The Austrian e-Medication pilot evaluation: Lessons learned from a national medication list

Stefan Janzek-Hawlat
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The Austrian Electronic Health Record (ELGA)

- Discharge summary
- Laboratory report
- Patient disposal
- Radiology report
- eMedication (Pilot project: April-December 2011, Evaluation: July-December 2011)
- Central infrastructure
eMedication

Pilot project
- Pilot project
- (April-December 2011)
- Evaluation
- (July-December 2011)
• Collect and provide dispensed and prescribed medications for health care provider (HCPs)
• Centralized database which uses the central ELGA-infrastructure (HCP-Index, Patient-Index...)
• No check on drug interactions and duplicate dispensations and prescriptions
• Will become operational January 2015
eMedication Pilot Project

Setting

Participants:
- Three pilot regions
- Physicians
- Pharmacists
- Hospitals (administration and medical staff)
- Patients
- Software manufacturers

Pilot implementation:
- Informed patient consent
- Collect and provide prescribed and dispensed medications
- Over-the-counter drugs (OTC) included
- Check on drug interactions and duplicate dispensations and prescriptions

Limitations:
- Voluntary participation
- Control group could not be implemented
- No information about local interaction checks
- Political interference

Evaluation method

Project goals
- Questionnaire
  - Cross sectional study
  - Question based on literature and project documents
  - Questions developed with physicians and pharmacists
  - December 2011 - January 2012

- Log File Analysis
  - Longitudinal study
  - Aggregated data to answer project goals
  - Weekly, monthly and data from whole period
Setting

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Results

Participation

Health Care Professionals
- 41 GPs
- 15 GP with integrated pharmacy
- 33 specialists
- 53 pharmacies
- 4 hospitals

Patients
- Registered patients: 5,451
- Number of drop outs: 117
- Number of sheets: 116,654
- 555 completed questionnaires: 10.2%
- Main reason for participation: Increase patients safety (n=145)

Benefits & Impact

Medication list increases patient safety

Checks and Alerts
Software quality & data security

Nation wide roll out

Position on certain topics

Recommendation to participate?

Pros & Cons (qualitative)
Participation

Health Care Professionals

- 41 GPs
- 13 GP with integrated pharmacy
- 31 specialists
- 50 pharmacies
- 4 hospitals

Response rates
- 92 questionnaires sent out
  - 61 responded
  \[ \{66.3\% \}
- 280 employees
  - 68 responded
  \[ \{29.6\% \}

Main reasons for participation
- Simplification of a clinical task
- Medical relevance
- Offer additional service to customers
- Examine strengths and weaknesses of medication
- Improve medication

Patients

- Registered patients: 5,431
- Number of drop outs: 217
- Number of visits: 20,654
- 553 responded questionnaires
  \[ \{10.2\% \}
- Main reason for participation:
  Increase patients safety (n=545)

Age groups

No. of registered patients

female
male
Participation

Health Care Professionals

- 41 GPs
- 13 GP with integrated pharmacy
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- 50 pharmacies
- 4 hospitals

Response rates
- 92 questionnaires sent out
  - 61 responded  \[66.3\%\]
- 230 employees
  - 68 responded  \[29.6\%\]

Main reasons for participation
- eMedication is a useful tool
- Medical relevance
- Offer additional service to customers
- Examine strength and weaknesses of eMedication
- Improve eMedication

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Benefits & Impact

Medication list increases patient safety

- 70% of physicians (n=59)
- 85% of pharmacists (n=65)
- 90% of patients (n=528)
- Better overview about patients medication

- 70% of physicians (n=58)
- 90% of pharmacists (n=64)
- Positive influence on patients safety

- 81% of patients visiting 2 or more physicians (n = 534)
- 52% of patients visiting 2 or more pharmacies (n = 534)
- HCP cross over communication

Checks and Alerts

- 10,563 drug interaction alerts
- 28,654 visits
- 0.51 drug interaction alerts per visit

- Majority of HCPs are already using drug interaction tools
- OTC medications are more likely to produce a drug-drug interaction warning

Software quality & data security

- 16.7% of physicians and 26.4% of pharmacists were satisfied with the GUI
- Low satisfaction of integration of the software module depending on used software

- 67.2% of physicians
- 28.4% of pharmacists
- 20% of patients

- Worry about misuse of electronic data
Benefits & Importance

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worry about misuse of electronic data
Nation wide roll out

Position on certain topics

<table>
<thead>
<tr>
<th>Patients are able to exclude medications</th>
<th>(% of 1 to 67)</th>
<th>(% of 68 to 95)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>(62%)</td>
<td>(83%)</td>
</tr>
<tr>
<td>Collection of prescribed and dispensed medications</td>
<td>(91%)</td>
<td>(69%)</td>
</tr>
<tr>
<td>Centralized check for all medications</td>
<td>(85%)</td>
<td>(55%)</td>
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Recommendation to participate?

- 40% of physicians would recommend their colleagues to participate
- 70% of pharmacists would recommend their colleagues to participate
- 86% of patients would recommend their friends and family to participate
- 90% of patients would support a nation wide launch

Pros & Cons (qualitative)

Pros
- Complete medication list
- Increase patient safety
- Detection of drug-drug interactions

Cons
- Badly designed software
- High costs and time expenses
- Data security

Changes needed before a nation wide roll out
- Increase software quality
- Mandatory participation for patients, physicians, and pharmacists
- Review interaction checks
- 'Get physicians on board'
### Position on certain topics

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<td>- (55%)</td>
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(n=52 to 67) (n=49 to 58)
<table>
<thead>
<tr>
<th></th>
<th>A (n=52 to 67)</th>
<th>B (n=49 to 58)</th>
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<td>Patients are able to exclude medications</td>
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40% of physicians would recommend their colleagues to participate

Would you recommend your colleagues to participate in a nation wide roll out? (n = 49)

- **Total**: 12.2% Strong Agree, 30.6% Agree, 14.3% Disagree, 42.9% Strong Disagree
- **Software A**: 10.0% Strong Agree, 60.0% Agree, 20.0% Disagree, 10.0% Strong Disagree
- **Software B**: 11.8% Strong Agree, 17.6% Agree, 11.8% Disagree, 58.8% Strong Disagree
- **Software C**: 16.7% Strong Agree, 27.8% Agree, 16.7% Disagree, 38.9% Strong Disagree
70% of pharmacists would recommend their colleagues to participate

Would you recommend your colleagues to participate in a nation wide roll out? (n = 63)

- **Total**: 42.9% Strong Agree, 30.2% Agree, 19.0% Disagree, 7.9% Strong Disagree
- **Software A**: 40.0% Strong Agree, 40.0% Agree, 10.0% Disagree, 10.0% Strong Disagree
- **Software B**: 36.6% Strong Agree, 31.7% Agree, 26.8% Disagree, 4.9% Strong Disagree
- **Software C**: 70.0% Strong Agree, 10.0% Agree, 20.0% Disagree, 0.0% Strong Disagree
• 86% of patients would recommend their friends and family to participate
• 90% of patients would support a nation-wide launch
Pros & Cons (qualitative)

**Pros**
- Complete medication list
- Increase patient safety
- Detection of drug-drug interactions

**Cons**
- Badly designed software
- High costs and time expenses
- Data security

**Changes needed before a nation wide roll out**
- Increase software quality
- Mandatory participation for patients, physicians and pharmacists
- Review interaction checks
- "Get physicians on board"

- 90% of patients would support a nation wide launch

**Comprehensive chart analysis**

Colleagues to participate

Would you recommend your colleagues to participate in a nation wide roll out?

<table>
<thead>
<tr>
<th>Software</th>
<th>Strongly Agree</th>
<th>Agree</th>
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<tbody>
<tr>
<td>A</td>
<td>10%</td>
<td>30%</td>
<td>40%</td>
<td>20%</td>
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<tr>
<td>B</td>
<td>20%</td>
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<tr>
<td>C</td>
<td>10%</td>
<td>40%</td>
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**Table data**

Total: 10% Strongly Agree, 30% Agree, 40% Disagree, 20% Strongly Disagree.
Pros

- Complete medication list
- Increase patient safety
- Detection of drug-drug interactions

Cons

- Badly designed software
- Complete medication list
- Increase patient safety
- Detection of drug-drug interactions

Cons
- Badly designed software
- High costs and time expenses
- Data security
Changes needed before a nationwide roll out

- Increase software quality
- Mandatory participation for patients, physicians, and pharmacists
- Review interaction checks
- "Get physicians on board"
Recommendations

Organizational issues

- (Political) Commitment and involvement of all interest groups needed
- Minimize the additional work and/or discuss monetary incentives
- Opt-out and access to data
- Main beneficiaries are old and multiple morbid patients

Complete medication list

- All HCP need to participate to collect dispensed and prescribed medications
- Involve OTC medications
- Review the centralized checks
Organizational issues

• (Political) Commitment and involvement of all interest groups needed
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Complete medication list

- All HCP need to participate to collect dispensed and prescribed medications
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Conclusion

- Recommend to continue the project "eMedication"
- High potential to increase patient safety
- Consider recommendation concerning SW
- Ensure patient rights and data security

Special thanks to:
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\textsuperscript{2} Institute of Health Informatics, UMIT-University for Health Sciences, Medical Informatics and Technology, Hall in Tyrol, Austria

\textsuperscript{3} Section for Medical Information Management and Imaging, Center for Medical Statistics, Informatics, and Intelligent Systems, Medical University of Vienna, Austria
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