Economic impact of a nationwide interoperable e-Health system using the PENG evaluation tool

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Estonian E-Health System

• Estonia has a national e-Health system covering primary and secondary care.

• Electronic Health Records since 2009 – 2011 62% of the population had recorded data in the central system:
  – Primary and secondary care summaries;
  – Referral letters, immunisation letters, birth and infant development summaries;

• Digital image repository since 2009;

• e-Prescription since 2010;
Rationale for conducting the study

- The potential benefits of E-Health can only be realised through integration of care processes;
- Integrated care leads to better health outcomes and efficiency gains.
- Aim was to map and evaluate the costs and benefits of a nationwide health information exchange system;
- Necessary **baseline** for conducting future evaluations to determine if potential benefits were realised.
Method I

- PENG evaluation tool for IT investments was used to map costs and potential benefits.
  - Mapping of all costs and benefits, partial monetisation;
  - 3 stakeholders – patient, provider and the society;
- Type II Diabetic patients – used for benefit mapping
  - Standardised care process,
  - Regular use of health care services,
  - Proper management has a strong positive effect for the quality of life.
Method II

- Direct costs for health care providers and the government were combined with indirect costs through risk analysis;
- Potential benefits were mapped by a panel of stakeholders;
- Each potential benefit was structured to show the underlying rationale and presented as a branch in a benefit tree;
- Assumptions for benefit mapping:
  - Full interoperability between health care providers
  - Full utilisation of services by physicians
Results: Imbalance of costs and benefits

- The estimated annual NPV will be positive on the 3. year post implementation.
- **Important implication** - division of costs and benefits.
- Health care service providers incur 2/3 of the costs but reap only 6% of potential benefits.
- Government will benefit most through a healthier workforce.
- **Policy implications**: more support for health care providers.
- **Impact**: State’s priorities focused on utilisation of services.
Weaknesses and Future Research:

• Patient’s costs were not addressed;
• Patients behave rationally - manage their condition to minimise the risk for adverse events;
• Overall good basis for follow-up;
• Future research:
  – Validation of the branches in the benefit tree;
  – Longitudinal studies on technical efficiency and HIE;
THANK YOU!

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