Public Health England

Protecting and improving the nation's health

NHS Health Check programme:

Literature review April 18th 2016 to July 5th 2016

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Published July 2016
PHE publications gateway number:

Contents

Acknowledgements

This literature review has been produced by the PHE Knowledge and Library Service with the support of members from the NHS Health Check Expert Scientific and Clinical Advisory Panel

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 April (week 3) 2016. This search identifies references **from April (week 3) 2016 to July 5th 2016**. The cut-off date for internet searches was **6th July 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 or 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=20160418-20160705
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 2016/04/18 to 2016/07/07

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=20160418-20160705

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: 20160418-20160705 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 18/04/2016 to 05/07/2016
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 04/18/2016 to 07/06/2016

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 April (week 3) and July 5th 2016

Database	No. of hits	Exclusive
Medline (April 21st 2016 to July 5th 2016)	350	350
PubMed (April 21st 2016 to 5th July)	349	247
Embase (2016 week 16 to 2016 week 27)	645	571
HMIC (April 2016 to May 2016)	18	16
CINAHL (up to 5th July 2016)	127	116
Global Health (up to 5th July 2016)	341	278
PsycInfo (up to 5th July)	200	191
Cochrane Library (Issue 6/12, June 2016)	41	30
NHS Evidence (18/04/2016 to 05/07/2016)	210	204
TRIP database (18/04/2016 to 05/07/2016)	248	231
TOTAL		**2234**

Table 2a. Citations added to internet sources between April 18th 2016 and July 6th 2016.

Internet sources	No. of hits
Google Scholar (5th July 2016)	505
Google (6th July 2016)	300
Trials registers (6th July 2016)	29
TOTAL	**834**

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

From these 3068 results, 6 were identified as being relevant to the NHS Health Check programme, 24 to general health checks and 49 to diabetes/cardiovascular disease screening or prevention.

Total relevant references = 79

- **NHS Health Checks = 6**
- **general health checks = 24**
- **diabetes/cardiovascular disease screening or prevention = 49**

4. References on the NHS Health Check Programme (6)

Critically appraised topic
Newton J and Thompson K. (2016). *NHS Health Check: national evaluation findings and their implications*. Published on behalf of the NHS Health Check Expert Scientific and Clinical Advisory Panel May 2016. AIM: to rapidly appraise the recent NHS Health check national evaluation METHODS: Papers are only appraised by ESCAP if they have a) a large sample size b) a robust method and c) achieve a high level of coverage in the media RESULTS: The new study shows that attendees had significantly higher cardiovascular risk, average systolic blood pressure, diastolic blood pressure, body mass index (BMI) and total cholesterol compared with non-attendees. Significantly higher rates of diagnosis for chronic kidney disease (CKD), familial hypercholesterolemia, hypertension, peripheral vascular disease and type 2 diabetes were also reported. The programme is not therefore attracting the “worried well” as had been feared but is in fact being taken up by those at somewhat higher than average risk. There was a detectable absolute reduction in modelled cardiovascular risk in patients identified as having had a check (6.7% to 6.2%) but this was a small change and was also true to a lesser extent in those deemed not to have had a check (5.1% to 4.9%). However, NHS Health Check attendance was associated with significant decreases in blood pressure, BMI and total cholesterol which persisted after matching. There was no significant change in smoking rates. The study demonstrated significant increases in prescribing of statins and anti-hypertensive medication attributed to attendance at a check. However, even in patients at high risk (>20% 10-year cardiovascular risk) only 40% were on statins and 23% on antihypertensive medication View full text
Cross-sectional studies
Miller LK (2016). *Implementation of point-of-care testing: current applications and the impact on patient experience*. Manchester Metropolitan University. PhD thesis AIM: to identify where and how POCT [point-of-care testing] is currently used, to assess its impact on patient outcome and experience within a community setting and to evaluate its performance in the community setting. METHODS: A survey was performed to gain insight on the extent to which POCT is used within UK primary care, how well established it is and general attitudes toward its use. A cross-sectional study, employing both quantitative and qualitative methods was conducted with patients receiving local authority provided NHS Health Checks in the community, where POCT is used to measure cholesterol and glucose. The analytical and operator performance of the POCT used was also assessed. RESULTS: UK primary care staff were aware of POCT; 86% of respondents

reporting that their surgery used some form of POCT on a regular basis. It appeared, however, that POCT operators were not always trained and that the quality of results obtained was not always considered. The use of POCT in community-based NHS Health Checks was well received and enabled the screening of individuals who would not normally access healthcare. However, the programme as a whole did not instigate significant improvements in the cardiovascular health of the participants, unless the participant was referred for further testing. The POCT used produced results that were significantly different from the reference value, producing clinically significant changes in outcome.
View full text

Petersen J and Benzeval M (2016). *Untreated hypertension in the UK household population - Who are missed by the general health checks?* Preventive Medicine Reports 4: 81-86.
AIM: This paper investigates the prevalence and characteristics of those with untreated (compared to treated) hypertension who did not have a history of cardiovascular disease (CVD); a group who is in effect missed by general health checks.
METHODS: Untreated hypertension was studied in 8933 individuals aged 40-74 years representative of the UK household population, who were interviewed and underwent a physical health examination in their home, 2010-2012.
RESULTS: The prevalence of untreated hypertension without a history of CVD was 7% for men, 2% for women, and 5% overall. Untreated hypertension was particularly high among the 55-64 year age group.Age and sex-adjusted analyses found strong positive associations with male gender, smoking, self-reported good-excellent health, full fat dairy preference, white bread preference, higher alcohol consumption, and living alone. Strong negative associations were found for possessing 5. + prescription drugs, statins or antiplatelets, being diagnosed with diabetes or possessing antidiabetics, and long-term limiting illness status.
View full text

Qualitative research

Shaw RL et al. (2016). *GPs' perspectives on managing the NHS Health Check in primary care: a qualitative evaluation of implementation in one area of England*. BMJ Open 6(7): e010951.
AIM: This paper aimed to evaluate the implementation of the National Health Service (NHS) Health Check programme in one area of England from the perspective of general practitioners (GPs).
METHODS: A qualitative exploratory study was conducted with GPs involved in delivering the NHS Health Check and with patients. Primary care surgeries in Birmingham Cross City Clinical Commissioning Group were invited to take part - this study focuses on 9 GPs who were willing to participate. Individual semistructured interviews were conducted with GPs face to face or via telephone.

RESULTS: Themes were generated which represent GPs' experiences of managing the NHS Health Check: primary care as a commercial enterprise; 'buy in' to concordance in preventive healthcare; following protocol and support provision. GPs also need support in allocating resources to the Health Check including training on how to conduct checks in a concordant (or collaborative) way.
View full text

Modelling studies

Kypridemos C et al. (2016). *Cardiovascular screening to reduce the burden from cardiovascular disease: Microsimulation study to quantify policy options*. BMJ 2016;353:i2793.
AIM: To estimate the potential impact of universal screening for primary prevention of cardiovascular disease (National Health Service Health Checks) on disease burden and socioeconomic inequalities in health in England, and to compare universal screening with alternative feasible strategies.
METHODS: Microsimulation study of a close-to-reality synthetic population (with similar characteristics to the community dwelling population of England). Five scenarios were considered: baseline scenario, assuming that current trends in risk factors will continue in the future; universal screening; screening concentrated only in the most deprived areas; structural population-wide intervention; and combination of population-wide intervention and concentrated screening. Main outcome measure Cardiovascular disease cases and deaths prevented or postponed by 2030, stratified by fifths of socioeconomic status using the index of multiple deprivation.
RESULTS: Compared with the baseline scenario, universal screening may prevent or postpone approximately 19 000 cases (interquartile range 11 000-28 000) and 3000 deaths (-1000-6000); concentrated screening 17 000 cases (9000-26 000) and 2000 deaths (-1000-5000); population-wide intervention 67 000 cases (57 000-77 000) and 8000 deaths (4000-11 000); and the combination of the population-wide intervention and concentrated screening 82 000 cases (73 000-93 000) and 9000 deaths (6000-13 000). The most equitable strategy would be the combination of the population-wide intervention and concentrated screening, followed by concentrated screening alone and the population-wide intervention.
View full text

Ongoing research

Mitchell J et al. (2016). *Effectiveness and cost-effectiveness of a very brief physical activity intervention delivered in NHS Health Checks (VBI Trial): study protocol for a randomised controlled trial*. Trials 17(1): 1.
AIM: To estimate the effectiveness of a very brief pedometer-based intervention (Step it Up) in increasing objectively-measured physical activity in adults 40–74 years of age attending NHS Health Checks in primary care compared with the Health Check alone, and to estimate the cost-effectiveness of this intervention
METHODS: The Very Brief Intervention (VBI) Trial is a two parallel-group,

randomised, controlled trial with 1:1 individual allocation and follow-up at 3 months. A total of 1,140 participants will be recruited from 23 primary care practices in the east of England. Participants eligible for an NHS Health Check and who are considered suitable to take part by their doctor and able to provide written informed consent are eligible for the trial. Participants are randomly assigned at the beginning of the NHS Health Check to either 1) the control arm, in which they receive only the NHS Health Check, or 2) the intervention arm, in which they receive the NHS Health Check plus 'Step It Up' (a face-to-face discussion, including feedback on current activity level, recommendations for physical activity, and information on how to use a pedometer, set step goals, and monitor progress; written material supporting the discussion and a pedometer to wear and a step chart for monitoring progress) RESULTS: The primary outcome will be accelerometer counts per minute at 3-month follow-up. Secondary outcomes will include the time spent in the different levels of physical activity, self-reported physical activity and economic measures. Trial recruitment is underway.
View details

References relating to general health checks (24)

Evidence summaries

Lopez-Garcia-Franco A et al. (2016). *Health checks in general practice: Evidence first, not last*. Polskie Archiwum Medycyny Wewnetrznej 126(3): 185-189.
AIM: to review evidence on health checks in general practice
METHODS: unclear, no stated search strategy or criteria for evidence selection
RESULTS: The currently available evidence on the effectiveness of health checks is limited. The effectiveness of health checks must be assessed through rigorously designed RCTs with adequate statistical power and follow-up. Special emphasis must be placed on avoiding common biases associated with studies on screening programs.
View full text

Ridley J et al. (2016). *Adult health checkup: Update on the Preventive Care Checklist Form©.* Canadian Family Physician 62(4): 307-313 and e171-ee178.
AIM: To describe updates to the Preventive Care Checklist Form (an evidence-based tool used to screen average-risk adults at the periodic health examination) to help family physicians stay up to date with current preventive health care recommendations.
METHODS: The Ovid MEDLINE database was searched using specified key words and other terms relevant to the periodic health examination. Secondary sources, such as the Canadian Task Force on Preventive Health Care, the Public Health Agency of Canada, the Trip database, and the Canadian Medical Association Infobase, were also searched. Recommendations for preventive health care for average-risk adults were reviewed
RESULTS: Updates were made to the form based on the Canadian Task Force on Preventive Health Care recommendations including screening for obesity (2015), hypertension (2012), and diabetes (2012, 2013).
View full text

Collins P et al. (2016). *Cardiovascular risk assessment in women - an update*. Climacteric 19(4): 329.
AIM: To review female-specific risk factors that may contribute to the potential development of cardiovascular disease.
METHODS AND RESULTS: unclear from the abstract, full text not available
View abstract

Systematic reviews

Ware RS and Lennox NG (2016). *Characteristics influencing attendance at a primary care health check for people with intellectual disability: An individual participant data meta-analysis*. Research in Developmental Disabilities 55: 235-241.

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 abstract

Cohort studies

Avanzini F et al. (2016). *Improving cardiovascular prevention in general practice: Results of a comprehensive personalized strategy in subjects at high risk*. European Journal of Preventive Cardiology 23(9): 947-955.

AIM: to assess feasibility and results of a comprehensive personalized method for cardiovascular prevention in high risk patients followed by their general practitioner.

METHODS: Between 2004 and 2007, 12,513 patients (mean age 64.0 ± 9.5 years; 61.5% males) with multiple cardiovascular risk factors or history of atherosclerotic disease were identified and followed for five years. If control of major modifiable cardiovascular risk factors (hypertension, hypercholesterolaemia, diabetes, obesity, smoking, unhealthy diet, physical inactivity) was sub-optimal, at baseline and yearly thereafter general practitioners planned with patients, with the help of a brief checklist, preventive interventions to improve the global risk profile. Main outcome was the control of the seven major modifiable cardiovascular risk factors during follow-up.

RESULTS: Control of all major modifiable risk factors except physical inactivity improved gradually and significantly ($p < 0.0001$) during follow-up. The improvement in the global cardiovascular risk profile during the first year was independently and significantly associated with a lower rate of major cardiovascular events in the following years (hazard ratio 0.939; 95% confidence interval 0.887–0.994, $p = 0.03$).

View abstract

Carey IM et al. (2016). *Do health checks for adults with intellectual disability reduce emergency hospital admissions? Evaluation of a natural experiment*. J Epidemiol Community Health. doi:10.1136/jech-2016-207557.
AIM: to assess the effectiveness of health checks for adults with intellectual disability (ID) in reducing emergency hospital admissions using a large English primary care database.
METHODS: An evaluation of a 'natural experiment', incorporating practice and individual-level designs. For practices, changes in admission rates for adults with ID between 2009-2010 and 2011-2012 were compared in 126 fully participating versus 68 non-participating practices. For individuals, changes in admission rates before and after the first health check for 7487 adults with ID were compared with 46 408 age-sex-practice matched controls.
RESULTS: Practices with high health check participation showed no change in emergency admission rate among patients with ID over time compared with non-participating practices (IRR=0.97, 95% CI 0.78 to 1.19), but emergency admissions for ACSCs did fall (IRR=0.74, 0.58 to 0.95). Among individuals with ID, health checks had no effect on overall emergency admissions compared with controls (IRR=0.96, 0.87 to 1.07), although there was a relative reduction in emergency admissions for ACSCs (IRR=0.82, 0.69 to 0.99). Elective admissions showed no change with health checks in either analysis.
View full text

Lytvyak, E., et al. (2016). *Impact of a 3-year multi-centre community-based intervention on risk factors for chronic disease and obesity among free-living adults: the Healthy Alberta Communities study*. BMC Public Health 16(1): 1-15.
AIM: The current paper examines changes in blood pressure (BP) and anthropometric indicators within the Healthy Alberta Communities (HAC) communities compared to secular trends.
METHODS: Height, weight, waist and hip circumference and blood pressure (BP) were measured among 1554 and 1808 community residents at baseline (2006) and follow-up (2009), respectively. A comparison sample was drawn from a representative national survey. Samples were stratified by age and change between pre- and post-intervention was assessed using t-tests.
RESULTS: Adjusted systolic (SBP) and diastolic (DBP) BP declined within most age groups in HAC communities from pre- to post-intervention. The net decline in SBP was 1 mmHg in 20-39 year olds ($p = 0.006$) and 2 mmHg in 40-59 year olds ($p = 0.001$), while the net decline in DBP was 3 mmHg in 20-39 year olds ($p < 0.001$), 2 mmHg in 40-59 year olds ($p < 0.001$) and 3 mmHg in 60-79 year olds ($p < 0.001$). The net increase in the proportion of individuals with normal BP was 5.9 % ($p < 0.001$), while the net decline in the proportion of individuals with stage 1 hypertension was 4.5 % ($p < 0.001$). BMI and body weight were unchanged.
View full text

Martin N et al. (2016). *Identification and Management of Women at Risk for Heart Disease: Results From the CardioPrevent® Program*. Canadian Journal of Cardiology 32(4): S10-S11.
AIM: to evaluate the cardioprevent® program, a program providing physicians with a systematic process to screen and identify women and their family members deemed at risk for future cvd and link them to a personalized primary prevention program to reduce that risk.
METHODS: Outreach facilitators work with primary care practices to introduce systematic processes to screen at-risk patients (patients with predicted 10-year risk of hard cvd outcome ≥ 10% who have not yet suffered a cardiac event) who can then be linked into the cardioprevent program. Patients undergo a full risk factor screening and receive tailored education and programming supported by behavioural-based counseling over 23 sessions by a health coach. Patients complete assessments at baseline, 6 and 12 months to evaluate changes in global cardiovascular risk and health-related outcomes (i.e., lipids, HbA1c, blood pressure, smoking, weight, waist circumference, BMI, physical activity, nutrition, stress, anxiety, depression, and QOL).
RESULTS: Six hundred and thirty three program referrals from participating physicians in the Champlain region have been received. In a sample of 435 patients (mean age = 58.9 years; 69% female), 10-year risk of developing CVD was reduced by a relative 27.3% (from 20.5% to 14.9%) over 12 months. At 12 months, there was a 0.6 unit reduction in total cholesterol/HDL ratio (p = .000), a 0.6 mmol/L reduction in total cholesterol (p=.000), a 0.2% reduction in HbA1c (p = .004), a 0.9 kg/m2 reduction in BMI (p=.000), and a 4.6 cm reduction in waist circumference (p = .000). Patients completed 87% of the program sessions.
View abstract

Oshio T et al. (2016). *Can leisure-time physical activity improve health checkup results? Evidence from Japanese occupational panel data*. J Occup Health. June 6.
AIM: to examine the extent to which changes in worker health, as measured by health checkup items, were associated with increased intensity of leisure-time physical activity (LTPA) after controlling for individual time-invariant attributes.
METHODS: Panel data was used from two to four waves of a Japanese occupational cohort survey, focusing on 30,206 observations of 10,106 individuals (7,669 men and 2,437 women) aged 18-76 years. We estimated first-difference and mean-centered fixed effects models to examine how changes in 10 health checkup items were associated with changes in LTPA intensity. We considered four LTPA intensity levels (none, low, moderate, and vigorous), based on self-reported assessments.
RESULTS: For men, low-density lipoprotein cholesterol levels, glycated hemoglobin levels, body mass index, and waist circumference improved when LTPA intensity was increased even at a low level, whereas triglyceride, high-density lipoprotein cholesterol, and fasting blood glucose levels improved when LTPA intensity was increased to moderate or vigorous levels. Blood pressure (both systolic and diastolic)

and total cholesterol levels were only modestly responsive to changes in LTPA intensity. For women, blood pressure (both systolic and diastolic) and waist circumference were negatively associated with LTPA intensity, whereas the other variables showed more modest effects.
View abstract

Cross-sectional studies

Alhossan A et al. (2016). *Outcomes of annual wellness visits provided by pharmacists in an accountable care organization associated with a federally qualified health center*. American Journal of Health-System Pharmacy 73(4): 225-228.
AIM: to evaluate the clinical and financial outcomes of annual wellness visits (AWVs) conducted by clinical pharmacists working as part of an accountable care organization (ACO) in a federally qualified health centre.
METHODS: In this retrospective, single-center, chart review study, patients seen for AWVs at El Rio Health Center between October and December 2013 were eligible for study inclusion. Data collected from patient charts included patient demographics, preventive screenings ordered by clinical pharmacists during the AWV and completed within one month after the visit, other screenings completed by clinical pharmacists during the visit, medication changes by clinical pharmacists, and revenues collected from the AWV and preventive screenings.
RESULTS: Three hundred patient records were reviewed. Clinical pharmacists completed 1608 interventions, with a mean of 5.4 interventions per patient. A total of 272 referrals were made, 120 (45%) of which were completed within one month of the visit. Of the 183 laboratory tests ordered for diabetes and lipid screening, 152 (83%) were completed within one month of the AWV (p >0.001). Of the 370 vaccinations offered during the visits, 182 (49%) were administered (p >0.001). Twenty-four medication and dosage changes were made by clinical pharmacists during AWVs, and the total revenue for the AWVs conducted by pharmacists and services completed during the visits exceeded $22,000.
View abstract

Allenby A et al. (2016). *The quality of cardiovascular disease prevention in rural primary care.* Australian Journal of Rural Health 24(2): 92-98.
AIM: to measure the differences in the recording of risk factors and lifestyle advice between those at high risk of cardiovascular disease and those diagnosed with cardiovascular disease, and to identify the practice characteristics associated with such recording in rural primary care.
METHODS: A cross-sectional observation study of 14 general practices in rural Australia. Medical records were audited to measure recording of risk factors and lifestyle advice for those at high risk of and those diagnosed with cardiovascular disease. Each practice was asked to identify 20 patients; 10 at high risk and 10 diagnosed with cardiovascular disease.
RESULTS: 282 records were audited with 142 being high risk and 140 diagnosed

with cardiovascular disease.Measures recorded significantly less in the high-risk group were: blood pressure (94% versus 99%; P = 0.019); physical activity (24% versus 56%; P = 0.000); dietary advice (32% versus 51%; P = 0.001); and physical activity advice (34% versus 56%; P = 0.000). Recording of risk factors was positively associated with practice involvement in quality improvement (P < 0.001), continuing education (P < 0.001), and greater percentage of general practitioners (P < 0.05) and practice nurses (P < 0.001).
View full text

Groenenberg I et al. (2016). *Determinants of participation in a cardiometabolic health check among underserved groups*. Preventive Medicine Reports 4: 33-43.
AIM: to explore the process of decision-making regarding health risk assessment (HRA) participation among underserved groups (45-70 y): native Dutch with a lower socioeconomic status (SES), Turkish, Moroccan, and Surinamese participants.
METHODS: We conducted a cross-sectional questionnaire study. The questionnaire comprised the following determinants: a self-formulated first reaction, a structured set of predefined determinants, and the most important barrier(s) and facilitator(s) for HRA completion.
RESULTS: Of the 892 participants in the questionnaire, 78% (n = 696) also completed the HRA. Moroccans and patients from GP practices with a predominantly non-Western population less often completed the HRA. A lower SES score, wanting to know one's risk, not remembering receiving the invitation (thus requiring a phone call), fear of the test result and/or adjusting lifestyle, perceived control of staying healthy, wanting to participate, and perceiving no barriers were associated with completing the HRA.
View abstract

Karikatti SS et al. (2016). *Assessing risk of cardiovascular disease among school teachers: A high risk approach at school settings*. Indian Journal of Public Health Research and Development 7(2): 162-167.
AIM: the study was undertaken to screen hypertension and diabetes, and to assess risk of coronary vascular disease, among school teachers
METHODS: The present study was a cross sectional study, carried out in two randomly selected schools and school teachers were the study participants. Data regarding socio-demographic risk factors - age, sex, and behavioral factors like tobacco use, physical inactivity etc, were collected and anthropometry was done at school setting. School teachers were screened for diabetes and hypertension.
RESULTS: 72 teachers participated in the study and 59 (81.94% %) were females. Staff belonged to ages from 21 to 62 years and were from different social strata. The results showed that 4(5.56%) were showing hyperglycemia and 2 (2.8%) were known patients of diabetes. Among those who got screened 12(16.67%) had high blood pressure levels. The other risk factors of CVD were also prevalent among school teachers.
View abstract

Redon J et al. (2016). *Impact of hypertension on mortality and cardiovascular disease burden in patients with cardiovascular risk factors from a general practice setting: The ESCARVAL-risk study*. Journal of Hypertension 34(6): 1075-1083.
AIM: to estimate the attributable risk associated to hypertension for all-cause mortality and cardiovascular hospitalization endpoints in a prospective study of patients with at least one cardiovascular risk factors participating in the Estudio Cardiovascular Valencia-risk project.
METHODS: Prospective electronic health recording-based study in a Mediterranean population that included 52 007 cardiovascular disease-free men and women aged 30 years or older (mean age 62.6 year) with hypertension (79.0%), diabetes mellitus (37.3%), or dyslipidemia (88.2%), who underwent routine health examinations. All-cause mortality and hospitalization records for coronary heart disease (CHD) or stroke were collected.
RESULTS: During an average follow-up time of 3.2 years, 928 deaths and 1682 and 1529 hospitalizations for CHD and stroke, respectively, were recorded. In both men and women, hypertension significantly increased the multiadjusted rates of death and CHD and stroke hospitalizations. Hypertension was associated with a substantial amount of avoidable deaths both in men and women, population attributable risks were 41.81 (95% confidence interval 28.02, 53.24)% and 37.84 (5.74, 61.51)%, respectively. Similarly, the population attributable risk of hospitalization for CHD and stroke associated to hypertension was among the highest in both the sexes as compared with the impact of the other main cardiovascular risk factors.
View abstract

Tahaineh L et al. (2016). *Primary prevention of cardiovascular disease in a primary care setting*. Prim Health Care Res Dev 17(3): 311-316.
AIM: to investigate primary prevention of cardiovascular disease in a primary care setting in Jordan.
METHODS: Adult patients without clinical cardiovascular disease who attended a primary care setting were interviewed and their medical files were reviewed. Data collected to assess primary prevention of cardiovascular disease included lifestyle/risk factor screening, weight assessment, blood pressure measurement and control, and blood lipid measurement and control.
RESULTS: A total of 224 patients were interviewed. The proportions of patients' files with risk factors documentation were 37.9% for smoking status, 30.4% for physical activity assessment and 72.8% for blood pressure assessment. The majority of hypertensive patients (95.9%) had a blood pressure reading at their most recent visit of 140/90 or had been prescribed 2 antihypertensive medications.
View abstract

Bryant J et al. (2015). *Is identification of smoking, risky alcohol consumption and overweight and obesity by General Practitioners improving? A comparison over time*. Fam Pract 32(6): 664-671.
AIM: to examine whether sensitivity and specificity of GP detection of smoking, risky alcohol consumption and overweight and obesity has increased in patients presenting to see their GP, by comparing results from four Australian studies conducted between 1982 and 2011.
METHODS: Demographic characteristics of patient and GP samples and the prevalence, sensitivity and specificity of detection of each risk factor were extracted from published studies. Differences between GP and patient sample characteristics were examined.
RESULTS: There were no statistically significant changes in the sensitivity of GP detection of smoking or overweight or obesity over time. Specificity of detection of smoking increased from 64.7% to 98% (P < 0.0001) and decreased for overweight or obesity from 92% to 89% (P = 0.01). There was a small decrease in the sensitivity of detection of alcohol consumption (P = 0.02) and an increase in specificity (P = 0.01).
View abstract

Grady A et al. (2015). *GP detection of health risk factors among general practice patients at risk of primary and secondary stroke*. Fam Pract 32(3): 336-342.
AIM: to compare the following among general practice patients with and without a history of stroke or heart disease: (i) self-reported prevalence rates of lifestyle risk factors; (ii) accuracy of GP detection of patient-reported risk factors and (iii) average proportion of patient-reported risk factors detected by GPs.
METHODS: Consecutive patients attending a participating general practice clinic were invited to participate in a cross-sectional touchscreen survey assessing lifestyle risk factors in 2010-11. The GP of each consenting patient completed a corresponding survey assessing the patient's risk factors. Demographic characteristics of patients and GPs were obtained.
RESULTS: Data from 51 GPs and 564 patients were analysed. Patients without a history of stroke or heart disease reported significantly higher rates of smoking (12%) and risky alcohol consumption (56%) than patients with a history of stroke or heart disease (6% and 36%, respectively). Low sensitivity of GP detection of risk factors was found for all risk factors for all patients. Patients with a history of stroke or heart disease have a significantly higher mean proportion of risk factors detected by their GP compared to patients without a history of stroke or heart disease (P = 0.00).
View full text

Gray BJ et al. (2014). *'Prosiect Sir Gar': workplace-based cardiovascular disease and diabetes risk assessments*. Occup Med (Lond) 64(7): 549-556.
AIM: to introduce the Prosiect Sir Gar workplace-based initiative for CVD and diabetes prevention and report some of the baseline measurements in regards to CVD and diabetes risk.
METHODS: Individuals from two workplaces attended a medical health check with

an added CVD and diabetes risk assessment component. Demographic and anthropometric data, systolic and diastolic blood pressure, smoking status and family and medical histories were recorded. Blood samples were analysed for total and high-density lipoprotein cholesterol and HbA1c. Ten year risk of CVD and diabetes were predicted using the QRISK2 and QDiabetes algorithms. Individuals at high risk of either condition were referred to a lifestyle intervention programme.
RESULTS: Among over 800 individuals screened, a high prevalence of central obesity (75%), systolic hypertension (20%) and diastolic hypertension (23%) were observed in both workforces. In addition, a substantial proportion of the workers were either 'overweight' (42%) or 'obese' (28%).
View full text

Qualitative research

Kinsman L et al. (2016). *Prevention of cardiovascular disease in rural Australian primary care: an exploratory study of the perspectives of clinicians and high-risk men*. Australian Journal of Primary Health. 2016 Apr 27. doi: 10.1071/PY15091.
AIM: to explore the self-reported behaviours and satisfaction with their general practice/practitioner of men at high risk of CVD, and attitudes of rural primary care clinicians regarding the role of primary care in CVD prevention.
METHODS: This observational research was addressed through survey questionnaires with rural men at high risk of CVD and semi-structured interviews with rural primary care clinicians. Fourteen rural primary care practices from towns with populations less than 25000 participated.
RESULTS: One hundred and fifty-eight high-risk men completed the questionnaire. Their responses demonstrated poorly controlled risk factors despite a willingness to change. Alternatively, rural primary care clinicians (n = 20) reported that patients were unlikely to change and that illness-based funding models inhibited cardiovascular preventive activities.
View abstract

Mattei J et al. (2016). *Perceptions and Motivations to Prevent Heart Disease among Puerto Ricans*. American Journal of Health Behavior 40(3): 322-33.
AIM: to perform a qualitative assessment of Puerto Ricans' knowledge and perceptions of cardiovascular disease (CVD), and motivations/barriers and preferences to participate in community/ clinical programs for CVD-prevention.
METHODS: Four guided focus group discussions were conducted on a total of 24 Puerto Ricans, aged 40-60 years in Boston, MA.
RESULTS: Participants were aware of CVD, but less knowledgeable about its prevention. They perceived it as serious, and either had CVD or knew someone who had it. They favored education and activities on nutrition, exercise, clinical advice, and social interaction, in weekly/ biweekly small-group sessions with other Latinos, led in Spanish by a familiar health professional, in a convenient community location. Age- and culture-specific program content and educational materials were preferred.

A theme emerged on 'personal or family motivations' such as to become healthier and live longer so they would feel better and support their families, or to learn about CVD-prevention. Main barriers included family obligations, weather, safety concerns, transportation, and depressive mood.
View abstract

Economic analysis

Kamboj L et al. (2016). *Cost effectiveness of a systematic guidelines-based approach to the prevention and management of vascular disease in a primary care setting*. International Journal of Cardiology 203: 893-899.
AIM: to examine the cost effectiveness of the CVDPMI [Comprehensive Vascular Disease Prevention and Management Initiative] program compared to no CVDPMI program in adult patients identified at risk for an initial or subsequent vascular event in a primary care setting in Ontario, Canada
METHODS: . A one year and a ten year cost effectiveness analyses were conducted. To determine the uncertainty around the cost per life year gained ratio, a non-parametric bootstrap analysis was conducted.
RESULTS: The overall population base case analysis at one year resulted in a cost per CV event avoided of $70,423. FRS [Framingham Risk Score] subgroup analyses showed the high risk cohort (FRS >20%) had an incremental cost effectiveness ratio (ICER) that was dominant. In the moderate risk subgroup (FRS 10%-20%) the ICER was $47,439 per CV event avoided and the low risk subgroup (FRS <10%) showed a highly cost ineffective result of greater than $5 million per CV event avoided. The ten year analysis resulted in a dominant ICER.
View abstract

Ongoing research

Morris C. (2016). *Risk-I: Exploring Risk-Identification to Prevent Cardiovascular Disease-an Institutional Ethnography*. Third ISA Forum of Sociology (July 10-14, 2016), Isaconf. Conference abstract.
AIM: to focus on the issues for patients who are not highly engaged in preventing cardiovascular disease by screening, but who have been shown to experience a higher number and severity of risk factors
METHODS AND RESULTS: This study explores how risk is identified in practice using ‘institutional ethnography’, an established methodological approach using observational and interview techniques. The investigation starts from the experience of patients and investigates the ways in which risk identification processes shape (or fail to shape) their actions. Evidence suggests that there are disconnects between the intentions of guidelines and the reality of people’s experience
View details
See also: http://www.hra.nhs.uk/news/research-summaries/risk-i/

Roy M et al. (2016). *Implementation interventions to improve the uptake of cardiovascular disease prevention strategies in sub-Saharan Africa: a systematic review*. PROSPERO International prospective register of systematic reviews CRD42016036699.
AIM: to evaluate the implementation, process and health status outcomes of implementation interventions addressing cardiovascular disease prevention in sub-Saharan Africa and to evaluate differences by intervention type and disease condition
METHODS: Identification of studies through systematic searches of bibliographic databases and clinical trial registries. We will include randomized controlled trials (RCTs), quasi-RCTs, controlled before-and-after studies, interrupted time series studies, and observational cohort studies. We will include interventions to improve delivery and adherence to pharmacologic treatment of hypertension, dyslipidemia, or diabetes as well as lifestyle modification interventions that seek to change one or more of the following lifestyle choices (physical inactivity, unhealthy diet, tobacco use) to alter one or more cardiovascular disease risk factors including: physical inactivity, obesity, tobacco use, elevated blood pressure, elevated serum cholesterol levels, diabetes.
View details

Weiner BJ et al. (2015). *Advancing heart health in North Carolina primary care: the Heart Health NOW study protocol*. Implementation Science 10: 160.
AIM: to determine if primary care practice support - a comprehensive evidence-based quality improvement strategy involving practice facilitation, academic detailing, technology support, and regional learning collaboratives - accelerates widespread dissemination and implementation of evidence-based guidelines for cardiovascular disease (CVD) prevention in small- to medium-sized primary care practices and, additionally, increases practices' capacity to incorporate other evidence-based clinical guidelines in the future.
METHODS: Heart Health Now (HHN) is a stepped wedge, stratified, cluster randomized trial to evaluate the effect of primary care practice support on evidence-based CVD prevention, organizational change process measures, and patient outcomes. Each practice will start the trial as a control, receive the intervention at a randomized time point, and then enter a maintenance period 12 months after the start of the intervention. The intervention will be randomized to practices in one of four strata defined by region of the state (east or west) and degree of practice readiness for change. Evaluation will examine the effect of primary care practice support on (1) practice-level delivery of evidence-based CVD prevention, (2) patient-level health outcomes, (3) practice-level implementation of clinical and organizational changes that support delivery of evidence-based CVD prevention, and (4) practice-level capacity to implement future evidence-based clinical guidelines.
RESULTS: Results will indicate whether primary care practice support is an effective strategy for widespread dissemination and implementation of evidence-based clinical

guidelines in primary care practices.TRIAL REGISTRATION: ClinicalTrials.gov NCT02585557.
View full text

References relating to diabetes and cardiovascular disease screening or prevention (49)

Evidence summaries

Abid A et al. (2016). *Screening for Type II Diabetes Mellitus in the United States: The Present and the Future*. Clinical Medicine Insights 9: 19-22.
AIM: This brief communication looked at the current diabetes screening practices in the United States and the gaps in the guidelines.
METHODS: unclear, no search strategy or evidence inclusion criteria given
RESULTS: The studies to date suggest that evidence on the reliability of diabetic screening guidelines is poor. The guidelines fail to provide a broad umbrella for screening in those who are at highest risk
View full text

Ahmed E and El-Menyar A (2016). *Management of coronary artery disease in South Asian populations: why and how to prevent and treat differently*. Angiology 67(3): 212-223.
AIM: to review the literature to address the role of the screening tools, scoring systems, and guidelines for primary, secondary, and tertiary prevention in South Asian (SA) populations.
METHODS: unclear/unreported
RESULTS: Despite the number of studies published, there is no evidence to suggest that treatment targets should differ between ethnic groups. The lack of ethnic risk algorithms is an important gap to understand and prevent CVD events among SAs who have a higher prevalence of CV RFs at younger age. Intense lifestyle and nutritional modification along with optimal risk reduction and evidence-based treatments should be optimized in high-risk SA patients.
View abstract

Barengo NC and Tuomilehto JO (2016). *How can we identify candidates at highest risk - to screen or not to screen?* Herz 41(3): 175-183.
AIM: This article summarizes the benefits and unsolved questions of screening for type 2 diabetes (T2D).
METHODS: unclear, no search strategy or evidence inclusion criteria given in the abstract
RESULTS: Many T2D risk assessment tools have been developed. Current evidence has shown that T2D can be prevented by lifestyle interventions, justifying T2D screening. However, information is scarce on the long-term impact of T2D screening regarding health outcomes such as cardiovascular disease. It is not certain whether health-care facilities and health-care staff are capable of

implementing screening activities and subsequent interventions among high-risk individuals; lifestyle management tasks in particular are often not among the best skills that health-care personnel possess. Also, there is a lack of evidence for the periodicity of population-wide screening activities.
View abstract

Tan SC et al (2016). *Review of Cardiovascular Disease Prevention and Control Programs: International Experience and Challenges in China*. International Cardiovascular Forum Journal 6 Forum Journal 6 DOI: 10.17987/icfj.v6i0.247.
AIM: to review the published literature on CVD prevention and control programs and report on interviews of local and foreign experts to provide recommendations for China-specific CVD prevention and control programs.
METHODS: unclear/unreported
RESULTS: Based on the evidence and identified challenges in China, programs focusing on disease management, treatment adherence, physician/health care provider education, financial incentives, and integrated healthcare are recommended for the prevention and control of CVD in China.
View full text

Duffy JY and Hameed AB (2015). *Cardiovascular disease screening*. Seminars in Perinatology 39(4): 264-267.
AIM: The purpose of this review is to describe current risk stratification schemes as well as outline the role of obstetric history and serum biomarkers in adjusting risk stratification in women
METHODS: unclear/unreported
RESULTS: Risk stratification is a critical element of optimizing targeted prevention efforts. Further research is needed to inform gender-based risk stratification incorporating both traditional risk factors and those specific to women, i.e., pregnancy complications and use of biomarkers
View abstract

Systematic reviews

Damen JA et al. (2016). *Prediction models for cardiovascular disease risk in the general population: systematic review*. British Medical Journal 2016;353:i2416
AIM: to provide an overview of prediction models for risk of cardiovascular disease (CVD) in the general population
METHODS: a literature search of Medline and Embase until June 2013; studies eligible for inclusion were those describing the development or external validation of a multivariable model for predicting CVD risk in the general population.
RESULTS: 9965 references were screened, of which 212 articles were included in the review, describing the development of 363 prediction models and 473 external validations. Most models were developed in Europe (n=167, 46%), predicted risk of fatal or non-fatal coronary heart disease (n=118, 33%) over a 10 year period (n=209,

58%). The most common predictors were smoking (n=325, 90%) and age (n=321, 88%), and most models were sex specific (n=250, 69%). Substantial heterogeneity in predictor and outcome definitions was observed between models, and important clinical and methodological information were often missing. The prediction horizon was not specified for 49 models (13%), and for 92 (25%) crucial information was missing to enable the model to be used for individual risk prediction. Only 132 developed models (36%) were externally validated and only 70 (19%) by independent investigators. Model performance was heterogeneous and measures such as discrimination and calibration were reported for only 65% and 58% of the external validations, respectively.
View abstract

Einarson TR et al. (2016). *Cost effectiveness of screening for type 2 diabetes mellitus and pre-diabetes: Systematic literature review*. Value in Health 19 (3): A302.
AIM: to determine the economic impact of screening for T2DM and prediabetes.
METHODS: We searched Scopus/Medline/Embase for papers published between 2000 and 2015 in any language. Interventions included any type of screening (universal, targeted, and opportunistic). Articles must have reported both costs of screening and outcomes, including cost-effectiveness.
RESULTS: We identified 137 studies; 108 were rejected, 29 (from 12 countries) were analyzed. Screening types included 18 universal, 8 targeted and 8 opportunistic. One study screened for pre-diabetes only, 16 T2DM only and 12 examined both T2DM and pre-diabetes. Fourteen (48%) reported costs of screening only, 9 (31%) costs of screening combined with interventions and 6 (21%) presented all costs separately. Screening was compared to no screening in 12 studies (41%), in which screening was found cost-effective in 8 (67%), not cost-effective in 4 (33%) and neither in 1 (8%). In studies comparing different screening methods, 6 found that targeted screening was cost-effective compared with universal screening (none found the opposite), and 1 found opportunistic screening superior to universal. Sensitivity analyses generally confirmed primary findings. Costs were lower when both T2DM and prediabetes were screened compared with T2DM only. Major cost drivers included prevalence of T2DM/pre-diabetes, type of blood test used and rate of uptake of testing. For optimal cost-effectiveness, screening for both T2DM and pre-diabetes should be initiated around age 45-50, with repeated testing every 5 years.
View abstract

Inoue Y et al. (2016). *A comparison of pharmacists' role functions across various nations: The importance of screening*. Research in Social & Administrative Pharmacy 12(2): 347.
AIM: to examine differences in pharmacists’ and pharmacy assistants’ professional roles and the dispensing system in Japan with those in the United Kingdom, Malaysia, and the Philippines.
METHODS: A review of relevant literature was supplemented by interviews of

dispensary staff at hospitals and community pharmacies in Malaysia and the Philippines.
RESULTS: The UK, Philippines, and Malaysia had dispensing assistants who performed dispensing roles, while Japan did not. Although pharmacy assistants occasionally performed screening and dispensing inspections due to the lack of pharmacists, it is necessary for pharmacists participating in risk management to ensure formula optimization and monitoring. Pharmacists' contribution to medical care involves ensuring safety in drug therapy and overall medical services. Screening is the most fundamental and important function performed exclusively by pharmacists, thereby establishing their status within the medical system.
View abstract

Shaw L et al. (2016). *Patients' perceptions and experiences of cardiovascular disease and diabetes prevention programmes: A systematic review and framework synthesis using the Theoretical Domains Framework*. Social Science & Medicine 156: 192.
AIM: to determine the patients' experience of prevention programmes for cardiovascular disease (CVD) and diabetes
METHOD: A systematic review and framework synthesis were conducted. This novel method for synthesizing qualitative evidence aims to make health psychology theory accessible to implementation science and advance the application of qualitative research findings in evidence-based healthcare.
RESULTS: Findings from 14 original studies were coded deductively into the Theoretical Domains Framework (TDF) and subsequently an inductive thematic analysis was conducted. Synthesized findings produced six themes relating to: knowledge, beliefs, cues to (in)action, social influences, role and identity, and context. A conceptual model was generated illustrating combinations of factors that produce cues to (in)action. This model demonstrated interrelationships between individual (beliefs and knowledge) and societal (social influences, role and identity, context) factors.
View abstract

Singh K et al. (2016). *Evidence on cost-effectiveness of interventions to control cardiovascular diseases and diabetes mellitus in south Asia: A systematic review*. Global Heart 1): e76-e77.
AIM: to systematically review the cost-effectiveness evidence on individual-, group and population-level interventions to control CVD and DM in context to South Asia.
METHODS: We searched 14 electronic databases including PubMed, Embase and Cochrane Library, for all relevant articles published up to June 2014. The search strategy consisted of free text and MeSH terms related to economic evaluation, CVD, DM and South Asia.
RESULTS: Of the 2446 identified studies, 26 met full inclusion criteria. Together, these studies gave 253 independent CERs in eleven categories of interventions (singly or in combination) to control CVD and DM. Nearly half of the studies (n=14)

were based on decision modeling, and six studies each were alongside randomized trials and observational studies. Majority of studies were reported from India (n=12), or for South Asian region taking India as an example (n=9), followed by Bangladesh (n=3), and Pakistan (n=2). There were no studies published from other South Asian countries. Most interventions show significant positive economic evidence (i.e. cost-effective), when compared to the counterfactual of no intervention (Table 1). While, primary prevention strategies were largely evaluated in decision modeling studies, pharmaceutical interventions were the predominant focus in economic evaluations alongside randomized trials. Critical appraisal of economic evaluation methods revealed: 13 excellent, 6 good, and 7 poor quality studies.
View abstract

Selak V et al. (2016). *Do polypills lead to neglect of lifestyle risk factors? Findings from an individual participant data meta-analysis among 3140 patients at high risk of cardiovascular disease*. European Journal of Preventive Cardiology. Mar 4.
AIM: to investigate whether polypill-based care for the prevention of cardiovascular disease (CVD) is associated with a change in lifestyle risk factors when compared with usual care, among patients with CVD or high calculated cardiovascular risk.
METHODS: We conducted an individual participant data meta-analysis of three trials including patients from Australia, England, India, Ireland, the Netherlands and New Zealand that compared a strategy using a polypill containing aspirin, statin and antihypertensive therapy with usual care in patients with a prior CVD event or who were at high risk of their first event. Analyses investigated any differential effect on anthropometric measures and self-reported lifestyle behaviours.
RESULTS: Among 3140 patients (75% male, mean age 62 years and 76% with a prior CVD event) there was no difference in lifestyle risk factors in those randomised to polypill-based care compared with usual care over a median of 15 months, either across all participants combined, or in a range of subgroups. Narrow confidence intervals (CIs) excluded any major effect; for example differences between the groups in body mass index was -0.1 (95% CI -0.2 to 0.1) kg/m(2), in weekly duration of moderate intensity physical activity was -2 (-26 to 23) minutes and the proportion of smokers was 16% vs 17% (RR 0.98, 0.84 to 1.15) at the end of trial.
View abstract

Youngs W et al. (2016). *The impact of pre-diabetes diagnosis on behaviour change: an integrative literature review*. Practical Diabetes 33(5): 171-175.
AIM: to assess whether having the diagnosis of pre-diabetes encourages or empowers people to make appropriate lifestyle changes to prevent progression to a diagnosis of type 2 diabetes
METHODS: A systematic search was conducted in CINHAL, Embase and MEDLINE databases. Study inclusion criteria: 2001 onwards, full text English, articles with ‘pre-diabetes’ and ‘lifestyle’ changes, primary sources only, both quantitative and qualitative studies were included.
RESULTS: The studies demonstrated that pre-diabetes was found to be a

challenging concept by patients and nurses alike. Lack of knowledge and support, along with patients' perceived barriers, had an impact upon the various motivation and self-efficacy behaviours towards lifestyle changes.The review found that more education and support are required to motivate lifestyle change in the person with pre-diabetes.
View full text

Guidance

Piepoli M et al. (2016). *2016 European Guidelines on cardiovascular disease prevention in clinical practice*. European Heart Journal 23rd May.
AIM: This guideline provides tools for healthcare professionals to promote population-based strategies and integrate these into national/regional prevention frameworks and to translate these in locally delivered healthcare services, in line with the recommendations of the WHO.
METHODS: The present guidelines represent an evidence-based consensus of the 6th European Joint Task Force involving 10 professional societies.By appraising the current evidence and identifying remaining knowledge gaps in managing CVD prevention, the Task Force formulated recommendations to guide actions to prevent CVD in clinical practice. The Task Force followed the quality criteria for development of guidelines.
RESULTS: Compared with the previous guidelines, greater emphasis has been placed on a population-based approach, on disease-specific interventions and on female-specific conditions, younger individuals and ethnic minorities
View full text

Lefler LL et al. (2016). *New cardiovascular guidelines: Clinical practice evidence for the nurse practitioner*. J Am Assoc Nurse Pract 28(5): 241-248.
AIM: to summarize the six new cardiovascular screening, prevention, and treatment guidelines for use in practice.
METHODS AND RESULTS: Published and peer-reviewed guidelines published jointly and in collaboration with the National Heart Lung and Blood Institute by the American Heart Association and the American College of Cardiology constitute the evidence base for this article. The potential for making lifestyle changes a way of life instead of a diet or program is an important point to make in clinical visits. If nurse practitioners (NPs) could promote a way-of-life lifestyle change to individuals in America, even change at a modest level, we could improve the health of the nation.
View abstract

Trials

Tawfik MY and Mohamed RA (2016). *The impact of communicating cardiovascular risk in type 2 diabetics on patient risk perception, diabetes self-care, glycosylated hemoglobin, and cardiovascular risk*. Journal of Public Health 24(2): 153-164.
AIM: to investigate the effect of a cardiovascular risk (CVR) communication

intervention on the accuracy of CVR perception, diabetes self-care (DSC), glycosylated hemoglobin percent (HbA1c%), and CVR in patients with type 2 diabetes mellitus (T2DM).
METHODS: A randomized controlled trial was performed in T2DM patients attending the family medicine outpatient clinic in Suez Canal University Hospital, Ismailia. The intervention group (n = 107) received a comprehensive CVR communication. Control subjects (n = 107) received the standard usual care. The outcome measures were: accuracy of risk perception, DSC, HbA1c%, and CVR scores. Patients were investigated at baseline and 3 months after the intervention.
RESULTS: After the intervention, the accuracy rate of risk perception was significantly improved (from 44.9 % to 89.7 %) in the intervention group with excellent improvement in agreement between perceived and objective risk (kappa ± SE 83.7 ± 4.4 %, $p < 0.000$). Diabetes self-care sum scale scores and HbA1c% showed statistically significant improvements for within-intervention group comparisons and between groups after the intervention ($p < 0.000$). Cardiovascular risk scores showed minimal, not statistically significant improvement in both groups.
View abstract

Wennehorst K et al. (2016). *A comprehensive lifestyle intervention to prevent type 2 diabetes and cardiovascular diseases: The german chip trial*. Prevention Science Apr;17(3):386-97.
AIM: to examine the effects of a holistic lifestyle intervention on clinical and laboratory parameters as well as on the long-term diabetes risk in patients at risk to develop diabetes.
METHODS: We conducted a randomized controlled trial in a primary care setting in Hannover, Germany, with 83 patients diagnosed as (pre)diabetic or at risk for diabetes. CHIP Germany is a 40-hour coaching lifestyle intervention program for the primary and secondary prevention of type 2 diabetes and cardiovascular diseases. The intervention included a comprehensive nutrition and health educational program based on the American CHIP approach. The primary outcome parameter was the body mass index (BMI). Secondary outcome parameters included body weight, blood pressure, fasting glucose, HbA1c, blood lipids, and the FINDRISK score, which assesses long-term diabetes risk.
RESULTS: At the final measurement after 12 months, in the intervention group the BMI was reduced by 1.4 versus 0.2 kg/m2 in controls ($p = .119$). The mean sustained weight loss after 12 months was −4.1 kg in the intervention group versus −0.8 kg in controls. Furthermore, we found a trend toward a stronger reduction in blood pressure, fasting glucose, and HbA1c as well as an improved FINDRISK score in the intervention group, compared to controls.
View abstract

Cohort studies

Adang EM et al. (2016). *Efficiency of the implementation of cardiovascular risk management in primary care practices: an observational study*. Implementation Science 11(1): 1.

AIM: This study aimed to document the variation in technical efficiency of primary care (PC) practices in delivering evidence-based cardiovascular risk management (CVRM) and to identify associated factors.

METHODS: This observational study was based on the follow-up measurements in a cluster randomized trial. Patients were recruited from 41 general practices in the Netherlands, involving 106 GPs and 1671 patients. Data on clinical performance were collected from patient records.

RESULTS: Not all PC practices delivered recommended CVRM with the same technical efficiency; a significant difference from the efficient frontier was found ($p < .000$; 95 % CI 1.018–1.041). The variation in technical efficiency between PC practices was associated with training practice status ($p = .026$). Whether CVRM clinical tasks were performed by a practice nurse or a GP did not influence technical efficiency in a statistical significant way neither did practice size.

View full text

Bowen ME et al. (2016). *Diabetes screening in a large, safety-net healthcare system: Frequency and outcomes of glycemic testing in real world clinical practice*. Journal of General Internal Medicine 1): S187-S188.

AIM: to characterize glycemic testing patterns in routine clinical practice and determine the prevalence and outcomes of gold-standard diabetes screening in a high-risk, underserved population.

METHODS: We conducted a retrospective cohort study using comprehensive electronic medical record (EMR) data from a large, integrated, indigent healthcare system. Eligible patients were non-pregnant, age 18-65 and had body mass index (BMI) available. All participants had an index visit between January 2012 and June 2013, with the index visit defined as the first visit occurring during this period. All patients were established in primary care with 2 or more primary care visits in the 2 years following their index visit.

RESULTS: In the total cohort (N = 28,488), the mean (SD) age was 45.1 (11.6) years. The mean BMI was 30.9 (7.4) with 80 % having a BMI > 25 kg/m². Over 85 % of patients were non-white, with the majority of patients being Hispanic (44 %) or Black (35 %). Patients were 64 % female and 79 % were uninsured. The prevalence of hypertension, hyperlipidemia, and cardiovascular disease was 33, 26, and 3.8%respectively. In the total cohort of 28,488 patients, 86 % completed one or more glycemic tests during the followup period. Among those with one or more resulted glycemic tests (N = 24,573), 83 % had a random glucose, 59%had an A1C, 28%had a fasting glucose, and 0.7%had anOGTT. Sixty-two percent (N = 17,657) of the total cohort completed gold standard diabetes testing during the follow-up period. When glycemic status was classified by goldstandard test results, 51 % were normal, 37 % had prediabetes identified during

the follow-up period, and 12 % had diabetes identified during the follow-up period. A total of 49%of those completing gold-standard tests had dysglycemia, defined as having either prediabetes or diabetes. Those completing gold standard diabetes screening tests were older, had higher BMIs and were more likely to have commercial insurance or Medicaid/ Medicare ($p < 0.001$ for all). However, no difference in screening was observed among the uninsured ($p = 0.16$). Hispanics and Asians were more likely to receive gold standard screening ($p < 0.001$); however no difference was observed among blacks ($p = 0.46$). In the total cohort of 28,488 patients, 89 % of met ADA screening criteria.
No freely available abstract

Dunham-Friel M et al. (2016). *What will we learn from screening 10,000 African American women for heart disease risk factors?* Journal of Women's Health 25 (4): A11.
AIM: to screen 10,000 African American Women for heart disease risk factors in the Metro-Atlanta Community and to help understand the current state of hypertension and heart disease risk factors in African American women in Metro-Atlanta
METHODS: We conduct a monthly community health screening which includes collecting patient data and testing for: blood pressure, cholesterol, body mass index, waist circumference and cardiovascular risk score. Once the data is collected and all screening are complete each participant is given educational material and has the chance to review results, ask questions and get advice from Cardiology Physicians, Nurse Practitioners or Registered Nurses. The participant is referred if needed and provided with extensive information on heart health, hypertension, heart disease, diet, exercise, diabetes and Emory social media options. Six months post screening we follow up with the patient to see if they have experienced any behavior changes or need further clinical care.
RESULTS: Our preliminary results have shown: Blood Pressure: Out of the 87 patients we have complete screening data on 28 were found to have high/elevated blood pressure which is 32% of our screened population. (systolic of 140 and above) BMI: Of the 87 patients screen 54 had a BMI of 30 or greater (62% of women screened). That puts over half of the women screened in the obese category according to the NIH BMI guidelines. Uninsured: We found 12 out of 87 patients were uninsured (13.7%). Low Income: We found 26 out of 87 patients had an annual household income between $12-$24,000 (29.8%) Cardiovascular risk assessment: 25 out of 87 Women screened had a 10 year cardiovascular risk assessment score of 7.5%.
No freely available abstract

Kim CH et al. (2016). *Risk of progression to diabetes from prediabetes defined by HbA1c or fasting plasma glucose criteria in Koreans*. Diabetes Res Clin Pract 118: 105-111.
AIM: To examine the abilities of HbA1c and fasting plasma glucose (FPG) criteria predicting 5-year progression rate to diabetes in Korean adults with prediabetes.

METHODS: Participants included 17,971 Koreans (aged 20-79years) who underwent routine medical check-ups at a mean interval of 5.2years (3.1-6.7years). Prediabetes was defined as FPG 5.6-6.9mmol/l or HbA1c 5.7-6.4% (39-46mmol/mol). Incident diabetes was defined as FPG7.0mmol/l, HbA1c6.5% (48mmol/mol), or initiation of antidiabetic medications.
RESULTS: At baseline, the prevalence of prediabetes was 30.6% (n=5495) by FPG and 20.4% (n=3664) by HbA1c criteria. The 5-year progression rate to diabetes was significantly higher in prediabetes identified by HbA1c than by FPG tests (14.7% vs. 10.4%, P<0.001). Of individuals diagnosed with prediabetes by only one test, those by HbA1c alone had a higher risk of progression to diabetes than those diagnosed by FPG alone (6.0% vs. 3.9%, P<0.001). Receiver operating characteristic curve analysis showed that area under the curve was greater for HbA1c (0.855, 95% CI 0.840-0.870) than for FPG (0.830, 0.813-0.846) (P=0.016). After adjustment for conventional risk factors, the odds ratio (OR) of developing diabetes was higher in participants with prediabetes identified by HbA1c (OR 9.91, 8.24-11.9) than by FPG (OR 7.29, 5.97-8.89) (P=0.026).
View abstract

O'Keeffe AG et al. (2016). *Time trends in the prescription of statins for the primary prevention of cardiovascular disease in the United Kingdom: a cohort study using The Health Improvement Network primary care data*. Clinical Epidemiology 8: 123-132.
AIM: to examine both the rate of statin therapy initiation and the prevalence of statin prescriptions over time for the primary prevention of CVD. In addition, to examine possible differences in trends over time with respect to sex, age group, and level of socioeconomic deprivation.
METHODS AND RESULTS: Using The Health Improvement Network primary care database, statin therapy initiation and statin prescription prevalence rates were calculated using data from 7,027,711 individuals across the UK for the years 1995 to 2013, overall and stratified by sex, age group, and socioeconomic deprivation level (Townsend score). Statin therapy initiation rates rose sharply from 1995 (0.51 per 1,000 person-years) up to 2006 (19.83 per 1,000 person-years) and thereafter declined (10.76 per 1,000 person-years in 2013). Males had higher initiation rates than females and individuals aged 60-85 years had higher initiation rates than younger or more elderly age groups. Initiation rates were slightly higher as social deprivation level increased, after accounting for age and sex. Prescription prevalence increased sharply from 1995 (2.36 per 1,000 person-years) to 2013 (128.03 per 1,000 person-years) with males generally having a higher prevalence rate, over time, than females. Prevalence rates over time were generally higher for older age groups but were similar with respect to social deprivation level.
View full text

Rasmussen SS et al. (2016). *Incidence of register-based diabetes 10 years after a stepwise diabetes screening programme: the ADDITION-Denmark study*. Diabetologia 59(5): 989-997.
AIM: to describe the incidence of diabetes for risk groups according to advancement in a screening process.
METHODS: In 2001-2006, a diabetes screening programme based on the Danish diabetes risk score and measures of HbA1c and glucose was carried out in Danish general practices. The present study includes 13,249 individuals with low diabetes risk scores and 22,726 with high diabetes risk scores but no diabetes according to WHO 1999 criteria. Seven incremental levels of diabetes risk were defined and followed for incident diabetes recorded in the Danish National Diabetes Register until December 2012. For each group, cumulative diabetes incidence was calculated..
RESULTS: After 10 years of follow-up 1,164 new diabetes cases were registered. Incidence rates were 1.0, 4.2, 14.5, 28.8 and 52.6 per 1,000 person-years in individuals at low risk and in those with normal glucose tolerance, impaired fasting glucose, impaired glucose tolerance and one diabetic glucose value, respectively. For each step in the screening algorithm, the risk of developing diabetes was higher than in the previous step.
View abstract

Sidebottom A. et al (2016). *Changes in cardiovascular risk factors after 5 years of implementation of a population-based program to reduce cardiovascular disease: The Heart of New Ulm Project*. American Heart Journal Volume 175, May 2016, Pages 66–76.
AIM: The Heart of New Ulm Project is a population-based project with health care, community, and workplace interventions aimed at addressing multiple levels of the social-ecological model designed to reduce modifiable CVD risk factors in rural New Ulm, MN.
METHODS: Electronic health record data were extracted at baseline (2008-2009) and 2 follow-up periods (2010-2011, 2012-2013) for residents aged 40 to 79 years. Generalized estimating equations were used to fit longitudinal models of the risk factors.
RESULTS: Of 7,855 residents in the target population, 80% had electronic health record data for each period. The prevalence of at goal (blood pressure [BP] <140/90 mm Hg) and (low-density lipoprotein cholesterol [LDL-C] <130 mg/dL) increased from 79.3% to 86.4% and 68.9% to 71.1%, respectively, from baseline to 5 years, with the largest reductions in BP and LDL-C seen in individuals not at goal at baseline. Blood pressure and lipid-lowering medication use increased from 41.8% to 44.0% and 25.3% to 29.1%, respectively. The proportion at goal for glucose increased from 46.9% to 48.2%. The prevalence body mass index <30 kg/m2 (55%) did not change, whereas the proportion at-goal for high-density lipoprotein decreased from 63.8% to 58%, and smoking showed an increase from 11.3% to 13.6%.
View abstract

Carrington MJ and Stewart S (2015). *Cardiovascular disease prevention via a nurse-facilitated intervention clinic in a regional setting: the Protecting Healthy Hearts Program*. European Journal of Cardiovascular Nursing 14(4): 352-361.
AIM: to determine the potential benefits of a nurse-led, self-management intervention program to reduce CVD and diabetes risk.
METHODS AND RESULTS: A six-month pre/post observational study was conducted in a high risk, under-serviced regional community. A nurse-led heart health clinic was established and 530 self-selected adult individuals (mean age 54+/-14 years, 62% female) were subject to standardized screening. Individual targets and multidisciplinary strategies to reduce risk factors were individually tailored according to the Green Amber Red Delineation of rIsk And Need (GARDIAN) system. Changes in participants' CVD risk factors and lifestyle behaviors were compared and independent correlates of improvements in blood pressure (BP), total cholesterol, weight and absolute CVD risk were evaluated. Baseline risk factors for CVD were highly prevalent. Participants required low (43%), moderate (34%) or high (23%) levels of surveillance and management according to GARDIAN criteria. Clinically significant changes in 326 (76%) participants were observed. Average BP decreased by 4 mmHg (systolic) and 1 mmHg (diastolic), weight by almost 1 kg, total cholesterol by 0.6 mmol/l and body mass index (BMI) by 0.3 kg/m(2). A change in absolute CVD risk scores of -0.4% was observed. Primary physician attendance independently predicted improvements in BP (odds ratio (OR) 1.67; 95% confidence interval (CI) 1.08-2.58, p=0.022) whereas GARDIAN status, age, physical activity and nurse guidance positively influenced cholesterol, absolute CVD risk and weight outcomes.
View abstract

Sathish T et al. (2015). *Achutha Menon Centre Diabetes Risk Score: a type 2 diabetes screening tool for primary health care providers in rural India*. Asia-Pacific Journal of Public Health 27(2): 147-154.
AIM: to develop a diabetes risk score for primary care providers in rural India.
METHODS: They used the baseline data of 451 participants (15-64 years) of a cohort study in a rural area of Kerala, India.
RESULTS: The new risk score with age, family history of diabetes, and waist circumference identified 40.8% for confirmatory testing, had a sensitivity of 81.0%, specificity of 68.4%, positive predictive value of 37.0%, and negative predictive value of 94.0% for an optimal cutoff >4 with an area under the receiver operating characteristic curve of 0.812 (95% confidence interval = 0.765-0.860).
View full text

Cross-sectional studies

Ahn CH et al. (2016). *Evaluation of non-laboratory and laboratory prediction models for current and future diabetes mellitus: A cross-sectional and retrospective cohort study*. PLoS ONE 11 (5) (no pagination)(e0156155).

AIM: to evaluate the performance of diabetes risk scores composed of non-laboratory parameters, including a recently published Korean risk score (KRS), and compared them with laboratory parameters.
METHODS: The data of 26,675 individuals who visited the Seoul National University Hospital Healthcare System Gangnam Center for a health screening program were reviewed for cross-sectional validation. The data of 3,029 individuals with a mean of 6.2 years of follow-up were reviewed for longitudinal validation. The KRS and 16 other risk scores were evaluated and compared with a laboratory prediction model developed by logistic regression analysis.
RESULTS: For the screening of undiagnosed diabetes, the KRS exhibited a sensitivity of 81%, a specificity of 58%, and an area under the receiver operating characteristic curve (AROC) of 0.754. Other scores showed AROCs that ranged from 0.697 to 0.782. For the prediction of future diabetes, the KRS exhibited a sensitivity of 74%, a specificity of 54%, and an AROC of 0.696. Other scores had AROCs ranging from 0.630 to 0.721. The laboratory prediction model composed of fasting plasma glucose and hemoglobin A1c levels showed a significantly higher AROC (0.838, $P < 0.001$) than the KRS. The addition of the KRS to the laboratory prediction model increased the AROC (0.849, $P = 0.016$) without a significant improvement in the risk classification (net reclassification index: 4.6%, $P = 0.264$).
View full text

Anderson AE et al. (2016). *Electronic health record phenotyping improves detection and screening of type 2 diabetes in the general United States population: a cross-sectional, unselected, retrospective study*. Journal of Biomedical Informatics 60: 162-168.
AIM: to assess whether electronic health record (EHR) phenotyping could improve DM2 screening compared to conventional models, even when records are incomplete and not recorded systematically across patients and practice locations, as is typically seen in practice.
METHODS: In this cross-sectional, retrospective study, EHR data from 9948 US patients were used to develop a pre-screening tool to predict current DM2, using multivariate logistic regression and a random-forests probabilistic model for out-of-sample validation. We compared (1) a full EHR model containing commonly prescribed medications, diagnoses (as ICD9 categories), and conventional predictors, (2) a restricted EHR DX model which excluded medications, and (3) a conventional model containing basic predictors and their interactions (BMI, age, sex, smoking status, hypertension).
RESULTS: Using a patient's full EHR or restricted EHR was superior to using basic covariates alone for detecting individuals with diabetes (hierarchical X2 test, $p<0.001$).
View abstract

Borghi C et al. (2016). *Lack of control of hypertension in primary cardiovascular disease prevention in Europe: Results from the EURIKA study*. International Journal of Cardiology 218: 83-88.
AIM: to assess the prevalence of and factors associated with uncontrolled hypertension and apparent resistant hypertension in the European Study on Cardiovascular Risk Prevention and Management in Usual Daily Practice (EURIKA).
METHODS: EURIKA was a cross-sectional observational study including patients being treated for the primary prevention of cardiovascular disease in 12 European countries. Patients were assessed if they were being treated for hypertension (N = 5220).
RESULTS: In the primary analysis, a total of 2691 patients (51.6%) had uncontrolled hypertension. Factors significantly associated with an increased risk of having uncontrolled hypertension included female sex (odds ratio [OR]: 2.29; 95% confidence interval [CI]: 1.93-2.73), body mass index (BMI; OR per kg/m²: 1.03; 95% CI: 1.01-1.04), and geographic location. A total of 749 patients (14.3%) had apparent resistant hypertension. Factors significantly associated with an increased risk of having apparent resistant hypertension included BMI (OR per kg/m²: 1.06; 95% CI: 1.04-1.08), diabetes (OR: 1.28; 95% CI: 1.06-1.53), use of statins (OR: 1.36; 95% CI: 1.15-1.62), serum uric acid levels (OR: 1.16; 95% CI: 1.09-1.23), and geographic location.
View abstract

De Backer G et al. (2016). *Lifestyle and risk factor management in people at high cardiovascular risk from Bulgaria, Croatia, Poland, Romania and the United Kingdom who participated in both the EUROASPIRE III and IV primary care surveys*. European Journal of Preventive Cardiology Apr 15th.
AIM: to determine time trends in the implementation of European guidelines on the management of cardiovascular disease prevention in people at high cardiovascular risk.
METHODS: Cardiovascular disease prevention as reflected in the primary care arms of the EUROASPIRE III and IV surveys were compared in centres from Bulgaria, Croatia, Poland, Romania and the United Kingdom that participated in both surveys. All patients were free of cardiovascular disease but considered at high cardiovascular disease risk since they had been started on blood pressure and/or lipid and/or glucose lowering treatments. They were interviewed and examined by means of standardized methods ≥6 months after the start of therapy.
RESULTS: EUROASPIRE III comprised 2604 and EUROASPIRE IV 3286 subjects whereof 76% and 56% were interviewed. There were no major differences between the two surveys in age, gender, centres and reasons for inclusion. The prevalence of smoking was similar between EUROASPIRE III and IV. The proportion of smokers who did not intend to quit was significantly greater in EUROASPIRE IV compared with III. The prevalence of overweight or obesity was high and identical in both surveys. No significant differences were observed in physical activity. In participants not on blood pressure lowering treatment an elevated blood pressure was observed

in 47% in both EUROASPIRE III and IV. In participants not on lipid lowering drugs the low-density lipoprotein cholesterol was ≥2.5 mmol/l in 87% and 88% in EUROASPIRE III and IV respectively. In participants free from known diabetes fasting plasma glucose was ≥7 mmol/l in 12% and 18% in EUROASPIRE III and IV. In subjects with known arterial hypertension blood pressure was at or below guideline recommended targets in 28% in EUROASPIRE III and 35% in IV. In participants on lipid lowering drugs the low-density lipoprotein cholesterol was < 2.5 mmol/l in 28% and 37% in EUROASPIRE III and IV. Glycated haemoglobin was < 7.0% in participants with known diabetes in 62% and 60% in EUROASPIRE III and IV.
View abstract

Jansson SPO et al. (2016). *Mortality and cardiovascular disease outcomes among 740 patients with new-onset Type 2 diabetes detected by screening or clinically diagnosed in general practice*. Diabetic Medicine 33(3): 324-331.
AIM: to analyse all-cause mortality and cardiovascular disease (CVD) outcomes in patients with Type 2 diabetes detected by screening or diagnosed clinically.
METHODS: A diabetes register was established at the primary healthcare centre in Laxå, Sweden beginning in 1972. The register was based on data from clinical records with information on medical treatment and laboratory data, as well as all-cause mortality, CVD, myocardial infarction and stroke events from national registers until 31 December 2013. A total of 740 patients with new-onset Type 2 diabetes were registered between 1972 and 2001. In addition, an opportunistic diabetes-screening programme involving people aged 35-79 years started in 1983 and was repeated onwards in 5-year cycles.
RESULTS: Baseline characteristics showed a significantly higher CVD risk, mainly depending on more prevalent CVD events in the screened compared with the clinically detected group (propensity score 0.59 vs. 0.46, P<0.0001). After mean follow-up periods of 12.9 and 13.6 years for screening detected vs. clinically detected patients, respectively, hazard ratios were as follows: all-cause mortality, 0.99 (P=0.89); CVD, 1.17 (P=0.10); myocardial infarction, 1.08 (P=0.49); and stroke, 1.03 (P=0.83).
View abstract

Khunti S and Herrera H (2016). *Type 2 diabetes mellitus and cardiovascular disease screening in community pharmacy: Practices and barriers towards service provision*. International Journal of Pharmacy Practice 24: 35.
AIM: to determine community pharmacists' current practices in screening for type 2 diabetes mellitus and cardiovascular disease and to identify barriers towards the provision of these services.
METHODS: A postal questionnaire was used for data collection. This was sent to all community pharmacies in the geographic areas of Hampshire, the Isle of Wight and Leicester. These areas were selected to have a wider representation of settings and patients characteristics. The questionnaire gathered anonymous data on

demographics, whether screening for these conditions was provided, which methods were used, and what barriers were found to providing this service.
RESULTS: Out of 447 questionnaires sent, 76 were returned, accounting for a response rate of 17%. A total of 44 (58%) stated that the respondents provided screening for one or both of the conditions. Of those who were not involved in screening, 23 (72%) intended to do so within the next five years. Different methods were used for screening: 21 (48%) of those screening for type 2 Diabetes used a risk assessment questionnaire and 36 (82%) a blood test, with a further 4 (9%) using other methods such as a general health check. From the pharmacies that screened for cardiovascular disease, 21 (48%) used a risk assessment questionnaire, 35 (80%) measured blood pressure, 31 (71%) used body mass index, 12 (27%) used a physical activity assessment, 20 (45%) used a blood test for cholesterol, and 6 (14%) used other methods including smoking status, QRISK score and health checks. More pharmacists in Hampshire and the Isle of Wight used a blood test for cholesterol compared to pharmacists in Leicestershire (60% versus 26%, P 0.0262) when screening for cardiovascular disease. There were no differences in the use of other methods between the different geographical areas. This study showed that, out of the 76 pharmacists that completed the questionnaire, 57 (75%) felt that time constrains was a key barrier for involvement with these services. In addition, 61 (81%) reported the need for additional funding, and 50 (66%) the need for these services to be commissioned. A further 35 (47%) considered the need for additional training to be affecting the uptake of these services. There was not a clear association between these findings and the demographics of the sample.
No freely available abstract

Lang SJ et al (2016). *Impact of socioeconomic deprivation on screening for cardiovascular disease risk in a primary prevention population : a cross-sectional study*. BMJ Open2016;6: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: A cross-sectional study, involving 7987 people aged 50-74 years with no CVD diagnosis from nine UK general practices. 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 per cent (OR 1.09 (1.03 to 1.15) per IMD decile; p=0.004).
View full text

Misra R et al. (2016). *Community-Based Diabetes Screening and Risk Assessment in Rural West Virginia*. Journal of Diabetes Research. Article ID 2456518
AIM: to assess diabetes risk among 540 individuals from 12 counties using trained extension agents and community organizations in West Virginia.
METHODS: This project utilized a cross-sectional study design. Individuals were screened for diabetes using (1) the validated 7-item diabetes risk assessment survey and (2) hemoglobin A1c tests. Demographic and lifestyle behaviors were also collected.
RESULTS: The average age, body mass index, and A1c were 51.2 +/- 16.4, 31.1 +/- 7.5, and 5.8 +/- 0.74, respectively. The majority were females, Non-Hispanic Whites with no prior diagnosis of diabetes. Screenings showed that 61.8% of participants were at high risk for diabetes. Family history of diabetes (siblings or parents), overweight or obese status, sedentary lifestyle, and older age were commonly prevalent risk factors. Higher risk scores computed from the 7-item questions correlated positively with higher A1c ($r = 0.221$, $P < 0.001$). In multivariate logistic regression analyses, higher diabetes risk was predicted by obesity, older age, family history of hypertension, and gestational diabetes. Females were 4 times at higher risk than males.
View abstract

Owuor JO et al. (2016). *Targeted screenings, open days and volunteer-based peer support interventions in diabetes prevention, management and control in Nairobi, Kenya.* Global Heart 1): Volume 11, Issue 2, Supplement, Page e107.
AIM: to empower diabetics and their communities to take charge of their own health in diabetes prevention, management and control; improve health literacy through peer support and self-care education; facilitate formation of patients support networks, enhanced advocacy at the community level; and influence NCD policy environment.
METHODS: Targeted risk factor screening and education campaigns; early detection of complications through baseline and regular assessments; support formation of patient support groups for addressing challenges of living with diabetes, sharing and encouraging each other; support monthly 'open day forums' -share issues and meet the experts; and generate and transfer knowledge for adequate self-care.
RESULTS: (i) Increased peer support groups from 1 in 2011 to 17 in 2013, comprising 164 patients in groups of 5-15 members, the diversity ranging from youth-oriented to women and elderly persons support groups; (ii) Representation of patient voices in several advocacy forums including high-level discussion panel and workshop session at the East African Diabetes Study Group Conference held in Nairobi October 2013; (iii) Increased health advocacy campaigns and NCD risk-factor screenings mostly targeting low-income neighborhoods and marginalized groups.
View abstract

Puspitasari P et al. (2016). *An explanatory model of community pharmacists' support in the secondary prevention of cardiovascular disease*. Research in Social & Administrative Pharmacy 12(1): 104.
AIM: to develop a model illustrating influences on CVD support provision by community pharmacists.
METHODS: Mail surveys were sent to a random sample of 1350 Australian community pharmacies to investigate determinants of CVD support provision. A theoretical model modified from the Theory of Planned Behavior (TPB) was used as a framework for the survey instrument. Structural equation modeling was used to determine how pharmacists' attitudes and environmental factors influence CVD support.
RESULTS: A response rate of 15.8% (209/1320) was obtained. The model for CVD support provision by community pharmacists demonstrated good fit: $\chi 2/df = 1.403$, RMSEA = 0.047 (90% CI = 0.031–0.062), CFI = 0.962, TLI = 0.955 and WRMR = 0.838. Factors found to predict CVD support included: two attitudinal latent factors ("subjective norms of pharmacists' role in CVD support" and "pharmacists' perceived responsibilities in CVD support") and environmental factors i.e. pharmacy infrastructure (documentation and a private area), workload, location; government funded pharmacy practice programs; and pharmacists' involvement with Continuing Professional Development and attendance at CVD courses.
View abstract

Radigan M et al. (2016). *Sustaining Screening of Key Health Risk Factors in New York State Mental Health Clinics After Implementation of the Health Indicator Initiative.* Psychiatric Services 67(4): 425-430 426p.
AIM: to determine relationships between demographic and clinical risk factors and obesity and smoking by using screening data
METHODS: Screening data on weight loss and smoking cessation among adult outpatients were examined in state-operated clinics in the New York State Office of Mental Health. Individuals enrolled in 2010-2012 with two or more valid body mass index measures and two or more valid smoking measures (N=22,574) were selected. Chi square tests examined associations between demographic and clinical risk factors and obesity and smoking.
RESULTS: The prevalence of obesity and smoking was 45% and 50%, respectively. The odds of losing weight or remaining at a stable weight were higher among males (versus females), individuals ages ≤49 (versus ≥50), smokers (versus nonsmokers) at baseline, and individuals with diabetes (versus without diabetes). The odds of gaining weight were higher among individuals prescribed psychotropic medications compared with those who were not prescribed psychotropic medications. Individuals ages ≤49 and those with a pulmonary condition or psychotic or substance use disorders (versus without these conditions) were less likely to quit smoking. Individuals who were obese (versus not obese) at baseline and those with an endocrine condition (versus without this condition) were more likely to quit smoking.
View abstract

Sharma SK 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 abstract

Surana A et al (2016). *Evaluation Of Primary Prevention Of Cardiovascular Disease In Primary Care.* International Journal Of Medical Science And Clinical Inventions Volume 3 issue 3 2016 page no. 1725-1726.
AIM: to perform a retrospective analysis of our resident clinic in a medium size community hospital, to evaluate the adherence to measures of primary prevention of CVD.
METHODS: The modalities studies in this study for the primary prevention of CVD were aspirin, statins and smoking cessation. Inclusion criteria: age 55 to 65, active patient at the resident clinic (seen at least once between June 2014 –April 2015). A total of 1466 patients' charts were reviewed. After applying the inclusion and exclusion criteria 955 patients were included (n= 955). Use of aspirin, statin use and type and dose of statin, and allergy/ contraindication to these medications, and current smoking status were tabulated.10 year ASCVD risk score for these patients was calculated.
RESULTS: 36% (344) of these patients were males and 64% (611) were females. Only 39% (372) of these patients were on aspirin for primary prevention. Out of those 61%(583) not on aspirin only 10% (59) had a documented contraindication to aspirin. With regards to lipid management, 66% (630) patients had an ASCVD risk score of more than 7.5, qualifying them for statin therapy. Out of these only 48%(302) were on optimal statin therapy, while 49%(309) were on suboptimal and 3%(19) were on no statin therapy. Out of those not on statin therapy, only 11% (2) had a documented contraindication for statins. 58% (554) of the studies population was smoker in the studies population, despite documented counseling efforts by the

clinicians.
View full text

Tseng E et al. (2016). *Primary care providers' knowledge of screening and diagnosis of diabetes and prediabetes*. Journal of General Internal Medicine 1): S364.
AIM: to identify primary care providers knowledge of guidelines for screening and diagnosing diabetes and prediabetes.
METHODS: Primary care providers from a large academically-affiliated multispecialty group (which served 244,000 patients in 2015), completed a written, self-administered survey at their annual retreat in November 2015. Survey items on risk factors and laboratory parameters for the screening and diagnosis of diabetes and prediabetes were based on the American Diabetes Association's guidelines which have been consistent since 2010. We used logistic regression to evaluate the association between clinician characteristics (sex, race, years since training, clinic sessions/week) and knowledge of risk factors and diagnostic criteria for diabetes and prediabetes.
RESULTS: Of 184 adult primary care provider attendees, 141 (77 %) completed the survey. Among the respondents, 99 % were physicians or nurse practitioners. Medicine specialties represented included internal medicine (43 %), family medicine (40 %), and internal medicine-pediatrics (15 %). The majority of providers were female (72 %), white (55 %; other races: Asian, 23 %, African American, 14 %) and in practice for at least 10 years (59%). Number of half-day clinic sessions varied with 16%reporting 5-6, 21% reporting 7-8, and 40 % reporting 9-10 per week. Only 6 % of providers correctly identified all the risk factors that should prompt screening for diabetes. The most commonly identified risk factors were family history of diabetes in a first-degree relative (94 %), overweight (89 %), history of gestational diabetes (87 %), dyslipidemia (86 %), hypertension (77 %), and history of heart disease (75 %). The least-commonly identified risk factors were Asian race (38 %) and Hispanic ethnicity (52 %). Roughly two-thirds of providers correctly identified the laboratory parameters for the diagnosis of diabetes using both fasting glucose (>126 mg/dL) and hemoglobin A1c (>6.5 %). Only 41%of providers correctly identified the laboratory parameters for the diagnosis of prediabetes based on fasting glucose (100-125 mg/dL), and even fewer providers (21 %) correctly identified prediabetes based on hemoglobin A1c (HbA1c 5.7-6.4 %). Each additional full day of clinic per week was associated with a 1.4- to 1.5-fold increased odds (for fasting blood glucose: OR = 1.35; 95%CI: 1.05 to 1.74; for HbA1c: OR = 1.47; 95%CI: 1.04 to 2.06) of correctly choosing the laboratory criteria for the diagnosis of prediabetes. We did not find a significant association between other clinician characteristics and knowledge of diagnostic criteria.
No freely available abstract

Yu EA et al. (2016). *Recommended anthropometric cut-offs for population screening of diabetes and prediabetes need to be evaluated in resource-limited settings*. FASEB Journal. Vol 30, no. 1, supplement 33.1.

AIM: to examine the association of anthropometric measurements with diabetes and pre-diabetes in a cohort where the majority of participants would be classified as low risk based on either BMI or WC.
METHODS: Study participants were recruited from an outpatient clinic in rural South India (n=297). Concentrations of glycosylated hemoglobin (HbA1c) were measured by high-performance liquid chromatography. Diabetes and pre-diabetes were defined as HbA1c >6.5% and >5.7% to <6.5%, respectively. Waist circumference was measured by non-stretch measuring tape to the nearest 0.1 cm by study staff. Whole and segmental body composition were measured by bioelectrical impedance analysis.
RESULTS: Mean waist circumference was 73.2 cm (SD: 11.3) among males, and 69.7 cm (SD 12.1) among females. Among male study participants, more than 90% had a waist circumference < 90 cm; among females, 80% had a waist circumference <80 cm. Mean BMI was 19.2 kg/m² (SD 4.1) among men, and 20.4 kg/m² (SD 5.4) among women. Among males, 50.0% had BMI <18.5 kg/m², and over 90% had BMI <25.0 kg/m². Among females, nearly 50% of study participants had BMI <18.5 kg/m², and more than 80% had BMI <25.0 kg/m². Study participants with waist circumference in the two lowest tertiles had a lower risk of diabetes (Tertile 1 vs 3: RR 0.40 [95% CI 0.20-0.81]; Tertile 2 vs 3: RR 0.33 [95% CI: 0.15-0.73]), compared to those in the highest tertile (p=0.004). Waist circumference was not associated with pre-diabetes; BMI was not associated with either diabetes or pre-diabetes.
View abstract

Dugee O et al. (2015). *Adapting existing diabetes risk scores for an Asian population: a risk score for detecting undiagnosed diabetes in the Mongolian population*. BMC Public Health 15: 938.
AIM: to develop and validate a diabetes risk score for the screening of undiagnosed type 2 diabetes mellitus in the Mongolian adult population.
METHODS: Blood glucose measurements from 1018 Mongolians, as well as information on demography and risk factors prevalence was drawn from 2009 STEPS data. Existing risk scores were applied, measuring sensitivity using area under ROC-curves. Logistic regression models were used to identify additional independent predictors for undiagnosed diabetes. Finally, a new risk score was developed and Hosmer-Lemeshow tests were used to evaluate the agreement between the observed and predicted prevalence.
RESULTS: The performance of existing risk scores to identify undiagnosed diabetes was moderate; with the area under ROC curves between 61-64 %. In addition to well-established risk factors, three new independent predictors for undiagnosed diabetes were identified. Incorporating these into a new risk score, the area under ROC curves increased to 77 % (95 % CI 71 %-82 %).
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Hsia DS et al. (2015). *Impact of Lowering BMI Cut Points as Recommended in the Revised American Diabetes Association's Standards of Medical Care in Diabetes-2015 on Diabetes Screening in Asian Americans*. Diabetes Care 38(11): 2166-2168.
AIM: to estimate the screening prevalence of prediabetes and diabetes using a lower BMI cutoff of 23 kg/m(2) in Asians in the U.S. using the National Health and Nutrition Examination Survey (NHANES) from 2011 to 2012.
METHODS: A cross-sectional analysis was conducted of non-Hispanic Asians, aged 45 years and older, with available BMI, HbA1c, and fasting glucose data. These overall criteria were met by 341 participants.
RESULTS: Lowering the screening BMI to 23 kg/m(2) increased the sensitivity of screening for prediabetes and diabetes from 50.2 to 74.1% (P < 0.0001) but decreased the specificity from 62.9 to 38.7% (P < 0.0001).
View abstract

Priscilla S et al. (2015). *A pragmatic and scalable strategy using mobile technology to promote sustained lifestyle changes to prevent type 2 diabetes in India-Outcome of screening*. Diabetes Research & Clinical Practice 110(3): 335-340.
AIMS: We describe a two-step screening approach using non-invasive risk assessment and glycated hemoglobin (HbA1c) to identify participants for a diabetes prevention trial.
METHODS: A total of 6030 non-diabetic persons of 35-55 years were screened using risk assessment for diabetes. Those with three or more risk factors were screened using point of care HbA1c test. For this study, participants in HbA1c categories of 6.0% (42.1 mmol/mol)-6.4% (46.4 mmol/mol) were selected and their characteristics were analyzed.
RESULTS: Among 6030 persons, 2835 (47%) had three or more risk factors for diabetes. Among those screened with HbA1c, 43.2% (1225) had HbA1c values of <6.0% (42.1 mmol/mol), 46.8% (1327) had HbA1c values between 6.0% (42.1 mmol/mol) and < 6.4% (46.4 mmol/mol) and 10% (283) had undiagnosed diabetes with >6.5% (47.5 mmol/mol). Positive family history was present in 53.2%, 81.7% were obese and 14.8% were overweight.
View abstract

Qualitative research

Lee M et al. (2016). *Potential Motivators and Barriers for Encouraging Health Screening for Cardiovascular Disease Among Latino Men in Rural Communities in the Northwestern United States*. Journal of Immigrant & Minority Health 18(2): 411-419.
AIM: to determine what motivates Latino men to participate in health screening for diabetes, high blood pressure, and high cholesterol.
METHODS: A qualitative, descriptive study. Self-identified Latino men (n = 17) were interviewed following a community health screening targeting Latinos. Individual semi-structured interviews were conducted in either Spanish or English after giving

written consent. Trained interpreters were used for Spanish interviews.
RESULTS: Emerging themes include motivating factors and barriers to participate in screening.
View abstract

O'Brien MJ et al. (2016). *Patient perceptions about prediabetes and preferences for diabetes prevention*. Journal of General Internal Medicine 1): S326-S327.
AIM: 1) to examine their knowledge and perceptions about the risk of developing diabetes; and 2) to explore their preferences for treatment to prevent or delay diabetes.
METHODS: We enrolled 35 adults with prediabetes from 2 large Midwest primary care practices. Participants were identified by querying diagnosis codes and laboratory results in clinics' electronic health record systems for impaired fasting glucose, impaired glucose tolerance, or elevated hemoglobin A1C. We excluded patients with diagnosed diabetes, antidiabetic medication use, and those who had a myocardial infarction, stroke, or cancer treatment in the previous year. We conducted in-depth interviews using a semi-structured interview guide, which was designed to elicit the following patient perspectives: knowledge about the risk of developing diabetes; reactions to information about future diabetes risk with and without treatment; and treatment preferences as shaped by underlying values, goals, and concerns.
RESULTS: We identified 3 major themes reflecting participants' perceptions about their diabetes risk and treatment preferences to prevent or delay diabetes. Theme 1: Knowledge gaps about prediabetes and its treatment are pervasive. Most participants overestimated the risk of developing diabetes. ("As soon as I hear prediabetes, I automatically think you are going to get diabetes. I think people usually go that way.") Knowledge about treatment options was also limited. ("The doctor suggested to me to reduce the meals and to exercise. But just that;" and "I've heard that people who have diabetes can control it with medication. But I never heard that if you take a medication, it can prevent diabetes.") Theme 2: Evidence about diabetes risk and treatment options for prediabetes is motivating to patients. For some participants, learning this information during the interview gave them hope that diabetes could be prevented. ("There's still some time and the time is now. I feel a little better seeing the numbers and seeing that there is a possibility to really prevent diabetes.") Learning the diabetes risk reduction associated with ILI and metformin seemed to motivate patients to take action. ("This information is letting me know that I can beat this that I can try to develop an exercise and eating plan that will get me back to being almost normal.") Theme 3: Both ILI and metformin are considered acceptable treatments. Most participants preferred ILI as their initial choice to prevent or delay diabetes. They cited some of the following perceptions about ILI to support this preference: it has additional benefits beyond lowering diabetes risk; it constitutes "personal responsibility" and a "natural way" for managing prediabetes; and it is associated with a greater risk reduction than metformin.
No freely available abstract

Petrova D et al. (2016). *To screen or not to screen: What factors influence complex screening decisions?* Journal of Experimental Psychology: Applied 22(2): 247.
AIM: to study how cognitive skills, emotions, and a priori beliefs about screening affect comprehension of the evidence of benefits and harms from screening and intentions to get screened.
METHODS: Young adults (N = 347) received information about a disease for which a screening test was available and numerical information about the benefits and harms from screening.
RESULTS: Comprehension and perceptions of benefits are central to decisions; however, lay perceptions of harms along the screening cascade require further study. Numeracy, science literacy, and emotions can promote informed decision making by facilitating comprehension of the evidence. At the same time emotions and beliefs resulting from persuasive campaigns can have strong effects on screening intentions beyond the available evidence.
View abstract

Service evaluation

Abrahams-Gessel S et al. (2016). *Challenges Facing Successful Scaling Up of Effective Screening for Cardiovascular Disease by Community Health Workers in Mexico and South Africa: Policy Implications*. Health systems and policy research 3(1) pii 26.
AIM: to compare the experience with this CVD screening study to successful programs in vaccination, reproductive health, HIV/AIDS, and TB specifically to identify the barriers we identified as limitations to replicating these programs in the area of CVD diagnosis and management.
METHODS: We review barriers impacting the effective translation of policy into practice, including scale up issues; training and certification issues; integrating CHW to existing primary care teams and health system; funding and resource gaps.
RESULTS: We suggest policy recommendations to replicate the demonstrated success of programs utilizing task-sharing with CHWs in infectious diseases and reproductive health, to integrated programs in NCD.
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Ongoing research

Seguin R et al. (2016). *Strong Hearts, healthy communities: a rural community-based cardiovascular disease prevention program*. BMC Public Health 16(1): 86.
AIM: This community-based study will be a two-arm randomized controlled efficacy trial comparing a multi-level, community program (Strong Hearts, Healthy Communities) with a minimal intervention control program (Strong Hearts, Healthy Women).
METHODS: Strong Hearts, Healthy Communities was developed by integrating content from three evidence-based programs and was informed by extensive formative research (e.g. community assessments, focus groups, and key informant

interviews). Classes will meet twice weekly for one hour for 24 weeks and focus on individual-level skill building and behavior change; social and civic engagement are also core programmatic elements. Strong Hearts, Healthy Women will meet monthly for hour-long sessions over the 24 weeks covering similar content in a general, condensed format. Overweight, sedentary women 40 years of age and older from rural, medically underserved communities (12 in Montana and 4 in New York) will be recruited; sites, pair-matched based on rurality, will be randomized to full or minimal intervention. Data will be collected at baseline, midpoint, intervention completion, and six-month, one-year, and eighteen months post-intervention. The primary outcome is change in body weight; secondary outcomes include physiologic, anthropometric, behavioral, and psychosocial variables. In the full intervention, engagement of participants' friends and family members in partnered activities and community events is an intervention target, hypothesizing that there will be a reciprocal influence of physical activity and diet behavior between participants and their social network. Family members and/or friends will be invited to complete baseline and follow-up questionnaires about their health behaviors and environment, height and weight, and attitudes and beliefs.
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Silarova B et al. (2015). *Information and Risk Modification Trial (INFORM): design of a randomised controlled trial of communicating different types of information about coronary heart disease risk, alongside lifestyle advice, to achieve change in health-related behaviour*. BMC Public Health 15: 868.
AIM: to evaluate short-term effects of providing different types of information about coronary heart disease (CHD) risk, alongside lifestyle advice, on health-related behaviours.
METHODS: In a parallel-group, open randomised trial, we are allocating 932 male and female blood donors with no previous history of CVD aged 40-84 years in England to either no intervention (control group) or to one of three active intervention groups: i) lifestyle advice only; ii) lifestyle advice plus information on estimated 10-year CHD risk based on phenotypic characteristics; and iii) lifestyle advice plus information on estimated 10-year CHD risk based on phenotypic and genetic characteristics. The primary outcome is change in objectively measured physical activity. Secondary outcomes include: objectively measured dietary behaviours; cardiovascular risk factors; current medication and healthcare usage; perceived risk; cognitive evaluation of provision of CHD risk scores; and psychological outcomes. The follow-up assessment takes place 12 weeks after randomisation. The experiences, attitudes and concerns of a subset of participants will be also studied using individual interviews and focus groups.
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