

Cardiovascular Disease

Group lead: [David Fitzmaurice \(/staff/profiles/haps/PrimaryCareClinicalSciences/fitzmaurice-david.aspx\)](/staff/profiles/haps/PrimaryCareClinicalSciences/fitzmaurice-david.aspx)

Overview

This group comprises a broad range of disciplines covering the whole spectrum of cardiovascular disease, integrating epidemiology, clinical management, health technology assessment and translational research.

Our research group

Within this overall theme ongoing work includes research into:

- 1) Prevention and treatment of venous thromboembolism
- 2) Service delivery of oral anticoagulation
- 3) Systematic reviews of cardiovascular interventions
- 4) Best methods for blood pressure monitoring
- 5) Interventional studies in chronic kidney disease
- 6) Prospective cohort studies using primary care databases
- 7) Best Practices for Patient Reported Outcome Assessments in Cardiovascular Trials
- 8) Ethnicity and cardiovascular outcomes (i.e heart failure, AF)
- 9) Adherence

Current projects...

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Title of Research: Improving the prevention and treatment of Venous Thromboembolism in Hospital and the Community
 Value of Grant: £1,750,933
 Awarded by: NIHR Programme Grant
 Duration: 01/04/10-31/03/15

Title of Research: Global Anticoagulation Registry in the Field (GARFIELD)
 Value of Grant: £421,000
 Awarded by: Thrombosis Research Institute
 Duration: 01/03/11-28/02/16

Title of Research: The development of a Registry for Patients who Self-Monitor and Manage their own Oral Anticoagulation
 Value of Grant: £53,469
 Awarded by: National School of Primary Care Research
 Duration: 6/1/2010 – 31/05/2013

Title of Research: A systematic review of the diagnostic and prognostic utility of tests currently available for the detection of aspirin resistance in patients with established cardiovascular or cerebrovascular disease
 Value of Grant: £198,529
 Awarded by: NIHR HTA
 Duration: 01/02/11-31/07/11

Title of research: The development and evaluation of a prognostic model and clinical decision rule to help decide on cessation of anticoagulant therapy in patients with idiopathic venous thromboembolism (VTE)
 Value of Grant: £226,482
 Awarded by: NIHR HTA
 Duration 01/06/12 -28/02/14

Other applicants Deidre Lane, Manuel Monreal, Sue Jowett, Richard Riley, Jon Deeks, Eve Knight, David Moore, Peter Rose, Trevor Baglin, Carl Heneghan, Greg Lip, Frits Rosendaal

Optimising the diagnosis and management of hypertension in primary care through self-monitoring of blood pressure (2012-2017). NIHR Programme Grant. £1,999,760.
 Lead: Professor Richard McManus. (*Collaboration with University of Oxford*)

Does a 'polypill' have a role in secondary prevention of stroke in older people in the developed world? (2011-2016). The Stroke Association/British Heart Foundation. £999,818. Lead: Professor Jonathan Mant. (*Collaboration with University of Cambridge*)

The Stroke Oxygen Study (SO2S): A multi-centre, prospective, randomised, open, blinded-endpoint study to assess whether routine oxygen supplementation (ROS) in the first 72 hours after a stroke improves long-term outcome (2011-2016). NIHR HTA Programme: Clinical Trials and Evaluation Programme. £1,104,475. Lead : Professor Christine Roffe. (*Collaboration with Keele University*)

Pilot study for a randomised controlled trial of task-specific reach-to-grasp training at home (2011-2014). Stroke Association. £159,448. Lead: Dr Ailie Turton (*Collaboration with University of the West of England*)

Deputy Director of NIHR funded Collaboration for Leadership in Applied Health Research West Midlands (CLAHRC-WM) Jan 2013 to Dec 2018. (Total for CLAHRC £10,000,000 over 5 years) This will include feasibility studies of case finding for LVSD and cardiovascular related diseases

Co-investigator: AURAS-AF Reducing risk of stroke in people with atrial fibrillation and identifying barriers to anticoagulation: cluster randomised controlled trial of a reminder intervention. Principal Investigator: Tim Holt (Oxford), Co-Investigators: David Fitzmaurice, Tom Marshall, Fay Matthew, Richard Hobbs, Daniel Lasserson, Karen Kearley, Nadeem Qureshi. National School of Primary Care Research. £610,322. Sep 2012 to Feb 2014.

Theme lead for cardiovascular disease prevention in the NIHR funded Birmingham and Black Country Collaboration for Leadership in Applied Health Research and Care (CLAHRC-BBC) Size of grant: £765,853. Oct 2008 to Oct 2013. (Total for CLAHRC £9,999,170 over 5 years)

Co-investigator: Iranian Health Ministry, Tehran University of Medical Sciences, and Alborz Daru. A polypill trial for the prevention of cardiovascular disease: the PolyIran trial. (Start date January 2011, finish date December 2018) c.£7.5m.

XQ Lao, WJ Ma, **GN Thomas**, YJ Xu, ZH Chen, HX Wang, XJ Xu, MY Di, QM Cai, YY Yu. Plasma glucose, HbA1c and genetic variants in a southern Chinese population experiencing rapid economic development: a prospective longitudinal cohort study. Funded by National Natural Science Foundation of China (NSFC). RMB 160,000;

GN Thomas (PI), R Beech, P Croft, J Deeks, P Gill, F Griffiths, R Hughes, J Mathers, K Rees, T Roberts, J Sim, N Stallard. National Institute for Health Research (NIHR) Research Design Service. Start date 1 October 2013, finish date 30 September 2018. £5,419,031

WYH Chan, M Schooling, B Cowling, CQ Jiang, **GN Thomas**, KK Cheng, PC Sham, HF Tse, TH Lam. Mendelian randomization to causally infer the impact of life-Long Vitamin D Deficiency on cardiovascular disease and death: Implications for community-based cardiovascular prevention. Health and Medical Research Fund (HMRF) HK\$999,000=£79,920 (£1:HK\$12.5) Start date Jan 2013, finish date Dec 2015.

CM Wong (Hong Kong-PI), WM Chan, HK Lai, Y-FL, TQ Thach, AK-H Lau, TH Lam, AJ Hedley, J Ayres, KBH Lam, **GN Thomas (UK-PI)**. Study of long-term exposure to air pollution and chronic cardiovascular and respiratory disease in a cohort of older persons. Start date 1 July 2011, finish date 30 June 2014. Wellcome Trust £158,205.

IMPRESS-AF: IMproved exercise tolerance in patients with PReserved Ejection fraction by Spironolactone on myocardial fibrosis in Atrial Fibrillation. NIHR EME, £1,471,899; Co-I.

Quality and Outcomes Framework: Piloting of Quality Indicators. National Institute for Health and Clinical Excellence (2013): £750,000; Co-PI.

International EchoNoRMAL Group. Normal Reference Ranges for Echocardiography: An Individual Person Meta-Analysis. Led By University of Auckland. Co-I.

Spironolactone to Prevent Cardiovascular Events in Early Stage Chronic Kidney Disease (STOP-CKD): A Pilot Trial. NIHR Research for Benefit Programme (2012) £244,319; Co-PI.

Subclinical hypothyroidism and cardiovascular disease amongst South Asians and Black African-Caribbean groups: analysis of the Ethnic – Echocardiographic Heart of England Screening Study. NIHR National School of Primary Care Research (2012). £19,000; PI.

Assessment of dietary salt intake levels among adults in Delhi and Haryana, India. Wellcome Trust Capacity Building Programme (2011-13) £23,530; Co-I.

Self-monitoring of blood pressure in pregnancy: developing the evidence base in primary care. £236,560; Funder: NSPCR; Start date: 01/10/2012; Duration: 18 months; CI: Richard McManus.

Development and implementation of new diagnostic processes and technologies in primary care. £1,981,996; Funder: NIHR; Start date: 01/10/2008; Duration: 60 months (finished Sept 2012 so not sure if relevant?)

Defining the prognostic value of the morning surge in clinical practice. £34,339; Funder: NSPCR; Start date: 01/10/2011; Duration: 12 months; CI: James Sheppard (ongoing work)

Recent publications...

Kakkar AK, Mueller I, Bassand J-P, **Fitzmaurice DA**, Goldhaber SZ, et al. Risk Profiles and Antithrombotic Treatment of Patients Newly Diagnosed with Atrial Fibrillation at Risk of Stroke: Perspectives from the International, Observational, Prospective GARFIELD registry. *PLoS ONE* 8(5): 2013; e63479. doi:10.1371/journal.pone.0063479

Mohammed MA, Marshall T, Nirantharakumar K, Stevens A, **Fitzmaurice D**. Patterns of warfarin use in subgroups of patients with atrial fibrillation: a cross-sectional analysis of 430 general practices in the United Kingdom *PLoS One*. 2013 May 2;8(5):e61979. doi: 10.1371/journal.pone

Lane D, Raichand S, Moore D, Connock M, Fry-Smith A, **Fitzmaurice D**. Combined anticoagulation and antiplatelet therapy for high-risk patients with atrial fibrillation: a systematic review. *Health Technol Assess* 2013;**17**(30). 2013;(30).

Kaambwa B, Bryan S, Jowett S, Mant J, Bray EP, Hobbs FDR, Holder R, Jones MI, Little P, Williams B, McManus RJ. Telemonitoring And Self-Management In The Control Of Hypertension (TASMINH2): A cost-effectiveness analysis *European Journal of Preventative Cardiology* 2013 DOI: 10.1177/2047487313501886

Lovibond K, Jowett S, Barton P, Caulfield M, Heneghan C, Hobbs FDR, Hodgkinson J, Mant J, Martin U, Williams B, Wonderling D, McManus RJ. Modelling the cost-effectiveness of different options for the diagnosis of high blood pressure in primary care. *Lancet*. 2011. 378; 1219-1230.

Jowett S, Bryan S, Mant J, Fletcher K, Roalfe A, Fitzmaurice D, Lip GYH, Hobbs FDR. Cost effectiveness of warfarin versus aspirin in patients older than 75 years with atrial fibrillation. *Stroke* 2011; 42; 1717-1721.

von Eisenhart Rothe A, Goette A, Kirchhof P, Limbourg T, **Calvert M**, Ladwig, K-H Depression in Paroxysmal and Persistent Atrial Fibrillation Patients: a Cross-Sectional Comparison of Patients Enrolled in Two Large Clinical Trials. In Press *Europace*

Kyte D, Ives J, Draper H, Keeley T, **Calvert M**. **Inconsistencies in quality of life data collection in clinical trials: a potential source of bias? Interviews with research nurses and trialists.** (<http://www.ncbi.nlm.nih.gov/pubmed/24124580>) *PLoS One*. 2013 Oct 4;8(10):e76625. doi: 10.1371/journal.pone.0076625.

Kyte D, Draper H, **Calvert M**. **Patient-reported outcome alerts: ethical and logistical considerations in clinical trials.** (<http://www.ncbi.nlm.nih.gov/pubmed/24065005>) *JAMA*. 2013 Sep 25;310(12):1229-30. doi: 10.1001/jama.2013.277222

Kyte DG, Draper H, Ives J, Liles C, Gheorghe A, **Calvert M**. **Patient reported outcomes (PROs) in clinical trials: is 'in-trial' guidance lacking? a systematic review.** (<http://www.ncbi.nlm.nih.gov/pubmed/23560103>) *PLoS One*. 2013;8(4):e60684. doi: 10.1371/journal.pone.0060684. Epub 2013 Apr 1. Review.

Calvert M, Blazeby J, Altman DG, Revicki DA, Moher D, Brundage MD; CONSORT PRO Group. **Reporting of patient-reported outcomes in randomized trials: the CONSORT PRO extension.** (<http://www.ncbi.nlm.nih.gov/pubmed/23443445>) *JAMA*. 2013 Feb 27;309(8):814-22. doi: 10.1001/jama.2013.879.

Gill PS, **Calvert M**, Davis R, Davies MK, Freemantle N, Lip GY. **Prevalence of heart failure and atrial fibrillation in minority ethnic subjects: the Ethnic-Echocardiographic Heart of England Screening Study (E-ECHOES).** (<http://www.ncbi.nlm.nih.gov/pubmed/22110591>) *PLoS One*. 2011;6(11):e26710. doi: 10.1371/journal.pone.0026710. Epub 2011 Nov 16.

Howell NJ, Ashrafian H, Drury NE, Ranasinghe AM, Contractor H, Isackson H, **Calvert M**, Williams LK, Freemantle N, Quinn DW, Green D, Frenneaux M, Bonser RS, Mascaro JG, Graham TR, Rooney SJ, Wilson IC, Pagano D. **Glucose-insulin-potassium reduces the incidence of low cardiac output episodes after aortic valve replacement for aortic stenosis in patients with left ventricular hypertrophy: results from the Hypertrophy, Insulin, Glucose, and Electrolytes (HINGE) trial.** (<http://www.ncbi.nlm.nih.gov/pubmed/21200004>) *Circulation*. 2011 Jan 18;123(2):170-7. doi: 10.1161/CIRCULATIONAHA.110.945170. Epub 2011 Jan 3.

Marshall T. Physical activity and atrial fibrillation *Heart* published online September 23, 2013 doi: 10.1136/heartjnl-2013-304541

Wu J, Yao GL, Zhu S, Mohammad MA, Marshall T. Patient factors influencing of lipid lowering drugs for primary prevention of cardiovascular disease in UK general practice: a national retrospective cohort study PLoS One 2013 8(7): e67611. doi:10.1371/journal.pone.0067611

Mohammed MA, Marshall T, Nirantharakumar K, Stevens A, Fitzmaurice D. Patterns of warfarin use in subgroups of patients with atrial fibrillation: a cross-sectional analysis of 430 general practices in the United Kingdom PLoS One. 2013 May 2;8(5):e61979. doi: 10.1371/journal.pone

Talaei M, Sarrafzadegan N, Sadeghi M, Oveisgharan S, Marshall T, Thomas GN, Iranipour R. Incidence of cardiovascular diseases in an Iranian population: the Isfahan cohort study. Arch Iran Med. 2013 Mar; 16(3):138-44. doi: 013163/AIM.004.

Bó Hortaigh, JA Bosch, D Carroll, K Hemming, S Pils, A Loerbroks, ME Kleber, TB Grammer, JE Fischer, BO Boehm, W März, **GN Thomas***. Evidence of a synergistic association between heart rate, inflammation, and cardiovascular mortality in patients undergoing coronary angiography. European Heart Journal. 34(12):932-941; 2013. Citation impact factor: 10.478, ISI Cardiac & Cardiovascular Systems Rank 3/117

IL6R Genetics Consortium and Emerging Risk Factors Collaboration, N Sarwar, AS Butterworth, DF Freitag, J Gregson, P Willeit, DN Gorman, P Gao, D Saleheen, A Rendon, CP Nelson, PS Braund, AS Hall, DI Chasman, A Tybjaerg-Hansen, JC Chambers, EJ Benjamin, PW Franks, R Clarke, AA Wilde, MD Trip, M Steri, JC Witteman, L Qi, CE van der Schoot, U de Faire, J Erdmann, HM Stringham, W Koenig, DJ Rader, D Melzer, D Reich, BM Psaty, ME Kleber, DB Panagiotakos, J Willeit, P Wennberg, M Woodward, S Adamovic, EB Rimm, TW Meade, RF Gillum, JA Shaffer, A Hofman, A Onat, J Sundström, S Wassertheil-Smoller, D Mellström, J Gallacher, M Cushman, RP Tracy, J Kauhanen, M Karlsson, JT Salonen, L Wilhelmsen, P Amouyel, B Cantin, LG Best, Y Ben-Shlomo, JE Manson, G Davey-Smith, PI de Bakker, CJ O'Donnell, JF Wilson, AG Wilson, TL Assimes, JO Jansson, C Ohlsson, Å Tivesten, Ö Ljunggren, MP Reilly, A Hamsten, E Ingelsson, F Cambien, J Hung, **GN Thomas**, M Boehnke, H Schunkert, FW Asselbergs, JJ Kastelein, V Gudnason, V Salomaa, TB Harris, JS Kooner, KH Allin, BG Nordestgaard, JC Hopewell, AH Goodall, PM Ridker, H Hólm, H Watkins, WH Ouwehand, NJ Samani, S Kaptoge, E Di Angelantonio, O Harari, J Danesh. Interleukin-6 receptor pathways in coronary heart disease: a collaborative meta-analysis of 82 studies. Lancet. 379(9822):1205-1213; 2012. Citation impact factor: 38.278, ISI Medicine, General & Internal Rank 2/155.

HC Yang, YJ Liang, JW Chen, KM Chiang, CM Chung, HY Ho, CT Ting, TH Lin, SH Sheu, Wei-Chuan Tsai, J-H Chen, HB Leu, WH Yin, TY Chiu, CI Chern, SJ Lin, B Tomlinson, Y Guo, PC Sham, SS Cherny, TH Lam, **GN Thomas**, WH Pan. Identification of IGF1, SLC4A4, WWOX, and SFMBT1 as hypertension susceptibility genes in Han Chinese with a genome-wide gene-based association study. PLoS One. 7(3):e32907; 2012. Citation impact factor: 4.411, ISI Biology Rank 12/86.

GN Thomas, B ó Hortaigh, J Bosch, S Pils, A Loerbroks, ME Kleber, TB Grammer, BO Böhm, W März Vitamin D levels predict all-cause and cardiovascular disease mortality in subjects with the metabolic syndrome: The Ludwigshafen Risk and Cardiovascular Health (LURIC) Study. Diabetes Care. 35(5):1158-1164; 2012. Citation impact factor: 7.141, ISI Endocrinology & Metabolism Rank 9/116.

GN Thomas*, DJ Macfarlane, B Guo, BMY Cheung, SM McGhee, KL Chou, JJ Deeks, TH Lam, B Tomlinson. Health promotion in older Chinese: 12-mo cluster RCT of pedometer and 'peer support'. Medicine and Science in Sports and Exercise. 44(6): 1157-1166; 2012. Citation impact factor: 4.431, ISI Sports Sciences Rank 3/80.

Bennett PC, **Gill PS**, Silverman S, Blann AD, Balakrishnan B, Lip GYH. (2013) Ethnic/racial Differences in Circulating Markers of Angiogenesis and their association with Cardiovascular Risk Factors and Cardiovascular Disease. International Journal of Cardiology 167; 1247-1250.

Patel JV, Chackathayi J, Hughes EA, Webster C, Lip GYH, **Gill PS**. (2013) Vitamin D deficiency amongst minority ethnic groups in the UK: a cross sectional study. International Journal of Cardiology 167: 2172-2176.

Shantsila E, Wrigley BJ, Shantsila A, Tapp LD, **Gill PS**, Lip GHY. (2012) Monocyte-derived and CD34+KDR+ endothelial progenitor cells in heart failure. Journal of Thrombosis and Haemostasis; 10(7):1252-61.

Gill P; Plumridge G; Khunti K; Greenfield S. (2013) Under-representation of minority ethnic groups in cardiovascular research: a semi-structured interview study. Family Practice 30: 233-241.

Shantsila E, Wrigley BJ, Blann AD, **Gill PS**, Lip GYH. (2012) A contemporary view on endothelial function in heart failure. European Journal of Heart Failure 14(8):873-881.

Hodgkinson JA, Sheppard JP, Heneghan C, Martin U, Mant J, Roberts N, McManus RJ. Accuracy of ambulatory blood pressure monitors: a systematic review of validation studies. Journal of Hypertension. 2013 Feb;31(2):239-50. doi: 10.1097/HJH.0b013e32835b8d8b

Martin U, Holder R, **Hodgkinson J**, McManus R. Inter-arm blood pressure differences compared with ambulatory monitoring: a manifestation of the "White-Coat" effect? British Journal of General Practice, 2013; 63(607): 77-78 doi: 10.3399/bjgp13X663055 (abridged)

Hodgkinson JA, Taylor CJ, Hobbs FD. Treatment pathways for patients with atrial fibrillation. International Journal of Clinical Practice Jan 2012;66(1):44-52. doi: 10.1111/j.1742-1241.2011.02818.x.

Lovibond K, Jowett S, Barton P, Caulfield M, Heneghan C, Hobbs FDR, **Hodgkinson J**, Mant J, Martin U, Williams B, Wonderling D, McManus RJ. Cost-effectiveness of options for the diagnosis of high blood pressure in primary care: a modelling study. The Lancet 2011; 378 (9798): 1219 - 1230, 1 October 2011 doi:10.1016/S0140-6736(11)61184-7

Hodgkinson J, Mant J, Martin U, Guo B, Hobbs FDR, Deeks JJ, Heneghan C, Roberts N, McManus RJ. Relative effectiveness of clinic and home blood pressure monitoring compared to ambulatory blood pressure monitoring in the diagnosis of hypertension: a systematic review. British Medical Journal 2011; 342:d3621 doi: 10.1136/bmj.d3621

Hodgkinson J, Taylor C, Hobbs FDR. Predictors of incident Atrial Fibrillation and influence of medications: a retrospective case control study. British Journal of General Practice 2011; 61(587):e353-61. DOI:10.3399/bjgp11X578034

Taylor C, **Hodgkinson J**, Hobbs FDR. Rhythm control agents and adverse events in patients with atrial fibrillation. International Journal of Clinical Practice July 2010, 64, 8, 1069-1075

Research group members...

Pls: [Pelham Barton \(/staff/profiles/haps/HealthEconomics/barton-pelham.aspx\)](#), [Melanie Calvert \(/staff/profiles/haps/PrimaryCareClinicalSciences/calvert-melanie.aspx\)](#), [KK Cheng \(/staff/profiles/haps/PublicHealthEpidemiologyBiostatistics/cheng-kk.aspx\)](#), [Jon Deeks \(/staff/profiles/haps/PublicHealthEpidemiologyBiostatistics/deeks-jon.aspx\)](#), [Paramjit Gill \(/staff/profiles/haps/PrimaryCareClinicalSciences/gill-paramjit.aspx\)](#), [James Hodgkinson \(/staff/profiles/haps/PrimaryCareClinicalSciences/hodgkinson-james.aspx\)](#), [Roger Holder \(/staff/profiles/haps/PrimaryCareClinicalSciences/holder-roger.aspx\)](#), [Sue Jowett \(/staff/profiles/haps/HealthEconomics/jowett-sue.aspx\)](#), [Tom Marshall \(/staff/profiles/haps/PrimaryCareClinicalSciences/marshall-tom.aspx\)](#), [David Moore \(/staff/profiles/haps/PublicHealthEpidemiologyBiostatistics/moore-david.aspx\)](#), [Neil Thomas \(/staff/profiles/haps/PublicHealthEpidemiologyBiostatistics/thomas-neil.aspx\)](#)

Students:

[Cristina Penalzoza \(/staff/profiles/haps/HealthEconomics/penalzoza-maria.aspx\)](#). An investigation of the effect of the use of best practice guidelines and alternative model structures in cardiovascular disease modelling

[Ryan Irwin \(/staff/profiles/haps/students/irwin-ryan.aspx\)](#) – variation and quality improvement in primary care chronic disease management (CVD and diabetes care)

[Clare Taylor \(/staff/profiles/haps/students/taylor-clare.aspx\)](#) – diagnostic pathways to diagnosis of heart failure

[Grace Moran \(/staff/profiles/haps/students/moran-grace.aspx\)](#) – psychological consequences and prognosis following TIA

Wenbun Leong, University of Birmingham. Obesity, sleep disturbances and associated complications.

Naseer Ahmad, University of Liverpool. Ethnicity and socioeconomic status and peripheral arterial disease.

Marzieh Hosseini, Completion date 2013 (3rd year). Role of sleep in health. Funding: NIHR Collaboration for Leadership in Applied Health Research and Care (CLAHRC).

Alison Cartwright, Completion date 2014 (4th year). Role of adiposity on quality of life and mental health measures. Funding: NIHR Collaboration for Leadership in Applied Health Research and Care (CLAHRC).

Gemma Knowles, Completion date 2013 (4th year). Ethnic differences in measures of obesity. Funding: Centre for Obesity Research, University of Birmingham.

Mash Hamid, Completion date 2014 (3rd year). Dietary associations with cardiovascular risk factors: the Guangzhou Biobank Cohort Study. Funding: Norwegian government scholarship.

Clare Stradling (40%), Completion date 2018 (1st year). Role of the Cambridge diet in alleviating HIV dyslipidaemia. Funding: NIHR PhD Fellowship. The natural history of Impaired Glucose Tolerance amongst young adults and its effect on renal function.

NIHR National School of Primary Care Research PhD studentship for Ferozkhan Jadhakhan (2013 - 2016); £85,260; main supervisor

Social networks and transnational South Asian and African-Caribbean families: developing and maintaining social relations with ageing. 4 year PhD School Studentship Farina Kokab. (2011-15) £71,088; main supervisor

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