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Singapore-UK team to develop a novel device to reduce Chemotherapy side effects

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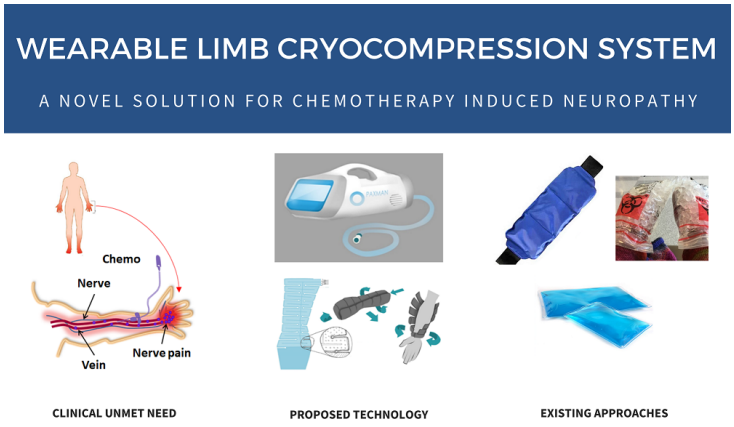
Highly-efficient and miniaturised cooling-compression technology aims to prevent/reduce pain and sensitivity in hands and feet due to chemotherapy



A team of clinicians and scientists from the National University Cancer Institute, Singapore (NCIS) at the National University Hospital (NUH) and the N.1 Institute for Health at the National University of Singapore (NUS) has partnered Paxman Coolers Ltd (UK) (Paxman) to develop a device that may prevent or reduce numbness and pain caused by certain types of anti-cancer therapy.

Chemotherapy-induced peripheral neuropathy (CIPN) is a severe side-effect of chemotherapy drugs called taxanes, which are used to treat common cancers such as breast, lung, ovarian and stomach cancer. CIPN affects about 1.4 million cancer patients globally every year. CIPN causes progressive and often irreversible pain or sensitivity in the hands and feet of patients undergoing chemotherapy leading to delays and discontinuation of treatment.

Few to no prevention and treatment strategies exist for CIPN. Recently, cryotherapy (or cooling) of the limbs during chemotherapy has demonstrated a protective effect by preventing/reducing CIPN severity. However, the currently used frozen gloves or ice packs are not user-friendly. The clinician team is developing a medical device that can deliver stable cooling, tolerability over the entire duration of the chemotherapy.

A novel solution for CIPN

In collaboration with Paxman, the Singapore NUHS research team from the Department of Haematology-Oncology at NCIS and NUH, and the N.1 Institute for Health at NUS are developing a portable limb cryocompression device specifically targeting prevention of CIPN in cancer patients. The team expertise in cryocompression technology over the past eight years and is previously supported by the National Health Innovation Centre Singapore (NHIC). Working together as a team since 2019, Paxman, global leaders in scalp cooling for prevention of chemo-induced hair loss, was identified as the ideal commercialisation partner for the project.

“Paxman is determined, not only to provide patient access to scalp cooling technology to prevent chemotherapy-induced hair loss globally, but now also to give patients the chance to reduce or prevent the debilitating side effect of peripheral

neuropathy. We bring to this collaboration extensive expertise in design, development, manufacture, regulatory approval, along with experience of commercializing medical cooling devices. The company is perfectly placed to roll out this technology to its existing and growing customer base throughout the world” commented Mr Richard Paxman, CEO of Paxman.