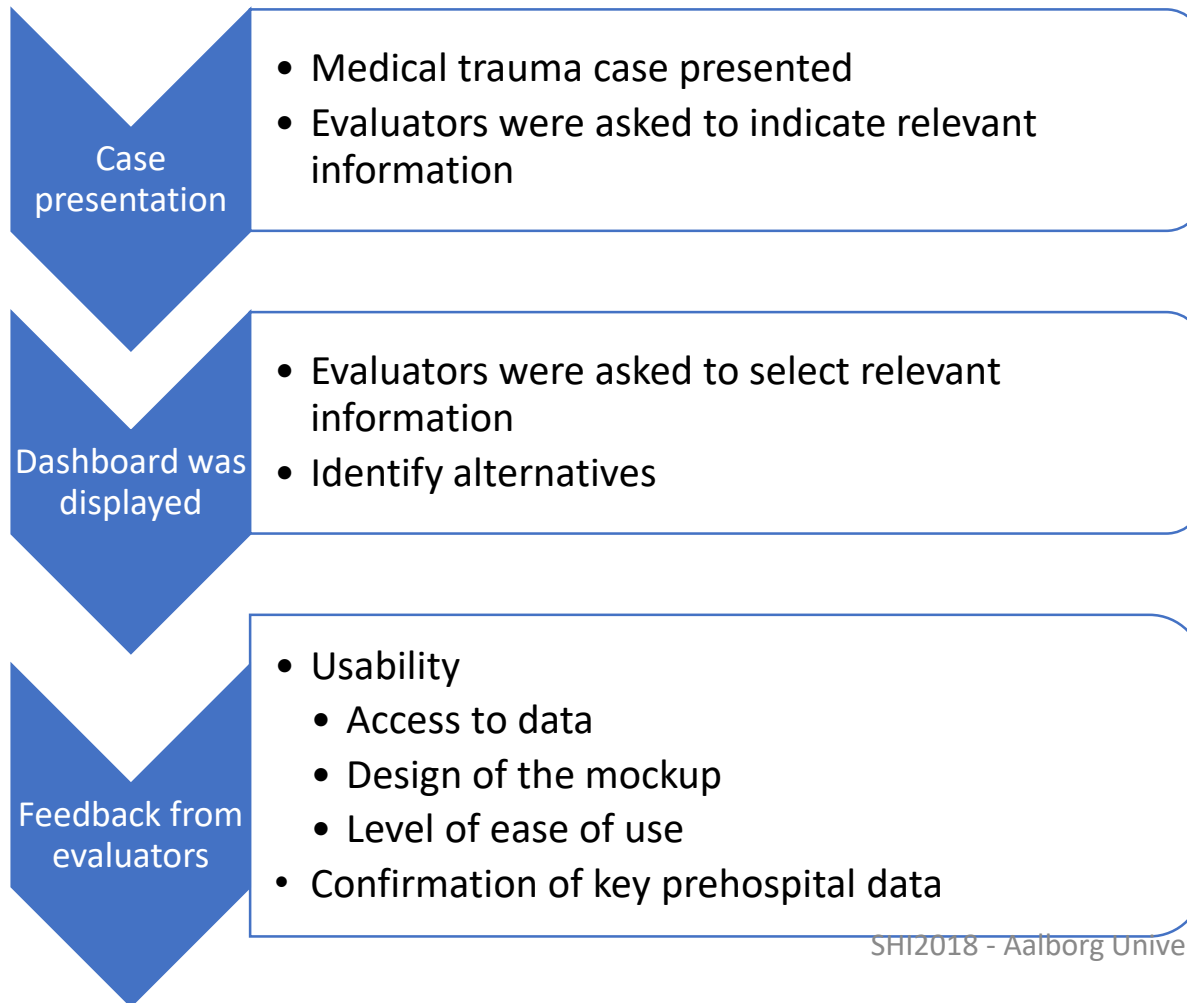
Dashboard design

- 20 Requirements for the design
 - Results from the field studies
 - Outcomes from other studies
 - *The good design principles* by Wiklund et al.
- Interactive mockups
 - Gives users possibility to interact with the design

Materials and Methods

Phase 2 – Evaluate the design

Cognitive walkthrough



Evaluators of the dashboard		
Emergency department A	Emergency department B	Peers
♂ ♀ ♀	♀ ♀ ♀	♀ ♀ ♀
3 nurses	3 nurses	2 nurses 1 radiographer
Use prehospital information system	Non-use pre-hospital information system	None pre-hospital experience
> 2 years healthcare experience		

Results

Field study at an emergency department

Workflow

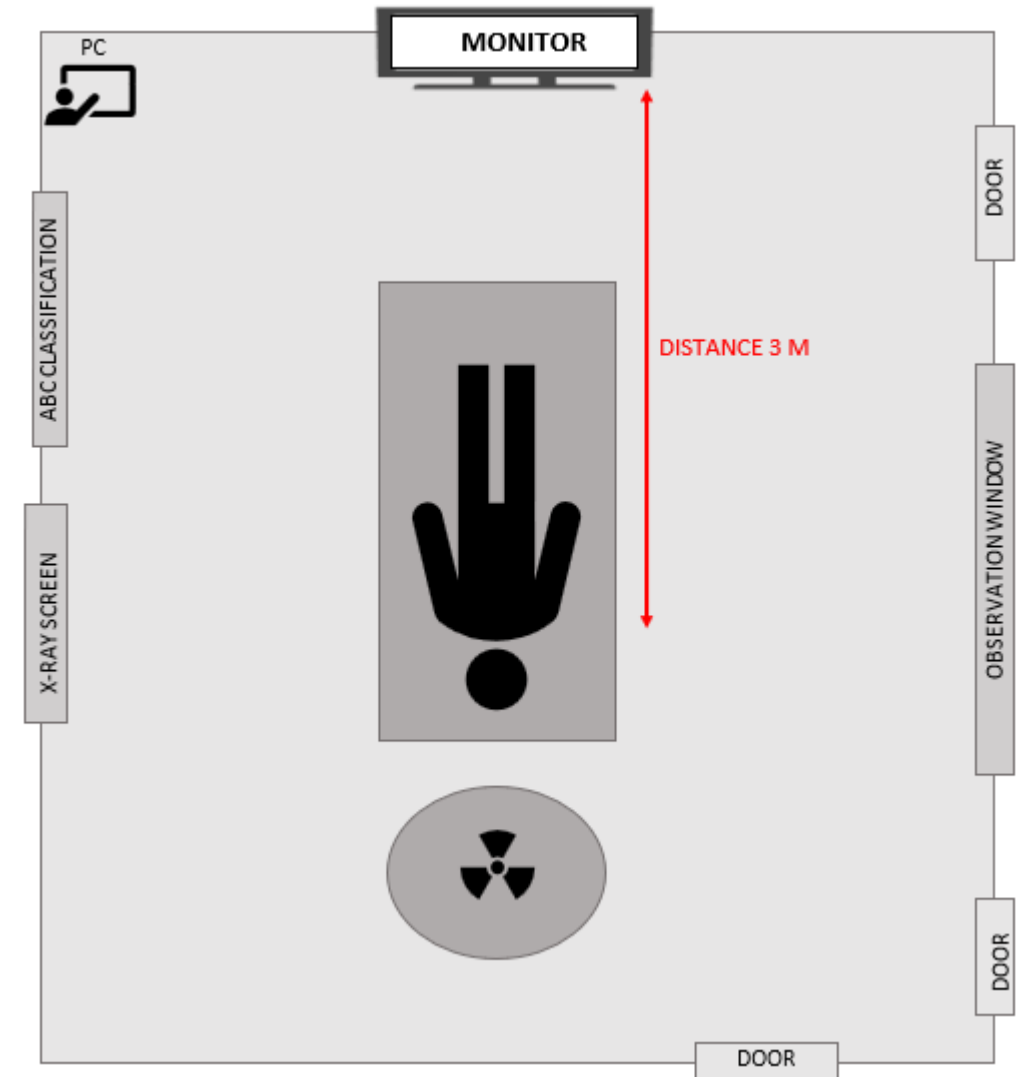
- Emergency call → the coordinator calls relevant personnel to the trauma room
- At the trauma room → personnel awaits information from the attending physician

Could this wait be utilized?

Loss of important contextual information?

Useful prehospital information

- Prehospital notes
- Pictures from the accident
- ABCDE assessment og GCS
- Vital values (pulse, BP, etc)
- Triage/trauma score



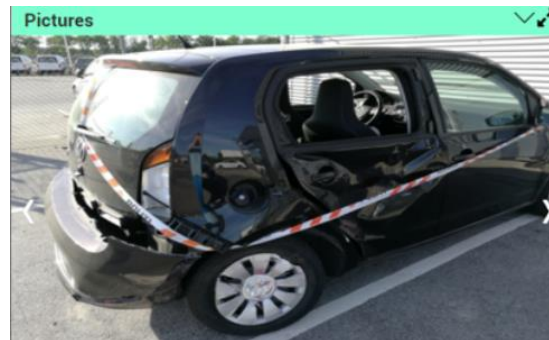
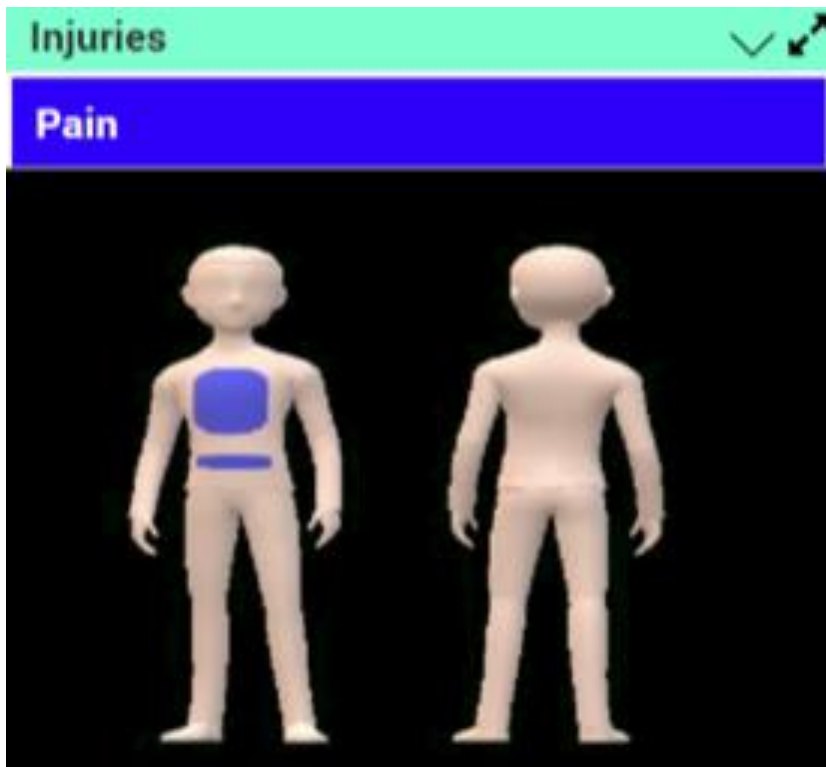
Instructional design of a trauma room

Results

Dashboard design

Patient		Assessment and treatment						Vital signs & observations						
Allergi:	Ingen kendte	Oprettet	A:	B:	C:	D:	E:	GCS	Puls	Blodtryk	Respiration	Saturation	Medicin	
Tidligere sygdomme :	ingen	10:31	Fri	Besværet	Upåvirket	Pupil Venstre: Normal		11:26:06	11:23:09	11:23:01	11:25:42	11:22:50		
Diagnose:	DS369 Læsion af intraabdominale organer uden					Pupil Højre: Normal		10:31:50	10:33:11	10:32:45	10:33:33	10:32:35		
Mistanke om CPR:	Nej					Smerter: Stærke		13(E3+V5+M5)	88 Bpm	90/51 mmHg	17 rpm	91% SpO2		
ID bevis:	Ja	Behandling:												
ID bekræftet af:	Patient	Anden Behandling:		Spineboard, Halskrave										
		B: Respiration		Ilt næsebrille										

Pictures	Notes	Injuries
	<p>Indtastet af bruger XX 22-03-2018 10:10</p> <p>Mathilde Busk (MB) på 21 år har været fastklemt i trafikuheld. Undersøgelserne på ulykkesstedet viser, at MB har smerter fra abdomen og brystet samt dårlig vejrtrækning, som viser sig at være lungekontusion og nyrekontusion. MB er vågen men panisk og kan selv identificere sig. MB har et blodtryk på 90/50 mmHg, puls på 100/min., respiration på 18/min. og en saturation på 89.</p>	<p>Pain</p>



Results

Evaluation findings

- The panel design provides a good and clear overview of relevant data
- The expandability feature was appreciated
- Assessment and Treatment
 - Alot of data in one panel
- Vital signs and observations
 - Positive towards segregated data
 - Critical values should be highlighted
- Pictures
 - Provides insight
 - Currently only used by EDA
- Notes
 - Currently only used by EDA
- Injuries
 - Important knowledge of location and injury type
 - Multiple injuries needs to be clearly distinguished from each other

Assessment and treatment					
Oprettet	A:	B:	C:	D:	E:
10:31	Fri	Besværet	Upåvirket	Pupil Venstre: Normal Pupil Højre: Normal Smerter: Stærke	
Behandling:					
Anden Behandling:			Spineboard, Halskrave		
B. Respiration			Ilt næsebrille		

Notes

Indtastet af bruger XX 22-03-2018 10:10

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Discussion

- Prehospital data is complex and benefits from being visualized
- The user centered design provided important know how
- All key prehospital data needs to be digitized
- Segregation of data eases search
- Fast access to relevant data can result in fewer steps in decision making

Synopsis

Overview of dashboard:

Evaluators:

- "Great overview"
- "Clean simplistic design"

Other studies:

Dowding: Efficiency in information sharing

Franklin: Real-time data support

Information

Key prehospital data:

- Identified through observations and supported in earlier studies by Carter and Swartz

Evaluators:

- "It is precisely the information i need"

Dashboard

Healthcare
clinician


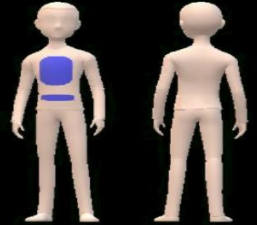
Usability of a dashboard in trauma care:

Evaluators: "The dashboard can be used with advantage in the trauma room"

Other studies:

Batley: Dashboard designs are extremely easy to use and is helpful to healthcare clinicians

Patient		Assessment and treatment					Vital signs & observations						
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Conclusion

- Dashboards in trauma rooms provides easy access to key prehospital data, and is valuable for clinicians in critical situations

Contact information

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