



**Annual Report of the Nursing  
and Midwifery Contribution to  
the Spark Innovation  
Programme 2020**



Feidhmeannacht na Seirbhíse Sláinte  
Health Service Executive

# Foreword

I am delighted that the ONMSD had the opportunity to collaborate with the Spark Programme during 2020, which was a year like no other for health and social services in Ireland. The emergence of the Covid-19 pandemic increased job stressors, impacted shift work and required staff to become accustomed to wearing protective equipment. In the face of these unprecedented challenges, nurses and midwives have not only demonstrated outstanding resilience, dedication and care, but also proven their ability to adapt their services to support people in their care under difficult circumstances.

Nurses and midwives have been at the forefront of redesigning health services and coming up with new ways of working, particularly in response to Covid-19. We recognise that nurses and midwives are natural problem solvers with a unique relationship to patients. We will continue to motivate and promote innovative practices to ensure the best patient experiences, health outcomes and nursing and midwifery practices.

I wish to congratulate the Spark team for rolling out an excellent programme despite the extraordinary constraints we all worked within in the last year, and especially pleased to see that the Spark Ignite initiative in collaboration with HIHI won a commendation at the Irish Healthcare Awards 2020 - the fourth time a Spark initiative has been recognised at national awards.

I am delighted to continue to support Spark to empower frontline teams to identify problems, improve processes, and propose solutions.

## **Dr Geraldine Shaw**

Nursing and Midwifery Services Director ONMSD  
Health Services Executive



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# 1.0 Introduction

## 2020, a unique year

2020 was the first full calendar year of having the Office of the Nursing and Midwifery Services Director (ONMSD) as part of the Spark team and we were very thankful for this partnership that began in 2019 - we were blown away with the projects and ideas that flooded in from our Nursing and Midwifery colleagues!

2020 is a year that will forever stay in the minds of our frontline staff. Roles that already demand so much became even more challenging, with increased work intensity, as well as stress, fear and uncertainty, and all of this while also not seeing family and friends for long periods of lockdown.

With new challenges in providing care and indeed for how users experience healthcare the question was asked of us all, how do we respond? At Spark, the response to our initiatives confirms that our frontline staff chose innovation!

We are humbled by the consistent hard work and dedication that HSE frontline staff throughout the country have shown. We are grateful that they have also taken the time to apply to our initiatives, often after long dehydrated days wearing PPE speaks to this dedication. This demonstrates that the desire to innovate and improve our health system is very strong.

The year ended with the National Office for Health and Social Care Professionals (HSCP) joining with ONMSD and NDPT collaborating with Spark to expand the programme to include all HSCP disciplines.

This is the fourth year of Spark and as the Program grows so, we hope, will our team. We recently gained a Programme Coordinator and we intend to appoint a Post Doctoral Researcher in 2021. We are also working with ONMSD and the HSCP office to explore the feasibility of expanding the innovation fellows to include a Nursing / Midwife fellow as well as a HSCP fellow so that all groups are represented in the co-design of the Spark programme, involved in the decision-making processes and the implementation of projects.

Our programs allow frontline healthcare staff to highlight problems they have identified and want to develop innovative solutions for. These may be related to changes we have experienced as a result of the pandemic or they could be long present problems that are crying out for meaningful solutions.

In this report we will outline the contribution of nurses and midwives to the programmes we have been running in this year where much activity shifted to a new digital realm. A selection of Case Studies show that innovation of teams in the HSE only needs simple ingredients:

- that we listen to our frontline staff who see the problems,
- that we give the opportunity for them to learn about innovation and user centred design, and
- that we support them in implementing their solution.

From the inception of the Spark programme this has been our modus operandi and as our presence grows in the future to meet demand, Spark will keep listening, generating opportunities and supporting our frontline staff.

Jared Gormly,  
Spark Lead  
Health Services Executive

# 1.1 Fellows Foreword

**The Spark Innovation Programme should appeal to those who are excited by change, innovation and development in our health system.**

Innovation and design principles are undoubtedly a departure from the day-to-day clinical roles that most of us in the HSE might be used to. The programme seeks out innovative and creative figures from within the health service. We at Spark recognise that the healthcare staff's input, opinions and knowledge of working within the health system are of central importance in both the development and implementation of projects.

Spark is currently run by a small team. However, we believe that we consistently succeed in punching above our weight. Our goal is to grow to be able to increase our reach and encourage further innovation in the health system. This programme seeks to 'do as we say' and to find innovative ways to enhance the reach of Spark in the health system, increasing our impact as we do so.

From the organising of events (User Centred Design webinars, Design Week to our conference), creation and dissemination of digital content that is

shared on our website and social media accounts, and most importantly in the support of innovators through training, funding and other supports, the programme is continually evolving based on the changing climate in our health service.

2020/21 saw a pivot to online Design Thinking workshops and applicants pitching for funding and support via digital pitch sessions. Healthcare staff applied in record numbers to our COVID Call and their message was clear:

**We are continuing to innovate!**

We saw this and responded by maintaining and expanding our offerings as much as our capacity allowed. When healthcare staff identify a problem that affects their hospital, service or unit, we offer an opportunity to hone their presentation, design and innovation skills. But most importantly, we listen to their ideas and we work to help make these innovations succeed.

## The Team



**Jared Gormly**  
Spark Lead



**Dr Alan Hopkins**  
National Fellow For  
Innovation



**Neilan Govender**  
Spark Co-ordinator

## 1.2 The Spark of Inspiration

**The SPARK Innovation Programme is a frontline staff-led initiative that seeks to support, promote and recognise innovation amongst healthcare staff.**

Spark Innovation Programme was initially established as a national programme to empower and engage doctors at the beginning of their careers. The opportunity to develop one's ideas is central to keeping staff engaged and inspired staff, and makes it easier to recruit and retain the high-quality graduates of our world class medical education system.

However, SPARK is not solely about successful ideas but also about the potential shared learning for the system – creating a great place to work where healthcare professionals are empowered and encouraged to bring all of their creativity, imagination, problem solving skills, love of design, and passion for the wellbeing of patients.

The power of this vision has seen Spark expand to include all healthcare professionals, and every employee of the HSE, thanks to partnership with the National Quality Improvement Team and the ongoing support from Office of Nursing and Midwives Director (ONMSD), National Doctors Training and Planning (NDTP), and Health and Social Care Professionals (HSCP).

The ONMSD Spark Collaboration is led by a small group, meeting quarterly to guide the development of the Spark programme and reporting back to the ONMSD leadership team. Membership of the group includes: Jared Gormly, Neilan Govender, Dr Alan Hopkins, Loretto Grogan, Claire MacGabhann, Margaret Williams, Margaret Casey and Dr Maureen Flynn.

The programme continues to exemplify bottom-up innovation support. The role of Innovation Fellows is critical in leading and shaping the Spark Programme, playing a key part in supporting ideas, design, innovation, collaboration and initial implementation of initiatives led by frontline staff.

As frontline staff, the Innovation Fellows on the Spark team are required to ensure the relevance of the initiatives to those swamped with clinical work. This ongoing monitoring and a willingness to pilot new schemes, critically appraise them, and keep what works best, is key to the continued success of the programme.

# 1.3 Aims & Objectives

## Engage & empower frontline staff

*We need to empower our staff to deliver change, identify barriers and implement improvements for patients and service users*  
HSE Corporate Plan 2021-24

- Promote and celebrate initiative, creativity and collaboration
- Create funding streams for staff generated solutions to identified problems and opportunities
- Enable access to and training in design and innovation methodologies
- Implementing
- Share success stories



## Create a supportive ecosystem for health innovators

*With a shared vision of improving patient and service user experience, we will work together more effectively and overcome barriers that have made change more difficult in the past.*

HSE Corporate Plan 2021-24

- Create an innovation friendly workplace
- Promote collaborative work practices
- Normalise innovation practices
- Promote the role of human centred thinking in the health system
- Promote early engagement with emerging technology

## Develop capability systemic

*To create this environment, ...an increased focus on teamwork and collaboration ...education and training programmes ...and developing necessary structures (e.g. locally based change and improvement networks, communities of practice etc)*

HSE Corporate Plan 2021-24

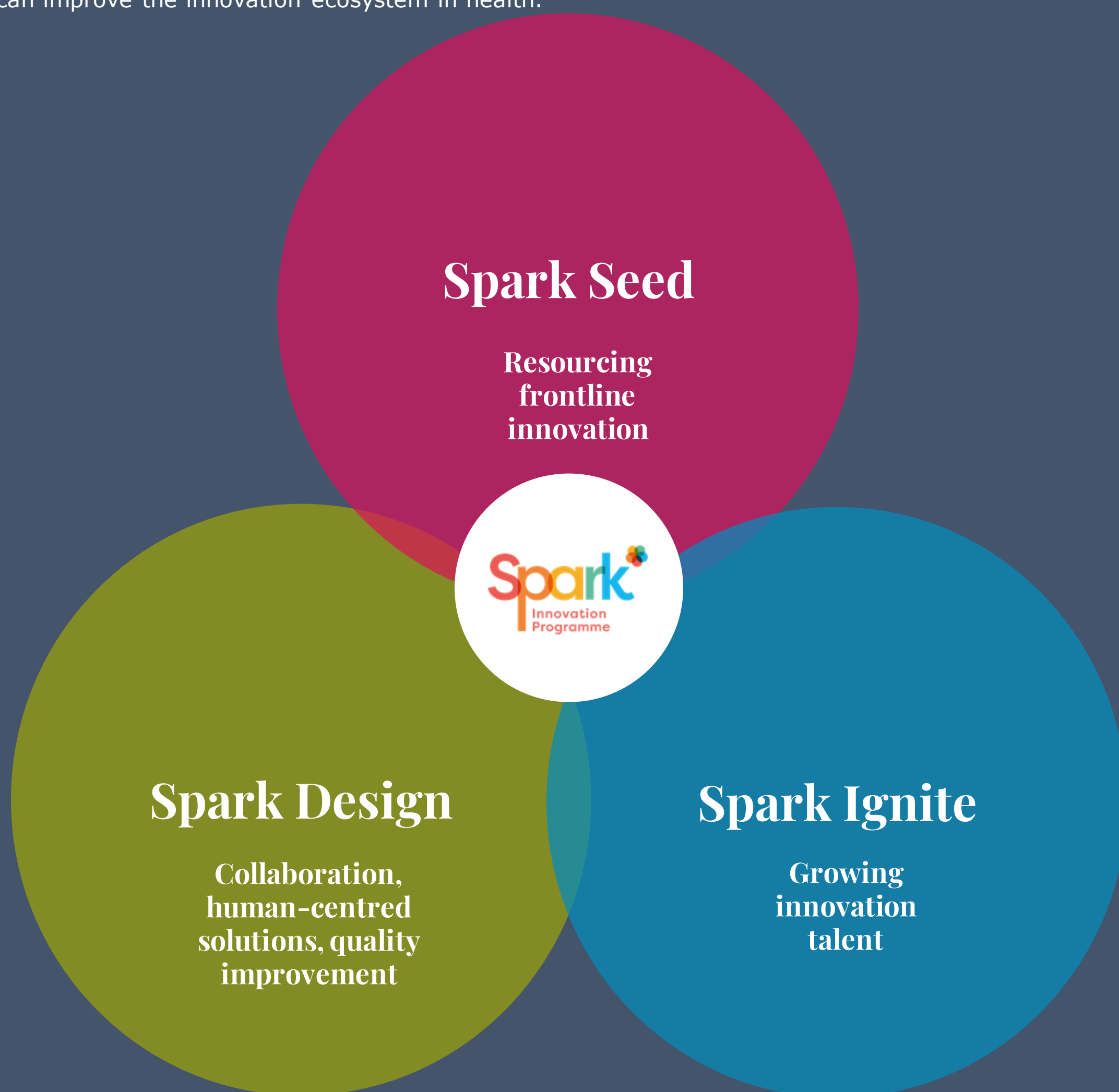
- Leverage existing resources and form strategic partnerships
- Source expertise
- Create pathways for innovations and innovators
- Build evidence base illustrate value

# Our three key programme strands

The main work of Spark falls into three areas which we've labelled as

- Spark Seed - targeted at first step innovators. Provides training, micro-funding and support to enable them to develop their project
- Spark Ignite - aimed at projects that have the potential to scale, to make systemic improvements, or to have commercial impact
- Spark Design - help changemakers to make space in their process to consider whether their solutions are human-centred and of the highest quality

While these areas cover most of what we do, we are always open to collaborate with others to promote frontline innovation and work on initiatives that can improve the innovation ecosystem in health.





# Spark Seed

# 2.0 Spark Seed

**Seed Funding is an initiative whereby frontline staff can apply for micro-funding and other supports for innovative projects that will improve our health service. The initiative focuses on small, rapidly implementable projects which take a bottom-up approach to change.**

Seed Funding is central in the vision of the Spark Programme, the process involves seeking out innovators in our health system in need of support and helping them to realise their meaningful solutions.

Applications are reviewed and the most promising are invited to attend a User Centred Design / Design Thinking workshop, here we encourage applicants to dig deeper into the problem they are exploring, to further consider the user's needs and experiences. The workshops were facilitated by Trevor Vaugh, Assistant Professor of Human Centred-Innovation in Maynooth University and inventor on RTE's "The Big Life Fix". Ideas are refined with support and mentorship from the Spark team before pitching for funding, should that be needed in the implementation of their solution.

While small in scale, these projects have great potential to make meaningful improvements to patient care, increase service capacity and generate cost-savings.

The 2020 seed funding call was open to NCHDs, Nurses & Midwives and MDT applications. This was the first call after the ONMSD joined the Spark programme and the enthusiasm from nurses and midwives was shown in their fantastic response with over double the amount of projects led by them compared to NCHDs. Indeed we expected the proportion of ONMSD applications to be higher as it was their first opportunity to apply, but we were humbled by the interest.

The COVID-call was set up to seek problems affecting our healthcare staff and present these problems to the finest minds innovation and design minds in Ireland. We put two simple questions to our frontline staff – 'what current challenges are preventing you from doing your job well today?' And 'what is currently causing your patient's distress or leading to negative experiences?' The response was overwhelming. Dozens of healthcare staff were selected to attend design thinking and innovation workshops led by Trevor Vaugh. The COVID call had two major outputs these were in providing support and funding to the most promising proposals and the other was in creating Design on the Frontline, a collaboration with the design community to help develop solutions to key problems identified by this call.

After the first workshop working closely with frontline staff, we identified these healthcare challenges which have arisen, or have been amplified by the Covid-19 pandemic. These are the 3 design briefs which capture the most cited challenges, 'PPE Improvement & Sustainability', 'Frailty and Wellbeing' and 'Communication, Isolation and Boredom'. From the frontline we have identified 'Healthcare Champions' who continue to provide insight relating to the specific briefs. These are the type of challenges that we know designers are excellent at solving and we also saw that during the pandemic healthcare staff were already under huge pressure so getting help in developing solutions was needed for these challenges that require huge empathy, creativity, innovativeness, grit, and agility. We trust the intuitiveness, creativity, and ingenuity of designers. Design on the frontline is an effort to share these pressing challenges with the design and innovation community. Our hope is that design can bring new thinking, new ideas by challenging existing orthodoxies and proposing preferred futures.

Spark Seed



**81**

Applications led by Nursing & Midwifery



**29**

Nurses and Midwives led projects attended workshops



**17**

Projects Awarded Funding totalling **€22,515**

Covid Call

**174**

Nurses and Midwives applied as individuals or as part of MDTs

**90**

Nurses and Midwives attended Design workshops

**50**

Nurses and Midwives in supported projects Funding awarded **€25,500**

## 2.1 Seed funding – A selection of funded projects

### 001

#### Catch me if you can – stop and watch tool

Sandra O'Reilly Quality and Practice Nurse, Fiona Shanahan CNM3, Maria Fitzpatrick CNS Ailish Mooney Clinical psychologist

**The Problem:** People are more than a set of numbers taken from their vital signs

**Solution:** This paper tool assesses for deterioration in patients which is not captured by the NEWS observation chart. Suitable for staff who may have less clinical training, it has previously been used by the NHS, and implemented here due to the pandemic, as it has great potential benefits for potential to do a lot of good, for vulnerable service users in residential care and nursing homes

### 002

#### Building an online presence

David Field, CNS

**The Problem:** Creating better information on and access to Mater Sexual Health Services

**Solution:** An interactive website will enable online assessment pathway, appointment booking, covid pre assessment, courses for HCPs - a one-stop place for sexual health in the Mater

### 003

#### Parental Comfort Packs

Lisa McIlMurray, Nurse

**The Problem:** Stress and anxiety of parents in the PICU environment

**Solution:** To develop a welcome comfort pack that could be given to the parents when they arrive to help them settle into the hospital and provide a few essentials that could make their journey through ICU with their child a little less stressful. The welcome pack would cater for all parents entering the PICU environment, regardless of their child's age/stage of development or underlying condition.

### 004

#### Enhancing the care of patients with Dementia in the acute setting

Brian Magennis, Nurse

**The Problem:** The number of people with dementia admitted to hospital is growing. The need to adapt the unfamiliar and sometimes over-stimulating clinical environment is an important aspect for the provision of care.

**Solution:** Design of a designated dementia friendly Siting Room that can be used at any time to reduce distress that the busy and noisy clinical environment might induce.

### 005

#### Production of a Skin Cancer Patient Information Booklet for patients attending the Plastic and Reconstructive Surgery Skin Cancer See & Treat Clinic.

Kelsey O'Donnell, Nurse

**The Problem:** See and Treat clinics, also known as 'one-stop clinics', enable specialist assessment and surgical treatment of skin cancers to occur in a single visit. There is a significant amount of information for a patient to take in and remember in a short consultation.

**Solution:** To develop a Skin Cancer Patient Information Booklet, specifically tailored for use in the Skin Cancer See and Treat Clinic at MMUH.

### 006

#### Don't just screen, intervene- Improving the Physical Health care of Residential Mental Health Service Users

Sinead Hennessy, Nurse

**The Problem:** Mental health service users are showing raised BMI, raised serum lipids, poorer diet and ultimately shortened life expectancy compared to the general population.

**Solution:** Staff survey followed up with education program for HCPs in mental health with regards to optimising service users' care.

# 2.1 Seed funding - Funded projects

## Individual Applications - Seed funding

Antoinette Doherty, Nurse - Letterkenny University Hospital.

Advanced Nurse Practitioner led Breathlessness Intervention Service for Respiratory patients. €500.00

Merin Mathew, Nurse - St Columcille's Hospital, Loughlinstown, Dublin.  
Oral Hygiene Awareness program. €500.00

Brian Magennis, Nurse - Mater.  
Enhancing the care of patients with Dementia in the acute setting. €3,000.00

Marie Ryan, Nurse - Mater Hospital.  
Development of a 'Paediatric Peripheral Intravenous Cannulation and Venepuncture Blended Learning Programme' at Midland Regional Hospital, Portlaoise. €1,500.00

Mary Hamzawi, Nurse - Crumlin.  
Get It Right to Avoid the Fight - Co-Designing an MDT Care Pathway for adolescents with IBD. €1,000.00

Anne Spencer, Nurse - St Michael's House.  
What a difference a bed makes!. €1,800.00

Colette Kivlehan, Midwife - Sligo University Hospital.  
Colostrum Harvesting, growing our future. €750.00

Sinéad Hennessy, Nurse - Dublin South Central Mental Health Services.  
Don't just screen, Intervene- Improving the Physical Health care of Residential Mental Health Service Users . €1,000.00

## Individual Applications - COVID Call

Orla Coleman, ADON - St Luke's Home  
Designing a staff care digital app to support staff during Covid-19 pandemic. €2,000.00

Cliona Foley, Nurse - CHI Crumlin  
Improving the experience of children with special needs and autism in OPD. €750.00

Denise Hogan, Nurse - Drogheda Day Hospital  
To bring Clients together virtually through a newsletter. €750.00

Catherine Moore, Nurse - Le Brun House, Vergemount Mental Health: Person Centered-Sensory Room/Sensory Equipment. €750.00

Clare Flanagan, Nurse - Psychiatry of Old Age  
Supporting older adults to use video consultation technology during Covid 19. €750.00

Irene Hartigan, Nurse - University College Cork  
Upscaling an information booklet for stroke patients and families. €1,000.00

Eoin Tabb, Nurse - University Hospital Waterford  
Making education for the cancer journey accessible for all. €2,500.00

Paul Phelan, Nurse - University Hospital Waterford  
Maintaining Contact & Connections with Family Throughout Covid-19. €3,000.00

Anne Marie O'Shea, Nurse - Midland Regional Hospital Portlaoise  
OxySense"- # O2 monitoring makes sense. €3,000.00

Caroline Edgeworth, Nurse - TUH  
Using virtual means to increase the uptake of cardiac rehabilitation in patients unable to attend the face to face program. €1,000.00

## Group Applications - Seed funding

Diarmuid Boyle (Music Therapist), , Linda Carey (Nurse) - South Tipperary Mental Health Services.  
Where Words Fail Music Speaks . €500.00

Jane Gunn, Nurse - CUH  
1st Birthday Dental Pack for Babies with Cleft. €1,500.00

Patricia Finlay, Nurse - Louth Meath Mental Health Services

Instalment of interactive white boards (IWB's) into 2 training / conference rooms at St. Brigid's Hospital, Ardee, Co. Louth. €2,665.00

Kelsey O'Donnell, Nurse - Mater Hospital  
Production of a Skin Cancer Patient Information Booklet for patients attending the Plastic and Reconstructive Surgery Skin Cancer See & Treat Clinic. €1,500.00

David Field, Nurse - Mater  
Building an online presence - Mater Sexual Health Services. €2,000.00

Lisa Slattery, Nurse - St James'  
Virtual Interactive Sleep Clinic (re-juvenating a tired clinic). €1,000.00

Sandra O'Reilly, Nurse - Cheeverstown  
"CATCH ME IF YOU CAN" - STOP AND WATCH TOOL. €1,000.00

Elaine Clear /Amy Donnelly , Nurse/NCHD -St Vincent's Hospital

MINIMISE - (Monitoring of Narcotic Initiation and Management in Irish Surgical patients). €2,300.00

## Group Applications - COVID Call

Mary Doyle, Nurse - Beamount Hospital  
In room rehabilitation and wellbeing initiative during the COVID- 19 pandemic in a rehabilitation and residential care setting for older adults . €1,000.00

Josephine Reilly, Nurse - Child and Adolescent Mental Health Services, Cavan  
Increasing therapeutic resources for clients with Eating Disorders . €2,000.00

Lisa McIlmurray (Caroline Lynch, Alanna Madden) , Nurse - CHI @ Temple Street  
Parental Comfort Packs . €2,000.00

Mary Devitt and Catherine Carrig, Nurse -TUH  
"CAP' (Children's Asthma Pack). €3,000.00

Liz Forde and Fiona Guidera, Nurse - South Southwest Hospital Group - CUH, MUH and SIVUH  
OPAT - "Your path home. €2,000.00

# 2.2 Stop and Watch Tool

Catch me if you can



Produced by the North Cumbria Health & Care System

Learning Disabilities Mortality Review (LeDeR) Programme

## Recognising Deterioration

<b>S</b> Seems different to usual No matter how small the change, think: 'Stop & Watch'	<b>E</b> Early Warning Tool	<b>W</b> Weight change Losing weight without trying
<b>T</b> Talks or communicates less	<b>A</b> Ate less Lack of appetite	<b>A</b> Agitated or more nervous than usual
<b>O</b> Overall needs more help	<b>N</b> No bowel movement in 3 days or diarrhoea	<b>T</b> Tired Weak, confused or drowsy
<b>P</b> Pain (new or worsening) Participating less in activities	<b>D</b> Drank less Monitor using a hydration chart	<b>C</b> Change in skin colour or condition
<b>Everyone can spot the signs</b> If you notice an important change make sure you talk to the right person about this without delay. This could be your manager, healthcare professional, the family, or the out of hours health service.		
<b>H</b> Help with walking, transferring or going to the toilet more than usual		

## INNOVATORS

Sandra O'Reilly Quality and Practice Nurse, Fiona Shanahan CNM3, Maria Fitzpatrick CNS Ailish Mooney Clinical psychologist

## THE PROBLEM

Training needs analysis highlighted circumstances where vulnerable patients could have been helped to seek medical assistance sooner, particularly patients with an Intellectual Disability (ID). Characteristics and symptoms associated with the ID potentially masked symptoms of other underlying health problems, meaning they might go undiagnosed and lead to more serious health issues. Research indicates significant disparity in health outcomes for people with ID vs general population.

## THE INNOVATION OPPORTUNITY

We identified the need to provide educational support to our staff teams in the identification of deterioration, specifically for a person with an ID. The tool we required would need to support staff teams with different skill mix within the social care setting.

## THE PROJECT

Stop and Watch is an early warning communication tool previously developed by Ann Stabler and when used in the NHS, data showed that deteriorating patients with an ID could be identified up to five days sooner than with NEWS observations alone. The tool comes in a printed leaflet format, using colourful emojis that represent 12 signs of deterioration as a simple abbreviation to help people to remember them. It can be utilized by certified healthcare assistants or social care workers to make observations not captured by NEWS and alert a nurse or manager if they notice something different in a person's daily care routine.

## THE RESULTS

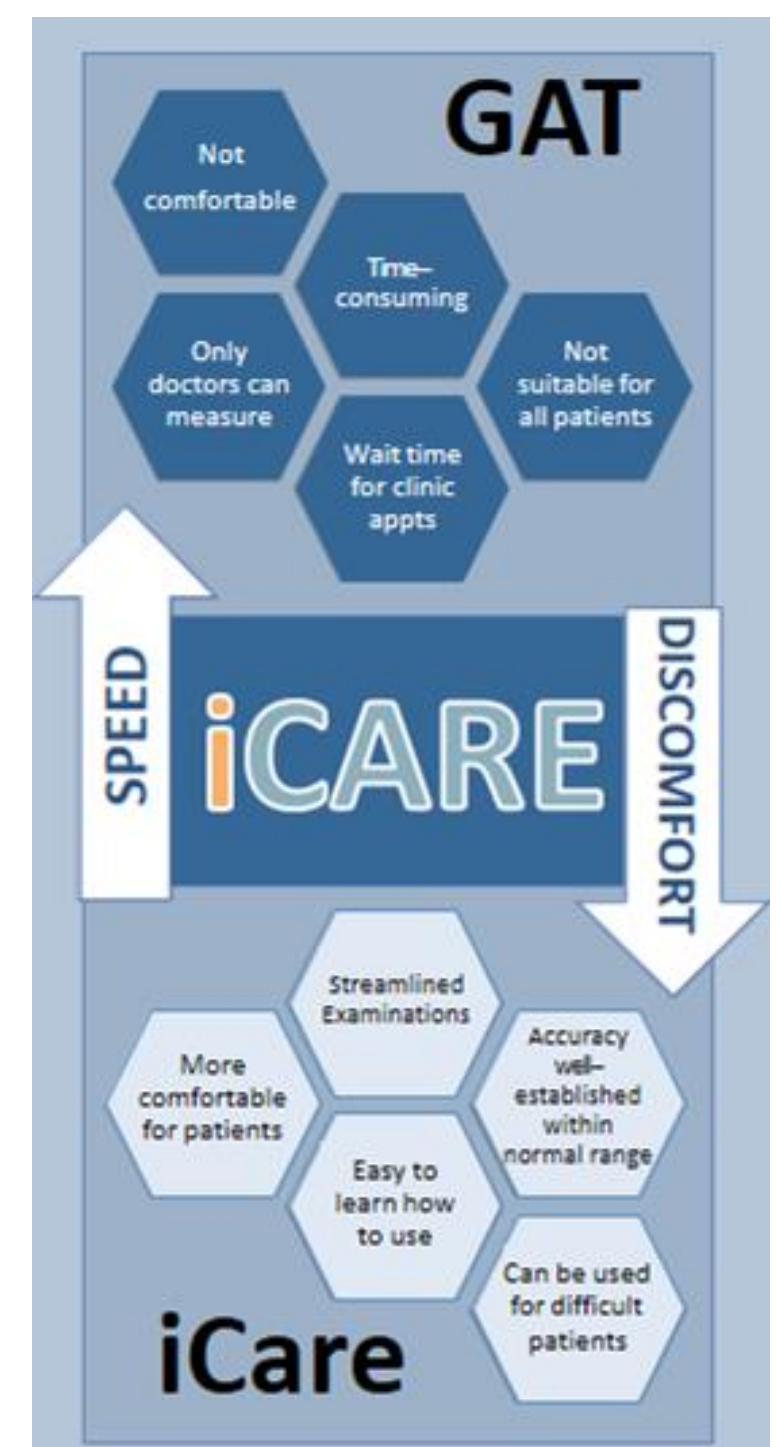
In response to Covid-19, the Stop and Watch tool was used as part of our monitoring and escalation tool kit to support staff with daily monitoring of service users. Data collected in relation to daily reviews of service users indicated that staff are using the tool to identify signs of deterioration.

## THE BENEFITS

- Increase staff confidence and understanding of deterioration in a social care setting.
- You don't need to be clinically trained to use the tool.
- Earlier escalation to G.P. review
- Common language being used between all staff.
- Improved communication.
- Improved health outcomes.
- Easy to use!!!!!!
- Carers and family members are able to keep the leaflet with them as an aid memoire.

## THE POTENTIAL

- Use the tool for specific research on individuals and groups to inform future support needs.
- Provide stop and watch training to all new employees as a part of the induction program
- Extend education on the tool to service users and families
- Develop a national roll out of the tool



## 2.3 Introducing Nurse-administered iCare in Retinal Clinics

### HOSPITAL

Mater Misericordiae University Hospital Dublin

### THE PROBLEM

Demand for the retina service at MMUH has grown significantly in recent years. Because treatments often must be administered over a lengthy period of time, requiring regular outpatient follow up, demand far exceeds capacity. Clinics frequently run overtime, with negative implications for cost management and staff/user wellbeing.

Measuring Intraocular Pressure (IOP) is an integral part of the eye exam, but for most patients it is simply a screening measure. However, 50% of patients struggle with IOP measurement using the standard method, Goldman Applanation Tonometry (GAT) which also requires extensive staff training, is a lengthy procedure, and involves the use of unpleasant anaesthetic drops.

### THE INNOVATION OPPORTUNITY

The iCare Device is an alternative method which compares well to GAT over a low to moderate IOP range. Can the efficiency of eye service delivery be improved by transitioning IOP measurement from doctor/GAT to nursing staff/iCare, allowing doctors to make the most of the time available to them with each patient?

### THE PROJECT

Secure funding to purchase two iCare ic100 tonometers. Run audited experiment (26 patients, 51 eyes) comparing GAT administered by doctors, and iCare administered by nursing staff.

Compare patient comfort levels, iCare readings and agreement with GAT. Calculate efficiencies using time driven activity-based costing method (TDABC).

### THE RESULTS

- iCare was faster in 100% of cases.
- iCare over five times faster (9 seconds per reading v 52 secs for GAT).
- 82% of iCare readings accurate within 2mmHg of readings taken via GAT.
- iCare had a 100% sensitivity for picking up raised IOP with an 87% specificity.
- iCare had a positive predictive value of 12.5% but a negative predictive value of 100% – excellent for screening.

### THE BENEFITS

- 100% of patients surveyed found iCare experience to be more comfortable than GAT.
- Can be performed in any sitting position (including a wheelchair)
- Does not require their lids to be held open or the instillation of eye drops (which sting)
- Faster than GAT.

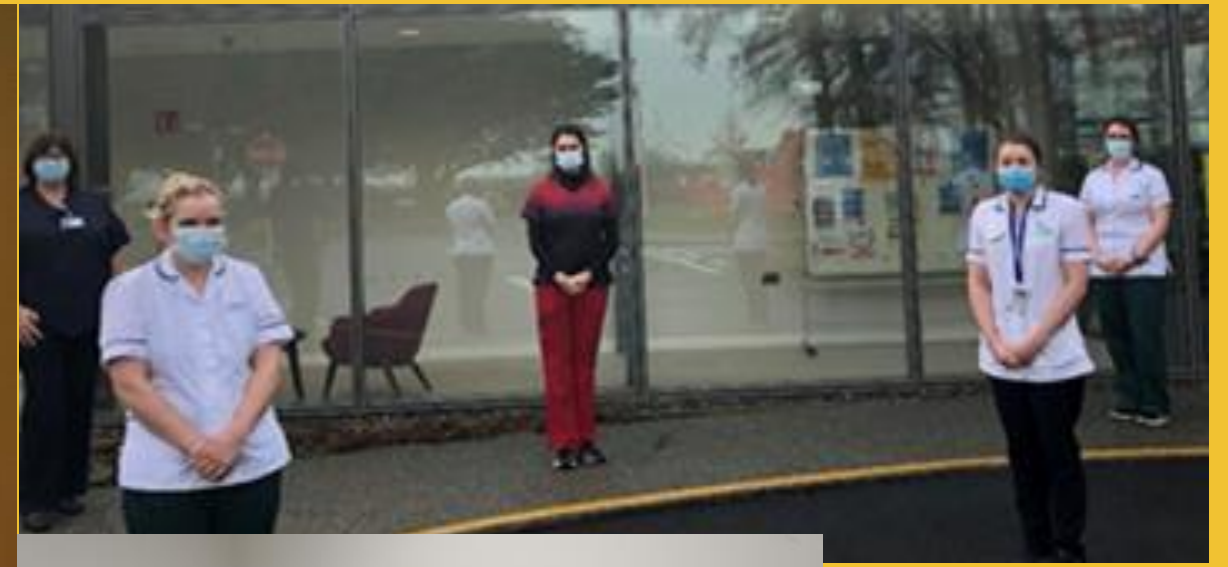
### THE FIGURES

- Estimated cost per clinic session of 45 patients (3 doctors [consultant, SpR, and SHO] using GAT) = €178.25.
- Cost per session for 2 staff nurses to use iCare = €98.20.
- Saving of €80.09 per session.

### POTENTIAL SAVING

With four retinal clinics running each week for approximately 48 weeks a year, a saving of €14,737.47 per annum was anticipated.

## 2.4 COVID Call In Room Rehab



### In room rehabilitation and wellbeing initiative during the COVID- 19 pandemic in a rehabilitation and residential care setting for older adults

#### INNOVATORS

Mary Doyle CNS; Eimear Flood. Senior OT; Louise McCarron Senior Physiotherapist; Sarah Mello Consultant Geriatrician; Prof Des O Neill, Consultant Geriatrician.

#### THE PROBLEM

During the COVID-19 pandemic, social isolation of older adults due to visitor restrictions, mandatory infection surveillance periods, and lack of interaction with other residents, is of great concern, particularly for vulnerable cohorts in rehabilitation settings and in residential care, with patients and residents for the most part confined to their rooms. In addition, many such patients have chronic illness such as COPD, Parkinson's disease, dementia, osteoarthritis and chronic pain.

#### THE INNOVATION OPPORTUNITY

How can we enable patients to independently progress to achieving their rehabilitation goals despite any infection control measures in place?

#### THE PROJECT

Provide equipment and creative activity packs to be used in each patient's room, including multiple single-use pieces of equipment.

Enable a range of holistic leisure activities such as creative arts and crafts when visiting is restricted, to support ongoing exercise plans and meaningful activity. All equipment to meet infection controls standards.

#### THE BENEFITS

- Combat negative effects of inactivity such as sarcopenia, frailty and deconditioning.
- Enhance overall wellbeing of residents and patients, including rebuilding confidence and self-esteem lost during acute illness.
- Change in thinking and practice within care team.

#### THE POTENTIAL

- Enable patients to continue to exercise and progress with rehabilitation even in times of infection control measures being in place.
- When patients can continue to progress when in isolation as well as in dedicated MDT sessions this could lead to reduced lengths of stay in both hospital and rehabilitation facilities

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*The need for innovation is even greater in the new COVID era. Our experience in the past few months has demonstrated the great power of collective imagination in healthcare settings in its relentless pursuit of the possible. The application of this imagination can make us more resilient and can circumvent the most difficult challenges.*

”

**Dr Colm Henry,**  
Chief Clinical Officer  
Department of Clinical Design & Innovation





# Spark Ignite

## 3.0 Spark Ignite

# Spark Ignite

Spark Ignite is run in association with the Health Innovation Hub Ireland (HIHI), the Health Service Executive (HSE), the Office of the Nursing and Midwifery Services Director (ONMSD), the National Health and Social Care Professions Office (HSCP), and National Doctor Training and Planning (NDTP).

HSE staff who work across the Irish healthcare system carry out important work every day. This past year their response to the COVID-19 pandemic made an enormous difference to patients across all primary care, acute and national services. These front-line staff see the problems first-hand and have the expertise and passion to develop solutions. This competition provides an opportunity for those staff to develop their ideas for solutions.

The very best 'big ideas' from healthcare staff are assessed, developed and showcased through this competition. This competition seeks innovative ideas from the 115,000+ HSE employees aiming to improve patient and healthcare outcomes. Spark Ignite is open to all disciplines and departments within the HSE, enabling staff to develop their ideas through validation of clinical need and to determine the market for their proposed solution, product, or service. Successful applicants will also receive guidance on how to bring their ideas towards reality.

Spark Ignite is an opportunity for all healthcare staff to put forward their ideas for innovative products or services. The goal of the HSE-HIHI Spark Ignite Competition is to assist staff to develop solutions to the challenges faced by healthcare providers and patients.

Successful applicants will benefit from a bespoke healthcare focused innovation workshop delivered by experts, to hone their idea and proceed to pitch for funding including a €3000 prize for an individual winner, €3,000 team prize and three runner up prizes of €1,000, in three regional competitions, followed by a National final for the six regional finalists.

- **Open to all HSE staff**
- **Bottom up approach**
- **Learn innovation and design thinking methodologies**
- **Validate unmet clinical needs and determine if a market exists for their proposed solution**
- **Identify the stakeholders and develop a coherent value proposition**
- **Understand the product development pathway**
- **Reviewed by a panel of experts from various sectors**
- **Funding awarded for further development of winning ideas**

# 3.0 SPARK Ignite 2020



**4k**

HSE staff engaged via email  
and in-person contact



**35k**

social media  
engagements



**151**

applications from  
over 45 disciplines



**160+**

Attended  
workshops



**36**

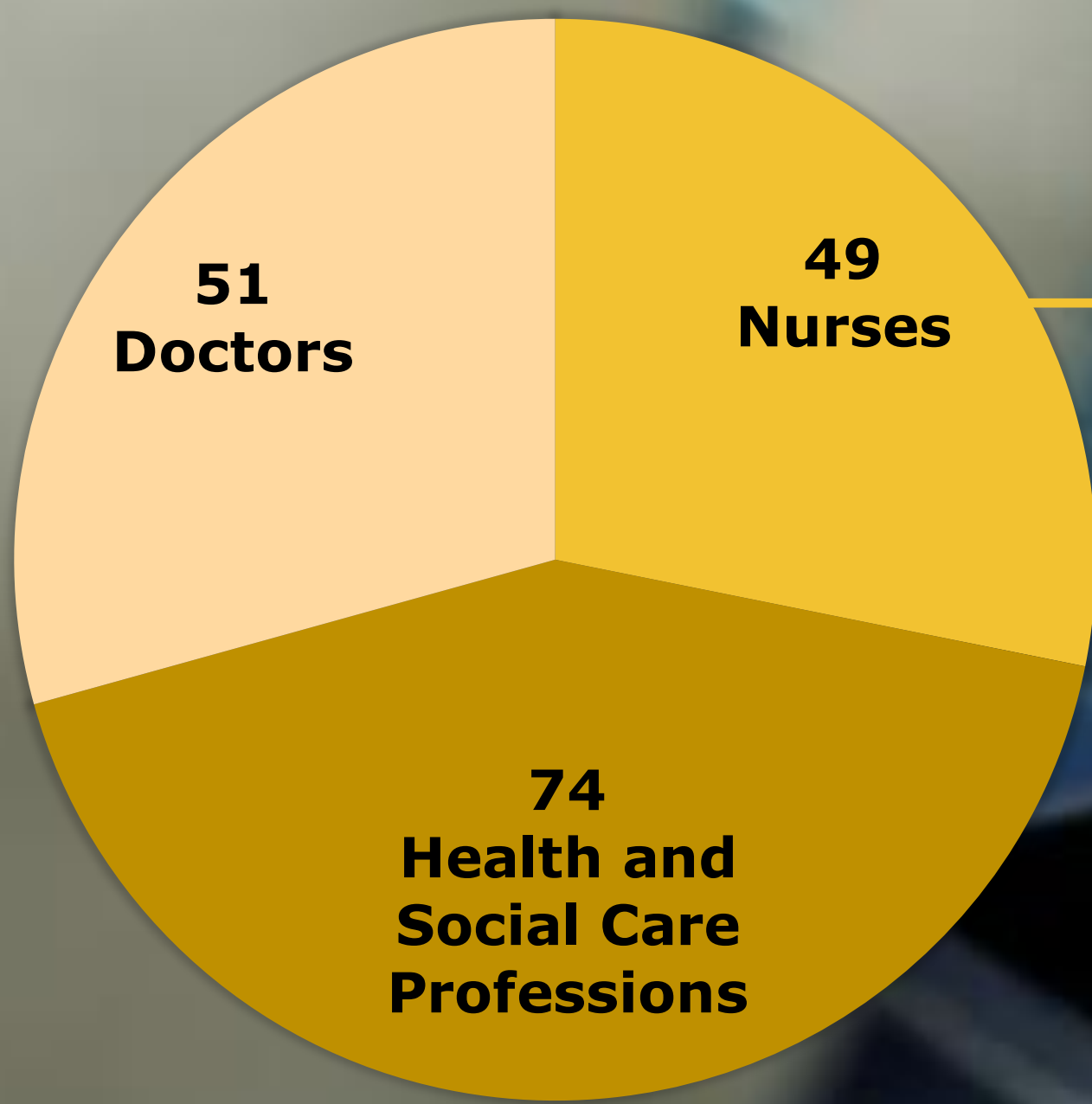
Solutions  
Shortlisted



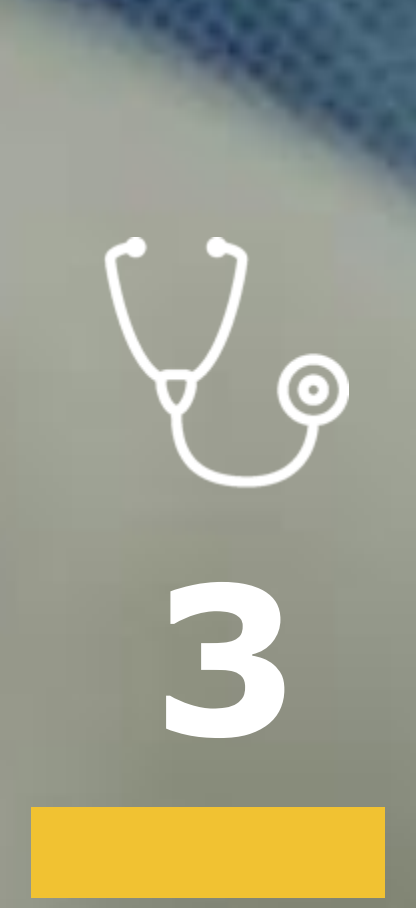
**15**

Awarded  
funding

# 3.1 Roles of applicants and project types



49 Nurses	
Staff Nurse	18
Clinical Nurse Specialist	16
Candidate ANP	1
Advanced Nurse Practitioner	8
Public Health Nurse	2
Quality Improvement Midwife	4



IT/E-Health

Service Improvement / New Service

Other

Medical Device

Process Improvement

Education Tools

Diagnostic Device

# HIHI Spark Ignite 2020 meet the finalists – Nursing and Midwifery led applications

In 2020, 49 Nursing/midwifery-led projects were submitted to the HIHI Spark Ignite Competition. Upon review, 4 nursing/midwifery-led projects from the Cork region and 1 from the Galway region were selected to attend a series of innovation workshops and to pitch for funding. As 2020 was the first National Spark Ignite Competition involving Doctors, ONMSDs and HSCPs, promotion of the event was crucial to ensuring awareness of the initiative. We at Spark, are delighted to see the campaign sparked enough interest to receive 49 applications from Nurses and Midwives all around Ireland. As we build upon our promotions and communications strategy year on year, we aim to increase the number of applications from ONMSD applicants in each region.

Norma Caples, a CNS from University Hospital Waterford, won funding as the Individual winner in the Cork Region. Since winning, HIHI have released a case study on their website which has been widely shared on social media to raised awareness of innovators working at the ground level of the ONMSD. In collaboration with the HIHI, the Spark Team are delighted to showcase participants success and to promote their innovative ideas through our channels. This in turn raises awareness of the competition and helps to provide a point of reference to encourage future applicants. The potential for growth in each region is very promising.

## Cork

Colette Cunningham

Senior Neonatal Intensive Care Nurse in University Hospital Waterford (UHW)

My Innovation is targeted at justifying the acquisition of a UV mobile phone cleaner for use in the NICU in UHW.

## Cork

Norma Caples

CNS/RNP Heart Failure University Hospital Waterford

My innovation is an app that will alert heart failure patient when there is a significant increase in their weight that may indicate a deterioration in their heart failure.

## Cork

Ali-Rose Sisk

Neurosurgical RGN CUH and Marie Curie PhD Student

My innovation, SafeCare, is a digital platform which revolutionises nursing documentation and automates the audit task.

## Cork

Dimitris Agorastos

Midwife in Cork University Maternity Hospital

My innovation is a queue management app accessible which will assist patients with checking in, identification and waiting times in the clinics

## Galway

Tara Byrne

Respiratory Registered Advanced Nurse Practitioner

Portiuncula Hospital Ballinasloe Co. Galway

## 3.2 South Regional Winners - HHIH Cork

### Individual Winner

#### My CheckMate

Norma Caples - CNS/RPN, UHW

**Checkmate is a patient engagement application for early identification of heart failure with huge potential to save lives.**

##### Expected Benefits

Early identification of weight gain pertaining to heart failure

##### Potential Impacts

Improved patient care, Patient empowerment, Community care, Reduction of Risk, Cost Savings, Improved Quality of Life

### Team Winner

#### Patient-led Education Tool

Dr Lyndsey Paul, Consultant, UHW  
Dr Catriona Gallagher, SpR, UHW  
Anita Flynn, Staff Nurse, UHW

**An application to provide reminders of test and vaccination dates, record results and improve self-awareness, to reduce the risk of cancer and infection in the immunosuppressed population.**

##### Expected Benefits

Improved safety profile of immunosuppressive drugs

##### Potential Impacts

Reduction of risk, Improved quality of life, Reduction of costs, Patient empowerment

### One to watch

#### OA Knee Pathway

Siobhán Corcoran, Clinical Specialist Physiotherapist, UHW

**The Establishment of Novel Clinical Pathways for Orthopaedic Outpatient Referrals, integration of local community services and multidisciplinary triage across the South Eastern Region.**

##### Expected Benefits

Improved pathway for those needing to see an Orthopaedic Surgeon quicker

##### Potential Impacts

Improved efficiencies, Improved patient experience

### Novelty winner

#### A Predictive Model for Emergency Departments

Jonathan Harrington, Data Analyst Lead, MUH

**A software solution to predict Emergency Department activity, determining common patterns of activity through machine learning and existing data.**

##### Expected Benefits

Reduce ED overcrowding, long wait times, cancelled procedures, and budget overruns

##### Potential Impacts

Queue Application Management for OPD, Improved efficiencies, Reduced waiting times at clinics.

### Fastest to market

#### SelfCare

Ali Rose Sisk, RGN & PhD, CUH

**A platform for monitoring nursing home processes.**

##### Expected Benefits

Improved nursing documentation logging procedure and audit automation

##### Potential Impacts

Improved efficiencies, Reduction in costs, Automation

## 3.3 East Regional Winners - HIHI Dublin

### Individual Winner

#### PressiDect

Siobhán Ryan, Med Student, RCSI

**A device to mitigate the risk of patients developing pressure sores during surgery.**

##### Expected Benefits

Improve the current standards for intraoperative pressure care reducing pressure sore incidence

##### Potential Impacts

Revenue potential, Improve patient care, Reduce risk of complications, Reduce associated costs of complications

### Team Winner

#### Blood Stock Inventory Management

Alison Harper, Chief Medical Scientist, TUH  
Helena Begley, Medical Scientist, Naas  
Fergus Guilfoyle, Chief Medical Scientist, Coombe

**A weekly blood exchange programme between three sites aiming to improve O negative stock levels.**

##### Expected Benefits

An estimated €370,000 saving to HSE annually

##### Potential Impacts

Reduce cost of blood products, Maintain critical stock of blood, Improve patient outcomes, Improve efficiencies

### One to watch

#### Falling Down

Andrew Fitzgerald, Physiotherapy Assistant, St. James

**An adjunct support for adult incontinence pads to ensure they remain in place and protect a patient's dignity.**

##### Expected Benefits

Improve grip for incontinence pads, helping to retain patient's dignity

##### Potential Impacts

Improved patient care, Improved efficiencies.

### Novelty winner

#### UV Alert System

Dr Barbara McGrogan, Research Scientist, NCCP

**A campaign to raise awareness of the UV index (UVI) and promote sun protective behaviours in the outdoor worker setting.**

##### Expected Benefits

Improved understanding of UV and SunSmart behaviour for outdoor workers to reduce skin cancer incidence

##### Potential Impacts

Reduced incidence of skin cancer, Reduction in cost to the exchequer, Reduced the burden on the healthcare system

### Fastest to market

#### Model for Amniocentesis Procedures

Dr Maria Cheung, NCHD, NMH  
Dr Gillian Ryan, Fetal Medicine Fellow, NMH

**A simulation model for Amniocentesis and Chorionic Villus sample training.**

##### Expected Benefits

Improved nursing documentation logging procedure and audit automation

##### Potential Impacts

Improved efficiencies, Reduction in costs, Automation

## 3.4 East Regional Winners - HHHI Galway

### Individual Winner

#### **A Novel, Early Detection Tool.**

Helen Ryan, Sr Medical Scientist, UHG

**A home diagnostic test for early detection of leaking amniotic fluid following non-overt rupture of amniotic membranes in expectant mothers.**

#### **Expected Benefits**

Novel diagnostic for the detection of amniotic fluid for quicker intervention and better patient outcomes

#### **Potential Impacts**

Revenue potential, Improved patient care

### Team Winner

#### **Establishment of a Measuring and Monitoring System.**

Marie Ronan, Antimicrobial Stewardship Pharmacist, Saolta  
Rose Cafferkey, Antimicrobial Stewardship Pharmacist, MUH

**A digital smart tool to tackle the rising threat of antimicrobial resistance to public health through key performance indicators.**

#### **Expected Benefits**

Software to monitor and audit antibiotic use in real time

#### **Potential Impacts**

Reduction in costs, Improvement in medication usage, Increase in patient options

### One to watch

#### **Virtual augmentation of breast cancer for surgical planning**

Dr John O'Donnell, Breast Surgeon (trainee), UHG

**A 3D imaging system to convert mammograms from 2D to 3D, allowing surgeons to locate a cancerous mass before resection.**

#### **Expected Benefits**

Improved breast imaging for tumour removal leading to better clinical outcomes

#### **Potential Impacts**

Improve patient care, Improve efficiencies, Reduce risk, Revenue potential

### Novelty winner

#### **Chimera Plate**

Dr David Tiernan, Orthopaedic Reg/ED SHO, UHG

**A dynamic locking plate and screw system for setting bones.**

#### **Expected Benefits**

Medical device to optimise bone's natural ability to heal

#### **Potential Impacts**

Revenue potential, Improvement in patient care, Improvement in efficiencies, Reduction in cost

### Fastest to market

#### **JacLite100**

Jen Carroll, Emergency Call Taker, National Emergency Operations Centre

**A prototype device to assist first responders in cardiopulmonary resuscitation.**

#### **Expected Benefits**

Keychain device to assist timing while performing CPR

#### **Potential Impacts**

Strong revenue potential, Improve patient care





Download app



Open app



View the app information



Weigh yourself every day\*:  
— after passing urine  
— before eating/drinking  
— before getting dressed



Enter your weight in the app once a day\*, in kilograms or stones and pounds



If your weight has increased by 2kg or more in seven days, you will receive an alert

\*Note: you must weigh and enter weights daily to ensure accurate detection of any weight increase from fluid

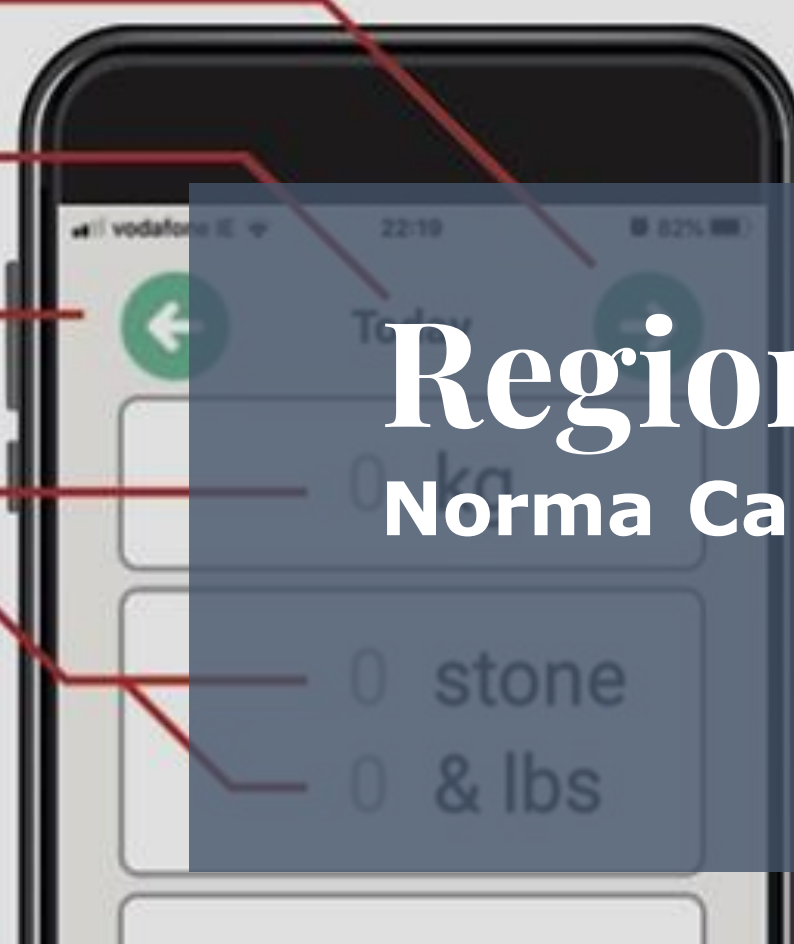
Tap to view the next weight entry

Date of weight entry

Tap to view the previous weight entry

Enter weight in kg or in stones and lbs

App guidance

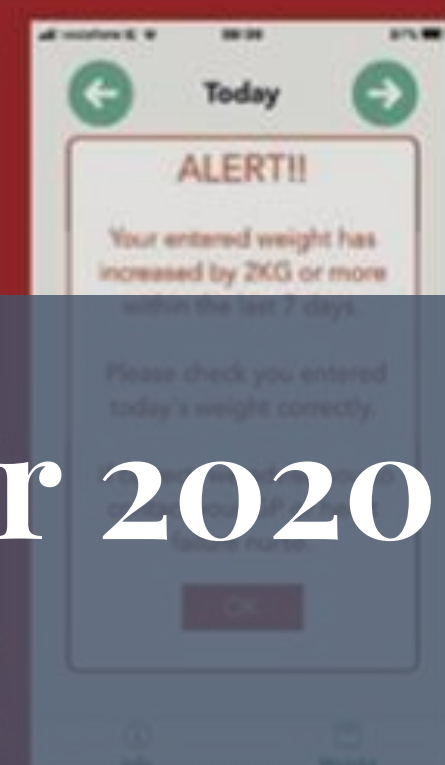


# Regional Winner 2020

## Norma Caples

A sudden increase in weight is associated with a deterioration in heart failure.

If you see this alert and enter your weight correctly, contact your GP or heart failure nurse.



## 3.5 Case Study – Fluid Heart Tracker App

### Innovators

Norma Caples, Clinical Nurse Specialist & Registered Nurse Prescriber, University Hospital Waterford Lead Nurse, National Heart Programme

### The Problem

Fluid retention, manifested by weight gain is indicative of Heart Failure (HF). Prompt identification of weight gain before symptoms manifest enables rapid intervention leading to better patient outcomes and reducing associated healthcare costs. Patients with HF are required to record their daily weights, calculate weight gain and to alert their clinical teams when weight gain exceed certain limits. However, up to 66% of HF patients have mild cognitive impairment, with a reduction in numeracy and cognition skills resulting in an inability to recognise weight gains.

### The Innovation Opportunity

What tool could be developed to assist patients identify an increase in weight, and encourage them to seek help sooner, leading to earlier intervention and improved clinical outcomes?

### The Project

Fluid Heart Tracker is a simple mobile phone app to record weight and alerts the user to seek clinical help when their weight is increasing. Designed in conjunction with those living with HF Removes the patient's need to recognise/calculate an increase in weight Reduces the risk of unidentified deterioration in heart failure. Patients and carers are empowered to manage their condition in real-time

### The Results

A pilot study of the App on 31 users identified that the App was easy to use, provided benefit to users and is something that they would recommend to others. The app is available on the Irish Heart Foundation (IHF) website Norma is now conducting a follow-on study as part of a PhD thesis at TCD.

### The Benefits

- Self-care model supports a community-based care methodology
- Potential for earlier intervention
- better patient outcomes
- reduction in hospital admissions

### The Figures

€3,000 invested (Spark)

### The Potential

There is a potential cost saving to the HSE of €15,000 per HF patient per year using the app.

Estimated savings from pilot study from users avoiding heart failure are at €300,000

# Spark Design

## 4.0 SPARK Design

# Spark Design

Healthcare is complex and problems within healthcare as a result are complicated, requiring intelligent solutions. At Spark we fully believe in human centred design and our goal is to spread design principles to healthcare professionals. Great design is inclusive well thought out and makes you ask how we ever did things differently before

Design Thinking / User Centred Design is a problem-solving methodology that puts the user at the centre of the process surrounded by the core principles of having empathy for the user, interdisciplinary teamwork and rapid prototyping of the solution or idea. This approach is often used in the world of business and yet it is incredibly suited to the healthcare industry due to its 'human-centred' focus.

At Spark, with the help of the design community we teach and encourage the use of Design Thinking to innovate and solve problems that impact healthcare and patient lives. The design thinking problem-solving methodology is utilised to reframe and think of your ideas with a human-centred approach. The focus is placed on implementing the design process and learning how design thinking can foster new approaches to complex and persistent healthcare problems through human-centred research, collective and diverse teamwork and rapid prototyping. Participants are encouraged to ideate, test and & prototype solutions.

We at Spark are passionate about the use of design principles in healthcare and strive to integrate with the design community and encourage design thinking and user centred design in all of our initiatives.

Our design workshops are run as part of many of our programmes and their roles is central to Spark Seed which are discussed in detail in that section. We also support design sprints / challenges / weeks most notably in SJUH and MMUH which are described below.

Our design initiatives include:

- Promoting design practices in the workplace
- All seed and ignite funding applicants attend Design Thinking and Innovation workshops
- Matching designers with Seed and Ignite projects to maximise impact
- Designer in Residence, in collaboration with St James University Hospital
- Design Challenges / Design Weeks

# 4.1 Design Outputs

## Totals



**5**

Design Thinking Workshops hosted in 2020



**1**

In Person Workshop



**4**

Online Workshops During the Pandemic

## Breakdown



**287**

Total number of applications



**174**

Participated in workshops



**109**

Nurses and Midwives attended design workshops

## Totals



**2**

Hospital Design Challenges Supported



**1**

National Covid Call



**5**

MakerLabs co-designed with the HSE National Library

# 4.2 Design Challenges

## Designer in Residence St James' Hospital

This project aims to prove the value of embedded clinical innovation and to form a basis for establishing a medium to long-term Design Innovation Service at SJH in collaboration with the Spark Programme. In the shorter term, the intention would be to recruit additional technical skills to this service to allow more projects of higher complexity to be pursued.

Ultimately, we can foresee a marketplace where ideas that have arisen at the clinical coalface and have been nurtured and protected to maximise return for patients and taxpayers can be licensed out to interested manufacturers and distributors.

## Design Challenges

- Annually in MMUH and SJH
- Healthcare staff provide problems in their service for design experts to solve collaboratively over a focused week of design
- Amazing solutions developed rapidly
- Interdisciplinary collaboration healthcare, designers and engineers
- Broaden competencies and knowledge in other domains

## Design Week Mater Hospital - NCAD

Running since 2016, Masters level design students from National College of Art and Design and Mater staff participate together in an intensive design sprint.

Challenges are set by staff through an open call, and following four days of intensive research, ideation and prototyping and testing in a temporary design lab onsite at the Mater, students present their solutions at the very popular 'Design Showcase' event.

The design students come from a variety of design backgrounds, including the MSc Medical Devices group and Masters in Interaction Design and Service Design. Matched with the subject matter expertise of the hospital staff, their different skillset and perspective provides a fresh look at old problems and generates exciting and creative solutions.

In 2019, Spark Innovation came on board as project sponsor, providing a €3000 seed fund to the winning team, a much-needed injection of cash to help high potential projects get off the ground.



# MakerLab is a new space to experiment with ideas, share ideas and connect ideas.

Introducing MakerLab, a new space for healthcare workers to think about and tackle challenges, invent new ways of doing things and new things to do them with. MakerLab is a space to transform knowledge and insight into action.



## Built on insight & experience

MakerLab is designed in collaboration with expert medical device inventors & healthcare innovators.



## Out of the head, into the world

MakerLab is a dedicated space offering tools, materials, support and permission to experiment and bring ideas to life.



## A magnet for innovators

MakerLab signals the importance of experimentation and innovation within the hospital system.



## Support at every step

MakerLab is supported by expert training workshops, inspiring case studies, mentorship and funding.



## 4.3 SPARK Design - Maker Lab Pilot

MakerLab is a mobile workstation, co-funded by the ONMSD, designed to give staff the tools, materials and permission to build early-stage prototypes and experiments.

Residing in the Hospital Library, but designed to fit in the work environment, each MakerLab will be accompanied by training workshops and inspiring healthcare innovation case studies, and includes a display space for exhibitions, information, case studies, innovation frameworks etc.

MakerLabs come fully stocked with the following:

- hand tools
- tapes, adhesives, clips and fasteners
- sheet materials commonly used in early-stage medical equipment.
- miscellaneous materials and 'doohickies' ideal for typical innovation prototypes.
- pipes, rods and tubes
- innovation workshop templates and supplies (Sticky notes, pens, markers, Bluetack, sketchbooks etc.
- clamping vice, whiteboard, tool hangers

An initial pilot will see MakerLab installed in 5 hospital libraries across Ireland:

- **Cork University Hospital**
- **Connolly Hospital**
- **Galway Merlin Park**
- **Tullamore Regional Hospital**
- **Our Lady of Lourdes Hospital, Drogheda**

*"Research studies show that nurses do 27 workarounds per shift or in 36 different places over the course of an hour that means nurses are innovating in highly inefficient healthcare environment. 27 times a shift, they're macgyvering medical devices and products on the hospital floor to better serve the needs of their patients"*

Rebecca Love  
Principal Clinical Innovation, OptimizeRX





# Impact and Looking Forward

# 5.1 Evaluating Impact – What you can't put a number on

## Empowering frontline staff

- The power of being told your idea is really good
- Feeling your insight, experience and creativity can make a difference
- Being given the tools to advance your solution

## A better healthcare system

- Improved services
- Better use of resources
- Patients feel listened to

## A culture of innovation

- Problems are resolved quickly at little cost.
- Collaborative working becomes the norm, and promotes mutual inter-professional trust, respect, and collaboration.



## 5.2 At Spark, in 2021 we're looking forward.

- We're collaborating with OMNSD and NHSCPO to expand the Spark Team, potentially with new Innovation Fellows from Nursing and Midwifery and the Health and Social Care Professions.
- We're looking forward to tracking the progress of Seed and Ignite projects from years past as they scale up, rollout, commercialise, and transfer to different healthcare and public service settings.
- Every time we run an initiative; the number of applicants grows. We're looking forward to expanding our programme to accommodate the increase in engagement from our colleagues in Nursing, Midwifery, and the Health and Social Care Professions, which means even more cross-disciplinary collaboration, and more exciting projects.
- We're looking forward to piloting Makerlabs across five hospitals, because we're excited to see how these mobile workstations transform the possibilities for fast-track frontline innovation, and because our strategic partnership with the National Health Library Service dates back to the earliest days of Spark.
- We're looking forward to seeing what arises from the first Designer in Residence collaboration with St James University Hospital, which cements our mutual commitment to bringing excellence and efficacy through to design right to the frontline of healthcare.
- We're looking forward to working with a Health Economist who will help us evaluate the true value of some of our most successful projects.
- We're looking forward to putting together our next Spark Summit, the first of which in 2019 won a commendation for Best Conference at the Irish Healthcare Awards. When we can welcome passionate healthcare innovators back together to share their stories of creativity, invention, success, and learning, we will know the pandemic is behind us.



End