MTFCAMBRIDGE.

INNOVATION 24 PROGRAMME 25

Educate. Inspire. Connect.

Sponsorship

team

Team Consulting is an award winning medical device design and development consultancy based in Cambridge, UK. Their expertise and experience includes diagnostics, drug delivery, medical devices and surgical instruments, amongst others. Team Consulting is working at all stages of medical device development, from early concept through to commercial launch. Their deep industry knowledge for a highly regulated sector is valued by new start-ups and big pharmaceutical companies alike.

Partnerships

NIHR | Cambridge Biomedical Research Centre

UNIVERSITY OF CAMBRIDGE Judge Business School

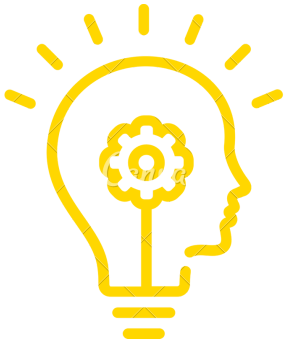
42T.

CAMBRIDGE | Enterprise

UNIVERSITY OF CAMBRIDGE Office for Translational Research

SOLICI | Cambridge Healthcare Research. | vox.bio

Contents



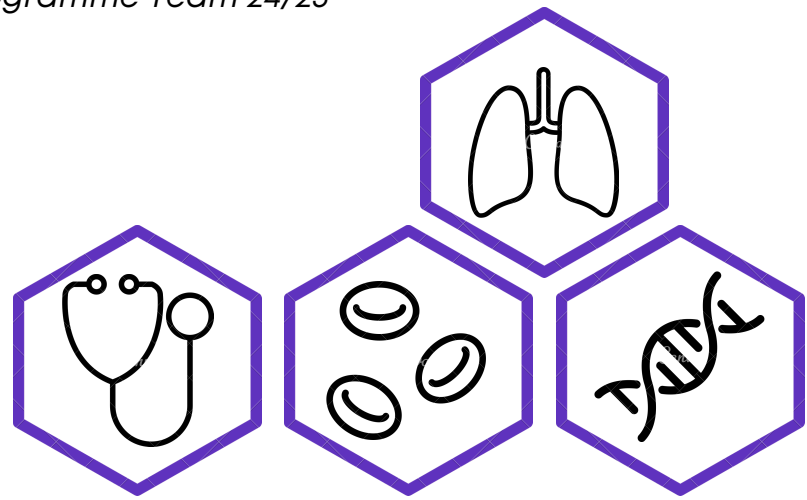
Foreword

Welcome to the Innovation Programme 2024/25!
We are delighted to have you on the programme this year. It is fantastic to connect so many bright and motivated students, who all share the common goal of driving innovation in healthcare!

In this booklet you can find all the important information about the programme. The programme is a fantastic opportunity to get involved in MedTech, connect with like-minded students and build a network within the local Cambridge and national MedTech space.

We're looking forward to the next few weeks and we're very happy to have you on the Innovation Programme this year!

With very best wishes,
Clara, Victoria, Alisha
Innovation Programme Team 24/25



About MTF

The **MedTech Foundation** is a national engagement initiative for university students, early career researchers and clinicians. It is a student-led affiliation of the Surgical MedTech Co-operative, an NIHR-funded research group at the University of Leeds, and its objective is to encourage innovation and interdisciplinary collaboration amongst students and trainees around the UK. Spokes exist across the country, including here in Cambridge.

Each year, we deliver an educational **Innovation Programme**, organise several research and industry **internships**, and host a series of **MedX events**, inviting thought leaders from the MedTech space to present on what is happening at the frontiers of the field.

MEDTECHFOUNDATION.

- Leeds
- Cambridge
- Birmingham
- Edinburgh
- Warwick
- Leicester
- Manchester
- HYMS
- Bristol
- Tayside
- Liverpool
- Nottingham

MedTech Foundation

@medtechf

linkedin.com/company/medtechfoundation/

medtechfoundation.org

Cambridge MTF

The **Cambridge MedTech Foundation** was set up as a student society at the University of Cambridge in 2018 by two medical students, Max Stewart and Angela Lam.

We are an interdisciplinary group of students, trainees and academics. Our aim is to **educate, inspire and connect** the next generation of healthcare innovators.

We organise our annual educational flagship programme, the Innovation Programme, as well as MedX talks with MedTech leaders in Cambridge.

We are also connecting students and professional who are interested or working in the Cambridge MedTech space.

Cambridge MedTech Foundation

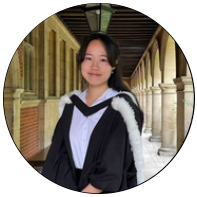
@cambridgemedtech

linkedin.com/company/cambridge-mtf/

cam.medtechfoundation.org/

MTFCAMBRIDGE.

The IP Team



Clara
IP Lead 24-25

Clara is a 5th year Clinical Medical Student at Sidney Sussex College. She has a particular interest in neuroscience, having conducted research internships at Karolinska Institute and University of Tokyo. Clara has been selected to take part in the Accelerate Incubator at the Judge Business School, offering individualised entrepreneurship training and mentorship. Clara is interested in continuing to explore how the application of novel technologies can transform patient care, and sees MedTech as an avenue for developing innovative solutions to improve clinical outcomes and reduce healthcare inequalities.

Alisha
IP Officer 24-25

Alisha is a second-year medical student at Emmanuel College, University of Cambridge. She has an avid interest in medical technology, having won a national essay competition for her essay on the role of AI in medicine, which was published in a renowned magazine. Her particular interests include neuroimaging, having done research into OPM-MEG, and she enjoys utilising her physics knowledge and programming skills. As a clinical coder, she is eager to further her contributions towards medical innovation and device development.

Victoria
IP Officer
24- 25

Victoria is currently finishing her PhD in Education at the University of Cambridge. Her research is on International Chinese Students' Identity, Representation, and Experience post COVID in the U.S. Other than her academic research she is also interested in Assistive Technology for Aging Population particularly those who suffers from memory loss.

Programme Overview

MTFCAMBRIDGE.

INNOVATION 24 PROGRAMME 25

The **Innovation Programme** (IP) is a 14-week educational programme providing both an introduction to the landscape of medical device development and experience of interdisciplinary teamwork.

Small teams of students, early career researchers & clinicians work to **solve real-life clinical problems** identified by our clinical partners. This is supported by **interactive workshops and small-group mentoring** covering approaches to clinical problems, concept generation, effective teamwork, business model development, and pitching.

The programme reaches its conclusion with teams pitching their ideas to a panel of judges from academia, industry, and clinical practice at our **final pitch event** on Friday 20th March 2025.

This event is a fantastic opportunity to celebrate you work, and network with everyone who is involved in the programme.

Programme Overview

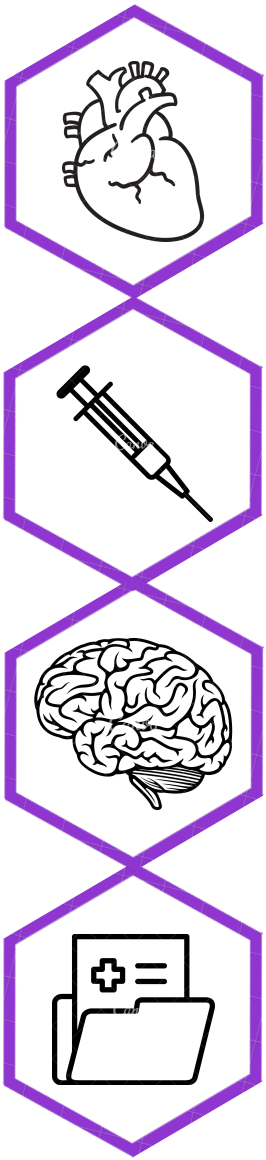
Participant testimonials

"The Innovation Programme introduced me to what it takes to be an entrepreneur in the MedTech sector."
- 2nd year PhD in Biophysical Chemistry Student

"An eye opening experience highlighting how medicine and innovation can be brought together to help patients in a completely different way."
- 4th year MB/PhD Student

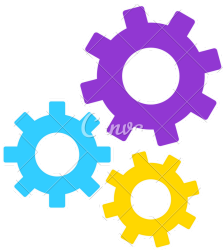
"The Innovation Programme provided me with a unique insight into the entrepreneurial side of medicine and gave me the rare opportunity to collaborate with students from vastly different disciplines, while also giving me the skills and confidence to innovate in my future career."
- 3rd year Medicine and Neuroscience Student

"A valuable educational experience for anyone interested in medical innovation."
- 3rd year Medical Student



Term card

4th Nov 2024	Applications Open
15th Nov 2024	Applications Close
17th Nov 2024	Results Released
6-8pm 21 Nov 2024	Workshop 1: Opening + Clinical Problems
6-8pm 5th Dec 2024	Workshop 2: Concept Generation Clinical Mentoring Technical + Business Mentoring
6-8pm 6th Feb 2025	Workshop 3: Business Model Canvas Clinical Mentoring
6-8pm 20th Feb 2025	Workshop 4: From Concept to Product Technical + Business Mentoring
6-8pm 6th Mar 2025	Workshop 5: How to Pitch Committee Check-In
6-9pm 20th Mar 2025	Final Pitch Event Practice Pitches



Student Biographies 24/25

Name: **Aarushi Malik**
Aarushi is a third year Medical student studying at St John's College and intercalating in Genetics. She has previously done research involving cancer immunity, and is interested in maximising her impact for good and runs a charity society in university. She is passonate to try and use her medical knowledge for wide ranging applications.

Name**: Alexander Bulloso**
Alex is a first year Medicine student at Lucy Cavendish College. He has an interest in the applications of MedTech and AI to public health. He has been teaching himself data science using python.

Name: **Ameer Morshed**
Ameer is a third year medical student at Gonville and Caius College. He has interest in medical and drug development, managing consulting projects requiring market scoping in psychedelic medicines but also been part of academic projects within cardiology. Ameer believes in taking an application based approach into medical development and wishes to be a part of such projects in the future.

Name: **Andre Wendlinger**
Andre is a first year PhD student at Gonville and Caius College, in the Department of Radiology. His research supported by NVision Imaging Technologies, focuses on the integration of their new device into preclinical MRI workflows with a view to advancing its clinical applications. With a strong background in physics and MRI technology, Andre previously completed a Master's thesis at the Technical University of Munich and gained practical experience as an MRI radiographer.

Student Biographies 24/25

Name: **Ayan Jameel**
Hello, I am Ayan, I am a third-year medical student at Caius studying PDN this year. I also run the social media pages for the Caius MedSoc. I play badminton in my free time.

Name: **Ayomide Lambe**
Ayomide is a fourth-year medical student at Magdalene College. He has extensive experience in researching cellular Ca2+ handling, project-oriented leadership and healthcare policy. Ayomide is enthusiastic about using AI and MedTech innovations to improve early diagnosis, enhance patient outcomes and increase the productivity of the UK's healthcare system.

Name: **Bashar Rovezi**
Hi, I'm Bashar! I'm a first year Medicine student at Peterhouse College. As a first year, I have just started my doctoral training and have loved every minute of it so far. I am intrigued by the future of technology in this shifting day and age, but moreso the implementations of this into medicine and how this can improve patient-centred care in the future.

Name: **Barney Steventon-Barnes**
Barney is a second-year medical student who wants to make a difference on the bigger picture level. He has previous experience in entrepreneurship, designing an environmental tech product to win a national competition. He is interested building at scale, tackling health inequalities, and highly recommends the podcast Big Picture Medicine.

Student Biographies 24/25

Name: **Bissie Shupo**

I am in my third year studying medicine at Queens' College. I have experience doing projects relating to immunology and pharmacology. I am also currently intercalating in integrative physiology. I am particularly interested in the developments of the use of AI and robotics in surgery, and also how medical innovation more broadly can positively impact overall patient outcomes and wellbeing.

Name: **Brychan Thomas**

Brychan is a veterinary medicine student in his second year at St. Catharine's college. Outside of his degree he has experience with microcontrollers, machine learning and computational modelling, specifically of biochemical processes in plant cells. He is interested in the development of new veterinary diagnostic and patient monitoring technologies.

Name: **Destiny Snow**

Destiny is a second year Psychological and Behavioural Sciences student at Queens' College. She has volunteered in dementia care and shadowed hospital consultants, which has sparked her interest in improving healthcare outcomes. Destiny is passonate about the intersection of biological research, psychology and data science within healthcare, with a keen interest in improving outcomes for individuals with neurological conditions.

Name: **Dhruval Soni**

Dhruval is a third year medicine student at Peterhouse, Cambridge. He has experience in structural biology and his current project is about the spike structure of an orthobunyavirus. Dhruval is excited about the application of new technologies to our understanding of protein interactions.

Student Biographies 24/25

Name: **Elizabeth Zachariah**
Elizabeth is a 4th year medical student studying at King's College. She has experience working with flow cytometry and other wet lab techniques. She is also interested in exercise physiology, having focussed her undergraduate part II dissertation on the relationship between step count and aerobic fitness.

Name: **Emily Brown**
Emily is a Biological Sciences MPhil student in the Department of Biochemistry. She is a member of the Machesky group, which investigates cancer metastasis, with a focus on the interactions between cancer cells and their surrounding environment. Emily is passionate about translating basic scientific discoveries into real world applications.

Name: **Ezekiel Dinama**
Ezekiel Dinama is a first-year PhD student in Clinical Neurosciences at Queens' College. His background is in clinical medicine and has a master's degree in biomedical engineering. He has worked for 4 years as a medical doctor in the NHS. His PhD research with the Brain Physics Research Lab will be to apply signal processing techniques and use data-driven methods like machine learning to understand key pathological markers in the monitoring metrics of patients diagnosed with traumatic brain injury.

Name: **Freddie Preston**
Freddie is a first year Engineering student at Queens' college, hoping to specialise in Biomedical Engineering. He has experience in 3D printing models of biological systems like blood vessels for training doctors. Freddie loves exploring the ways technology interacts with the body and how it can be used to solve healthcare problems.

Student Biographies

Name: **Gabriella Zoe Jenkins**
Gabby is a first year medical student at Churchill college. She is passionate about population health inequalities and how these can impact access to and efficacy of treatment.

Name: **Grace Yun**
Grace is a first year Engineering student at Girton College. Over the past year she has taken a biosecurity course, during which she worked on a project to model disease spread. She has also worked on a proposal for a low-tech agricultural food chain, focused around genetically engineered fungi as a resilient food source.

Name: **Hannah Forsdyke**
Hannah is a first year Engineering student at Sidney Sussex College, hoping to specialise in Biomedical Engineering in third year. She has experience in the manufacture of joint implants, and has a key interest in devices that help people with their mobility. Overall, she just wants to see technology improve people's daily lives.

Name: **Hannah Richardson**
Hannah is a second year Medicine student at Jesus College. She has been involved in patient advisory groups for clinical research projects such as data focused studies and programmes involving artificial intelligence. Hannah is enthusiastic about using technology to improve healthcare through improvements to both clinical care and patient experiences of healthcare in general.

Student Biographies

Name: **Hilary Patankar**
Hilary is a final year medic at Robinson College. She has experience in neuroscience research, particularly looking at reward prediction error and its effect on behaviour. Hilary is interested in exploring the potential of diagnostic testing for major cardiovascular, metabolic, genetic and neurological conditions.

Name: **Jessica Collins**
I am a fourth year engineering student at trinity hall. I have specialised in biomedical engineering and am currently doing a project in continuous glucose monitoring for premature babies. I love biomimetic design and anything systems.

Name: **Justin Braver**
Justin is a PhD student in the Department of Public Health and Primary Care at the University of Cambridge, with a background in physiotherapy and a Master's in Business. His PhD research explores digital health interventions for secondary prevention of cardiovascular disease, aiming to improve outcomes and reduce disease morbidity and mortality. With a strong interest in applied research, he focuses on designing, implementing, and evaluating scalable health services that meet the quintuple aim of healthcare improvement: clinical and cost effectiveness, health equity, clinician well-being, and patient experience.

Name: **Karthik Prabhu**
Hi, I'm Karthik, a 3rd year medical student at Gonville and Caius college, currently intercalating in Management Studies Tripos at the Judge Business School. Attending various Healthtech pitches led by the Accelerate Cambridge Programme has been insightful, showcasing how scientific ideas are transformed into real-life clinical solutions, and I'm eager to be a part of this! With Cambridge leading as a global hub for biotechnology, there's no better place to be to get involved with Healthtech!

Student Biographies

Name: **Kishore Murugesh**
Kishore is a third year Medicine student at Gonville and Caius College. He is intercalating in Management Studies and is interested in business, finance and investment. Kishore wants to use his skills studying medicine and business to help with funding medical research and converting life-changing innovations into practical business models with a clear pathway to sustainability.

Name: **Linda Tang**
Linda is a fourth-year medical student at Catz. She has a strong interest in clinical medicine. Linda is passionate about how MedTech can be used to improve health outcomes.

Name: **Lorna Robertson**
Lorna is a first year graduate medical student at Hughes Hall. She has a bachelors in Chemistry from University of St. Andrews and a Masters in Public Health from Imperial College London. Prior to coming to Cambridge she interned at the WHO Collaborating Centre for Public Health Education and Training and worked in health intelligence at the British Heart Foundation.

Name: **Magdalena Nowinska**
Magda is a fourth year PhD in Chemistry student in the Vendruscolo lab at the Centre for Misfolding Diseases. Magda's research focuses on Parkinson's disease diagnostics. Before her PhD, she worked in a biotechnology start-up in Cambridge focussing on developing and testing drugs for Alzheimer's disease. Magda loves bringing together creative minds from diverse fields to work together on cool projects.

Student Biographies

Name: **Marine-Oceane Verdez-Scholler**
Marine-Océane is a second-year graduate-entry medical student at Wolfson College, with a background in Cancer Biomedicine from University College London (UCL). She has actively participated in both biomedical research and educational initiatives, with a particular focus on presenting complex scientific findings to diverse audiences and using effective communication as a tool to facilitate the translation of cutting-edge discoveries from bench to bedside. Passionate about advancing medical technology, Marine is dedicated to developing and implementing innovative solutions that bridge existing gaps between laboratory research and clinical practice.

Name: **Mark Bahreini**
Mark is an MBE candidate at King's College, attending as a Post-9/11 GI Bill recipient. He is a former Biotech Equity Research Associate at H.C. Wainwright and a Life Sciences Investment Banking Associate at Ferghana Partners. He served 4 years in the U.S. Army, retiring as a Captain after serving as a forward-deployed Maneuver Battalion Surgeon, with two deployments. He has also practiced emergency and trauma medicine as a licensed and certified physician associate with full prescription authority.

Name: **Milindu Wickramarachchi**
Milindu is a final year Medicine student at Girton College. He has lots of experience in radiology and medical education, and is keen to use his MedTech knowledge to enhance both fields respectively.

Name: **Mineli Cooray**
Mineli is an incoming medical student in 2025 and a current Population Health Sciences master's student at Churchill College. She has previously conducted research on antimicrobial resistance (AMR) and the health inequalities it exacerbates, focusing on how these issues impact underserved populations. She is passionate about developing solutions that reduce health disparities and improve access to equitable healthcare.

Student Biographies

Name: **Nasyen Penuel Rohit Madhan Mohan**
Rohit is a fifth-year Medicine student as Robinson College. He has experience in lab-based medical research and has worked with AI models in medical imaging before. Rohit is passionate about the potential of 3D bio printing and its applications in sports medicine.

Name: **Natalia Owen**
Natalia is a first year PhD student in clinical neurosciences at Cambridge, and previously studied both neuroscience and economics. She has experience in neurodegenerative conditions, specifically in blood-based biomarkers. Natalia is deeply interested in translating clinical research to the public sphere.

Name: **Othniel Kabesha**
Othniel is a second year Engineering student at Fitzwilliam college. He has experience in programming and electronics and has done projects regarding robots and their mechanisms for movement. Othniel is excited to learn more about prosthetic replacement and enhancement as well as engineering solutions to medical problems.

Name: **Pascal Wodtke**
Pascal is a third year PhD student in Radiology at Gonville & Caius college. He trained in physics and specialized on medical imaging throughout his postgraduate studies. Pascal has working experience in Medtech startups as well as patent law.

Student Biographies

Name: **Phoenix Mombru**

Phoenix is a third-year undergraduate medical student at Trinity, currently intercalating in engineering. She has experience as a summer intern for a biotech startup and has advised a startup on their route-to-market strategy with the Cambridge Consulting Network. She is particularly passonate about neuroscience and obstetrics and, in her free time, enjoys singing in King's Voices choir.

Name: **Prabav Santhosh Kumar**

Prabav is a third year medical student at Jesus College, with a particular interest in circuits neuroscience, and the underlying mechanism of cognition. He has had experience as a founder's associate in a small start-up in the past and is keen to gain further experience about the process from concepts to products.

Name: **Queenie H.W. Wong**

Queenie is a first-year PhD student in Clinical Neurosciences at Lucy Cavendish College, studying the use of neuroimaging in neurosurgical oncology. As an aspiring clinician-scientist in neurosurgery, she is particularly interested in brain tumour research and was involved in genomics research in glioblastoma, medulloblastoma, and meningioma. She is passionate about the synergy among medicine, science, and technology and strives to advance and popularise neuroscience through clinical practice, research, and leadership.

Name: **Rachel Nguyen**

Rachel is an MPhil student at Hughes Hall, with a broad and multidisciplinary background in biomedical research. She has gained valuable experience across a wide array of diseases, including nephrology, cancer, and pulmonology. Rachel is particularly passionate about developing novel microphysiological systems for disease modeling and drug screening. She is keenly interested in the commercialization of medical innovations, with a specific focus on the regulatory affairs surrounding novel medical devices.

Student Biographies

Name: **Rishal Narayan**
Rishal is a third year medical student at Gonville and Caius college, intercalating in Management Studies. He has completed projects in the past analysing the ethical and biological implications of CRISPR-Cas9 technology. Rishal is interested in the process of creating novel technology and how to use data and analytics to aid companies during decision making.

Name: **Rosalyn Cheng**
Rosalyn is a first year Medicine student at Newnham College. She has experience in genomics lab research on Drosophila and done projects on breast cancer. She is passionate about working in interdisciplinary fields that make use of multiple perspectives to approach a particular problem.

Name: **Ruying Yang**
Ruying is a second year Medical student at Trinity Hall college. She is passionate about medical education and making healthcare as accessible as possible. She is interested in exploring the intersection between medicine and engineering and how this translates to modern therapeutics, with a special interest in immunotherapy.

Name: **Salome Tkebuchava**
Salome is a master's student in the Bioscience Enterprise program. She has a background in finance, specializing in investments in early to late-stage healthcare companies. She is passionate about the intersection of science and finance and aims to leverage her business expertise to launch a healthcare startup.

Student Biographies

Name: **Sam Al Saidi**

I am a fourth year medical student at Selwyn college. I am working on a project on the use of ai and digital health in medical workflow. I am interested in the application of ai and app development in the NHS.

Name: **Shanlin Tong**

I am a third-year PhD student in the Department of Pathology, holding an MD/PhD. With clinical experience in surgical oncology and emergency care, I had also experience on developing AI systems to enhance cancer diagnosis and treatment for my research project. My goal is to bridge the gap between advanced technology and patient care, ensuring that innovations directly impact clinical practice.

Name: **Siddhant Patel**

Sid is a second year Medicine student at St John's College; he has an interest in neurology, interventional radiology, and the applications of AI to improve patient care. He has held interviews with founders of MedTech startups, such as MediShout and Joey, to assess their aims, problems and functions, and has undertaken consulting and finance experience to gain better ideas about problem-solving and decision-making.

Name: **Sneha Daga**

Sneha is a first year Medicine student at Christs College. She has done healthcare projects looking at childhood obesity, health literacy and research into first aid teaching. Sneha is interested in using new technology to change the way we look at disease, including prevention, diagnosis and treatment.

Student Biographies

Name: **Sophia Signorini**

Sophia is a first year Graduate Medicine Student, having completed an Undergraduate Bachelor's in Dentistry. She has spent time working in the Maxillofacial Surgical Specialty and finds interest in projects which involve patient-specific surgical techniques. Sophia is passionate about innovating care solutions to empower patients and revolutionise healthcare pathways.

Name: **Taryn Adams**

Taryn is currently participating in the MPhil Biosciemce Enterprise at the Department of Chemical Engineering and Biotechnology, Cambridge University. She was fortunate to be awarded the Gates Cambridge Scholarship to join the class on her journey to developing commercial skillsets that compliment her technical expertise in molecular and cell biology and aspiring entrepreneur. Taryn has a MRes in Molecular and Cell Biology with a strong skillset in protein and exosome production and purification. She has 1.5 years experience as a design and development scientist, having navigated the complexities of product development and maintenance in a commercial setting focusing on hollistic management of these projects including the financial management, regulatory management (ISO13485 for medical devices) and the technical management in the laboratory.

Name: **Vinu Nathan**

Vinu is a third year Medical student at St. John's college. He has experience in volunteering for healthcare in the less developed world. Vinu is passionate about the constant improvement of healthcare, and thus the development of medical technology.

Cohort Breakdown

2024/25 Cohort

50
Students

32
Undergraduates

26
Colleges

18
Postgraduates

Intro to MedTech

What is Medical Technology and its market:

WHO defines MedTech as "An article, instrument, apparatus or machine that is used in the prevention, diagnosis or treatment of illness or disease, or for detecting, measuring, restoring, correcting or modifying the structure or function of the body for some health purpose."

Medical technologies include and are not limited to medical devices from the face mask that we have all gotten well acquainted with in the last 2 years, to surgical robots like the Da Vinci. Diagnostic tests, software, and health and wellness applications are also examples of medical technologies.

The size of the MedTech market was projected to reach US$575.80bn in 2022 and is projected to continue growing with annual growth rates varying between 2.6% to 9.3% in the last 10 years.

The local MedTech industry:

(AHSN network review, 2019)

Intro to MedTech

Regulatory framework:

Given the opportunity for medical technology to impact healthcare, it is imperative that these technologies are safe. Within the UK, the government under NICE has developed sets of varying regulatory standards that medical technology has to meet. Most medical devices are regulated under Medicine and Healthcare products Regulatory Agency (MHRA guidelines). These rules are supplemented by international standards such as for example ISO 14155 which governs clinical investigations carried out on human subjects. On the other hand, BSI PAS 277 sets out the quality criteria for the development, testing and releasing of health and wellness apps.

Adoption of medical technology:

Within the UK, the main body responsible for the production of evidence-based guidelines for the use of medical technology within the healthcare sector is NICE (National Institute for Health and Care Excellence), as part of their function, they publish medical technologies guidance which assesses specific technologies that manufacturers may put forward. NICE then recommends the 'case for adoption' based on the claimed advantages and prevailing clinical protocol.

Intro to MedTech

Support around MedTech:

Given the need for MedTech to continue growing and developing, programmes and funding bodies have been set up to accelerate this process. For example within the NHS, there is a MedTech funding mandate that is committed to accelerate the uptake of certain innovative medical devices. The selection of these devices is based on the criteria of cost saving and resources.

(1) Effective

(2) Cost-saving within three years of implementation as demonstrated by NICE modelling and published in a NICE resource template

(3) NICE budget impact analysis tool

Sustainability in MedTech

Medical technology seeks to improve health outcomes. Therefore, if the production or use of MedTech is harmful to others or the environment, it results in worsening health outcomes. This relationship between human health and the environment is known by the term planetary health. Planetary health can be adversely affected by many factors, including pollution and emissions. Climate change has been declared by the World Health Organisation as the single greatest threat to human health in the 21st century [1].

Healthcare is not exempt from contributing to climate change; in 2020, 24.9 gigatonnes of greenhouse gas emissions were released by the NHS (4% of the UK carbon footprint). To counter this, the NHS has set out a plan to achieve net zero emissions by 2045. This is outlined in the Delivering a 'net zero' healthcare system 2020 NHS report [2].

Dry powdered inhaler (DPI) associated with a reduced carbon footprint

[1] https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health

Sustainability in MedTech

One common source of greenhouse gas emissions is the result of inhaler use. Metered-Dose Inhalers (MDIs) use propellants, which are potent greenhouse gases, to aerosolise the medication when inhaled. MDIs are the most commonly prescribed inhalers and contribute an estimated 3.9% of the NHS carbon footprint. Dry powder inhalers (DPIs), conversely, do not contain a propellant and the patient is the one who inhales the powder. These are increasingly used in clinical practice. In this instance, the switch between the propellant and using the patient's inhalation instead, means that the carbon footprint of this device can be significantly reduced without necessarily affecting patient treatment. This is a clear example where device design has had a significant impact on how sustainable a medical device is.

Metered Dose inhaler (MDI) : a common source of greenhouse gas emissions

[2] https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2022/07/B1728-delivering-a-net-zero-nhs-july-2022.pdf

Teamworking

Teamwork can be defined as working together in a group with other people. Although we all have our preferences, and some may hate teamwork whilst others may love it, working a team is no easy task. This is why we hope these few words of wisdom might guide you towards working efficiently, effectively, and in unison with your teammates.

1. **Know what type of team member you are**: Some people may tend to naturally slip into action-oriented roles in the team i.e., 'doing', whereas others may resonate more with thought-oriented roles in the team, providing more 'thinking'. Regardless of what kind of team member you think you might be, it is important to accept others' ways of working and work together.
2. **Communicate:** Communication skills are a key component of any teamwork. As it should be made clear what the intentions of the team are and the direction the team is moving at all times. By communicating, and working towards clear, achievable goals then there can be no 'he said, she said' and the team will naturally work together towards something special!

Teamworking

3. **Be organised:** Although some of us may find this harder than others (and that's ok!), having the right tools at the tips of your fingertips will help with working in a team more fluidly. Project management systems and organisation within the team is therefore key to avoiding any tensions within the team.

Knowing yourself and knowing your team:
Belbin's nine team roles

Teamworking

Soft Skill: Meetings

Everyone has a different way of conducting meetings. Here are a few tips and tricks we hope you may find useful when finding your own method of conducting meetings!

· Decide who will be chairing the meeting – rotate within the team!
· Plan an agenda and circulate this beforehand: so, people will know what is to come.
· Be on time!
· Take notes/meeting minutes
· Keep track of action points (AP): these are actions that members of the team need to take in order to progress the project
· Summarise what was decided and said
· Address timings and deadlines!
· Plan the next meeting before saying goodbye: this way, you wont need to frantically text each other to find when to next meet!

Meeting minute template:

https://bit.ly/3mFdoLw

Clinical Problem 1

Low cost / bedside CSF diagnostics

Ms Sara Venturini BSc MBChB MPH MRCS
Specialty Registrar in Neurosurgery & PhD Candidate
University of Cambridge & Cambridge University Hospitals NHS Foundation Trust

Cerebrospinal fluid (CSF) diagnostics involve analyzing the fluid surrounding the brain and spinal cord to identify life-threatening neurological or neurosurgical conditions. These tests are essential for diagnosing infections, hemorrhages, and other critical conditions that require immediate intervention. However, current diagnostic approaches are costly and resource-intensive, relying on disposable equipment, laboratory infrastructure, and a consistent supply chain. Late diagnosis can result in irreversible brain injury, extended treatment, and prolonged hospital stays. A frugal, portable bedside solution offering reliable and rapid results could revolutionize access to CSF diagnostics, particularly in resource-limited settings, reducing delays and improving patient outcomes.

Clinical Problem 2

Low cost alternative to intraoperative neuro navigation tools

Ms Sara Venturini BSc MBChB MPH MRCS
Specialty Registrar in Neurosurgery & PhD Candidate
University of Cambridge & Cambridge University Hospitals NHS Foundation Trust

Intraoperative neuro-navigation is a critical technology that provides neurosurgeons with precise guidance to safely navigate the brain during surgery. This technology is especially valuable for surgeries in challenging or delicate anatomical locations, helping to reduce risks and complications while enhancing precision. However, current systems are prohibitively expensive, requiring significant investment in equipment, consumables, maintenance, software, and imaging. An ideal solution would be a cost-effective and accessible neuro-navigation tool that maintains anatomical accuracy while featuring a simple interface, minimal consumables, and flexible power options (battery or electricity). Such innovations could expand access to safe neurosurgery, particularly in resource-limited settings, improving outcomes for complex procedures.

Clinical Problem 3

Point of care guidance system for cannulation

Dr Paul Subhankar - Senior Clinical Fellow in Transplant Surgery and Organ Retrieval, Cambridge University Hospitals NHS Foundation Trust

Haemodialysis, a vital Renal Replacement Therapy for End-Stage Renal Disease, requires precise cannulation of an arteriovenous fistula (AVF). This process is heavily reliant on the expertise of dialysis nurses, yet many AVFs are not large or superficial enough, necessitating additional surgeries. Improper cannulation can lead to severe complications such as access loss or catastrophic bleeding. Moreover, the use of bulky ultrasound guidance is not universally comfortable or practical. A medtech solution, such as a point-of-care guidance system—potentially a visual patch or wireless real-time video device—could streamline and improve cannulation safety and efficiency. Such technology might have broader applications in other medical procedures requiring venous or arterial access.

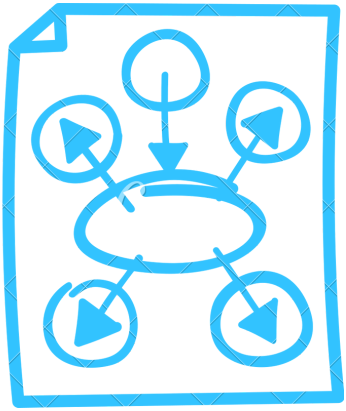
Workshop 1: Opportunity Evaluation and Teamwork

This workshop will introduce the steps of creating value and the essence of formulating a value proposition. You are encouraged to take the time to think about the value proposition for your idea during this workshop.

We will also cover how to evaluate a market as well as they key features of effective teamwork. After the workshop, you will receive a team working contract template to define some key rules for your team on how to work together effectively. Your facilitator will support you in case you need any help in your team, and will also make sure your project is going well.

Visit ***www.jbs.cam.ac.uk/entrepreneurship/*** to find out more.

Workshop 2:
Concept Generation



Clinical Engineering Innovation (CEI) is Cambridge University Hospital Trust's in-house team of engineers and scientists aiming to translate innovative medical technologies into patient benefit. They identify new unmet clinical needs within the Trust and work with clinical staff to develop concepts. They are skilled at identifying needs and solutions, developing concepts, prototyping, testing, intellectual property advice, and implementation.

In this workshop, CEI will introduce the principles of medical device development and take you, step-by-step, through the innovation pathway. The skills you will learn include defining a problem, screening ideas, quantification of risk, testing & validation. You will then have a chance to discuss your early ideas in your groups and try some of the exercises explained in the presentation.

Workshop 3:
Business Model Canvas

The Business Model Canvas is a strategic management tool used to visualise, discuss, describe and reinvent the building blocks of a business. By focusing on individual elements at a time, the Business Model Canvas is designed to assist you in recognising areas for improvement for your product or company. A skeleton of a Business Model Canvas is depicted on the left and below you can find a list of the components of the Business Model Canvas with exemplary questions.

- Value proposition
  - What is compelling about our proposition?
  - Why would customers buy or use our product?
  - What distinguishes us from competitors?
- Key Activities
  - What key activities does our value proposition require?
  - What uniquely strategic things does our start-up do to deliver the proposition?

Workshop 3:
Business Model Canvas

- Key Partners
  - Who are our key suppliers?
  - Which key activities do our partners perform?
  - What can our start-up not do, so it can focus on its key activities?
- Key Resources
  - What key resources are needed to deliver our proposition and to build our customer relationships?
  - What unique strategic assets does the start-up need to compete?
- Customer Relationships
  - What is the customer journey?
  - What type of relationship does each of our customers expect to establish/maintain?
  - Which of these have we already established?
- Channels
  - How do we reach our customer segments?
  - How do we raise awareness of our proposition?
  - Which channels are the most cost efficient?
- Cost Structure
  - What are our main cost drivers?
  - What are our most important costs?
  - Which key resources/activities are most expensive?
- Revenue Streams
  - How do we maximise revenue for our proposition?
  - For what propositions are our customers willing to pay?
  - How and what are they paying?

Workshop 4:
From Concept to Product

What comes after a concept for a medical device? Team Consulting will explain the steps that are required if you want to develop your product further. It is useful to know the innovation pathway in MedTech if you are developing an idea for medical technology.

Team Consulting is working on medical device design and development for their clients. They are experts in developing concepts for medical devices and helping their customers to translate ideas into products. This workshop will highlight the steps after concept generation and will illustrate the process with real world examples from their daily work.

Visit ***www.team-consulting.com*** to find out more.

Workshop 5: Pitching

When introducing effective pitching, analogies are often drawn to storytelling. Much like storytelling, pitching lives from tension and change. For instance, your pitch could start with explaining the status quo, which is essentially your introduction. Then you could get your audience's hopes high and paint a vision, that is, your vision, of what could be. This would be describing your product's aims. In the following, you could change the general mood again and highlight your competitors' failings or shortcomings, just to present your product's strength in more detail and launch the discussions with hopes raised high.

Of course, there is no recipe for effective pitching and sometimes competitions expect a certain structure. Hence, it is always worthwhile asking in advance whether there are guidelines in place. Below, we prepared a checklist that might help you prepare your pitch:

Workshop 5: Pitching

- Who is your audience? It's important to tailor your pitch to your audience. What is their background? Is the content of your pitch likely going to be similar to that of others?

- Keeping time is essential. Running over time can be interpreted as a sign of disrespect or at least bad organisation.

- Try to keep the amount of written text to a minimum. Working with visual clues is often more effective and less distracting to the audience.

- Avoid spelling and other mistakes in your presentation.

- Try to find a good balance between different media.

- What is your key message?

- Try to think of potential questions and how you would answer them.

- Practice, practice, practice. Practice will make you more confident delivering your pitch.

- Try to adapt your appearance to the event but remain yourself.

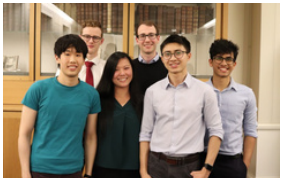
- Try to have a Plan B when e.g. the beamer is not working properly.

Final Pitch

Date: Friday 20th March 2025

The Innovation Programme ends with a formal pitching evening, in which the teams present their concepts to a panel of judges composed of established innovators and senior clinicians.

The final pitch event also presents an excellent networking opportunity and the chance to celebrate the hard work done over the past three months. Further details will be shared closer to the time!



Deliverables

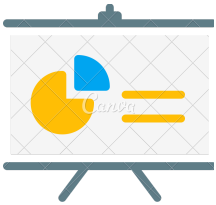
Over the course of the programme we will expect teams to submit some short pieces of work:

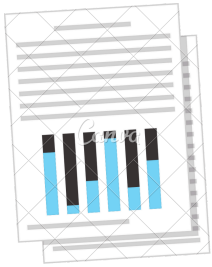
Working Contract: Due 12th Dec 2024
This contract determines the role that each participant will undertake within the team. You will be provided a template from which to work.

Abstract: Due 30th Jan 2025
This is a short summary of your project (maximum 200 words) that will need to include a short description of your clinical problem and the solution you're developing.

Executive Summary: Due 27th Feb 2025
A written document (maximum 1500 words) explaining your clinical problem, your final solution, the technology involved as part of your product and the important business aspects of your solution. Figures can be included. This will be given to the judges before the Final Pitch.

Final Pitch Presentation: Due 13th March 2025
The slide deck that will accompany your final pitch which should be no longer than 10 minutes in length, and allow for 5 minutes of questions.





Mentoring

Clinical Mentoring
The clinicians who present the clinical projects will offer two mentoring sessions for each team working on their clinical problem. The first of these sessions will provide an opportunity to have any questions answered about the projects and enable you to really get to grips with your problem. The second session will give you the chance to receive clinical feedback on your ideas and solution.

Technical Mentoring
Experts from will offer you a mentoring session to provide you with feedback on the technical aspect of your solution. You are expected to prepare a short pitch about the problem you're working on as well as your work-in-progress ideas for a solution.

Business Mentoring
Our partners offer mentoring sessions to review your commercial plans. As a startup accelerator, they are experts in mentoring early-stage ideas. Please bring your Business Model Canvas and a short pitch about your project and ideas to this session.

Team Facilitator
A member of the IP Team will be assigned to your team to support you throughout the programme and ensure everything is running smoothly. They are your point of contact in case you run into any problems or require any guidance.

Notes

Notes