GETTING IT RIGHT FIRST TIME

Primary Care Cardiovascular Society

Driving primary care to deliver the best in cardiovascular health

Oxford Academic Health Science Network

CVD prevention during the COVID-19 pandemic

A guide for primary care

This guidance offers practical and pragmatic guidance to support primary care teams in delivering cardiovascular disease prevention interventions during the COVID-19 pandemic. It highlights case studies and good practice examples and contains links to helpful external resources.

October 2020

Introduction

The COVID-19 pandemic has had a negative impact on cardiovascular disease (CVD) prevention. Targeted CVD prevention initiatives will directly reduce health inequalities and are highly effective at reducing stroke, myocardial infarction (MI) and other adverse cardiovascular events.

Key points

- Take a holistic approach to CVD prevention
  - Do not treat CVD risk factors in isolation
  - Maximise all encounters, especially face to face
  - Use the extended primary and community care team
  - Maximise opportunities to assess the CVD risk of your population
  - Offer lifestyle advice to all
- Target prevention to maximise effect
  - Use searches and risk stratification tools to identify those most at risk and start with these
  - Ensure patients are on optimal medication, including optimal dose
  - Promote self-monitoring using digital technology (but ensure non-digital ways of accessing care are available)

1. Take a holistic approach to CVD prevention

Many people will have multiple CVD risk factors and taking a holistic approach to detection and management of these risk factors is an effective way of delivering care and an efficient use of time. This is particularly true during the COVID-19 pandemic when there may be fewer opportunities to reiterate messages around adherence to medications and healthy behaviours. Rather than reviewing patients according to diagnoses, consider offering 'multiple cardiometabolic risk factor reviews' and allowing varying appointment lengths.

Patients with CVD risk factors may have experienced symptoms of MI, stroke, transient ischaemic attack (TIA) or heart failure during the pandemic and not reported these. Consider asking patients whether they have experienced symptoms of these conditions during lockdown and manage accordingly.

Reinforce healthy behaviours and check on adherence to medication. Lifestyle resources to share with patients can be found here.

Virtual group consultations can be useful for patient education. During the COVID-19 pandemic, one practice developed a series of virtual group consultations on lifestyle advice, which were delivered to patients with hypertension; a case study and links to materials used can be found here.

Patients who were previously shielding can be signposted towards local authority COVID-19 support. Details of this should be available on local authority websites.

2. Maximise encounters

During the pandemic, patients may have fewer encounters with healthcare professionals. All encounters, whether face to face or virtual, should be maximised.

Virtual encounters

- Take the opportunity to assess CVD risk, and remember that those older than 60 years with hypertension will automatically be at >10% CVD risk.
- Ask patients if they have a home blood pressure (BP) monitor or whether they can obtain one.

Face-to-face encounters

- Patients attending for blood tests, ECGs, dressings, etc, could have their pulse and BP checked by a healthcare assistant or phlebotomist (with appropriate training).
- Clinicians could consider adding a lipid profile in patients aged >40 years who have not had a lipid profile in 5 years and are having bloods taken for another reason.
- Perform the rest of the assessments in the annual diabetes check when patients attend for bloods.

3. Promote the use of remote technology for diagnosis and monitoring

Since the start of the pandemic, many patients will have missed routine and opportunistic screening that would previously have taken place face to face. Remote technology can be used to address the diagnosis gap and can also be used for ongoing monitoring of some conditions.

Hypertension

Studies have shown that self-monitoring of hypertension (with or without telemonitoring) can be safely and effectively used by primary care clinicians to titrate antihypertensive medication in patients with poorly controlled BP.[1] In Scotland, the Scale-up BP project has been running for several years and has shown the effectiveness of this approach at scale.[2]

Hypertension monitors

The British and Irish Hypertension society (BIHS) has developed a list of approved BP monitors, which have been independently peer reviewed. Many of these monitors are available for £20 or less, either online or via pharmacies. Patients should be advised on which cuff size they should purchase.

Practices who have MJog, AccuRx or a similar mass-messaging system may wish to run a survey to find out the proportion of their hypertensive patients who own a home BP monitor.

Blood Pressure UK and BIHS have a range of information for patients on the importance of home BP monitoring and how to take a reading. Links to this can be texted, emailed or posted to patients to back up information given verbally.

Home BP monitoring

When using home BP monitors

(all levels below are mean home BP, which is lower than clinic readings)

- Check the patient has access to a validated monitor <5 years old.[3]
- Explain to the patient how to take a home BP reading.
- Explain that for each BP reading, take 2 consecutive measures, at least 1 minute apart while seated after 5 minutes' rest.

Using a home BP monitor to **confirm a diagnosis of hypertension**	Using a home BP monitor to **manage known hypertension**

• Take 2 sets of readings a day (ideally morning and evening) for 7 days.
• Discard the first day's reading and use the average value of the remaining readings to confirm diagnosis.
• Offer universal lifestyle advice to all.
• Confirm diagnosis if home BP measurement average is 135/85 mmHg or higher:
  – Prescribe antihypertensive medication to:
  • all with BP ≥150/95 mmHg
  • all aged ≥60 years, as QRISK ≥10% by definition
  • all with CVD, type 2 diabetes, end-organ damage or QRISK ≥10% with BP 135–149/85–94 mmHg
	• Take 2 readings a day (ideally morning and evening) for at least 3 and up to 7 days.
	• If close to treatment target, consider asking for more readings (i.e. at least 7 days' worth).
	• Use the average value from at least 12 readings to guide management.
	• Targets:
	  – Age <80 years, including type 2 diabetes → <135/85 mmHg
	  – Age ≥80 years → 145/85 mmHg
	
	(Refer to treatment targets as per NICE.)

Monitoring platforms for hypertension

Several platforms allow patients to transmit their home BP readings to their GP practice. These vary in functionality and cost, and practices will need to consider what factors are important (cost, integration with EMIS/SystmOne, flagging of high-risk results). UCLPartners have compared five providers with products currently on the market; this comparison can be found here.

Text-based systems such as Florence are also available.

Not all patients will have access to a smartphone and not all patients will be comfortable sending BP readings in via an app. Practices should consider putting non-digital solutions in place too – for example, a simple BP diary or asking patients to text in photos of their monitor with BP readings.

Diagnosing atrial fibrillation

During the COVID-19 pandemic, for patients with a high CHA_2DS_2VASC score who have a single-lead tracing of atrial fibrillation (AF) for ≥30 seconds, clinicians should consider starting anticoagulation therapy ahead of a 12-lead ECG* if there are high circulating risks of COVID-19 and the patient is at high risk of poor outcome if they contract COVID-19. A 12-lead ECG should still be performed, but anticoagulation therapy should not be delayed in the meantime.

Single-lead devices that can be purchased by a practice and loaned to patients include Kardia Mobile and MyDiagnostick. A review of single-lead and other AF detection devices can be found here.

Several smartphone apps can be used to screen for AF. These CE-marked devices include Fibricheck, which uses photo-plethysmography through a smartphone camera to detect AF, and CardioSignal, which uses the gyrometer within a smartphone to detect AF. These devices have not yet gone through the NICE technology appraisal process, but they are being used by some health services in the UK. Although patients who screen positive for AF would need a confirmatory ECG, these apps provide a potential alternative to pulse palpation for patients who are having virtual consultations.

**Pulse palpation followed by a 12-lead ECG if the pulse is found to be irregular is the standard pathway for diagnosis of AF in the UK.[4] Recent European Cardiology Society guidelines[5] state that a single-lead ECG tracing ≥30 seconds or a 12-lead ECG showing AF analysed by a physician with expertise in ECG rhythm interpretation is necessary to establish a definitive diagnosis of AF.*

Type 2 diabetes

Assessment

Encourage at-risk patients to self-assess their diabetes risk at http://riskscore.diabetes.org.uk/start. People aged 18–79 years living in England and scoring over 16 points are eligible to join the NHS Diabetes Prevention Programme (NHS DPP), which is currently being delivered virtually.

At-risk patients should also be offered a blood glucose test, an HbA_{1c} test and CVD risk assessment.

For those already diagnosed

Diabetes self-management programmes are available. One example is myDESMOND, which combines content and research from the NICE approved face-to-face DESMOND self-management programme with a portable interactive web-based platform. The programme uses a variety of different formats to support patients, including short videos, articles and interactive activities on topics such as diet and lifestyle. Patients can also access a peer community through online forums. myDesmond is listed on the NHS apps library and can be accessed here.

Monitoring urine albumin to creatine ratio

Encourage people living with diabetes who are at risk of renal disease to check their albumin to creatinine ratio (ACR) at least annually.

Healthy IO offers a home-based screening service for early detection of albumin in urine for at-risk patients with diabetes. Patients are sent a urinalysis kit to conduct a self-test at home; they then take a photo of the

dipstick result to share with their clinician via smartphone for follow up. The tool has been used by Sussex Community Foundation NHS Trust during the COVID-19 pandemic.[6]

4. Ensure patients are on optimal medication

Do not defer appropriate initiation of medication for cardiovascular risk factors. Encourage patients newly initiated on medication to contact their community pharmacist to arrange a new medicines service (NMS) review, which can help support medication adherence.

Ensure that patients are on the optimal medication for their condition, including the correct dose.

For patients with AF, clinicians should consider switching appropriate patients from warfarin to a direct oral anticoagulant (DOAC) to avoid regular blood tests for monitoring of international normalised ratio (INR). DOACs require regular monitoring of renal function, but this is less onerous than INR monitoring for most patients and can be carried out routinely in primary care. Guidance produced by the Royal Pharmaceutical Society can be found here. Incorrect dosing of DOACs can lead to an increased risk of bleeding or inadequate anticoagulation. Dosing for any DOAC should always follow recommendations in the summary of product characteristics.

Follow the NHS England/Accelerated Access Collaborative lipid pathway guidelines for initiation and intensification of statins in high-risk patients. Benchmarked system- and practice-level data on statin intensification can be found here.

5. Refer to secondary care where appropriate

During the first wave of the pandemic, there was a well-reported reduction in the numbers of patients presenting to secondary care with MI, stroke, TIA or heart failure.

Remind patients of the symptoms of these conditions and explain to them that the risk of not seeking immediate medical attention for these conditions greatly outweighs the risk of COVID-19. This information could also be shared on practice websites and via AccuRx. Consider asking patients whether they experienced any unreported symptoms of these conditions during lockdown. Useful information is available online about symptoms of stroke and MI.

Many patients who did not report minor cardiac events during the pandemic could go on to develop heart failure. Anyone reporting symptoms of heart failure should be offered an N-terminal pro B-type natriuretic peptide (NT-proBNP) test and then referred as appropriate according to local pathways.

6. Use the extended primary care team

Utilise the skills of the extended primary care team, including healthcare assistants, phlebotomists and practice pharmacists, in addition to GPs and practice nurses. Also consider utilising the skills of district nurses and community pharmacists.

Team member	Potential role in CVD prevention
Phlebotomist	Pulse check prior to blood test
Healthcare assistant	Pulse check; BP check; diabetic foot check; holistic proactive care for low risk patients (education, self-management, behaviour change support); lifestyle advice; medication adherence
Prescribing clinician	As above, plus review and uptitration of drugs for medium-/high-risk patients
Community pharmacist	New medicine service review; pulse check/single-lead ECG; BP check
District nurse	Pulse check/single-lead ECG; BP check

7. NHS Health Checks

Where NHS Health Checks are provided in primary care, consider pre-stratifying your population to invite those at highest risk of CVD for reviews, focusing on inequalities. A 'top tips' document for increasing NHS NHS Health Check uptake can be found here.

8. Training and education

The Primary Care Cardiovascular Society (PCCS) has developed online learning bites on CVD prevention during the COVID-19 pandemic, which can be found here.

Public Health England has developed a range of videos, which can be found here.

UCLPartners has developed a range of training materials to support practice staff implement a remote monitoring system for hypertension, including scripts for staff who are delivering reviews over the telephone. which can be found here.

9. Use searches and risk-stratification tools

Code-cleansing searches

Consider running searches to identify patients with confirmed CVD risk factors (e.g. those receiving therapy for AF or hypertension) who have not been given a diagnosis code. Code cleansing is important, because it means that all patients with these conditions will be picked up in subsequent searches. Example search criteria for a code-cleansing search can be found here, and a case study showing the effectiveness of code cleansing can be found here.

System searches

A range of tools for searching GP systems can be found here.

Risk stratification

Using a risk-stratification framework will enable you to:

- identify and prioritise those at highest risk for urgent review
- assign different members of the primary care team to review patients based on clinical need.

Examples of risk stratification frameworks include:

- Affinity Care (suite of protocols and frameworks covering a range of CVD risk factors)
- UCLPartners (hypertension)
- AF virtual clinic
- Accelerated Access Collaborative lipid pathway.

Simple searches can also help you risk stratify. For example:

- Search for all patients on the AF register with CHA_2DS_2VASC ≥2 and not on oral anticoagulation therapy.
- Search for all patients with last recorded BP ≥180/120 mmHg, ≥160/100 mmHg, and ≥140/90 mmHg, targeting those with the highest BP first.
- Search for patients not on the hypertension register with a last recorded BP >140/90 mmHg to call them in for follow-up diagnostic tests.

Quality improvement

Using searches and risk stratification as part of quality improvement (QI) can ensure that any improvements delivered are sustained. The Royal College of General Practitioners has developed comprehensive guidance on carrying out QI projects in primary care.

An example of a QI plan on a page can be found here, and a template for writing up a QI project can be found here.

CVDPREVENT, a new national primary care audit being launched in 2021–22, will provide the necessary measurement and audit mechanisms to support practices and primary care networks (PCNs) in determining local needs and directing resources. Practices need to **opt in** to CVDPrevent.

10. References

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Appendix 1: Case studies

Case study 1 – Multiple cardiometabolic risk factor reviews

At Stoke Road Surgery, long-term condition clinics are run by two experienced nurses. Where possible, multiple conditions are reviewed at the same visit. Individual appointments are arranged for 20 minutes, and two patients are seen consecutively, followed by a 10-minute break or 'cushion'. This cushion allows some additional time for patients who are elderly, more complex or need longer with the clinician. Six patients are reviewed per 2.5-hour session – either virtually or face to face.

The clinics are organised by a specific member of the administrative team, who telephones patients to arrange the appropriate blood tests 1 week prior to the appointment. Patients with heart failure are always seen face to face and examined by nurses trained to undertake heart failure assessments.

Where patients are reviewed virtually, if blood pressure needs to be recorded, they are asked if they have, or can obtain, a home blood pressure monitor. In all but a handful of cases, patients have been prepared and able to do this.

Templates are used for the different cardiovascular disease, diabetes and heart failure assessments and, due to overlap in these assessments, time is saved by reviewing all conditions in one appointment.

The 2018 NICE chronic heart failure guidelines[7] advised six-monthly reviews of patients with heart failure, which would have required around 300 extra long-term condition appointments in the practice every annum. Searching revealed that all but 17 of the patients with heart failure were being seen routinely in other long-term condition reviews.

Case study 2 – Virtual group consultations

Measures that needed to be undertaken for the COVID-19 pandemic mean that routine face-to-face appointments are no longer possible without appropriate triage, so patients at high risk of cardiovascular disease (CVD) requiring assessment, medication and lifestyle intervention are not able be seen and counselled in the usual way. With Woodley Centre Surgery in Wokingham, Berkshire, already struggling to get the numbers of patients to have their blood pressure (BP) taken even before the pandemic, alternative ways of addressing CVD prevention were needed, particularly for patients who had stayed away due to fear of catching COVID-19 or putting further pressure on GPs during this difficult time.

The practice had already been running a series of face-to-face group consultations in other disease areas, such as diabetes, fibromyalgia, chronic pain and paediatric asthma for 18 months. These had been very popular and successful, with data from the paediatric asthma cohort showing reductions in emergency department attendances, practice appointments, and use of inhalers. The practice therefore decided to embark on turning the face-to-face group consultations to virtual group consultations (VGCs), using Microsoft Teams and extend the VGCs to CVD prevention.

Patients on the practice CVD register were invited to join a VGC via text message. Seventy-nine patients initially expressed an interest, making it impossible to run a straightforward VGC through Microsoft Teams, so the format was switched to a webinar, the first of which was attended by 49 people. The webinars are led by a health and wellbeing coach, Maria Goncalves, supported by Rupa Joshi, the lead GP on the project, who currently volunteers Wednesday mornings to these sessions. The health and wellbeing coach is funded for 1 day a week through the Primary Care Network Additional Roles Reimbursement Scheme (ARRS) Directed Enhanced service (DES) scheme, running webinars and patient education sessions in the morning and one-to-one support sessions in the afternoon.

The identities of all patients who attended were verified before the webinar, and patients were asked to be respectful of the clinicians and each other. Although patients had the option to switch off their camera during the sessions, many choose to participate with the video active. Older patients were unexpectedly adept at using video software, having become familiar with the software to stay in contact with family and friends during lockdown.

The tone of the webinar was non-judgemental, instead encouraging patients to take ownership of their own health and wellbeing. The content covered a variety of topics useful for CVD prevention, including self BP monitoring, diet and nutrition (e.g. rainbow diet, vitamins D and C, omega 3 oils, salt, potassium, and glucose spikes), recommended exercise levels, stress reduction and breathing techniques, and sleep hygiene. Patients are also encouraged to join a WhatsApp group and Facebook page set up alongside the webinar, through which the clinicians could share useful resources, including 'a lifestyle checklist, This approach has proved so popular and successful that the practice has further broadened the reach to other topics useful during the pandemic, including severe asthma, anxiety/depression, shielding, postnatal care, mental health in children, and minor illness in under 5s. The practice aims to organise sessions for COVID-19 rehabilitation and for carer support.

Click to download the lifestyle checklist and webinar presentation.

Case study 3 – Scale-up BP project

After participating in a randomised control trial (RCT) that demonstrated that remote monitoring of hypertension was effective, NHS Lothian scaled up this approach to create an integrated telemonitoring system for hypertension 'Scale-up BP'. The system provides regular summaries of patient home monitored blood pressure (BP) readings to the general practice.

Patients are provided with hypertension monitors and asked to text in their blood pressure readings via the Florence text-messaging solution, which can be used on any mobile phone.

When patients join the telemonitoring system they are assigned a review frequency – either 1, 3 or 6 monthly, depending on how well controlled their condition is. Result summaries, which are both tabular and graphical, with clear identification of patients requiring action, are sent through to DOCMAN for review and action by a practice nurse. The results come through the general DOCMAN results feed and do not require the nurse to log in to a separate system.

80% of practices across Lothian are signed up to the system and a further 10 health boards are taking part. Currently, more than 10,000 patients are using the system across Scotland. Feedback has been excellent from both GPs and patients. Patients using the system have seen improvements in their BP control in line with those seen in the RCT. Practice workload has reduced, with patients using the system having a 24% reduction in face-to-face consultations (all conditions) compared to normal care. The system has a low dropout rate (7%), with the vast majority of patients using the system in the long term.

There were few barriers to implementation, and the IT department responsible for the implementation was a significant enabler to getting the project running quickly. Some concern was expressed over whether patients would input the correct details – end-digit analysis showed that this fear was unfounded and only a very small number (~3%) of results showed evidence of manipulation. A further concern was expressed over patients with a very high BP reading, and this was addressed through a 'patient contract', where patients agree to take responsibility to contact the practice within 24 hours if their BP is over a certain limit. This is explicitly and carefully explained to the patient and they are also provided with written information.

Initially there was concern that patients using the system were younger and slightly more affluent than on average. However, this was found to be related to the practice population within the early adopting practices. Once the project was rolled out on a wider basis, not only was uptake similar in more deprived areas but people who were socially deprived derived more benefit from the intervention than those not experiencing social deprivation.

The system has been seen as a significant aid in managing the hypertensive population during the COVID-19 pandemic, and, unsurprisingly, use has increased during this time. Learning from this project has been applied to develop a 'Telecovid' project to monitor oxygen saturation at home.

Case study 4 – GP data-cleansing initiative for atrial fibrillation and hypertension

The prevalence of both hypertension and atrial fibrillation (AF) vary between clinical commissioning groups and may relate, in part, to the quality of clinical coding. People who are on treatment for hypertension or AF but who are not coded may be at risk of not being recalled as part of the disease register protocol, and this may have a direct impact on their risk of cardiovascular complications, quality of life, maintaining independence and survival. Equally, under-recording will artificially underestimate the prevalence of patients with known hypertension and AF.

A code-cleansing initiative was undertaken in Hampshire, Isle of Wight and Thames Valley regions during February 2019–December 2019 to improve the quality of coding for AF and hypertension within primary care. This aimed to generate a more accurate register of people with AF and hypertension, which would inform the practice's recall-and-review processes within primary care and the wider healthcare system to support people to live healthier, monitor effective treatment and support medicines optimisation.

Overall, 285 (74%) practices across Thames Valley, Hampshire and the Isle of Wight participated in the initiative:

- 12,711 patients were added to the hypertension registers
- 2,446 patients were added to the AF registers.

Key learnings from the project were:

- There is under-recording of AF and hypertension across primary care; it is likely there is chronic under-recording for other long-term conditions such as diabetes, chronic obstructive pulmonary disease and heart failure.
- Coding anomalies were identified, including in-hospital patients treated for hypertension but not coded on discharge and/or patients moving GP practices and not coded. Furthermore, patients with comorbidities such as diabetes who were found to be hypertensive were coded for diabetes but not for hypertension.

Case study 5 – Affinity Care

Affinity Care is a 25-partner 'super practice' delivering care to more than 64,000 patients in Bradford. Over the past few years, clear pathways have been developed for the management of a range of cardiovascular disease (CVD) risk factors.

During the COVID-19 pandemic, these pathways have been adapted to include:

- Diagnosis and management of hypertension using a home blood pressure (BP) monitor
- Telephone review for patients without access to a home BP monitor:
  - Screening for hypotensive symptoms (uptitration of medicine inappropriate)
  - Protocol for risk-stratifying patients in whom face-to-face review can be deferred for 6 months
  - Protocol for identifying patients in whom medication can be safely uptitrated based on last recorded BP reading
- E-consultation with cardiology Affinity Care Primary Care Network cardiovascular team (composed of GPs with a specialist interest and advanced nurse practitioners), where appropriate, for patients with symptomatic atrial fibrillation
- Self-monitoring of weight, pulse and BP for patients with heart failure with left ventricular systolic dysfunction
- Clear risk assessment framework for patients reporting palpitations
- The importance of talking to patients to dispel myths around angiotensin-converting enzyme (ACE) inhibitors/angiotensin receptor blockers being linked to COVID-19 complications
- Reminding patients with CVD risk factors of the importance of social distancing or shielding, as appropriate
- The importance of adhering to medications and lifestyle modifications during the pandemic.

Click to download Pathways in cardiovascular care.

Appendix 2: UCLPartners comparison of home BP monitors

For local decision - options for transmission of home blood pressure reading to GP practice UCLPartners

Considerations:

- Patient facing end
- Integration with existing GP systems, e.g. EMIS
- Ability to flag high-risk results
- Ability to batch message patients to request home BP result

All systems highlighted are:
- GDPR compliant
- CE marked
- Currently only available in English

Comparison of providers (not exhaustive)

	Accurx	E-consult	Omron Connect	Omron HTN +	Primary Care Pathways
Does it integrate with primary care clinical systems, e.g. EMIS?	Pending(1-2months ?) but will be integrated. Need to input BP to be coded	No- a pdf is provided which is incorporated into EMIS and SystmOne. Manually input BP into notes to be coded	No - clinician has separate dashboard & log in	Yes – separate dashboard but does integrate	Yes (EMIS, system one and vision)
Cost	Accurx basic free Florey may cost additional	Free temporarily	Free (not Hypertension+)	Cost TBC- pilot at present	£200 per year for basic package
BP monitors	Patient needs own BP monitor	Patient needs own BP monitor	Bluetooth enabled but can input BP manually	Bluetooth enabled but can input BP manually	Patient needs own monitor
Ease of use for patient	Yes	Yes	Yes- but patient must download app	Yes – patient needs to download app	Simple online form
How many readings	Minimum one reading but can add additional if GP requests	Minimum of 3	Minimum of 3	Variable – clinical can adjust	Review of specific readings options given
Safety netting/ red flags	Safety message at the end of entering data via text	Patient directed to emergency care if any red flags whilst inputting answers	None – higher readings appear at top of dashboard	Alerts with readings – with onus on patient to contact Health care professional	Disclaimer alert to patient prior to completing form.

Appendix 3: System searches

UCLPartners have developed searches for EMIS and SystmOne, which can be accessed for free. These searches will identify all patients with hypertension and will stratify them into priority groups based on last recorded blood pressure, as well as comorbidities and ethnicity. Similar searches area available for type 2 diabetes.

The Clinical Digital Resource Collaborative (CDRC) have developed a suite of free tools for searching EMIS and SystmOne to identity patients with high cholesterol and familial hypercholesterolaemia who are undiagnosed or not on optimal treatment. More information can be found here.

A number of primary care record system tools are available which can identify patients with AF not on anticoagulation therapy and, in some cases, advise on dosing. Search tools can be helpful in identifying patients for review. Dosing adjustments for any DOAC should always follow recommendations in the summary of product characteristics.

- GRASP-AF is a free tool that identifies patients with AF who are not anticoagulated. The tool also assists with case finding. It can be accessed here.
- Within the EMIS system a tool named 'AF advisor' can be activated which can assist with dosing and DOAC reviews. AF advisor can also be used to identify patients not on anticoagulation therapy.
- Practices can also access searches through commercial companies such as Oberoi (OBEROI-AF) and Interface Clinical Services (Attend2AF).

Your local medicines optimisation team may also have developed searches or may be able to help you design a local search.

Appendix 4: Suggested search criteria for code cleansing

Consider creating searches to identify patients who have been prescribed medicines for atrial fibrillation (AF) or hypertension but not included on the quality outcomes framework (QOF) register. These searches could include:

- AF1: prescribed oral anticoagulation but not on AF register
- BP1: Prescribed antihypertensive but not on hypertension register
- BP2: Recorded high blood pressure but not on hypertension register
- BP3: prescribed amlodipine, indapamide or bendroflumethiazide but not on hypertension register.

Appendix 5: Contributors

Development team

Professor Gary A Ford, Chief Executive Officer, Oxford Academic Health Science Network; Consultant Stroke Physician, Oxford University Hospitals NHS Foundation Trust; Professor of Stroke Medicine, Oxford University

Dr David Hargroves, Consultant Physician and Clinical Lead for Stroke Medicine, East Kent Hospitals University NHS Foundation Trust; National Clinical Lead for Stroke Programme for GIRFT, NHSE/I

Dr Deb Lowe, Consultant Stroke Physician and Geriatrician, Wirral University Teaching Hospital NHS Foundation Trust; National Clinical Director for Stroke Medicine, NHSE&I, Senior Clinical Advisor for Stroke Programme for GIRFT, NHSE&I

Beverley Bostock, Advanced Nurse Practitioner, Mann Cottage Surgery, Gloucestershire; Education Facilitator, Devon Training Hub; Committee Member, Primary Care Cardiovascular Society; Editor in Chief, *Practice Nurse Journal*

Dr Paul Ferenc, GP Partner, Pershore Medical Practice; Committee Member, Primary Care Cardiovascular Society

Professor Kamlesh Khunti, Professor of Primary Care Diabetes and Vascular Medicine, University of Leicester and Leicester General Hospital

Professor Gregory Lip, Price-Evans Chair of Cardiovascular Medicine, University of Liverpool; National Institute for Health Research (NIHR) Senior Investigator; Consultant Cardiologist (Hon), Liverpool Heart & Chest Hospital NHS Trust

Judith Magowan, RGN, Registered Mental Health Nurse, Independent Nurse Prescriber, Okehamptom Medical Centre

Dr Terry McCormack, GP and Honorary Professor of Primary Care Cardiovascular Medicine, Hull York Medical School

Professor Richard McManus, General Practitioner, 27 Beaumont St, Oxford; Professor of Primary Care University of Oxford, Nuffield Department of Primary Care Health Sciences; NIHR Senior Investigator

Dr Jim Moore, President, Primary Care Cardiovascular Society

Dr Melanie Roche, Public Health Consultant, Cheshire and Merseyside Public Health Collaborative (Champs) Support Team

Dr Guy Rooney, Medical Director, Oxford Academic Health Science Network

Dr Raj Thakkar, GP, Clinical Commissioning Director, Planned Care, Bucks CCG; Primary Care Cardiology Lead, Oxford AHSN; LTC and CVD lead, TV and Hants SCN, NHS England and Improvement

Helen Williams, Consultant Pharmacist for CVD, South East London CCG, Clinical Lead for AF (NCL), UCL Partners, National Specialty Adviser for CVD Prevention, NHSE&I

Hannah Oatley, Clinical Innovation Adoption Manager, Oxford Academic Health Science Network

Jemma Lough, Independent Medical Writer

Acknowledgements

We thank the following people, who contributed case studies, feedback and suggestions during the development process.

Dr Matthew Fay, Clinical Chief Executive, Affinity Care PCN; General Practitioner, The Willows Medical Practice, Queensbury, West Yorkshire

Professor Ahmet Fuat, Honorary Professor of Primary Care Cardiology, Durham University; GP, GP Appraiser and GPSI Cardiology Darlington; Past President, Primary Care Cardiovascular Society

Dr Rupa Joshi, Managing Partner, Woodley Centre Surgery and Wokingham GP Alliance

Professor Brian McKinstry, Professor Emeritus Primary Care eHealth, Usher Institute, The University of Edinburgh

© 2020

www.OxfordAHSN.org

e: info@oxfordahsn.org

t: @OxfordAHSN