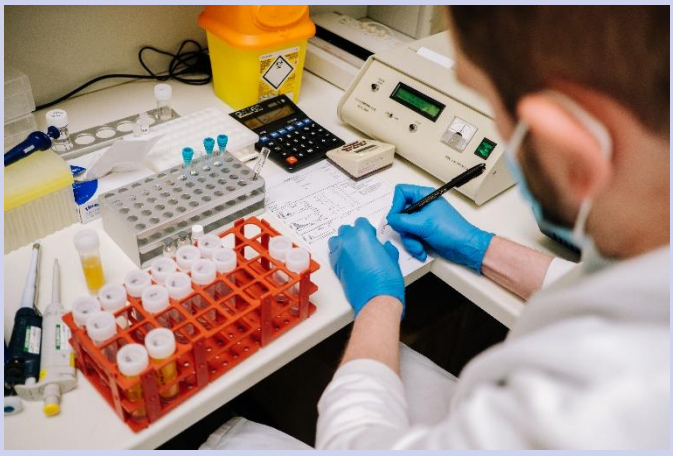
Bevan Commission support for Innovation in Cryoprecipitate

Towards the end of last year, research scientist Michael Cahillane was selected to take part in the Bevan Commission's Innovation Intensive Learning Week 2023, held at the Towers Hotel in Swansea.

The week was made up of lectures and group work where Michael had the opportunity to discuss his project with people from all over the health and care system in Wales, with support and advice from Bevan Commission exemplars and other experienced experts.

"It was a very intense experience, stepping out of my day-to-day work and focussing on my idea around reducing waste in the blood component manufacturing process.

"I have a better understanding now of what innovation involves and taking what I learned over the week, I have streamlined my project and am very excited to see where it takes me." Michael Cahillane



The Innovation Project
Michael's project is looking at a plasma component called pooled cryoprecipitate. Cryoprecipitate is rich in clotting factors and is transfused into patients to speed up clotting mechanisms during bleeding.

Fifty per cent of deaths in the first 24 hours after significant trauma are due to massive bleeding, so rapid clotting to control bleeding can be lifesaving in many cases.

Manufacturing pooled cryoprecipitate is time consuming and Michael has identified a part of the process where waste is essentially built-in to try and best manage the time.

In the manufacturing process, plasma components are rapidly frozen and stored below -25°C. Cryoprecipitate is then formed within the plasma through controlled, slow thawing of the plasma units. The precipitate is separated from the residual plasma to create a cryoprecipitate single unit. Five cryoprecipitate singles of the same ABO blood type are amalgamated to form one unit of pooled cryoprecipitate for clinical use.

To ensure enough suitable cryoprecipitate is available for one clinical dose, six ABO-matched plasma units are thawed, with the additional unit considered a contingency in case one plasma unit is unusable. If five of the plasma units are successfully thawed and able to be used, the sixth contingency cryoprecipitate single is discarded.

Michael is going to test whether we can refreeze these clinically suitable cryoprecipitate singles instead of discarding them, and then thaw and pool them through a supplementary manufacturing procedure when sufficient ABO-matched singles are available.

The Outcomes

Innovation in cryoprecipitate production can enhance its yield and stability, maximising its impact on patient care in clinical settings, saving lives and enhancing quality of life.

This new procedure and any units manufactured from it will need to be rigorously tested, with quality assurance key to ensuring component integrity fulfils the relevant UK component specification guidelines. If project results demonstrate the process produces clinically viable components, the next step will be to incorporate the procedure into current operations as routine manufacturing process.

“The blood service is always trying to increase the number of donors to ensure we have the blood supplies needed to meet demand. My project aims to see if we can do more with what we have, using our donors’ valuable contributions as efficiently as possible.”

“The affected departments are very supportive of this project, which if successful, could result in a positive addition to their current processes and help to bolster component stocks whilst reducing unnecessary wastage.”

“I am committed to getting other scientists and staff across both Manufacturing, the Quality Assurance Laboratory and my own Component Development and Research laboratory involved in the project, so we all build on our current skills and experience and continue to deliver continual, innovative improvements for the organisation.”

Michael Cahillane