An App to Improve Colorectal Carcinoma Follow-Up

Martin Stierlin
Lukas Wyss
Introduction

• Cancer is the second leading cause of death in Switzerland
• If the cancer is detected early and resected completely, patients can be cured
• 30-44% of patients with R0-resection develop a relapse or metastasis, often in the first 3 years after surgery
Introduction

• Good follow-up according to consensus recommendation of the Swiss Society of Gastroenterology is essential

• Insufficient follow-up in Switzerland

• Impact patient behaviour for follow-up of colon cancer with an app
Methods

• Defined use case
• Interviews with patients, physicians and Swiss Cancer Lage to confirm use case and user interface
• Client server application
  • Follow-up app
  • GIST interface
Methods

- Patient Administration (GIST)
  - Python 3.6
  - Flask SQLAlchemy
- Mobile App
  - Microsoft .NET
  - Xamarin
Result (Server)

- Patient with T1 N0 M0 colon cancer and hemicolecotomy with curative intention
- Study registration with study nurse using GIST
- Automated blinded randomization trough GIST
- Generating QR code
Result (Server)

- Patient with T1 N0 M0 colon cancer and hemicolectomy with curative intention
- Study registration with study nurse using GIST
- Automated blinded randomization trough GIST
- Generating QR code
Result (Server)

- Patient with T1 N0 M0 colon cancer and hemicolecotomy with curative intention
- Study registration with study nurse using GIST
- Automated blinded randomization trough GIST
- Generating QR code
Result (App)

- Date of operation
- Localization
- TNM stage
- Doctor’s name
- Follow-up dates are calculated automatically
Result (App)

• Reminders and appointments via push message
Result (App)

• Reminders and appointments via push message
Planned Study

• Reminder to the patient to make an appointment with his GP or specialist for the next follow-up

Hypothesis

• More follow-ups are made for a longer time period and in a timelier fashion if the patient uses the app
Planned Study

• The control group works without the app, they receive a piece of paper with the recommended follow-up scheme.
• The app displays a PDF with the follow-up scheme on demand.
• The apps reminder and appointment functions are deactivated.
Planned Study

- Intervention and control group both use the app
- Reminders for the control group will be displayed at the very end of the recommended appointment period
Discussion

• Funding must be secured to achieve market readiness and to conduct the clinical study
• Positive votum of an ethics committee
• Limited to colon and rectal cancer with less advanced tumor stage
  • Follow-up for higher stages must be defined individually
  • Agreed follow-up schemes are either not existing or unhandy for implementation
• Following a considerable number of patients over a long period of time (at least 2 years)
• Maintained continuously
• Intensive testing will be required for multicentric recruiting
Discussion

• Storing of sensitive patient data on the GIST server
• Registrar sees only pseudonymized patient data
• Employing reminder functions has shown positive effects
• Adverse effects such as alert fatigue and thus non-adherence are also well described
• Slider for the recording of a subjective quality of life
• Even if adherence to follow-up will be improved with the app, we cannot prove in the planned study design that this will improve patient outcome
• If TUNA really reduces drop outs from patient follow-up, it’s already worth it