Electronic Health Records user experiences: a nationwide survey from Norwegian hospitals.

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NINe - National Implementation Research network e-health

- We are working to create a collaboration between all health regions in Norway to establish a national network for implementation research

- The aim is to develop indicators at different levels: Nordic, national and regional.

- Indicators on quality, satisfaction, cyber security

- Contribute to higher quality decisions on procurement or improvement of the e-Health system in management and the health service in Norway.

Agenda

- Background
- Method
- Results
- Findings
- Discussion

Background

- Last decade increased investments on eHealth initiatives

- White paper 9, ´One citizen – one Health Record

- Norwegian system consist of four health regions (north, central, west and south east

- DIPS, DocuLive and now EPIC on hospitals

Aim of the study

- This extension of the 2019 study attempts to determine if the results from the previous survey also hold for all Health Regions in Norway

- Elucidate the effect of the latest eHealth developments on clinical users satisfaction.

Why is the usefull?

- The adoption of a new Electronic Health Record (EHR) is a disruptive event for hospitals influencing the satisfaction and performance of clinicians

- In Norway, the four health regions (South-East, West, Central, and North) have used different EHR systems.

Method

- Setting: four major hospitals, covering every health region
  - Haukeland University Hospital (HUH),
  University Hospital of North Norway (UNN), Trondheim
  University Hospital (St. Olav), and Oslo University Hospital
  (OUH)

- Data collection
  - in 2018 (n= 506) clinicians contacted
  - For OUH, surveys were gathered from 2015/2016 (n=152 physicians)

- Questionnaire
  - Based on validated questionanaire
  - 5 point likert scale
  - Questionnaire was structured in 3 main sections, all related to various dimensions of satisfaction

- Analysist/statiscal method
  - Main frequency (percentage) for discrete variables and mean for continuous variables.
  - The Pearson chi-square test for comparison,
 - Level of significance = 0.05.

Baseline dataset: table 1

| Health Region (Survey year)	Clinical profession		
	Physician	Nurse	Total
West (2018)	34	12	46 (15.4%)
Central (2018)	31	31	62 (20.7%)
North (2018)	22	17	39 (13.1%)
South-East (2016)	152	0	152 (50.8%)
Total	239 (79.9%)	60 (20.1%)	299 (100.0%)

Findings

- Interuptions
  - 1. Interruption - login requests
  - 2. Interruption - EHR hanging or crashing
- Three dimensions of satisfaction
  - 1. Functionallity Satisfaction
  - 2. Generic Satisfaction
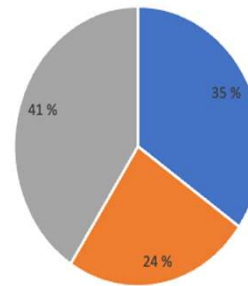 - 3. Overall satisfaction
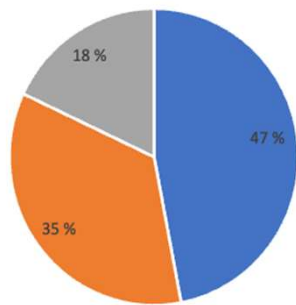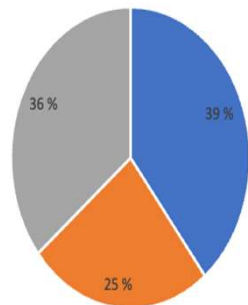
EHR functionality satisfaction

EHR overall satisftion.

EHR generic satisfaction.

Table 2

Survey question	EHR Functionality Satisfaction		
	Satisfied	Neither-nor	NotSatisfied
1 Read sample responses from medical biochemistry	72.5%	21.0%	6.5%
2 Compare the treatment and efficacy of a particular patient	69.0%	20.0%	11.0%
3 Overview of the patient´s issues	60.0%	27.0%	13.0%
4 Read the radiology response reports	55.5%	27.0%	17.5%
5 Overview of your outstanding task	55.5%	33.0%	11.5%
6 Communicate with patient about health information	25.5%	51.5%	23.0%
7 Receive specific advice and recommendations for further treatment	33.0%	51.0%	15.0%
8 Prescribe drug treatment	33.0%	44.0%	22.0%
9 Concrete plan for the patient´s assessment, treatment and care	39.5%	33.0%	11.5%
10 Assess the right to priority health care	32.0%	37.0%	31.0%
11 Overall overview of the patient´s drug treatment	29.0%	31.0%	34.0%

Interruptions

- There were two questions related to interruptions of the clinical workflow while using the EHR.
  - **Interruption caused by login requests**;
    - Results range from 4 to 50 interruptions per day (outliers removed).
    - The mean number of interruptions per day is 17.21. The corresponding number from the 2019 study was 17.15.
  - **Number of interruptions due to the EHR hanging or crashing**.
    - The mean number of interruptions is 3.08, corresponding to one interruption per week in the scale used

- The high number of interruptions (number of logins a day and EHR hanging or crashing) could directly affect security and easy access for healthcare personnel.

- The high frequency of interruptions indicates that the first goal from the government stated in the whitepaper "one citizen - one Health Record" (*secure and easy access for the health care professionals to information about the patients is required*) is still not covered good enough

Satisfaction with different kinds of functunality

Most satisfied with

- Read sample responses from medical biochemistry

- Compare the treatment and efficacy of a particular patient

- Overview of the patient's issues

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Satisfaction with different kinds of functunality

Not satisfied

- These were related to the overall overview of patients' drug treatment
- The assessment of the proper priority of care
- Communication with the patient about health information
- Prescriptions of drug treatments.

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Generic satisfaction

- Generic EHR satisfaction refers to effectiveness, high quality, worth the time and effort, and user-friendliness

- A total of 39.3% of respondents were satisfied, 24.8% of respondents reported that they were neither satisfied nor dissatisfied, and the remaining 35.9% reported being dissatisfied

- The corresponding numbers from the 2019 study was 40.1%, 23.2%, and 36.7%, respectively.

- By clinical role, the difference was significant (p<0.001). Nurses (33.6% satisfaction) are less satisfied than physicians (66.4% satisfaction).

Overall satisfaction

- With regards to overall satisfaction, there is a significant portion of respondents that reported to be overall dissatisfied (40.8%). A total of 34.7% of respondents were satisfied, 24.4% of respondents reported that they were neither satisfied nor

- Level of dissatisfaction is higher than the score found when measuring specific functionality dissatisfaction.

- This may indicate that, even though users were not dissatisfied with specific functionalities, the integration of functionalities in the system workflow increases overall dissatisfaction.

- The EHR overall satisfaction was addressed through a single item and persistent on a national level.

Conclusion

- No differences in generic or overall satisfaction were found when including data for all four health regions in Norway

- No differences in satisfaction were found between the two types of EHRs

- Differences are found within the same EHR regarding clinical user satisfaction, meaning that the context significantly impacts the satisfaction.

- Findings show a relatively high frequency of interruptions that could affect secure and easy access for the health care professionals to information about the patients.