Institution: Imperial College London

Unit of Assessment: 01 Clinical Medicine

Title of case study: Improving Quality for Cardiovascular Disease Prevention in Europe and the National Health Service

1. Summary of the impact (indicative maximum 100 words)

In response to the gap between standards and the reality of preventive cardiovascular disease (CVD) health care delivered across Europe, Imperial College researchers developed an innovative nurse-led, multidisciplinary, family centred, CVD prevention programme (EUROACTION) and led its evaluation in hospital and general practice across 8 European countries. We showed that patients and their families in our programme can achieve healthier lifestyles and better risk factor management compared to usual care and these differences were sustained out to one year. We then adapted our learning from EUROACTION for the NHS, by integrating secondary and primary prevention into one community service (MYACTION), and managing cardiovascular disease as a family of diseases with common antecedents. To train doctors, nurses and allied professionals to deliver MYACTION we created an MSc in Preventive Cardiology which is now in its 6th year. EUROACTION is now recommended as an evidence based model of care in current European CVD prevention guidelines, and MYACTION is being commissioned by the NHS in London, and Galway, Republic of Ireland, and by the Western Isles Health Board. Our research has impacted directly on the development and delivery of high quality preventive care in both Europe, and the NHS, and on the training of doctors, nurses and allied health professionals in preventive cardiology.

2. Underpinning research (indicative maximum 500 words)

Key Imperial College London researchers:
Professor David A Wood, Garfield Weston Professor of Cardiovascular Medicine and Honorary Consultant Cardiologist to Imperial College Healthcare NHS Trust (1990-present)
Dr Kornelia Kotseva, Senior Clinical Research Fellow and Honorary Consultant Cardiologist to Imperial College Healthcare NHS Trust (2006-present)

CVD is the commonest cause of death in Europe and a major cause of disability. There is a strong scientific evidence base for prevention of cardiovascular disease, both secondary and primary prevention, but a substantial gap exists between the standards set in the CVD prevention guidelines and their implementation in practice. Professor Wood and his academic group developed the concept of the EUROASPIRE surveys to describe time trends in delivery of preventive care, and the EUROACTION trials evaluating new models of preventive care, and coordinated these studies through an European wide research collaboration across 24 countries.

Professor Wood conceived, deigned and coordinated the EUROASPIRE cross sectional surveys of preventive cardiology practice, conducted on four occasions across 24 European countries between 1996 and 2013. They provide descriptions of lifestyle, risk factor and therapeutic outcomes, using standardised methodology, for coronary patients in hospital and people at high risk (i.e. with hypertension, dyslipidaemia, diabetes) of developing CVD in general practice (1, 2). Time trends over 17 years have shown no change among coronary patients in the prevalence of persistent smoking, significant increases in prevalence of obesity and central obesity and corresponding increases in prevalence of self-reported diabetes (3, 4). Blood pressure management has not improved, with about half of all patients above the therapeutic target. Lipid management has improved significantly although almost half of all patients are still not at the lipid guideline target. The use of cardioprotective drugs in all classes has increased substantially over this period but unhealthy lifestyles persist and are getting worse (3, 4). Professor Wood and colleagues have modelled these EUROASPIRE data to determine the health economic impact of closing the treatment gap in CVD prevention and it is cost effective to do so (5).

In response to these results Professor Wood conceived, designed and coordinated a European

demonstration project in preventive cardiology called EUROACTION. The object was to demonstrate whether the standard of preventive cardiology could be improved compared to usual care. EUROACTION was a nurse-led, multidisciplinary, family centred preventive cardiology programme delivered in hospital and general practice. It was initially evaluated in a matched pair cluster randomised controlled trial in 24 hospital and general practice centres across 8 countries: Denmark, France, Italy, Spain, The Netherlands, Poland, Sweden, United Kingdom and 9,062 patients and their partners between 2003 and 2006. The programme was led by nurses working with dieticians, physiotherapists, cardiologists and general practitioners. The foundation of the programme was achieving a healthy lifestyle in families and therefore both patients and their partners were recruited to the programme. The one year trial outcomes showed that patients with coronary disease in hospital, and those at high risk of developing cardiovascular disease in general practice, together with partners of both, achieved healthier lifestyles: prevention of smoking relapse, healthier eating (lower saturated fat and higher fruit and vegetable and oily fish consumption) and increased physical activity levels (6).

Although the EUROACTION programme prevented some smoking relapse in coronary patients by comparison with usual care there was no significant difference in successful new quit attempts in either coronary or high risk patients who were persistent smokers. This disappointing result led to a second EUROACTION trial (EUROACTION *plus Varenicline*) of smoking cessation in persistent high risk smokers with established atherosclerotic vascular disease or at high risk of developing CVD. This parallel group randomised controlled trial was conducted in 20 general practices across 4 countries between 2010 and 2012. A total of 696 patients were randomised to the EUROACTION *plus* programme or usual care. At 16 weeks 51% of patients in the EUROACTION *plus* programme were abstinent compared to 19% in usual care. The odds of being abstinent was 4.5 times higher in the EUROACTION *plus* programme compared to usual care. So a nurse led behavioural approach to smoking cessation, coupled with optional Varenicline, substantially increased successful quit attempts and, in addition, these patients also achieved healthier diets and increased physical activity levels compared to usual care. (*Eur Heart J 2013* In press)

3. References to the research (indicative maximum of six references)

(1) Kotseva, K., Wood, D., De Backer, G., De Bacquer, D., Pyorala, K., Reiner, Z., Keil, U. (2010). EUROASPIRE III. Management of cardiovascular risk factors in asymptomatic high-risk patients in general practice: cross-sectional survey in 12 European countries. *Eur J Cardiov Prev Rehabilitation*, 17 (5), 530-540. DOI. Times cited: 66 (as at 8th November 2013 on ISI Web of Science). Journal Impact Factor: 3.90

(2) Kotseva, K., Wood, D., De Backer, G., De Bacquer, D., Pyörälä, K., Keil, U. on behalf of EUROASPIRE Study Group. (2009). EUROASPIRE III: a survey on the lifestyle, risk factors and use of cardioprotective drug therapies in coronary patients from 22 European countries. *Eur J Prev Cardio*, 16, 121-137. DOI. Times cited: 267 (as at 8th November 2013 on ISI Web of Science). Journal Impact Factor: 3.90

(3) Kotseva, K., Wood, D., De Backer, G., De Bacquer, D., Pyörälä, K., Keil, U. on behalf of EUROASPIRE Study Group. (2009). Cardiovascular prevention guidelines in daily practice: a comparison of EUROASPIRE I, II and III surveys in 8 European countries. *Lancet*, 373 (9667), 929-940. DOI. Times cited: 273 (as at 8th November 2013 on ISI Web of Science). Journal Impact Factor: 39.06

(4) Wood, D.A., EUROASPIRE Study Group (2001). Clinical reality of coronary prevention guidelines: a comparison of EUROASPIRE I and II in nine countries. *Lancet*, 357, 995-1001. DOI. Times cited: 491 (as at 8th November 2013 on ISI Web of Science). Journal Impact Factor: 39.06

(5) De Smedt, D., Kotseva, K., De Bacquer, D., Wood, D., De Backer, G., Dallongeville, J., Seppo, L., Pajak, A., Reiner, Z., Vanuzzo, D., Georgiev, B., Gotcheva, N., Annemans, L. (2012). Cost-effectiveness of optimizing prevention in patients with coronary heart disease: EUROASPIRE III health economics project. *Eur Heart J*; 33 (22): 2865-2872. DOI. Times cited: 1 (as at 8th November 2013 on ISI Web of Science). Journal Impact Factor: 14.09

(6) Wood, D.A., Kotseva, K., Connolly, S., Jennings, C., Mead, A., Jones, J., Holden, A., De Bacquer, D., Collier, T., De Backer, G., Faergeman, O. EUROACTION Study Group. (2008). Nurse-coordinated multidisciplinary, family-based cardiovascular disease prevention programme (EUROACTION) for patients with coronary heart disease and asymptomatic individuals at high risk of cardiovascular disease: a paired, cluster-randomised controlled trial. *Lancet*; 371:1999-2012. DOI. Times cited: 147 (as at 8th November 2013 on ISI Web of Science). Journal Impact Factor: 39.06

4. Details of the impact (indicative maximum 750 words)

Impacts include: public policy and services, health and welfare, practitioners and services
Main beneficiaries include: NHS, practitioners, patients

The EUROACTION preventive cardiology model is now recommended by the current Joint European Societies Guidelines on CVD Prevention in Clinical Practice (2012).

In Section 5.1.1 *"Nurse co-ordinated prevention programmes effective in various healthcare systems"* the authors state *"A nurse coordinated multidisciplinary prevention programme in both hospitals and primary care practices was evaluated in the EUROACTION trial studying patients with CHD and those at high risk of CVD in eight countries….A particular strength of the programme was the demonstration of the feasibility of this type of programme in hospitals and general practice, outside of specialist centres, and in eight different healthcare systems across Europe."* So this nurse led, multidisciplinary, family centred programme is now a recommended model of care for health systems across Europe [1]. The Department of Health Cardiovascular Disease Outcomes Strategy also state that CVD should be treated as family disease with common antecedents and 'that the NHS will work to develop and manage service models to manage CVD as a family disease, in the community and in hospital' [2; see pages 5 and 6].

For the UK the principles of the EUROACTION preventive cardiology model were adapted by Professor Wood and his team for the NHS and a new model (MYACTION) was developed, piloted and implemented in London in 2008. MYACTION is an integrated vascular prevention programme (integrating secondary and primary CVD prevention) set in public leisure facilities in the community. MYACTION provides a service for all general practitioners to refer patients identified as 'high risk' through the NHS Health Checks programme. Imperial College now licenses the MYACTION preventive cardiology programme to the NHS, under the auspices of teaching and research, and MYACTION programmes have been set up as a pilot in NHS Bromley [3], NHS Westminster [4], and also in Galway, the Republic of Ireland [5], and most recently in Stornoway in the Western Isles, Scotland. A large majority of patients achieve through MYACTION the lifestyle and risk factor targets defined in the guidelines. The development of MYACTION based on the principles and learning from the EUROACTION research projects has impacted directly on the NHS in England by raising the quality of preventive care through Primary Care Trusts, and the same for single centre programmes in Ireland and more recently in Scotland.

MYACTION created a need for training in preventive cardiology for physicians, nurses and allied health professionals. Professor Wood and colleagues set up an MSc programme in Preventive Cardiology: Cardiovascular Health and Disease Prevention in 2008 [6]. We have trained doctors, nurses, dieticians, physiotherapists, physical activity specialists, pharmacists, and others in the principles and practice of preventive cardiology. The course is now entering its 6th year and 42 health care professionals have graduated from our programme.

The EUROACTION trials have impacted on the development of European guidelines on CVD prevention and the recommended delivery of preventive care in everyday clinical practice. They have led to the development of the MYACTION model for the NHS and the MSc in Preventive Cardiology.

5. Sources to corroborate the impact (indicative maximum of 10 references)

[1] Perk, J., De Backer, G., Gohlke, H., Graham, I., Reiner, Z., Verschuren, W.M.M., et al. (2012). European Guidelines on cardiovascular disease prevention in clinical practice. The Fifth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice. Euro Heart J 2012; 33:1635–1701.DOI (see page 1691).

[2] Cardiovascular Disease Outcomes Strategy, Department of Health. www.nice.org.uk/dg5 Archived on 8th November 2013.

[3] Connolly, S., Holden, A., Turner, E., Fiumicelli, G., Stevenson, J., Hunjan, M., Mead, A., Kotseva, K., Jennings, C., Jones, J., Wood, D.A. (2011). MyAction: an innovative approach to the prevention of cardiovascular disease in the community. *Br J Cardiol*,18,171-176

[4] Corroboration of the rollout of the programme in NHS Westminster can be gained from the Principal Screening Advisor for London, NHS England.

[5] Gibson, I., Flaherty, G., Cormican, S., Jones, J., Kerins, C., Walsh, A.M., Costello, C., Windle, J., Connolly, S., Crowley, J. (2013) Translating guidelines to practice; findings from a multidisciplinary preventive cardiology programme in the west of Ireland. *European J of Preventive Cardiology*. DOI

[6] MSc in Preventive Cardiology: Cardiovascular Health and Disease Prevention, Imperial College London https://www1.imperial.ac.uk/medicine/teaching/postgraduate/preventivecardiology/ Archived on 8th November 2013