PERSONALISED DIGITAL HEALTH INTERVENTION
FOR EVERY CANCER PATIENT

Vesa Kataja, LT, dosentti
Erikoislääkäri, syöpätaudit ja sädehoito
Lääketieteellinen johtaja
KAIKU HEALTH Ltd
The global cancer incidence was estimated to have risen to over 18 million new cases in 2018 according to the WHO. Several targeted therapies, such as immune checkpoint inhibitor (ICI) and tyrosine kinase inhibitor (TKI) therapies and combinations with precision radiation, have drastically changed the treatment landscape of 1st and 2nd line treatments across several indications.

There’s a high unmet medical need for timely management of toxicities of the precision combination therapies in order to provide patients with the most optimized treatments and to follow on outcomes and safety in real-time.
Solution: Personalised digital health intervention for every cancer patient

Treatment modality specific algorithms screen symptoms and real-world data, alert care team and provide personalised support for patients.
Some terminology

- PRO = Patient reported outcome
- PROM = Patient reported outcome measure
- ePRO = Electronic patient reported outcome
- ePROM = Electronic patient reported outcome measure
- DHI = Digital health intervention
- DTx = Digital therapeutics

These are not adverse events of treatment!
Value-Based Health Care (VBHC)
Measuring what matters to patient is instrumental

Efficacy-focused care

• Efficacy metrics include OS, PFS, RFS, TTP, TTF, CR, PR, SD, PD, etc.
• Patient reported AEs collected first for safety, later also for QoL:
  Systematic in trials; not so in real clinical world
  Reporting has been based upon HCP interviewing patients, usually just prior to the next planned Tx
→ Information given by the patients has been biased in many ways
→ Treatment decisions have been based on insufficient/incorrect information
→ Elevated risks for more severe AEs of toxic Txs, stopping Tx early, even fatalities

Efficacy = HOIDON TEHO = MITÄ TAPAHTUU TAUDILLE

Effectiveness-focused VBHC

• Efficacy IS NOT effectiveness!
• For value based health care (VBHC) effectiveness must be shown
  → PROs are essential for this!
• ePROs, reported online by the patients themselves, underline the true patient experience necessary for evaluating the effectiveness of the therapy
• Kaiku is one of the leading applications utilised in this

Effectiveness = HOIDON VAIKUTTAVAUS = MITÄ TAPAHTUU POTILAALLE
Patient applications and HCP platform

Kaiku Health Patient app

- Access through native mobile application or browser-based web app
- Communication with HCPs, sending images or attachments
- Symptom tracking and timely management
- Reporting on other PROs & PREMs (e.g. QoL)
- Patient consenting
- Patient education: Access to relevant patient support materials tailored to a treatment phase and hospital (e.g. survivorship materials)
- Automated communication of lab results (e.g. PSA during follow-up of prostate cancer treatment)

Kaiku Health HCP platform

- Automated triage of symptom reports
- Workflow management within care team
- Patient level decision support dashboard
- Patient population dashboard ("Eagle Eye")
- Automated triggering of PRO questionnaires based on patients’ appointment schedule
How Kaiku Health works
KAIKU HEALTH IS USED FOR CAPTURING AND PROCESSING PATIENT-REPORTED DATA IN ALL COMMON CANCER TYPES

- Breast Cancer
- Prostate and other urological cancers
- Lung cancer
- Colorectal and other GI cancers
- Hematologic cancers
- Melanoma and other skin cancers
- Gynecological cancers
- Head and neck cancers

COMPLIANT WITH ALL CANCER CARE PATHWAYS

- Surgery
- Systemic Therapies
- Radiation Therapy
- Follow-up
- Palliative care
Differentiating factors of Kaiku Health

**LIFE SCIENCE**

**Clinical Routine Use**
- Successful implementations with over 45 leading oncology care units in Europe
- Usability proven with +100 000 patients in total (+ 5000 oncology patients)
- 5.8 million data points captured

**Algorithms**
- 30 novel symptom detection algorithms developed based on the rapidly growing real-world database

**Evidence Generation**
- Published RWD data on the ICI module. Several ongoing clinical trials, several trials in the pipeline for building strong clinical evidence on our digital therapeutics

**Pharma Partners**
- Published collaboration projects with global pharma partners (Hoffmann La Roche, Amgen, MSD)

**Regulatory Classification**
- CE-marked Class I Medical Device in Cancer Care (and upgrade to Class IIA prepared with MDR)

**Machine Learning Models**
- First symptom prediction model implemented to a therapy monitoring module: AUC > 90 %

**Data Science**

**Powerful Configurability**
- Extremely effective configurability of new follow-up protocols and algorithms (already in + 30 indication and therapy combinations)

**Award Winning UX**
- 25 % of the cancer patients using Kaiku are +70 years old, patient compliance across modules > 90 %
- Best User Experience Design Award at Upgraded Life Festival 2017

**Interoperability**
- 10 established integrations with different HIS, Lab and ERP systems e.g. HL7, REST interfaces (Kaiku Bridge)

**Localizability**
- 7 countries (FIN, SWE, NOR, NL, GER, CH, ITA), 10 languages
Our stakeholder value propositions

PATIENT

Better patient experience and ultimately better outcomes

• 95% of cancer patients report positive impact on treatment experience*
• 90% of patients would recommend Kaiku Health (Immune Checkpoint Inhibitor module) to other patients*
• 5+ months increased life span and increased QoL for cancer patients with a non-commercial research-based solution in the US **

HEALTHCARE PROVIDER

Increased vigilance and clinical efficiency

• 64%-75% reduction in need for phone calls by patients*
• Over 300 cancer patients screened by one coordinating nurse*
• Digital patient follow-up reduced emergency room admissions by 5-10% with a non-commercial research-based solution in the US**

PHARMA AND MEDTECH

Real-world data on the effectiveness of therapies

• + 5 800 000 data entries captured*
• 10x more outcome data points from patients*
• 90% response rate in follow-up questionnaires in our cancer care modules enabling rich longitudinal data capture*

* Kaiku Health customer interviews / metrics
** Basch et al. 2017
Digital interventions show a significant potential for improving clinical outcomes in oncology

Evidence from literature: A randomized controlled trial with 766 metastatic cancer patients shows that digital symptom monitoring (non-commercial research tool) during chemotherapy helps patients live longer (5.2 months longer median overall survival), improves quality of life (31 % of patients), and reduces hospitalization (4 %) and ER visits (7 %).

Novel results from Kaiku Health’s real-world data: the first study in the world to publish real-world data gathered by Kaiku Health’s Immune Checkpoint Inhibitor module show correlations between different symptoms, which might reflect therapeutic efficiency, adverse effects, or tumor progression. A prospective feasibility trial validating Kaiku Health’s Immune Checkpoint Inhibitor module is expected to be published H1/2020.
COVID-19 remote monitoring in Kaiku Health

Kaiku asks patient to perform a daily symptom check*:

- High fever (over 40 °C) or milder fever that has lasted for several days
- Worsening cough
- Shortness of breath
- Blood or pink in sputum
- Severe fatigue
- Severe anxiety

-> In case there are signs of alarming symptoms, a patient is advised to contact the care team.

*) The follow-up parameters can be flexibly configured within 1-2 days.
A sample workflow of COVID-19 team in Kaiku Health

A patient registers and starts completing daily symptom checks.

COVID-19 team receives notifications only when a patient’s situation is worsening.

COVID-19 team contacts the patient on the urgent symptoms and provides needed instructions or asks a patient to come to the hospital.

A patient is provided a flyer with a link to activate the follow-up or care team can send the link to patient.

Kaiku Health can be handed for patients already at the testing facility. If a patient receives test that is negative, the follow-up can be automatically deactivated.
Kaiku Health asks a patient to report COVID-19 related symptoms on daily basis.
Healthcare providers landing page, where only the urgent symptom reports are highlighted
HCPs have access to a daily dashboard on patients’ symptoms

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© KAiku HEALTH
Co-created in Routine Cancer Care

Leading European hospitals and clinics are using our platform to better monitor their patients, reducing manual work and allowing prioritization of clinical actions.
Kaiku Health Oy

**History in Brief**

**Company Founded**
- COM

**First Customers**
- Docrates Cancer Center and Radiotherapy Hirslanden

**Development of**
- Cancer Immunotherapy Algorithm Started

**Series A of 4,4 Million Euros with Debiopharm Innovation Fund and Tesi**

**19.5.2020 Merger to Elekta, Sweden**

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Lauri Sippola, Joel Leikoinen, Henri Virtanen and Kaarlo Haikonen based on their initial market research at Aalto University.

Kaiku Health was taken into use by Europe’s leading cancer centers in Finland and Switzerland. Both Docrates Cancer Center and Radiotherapy Hirslanden are customers of Kaiku Health.

Kaiku Health has been to our knowledge the first company in the world to develop an algorithm for improving symptom management in cancer immunotherapies based on ePROs.

Collaborations published with world largest pharma companies such as Roche and Amgen.

HQ: Vilhonvuorenkatu 11 A, Helsinki Finland
Team of 43 people (28 software, UX and data and medical science professionals)
Europe leading cancer centers and global pharmaceutical companies as customers.