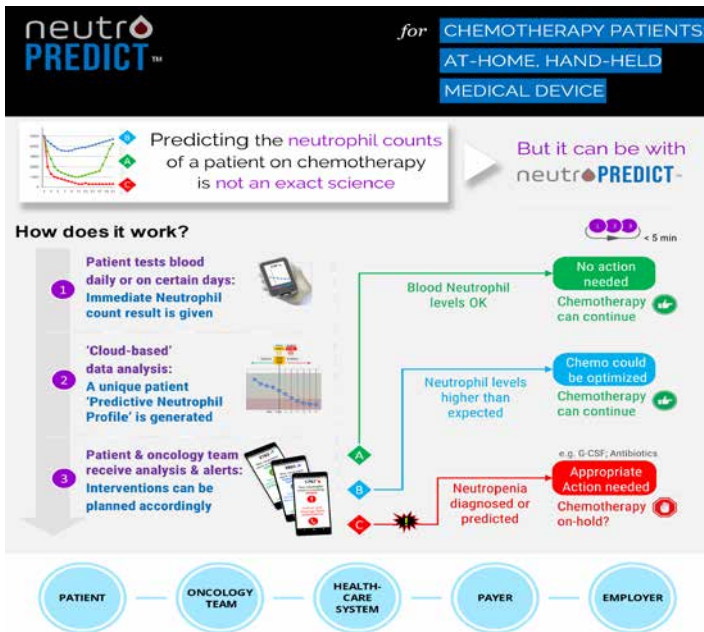


Neutro-Predict Team Develop New Device



neutrophil nadir and prevention of systemic infection will improve the outcome of cancer treatment.

The Neutro-Predict® team at NUI Galway led by Dr Ananya Gupta has developed a hand-held near patient device that can measure neutrophil counts accurately. Patients can use this device from the comfort of their home to monitor their blood cell counts following receiving chemotherapy. The Neutro-predict device can accurately quantify neutrophil populations in a small droplet of blood. Such a device will enable the patients to monitor their own blood counts and allow early detection of neutropenia. Timely detection of neutrophil loss and appropriate intervention will enable rapid and timely management of CIN and FN. Thus, Neutro-Predict will enable rapid and timely management of CIN and FN. It provides peace of mind and assurance to patients whose neutrophil counts do not fall below a critical level during chemotherapy. Timely detection and delivery of appropriate intervention will lead to prevention of sepsis, prolonged hospital stays, dose reduction and delay in receiving chemotherapy. This will in-turn improve the treatment outcome. Neutro-Predict thus aims to improve patient safety and quality of life, allowing for optimum use of antibiotics and GMCSF thus improving cancer treatment outcome.

This at home monitoring system will empower patients with the



Dr Ananya Gupta, Director of Exercise Physiology, NUI Galway

Neutropenia is a condition of having abnormally low level of neutrophils, a type of white blood cell, required to fight infections, particularly those caused by bacteria.^{1,5} Patients having <1,500 neutrophils per microliter of blood are considered to be Neutropenic.⁵ Chemotherapy-induced neutropenia (CIN) occurs in cancer patients as an adverse side effect of treatment.¹⁻³ The immune system of these patients become greatly impaired making them susceptible to infections, a condition known as Febrile Neutropenia (FN) associated with high body temperature.

FN is considered an oncologic emergency,¹⁻³ with 60,000 cancer patients in the US hospitalized each year and a mortality rate of 21%.

The current system of management of febrile neutropenia involves administration of prophylactic antimicrobials and hematopoietic growth factor supplements (granulocyte colony stimulating factor G-CSF). However, neutropenia is detected in these patients only after the onset of infection limiting the efficacy of these therapeutic interventions. Timely detection of

option to monitor their blood counts from the comfort of their home without having to take repeated trips to the GP or hospital. It also equips healthcare professionals with the insights to make more informed and personalised clinical decisions about their patients undergoing chemotherapy. This innovative device will also help to identify patients who are at a greater risk of developing neutropenic sepsis during their chemotherapy treatment.

The Neutro-predict prototype device has been successfully evaluated in the laboratory in 400 patient samples and has shown great potential as it can predict the neutrophil count with a sensitivity of 100% and a specificity of 98.6% as compared to the hospital gold standard blood cell counter. The prototype device will be ready for testing amongst patients in the new year at the University Hospital Galway in collaboration with the Advanced Therapies and Cancer clinical research group, HRB Clinical Research Facility, Galway.

The Neutro-Predict Device brings the following benefits:



For Patients

- Reduces risk of mortality
- Reduces hospitalisation
- Prevents dose reduction and delay in treatment
- Provides timely delivery of needed interventions
- Improves cancer treatment outcome
- Provides peace of mind



For Nurses

- Aid triaging decisions
- Reduce case-load in emergency rooms
- Reduce patient mortality



For Oncologists

- Monitor patient responses
- Identify patients at risk of infection
- Treat with antibiotics and GMCSF as needed
- Optimize chemotherapy dose and time



For Healthcare System

- Free-up emergency room and acute resources
- Reduce costs
- Improve patient outcomes
- Reduce antibiotic resistance

Neutro-predict is a fast, reliable, easy-to-use and low-cost device to monitor patients' blood counts at home following chemotherapy, thus improving patient safety and quality of life, optimising chemotherapy treatment and timely delivery of antibiotic and GMCSF to protect patients from infection, and empowering doctors to treat their patients more efficiently.

If you would like to learn more about Neutro-predict please visit: <https://www.nuigalway.ie/Neutro-predict/>

References available on request