

### **Summary of Achievements** (*papers on which Ray KK is an author shown in italics*)

Prof Ray is at the forefront of the design, development and delivery of clinical trials of pivotal novel therapies and registries, improving cardiovascular disease (CVD) health outcomes globally as well as changing FDA and EMEA warning labels for commonly used treatments when novel signals of harm were detected (Sattar Lancet 2010, Preiss JAMA 2011). As founder and architect of the familial hypercholesterolaemia (FH) studies collaboration (<https://www.eas-society.org/page/fhsc>), the first of its kind, he created a global coalition of 72 countries across 5 WHO regions, building a registry of 66,000 FH patients, demonstrating that patients with Heterozygous and Homozygous FH are diagnosed far too late, with extensive CVD already present and that few reached recommended cholesterol targets (Vallejo-Vaz, Lancet 2021, Tromp Lancet 2022). These findings initiated discussions on universal screening for FH at EU ministerial/WHO level, meaning these patients face dramatically improved health outcomes going forward.

Many such patients will benefit from cutting-edge therapies he has helped develop. He designed and led the largest trial of Bempedoic acid, the first oral cholesterol-lowering therapy approved globally in a decade as a viable alternative for the statin intolerant (Ray, NEJM 2019, Ference NEJM 2019). As global PI for Inclisiran he was pivotal in designing, directing and obtaining approval globally for this cholesterol-halving injection requiring administration only every 6 months, overcoming adherence issues (Ray, NEJM 2017 and 2020, Raal NEJM 2020). He worked with Novartis leadership to provide the NHS with this medication at a vastly reduced cost, a global first

(<https://www.guidelines.co.uk/news/nhs-england-to-routinely-offer-novel-cholesterol-lowering-jab/456277.article>) and provided invited expert testimony to NICE, securing UK approval. Under

Matt Whitty he currently advises the NHS England Accelerated Access Collaboration in overcoming obstacles to the implementation of Inclisiran in primary care.

With primary care physicians in mind, he designed and led the 18-country Da Vinci Registry, demonstrating that 80% of patients with CVD require more than one cholesterol-lowering medication to achieve cholesterol goals (Ray, EJPC 2021). Such unique contributions have resulted in

his recent engagement by the World Heart Federation to lead the 2022 Cholesterol Roadmap (Ray, Global Heart) and as an invited panellist at the 2022 G20/H20 Health Summit on 'why CVD is the number one killer worldwide, despite being preventable', in which he discussed roadblocks and posited solutions to this global CVD crisis.

Additionally, since 2018 Prof Ray has been recognised by Clarivate Analytics as among the top 0.1% globally cited authors in clinical medicine (>123k citations Google Scholar), with his original research having changed international guidelines (ESC, ACC, AHA).

As a key player at the intersection between academia, policymakers and industry, his access to and leadership within these arenas ensures that policymakers' resources and decisions are focused on prevention of the world's number one killer, whilst unmet clinical needs continue to be effectively identified through registries he has built from the ground up and patients better treated through novel therapies he helped develop. Professor Ray would be an invaluable addition to the Academy, bringing his expertise in life-changing collaborations between academia industry and policymakers.