

- Cambridge Summer School in Applied Human Nutrition: 14th-18th July 2018 - www.nnedpro.org.uk/summer-school
- International Summit on Medical Nutrition Education and Research in Cambridge: 19th & 20th July 2018 - www.nnedpro.org.uk/international-summit

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Nutrition as a Hard Science

Snapshots from the NNEdPro Chair's Nutrition and Vascular Studies Platform at the Medical Research Council (MRC) Elsie Widdowson Laboratory (EWL) in Cambridge

Cardiovascular disease (CVD) remains a leading cause of morbidity and mortality. Key knowledge gaps remain around how lesser understood components of diet, like phytonutrients and polyphenols, modulate cardiovascular risk. In 2011 *Nutrition and Vascular Studies* was established at MRC EWL to begin addressing unanswered questions in this area. Outlined is our four-pillar model exemplifying Nutrition as a 'living' scientific discipline, with the potential to influence policy and practice.

PILLAR-1: Establishment of a Vascular Function Assessment Laboratory (VFAL) dedicated to Nutrition

Nutritional interventions can have small but significant effects on vascular/endothelial function requiring bespoke measurement protocols. Our VFAL has worked to optimise methods and enhance precision in detecting how dietary exposures/interventions can impact cardiovascular risk, applying these techniques to both population and individual level studies. Key projects include estimation of relative predictive values of vascular measures, elucidating the role of hydration as a vascular confounder and development of a consensus forum on best practices in vascular nutrition studies. In addition, our Oxford Handbook of Clinical and Healthcare Research serves as a generic skills toolkit.

PILLAR-2: Observational Studies at Population Level

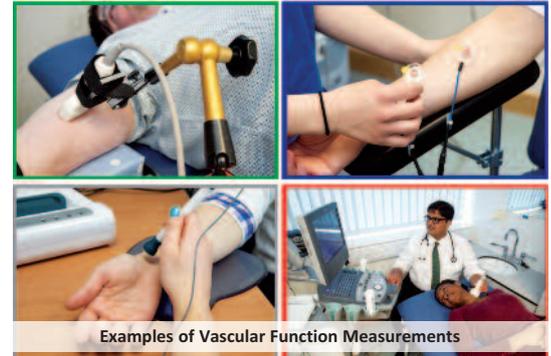
In our observational studies we investigate unmodified dietary variables that a population may ordinarily be exposed to, which can either generate questions for further investigation through explanatory trials or identify patterns leading to evidence synthesis.

The National Survey of Health and Development (NSHD), or the 1946 British Birth Cohort has collected a wealth of data over the past seven decades. We have undertaken longitudinal analyses of dietary patterns, biomarkers from stored samples and vascular function in NSHD.

The National Diet and Nutrition Survey (NDNS) collects cross-sectional data on dietary intakes and nutritional status to inform policy through risk assessment and monitoring. We have undertaken secondary analyses of NDNS data to estimate the contribution of diet (including polyphenol intake) to CVD risk.

The National Health Service (NHS) collects a plethora of routine clinical data that can be interrogated. We have undertaken secondary analyses of intensive weight management in secondary care, whilst setting up a framework for future collection of prospective data using NHS record linkage looking at diet and cardio-metabolic risk in specific populations.

Key researchers in Nutrition and Vascular Studies: Prof Daniele Del Rio, Dr Giuseppe Grosso, Dr Jane Maddock, Dr Virginia Tomatis, Dr Rajna Golubic, Marietta Sayegh, Melina Tsiountsioura, Gabriele Mocchiari, Nida Ziauddeen
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Key resources: NNEdPro Core Team and Collaborators Network, MRC EWL Nutrition Surveys and Studies Group, MRC EWL Volunteer Studies and Clinical Services Team



Examples of Vascular Function Measurements

PILLAR-3: Interventional Studies (Trials) at Individual Level

Examples of interesting mechanistic explanatory vascular/endothelial function trials (with associated sub-studies) include the following controlled dietary interventions:

- Fresh frozen berry consumption
- Green tea/coffee extract consumption
- Hazelnut skin extract consumption
- Wide ranging fruit and vegetable extract consumption ('NNTV')

Emerging findings from the NNTV Trial accepted for presentation at 'Nutrition 2018', Boston, USA

Predictive markers of Type-2 diabetes and vascular risk differed significantly between high vs low consumers of fruit and vegetables (FV). An increase in consumption of a single portion of FV resulting in measurable differences suggests that even modest increases in FV consumption are potentially beneficial for blood vessel health.

PILLAR-4: Evidence Synthesis for Translation to Professionals in Nutrition and Health

We undertake a series of evidence synthesis pieces particularly as 'umbrella reviews' to inform policy and educational interventions which can impact the knowledge, attitudes and practices of health professionals. We have had key inputs to the Cardiovascular Task Force of the British Nutrition Foundation which in 2018 is finalising the 2nd edition of its compendium of evidence on *Diet, Nutrition and CVD Risk Factors* as a key translational resource.

Looking ahead

Over 2018, the NNEdPro Group has formed a Nutrition Research and Innovation Consortium spanning Cambridge, London, Ulster and Parma. Going forward the combined strengths from these centres of research excellence will seek to address further unanswered questions around Nutrition and Non-Communicable Disease, connecting the cutting edge of science to evidence-informed practice through professional education.

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