

Rose Cafferkey



Marie Ronan

About Health Innovation Hub Ireland

Health services in Ireland and across the world are increasingly seeking innovations in health-related technology, products and services to drive improvements in the quality, access and value of healthcare delivery.

HHI works with those with ideas that address unmet healthcare needs to develop new products and processes within the healthcare system and stimulate a pipeline of new needs-driven innovations for the future.

Health Innovation Hub Ireland (HHI) brings enterprises and healthcare professionals together to **test, validate** and **help commercialise** innovative technologies, products and services, while enabling greater innovation in healthcare delivery.



HHI supports the building of an **innovation culture** within the **health service** through a suite of knowledge building resources and guidance for healthcare professionals on the key steps from ideation to adoption.

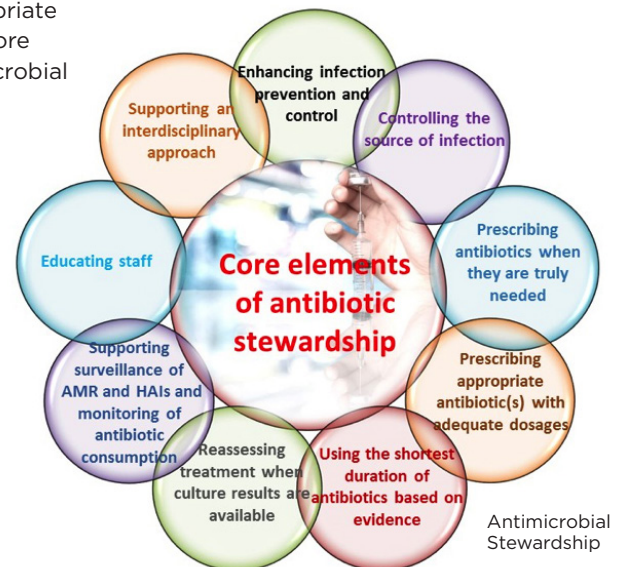
The Healthcare Challenge

Antimicrobial resistance is a worldwide problem, and is growing year on year. By 2050 multidrug-resistant bugs will kill more people than cancer and diabetes combined. Overuse and inappropriate use of antimicrobials results in increased emergence of multidrug-resistant bugs that are difficult to treat.

Marie and Rose emphasised a lack of a designated national programme or data collection system for a co-ordinated measurement of KPIs for Antimicrobial Stewardship in Acute Hospitals in Ireland. A coherent and co-ordinated method of measurement and oversight to manage effective antimicrobial use is required to reduce misuse of antimicrobials and reduce the risk of the development of antimicrobial resistance.

Antimicrobial Stewardship is a set of coordinated measures designed to improve and measure the appropriate use of antimicrobials, and therefore reduce the emergence of antimicrobial resistance.

Measuring the quality of antimicrobial prescribing through KPIs across all sectors of acute hospital care is a recommendation of the HSE's Quality Improvement Team. Ireland's National Action Plan (iNAP) on Antimicrobial Resistance promotes active surveillance feedback mechanisms to inform performance and activities and promote improvement in antimicrobial use.



About the Innovators

Rose Cafferkey and **Marie Ronan** won the HHI Spark Ignite National Final 2020. They designed a SMART Tool capable of the Surveillance, Monitoring and Audit of antimicrobials in Real Time whilst simultaneously measuring Key Performance Indicators (KPIs) for Antimicrobial Stewardship.

Rose is a Senior Clinical Pharmacist currently working as an Antimicrobial Stewardship Pharmacist in Mayo University Hospital (MUH). She has 15 years' experience working in the acute hospital sector. She covered the role of Oncology Pharmacist and Clinical Pharmacy Support services.

Marie is a Senior Clinical Pharmacist currently working as an Antimicrobial Stewardship Pharmacist in Mayo University Hospital (MUH). She has 12 years' experience working in the acute hospital sector, previously having worked in Tallaght University Hospital.

The Solution

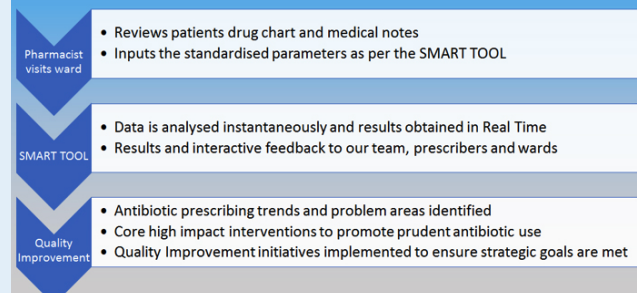
SMART TOOL, the data collection tool developed by Rose and Marie, allows for concise collection and reporting of all the National Recommended KPIs.

A SMART TOOL pilot study in Mayo University Hospital demonstrated a €100,000 decrease in spend on antibiotics over a two-year period, a 93% decrease in the use of the most broad-spectrum class of antibiotics, a 45% decrease in the use of IV antibiotics, a reduction in patient hospital stay

from 4.14 days (2017) to 3.76 (2019), and adhered to WHO, iNAP, and HIQA recommendations for real time audit and feedback systems.

Antimicrobial Resistance affects us all and has the potential to have a devastating impact on all our lives. SMART TOOL, a real time auditing platform, through monitoring and surveillance of antibiotics will have a significant impact on the fight against antimicrobial resistance.

SMART TOOL - Methodology



About HIHI Spark Ignite

The Health Innovation Hub collaborated with the Office of Nursing and Midwifery Service Development, National Doctors Training and Planning, and the Galway Local Enterprise Office to deliver the only bottom up, staff facing, innovation competition open to all HSE staff. The programme received over 150 applications from all disciplines and grades across the HSE. Thirty-six applications were selected to attend an innovation workshop to develop their idea by building a business proposition and preparing a pitch. The workshop participants pitched their ideas to a panel of experienced judges to win prize funding to develop their idea towards reality.

Outcome Report/Next Steps

Rose and Marie intend to develop a user friendly cross platform application for pilot in other hospitals. Initial discussions with app developers to scope out the development of a prototype are required. One major advantage of using an app provider is the availability of benchmarking which means if multiple hospitals use the app it will be possible to compare quality of prescribing across multiple sites. It will allow for sharing of quality improvement initiatives that work and have proven beneficial outcomes for patients, reduction in antibiotic resistance rates, and reduction in hospital acquired infection rates and financial savings for each hospital. Discussions will also take place with key stakeholders including Antimicrobial Resistance and Infection Control (AMRIC) to discuss application of this innovation in the community and long-term healthcare facilities to evaluate the quality of the prescribing in these settings.

Role of HIHI

Rose and Marie applied to the HIHI Spark Ignite Programme with their idea to address a serious and underserved clinical need for the growing threat of antimicrobial resistance and rise of super bugs.

Rose and Marie won the Team category in a regional final and were the overall national winners with their innovative solution. Through HIHI Spark Ignite, Rose and Marie developed a prize winning presentation displaying the need for a solution in this space from a patient,

clinical, and commercial perspective. The evidence from their pilot study showed increased patient benefits as well as cost savings to the hospital.

Rose and Marie's award winning presentation highlighted the need for a solution in the space of antimicrobial resistance and antimicrobial stewardship. They identified the financial and clinical benefits, demonstrated increases in efficiencies, and highlighted the scalability of their solution to other hospitals and beyond.

Testimonial

Rose and I are delighted and proud to win this prestigious award for the Antimicrobial Stewardship Team and Pharmacy Department at Mayo University Hospital. Being shortlisted for the HIHI Spark Ignite Award was an honour especially with the high calibre of entrants.

The training workshops provided by Health Innovation Hub Ireland were an excellent learning experience and will benefit us long into our careers. Spark Ignite has given us the confidence and the know how to bring all the elements of our project together and present them in a clear meaningful way. We would strongly encourage anyone with an innovative idea to enter this competition. We are forever grateful to the team at Spark Ignite, for their dedication their drive and their patience.

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