"The future is here, if you want to see the future you should come to the VBHC Dragons’ Grant & Endorsement and look at what is going on"

– Prof. Dr. Fred van Eenennaam, non-voting chairman
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“Europe has been in the lead, so we appreciate what VBHC Center Europe has been able to do for the VBHC movement. I think it has been a great 10 years”
- Prof. Michael E. Porter. -

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The main objective of the pilot program is to test the new organization of cancer care, its quality and clinical outcomes.

Meet the nominees of 2021 Pomeranian model of integrated care: The aim of the project is to reduce the number of exacerbations and costs of care, and to improve the quality of life.

Endorsement

ValueBased HealthCare Dragons 2021
On May 18th, 2021, the fourth edition of the Value-Based Health Care Dragon’s Grant and Endorsement is taking place. The VBHC Dragons' is focused on starting initiatives and is divided into two categories, Grant nominees & the Endorsement nominees. The Grant nominees are the diamonds in the growth that need to scale-up in order to accelerate their initiative. The Endorsement nominees are the diamonds in the rough that need some shaping. The nominee in both categories can use the support of the VBHC Community, and through this community can achieve more success. In the VBHC community, we have many different people with different expertise, through this variety of expertise there is always someone who can help your initiative further and increase the chance to become a VBHC Prize winner in the future. The members of the community who support the Dragon nominees are the ‘Dragon's Den’, This year we have once again put together a wonderful Den, and with their expertise they can certainly help our dragon nominees to accelerate their initiatives. The VBHC Dragons couldn’t be so successful without the nominees. The wide international variety of applicants this year, made it really hard to select the nominees. It was a really hard competition, who would get nominated for the VBHC Prize? Or who are the diamonds that need shaping to be our next VBHC Prize winners?

The nominee in both categories can use the support of the VBHC Community, and through this community can achieve more success.

Because of the large number of high-level nominees, 6 nominees are selected instead of 4 in the Grant category. Over the years we have seen many wonderful trends coming up. The first VBHC Dragons event in 2018 with 7 contestants, all from the Netherlands. Now, three years later, we have nominees from 6 different countries. Because of this international trend we see that the VBHC is gaining a larger impact around the world.
“Pay-for-performance will only raise costs if providers get higher pay for process compliance but do not have to compete on results.” – Prof. Michael E. Porter

"Value-based healthcare: Does it work? Yes! Is it easy? No!" – Prof. Dr. Fred van Eenennaam

“From what I see the applications for the VBHC Prize have become more holistic over the years.” – Dr. Christina Akerman

What do the two international experts advise hospitals and clinics to do when they switch to "value-based healthcare"? “Don't strive for perfection, it doesn't exist”. – Prof. Dr. Fred van Eenennaam
The Dragon’s Den 2021

Dr. Linetta Koppert, Erasmus MC

Dr. Gabrielle Speijer, CatalyzIT

Hugo Broekman, MSc. Chairman from board of directors of Frion

Michèle van der Kemp, MSc. Director of VBHC Strategy & Tactics at VDKMP

Dr. Aernout Somsen, Cardiologie Centra Nederland

Vincent Wiersma, MSc. Value-Based Health Care manager at Amgen

Mr. Dimitri van Hoewijk Lawyer in Healthcare & Life Sciences

Gona Aziz, MSc. Manager Innovation at EIT Health

Dr. Ewout van de Garde, St. Antonius Hospital

Mr. Jan Christiaan Huijsman, Zilveren Kruis

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Dragons' 2018

- **Grant**: 4
- **Endorsement**: 3
- **Nationalities**: 100%
- **Trend of 2018**: Innovative applications
- **2019 VBHC Prize Nominee**: 2
- **2020 VBHC Prize Nominee**: 1

Dragons' 2019

- **Grant**: 4
- **Endorsement**: 4
- **Nationalities**: 50% +
- **Trend of 2019**: The international applicants
- **2019 VBHC Prize Nominee**: 1

Dragons' 2020

- **Grant**: 5
- **Endorsement**: 5
- **Nationalities**: 50% +
- **Trend of 2020**: Implementation of eHealth
- **2020 VBHC Prize Nominee**: ?

Dragons' 2021

- **Grant**: 6
- **Endorsement**: 5
- **Nationalities**: 50% +
- **Trend of 2021**: The X
- **2021 VBHC Prize Nominee**: 1

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"The future is here, if you want to see the future you should come to the VBHC Dragons's Grant & Endorsement and look at what is going on" – Prof. Dr. Fred van Eenennaam, non-voter chairman
iClusion, bridging the gap between cancer patients and clinical trials

1 in 2 men and 1 in 3 women develop a form of cancer throughout their life. Regularly, oncologists run out of standard treatment options making clinical trial the last potentially life-saving option. However, only 5% of patients actually participate in clinical trials. This is due to the fact that both patients and oncologists are not aware of the latest research, and certain clinical trials might not be available in a center close to the patient.

The project

iClusion developed an infrastructure called Trial Eye (indirect) that connects all stakeholders in the clinical trial process in a closed-loop ecosystem. This increases the access to trials in two ways. First, it makes it possible to offer the trial at more sites and thus increasing access for patients. Trial Eye drastically reduces the effort of starting-up a study by digitizing and harmonizing the process, making it a matter of weeks instead of months. Second, Trial Eye makes sure patients and oncologists never have to miss a trial. It contains the only database on recruiting clinical oncology trials in the Netherlands and Belgium that is complete and always up to date.

iClusion also offers the same database as a public service called Heyleys (direct), where patients (and friends/family) can look-up all recruiting trials in The Netherlands in a user-friendly manner and are motivated to discuss (these) clinical trial extra treatment opportunity with their oncologist.

So, in case a patient is in need of a clinical trial, Heyleys coaches the patient in finding matching trials (rather few then many) and coaches the patient in preparing the conversation on these extra treatment chances. The oncologist can then login (also for free) to Trial Eye and find the same trials with more technical information. This allows the patient and oncologist to discuss the options. If the patient decides to participate in a trial, the oncologist can directly inform and include the patient. If the trial is not active in the hospital of the oncologist, Trial Eye can be used to directly refer the patient to the closest site. So, ultimately more patients can have an extra treatment options by participating in a clinical trial and drugs can be brought to market earlier.

'Trial Eye and Heyleys platforms contribute directly to patient empowerment and engagement and the shifting to information and participation societies'
Next steps
Now, iClusion is in the upscaling phase and aims to include more hospitals to our study site network and also expand to other countries. At the moment, the Trial-Eye infrastructure already has 10 contracted study sites in the Netherlands (and growing), increasing access to oncology clinical trials to more than 90 oncologists/hematologists treating more than 75,000 cancer patients. The total reach of Trial-Eye is 54 study sites in Belgium and the Netherlands by individual research professionals having free accounts to our Matchpoint module.

The footprint iClusion wants to leave on this planet, is changing the lives of cancer patients by growing to a network of 300-400 contracted study-sites globally reaching at least the patients of 2000 cancer treatment centers. This concept is revolutionary because it is designed from the viewpoint of the two most important stakeholders: the patient and their physician.

iClusion is in the process of a Social Return On Investment analysis for all stakeholders (patients, oncologists, biotech, pharma) by telephone interviews and questionnaires, expert and user panels. In this way they learn which values will be of largest impact on medical outcomes (such as anxiety reduction, self-worth and independence) and on family and friends. iClusion monitors and monetizes this, in order to keep on improving services over time.
**PIPRA, pre-interventional preventative risk assessment**

Disorientation, memory loss, difficulties in speech. If you are over sixty and about to undergo surgery, you could be at risk of developing any or all these symptoms. Postoperative delirium (POD) is an enormous problem occurring in 25% of surgical patients aged 60+. POD leads to adverse outcomes such as a 25% mortality within one month, double the risk of nursing home admission, costs of 1-2 billion Euros to health insurers in Germany alone and 38% of the affected end up suffering long-term cognitive decline and dementia. There are no treatments available once symptoms arise, instead, the focus is on prevention which is expensive and takes a lot of time.

PIPRA is a start-up developing a novel, AI-based pre-operative risk prediction tool which highlights patients at risk before undergoing surgery. PIPRA has interviewed 24 POD affected patients (elderly or frail patients about to have surgeries such as knee or hip replacements) and relatives to get their perspective on the problem. The ultimate goal of PIPRA is increasing health outcomes while the cost across the full cycle of care decreases. This is reached by (1) reducing complications and mortality from elective surgeries by preventing overmedication (e.g. harmful operations) and incentivizing preventive strategies (e.g. pre-hab), (2) Allocating resources efficiently (e.g. directing nurses attention to high-risk patients), (3) reducing the length of hospital stay (cost savings for public health systems) and (4) decreasing the need for nursing homes (societal cost savings).

‘This patient-centric approach increases patient value by improving health outcomes and decreasing costs over the full cycle of care’

**The project**

The solution itself is “patient centered and doctor driven”. If the patient has a surgical problem, he will be referred to the surgeon who confirms the surgical indication, discusses the surgical risks and organizes the pre-anesthesia visit. Here the anesthesia risks will be discussed and the AI tool is used by the anesthesiologist who puts in key risk factors, which results in clear overview of risk and benefits of the surgical intervention. Here, the solution allows for a better discussion with the patient more knowledge about the patient’s real risk for POD. In this way the patient is empowered, as shockingly, the patient is often not informed about their risk of POD.

If the patient is found to be at low risk, he will then follow the usual surgical pathway. If he/she is found to be at high risk, some interdisciplinary discussion will be held, as well as a discussion with the patient and his relatives to try to find the best approach
should we operate (pro and cons), should the patient be integrated in the Hospital Elder Life Program (HELP), and should the patient be offered pre-habilitation?

In order to create an AI based algorithm to predict risk, over 20,000 patients worth of data from over 20 clinical trials around the world were collected. Continuous monitoring of health outcomes then EU, then US and Australian markets of patients who have used the tool allows for further learning and is an effective feedback loop.

The patient stratification of the tool itself can allow comparison of outcomes between hospitals while correcting for e.g. university hospitals often having more complicated cases or geriatric departments taking on more high-risk patients.

Subjective replies regarding wellbeing from patients will also be included. PIPRA is collaborating with hospitals, academic partners, software developers and regulatory specialists. Their core team is multidisciplinary and includes an anesthesiologist, a technical expert and a business lead.

Next steps
As the tool is entirely software-based and suitable for the majority of non-cardiac surgeries, PIPRA is very scalable. The plan is to add other postoperative complications and to expand to the rest of the EU, then US and to Australian markets. Currently, the AI tool is being implemented in seven hospitals, in the Netherlands, Germany and Switzerland.
Voice community, Value-based healthcare for Outcomes In breast and lung Cancer in Europe

The VOICE Community, a Europe-wide Hospital Community pioneering in the assessment of value-based healthcare outcomes related to breast and lung cancer, aims to benchmark health outcomes and related costs to improve care delivery.

VOICE Community works collaboratively to: (1) measure patient reported health outcomes in routine clinical practice on a systematic and long-term basis, (2) include patients’ perspective in clinical decision-making, (3) improve patient empowerment, shared decision-making and physician-patient communication, (4) assess the impact on costs of the processes implemented, (5) identify factors for a VBHC successful implementation and (6) boost knowledge generation and best practice exchange.

The project
The VOICE Community was created in 2018 by organizations originally participating in the All-Can initiative launched by International Consortium for health Outcome Measurements (ICHOM). Value based healthcare paradigm is a core strategic working area for all VOICE organizations which is reflected in their significant and valuable engagement and commitment in the Community.

Thirteen European hospitals form the VOICE Community: Cruces University Hospital, Donostia University Hospital, 12 Octubre University hospital, Hospital Juan Ramón Jiménez, Institut Català d’Oncologia, Hospital Universitari de Bellvitge, Hospital Universitari i Politècnic La Fe, Institut de Cancerologie de l'Ouest, Istituto Scientifico Romagnolo per lo Studio e la Cura dei Tumori, Hospital Luz Saude Lisboa, Instituto Português de Oncologia do Porto, OLV AALST and Antwerp University Hospital.

The VOICE study combines an implementation research component and effectiveness, using quantitative and qualitative methods for data collection and analysis. Analyses are performed at individual level (patient) and at organizational (costs) level. The sample size are 900 patients and 350 patients for breast cancer and lung cancer respectively. Eligibility criteria for patients with breast cancer are: all patients over 18 (male and female) recently diagnosed with invasive stage I-IV cancer, or Ductal Carcinoma In Situ (DCIS), undergoing any treatment type (surgery, radiotherapy, chemotherapy, hormone therapy and/or targeted therapy). Patients with rare tumours, Lobular Carcinoma In Situ (LCIS) and recurring illness at the start of the study are excluded.
Eligibility criteria for patients with lung cancer are: patients over 18 (male and female) newly diagnosed with lung cancer, eligible to receive curative or palliative care treatment. The activities carried out in this study are:

- **Preparation period:** the intervention was defined; the data battery to be collected was designed; the systems required for that purpose were developed; and professionals participating in the study were recruited and trained.
- **Intervention period:** all processes set forth were activated; patient recruitment and follow-up, as well as data collection started.
- **Analysis and benchmarking period:** data collected are being analysed and outcomes compared among organizations.

Patients were progressively recruited when diagnosed with breast or lung cancer. Patients were followed up for at least 6 months or until death, if that occurred first. Intervention outcomes were monitored at different times: at baseline and after 6 months in breast cancer; and at baseline, after 3 months and after 6 months in lung cancer. Variables included in the ICHOM standard sets for breast and lung cancer were collected (socio-demographic, clinical and PROMs).

The main variables to be assessed using qualitative techniques are the following: intervention efficiency, satisfaction with the intervention, intervention acceptability in professionals’ routine practice, barriers and facilitators of the implementation process.

**Next steps**
Currently, the VOICE Community is immersed in the analysis phase. Specifically: clustering variables, building patient archetypes, defining types of analysis in terms of clinical variables, PROMs and costs. Some local preliminary results show promising findings which need to be further studied.
The TripleAIM1 study charts the variation in daily clinical practice in diagnostics and treatment in the Netherlands of newly diagnosed men with metastatic hormone sensitive prostate cancer (mHSPC) and evaluates the patient relevant (clinical and patient reported) outcomes as well as the overall costs.

In recent years, many new combinations of hormonal and chemotherapy regimens have been added to the existing androgen deprivation therapy (ADT) monotherapy for metastatic hormone sensitive prostate cancer. An inventory of the Santeon hospitals revealed a large difference in the used treatment strategy. Also, the use of different diagnostics varied determining the disease stage, treatment strategy and subsequently treatment outcome. Such nation-wide variety in clinical practice is undesirale per definition. In the TripleAIM1 study, diagnostics and treatment in daily practice are mapped and related to outcomes and costs with the final aim to advise a cost-efficient best practice based on the data analysis and to achieve harmonization in diagnostic work-up and treatment indication.

The project
Treatment strategies for metastatic hormone sensitive prostate cancer (mHSPC) evolve rapidly as survival outcomes of androgen deprivation therapy (ADT) consisting of bilateral orchiectomy, luteinizing hormone-releasing agonist or receptor antagonist, appeared inferior to those of ADT combined with either docetaxel, abiraterone, local radiotherapy or apalutamide. Given this rapidly evolving treatment landscape, there is a need for more detailed insights in real world data reflecting why treatments are initiated, combined and sequenced, how patients experience their quality of life (QoL) and how their relative effectiveness profiles emerge outside of clinical trial setting as well as their cost-effectiveness profiles.

In daily practice, routine clinical outcomes as well as costs and QoL are rarely measured and recorded as the infrastructure for thorough measurement and data collection is (often) lacking. Therefore, this study aims to facilitate this infrastructure to understand the optimal indication and use of treatments for mHSPC, the cost-effectiveness and to evaluate the impact of these treatments on patient outcome (relevant clinical outcome and QoL) in mHSPC patients with the aim to offer a more tailor-made therapy based on optimizing patient value.

Patients ≥18 years with newly diagnosed mHSPC are eligible for inclusion in the TripleAIzM1 study.
Grant Nominee

Triple AIM

1. Infrastructure:
An infrastructure has been developed in which clinical results, patient reported outcome (PRO) and costs data can be measured, collected and analysed in a uniform manner beyond the full care cycle of individual patients. The clinical and cost data are extracted from existing data sources. A dashboard is available for all participating hospitals with access to their own data collection and benchmark data. This infrastructure has the potential to evolve to an (eco)system in which valuable learning cycles can be implemented.

2. Design of protocol:
Protocol defined information; Medical condition. Subset of parameters to measure patient relevant outcome (Diagnostic, clinical parameters, Pro's and Costs). Data measurement methods. Statical analysis: 15 hospitals, 450 patients. Inclusion criteria: newly diagnosed mHSCP patients, ≥ 18 years

- Measure and collect Patient relevant outcomes (Clinical, PRO's) and Cost data
- Data analysis on individual patient level / therapy group level

Next steps
The infrastructure to measure and collect data in a unified way across all hospitals is built, as well as the central data base which are already in use, including the database dashboard. Retrospective data from 5 hospitals are available in the dashboard and will provide first insights into diagnostics and diagnosis, treatment (sequence), patient relevant clinical outcomes and costs. Patient inclusion in the prospective observational study has started and patient dashboard on PRO’s is in place. Four working groups will focus on the following themes: 1) diagnosis and clinical treatment, 2) patient engagement, 3) Value Based Health Care and 4) sustainability and health care optimization

There are two levels of IPU in scope of the project: 1. On hospital level the IPU is multidisciplinary centred around the patient 2. On project level the IPU is developed to be able to benchmark, share best practice and increase knowledge and expertise
COMPASSION: COPD Palliative and Supportive care Implementation

The COMPASSION project aims to assess the implementation and effectiveness of proactive and integrated palliative care for patients with COPD and their informal caregivers in eight hospital regions in the Netherlands. The developed products, learnings and results will be widely disseminated and shared with other healthcare organizations.

Patients with advanced COPD deserve compassionate care, tailored to their wishes and needs, and coordinated in an interdisciplinary team. To do so, physical, psychological, social and spiritual needs and patient’s wishes on future care will be timely and proactively discussed by healthcare providers, who collaborate closely together with other providers involved.

The project

Patients with advanced COPD experience significant symptom burden leading to a poor quality of life. Although guidelines recommend palliative care for this patient group, it is not yet daily practice. Important factors influencing the provision of palliative care are adequate communication skills, knowing when to start palliative care and continuity of care. The COMPASSION-project addresses these factors by implementing an integrated palliative care approach for patients with COPD and their informal caregivers.

In the first phase of the project, an integrated palliative care intervention was developed based on existing guidelines, a literature review, and input from patient and professional organizations. To facilitate uptake of the intervention, a multifaceted implementation strategy was developed, comprising a toolbox, (communication) training, collaboration support, action planning and monitoring.

Using a hybrid effectiveness-implementation type 2 design, they were able to simultaneously evaluate the implementation process and effects on patient, informal caregiver and professional outcomes. In a cluster randomized controlled trial, eight hospital regions were randomized to receive the integrated palliative care approach or to provide care as usual. Each region set up a multidisciplinary and transmural team including one or more pulmonologists, general practitioners, respiratory nurses and palliative care nurses. Health care providers of the intervention regions were trained in identification of palliative patients with COPD using the Propal-COPD tool, advance care planning, assessment of physical, psychological, social and spiritual needs, dyspnoea management and care coordination.
Subsequently, they implemented these intervention elements in their region. Patients who were admitted to the hospital for an exacerbation COPD were screened using the Propal-COPD tool. Those identified as palliative patients were offered an extensive polyclinical consultation with their pulmonologist and respiratory nurse 2-8 weeks after discharge in which needs and wishes were discussed. If needed, a palliative care nurse was also involved.

Outcomes included quality of life, spiritual well-being, anxiety and depression, unplanned healthcare use, informal caregiver burden and healthcare provider’s self-efficacy to provide palliative care. The implementation process and barriers and facilitators were investigated by a comprehensive mixed-methods evaluation, including semi-structured interviews with participating patients, informal caregivers and healthcare providers.

**Next steps**

In total, 190 patients (90 in intervention group and 100 in control group) and 52 informal caregivers were included in the study. During the first half of 2021, all outcome and process data will be analysed.

Preliminary qualitative results reveal that most healthcare providers highly valued the intervention, and mentioned that advance care planning discussions provided patients with peace of mind and clarity, improved the provider-patient relationship and increased job satisfaction.

The four control hospital regions will be trained as soon as is possible given the COVID situation. Several products are being developed, such as educational material, implementation guide, leaflets for patients. All products, learnings and results will be shared on the openly available online toolbox (www.palliatievezorgcopd.nl). It will be distributed via an extensive network and all available communication channels. Funding to provide implementation support to other regions in the Netherlands is being sought.

Participating hospital regions received no extra financial nor human resources. Thus, all implementation efforts had to be accomplished within the existing financial and time structures. Although Compassion must await the data analysis, it might be conceivable that palliative care decreases the number of hospital admissions, since in some cases it is agreed that the patient will primarily be treated at home.
Pomeranian model of integrated care for patients with advanced COPD

The aim of the project is to reduce the number of exacerbations and costs of care, and to improve the quality of life of patients with advanced chronic obstructive pulmonary disease (COPD).

The key value of the project is to achieve medical and economic benefits beyond the levels achievable with standard care for patients with advanced COPD. The integrated care model proposes coordination of medical activities, integration with social assistance and home support for patients. An important element of the program is individual and group education of patients and their relatives. The results of the studies conducted so far indicate that the adopted program significantly reduces the number of COPD exacerbations, reduces the overall costs of care (including hospitalization) and is fully accepted by the patients covered by it.

The project
COPD is one of the most common chronic diseases. Exacerbations, the number of which increases with the advancement of the disease, significantly worsen its course. The costs of medical care for patients with advanced disease amount to 80% of the total funds allocated to treatment in this group of patients. Standard care for patients with COPD does not take into account the factors of failure to cope with the disease and is not coordinated or integrated with social assistance.

This leads to a situation of "the patient being lost in the health care system" and not following medical recommendations, which increases the risk of a worse course of the disease and deterioration of the quality of life. Research conducted by the Polish Society of Lung Diseases (PTCD) indicates that a significant unfavourable factor is the lack of knowledge about COPD both in the general population and among patients.

The Pomeranian model of integrated care for patients with advanced COPD was introduced in 2010–2012 in order to reduce the number of exacerbations and costs of care and improve the quality of life of patients with advanced COPD. Its unique value lies in adding additional low-cost procedures to the standard COPD treatment, which increase the effectiveness of treatment, especially in reducing the number of exacerbations (including those requiring hospitalization). An additional value is the demonstration of the possibility of its implementation and development during the operation including the definition of standards for the operation of integrated care and the creation of educational programs for medical personnel, social workers and patients.
The innovative procedures introduced in the model include home patient support, the integration of the medical team with social assistance, and the participation of a coordinator.

In addition to treatment in accordance with the standards and individual needs, patients with advanced COPD are supported in the implementation of recommendations and their fulfilment is monitored. Patients who experience frequent exacerbations and who cannot cope with the disease are offered the help of an assistant at home. In addition to standard specialist medical care, consultations with a psychologist, physiotherapist and dietitian are available, and - if necessary - social assistance. All activities are coordinated by a dedicated person (coordinator). The project involves extensive education. As a result, the involvement of patients who created the Gdańsk Society of COPD Patients has increased.

**Next steps**
The results obtained so far indicate that the introduction of the model allowed for a significant improvement in indicators of the quality of care. Number of patients treated avoiding one severe exacerbation (NNT) 2.6 (Damps-Konstańska I et al. 2015). Most of the procedures (primary health care, AOS, hospitalization) are financed under a contract with the National Health Fund.

Additional costs - coordination of care, education and visits of assistants to sick homes are financed from local government funds and other sources.

The results of the analysis in the 6 months before and 6 months after the introduction of integrated care showed a significant reduction in direct medical costs related to COPD. By reducing the number of exacerbations requiring hospitalization or an emergency room visit, the overall costs have also decreased (Bandurska E et al. 2017, Bandurska E et al. 2019).

As part of the project, cooperation was established with the local government and non-governmental organizations - the Polish Society for Health Programs and the I like to help Foundation. The development of an integrated care system for patients with advanced COPD has become one of the activities implemented by the Health for Pomeranians and the Pomeranian Partnership for Integrated Health Care. In cooperation with the Geriatrics Center of the University Clinical Center (UCK) in Gdańsk, telerehabilitation of seniors was developed and implemented.
**Robot Maatje**, a robot buddy

Inpatient forensic care patients suffer from sexual problems, psychiatric disorders, personality problems, or addiction problems. The goal is to place them back into society, however, recidivism is an accompanied risk that needs to be minimized. Three important future risk factors for reducing the risk of recurrent criminal behavior are, not being bored, having a social network, and not being lonely.

Robot Solution’s Robot Maatje is the first social robot used in forensic patient care. The robot has conversations with them which is believed to reduce loneliness and boredom. With Robot Maatje, patients regain control over their own lives, focus on their future and make their own choices. This makes it possible for this target group to live independently with the guidance they need to reduce the chance of relapse and recidivism.

‘Robot Maatje can ask how you feel. For example: “Are you sad?” The client answers: “yes” or “no”. The robot can for example respond to “yes” with: “shall we dance together?”

**The project**

In the TBS, one of the goals is to prevent recidivism and thus to protect society. They do this by applying the RNR model, which stands for the Risk, Need Responsive model. This Model looks at risk factors for criminal behavior, the individual needs of the patient and the response in the form of an appropriate therapy or intervention to eliminate risks as much as possible. Two important future risk factors for reducing the risk of recidivism are useful recreation, not being bored, and a social network, not being lonely.

Within the Oostvaarderskliniek they recently conducted a small-scale trial with Robot Maatje in which one patient in the clinic could use Maatje for one month. Patients voluntarily participated in the study and were extensively interviewed beforehand about what Robot Maatje should do for them and where he can make a contribution. The preferences, hobbies and weaknesses of the patient form the input. During the research, patients could also independently place tasks and messages in the robot.
This trial has taught us a lot about the attraction and potential of social robots and the bond that can arise between TBS-patients and robots. We learned from this that Robot Maatje can serve as a supplement to interpersonal contact.

‘After the trial, the patient described Robot Maatje as; someone he can build on, someone who understands him, as he experienced Maatje as a friend that you can rely on and who he can entrust things.’

use Robot Maatje for this. The robot will stay with the patients for three months and its use and effect on the individual patient will be monitored by the practitioners and collected through interviews and questionnaires.

We will scientifically collect and process the effect of Robot Maatje’s deployment on the perception of loneliness and boredom with the aim of publication so that what we learn can benefit the improvement of forensic care and possibly ultimately reduce recidivism.
TeleTriageTeam (TTT), for remote eye care

In the Netherlands ~1.4 million individual patients were seen by an ophthalmologist in 2019. At the moment, we still live in the COVID-19 pandemic. In this pandemic, we must minimize physical contact and stay at home as much as possible. This distance society impacts the delivery of adequate eye care and education. This is where TTT steps in. TTT allows people with urgent eye vision problems to be treated remotely, to prevent a backlog, and to perform remote eye testing through the online platform of Easee (https://easee.online). In addition, the project is of high educational value to optometric students as it allows them to continue their program.

‘TTT decreases waiting times and transportation costs of the patients, since most of them can either receive the diagnostics remotely or are redirected to their GP, while the healthcare outcomes are maximized’

The project

TTT was born as a collaboration between students, optometrists, and ophthalmologists from Utrecht University of Applied Sciences and UMC Utrecht in order to provide qualitative remote eye care. In addition, it also created an environment where the communication with the patient has been improved, visual function was assessed remotely, and education for optometry-students is continued. Testing visual function was done through an online eye exam, developed in a public-private collaboration between the UMC Utrecht and Easee BV, an Amsterdam based MedTech startup company.

The program is aimed at remotely triaging medical urgencies and rescheduling appointments, as results have shown that over 60% of the care could safely be a teleconsultation, postponed, or referred to regional professionals. In this initiative, optometry-students reach out to patients in a semi-structured anamneses interview, assess whether remote eye testing is indicated and whether the patient would be able to do. Their own clinical educators guide this process, and - in accordance with Dutch law - the supervising ophthalmologist finalizes the clinical decisions. Everything is recorded in the Electronic Health Record and relayed back to the patient and involved GP or external ophthalmologist. The University of Applied sciences made TTT a formal part of the optometrist training.
Currently, 3000 patients have been treated so far. On average; ~50% of the patients still had to visit the ophthalmology department, ~20% of care was deferred, ~10% had their consultation changed to a teleconsultation, and ~20% patients were referred back to the GP or regional eyecare provider, or had their consultation cancelled. Thus, the TTT created room for new patients to get an appointment with an ophthalmologist. The online eye test was indicated most frequently to a group of patients not in need of immediate eyecare.

**Next steps**

Based on the outcomes of the project to date TTT has a calculated savings for society €337,500. This relates to 3,000 treated patients, with a 50% conversion rate from a regular appointment, and a societal cost per visit of €225.

Caveat: The actual costs of healthcare exceeds this number, based on the reimbursement of auxiliary investigations and treatments. This effect is counteracted by transferring care to the GP or local ophthalmologist. A follow-up HTA could shed light on the trough budget impact of TTT.

TTT is currently present in Utrecht alone, however, requests for implementation in other hospitals have been made. The online vision tool used, the online eye test developed by easee BV, is used in a series of European countries. In consequence, this practice is scalable to other treatment centers.
DCO

The main objective of the pilot program is to test the new organization of cancer care, its quality and clinical outcomes; the new care organization aims to improve the outcomes of cancer treatment. As part of the program, the complexity of diagnostics will be analysed and assessed on the basis of treatment pathways in 5 selected types of cancer - the most common in Poland - breast, lung, ovary, colon and prostate cancer.

The key value of the pilot program in Lower Silesia is the improvement of the safety and quality of oncological treatment (for the first time a quality monitoring system dedicated to the oncological diagnostic and therapeutic path organized around the patient was built), providing comprehensive treatment regardless of the place of residence, improvement of patient satisfaction and cost optimization of oncological care.

Uniform and structured standards for the description of histopathological and radiological examinations have been introduced in a dozen or so healthcare providers from Lower Silesia. Prophylactic questionnaires were also carried out, obtaining a database of thousands of people (including the first symptoms of cancer) and patient satisfaction surveys.

The project

As part of the pilot, the validity and effectiveness of the model based on a network of oncology centers are tested and assessed. The network comprised a provincial coordinating center and level I and II cooperating centers, whose task is to provide the recipient with comprehensive and coordinated oncological care in five selected types of malignant neoplasms - prostate, ovary, colon, breast and lung cancer.

Currently, the Polish cancer care system is fragmented and there is no cooperation between individual healthcare providers in terms of coordinating care for cancer patients. Patients do not have equal access to comprehensive oncological care, from prophylaxis to rehabilitation - there is a phenomenon of health exclusion.

There is no uniform reporting that would allow an objective assessment of the quality of cancer care. There is also a lack of uniform, standardized guidelines and forms of diagnostic and therapeutic protocols. The expected effect of the pilot program is the improvement of safety and quality of cancer treatment, improvement of patient satisfaction and cost optimization of cancer care.
As a result of the Pilot, the National Oncological Network will be implemented to increase the effectiveness of cancer prevention, early diagnosis and treatment quality, as well as to coordinate procedures and monitor quality. As a consequence, the implementation of KSO will enable the reversal of unfavorable epidemiological trends in Poland and will reduce the social costs of cancer burden. In addition, standardization and monitoring of treatment will ensure the optimization of diagnostic and therapeutic pathways, which should translate directly into the optimization of spending by the National Health Fund.

**Next steps**

The expected results are the development of a model of a system of coordinated and comprehensive oncological care, which will contribute to the improvement of treatment results, reduction of the number of complications, increase of cost effectiveness, as well as to the continuity and complementarity of the path of the oncological patient. The population results of the pilot project will be observable after the implementation of the KSO.

The oncological pilot is underway. However, already at the present stage, it is possible to indicate the improvement of the results of oncological treatment by introducing uniform standards of diagnostics and treatment. One of the key aspects is to conduct the diagnostic and therapeutic process in specialized units based on uniform pathways.

The results of the KSO Pilot are monitored based on precisely defined measures.
Fully automatic TDABC
The initiative developed a fully automatic TDABC model and a supplement outcome measurement hierarchy. Based on the IT systems and data available within a hospital.

This model can not alone calculate the distinct cost of activities for individual patients. It provides the data needed to plan and execute efficient patient flows and optimal resource utilization. With this data hospitals can analyse the real movements of patient flows, their resource use, time spent and resources utilization rates. The information can be used as a foundation to organize hospitals, forecast resource needs, share resources more efficiently, produce computer added planning on all planning levels (strategic, tactic, operational offline & online) and support flow quality control.

The project
Today’s costing model in danish healthcare is a top-down transactional model. It distributes expenses onto departments registered procedures code and provides an annual price for each procedure. However, this is a price statement only. The data from this model cannot be used to plan and optimize patient flows and resource utilization. Other industries rely on ERP system to provide data for these objectives. But hospitals do not have ERP systems.

This initiative produced ERP like data from current hospital IT systems. It developed an automatic TDABC model, that can be used to predict, plan, and optimize patient flows and resource utilization. The initiative found that the hospitals booking system and HR database could be used to produce an event log.

The columns of the log were: [patient id, activity, start time, end time, resource, diagnosis, cost]. All information except ‘Cost’, come from the booking system. The cost for an individual activity is determined by calculating each resource hourly cost rate (annual hours for each resource in the event log divided by the annual expenses of the resource) and multiplying it with the activity time. The booking systems was not implemented for this type of purpose, and departments were told to use it as they see fit. All departments used the system differently and start/end times of activities did not mimic reality.

Resource id’s in the booking system did not match the Id’s in the HR database. And there was no database related to non-human resources (location, purchase date and cost). In conclusion the model could show the movement and cost of patients across the entire hospital, but the data was not reliable.
Therefore, the initiative collaborated with the endocrinology department to develop registration practices and methodologies to produce the missing data.

The endocrinology department is an outpatient clinic for chronic patients over the age of 18. A patient flow was defined as all activity within a year – hence the cost of a patient flow is the annual cost. After one year with new registration practices and collection of necessary data, the initiative could display the cost of individual patients, activities, diagnosis, and resource utilization. Supplementing the cost data, the initiative also produced a health outcome score for patients with type I and II diabetes.

The score is produced by scoring a selection of indicators from 1-5.

Placing them in relevant medical groups and adding a % of importance. Thereafter, the indicator scores are aggregated to medical group scores.

These groups are given different % of importance and aggregated to a single health outcome score. A single outcome score made it easier for the department to get an overview of their patient population and navigate their efforts.

**Next steps**
As an example, the department is now able to look up patients with low scores and track their cost data or vice versa. The efforts of this initiative created a data infrastructure that can be scaled to all departments in the hospital and contribute to integrated planning, costing and quality management.
New frontier for fairer breast cancer care in a globalized world

Early 2020, the book and E-book “Breast cancer: Global Quality Care” was published by Oxford University Press. It became an international success. The aim was to help ease the burden and suffering of women with breast cancer across the globe.

Last year a lot of activities were organised to promote our mission. The project is continuously under review with feedback from the faculty. The future plan is to arrive to an open access platform freely available to all interested people.

The project

The aim of our work was to reflect on the potential to achieve a world-wide improvement in quality care, assessing value for money. In the year since then a lot of activities were organised to disseminate further the main message of the project: “A call for fairer breast cancer care for all women in a globalised world”. The book and project were reviewed and highly appreciated by a lot of journals and organizations as ASCO (American Society of Clinical Oncology), ESO (European School of Oncology), the Value Based Health Care initiative (Thinkers Magazine) and the Belgian Journal of Medical Oncology. The challenges outlined in the book were much appreciated. ASCO-Post concluded efforts like this one will help to ease the burden and suffering of women with breast cancer around the globe.

The book was highly recommended to all readers of the ASCO post. They pointed out the book offered examples of incorrect medical information. The challenges outlined in this excellent guide to advancing the quality of global breast cancer treatment were called staggering (attachment).

Publications about the idea were accepted in ESMO-open (Breast Cancer: global quality care optimizing care delivery with existing financial and personnel resources, more than 1000 readers and up-loadings the first three months) and are accepted for publication in other peer reviewed Journals as the European Journal of Breast Health (The official journal of the Senologic International Society, 2021) and in the Belgian Onco-Hemato Journal in the Dutch and French language 2021.
E-learnings were organized, with an interview by e-cancer in June 2020 (already more than 1200 viewers after 8 months) and a webinar around the project organized by the Association of cancer executives in the US with Didier Verhoeven as presenter (January 2020). November 2020 during the 4th virtual IOLC an international symposium was organized chaired by Didier Verhoeven and as other participants C. Allemani (UK), C Kaufman (US), S.Siesling (The Netherlands), M Joore (The Netherlands), E. Brain (France), B Anderson (US) and A Paravati (US). A selection of the talks are available on the SIS websites, the ACE website and the BJMO website.

Special attention is paid to the increase of “value-based health care” putting the patient in the centre of the care pathway and sharing information on high quality integrated breast cancer care. Because cancer care delivery is becoming unsustainable in many countries assessing healthcare value for the cost is becoming increasingly important. Specific recommendations are made considering the local resource facilities. The multidisciplinary breast conference is discussed as “the jewel in the crown” of the integrated practice unit (IPU), connecting multiple specialisations and functions around the breast cancer patient.

Next steps
Management and co-ordination of medical expertise, facilities and their interfaces are highly recommended. The participation in this project of two world-leading cancer programmes, the CONCORD programme and the Breast Health Global Initiative are particularly important (supporting letters, M. Coleman (UK) and B. Anderson (US, Jan 2020)). The project is continuously under review with feedback from the faculty. The future plan is to arrive at an open access platform-publication that is freely available to all interested people.
CATALYZIT connects care

It’s impossible to imagine your life without digital technology. But, it’s not yet mainstream in healthcare. And this is however, a missed opportunity! Technology enables physicians to get a better overview of the complete health situation of their patient: both physically and mentally. In order to do so it’s vital for them to be in control of the design of healthcare innovation. Their expertise and experience ensure the best care for the patient, both personal and digital. Cooperation with other parties in the field of healthcare technology is therefore crucial. CatalyzIT connects care.

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Gabriëlle Speijer MD
RADIATION ONCOLOGIST
FOUNDER CATALYZIT

gabrielle@catalyzit.com
+31 (0) 6 146 05 906
Smart data usage and exchange in healthcare

**Article Digipharm**
*By Steven Buijs, MSc*

**DIGIPHARM**
Digipharm has been a proud partner of ICHOM and implementation of Value Based Healthcare in the UK. The Digipharm platform, the digital health app, allows parties such as patients, healthcare insurers, healthcare organizations, manufacturers and governmental institutions to easily access clustered views of treatment data. Subsequently, in accordance with the provided data, a price for service is paid to the entitled stakeholders. The platform makes it easy to find the source of the data and to form multi-party contracts, in other words, smart contracting.

*‘We provide a platform to allow multiple Value Based Healthcare stakeholders to share and distribute data’*

Eventually, automatization of the entire process should result in a significant saving of man hours and thus a reduction in costs for all involved stakeholders.

Mohammed Rahman points out that in healthcare it is all about the patient. Creating the highest value at the lowest possible cost is key to what Rahman believes Digipharm is striving towards. With his background in the pharmaceutical industry, he discovered that pharma is still too much oriented towards increasing profit.

With Digipharm he tries to turn this upside down by combining all stakeholder needs to generate the fairest price for the best possible care. Patient first, money later. To obtain a fair price, certain models are necessary.

Data is gathered by measurement of, among others, patient performance, services to drug performance, waiting time in hospital per patient and time spent at the hospital. These factors can also easily be used in TD-ABC for healthcare organizations. A lot of clinical trials using this system are currently ongoing. This allows for pharmaceutical companies to outsource the research and receive better data. To measure patient outcomes, Digipharm incorporated PROMs into the application which are updated regularly according to the patient’s needs and outcomes.

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**Connected networks of stakeholders**

**Medical innovations**
Stakeholders
In order to agree with payment of a great amount of money, it seems logical to expect to see value and outcome of the treatment. In Asia, Africa and South America patients still have to pay for treatment themselves. There is no refund no matter the outcome of the treatment. Digipharm focuses its platform on highly specialized or expensive cases to set up fair contracts. For now, this is mainly carried out in the UK but with the intention to grow internationally.

When asked about stakeholder involvement in (strategic) decision making, Rahmen illustrates that stakeholders must be involved in decision making in order to carry out the day-to-day business. All parties have different incentives within those kinds of partnerships and contracts.

Pharmaceutical companies want research details to turn into data about their products. Health insurers want to monitor the patient outcomes via the platform as well. The government wants to subsidize treatments while at the same time monitor outcomes themselves. By providing a contract of treatment at Digipharm it is therefore of utmost importance to involve all stakeholders in decision making.

This is established by the previously mentioned measurements of quality of life. Based on quality of life, the premium of the treatment will increase or decrease. For example, a pharmaceutical company has developed a new drug and wants to bring this to the market. In the bundled payment contract the patient signs a contract to pay on while the patient benefits from the drug in terms of better outcomes.

In case the drug delivers insufficient increase in outcomes the patient, governmental institution providing a fund or insurer is entitled to a refund of the previously paid sum. In addition, pharmaceutical companies could incorporate that the price of the drug is very low in the beginning. When outcome measures are positive, the pharmaceutical company is allowed to increase the price of the product as well on grounds of it being a successful drug or treatment.

‘Bundled-payment contracts are sufficient for routine work with mildly complicated cases. However, within highly specialized or very expensive care it becomes more difficult to determine who is responsible to pay for what part of care.’
**Future perspectives**

In the future Digipharm strives to fully automate the platform and application and translate this into a fully automated healthcare industry that is based solely on benefits from drugs or treatment for patients. This is often referred to as personalized healthcare. This triggers pharmaceutical companies to conduct research into patient needs to deliver a profitable new drug or treatment.

Rahmen thinks that pharmaceutical companies and healthcare insurers must be held more accountable for their actions and this is achieved via these bundled-payment contracts. To fully automate the platform, a lot of research into AI learning to make proactive instead of reactive decisions. In parallel, a fully automated platform contributes to a general billing system instead of billing from different organizations or instances.

This creates a clear overview to all parties involved and on top of that, instead of waiting 6 weeks up to 2 years, obtain the money for your services directly. This creates an environment where organizations can manage their cash flow to the fullest extent resulting in financially healthier and more balanced healthcare organizations.
The Value-Based Dragons’ Grant & Endorsement is developed in the interest of bringing together highly experienced early adopters of the Value-Based Health Care concept and pioneering early stage initiatives. The goal is to endorse the VBHC rough diamonds that need some shaping and grant the VBHC growth diamonds that need to scale-up in order to accelerate their VBHC initiative. These nominees are the VBHC Prize winners of the future!

The Dragons’ Grant winner receives support and advice in upscaling worthy of €10,000,-. Moreover, the winner is also able to pitch their initiative during the VBHC Prize and benefit from all media attention and communication surrounding the event. This way, they build up momentum and we create traction for their initiative.

Previous winners

“It’s a good initiative to help you to get your initiative going and I hope that the network from here will help as well and we will see what the future will bring” – Marcel de Bruin, Winner Incocure, Dragons Grant 2019

“VBHC growth and development is way more important than people think. That is why it is so important to support and encourage initiatives such as the ones we have seen today at The Dragons Competition.” – Griffin Myers Dragons 2020
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Value based healthcare or not.