Public Health
England

Protecting and improving the nation's health

NHS Health Check programme:
Literature review July 5th 2016 to Oct 17th 2016

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

Public Health England
133-155 Waterloo Road
Wellington House
London SE1 8UG
Tel: 020 7654 8000
www.gov.uk/phe
Twitter: @PHE_uk
Facebook: www.facebook.com/PublicHealthEngland

Contents

Acknowledgements

A review of NHS Health Check literature

1.   Introduction

The NHS Health Check is a National programme that aims to prevent heart disease, stroke, diabetes and kidney disease, and raise awareness of dementia both across the population and within high risk and vulnerable groups.

A key part of the programme's governance structure is the expert scientific and clinical advisory group (ESCAP). The ESCAP provides an expert forum for the NHS Health Check policy, acting in an advisory capacity to support successful roll-out, maintenance, evaluation and continued improvement based on emerging and best evidence. In its first meeting ESCAP agreed to progress an initial, broad literature review to identify evidence relevant to the NHS Health Check programme. This remit was later expanded to include identification of evidence on general health checks and diabetes/ cardiovascular disease risk screening in the population. The methods and findings of that review are set out here.

2.   Methods

Medline, PubMed, Embase, Health Management Information Consortium (HMIC), Cumulative Index of Nursing and Allied Health Literature (CINAHL), Global Health, PsycInfo, the Cochrane Library, NHS Evidence, TRIP database, Google Scholar, Google, Clinical Trials.gov and ISRCTN registry were searched for references relevant to the NHS Health Check programme, general health checks, diabetes and cardiovascular screening and cardiovascular disease prevention.

Previous searches had identified references from between January 1996 and July 5th 2016. This search identifies references **from July 5th 2016 to October 17th 2016**. The cut-off date for internet searches was **October 17th 2016**.

Table 1. Search strategies

Database	Search strategy
Ovid Medline	1. health check*.tw.
	2. (diabetes adj3 screen*).tw.
	3. (cardiovascular adj3 screen*).tw.
	4. (population adj2 screen*).tw.
	5. (risk factor adj3 screen*).tw.
	6. (opportunistic adj3 screen*).tw.
	7. medical check*.tw.
	8. general check*.tw.
	9. periodic health exam*.tw.
	10. annual exam*.tw.
	11. annual review*.tw.
	12. NHSHC.tw.
	13. 1 or 2 or 3 or 4 or 5 or 6 or 7 8 or 9 or 10 or 11 or 12
	14. cardiovascular adj3 prevention.tw.
	15. (primary care or general practice or primary healthcare).tw
	16. 14 and 15
	17. Cardiovascular Diseases/ AND Primary Prevention/
	18. 16 or 17
	19. 13 or 18
	20. limit 19 to ed=20160705-20161017
PubMed	1. health check*
	2. diabetes screen*
	3. cardiovascular screen*
	4. population screen*
	5. risk factor screen*
	6. opportunistic screen*
	7. medical check*
	8. general check*
	9. periodic health exam*
	10. annual exam*
	11. annual review*
	12. NHSHC
	13. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12
	14. Cardiovascular Diseases AND Primary Prevention[MeSH Terms]
	15. "primary care"[Text Word] OR "general practice"[Text Word] OR "primary healthcare"[Text Word])
	16. (cardiovascular[Text Word] AND prevention[Text Word])
	17. #15 and #16
	18. #14 or #17
	19. #13 or #18 Filters: Publication date from 2016/07/05 to 2016/10/17

Ovid Embase

1. health check*.tw.
2. (diabetes adj3 screen*).tw.
3. (cardiovascular adj3 screen*).tw.
4. (population adj2 screen*).tw.
5. (risk factor adj3 screen*).tw.
6. (opportunistic adj3 screen*).tw.
7. medical check*.tw.
8. general check*.tw.
9. periodic health exam*.tw.
10. annual exam*.tw.
11. annual review*.tw.
12. NHSHC.tw.
13. periodic medical examination/
14. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13
15. cardiovascular adj3 prevention.tw.
16. (primary care or general practice or primary healthcare).tw
17. 15 and 16
18. cardiovascular disease/ AND primary prevention/
19. 17 or 18
20. 14 or 19
21. limit 20 to dd=20160705-20161017

Ovid HMIC

1 "health check*".af.
2 health checks/
3 (cardiovascular or vascular or heart or diabetes or stroke).af.
4 (screen* or risk).af.
5 3 AND 4
6 1 OR 2 or 5
7 cardiovascular adj3 prevention.tw.
8 (primary care or general practice or primary healthcare).tw
9 7 and 8
10 Cardiovascular diseases/ AND exp preventive medicine/
11 9 or 10
12 6 or 11
13 limit 12 to yr="2016"

EBSCO CINAHL

S10 S1 OR S2 OR S9 Limiters - Published Date: 20160705-20161017
S9 S5 OR S8
S8 S6 AND S7
S7 (MH "Preventive Health Care+")
S6 (MH "Cardiovascular Diseases+")
S5 S3 AND S4
S4 "primary care" or "general practice" or "primary healthcare"
S3 TX cardiovascular N3 prevention
S2 (diabetes N3 screen*) OR (cardiovascular N3 screen*) OR (population N2 screen*) OR (risk factor N3 screen*) OR (opportunistic N3 screen*) OR "medical check*" OR "general check*" OR "periodic health exam*" OR "annual exam*" OR "annual review*" OR NHSHC
S1 health check*

EBSCO Global Health

S10 S6 OR S19 OR S3 Limiters - Publication Year: 2016
S9 S7 AND S8
S8 DE "preventive medicine"
S7 DE "cardiovascular diseases"
S6 S4 AND S5
S5 "primary care" or "general practice" or "primary healthcare"
S4 TX cardiovascular N3 prevention
S3 S1 OR S2
S2 (diabetes N3 screen*) OR (cardiovascular N3 screen*) OR (population N2 screen*) OR (risk factor N3 screen*) OR (opportunistic N3 screen*) OR "medical check*" OR "general check*" OR "periodic health exam*" OR "annual exam*" OR "annual review*" OR NHSHC
S1 health check*

HDAS PsycInfo

1 "health check*".af.
2 PHYSICAL EXAMINATION/
3 HEALTH SCREENING/
4 "diabetes screen*".af
5 "cardiovascular screen*".af
6 "population screen*".af
7 ("opportunistic* screen*" OR "risk factor screen*").af
8 ("medical check*" OR "general check*" OR "periodic health exam*" OR "annual exam*" OR "annual review*" OR NHSHC).af
9 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8
10 cardiovascular.ti,ab
11 prevention.ti,ab
12 10 AND 11
13 CARDIOVASCULAR DISORDERS/
14 PREVENTIVE MEDICINE/
15 13 AND 14
16 12 OR 15
17 9 OR 16
18 17 [Limit to: Publication Year 2016]

Cochrane Library (Wiley)	#1 "health check*" #2 (diabetes next/3 screen*) or (cardiovascular next/3 screen*) or (population next/2 screen*) or (opportunistic next/2 screen*) or ("risk factor" next/3 screen*) or "medical check*" or "general check*" or "periodic health exam*" or "annual exam*" or "annual review*" or NHSHC #3 cardiovascular adj3 prevention.tw. #4 (primary care or general practice or primary healthcare).tw #5 #3 and #4 #6 MeSH descriptor: [Cardiovascular Diseases] this term only #7 MeSH descriptor: [Primary Prevention] explode all trees #8 #6 and #7 #9 #5 or #8 #10 #1 or #2 or #9 Publication Year from 2016 to 2016
NHS Evidence	*"health check*"* OR *cardiovascular prevention primary care* Limited to 05/07/2016 to 17/10/2016
TRIP database	*"health check*"* OR *cardiovascular prevention primary care* Since 2016
Google Scholar	*"nhs health check"* *cardiovascular "health check"* *cardiovascular prevention "primary care"* Since 2016, sorted by relevance.
Google	*"nhs health check"* *cardiovascular prevention "primary care"* *cardiovascular "health check"* Limited to past year, sorted by relevance
Clinical trials.gov and ISRCDN registry	*"health check",* limited to 07/05/2016 to 10/17/2016

Citation titles and abstracts were then screened in order to determine whether or not they were relevant. Those citations considered relevant were categorised using the PHE Types of Information, and are listed below in section 4. Categorisation has been based on information provided by authors/indexers and has not been independently verified. No appraisal of individual resources has been undertaken. A summary of the main aim, methods and results of each citation is provided, as well as a link to the abstract or full text, if available. If the full text of an article is not freely available online, it may be available via the PHE Knowledge & Library Service or OpenAthens.

3.   Results

The number of references identified are shown in table 2 and 2a.

Table 2. Citations published/entered between July 5th 2016 and October 17th 2016

Database	No. of hits	Exclusive
Medline (July 5th 2016 – Oct 17th 2016)	361	360
PubMed (July 5th 2016 – Oct 17th 2016)	417	389
Embase (July 5th 2016 – Oct 17th 2016)	625	489
HMIC (up to Sept 2016)	38	32
CINAHL (up to 17th Oct 2016)	132	113
Global Health (2016)	539	526
PsycInfo (2016)	100	48
Cochrane Library (Issue 10/12, Oct 2016)	13	10
NHS Evidence (05/07/2016 to 17/10/2016)	288	235
TRIP database (since 2016)	40	20
TOTAL		**2222**

Table 2a. Citations added to internet sources between July 5th 2016 and October 17th 2016

Internet sources	No. of hits
Google Scholar (17th Oct 2016)	262
Google (6th July 2016)	400
Trials registers (6th July 2016)	1
TOTAL	**463**

Note: it is not feasible to determine whether these internet hits are exclusive

From these 2685 results, 7 were identified as being relevant to the NHS Health Check programme, 6 to general health checks and 34 to diabetes/cardiovascular disease screening or prevention.

Total relevant references = 47
- **NHS Health Checks = 7**
- **general health checks = 6**
- **diabetes/cardiovascular disease screening or prevention = 34**

4. References on the NHS Health Check Programme (7)

Guidance
Public Health England 2016. **NHS Health Checks: increasing uptake**. This document includes techniques and innovative ways of increasing NHS Health Check uptake. View full text

Trials
McDermott, L., Wright, A. J., Cornelius, V., et al. 2016. **Enhanced invitation methods and uptake of health checks in primary care. Rapid randomised controlled trial using electronic health records**. *Health Technology Assessment* 385. AIM: to evaluate the effectiveness of an enhanced invitation method using the Question-Behaviour Effect (QBE), with or without the offer of a financial incentive to return the QBE questionnaire, at increasing the uptake of health checks. Secondary objectives were to evaluate reasons for low uptake of invitations and to compare case-mix for invited and opportunistic health checks. METHODS: Three-arm randomised trial. All participants invited for health checks from 18 general practices. Interventions: i) standard health check invitation only, ii) QBE questionnaire followed by standard invitation; iii) QBE questionnaire with offer of a financial incentive to return the questionnaire, followed by standard invitation. Outcomes: The primary outcome was completion of health check within six months of randomisation. RESULTS: There were 12,459 participants allocated and health check uptake was evaluated for 12,052 participants for whom outcome data were collected. Health check uptake was: standard invitation, 590 / 4,095 (14.4%); QBE questionnaire, 630 / 3,988 (15.8%); QBE questionnaire and financial incentive, 629 / 3,969 (15.9%). The increase in uptake associated with QBE questionnaire was 1.43% (95% confidence interval -0.12 to 2.97%, P=0.070) and for the QBE questionnaire and offer of financial incentive was 1.52% (-0.03 to 3.07%, P=0.054). The difference in uptake associated with the offer of an incentive to return the QBE questionnaire was -0.01% (-1.59 to 1.58%, P=0.995). During the study, 58% of health check cardiovascular risk assessments did not follow a trial invitation. People who received 'opportunistic' health checks had greater odds of ≥10% cardiovascular disease (CVD) risk; adjusted odds ratio 1.70, 95% confidence interval 1.45 to 1.99, P<0.001) compared with invited health checks. View abstract

Cross-sectional studies
Alageel, S., Wright, A. J. & Gulliford, M. C. 2016. **Changes in cardiovascular disease risk and behavioural risk factors before the introduction of a health check programme in England**. *Prev Med* 91 158-163. AIM: to evaluate changes in cardiovascular risk and behavioural risk factors in a health check eligible population in England from 1994 to 2013 METHODS: repeated cross-sectional design using seven surveys of the Health Survey for England. Measures included traditional CVD risk factors and behavioural risk factors. Linear trends were estimated allowing for sampling design. RESULTS: The surveys comprised 49,805 adults aged 45 to 74years; 30,639 were free from cardiovascular comorbidity; 16,041 (52%) had complete data for quantitative risk factors. Between 1994 and 2013, systolic blood pressure decreased

by 3.1 (95% confidence interval 2.5 to 3.6) mmHg per decade in men and 5.0 (4.5 to 5.5) in women. Total cholesterol decreased by 0.20 (0.16 to 0.24) mmol/l per decade in men; 0.23 (0.19 to 0.26) in women. Smoking declined by 6% (5% to 8%) per decade in men; 7% (6% - 8%) in women. The proportion with CVD-risk >/=20% declined by 6.8% per decade in men; 2.4% in women. Multiple behavioural risk factors were strongly associated with estimated CVD-risk, but improving trends in traditional CVD risk factors were inconsistent with increasing indicators of adiposity. View full text

Service Evaluation

Coffey, M. & Cooper, A. 2016. **Learning from Salford's NHS Health Check Improvement Journey: A document review**. Project Report, University of Salford.

AIM: Explore the outcomes of the 2014-2016 collaboration between Salford City Council (SCC), Haelo and other Salford Partners with respect to improving the uptake of NHS Health Checks

METHODS: This project is a secondary data analysis of documentation from a range of key stakeholders involved in the provision and delivery of Health Checks between 2014 and 2016. The documents for analysis include: reports; minutes of meetings; research, posters, a rapid review of the literature, research bids and best practice guidance from PHE.

RESULTS: The review has shown that there have been a huge variety of different activities under this collaboration, separated out into 4 key activity-themes, namely:
• Non-traditional settings/ partnerships - Community Engagement
• Practice Engagement/GPs
• Research
• Management/governance of the Health Check processes

Overall, the key aim of the collaborative, i.e. to increase uptake rates to 75% was not consistently met, which mirrors national trends.
View full text

Coghill, N., Garside, L. & Chappell, A. 2016. **Improving the uptake of NHS Health Checks in more deprived communities using 'outreach'telephone calls made by specialist health advocates from the same communities: A quantitative service evaluation**. *NHS Health Check National Conference 2016: Getting serious about prevention. London.*

AIM: This study aimed to determine the efficacy of a telephone outreach service for inviting patients for an NHS health Check, in GP practices from the lowest super output areas of Bristol (LSOA).

METHODS: 12 self-selected GP practices opted to use the telephone outreach initiative and five practices acted as controls. Rate of uptake, demographics, including IMD for the populations included and predictions for uptake were explored using STATA v13.1

RESULTS: Intervention practices were more successful at attracting ethnic minority patients to attend and complete their NHS Health Check (25.6%), compared to non-telephone outreach practices (7.2%). However, intervention practices showed a, 24% rate of uptake compared to 36% in control practices. Patients were more likely to attend their GP practice to complete their NHS Health Check, following their phone call if they were female, over aged 70 and less deprived.
View full text

Reviews (non-systematic)
Hudson, H. 2016. **The NHS Heath Check screening and non-diabetic hyperglycaemia**. *Practice Nursing* 27(10) 473-480. AIM: This review encourages practice nurses to provide advice to patients regarding the role of physical activity in reducing risk of developing type 2 diabetes. METHODS: This article reviews the statistics, screening for non-diabetic hyperglycaemia and associated risk factors, as well as the rationale behind NHS Health Checks and their uptake, to date. View abstract Millward, K. 2016. **NHS health checks**. *Primary Health Care* 26(8) 13. METHODS: Three recent studies examining the NHS Health Check programme are reviewed. View abstract

References relating to general health checks (6)

Meta-analysis

Ware, R. S. & Lennox, N. G. 2016. **Characteristics influencing attendance at a primary care health check for people with intellectual disability: An individual participant data meta-analysis**. *Res Dev Disabil* 55 235-41.

AIM: To assess the characteristics of people with intellectual disability who, when offered a health check with their primary care physician at no cost, completed the health check.

METHODS: Data from three randomised controlled trials considering health checks in people with intellectual disability living in the community were included in an individual-patient data meta-analysis. The studies used the same health check and the participant characteristics investigated (age, sex, cause of disability, level of disability and socio-economic position) were defined identically, but participants were sourced from different settings: adults living in 24-h supported accommodation, adults living in private dwellings, and school-attending adolescents.

RESULTS: In total 715 participants were offered health checks. Compared to participants with Down syndrome, participants with other known causes of disability were more likely not to attend their health check (odds ratio;95%CI)=(2.5;1.4-4.7), as were participants with no known cause of disability (2.3;1.2-4.3). These associations remained significant after adjusting for potentially confounding variables.

View full text

Evidence Summaries

NIHR Dissemination Centre 2016. **Signal: Annual health checks for people with intellectual disabilities reduce preventable emergency admissions**. 2nd Aug.

AIM: This study aimed to analyse hospital admissions for people with an intellectual disability from across English GP practices

METHODS: Emergency admissions, preventable emergency admissions and elective admissions were all looked at separately. Practices with high and low uptakes of health checks were compared. Practices that had seen 50% or more of their patients with intellectual disability were classified as having a high-uptake of health checks (126 practices) while those seeing less than 25% were classified as non-participating (95 practices).

RESULTS: There was no significant difference in overall emergency admissions amongst people with intellectual disabilities in GP practices with high-uptake compared to non-participating practices (incident rate ratio [IRR] 0.97, 95% confidence interval [CI] 0.78 to 1.19). There was no difference in emergency admissions between people with intellectual disabilities who had or had not received a health check (IRR 0.96, 95% CI 0.87 to 1.07). There was also no difference in elective admissions.There was a reduction in preventable (i.e. ambulatory care sensitive conditions) emergency admissions amongst people who received a health check compared to people who had not received a health check (IRR 0.82, 95% CI 0.69 to 0.99).

View full text

Cross-sectional studies

Bukman, A. J., Teuscher, D., Ben Meftah, J., et al. 2016. **Exploring strategies to reach individuals of Turkish and Moroccan origin for health checks and lifestyle advice: a mixed-methods study**. *BMC Fam Pract* 17 85.

AIM: to explore how adults of Turkish and Moroccan origin living in the Netherlands, aged 45 years and older, can be reached to participate in health checks for cardio-metabolic diseases and follow-up (lifestyle) advice.

METHODS: This mixed-methods study used a convergent parallel design, to combine data of one quantitative study and three qualitative studies. Questionnaire data were included of 310 respondents, and interview data from 22 focus groups and four individual interviews. Participants were recruited via a research database, general practitioners and key figures. Quantitative data were analysed descriptively and qualitative data were analysed using a thematic approach.

RESULTS: Regarding health checks, 50 % (95 % CI 41;59) of the Turkish questionnaire respondents and 66 % (95 % CI 57;76) of the Moroccan questionnaire respondents preferred an invitation from their general practitioner. The preferred location to fill out the health check questionnaire was for both ethnic groups the general practitioner's office or at home, on paper. Regarding advice, both groups preferred to receive advice at individual level rather than in a group, via either a physician or a specialised healthcare professional. It was emphasised that the person who gives lifestyle advice should be familiar with the (eating) habits of the targeted individual. Sixty-one percent (95 % CI 53;69) of the Turkish respondents preferred to receive information in their native language compared to 37 % (95 % CI 29;45) of the Moroccan respondents.

View full text

Formative Evaluation

Lloyd, B., Khanal, S., Macoun, E., et al. 2016. **Development of a multiple risk factor Brief Health Check for workplaces**. *Public Health Res Pract* 26(4).

AIM: to design an evidence based health risk assessment tool, a process for referring workers to healthy lifestyle programs, and a process for general practitioners to help workers mitigate their risk of chronic disease, independently of the workplace

METHODS: Translational formative evaluation.

RESULTS: The tool had good feasibility and acceptance, but barriers included business organisational issues (including the time taken to facilitate the health checks) and some scepticism among workers about the motivation of businesses and the absence of measurements other than waist circumference. A cluster nonrandomised trial showed no benefit of a modest incentive for participation. A significant proportion of workers were identified as being at risk of chronic disease, and many received an appropriate referral to an evidence based program.

View full text

Service Evaluation

Honnekeri, B., Vyas, A., Lokhandwala, D., et al. 2016. **Routine health check-ups: A boon or a burden?** *National Medical Journal of India* 29(1) 18-21.

AIM: to put forth recommendations for routine health screening for common diseases in asymptomatic adults in India

METHODS: Reviewed current screening guidelines for cardiovascular disease and common cancers, and surveyed multiple 'packages' provided at 8 centres in Mumbai, India.

RESULTS: Based on the current guidelines, we propose a preventive health check-up and early detection approach for various disease conditions in the Indian context. All adults who visit a doctor should be screened for hypertension. Routine screening of all men/women aged >35/45 years, respectively for dyslipidaemia may be discouraged. Screening for hypertension in men (aged 35–45 years) and women (aged 45–55 years) may be done if they have other risk factors for atherosclerosis. Routine screening for men/women over 45/55 years of age seems more appropriate. Routine screening may be discouraged for people >70 years of age.

View full text

Economic analysis

Gupta, T. & Gandhi, P. 2016. **An economic analysis comparing average cost of screening patients using remedy social platform versus popular preventive health check-up programs**. *International Journal of Medical Science and Public Health* 5(5) 882-885.

AIM: to evaluate disease risk prevailing in population and recommend a personalised diagnostic plan instead of a generic plan.

METHODS: Analysis using data collected from 140 patients through an online health assessment questionnaire. All of the participants in study were screened for a risk of them having a particular disease and were assigned a personalised diagnostic plan based on their risk-profile using an algorithm.

RESULTS: The average diagnostic cost came substantially lower than the tests recommended by usual health preventive checkup plans. This could result in highly judicious utilization of health-care resources, money, and participant time without creating any significant compromise in screening sensitivity.

View full text

References relating to diabetes and cardiovascular disease screening or prevention (34)

Note: These articles have not been categorised into publication types and are listed in alphabetical order by author.

Citations in author order
Cheong, A., Khoo, E., Tong, S., et al. 2016. **To check or not to check? A qualitative study on how the public decides on health checks for cardiovascular disease prevention**. *PLoS ONE* 11(7) e0159438-e0159438. AIM: to explore the views and experiences of the public in deciding to undergo health checks for CVD prevention. METHODS: This was a qualitative study utilising the constructivist grounded theory approach. A total of 31 individuals aged 30 years and above from the community were sampled purposively. Eight interviews and six focus groups were involved, using a semi-structured topic guide RESULTS: A conceptual framework was developed to explain the public's decision-making process on health check participation for CVD prevention. The intention to participate in health checks was influenced by the interplay between perceived relevance and the individual's readiness to face the outcome of health checks. Health checks were deemed relevant if people perceived themselves to be at risk of CVD and there was an advantage in knowing their cardiovascular status. People were ready to face the outcome of health checks if they wanted to know the results and were prepared to deal with the subsequent management. The decision to participate in health checks was also influenced by external factors such as the views of significant others, and the accessibility and availability of resources including time and finances. View full text. Note: See correction. *PLoS One* 11(8) e0162152.
Dalsgaard, E. M., Lauritzen, T., Borch-Johnsen, K., et al. 2016. **Early detection of type 2 diabetes and intensive treatment may reduce social inequalities in cardiovascular morbidity and mortality, ADDITION-Denmark**. *Diabetologia* 59 (1 Supplement 1) S180. AIMS: to examine the association between socioeconomic status and mortality and cardiovascular disease (CVD) METHODS: The ADDITION-Denmark trial cohort includes 1533 individuals aged 40-69 years with type 2 diabetes detected by screening between 2001 and 2006. Information on baseline education, income and cohabitation status was obtained from national registers. Using Cox regression, we calculated the long-term risk of CVD and all-cause mortality by socio-economic status, adjusting for age, gender and prevalent CVD. RESULTS: After five years of follow-up, individuals with a low educational level had a higher risk of CVD (HR 2.3, 95% CI 1.2 to 4.3) compared to those with higher educational level. Those with a moderate income also had a higher risk of CVD (HR 2,3, 95% CI 1.4 to 4.3) compared to individuals with the highest income. There was no association between education and risk of mortality (HR 1.6, 95% CI 0.9 to 2.6), nor between income and mortality (HR 1.6, 95% CI 0.9 to 2.8). View abstract

Dautzenberg, M. J. D., Haverkate, M. R., Bonten, M. J. M., et al. 2016. **Impact of socioeconomic deprivation on screening for cardiovascular disease risk in a primary prevention population: a cross-sectional study**. *BMJ Open* 6(3) e009984-e009984.

AIM: to investigate the association between socioeconomic deprivation and completeness of cardiovascular disease (CVD) risk factor recording in primary care, uptake of screening in people with incomplete risk factor recording and with actual CVD risk within the screened subgroup.

METHODS: Cross-sectional study in nine UK general practices with 7987 people aged 50-74 years with no CVD diagnosis. CVD risk was estimated using the Framingham equation from data extracted from primary care electronic health records. Where there was insufficient information to calculate risk, patients were invited to attend a screening assessment.

RESULTS: People who had lower Indices of Multiple Deprivation (IMD) scores (less deprived) had significantly worse routine CVD risk factor recording (adjusted OR 0.97 (0.95 to 1.00) per IMD decile; p=0.042). Screening attendance was poorer in those with more deprivation (adjusted OR 0.89 (0.86 to 0.91) per IMD decile; p<0.001). Among those who attended screening, the most deprived were more likely to have CVD risk 20% (OR 1.09 (1.03 to 1.15) per IMD decile; p=0.004).

View full text

David, F. B., Charity, D. E., Dean, T. E., et al. 2016. **Community Pharmacists Assisting in Total Cardiovascular Health (CPATCH): A Cluster-Randomized, Controlled Trial Testing a Focused Adherence Strategy Involving Community Pharmacies**. *Pharmacotherapy* 36(10) 1055.

AIM: To test a brief intervention for preventing statin nonadherence among community pharmacy patrons.

METHODS: Prospective, cluster-randomized, controlled trial (the Community Pharmacists Assisting in Total Cardiovascular Health [CPATCH] trial).Thirty community pharmacies in Saskatchewan, Canada.Participating pharmacies were randomized to 15 intervention pharmacies where a brief statin adherence intervention was delivered by pharmacists (intervention group [907 patients]) or 15 usual care pharmacies where no statin adherence intervention was delivered (usual care group [999 patients]) to new users of statins (defined as less than 1 yr of statin therapy). The primary outcome was mean difference in statin adherence between the intervention and usual care groups.

RESULTS: Among 1906 eligible patients, no significant differences in mean adherence were observed between those receiving the intervention and those receiving usual care (71.6% vs 70.9%, p=0.64), the percentage of patients achieving optimal adherence (57.3% vs 55.9%, p=0.51), or the percentage exhibiting nonpersistence (9.4% vs 8.3%, p=0.41). However, compliance to the study protocol was extremely low in several intervention pharmacies. In a post hoc analysis, a higher level of protocol compliance among intervention pharmacies was significantly associated with higher adherence (p<0.01 for trend). Pharmacies falling in the highest tertile of compliance to the study protocol exhibited higher mean adherence among their patients compared with those in the usual care group ($\hat{I}^2$ = 0.056, 95% confidence interval [CI] 0.010-0.101, p=0.01), and a significantly higher percentage of patients achieving optimal adherence (odds ratio 1.32, 95% CI 1.08-1.61; p<0.01); however, nonpersistence did not significantly differ between the two groups (5.5% vs 8.3%, p=0.27).

View abstract

De Boer, A. W., De Mutsert, R., Den Heijer, M., et al. 2016. **Advantages and disadvantages of unstructured cardiovascular risk factor screening for follow-up in primary care**. *European Journal of Preventive Cardiology* 23(11) 1195-1201.
AIM: This study investigates the advantages and disadvantages of unstructured screening of blood pressure and cholesterol outside primary care.
METHODS: After the baseline visit of the Netherlands Epidemiology of Obesity study (population-based prospective cohort study in persons aged 45-65 years, recruited 2008-2012) all participants received a letter with results of blood pressure and cholesterol, and a recommendation to consult a GP if results were abnormal. Four years after the start of the study, participants received a questionnaire about the follow-up of their results.
RESULTS: The study population consisted of 6343 participants, 48% men, mean age 56 years, mean body mass index 30 kg/m^2. Of all participants 66% had an abnormal result and, of these, 49% had a treatment indication based on the risk estimation system SCORE-NL 2006. Of the 25% of the participants who did not consult a GP, 40% had a treatment indication. Of the participants with an abnormal result 19% were worried, of whom 60% had no treatment indication.
View abstract

de Waard, A., Korevaar, J., Hollander, M., et al. 2016. **How is selective prevention of cardiometabolic diseases organized in the EU member states?** *The Netherlands Institute for Health Services Research*.
AIM: to give an overview of how selective prevention of CMD is organized in all 28 European Union (EU) member states.
METHODS: The SPIMEU research team developed an online questionnaire regarding the presence and organization of selective prevention of CMD. This questionnaire was sent to the expert in the field of prevention of CMDs in each of all 28 EU member states.
RESULTS: In order to look for opportunities to improve selective prevention of CMDs we will compare how this prevention is currently organized across the different EU member states. So far, 27 of the 28 experts completed the questionnaire and we are currently analyzing the results. We will take different factors into account by comparing the organization of selective prevention of CMD between the EU member states, for example organization of health care, strength of primary care, gatekeeper system, health insurance system and gross domestic product.
View abstract

Doval, H. C. 2016. **Does cardiovascular disease screening save lives in asymptomatic adults?** *Revista Argentina de Cardiologia* 84(4) 388-393.
AIM: to enumerate the criteria to decide whether screening should be performed in a medical condition
METHODS: the criteria are discussed in terms of the severity of the medical condition in terms of disability or mortality load amplitude caused in the population, the quality of the screening test in terms of sensitivity, specificity and predictive value, and whether the early medical condition has an effective treatment and advantages over the treatment performed at the moment of clinical presentation.
View full text

Dyakova, M., Shantikumar, S., Colquitt Jill, L., et al. 2016. **Systematic versus opportunistic risk assessment for the primary prevention of cardiovascular disease**. *Cochrane Database of Systematic Reviews*(1).

AIM: to assess the effectiveness, costs and adverse effects of systematic risk assessment compared to opportunistic risk assessment for the primary prevention of CVD.

METHODS: We searched the Cochrane Central Register of Controlled Trials (on the Cochrane Library, MEDLINE, EMBASE on 30 January 2015, and Web of Science Core Collection and additional databases on the Cochrane Library on 4 December 2014. We also searched two clinical trial registers and checked reference lists of relevant articles. We applied no language restrictions.Selection criteria: We selected randomised controlled trials (RCTs) that assessed the effects of systematic risk assessment, defined as a screening-like programme involving a predetermined selection process of people, compared with opportunistic risk assessment which ranged from no risk assessment at all to incentivised case finding of CVD and related risk factors. Participants included healthy adults from the general population, including those who are at risk of CVD.

RESULTS: Nine completed RCTs met the inclusion criteria, of which four were cluster-randomised. We also identified five ongoing trials. The included studies had a high or unclear risk of bias, and the GRADE ratings of overall quality were low or very low. The length of follow-up varied from one year in four studies, three years in one study, five or six years in two studies, and ten years in two studies. Eight studies recruited participants from the general population, although there were differences in the age ranges targeted. There was insufficient evidence to stratify by the types of risk assessment approaches. Overall, systematic risk assessment appears to result in lower total cholesterol levels (mean difference (MD) -0.11 mmol/l, 95% CI -0.17 to -0.04, 6 studies, 7 comparisons, 12,591 participants, I² = 57%; very low-quality evidence), lower systolic blood pressure (MD -3.05 mmHg, 95% CI -4.84 to -1.25, 6 studies, 7 comparisons, 12,591 participants, I² = 82%; very low-quality evidence) and lower diastolic blood pressure (MD -1.34 mmHg, 95% CI -1.76 to -0.93, 6 studies, 7 comparisons, 12,591 participants, I² = 0%; low-quality evidence).

View full text

Foraker, R. E., Shoben, A. B., Kelley, M. M., et al. 2016. **Electronic health record-based assessment of cardiovascular health: The stroke prevention in healthcare delivery environments (SPHERE) study**. *Prev Med Rep* 4 303-8.

AIM: to encourage patient-centered CVH discussions among at-risk, yet under-treated, populations by implementing a CVH risk assessment, visualisation, and decision-making tool that automatically populates with electronic health record (EHR) data during the encounter

METHODS: We quantified five of the seven CVH behaviors and factors that were available in The Ohio State University Wexner Medical Center's EHR at baseline (May-July 2013) and compared values to those ascertained at one-year (May-July 2014) among intervention (n = 109) and control (n = 42) patients.

RESULTS: The CVH of women in the intervention clinic improved relative to the metrics of body mass index (16% to 21% ideal) and diabetes (62% to 68% ideal), but not for smoking, total cholesterol, or blood pressure. Meanwhile, the CVH of women in the control clinic either held constant or worsened slightly as measured using those same metrics.

View full text

Hamilton, F., Devlin, G. & Arcus, K. 2016. **Primary prevention of cardiovascular disease-what happens in the rest of the world?** *Heart Lung and Circulation* 25 S36.

AIM: to update guidelines for medical management of CVD in New Zealand.

METHODS: A systematic review focussing on recent quality assured international

guidelines and systematic reviews published since 2012 which included CVD risk assessment and management

RESULTS: Fourteen international quality assured guidelines and six systematic reviews were identified and reviewed. A full summary of the results will be presented including a variety of thresholds for considering or recommending whether to treat medically, when treating to a target varying views on what those targets should be and equivocal views on risk communication and medication adherence .

View abstract

Hassan, Y., Ford, J. & Steel, N. 2016. **Why are statin prescribing guidelines for primary prevention not always followed in primary care?** *British Journal of General Practice* 66(651) 536-537.

AIM: to discuss causes of variations in rate of statin prescribing in primary care and how to solve the mismatch between guidelines and evidence base, and prescribing behaviour of GPs, who appear reluctant to prescribe statins for primary prevention to low-risk individuals

View preview

Hayek, A., Joshi, R., Usherwood, T., et al. 2016. **An integrated general practice and pharmacy-based intervention to promote the use of appropriate preventive medications among individuals at high cardiovascular disease risk: protocol for a cluster randomized controlled trial**. *Implement Sci* 11(1) 129.

AIM: to address treatment gaps in the use of preventive medications among patients at high CVD risk in the Australian primary care setting

METHODS: Following a systematic development process, the intervention will be evaluated in a pragmatic cluster randomized controlled trial including 70 general practices for a median period of 18 months. This intervention comprises a general practice quality improvement tool incorporating clinical decision support and audit/feedback capabilities; availability of a range of CVD polypills (fixed-dose combinations of two blood pressure lowering agents, a statin +/- aspirin) for prescription when appropriate; and access to a pharmacy-based program to support long-term medication adherence and lifestyle modification. The 35 general practices in the intervention group will work with a nominated partner pharmacy, whereas those in the control group will provide usual care without access to the intervention tools. The primary outcome is the proportion of patients at high CVD risk who were inadequately treated at baseline who achieve target blood pressure (BP) and low-density lipoprotein cholesterol (LDL-C) levels at the study end.

View full text

Hemming, K., Ryan, R., Gill, P., et al. 2016. **Targeted case finding in the prevention of cardiovascular disease: a stepped wedge cluster randomised controlled trial**. *Br J Gen Pract* 66(651) e758-67.

AIM: to evaluate the effectiveness of a programme of targeted, nurse-led case finding for CVD prevention in primary care.

METHODS: Urban West Midlands general practices between February 2009 and August 2012. Untreated patients aged 35-74 years and at >/=20% 10-year CVD risk were identified, invited for assessment by a project nurse, and referred to their GP for treatment initiation. The primary outcome was the proportion of high-risk patients prescribed antihypertensives or statins after exposure to the intervention compared with an equivalent period of time prior to exposure. Secondary outcomes included assessment of CVD risk factors.

RESULTS: In 26 sequentially randomised general practices the exposed group consisted of 2926 untreated high-risk patients identified at the start of the intervention, with 2969 patients identified at the start of the unexposed period. The trial was well balanced in terms of age, sex, and cardiovascular risk factors. In the

exposed period 19.7% of patients were prescribed antihypertensives or statins, and 10.8% of patients in the unexposed period. After adjustment for clustering and temporal effects the risk difference was 15.5% (95% CI = 3.9 to 27.1, P = 0.009). Assessment of lipid levels increased significantly, at 26.4% (99% CI = 5.3 to 47.5, P = 0.001).
View abstract

Hessler, J. B., Ander, K. H., Bronner, M., et al. 2016. **Predicting dementia in primary care patients with a cardiovascular health metric: a prospective population-based study**. *BMC Neurol* 16 116.
AIM: the purpose of the study is to examine the association of a cardiovascular health metric including six behaviors and blood parameters with the risk of dementia in primary care patients.
METHODS: Participants (N = 3547) were insurants aged >/=55 of the largest German statutory health insurance company, who were enrolled in a six-year prospective population-based study. Smoking, physical activity, body mass index, blood pressure, total cholesterol, and fasting glucose were assessed by general practitioners at routine examinations. Using recommended cut-offs for each factor, the patients' cardiovascular health was classified as ideal, moderate, or poor. Behaviors and blood parameters sub-scores, as well as a total score, were calculated. Dementia diagnoses were retrieved from health insurance claims data.
RESULTS: Over the course of the study 296 new cases of dementia occurred. Adjusted for age, sex, and education, current smoking (HR = 1.77, 95% CI 1.09-2.85), moderate (1.38, 1.05-1.81) or poor (1.81, 1.32-2.47) levels of physical activity, and poor fasting glucose levels (1.43, 1.02-2.02) were associated with an increased risk of dementia. Body mass index, blood pressure, and cholesterol were not associated with dementia. Separate summary scores for behaviors and blood values, as well as a total score showed no association with dementia. Sensitivity analyses with differently defined endpoints led to similar results.
View full text

Kenneth, J. S., Shihchen, K., Janice, C. Z., et al. 2016. **Cost Effectiveness of an Internet-delivered Lifestyle Intervention in Primary Care Patients with High Cardiovascular Risk**. *Preventive Medicine* 87 103.
AIM: to assess the cost-effectiveness of an online adaptation of the diabetes prevention program (ODPP) lifestyle intervention.
METHODS: ODPP was a before-after evaluation of a weight loss intervention comprising 16 weekly and 8 monthly lessons, incorporating behavioral tools and regular, brief, web-based individualized counseling in an overweight/obese cohort (mean age 52, 76% female, 92% white, 28% with diabetes). A Markov model was developed to estimate ODPP cost effectiveness compared with usual care (UC) to reduce metabolic risk over 10years. Intervention costs and weight change outcomes were obtained from the study; other model parameters were based on published reports.
RESULTS: Compared to UC, the ODPP in our cohort cost $14,351 and $29,331 per quality-adjusted life-year (QALY) gained from the health care system and societal perspectives, respectively. In a hypothetical cohort without diabetes, the ODPP cost $7777 and $18,263 per QALY gained, respectively.
View full text

Khanji, M. Y., Bicalho, V. V., van Waardhuizen, C. N., et al. 2016. **Cardiovascular Risk Assessment: A Systematic Review of Guidelines**. *Ann Intern Med*(13th Sept).
AIM: to systematically review current primary prevention guidelines on adult cardiovascular risk assessment and highlight the similarities and differences to aid clinician decision making.

METHODS: Publications in MEDLINE and CINAHL between 3 May 2009 and 30 June 2016 were identified. 2 reviewers screened titles and abstracts to identify guidelines from Western countries containing recommendations for cardiovascular risk assessment for healthy adults. 2 reviewers independently assessed rigor of guideline development using the Appraisal of Guidelines for Research and Evaluation II instrument

RESULTS: Of the 21 guidelines, 17 showed considerable rigor of development. These recommendations address assessment of total cardiovascular risk (5 guidelines), dysglycemia (7 guidelines), dyslipidemia (2 guidelines), and hypertension (3 guidelines). All but 1 recommendation advocates for screening, and most include prediction models integrating several relatively simple risk factors for either deciding on further screening or guiding subsequent management. No consensus on the strategy for screening, recommended target population, screening tests, or treatment thresholds exists.

View abstract

Kotseva, K., De Bacquer, D., De Backer, G., et al. 2016. **Lifestyle and risk factor management in people at high risk of cardiovascular disease. A report from the European Society of Cardiology European Action on Secondary and Primary Prevention by Intervention to Reduce Events (EUROASPIRE) IV cross-sectional survey in 14 European regions**. *Eur J Prev Cardiol*.

AIM: to determine whether the 2012 Joint European Societies' guidelines on cardiovascular disease (CVD) prevention in people at high CVD risk have been followed in clinical practice.

METHODS: Patients without a history of atherosclerotic disease started on either blood pressure and/or lipid and/or glucose-lowering treatments were identified and interviewed at least six months after the start of medication.

RESULTS: Medical notes of 6700 patients were reviewed, and 4579 patients (58.7% women; mean age 58.8 (standard deviation (SD) 11.3) years) interviewed (interview rate 68.3%). Overall, 16.6% were smokers, 39.9% were overweight (body mass index (BMI)>/=25 and <30 kg/m2), 43.5% obese (BMI >/=30 kg/m2) and 63.9% centrally obese (waist circumference of >/=88 cm for women, >/=102 cm for men). The medical risk factor control was very poor, with less than half (42.8%) of the patients on blood pressure lowering medication reaching the target of <140/90 mm Hg (<140/80 mm Hg in people with self-reported diabetes). Among treated dyslipidaemic patients only 32.7% attained the low-density lipoprotein (LDL)-cholesterol target of <2.5 mmol/l. Among people treated for type 2 diabetes mellitus, 58.5% achieved the glycated haemoglobin (HbA1c) target of <7.0%.

View abstract

Mbanya, V. N., Mbanya, J. C., Kufe, C., et al. 2016. **Effects of Single and Multiple Blood Pressure Measurement Strategies on the Prediction of Prevalent Screen-Detected Diabetes Mellitus: A Population-Based Survey**. *Journal of Clinical Hypertension* 18(9) 864-870.

AIM: to investigate the effects of single and multiple blood pressure (BP) measurements during the same encounter on screen-detected diabetes risk.

METHODS: Data for 9018 Cameroonian adults from a community-based survey were used. Resting BP was measured three times 5 minutes apart. Logistic regressions were used to compute the odd ratio (OR) per standard deviation (SD) higher BP variables.

RESULTS: Systolic BP, diastolic BP, and mean arterial pressure (MAP), but not pulse pressure, were related to prevalent diabetes. The highest OR (95% confidence interval [CI]) per SD higher pressure were recorded for MAP (OR, 1.16; 95% CI, 1.05-1.28) and systolic BP (OR, 1.15; 95% CI, 1.04-1.27). Estimates of the association were highest for the first, then third, and lastly the second BP

measurements. Estimates from average BP measurements were not better than those from single measurement.
View abstract

McKinn, S., Bonner, C., Jansen, J., et al. 2016. **Factors influencing general practitioners' decisions about cardiovascular disease risk reassessment: findings from experimental and interview studies**. *BMC Fam Pract* 17 107.
AIM: to understand the different factors that general practitioners (GPs) consider when deciding on the reassessment interval for patients previously assessed for primary CVD risk.
METHODS: This paper combines quantitative and qualitative data regarding reassessment intervals from two separate studies of CVD risk management. 144 Australian GPs viewed a random selection of hypothetical cases via a paper-based questionnaire, in which blood pressure, cholesterol and 5-year absolute risk (AR) were systematically varied to appear lower or higher. GPs were asked how they would manage each case, including an open-ended response for when they would reassess the patient. Semi-structured interviews were conducted with a purposive sample of 25 Australian GPs, recruited separately from the GPs in the experimental study.
RESULTS: GPs stated that they would reassess the majority of patients across all absolute risk categories in 6 months or less (low AR = 52 % [CI95% = 47-57 %], moderate AR = 82 % [CI95% = 76-86 %], high AR = 87 % [CI95% = 82-90 %], total = 71 % [CI95% = 67-75 %]), with 48 % (CI95% = 43-53 %) of patients reassessed in under 3 months. The majority (75 % [CI95% = 70-79 %]) of patients with low-moderate AR (</=15 %) and an elevated risk factor would be reassessed in under 6 months. Interviews: GPs identified different functions for reassessment and risk factor monitoring, which affected recommended intervals. These included perceived psychosocial benefits to patients, preparing the patient for medication, and identifying barriers to lifestyle change and medication adherence. Reassessment and monitoring intervals were driven by patient motivation to change lifestyle, patient demand, individual risk factors, and GP attitudes.
View full text

NHS Right Care 2016. **The cardiovascular disease (CVD) prevention pathway**. *NHS Right Care*.
AIM: to provide local health economies with a high-level overarching national case for change; a best practice pathway for individual conditions; and best practice case studies for elements of the pathway demonstrating what to change, how to change and a scale of improvement.
METHODS: The cardiovascular disease (CVD) prevention pathway is the first in a series of optimal value pathways on a number of conditions. These evidence-based pathways are being developed by NHS RightCare in close collaboration with NHS England's National Clinical Directors, Public Health England, Royal Colleges, NICE and other non-statutory stakeholders including patient groups.
View pathway

Nicholls, A. R., Bohning, D., Holt, R., et al. 2016. **The use of glucose measurements to improve screening for diabetes in clinical practice**. *British Journal of Diabetes and Vascular Disease* 16(3) 123-127.
AIM: To determine whether the addition of glucose measurements to the Leicester Risk Assessment Score (LRAS) improves the prediction of HbA1c >42mmol/mol (6.0%) compared with a risk score alone, and reduces the number requiring additional tests to determine their glycaemic status.
METHODS: LRAS and HbA1c were assessed in 484 participants (aged 40C80 years). 184 participants recruited directly from primary care underwent a fasting

glucose measurement while 300 participants recruited through advertisement to the general public attended for a random capillary glucose.

RESULTS: A LRAS of >17 had a sensitivity of 79.6% and specificity of 60.1% to predict the HbA1c value of >42 mmol/mol (6.0%). The addition of a fasting glucose to the LRAS improved the explained variation in HbA1c from 20.8% with a risk score alone to 46.7%. In addition the number of people requiring further assessment of their glucose status was reduced from 43.8% to 33.2%. The addition of a random capillary glucose to the LRAS did not significantly improve the model.

View full text

Patel, R. S., Lagord, C., Waterall, J., et al. 2016. **Online self-assessment of cardiovascular risk using the Joint British Societies (JBS3)-derived heart age tool: a descriptive study**. *BMJ Open* 6(9) e011511.

AIM: to report on the uptake and profiles of those who used the JBS3 self-assessment tool to determine their own cardiovascular risk.

METHODS: Observational, retrospective analysis of online tool use. Between February and July 2015, user data collected from the NHS Choices website, where the tool was hosted, were analysed anonymously using standard analytic packages.

RESULTS: The online tool landing page was viewed 1.4 million times in the first 5 months, with increased activity following limited media coverage. Of the 575 782 users completing the data journey with a valid 'heart age' result, their demographic and risk factor profiles broadly resembled the population of England, although both younger users and males (60%) were over-represented. Almost 50% and 79% did not know or enter their blood pressure or total cholesterol values, respectively. Estimated heart age was higher than chronological age for 79% of all users, and also for 69% of younger users under 40 years who are at low 10-year risk and not invited for NHS Health Checks.

View full text

Poltavskiy, E., Kim, D. & Bang, H. 2016. **Comparison of screening scores for diabetes and prediabetes**. *Diabetes Research and Clinical Practice* 118 146-153.

AIM: to compare the two screening scores from the American Diabetes Association (ADA) and Centers for Disease Control and Prevention (CDC) that can be used for DM as well as preDM

METHODS: Adult participants (N=9391) without known DM from the National Health and Nutrition Examination Surveys 2009-12 were included. We fitted the factors/items in the ADA and CDC scores in logistic regression with the outcomes of undiagnosed DM, preDM, and combination, and assessed the association and discrimination accuracy. We also evaluated the suggested cutpoints that define high risk individuals. We mimicked the original models/settings but also tested various deviations/modifications often encountered in practice.

RESULTS: Both scores performed well and robustly, while the ADA score performed somewhat better (e.g., AUC=0.77 for ADA and 0.73-0.74 for CDC for DM; 0.72-0.74 and 0.70-0.71 for preDM). The same predictors and scoring rules seem to be reasonably justified with different cutpoints for DM and preDM, which can make usage easier and consistent. Some factors such as race and HDL/LDL cholesterols may be useful additions to health education.

View full text

Rosendaal, N. T. A., Hendriks, M. E., Verhagen, M. D., et al. 2016. **Costs and cost-effectiveness of hypertension screening and treatment in adults with hypertension in rural Nigeria in the context of a health insurance program**. *PLoS ONE* 11(6) e0157925-e0157925.

AIM: to evaluate the costs and cost-effectiveness of hypertension care provided within the Kwara State Health Insurance (KSHI) program in rural Nigeria.

METHODS: A Markov model was developed to assess the costs and cost-effectiveness of population-level hypertension screening and subsequent antihypertensive treatment for the population at-risk of cardiovascular disease (CVD) within the KSHI program. The primary outcome was the incremental cost per disability-adjusted life year (DALY) averted in the KSHI scenario compared to no access to hypertension care.. RESULTS: Screening and treatment for hypertension was potentially cost-effective but the results were sensitive to changes in underlying assumptions with a wide range of uncertainty. The incremental cost-effectiveness ratio for the first and second strategy respectively ranged from US$ 1,406 to US$ 7,815 and US$ 732 to US$ 2,959 per DALY averted, depending on the assumptions on risk reduction after treatment and compared to no access to antihypertensive treatment.
View full text

Selak, V., Harwood, M., Raina Elley, C., et al. 2016. **Polypill-based therapy likely to reduce ethnic inequities in use of cardiovascular preventive medications: Findings from a pragmatic randomised controlled trial**. *Eur J Prev Cardiol* 23(14) 1537-45.
AIM: to investigate the consistency of the proportional effect of fixed-dose combination therapy (the 'polypill') on the use of recommended cardiovascular preventative medications among indigenous Maori and non-indigenous adults in New Zealand.
METHODS: Maori and non-Maori primary care patients at high risk of cardiovascular disease were randomised to a polypill (containing aspirin, statin and two antihypertensives) or usual care for a minimum of 12 months. The main outcome for this study was the use of all recommended medications (antiplatelet, statin and two antihypertensives) at 12 months.
RESULTS: Baseline use of recommended medications was 36% (93/257) among Maori and 51% (130/156) among non-Maori participants. Polypill-based care was associated with an increase in the use of recommended medications among Maori (relative risk [RR]: 1.87; 95% confidence interval [CI]: 1.50-2.34) and non-Maori (RR: 1.66; 95% CI: 1.37-2.00) when compared with usual care at 12 months, and there was no statistically significant heterogeneity in this outcome by ethnicity (p = 0.92).
View abstract

Sharma, S. K., Arvind, K., Vineeta, S., et al. 2016. **Screening of cardiovascular risk factors among, urban, semiurban, and rural residents in Jammu district of Jammu and Kashmir**. *International Journal of Medical Science and Public Health* 5(3) 443-447.
AIM: to study the cardiovascular disease risk factors in urban, semiurban, and rural population.
METHODS: A cross-sectional study was conducted by the Department of Cardiology of Super Speciality Hospital in the urban, semiurban, and rural areas of Jammu district of Jammu and Kashmir state, India, for a period of 2 years. Of the 4,050 volunteers screened, 1,030 were in urban, 1,270 in semiurban, and 1,750 in rural areas; the demographic profile, blood pressure, and blood sugar were observed, and the results were evaluated in percentages.
RESULTS: The mean age of the screened subjects was above 50 years of age, and the male to female ratio was, approximately, 1.5:1 at urban, 4:1 at semiurban, and 2.5:1 at rural areas. The majority of them were smokers, and about 58.9% of urban, 60% of semiurban, and 39.9% of rural volunteers were overweight and obese. The systolic prehypertension was 30%, 29.8%, and 30.9% and hypertension was 42.7%, 44.2%, and 44.9% among urban, semiurban, and rural population, respectively. The random blood sugar was positive in 9.3%, 12.8%, and 11.5% in urban, semiurban, and rural population, respectively.
View full text

Smetana, G. W., Abrahamson, M. J. & Rind, D. M. 2016. **Should We Screen for Type 2 Diabetes?: Grand Rounds Discussion From Beth Israel Deaconess Medical Center**. *Annals of Internal Medicine* 165(7) 509-516.
AIM: to debate screening merits and benefits, the significance of abnormal blood glucose levels and diabetes as cardiovascular risk factors, and test the application of guidelines to a particular patient aged 40 to 70 years who is overweight and does not have symptoms of diabetes
View abstract

Stiglic, G., Fijacko, N., Stozer, A., et al. 2016. **Validation of the Finnish Diabetes Risk Score (FINDRISC) questionnaire for undiagnosed type 2 diabetes screening in the Slovenian working population**. *Diabetes Res Clin Pract* 120 194-7.
AIM: to identify the optimum cut-off values for the FINDRISC questionnaire in the Slovenian working-age population
METHODS: A cross-sectional population-based study was performed on a sample of 632 individuals in two healthcare institutions between April and December 2015. The FINDRISC questionnaire was fully completed by 551 participants, aged 20–65 years, who were screened from the healthy working population living in the south-eastern region of Slovenia.
RESULTS: Optimal results for men were achieved at FINDRISC >7 (100.0% sensitivity and 0.78 AUC (area under the ROC curve)) and for women at FINDRISC >13 (60.0% sensitivity and 0.78 AUC).
View abstract

Sweeting, M. J., Barrett, J. K., Thompson, S. G., et al. 2016. **The use of repeated blood pressure measures for cardiovascular risk prediction: a comparison of statistical models in the ARIC study**. *Stat Med.*
AIM: to compare models that use simple summary measures of the repeat information on systolic blood pressure, such as (i) baseline only; (ii) last observation carried forward; and (iii) cumulative mean, against more complex methods that model the repeat information using (iv) ordinary regression calibration; (v) risk-set regression calibration; and (vi) joint longitudinal and survival models.
METHODS: Use of prediction models and dynamic risk-prediction
RESULTS: In comparison with the baseline-only model, we observed modest improvements in discrimination and calibration using the cumulative mean of systolic blood pressure, but little further improvement from any of the complex methods
View full text

Teo, C. H., Ng, C. J., Booth, A., et al. 2016. **Barriers and facilitators to health screening in men: A systematic review**. *Social Science & Medicine* 165 168-176.
AIM: to present current evidence on the barriers and facilitators to engaging men in health screening.
METHODS: A systematic review including qualitative, quantitative and mixed-method studies identified through five electronic databases, contact with experts and reference mining. Two researchers selected and appraised the studies independently. Data extraction and synthesis were conducted using the 'best fit' framework synthesis method.
RESULTS: 53 qualitative, 44 quantitative and 6 mixed-method studies were included. Factors influencing health screening uptake in men can be categorized into five domains: individual, social, health system, healthcare professional and screening procedure. The most commonly reported barriers are fear of getting the disease and low risk perception; for facilitators, they are perceived risk and benefits of screening.

26

Male-dominant barriers include heterosexual -self-presentation, avoidance of femininity and lack of time. The partner's role is the most common male-dominant facilitator to screening.
View abstract

Todd, B. A. 2016. **Pharmacist prescribing practices in a clinical pharmacy cardiac risk service**. *American Journal of Health-System Pharmacy* 73(18) 1442-1450
AIM: to describe prescribing practices within a clinical pharmacy cardiac risk service (CPCRS) and their impact on treatment outcomes in patients with atherosclerotic cardiovascular disease (ASCVD).
METHODS: Kaiser Permanente Colorado (KPCO), a group-model health maintenance organization with about 675,000 members served by 30 medical offices throughout Colorado, has adopted a collaborative drug therapy management (CDTM) model that enables pharmacist prescribing to improve patient access, patient care, and healthcare cost-effectiveness. Within the CPCRS established by KPCO, qualified pharmacists are permitted to prescribe initial therapy, modify drug regimens, order laboratory tests, and perform follow-up activities within their professional scope of practice
RESULTS: The CPCRS at KPCO has demonstrated successful maintenance of a clinical pharmacy service including pharmacist prescribing under a CDTM model to manage patients with ASCVD
View abstract

Van Lieshout, J., Huntink, E., Koetsenruijter, J., et al. 2016. **Tailored implementation of cardiovascular risk management in general practice: a cluster randomized trial**. *BioMed Central* 11(115).
AIM: to assess the effectiveness of a a tailored improvement program (which included communication skills training, online patient information, and a clinical protocol for managing depressive symptoms) on professional performance and outcomes in cardiovascular patients.
METHODS: A two-arm cluster randomized trial in 34 general practices involving 34 nurses was conducted. The primary outcome was an aggregated score of a positive score on lifestyle counselling delivered and an appropriate action on depressive symptoms. Secondary outcomes included the various elements of the primary outcome, vascular risk factors (extracted from patient records), and patient-reported lifestyle behaviors. Data were collected from medical records and a written survey among included patients.
RESULTS: A sample of 1782 patients with recorded cardiovascular disease or high cardiovascular risk was available at follow-up at 6 months. No impact on the primary outcome was found; lifestyle counselling was recorded in a minority of patients (11.4 % in the intervention group and 10.3 % in the control group). An effect was found on a secondary outcome: patients' physical activity level increased (B 0.18; 95 % CI 0.02–0.35) on a seven-point scale.
View full text

White, M. 2016. **Population approaches to prevention of type 2 diabetes**. *PLoS Med* 13(7) e1002080
AIM: this article reviews the behavioural interventions that may help to prevent Type 2 Diabetes Mellitus
View full text