



**Cambridge
University Hospitals**
NHS Foundation Trust

CLINICAL ENGINEERING INNOVATION



Engineering better patient care

Supporting MedTech SMEs

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CLINICAL ENGINEERING INNOVATION



WHO ARE WE?

Medical Physics and Clinical Engineering



Medical Physics and Clinical Engineering



Addenbrooke's Hospital

MPCE Directorate

Medical Physics

Clinical
Engineering

Radiotherapy

MRI

Radiation
Protection

Technical
Services

CEI

CEI: Engineering solutions to unmet clinical needs

**CLINICAL ENGINEERING
INNOVATION**

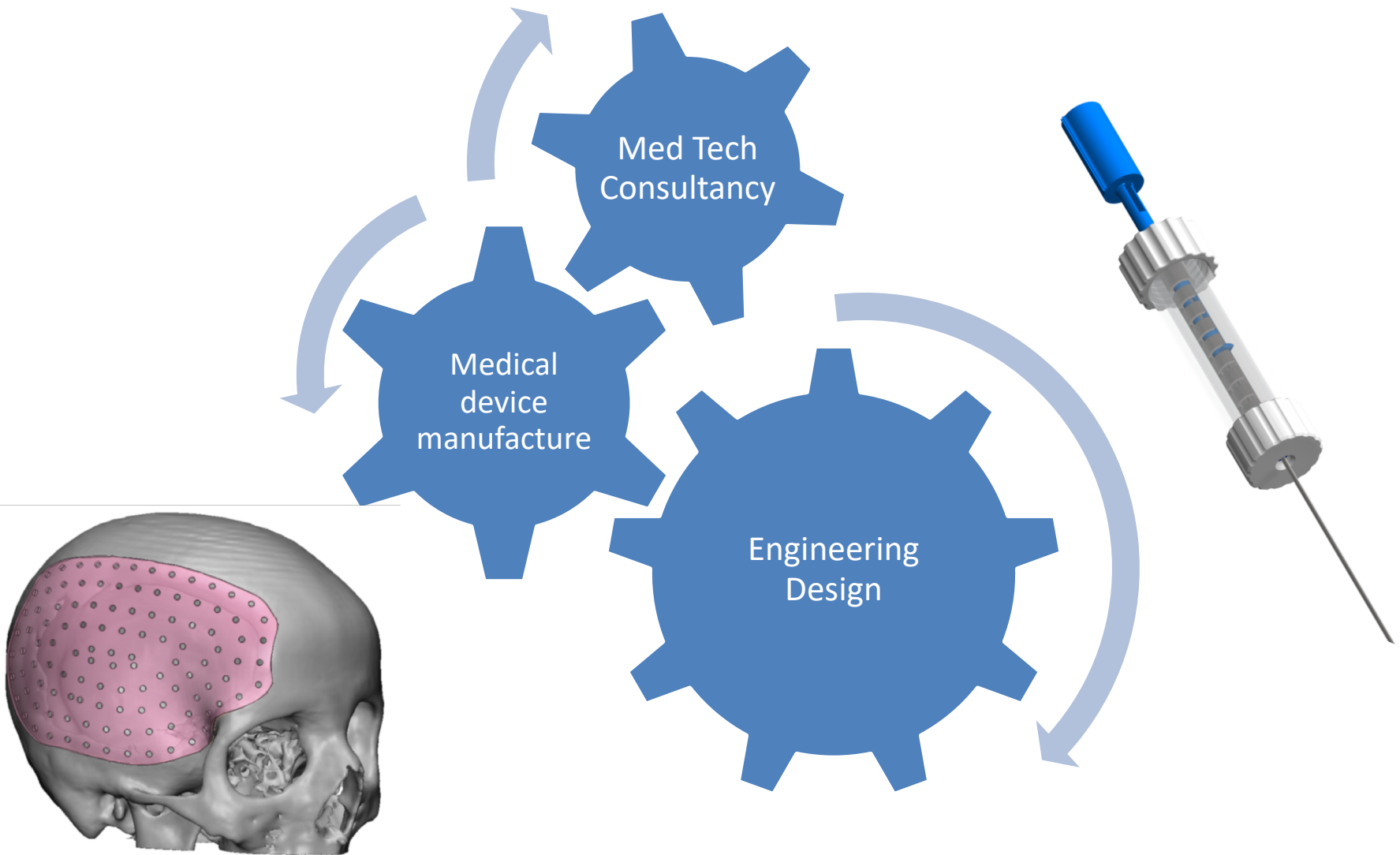


NHS

**Cambridge
University Hospitals**
NHS Foundation Trust



Supporting clinical service and research

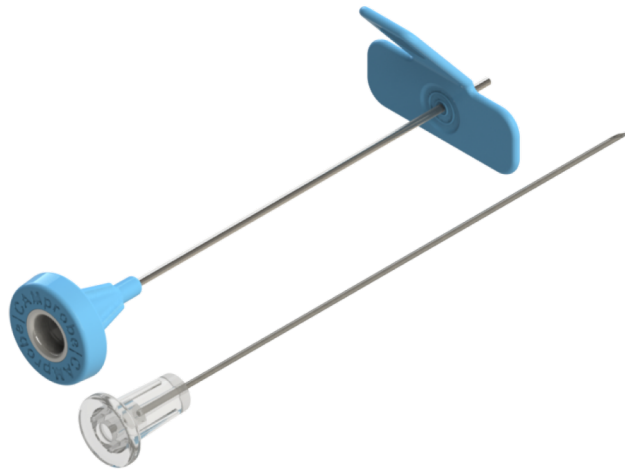


COLLABORATIONS

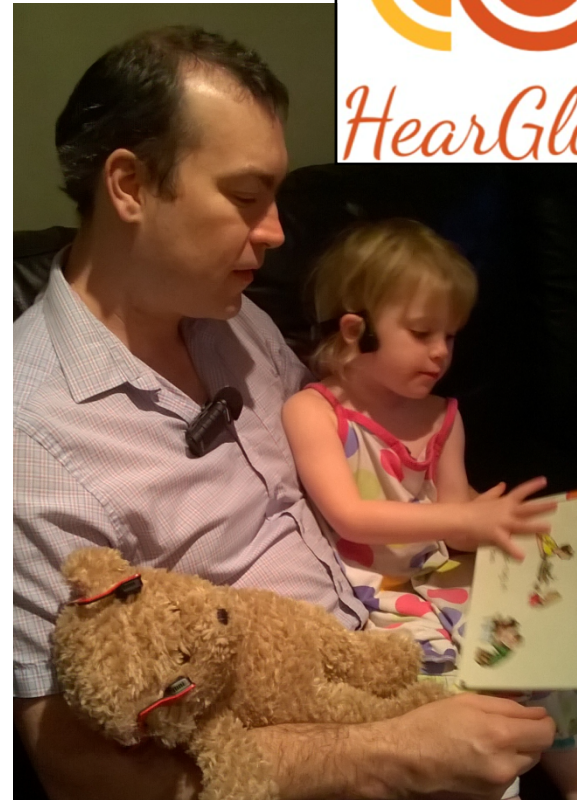
Collaborations

Safer prostate biopsies

CamPROBE



Helping kids with glue ear to hear



CONSULTANCY SERVICE

To assist industrial partners to develop and deliver gold standard medical products back into our NHS services.

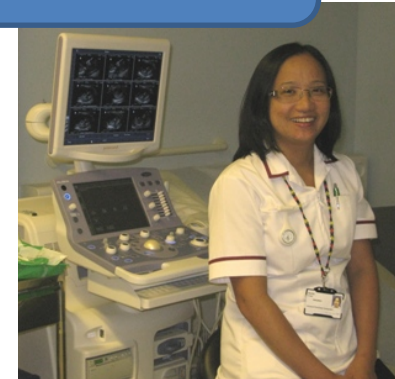
Consultancy service

Facilities




Expert advice

Staff



Thanks for listening

CLINICAL ENGINEERING
INNOVATION 

cei@addenbrookes.nhs.uk

Assistive switch for PCA



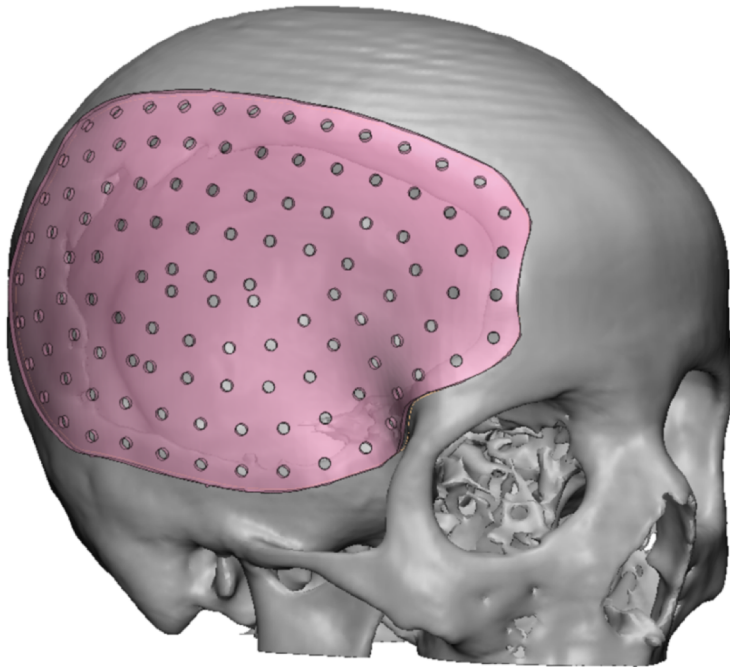
Patient-controlled analgesia (PCA) is the gold standard for pain relief on wards, but 20% of patients can't physically press the switch button.

We mapped the network of stakeholders and developed a solution using rapid prototyping to test and iterate our concepts.

We manufactured 3 switches and they are managed by the Medical Equipment Library, where they are loaned to wards as and when they need them.



Customised cranial plates



Cranial plate implants are used to cover a hole in the skull following brain injury. Traditionally, they either require a great deal of customisation by the surgeon in theatre, or are fabricated at very high cost by a manufacturer.

Now, using state-of-the-art 3D computer modelling, custom plates are designed directly from patients CT scans within the Trust, and then 3D printed in titanium.

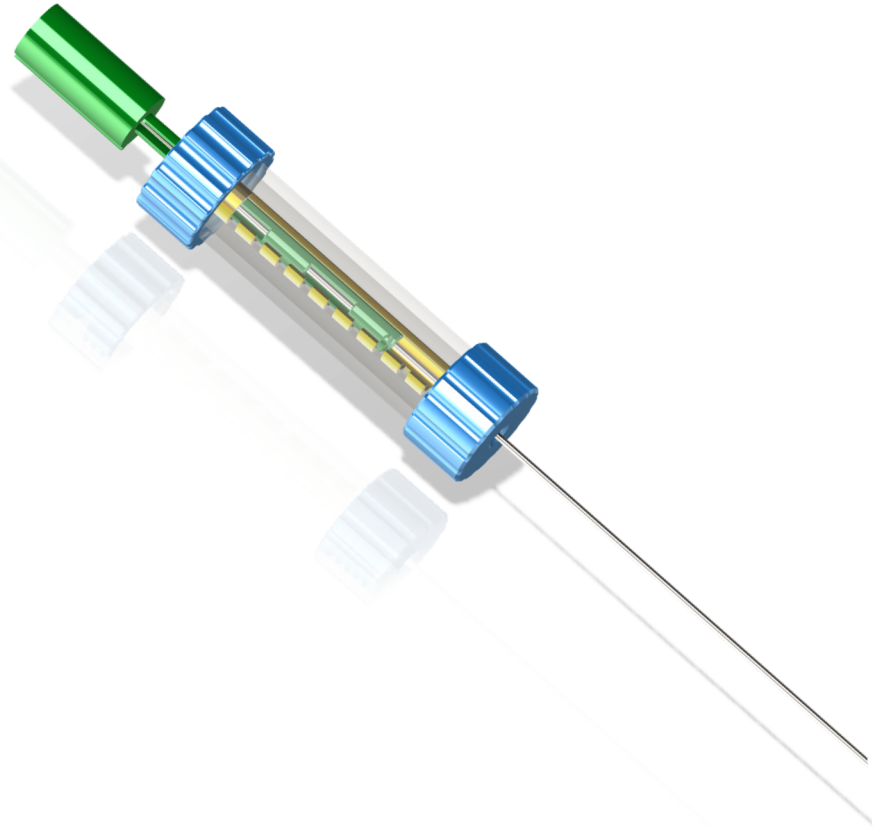
The new plates are faster and more accurate, are easier to implant and save the Trust money.

Stem cell injector

A specialist syringe was required to implant very small volumes of precious stem cells into the brain to help treat Parkinson's disease. The only commercial solution was too expensive and complex, with inadequate materials traceability.

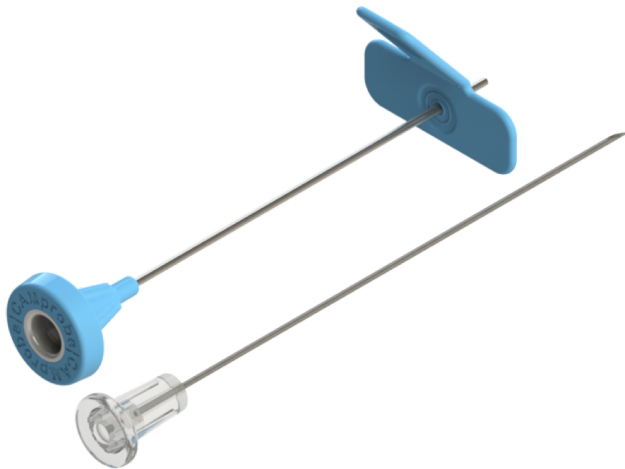
We designed a simpler, lower cost device for single use. We rapidly translated the clinical need into a working concept, safely developed and tested.

Our solution enabled internationally renowned scientists to undertake ground breaking research in-house.



Camprobe prostate biopsy tool

CamPROBE



A urologist in the Trust invented a tool for taking prostate biopsies via the skin of the perineum rather than the rectum – this vastly reduces the rate of post-procedure infection.

Clinical Engineering designed and manufactured prototypes for a research trial, which was a great success.

Now we're working on an NIHR i4i-funded project along with the inventor, manufacturers and the Clinical Trials Unit to develop the device into a CE marked single use disposable product with an estimated market of £50 million.

Glue ear headset

If glue ear means a young child is unable to hear properly, it can affect speech and language development as well as everyday life. But diagnosing it takes many months.

A clinician had an idea to use consumer bone conduction headphones to improve patients' hearing during the 'watchful waiting' period. We assessed the device, designed the required modifications and assembled the documentation required for a CE marked medical device.

A product is now ready for in-house use and on its way to being commercialised by an industry partner

