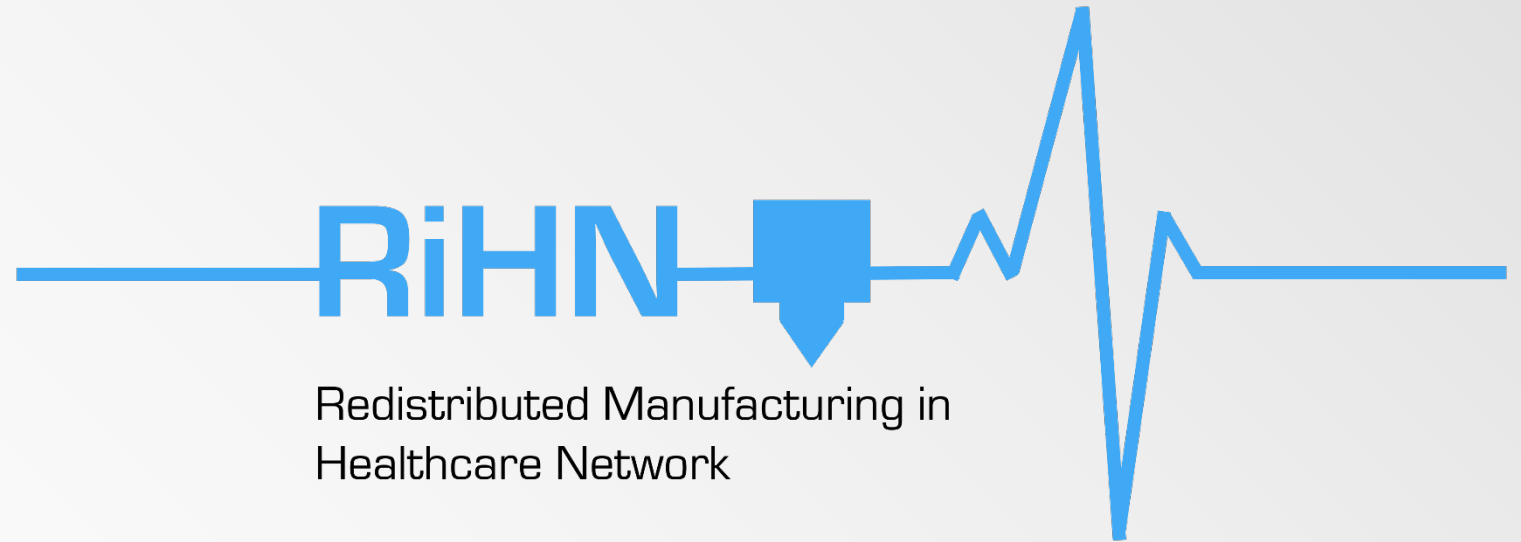




Engineering and
Physical Sciences
Research Council

Research Programme

Dr Chris Howell



University
of the
West of
England



Loughborough
University



Newcastle
University



RiHN Core Team

- **Eight institutions**, spanning the sciences, engineering, policy and management
- Access to a network of **200+ RiHN members** across academia, public and private sectors
- **Thought leadership** in Redistributed Manufacturing (RDM) – professional reports, international journal publications, national cross-disciplinary workshops, novel design and breakthrough technologies



Prof Wendy Phillips
Dr Dharm Kapletia
Dr Helen Sanderson
Dr Chris Howell



Prof Kenny Dalgarno
Dr Javier Munguia



Dr Qasim Rafiq



Prof Richard Bibb
Dr Abby Paterson



Prof Nik Willoughby



Prof Harris Makatsoris



Dr Sam Roscoe



Lt Col Paul Hunt



Overview of the RiHN Programme

“We seek to **identify, fund and advance** high-value **applications** of **redistributed manufacturing** research that will transform **future deployed medical care** capability”

- UK Engineering & Physical Sciences Research Council (EPSRC) Funded Network Plus Programme
- The research programme runs from July 2020 for 2 years, which involves running two funding competitions with a budget of **£1.2m* committed to feasibility study funding**
- We provide a **bridge** between medical practitioners involved in military and emergency medicine and researchers developing solutions, using advanced manufacturing

- 80% FEC



Research programme structure

Theme 1

Military and Emergency Medicine Requirements in Deployed Operations

Cross-Disciplinary Research (Internal)

- **Systems and operations analysis**

Theme 2

Additive Layer
Manufacturing
Capability

Theme 3

Cell and Tissue
Therapy
Manufacturing
Capability

Theme 4

Clinical Fluids
Manufacturing
Capability

Theme 5

Pharmaceutical
Manufacturing
Capability

Manufacturing Engineering Research (External)

- **Led by RiHN investigators with expertise in each theme**
- **Funding competition for themes 2-5, budget of £1.2m**

Theme 6

Innovation Assessment and Adoption for Deployed Operations

Cross-Disciplinary Research (Internal)

- **Business and innovation modelling**

RiHN funded projects (rihn.org.uk/projects/)

Additive Layer Manufacturing

- Digital design and manufacturing of personalised prosthetic socket on-demand: Technical validation in laboratory
- A novel design-through-manufacture approach to Transparent Face Orthosis for deployed medical environments
- Handheld Electrospinning of Antimicrobial Lamellar Structures (HEALS) for simultaneous fabrication and application of micro and nanofibrous wound dressings

Cell and Tissue Manufacturing

- Proof-of-concept of long-term storage of functional extra-cellular vesicles for application in accelerated soft-tissue and fracture healing
- Combining Orthobiologics, Antimicrobial and Angiogenic Properties for Rapid Treatment of Bone Repair in Deployed Settings

Pharmaceutical Manufacturing

- Decentralised manufacture of combi-pills at point of care
- AmorFlow: amorphous pharmaceuticals through continuous manufacturing in flow
- AMPLify: redistributed manufacturing of antimicrobial peptides for wound care

FURTHER 5x PROJECTS (Awards in-progress), covering **ALM, C&T, and Clinical Fluids**

RiHN Special Interest Group – **Point-of-Care Manufacturing in Healthcare**

Evaluate the business case for POC Manufacturing in Healthcare and shape future programmes

- Improve understanding of key factors affecting POC manufacturing innovation adoption
- Analyse the evidence of current and future POC performance, to identify SIG opportunities
- Inform targeted investment in POC research, technology, and collaboration; backed up by data from SIG members
- Support interactions with RiHN's funded feasibility studies, and core team
- Facilitate networking between manufacturing engineering and the clinical community
- Provide foundations for future collaborative bids and projects