Heart Disease Action Plan 2021

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Scottish Government
Riaghaltas na h-Alba
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Contents

1. Ministerial Foreword

The Heart Disease Action Plan 2021 is published during a time in which the NHS in Scotland has been facing an unprecedented level of pressure as a result of the Covid-19 pandemic. This has brought the need to address heart disease in Scotland into even sharper focus, having had a significant impact on people with heart disease and on the services that support them.

Heart disease remains a significant challenge in Scotland and I am clear that it must remain a priority for Scottish Government and NHS Scotland. Delivering this plan will be crucial to that continued prioritisation.

In this action plan, we set out our vision of minimising preventable heart disease, and of ensuring timely and equitable access to diagnosis, treatment and care. We have outlined the importance of providing appropriate support to enable people with heart disease to live well with their condition. That means identifying ways to support people with the emotional and psychological impacts of heart disease, giving as many people as possible access to specialist support, including vital rehabilitation services, and where necessary, supporting access to palliative care.

Achieving all of this is dependent upon a workforce that feels supported to deliver innovative models of care. Furthermore, it is important that we underpin the vision outlined in this plan with an ability to effectively use data to understand the delivery of care for people with heart disease across Scotland. This will ensure that we can identify and address unwarranted variation, measure progress, and direct resource where it will make the biggest impact on patient outcomes.

The actions set out in this plan take a whole system approach, encouraging collaboration between primary, secondary and specialist care, community care and third sector services.

In that collaborative spirit, the plan was developed in close collaboration with clinical advisors and third sector partners. It incorporates feedback from the National Advisory Committee on Heart Disease, and from people with lived experience of heart disease. We are grateful for the input of all stakeholders to this plan, and look forward to working with them to ensure its successful implementation.

I would like to take this opportunity to thank everyone for their invaluable contributions, and to thank the professionals working hard to deliver excellent care to people with heart disease across Scotland.

Mairi Gougeon, MSP

Minister for Public Health and Sport

2. Clinical foreword

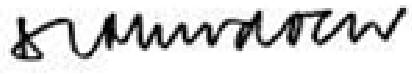
Scotland provides some of the best heart disease care in the world. We have a well-trained and committed workforce and we punch above our weight in international heart disease research. Care for patients with heart disease in Scotland has continued to advance in the six years since the last Heart Disease Improvement Plan was published but I believe there are still areas where we can improve and make the whole of our service one of the best in world.

The four priorities in the plan; prevention, timely diagnosis, treatment and care, workforce, and effective use of data, reflect issues which we discuss regularly at the National Advisory Committee for Heart Disease and encounter in our day-to-day work in hospitals and practices. We want to implement proven preventive strategies in all areas of our service. If you are a patient, we want to make your journey through consultation and tests to diagnosis and treatment as efficient and appropriate as we can, no matter what kind of cardiovascular condition you have and no matter where you live in Scotland.

The other two priorities, workforce and effective use of data, are key to the success of this plan. The workforce priority is not just about numbers but about creating and training a workforce who feel both supported to provide best possible care, and empowered to be innovative in their practice. Underpinning this plan, and essential to quality improvement in our services, is the collection and reporting of real-time data on activity and outcomes. Only then will we see if we are achieving real success and understand where we need to focus attention in our service.

All of us who work in cardiology services in Scotland want to work in the best service that we can possibly provide. Individual staff strive to do this every day and we have done our best to include their aspirations in this action plan so that we can all have a stake in its success.

As we recover from the COVID-19 pandemic, we have an opportunity to rebuild a service which works even better for the patient and I hope this plan provides further momentum in that direction.



Dr. David L. Murdoch

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3. Background and context

The Heart Disease Improvement Plan (2014) affirmed heart disease and stroke as a continued clinical priority for Scottish Government. The 2014 Plan set out a number of priorities and actions to deliver improved prevention, treatment and care for all people in Scotland affected by heart disease. An outline of progress achieved by that plan is included in Appendix A.

Whilst excellent progress has been made we will always strive to do more to deliver the best possible health and social care and to ensure that we continue to address the current needs of people living with heart disease in Scotland.

Heart disease continues to have a significant impact on people in Scotland. In addition, the Covid-19 pandemic has highlighted challenges and changed models of care across the entire health care system and this is an appropriate point to take stock and refresh our actions in this area.

We have received feedback on this plan from the National Advisory Committee for Heart Disease (NACHD), members of the wider cardiac community, people with lived experience of heart disease and policy colleagues across Scottish Government. This has been vital to our ability to produce this refreshed Heart Disease Improvement Plan, which is now retitled: Heart Disease Action Plan.

The vision and priorities of this plan are closely aligned with the vision and principles of the National Clinical Strategy for Scotland, which are; a focus on quality, change guided by evidence, allowing people and communities to manage their own health, new models of community-based provision, equitable access, encouraging collaboration and the implementation of Realistic Medicine.

This plan sets out a whole system approach, which encompasses primary, secondary and specialist care, community care and third sector services. Through the implementation of this plan, we endeavour to encourage collaboration and integration, where it will be of benefit to people with heart disease.

3.1 Scope of this plan

This plan addresses the needs of people with, and those at risk of developing, heart disease. It does not directly address diabetes or other cardiovascular conditions such as stroke. These are addressed separately in The Diabetes Improvement Plan and The Stroke Improvement Plan, overseen by the National Diabetes Group, and the National Advisory Committee on Stroke, correspondingly.

Similarly, specific actions to address Out of Hospital Cardiac Arrest is covered by the Out of Hospital Cardiac Arrest strategy, delivered through Safe a Life for Scotland.

Despite this, there are many common themes in providing timely and equitable care for people with all cardiovascular conditions and many people live with more than one condition so many actions detailed in this plan may be applicable across

boundaries. We will therefore work closely to align the implementation of relevant actions across condition specific plans.

Similarly, this plan focuses on the provision of diagnosis, treatment and care for people with heart disease and does not specifically address wider societal public health measures. Several policy commitments exist in Scotland in relation to this, including Raising Scotland's Tobacco-Free Generation: Tobacco Control Action Plan 2018; A Healthier Future: Scotland's Diet & Healthy Weight Delivery Plan 2018; A More Active Scotland: Scotland's Physical Activity Delivery Plan 2018; Alcohol Framework 2018: Preventing Harm and Cleaner Air for Scotland: The Road to a Healthier Future. The commitments set out in these plans in will have an important impact on heart disease in Scotland and should be seen as complementary to this action plan.

We seek coherence across a range of other policy areas and will continue to work collaboratively across the Scottish Government to ensure that appropriate links are made and maintained.

3.2 Scale of heart disease in Scotland

Heart disease remains a major cause of death and disability in Scotland, accounting for over 9,000 deaths each year[1]. There has been a steady rise in life expectancy over decades, but this has recently stalled, partly due to a slowdown in the progress in reducing mortality from heart disease, especially in people between the ages of 55 and 74[2].

Ischaemic heart disease, which can lead to a heart attack, is still Scotland's single biggest killer, responsible for 11.2% of all deaths in 2019[3]. It accounts for 25,000 hospital admissions each year[4].

Other forms of heart disease also have a significant and growing impact on people in Scotland. The incidence of conditions like heart failure[5], heart valve disease[6] and atrial fibrillation[7] have been increasing, partly as a result of an ageing population, improved detection and increased survival from acute coronary events. Many people are living longer with heart disease and may require lifelong care and support.

- More than 47,000 people have been diagnosed with heart failure in primary care[8]. This is likely to be an underestimation of the number of people living with heart failure in Scotland. In the past ten years, the incidence (new diagnosed cases) of heart failure has increased year on year in Scotland. In 2018/19 there were over 5200 incident cases of heart failure[9]. This increasing trend is projected to continue as the population ages.
- Based on global burden of disease estimates, more than 73,000 people in Scotland have heart valve disease[10].
- More than 106,000 people have been diagnosed with atrial fibrillation[11].
- Around 28,000[12] people in Scotland have an inherited heart condition, the most common of which is hypertrophic cardiomyopathy.

- Congenital heart disease is one of the most common birth defects in Scotland, affecting around one in every 150 births. Improved survival rates mean that a growing number of people are living into adulthood with congenital heart disease[13].

3.3 The impact of the Covid-19 Pandemic

The Covid-19 pandemic has brought the need for action to address heart disease in Scotland into even sharper focus, having had a significant impact on people with heart disease and on the services that support them.

During the first lockdown period of the pandemic, overall attendance at Accident and Emergency decreased[14] and this period coincided with a 30% decrease in emergency cardiology admissions in Scotland[15]. There was also a deferral and reduction of other services, including diagnostics, access to specialist support in the community and cardiac rehabilitation. There are concerns that all of this will have implications for mortality and morbidity for people with heart disease and result in an increase in the number of people who require continued support from the health system for many years to come.

Health inequalities, already significant in Scotland, have increased during the pandemic as Covid-19 has had a disproportionate impact on people living in areas of socioeconomic deprivation[16], and people of South Asian ethnicity appear to have been at proportionally greater risk[17].

Addressing inequality will be monitored and considered carefully throughout the implementation of this plan. That means listening to a wide range of voices in our efforts to create pathways and reshape models of care, embedding the actions on cardiac disease identified within the Women's Health Plan within the implementation of actions identified by this plan, and ensuring that we are appropriately measuring and acting upon inequalities within the data and improvement work outlined in Priority 4.

Despite the challenges, the pandemic has also provided opportunities for us to think about how we deliver health care services. Healthcare and support services have had to be creative, resilient and innovative about how they can provide the right support to patients. The use of technology and care closer to home has been vital to maintaining care throughout the crisis and has important lessons for delivering person-centred care in the future.

3.4 Vision and Priority Areas

Vision: We want to minimise preventable heart disease and ensure that everyone with suspected heart disease in Scotland has timely and equitable access to diagnosis, treatment and care that supports them in living well with their condition.

Priority 1: Prevention - tackling risk factors: We will minimise preventable heart disease by improving the detection, diagnosis and management of risk factor conditions.

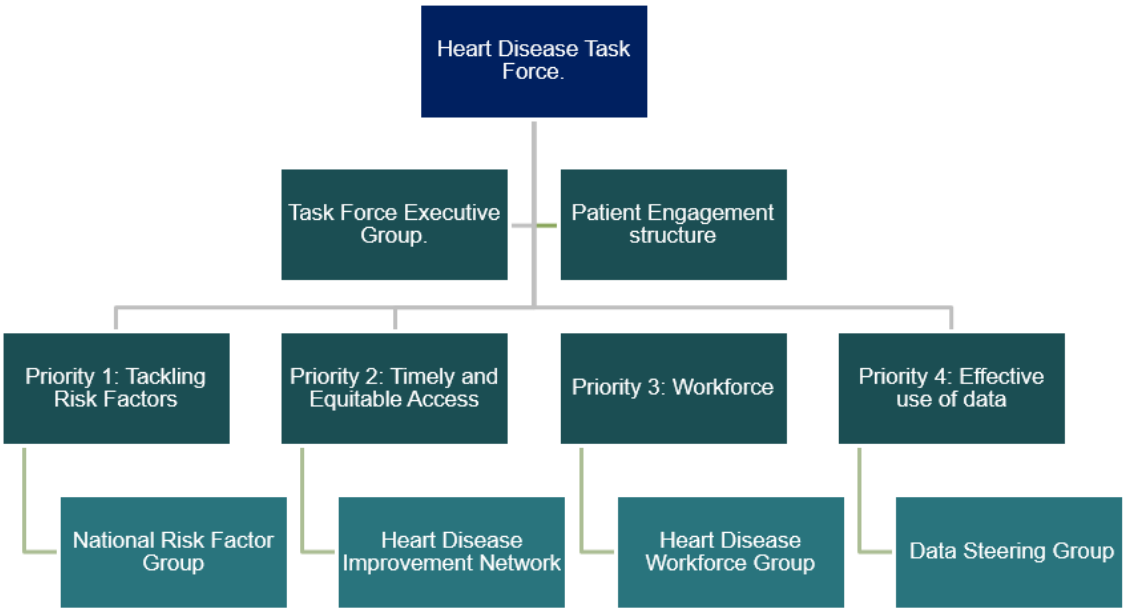
Priority 2: Timely and equitable access to diagnosis, treatment and care: We will ensure that everyone with suspected heart disease in Scotland has equitable access to timely and evidence-based diagnosis, treatment and care.

Priority 3: Workforce We will ensure appropriate staff resource and training to deliver timely and equitable services across Scotland for people with heart disease.

Priority 4: Effective use of data: We will ensure that high-quality, standardised data is available and used effectively to support clinical decision-making, understand patient outcomes and enable better service-planning, so that people experience better quality of care, and improved outcomes.

3.5 Governance

The implementation of this plan will be overseen by the National Heart Disease Task Force (previously known as the National Advisory Committee on Heart Disease), supported by the Scottish Government Clinical Priorities team.



The ethos of Realistic Medicine is that the person receiving care should be at the centre of decision making through meaningful conversations around what matters most to people, with a shared understanding of what healthcare might realistically

contribute to this. It is therefore vitally important that we place people with lived experience of heart disease at the very centre of implementing this plan. This will be supported by a robust lived experience structure which will feed directly into the Task Force.

There is often under-representation of women, people from black and minority ethnic backgrounds, people with disabilities, people who are LGBTI, and those living in areas of socio-economic deprivation in forums where engagement takes place. If we are to seriously address health inequalities and move towards the provision of equitable care then we must understand a wide range of lived experience. To do this we must make a strong and consistent effort to seek and amplify the voices of those typically underrepresented in decision making processes. In particular, our Equality and Impact Assessment for this plan has identified the need for us to make a concerted effort to amplify the voices of people from areas of deprivation (including a focus on people who experience homelessness), people from the gypsy traveler community, women, people with learning disabilities and older people.

Furthermore, groups of people who may be impacted by heart disease but are typically overlooked when it comes to engagement and addressing inequalities are people who are LGBTI and younger people. We will make a consistent effort to include their voices within the implementation of our lived experience structure.

A Task Force Executive Group will advance actions in between meetings and ensure continuous progress. This group will consist of, at least:

- Task Force Chair (CMO Advisor)
- Task Force Deputy Chair
- Heart Disease Improvement Network Lead
- Risk Factor Planning Group Lead.
- Heart Disease Workforce group Lead.
- Heart Disease Policy Lead (Scottish Government).
- Public Health Scotland (Audit lead)
- Patient Engagement Lead.

Each group identified in the infographic above will produce an annual implementation plan based on the strategic aims and actions outlined in this plan. The Task Force will agree these plans and oversee progress against them.

An annual report on progress towards the strategic priorities identified in this plan will be published, enabling continuous review of progress.

4. Priority 1: Prevention - tackling risk factors:

We will minimise preventable heart disease and stroke by improving the detection, diagnosis and management of risk factors.

Many people in Scotland live with cardiovascular risk factors such as high blood pressure or high cholesterol which place them at increased risk of heart disease or stroke.

Atrial fibrillation (AF), the most commonly diagnosed type of arrhythmia (or irregular heart rhythm), is associated with an up to fivefold increased risk of stroke.

Actions on other risk factors such as obesity, smoking and alcohol consumption are covered in other Scottish Government policy commitments. Though not addressed specifically by this plan, this does not diminish the importance of such measures and this plan should be viewed as complementary to the measures set out in Raising Scotland's Tobacco-Free Generation: Tobacco Control Action Plan 2018; A Healthier Future: Scotland's Diet & Healthy Weight Delivery Plan 2018; A More Active Scotland: Scotland's Physical Activity Delivery Plan 2018; Alcohol Framework 2018: Preventing Harm and Cleaner Air for Scotland: The Road to a Healthier Future.

Similarly, this priority does not specifically address diabetes, although it is a key risk factor for heart disease. The Diabetes Improvement Plan specifies key actions on diabetes and we will work collaboratively across these two plans to ensure alignment.

Often, high blood pressure, high cholesterol and atrial fibrillation may not have any symptoms. This means that people may not realise that they are at an increased risk of heart disease or stroke. Furthermore, once diagnosed, many people with these conditions may not be treated to optimal levels.

For example, it is estimated that as many as 610,000 adults in Scotland don't know they have high blood pressure. Lowering blood pressure significantly reduces the risk of heart and circulatory disease and death[18]. Despite this it is estimated that only 27% of adults with high blood pressure in Scotland have their blood pressure treated and controlled to below the SIGN recommended threshold of 140/90mmHg[19].

It is therefore vital to ensure appropriate detection, diagnosis and optimal management of these risk factor conditions to reduce cardiovascular disease in Scotland. Work in this area must be mindful of health inequalities and actively consider how to provide care and self-management support in a way that actively addresses such inequalities, and reaches people from communities that are particularly underserved by current models. A robust lived experience structure will play a key role in this regard.

Furthermore, we will work to support the principle identified within the Women's Health Plan that opportunities for optimisation of cardiovascular health and risk reduction should be taken across the women's lifespan. Of particular relevance to our priority on tackling risk factors is the identification and management of hypertensive disorders within pregnancy.

4.1 Models of community care

Examples from other countries have shown that community models of detection, diagnosis and management of high blood pressure are effective.

For example, in Canada, the Cardiovascular Health Awareness Programme introduced community based cardiovascular health promotion and chronic disease management activities through partnership with primary care, community pharmacists, third sector organisations, community groups and locally trained volunteers acting as peer health educators. The programme was linked with a 9% reduction in hospital admissions at population level for stroke, heart attack and heart failure among working age people (under 65), compared to communities that did not implement the programme[20]. Similar models could be developed in Scotland with close collaboration with key delivery partners including the third sector and community pharmacy.

Community models of care provide an opportunity to consider ways to reach those who may be less likely to engage with healthcare, and we must ensure that we are listening to lived experience and co-producing models in a way that identifies local solutions to local challenges, in order to address health inequalities.

4.2 Tele monitoring

Innovative ways to support diagnosis and support self-management of these conditions is also important. For example, self-monitoring is an increasingly common part of blood pressure management and can increase adherence to lifestyle changes or medication.

Self-monitoring of blood pressure is most effective when combined with support from a health care professional[21]. This can be supported through tele monitoring. Scale-Up BP is part of the Technology Enabled Care (TEC) programme funded by Scottish Government. People with suspected high blood pressure are given a validated blood pressure monitor and are prompted regularly to check their blood pressure at home and then asked to text back the readings through a text messaging system. The system informs them immediately if their blood pressure is on target or to contact a doctor or nurse if it is worryingly high.

Such models of care can support with diagnosis, and with longer term self-management and therefore it is important that any efforts to reshape detection, diagnosis and self-management should build on the work of this programme, including considering how such an approach can support a range of health care services. The Covid-19 pandemic has highlighted the importance and potential of

tele monitoring for supporting people with a variety of long term conditions. It is important that we continue to support and expand tele-monitoring for high blood pressure and also work to include other risk factor or cardiac conditions within such models of care.

Another area where we have supported remote monitoring is in the development of a Heart Failure Remote Health Pathway. A collaborative approach has been undertaken by clinicians, digital technicians, patients and third sector organisations to develop a remote monitoring pathway specifically for people with newly diagnosed heart failure or unstable symptoms. This enables clinicians to remotely monitor a patient's blood pressure, heart rate, bodyweight (in some cases oxygen saturation) and answers to a number of health-related questions.

4.3 Measuring improvement

It is estimated that only 27% of adults with high blood pressure in Scotland have their blood pressure treated and controlled to below the SIGN recommended threshold of 140/90mmHg[22]. This is based on data from the Scottish Health Survey and so there is scope to more accurately understand the treatment of people with blood pressure across Scotland and to support us in understanding variation and supporting improvement.

Familial hypercholesterolaemia (FH) is a specific inherited condition characterised by raised blood cholesterol levels and increased risk of early atherosclerosis, heart attack and stroke[23]. Early treatment with lipid-lowering drugs is very important for people with FH.

Because it is an inherited condition, parents, siblings and children of people with an FH gene mutation possess a 50% chance of having the faulty gene and NICE guidelines recommend a cascade testing system to support identification of FH[24].

Across Scotland there are variations in the models for the diagnosis and management of FH. There is also significant variation in access to testing. A more standardised approach in line with the national pathways vision identified within Priority 2 and improved data collection and identification of quality indicators in line with Priority 4 would help to understand variation and outcomes in order to drive forward positive changes in the delivery of care for people with FH across Scotland.

A similar lack of data collection and national understanding of variation is present for AF. To date, we have sought to address this through improving access to information about AF through SPIRE (Scottish Primary Care Information Resource). It is a service which allows information to be requested from GP practice records and collected centrally to produce statistics for Scotland as a whole. SPIRE also provides a platform for practices to see information about their patients, through a report on certain conditions. One of the reports in development is for AF. It focuses on identifying people documented as having a diagnosis of AF within their patient record, and determines if that person has received appropriate treatment, based on their risk score.

This information supports GP cluster-level learning, but we should also extract it at national level. This will enable baseline measurement of the current rate of appropriate anticoagulation, and enable an ambitious Scotland wide target for improvement to be set. This tool could also be used to support GP clusters to drive improvements in the management of high blood pressure and high cholesterol, including FH.

An important aspect of being able to measure improvement is the agreement of indicators that identify whether the patient journey is optimal. Development of indicators, as identified in Priority 4, should also include indicators relevant to the conditions highlighted within this chapter.

4.4 Actions

1. We will collaborate with partners to implement a community-based awareness, prevention and detection programme for high blood pressure and high cholesterol across Scotland, which is person-centred and co-designed.
2. We will develop indicators and improve data collection for all three conditions (high blood pressure, high cholesterol, and atrial fibrillation), by developing the SPIRE reports to include high blood pressure and high cholesterol (including FH). This will support local quality improvement within primary care and data should also be made available at regional and national level to identify unwarranted variation.
3. We will support and invest in the use of proven technology to support detection, tele-monitoring and the provision of tailored support for people with heart disease or cardiac risk factors.

5. Priority 2: Timely and equitable access to diagnosis, treatment and care

We will ensure that everyone with suspected heart disease in Scotland has equitable access to timely and evidence-based diagnosis, treatment and care.

There are several challenges to achieving timely and equitable access to diagnosis and treatment, care and support for people with heart disease in Scotland.

An ageing population, and increased survival from acute events, means that many more people are living with conditions which require long-term support. Increasing numbers of people with congenital heart disease are surviving into adulthood, often requiring complex, lifelong care, while the understanding and improved diagnosis of inherited conditions means more people require access to genetic services for diagnosis and resulting specialist cardiology care.

Cardiology admissions have increased every year in the last decade[25], with an increase of 25% since 2009 for overall admissions. Within this, emergency admissions have risen 30%. The Covid-19 pandemic has placed extra strain on acute NHS services and reaffirmed the need to find ways to ensure capacity within such services.

It is therefore important that, where possible, care is provided close to home and seeks to avoid hospital admission. Ensuring early intervention, supporting people to self-manage their condition and enabling sign-posting to wider support is also vital. Supporting this will involve transformation in models of care, integration and collaborative working across primary, community and acute care, integration with wider community services including those provided by the third sector, and the use of digital technology to support new ways of interacting with patients.

The Covid-19 pandemic has accelerated some of this transformation because, in response to the challenges of delivering care during a pandemic, new models of care have been adopted, and digital technology used more widely. We must continue to support the adoption at scale of digital technology while being mindful of, and taking steps to address, the potential digital exclusion faced by some people; including older people, those living in areas of deprivation and people for whom English is not a first language.

Throughout the provision of care for people with heart disease is the need to ensure that they can receive a timely diagnosis and access to treatment. It is also important to support people in their recovery and in living well with their condition.

Ensuring that people can be directed to appropriate resources to support them in self-management of their condition is an important part of this. Services like cardiac rehabilitation are instrumental to supporting people in living well with cardiac disease but are often limited to people who have had a heart attack or cardiac surgery. There is scope to consider how ensure that people with other heart conditions can have access to the rehabilitation support that they may need. Part of that is about working collaboratively to ensure that we can embed the principles of the World Health Organisation's Rehabilitation in Health Framework which puts informal and self-directed care as the foundation, and supporting people to access the services that are most appropriate for their needs.

We must also recognise that heart disease can have a significant impact on people's emotional and psychological wellbeing, and explore how best to support people in coping with these impacts.

Living well with heart disease also means that where necessary, people are supported towards the end of their life. At present, many people who die from heart disease are not considered for a palliative approach, or palliative care when they would benefit from it and we must improve this.

5.1 Nationally agreed pathways of care and a national resource for their implementation

In order to drive forward positive change in the models of care for people with heart disease across Scotland, it is important that we have a 'Once for Scotland' vision of what good quality care would look like across a whole pathway (including key aspects of care ranging from primary, community, secondary, specialist and palliative care). A pathway refers to the varying services and care professionals that a person may encounter throughout their experience of diagnosis, treatment and support, living with heart disease.

Cardiology is a multi-professional discipline with care provided by cardiologists, cardiac surgeons and increasing roles for specialist nurses, cardiac physiologists, cardiac scientists, pharmacists and clinical psychologists. Although a high proportion of the workload relates to emergency and urgent care, the speciality of cardiology also provides elective care and long-term disease management which is increasingly provided in the community.

There are many examples of nurse led models of specialist care for people with heart disease. For example, people with heart failure are supported by heart failure specialist nurses, many rapid access chest pain clinic services across Scotland are nurse-led, and a genetic testing service for hypertrophic cardiomyopathy (HCM) is supported by specialist nurses. There are also examples of nurse-led models of care for arrhythmias, valvular and congenital heart disease in some health boards in Scotland.

Services and support for people living with heart disease are provided by a range of health care professionals outside of cardiology, including those working in primary

care, community care and the third sector. Seamless care is dependent upon close working between all areas of the system.

Pathways can differ depending on the condition and can sometimes be complex, involving several professionals and varying tests and interventions. Local areas will have existing pathways, which vary depending on local needs or service availability.

Nationally agreed pathways are model pathways agreed at a national level that set out the vision for how diagnosis, treatment and care for people with heart disease should be delivered. This agreed 'Once for Scotland' vision enables clarity of messaging and supports local pathway development.

There are several areas where pathway development work is already ongoing. This includes the Scottish Obstetric Cardiology Network's development of pathways of care to ensure that pregnant women with heart disease have access to specialist care and advice, the Heart Failure Hub's remit to continue to maintain up-to-date pathways information and the Network for Inherited Cardiac Conditions Scotland's development of nationally-agreed protocols and guidelines to support better, safer management of patients with inherited heart conditions.

A national resource to support a 'Once for Scotland' approach to heart disease will help us to drive forward pathway development and implementation across Scotland. The development of nationally agreed pathways will enable clarity around the competencies of professionals delivering care to people with heart disease, support more effective integration across clinical boundaries including between specialties and also amongst those working in primary, secondary and community care.

Pathway development should;

- Consider the integrated nature of care for people with heart disease and take a whole systems approach including primary care, acute and specialist care, self-management, cardiac rehabilitation, psychological support and palliative care.
- Identify services best delivered at regional or national level

For a national vision to translate to change in practice, requires significant effort and it can be very difficult in linking policy vision at national level into widespread change within services. Such change is often led by local clinicians working in that particular health board and they face a host of challenges, not least the time and energy involved in navigating the health planning system while also working as a clinician.

Models such as the Heart Failure Hub, Cardiac Rehabilitation Champion and national networks (SOCN, NICCs) have demonstrated success by providing a central driving force behind sharing best practice, and advocating at national level for important changes. It is important that we adequately support and, where appropriate, expand this model.

To do this, we will establish a national resource responsible for

- Developing clinical consensus on guidelines, treatments and pathways across Scotland for a range of heart conditions.
- Supporting local clinicians in developing and implementing models of care in line with nationally agreed pathways.
- Supporting clinicians in navigating local, regional and national governance structures involved in the implementation of new models of care.
- Working with NES to develop and deliver a standardised educational programme that supports the delivery of key aspects of the national pathways.
- Supporting the development of additional networks or hubs as required to share good practice.
- Engaging with GP clusters to promote new models of care including community cardiology models.

5.2 Improving diagnostics

Timely access to cardiac diagnostics is an area of concern in Scotland. There are documented challenges in capacity for delivering diagnostic CT Coronary Angiography in line with current guidelines[26], and workforce issues within cardiac physiology are an important factor limiting the capacity to provide timely and equitable access to a range of diagnostic tests including ECG and Echocardiography. While we have focused on access to these tests for diagnosis, they are also vital in supporting decisions about long term management of heart conditions and so have a wider impact.

We do not adequately measure the time to diagnosis for people with heart disease across Scotland at present, although there are guideline recommended approaches. For example, SIGN guideline 147[27] sets out an appropriate approach to echocardiography in people with suspected heart failure, and SIGN guideline 151[28] recommends the routine use of CT coronary angiography to aid the diagnosis of stable angina.

To ensure that we can drive forward improvement in access to diagnostics, it is important that we take a more structured approach to collating information on diagnosis at national level to accurately identify unwarranted variation. Therefore time to diagnosis will form a core part of our wider work to improve data collection and support quality improvement.

It is also important to prioritise the spread and adoption of models of care that could improve the delivery of timely diagnosis for people with heart disease. Examples include embracing innovation in diagnostic techniques (such as the use of hand held echocardiograms), establishing one stop diagnostic clinics, or the provision of tests like ECGs, blood tests or echocardiography in the community.

We will support the development of pilot projects of innovative models of care for cardiac diagnostics, enabling us to learn from, and scale up such models to ensure that everyone across Scotland can benefit.

5.3 Living well with heart disease

5.3.1 Cardiac rehabilitation

Cardiac rehabilitation services are important services which provide vital support to help people get back to everyday life as much as possible after developing heart disease including heart attack, heart surgery or for people who have had an interventional procedure. A number of cardiac rehabilitation services across Scotland also offer support to people with heart failure.

The traditional model of cardiac rehabilitation is structured around exercise and education but rates of uptake across the UK have been stagnant and particularly poor among women and people from a black or minority ethnic background[29]. At the moment, the service in Scotland is generally limited to those who have had a heart attack or cardiac revascularisation but the vision set in SIGN 150 is of a service '*with a central focus on a specialist assessment providing an individualised programme of care to improve outcomes' [30].* This enables a more holistic focus on the individual, and supports them to access the support which is best suited to their needs. We will work to ensure more equitable access to these services for people with a range of heart conditions, where appropriate.

These services were severely impacted by the Covid-19 pandemic. Many had to implement virtual-only options and others paused services entirely while staff were redeployed. A number of digital offerings were created in response to these challenges. It will be important to maintain digital offerings alongside face to face services to improve choice and increase the uptake and reach of services.

In August 2020, Scottish Government published a Framework for Supporting People through Recovery and Rehabilitation during and after the COVID-19 Pandemic. This established our desire to see a whole system approach to a Once for Scotland Rehabilitation strategy to deliver rehabilitation support to everyone who needs it.

The Framework recognises the impact that Covid-19 has had on rehabilitation services and the increase in demand across these services as a direct impact of the pandemic. In particular it recognises that some people who have contracted Covid-19 may have resulting cardiovascular, respiratory or other symptoms that would benefit from rehabilitation. It also acknowledges the potential deconditioning of people's health that may have resulted from shielding, and the wider rehabilitation needs of people with long term conditions that may have been impacted by a reduction in services during the pandemic. The principles of the Framework are;

Leadership, person-centred, outcomes focused, multi-disciplinary and multi-agency, innovation, education and research, digital and quality improvement.

It is important that cardiac rehabilitation is strongly featured within the development of a Once for Scotland Rehabilitation strategy and that previous work and learning from the implementation of the Heart Disease Improvement Plan (2014) is shared. In particular, the development of a multi-disciplinary assessment tool for cardiac

rehabilitation could support the principle within the Framework 'rehabilitation *in any setting should include physical, mental, social assessment and intervention utilising a biopsychosocial model collaborating towards a common goal'.*

Quality improvement is a core principle within both the rehabilitation framework and also within this Heart Disease Action Plan. However, there is a gap in our national understanding about cardiac rehabilitation services. Scotland does not currently contribute to the National Audit of Cardiac Rehabilitation, nor do we centrally collate information about cardiac rehabilitation to support improvement.

Collection of data on cardiac rehabilitation has a critical role in measuring healthcare delivery and supporting quality improvement for people with heart disease. That data should be linked with data from acute services, and outcome data, to provide a complete picture of who accesses cardiac rehabilitation, what service model, and what the outcomes are at an individual, regional and national level. This will provide timely and individualised feedback and support us to drive improvements in the provision of care.

It is therefore important that cardiac rehabilitation features strongly within the wider work to improve data collection and data utilisation for quality improvement outlined in Priority Four.

5.3.2 Psychological and emotional support

The Covid-19 pandemic has affected every single person in Scotland. Many of us have been anxious or worried about our health, our family and friends, and changes to our way of life. Some individuals, families and communities will have found the past few months really tough. We know that the mental health impact of Covid-19 will not have been felt equally across Scotland and that people who have been required to shield, or are in a higher risk group, may be particularly impacted.

Before the pandemic, there was already a vital need to better address the psychological and emotional needs of people with heart disease. Depression and anxiety are common problems for people with heart disease and are associated with excess mortality, excess disability, greater healthcare expenditures and reduced quality of life[31].

It's also important for us to be cognisant of the significant psychological impact for people living with congenital heart disease and for families bereaved by sudden cardiac death.

In October 2020 we published 'Mental Health – Scotland's Transition and Recovery'. This is our response to the mental health impacts of Covid-19. It addresses the challenges that the pandemic has had, and will continue to have, on the population's mental health. It lays out key areas of mental health need that have arisen as a result of Covid-19 and sets out a joint focus on whole population level approaches to improving mental health alongside targeted support for vulnerable groups.

Key actions within the Mental Health recovery plan include a commitment to modernise pathways into mental health services from primary and unscheduled care, the need to utilise digital services such as computerised CBT and to ensure that appropriate support is provided to those whose mental health has been affected by shielding or as a result of belonging to a group at higher risk from Covid-19.

Through the delivery of the Heart Disease Action Plan we will work to support the Mental Health Transition and Recovery Plan's continued focus on early intervention, prevention, and easier access to support services. We will also support the involvement of partners and services across the whole health and social care integration landscape, including in relation to the provision of emotional wellbeing support for people with heart disease.

We will ensure that the cCBT programme reflects the needs of people with heart disease and we will work to make that service available to all cardiac rehabilitation and specialist nursing services across Scotland.

This will help us to support a stepped care approach to mental health for people with heart disease which is recommended by several guidelines and standards, including those on heart failure[32] and cardiac rehabilitation[33].

This approach is one in which the least intrusive intervention is provided first. If a person does not benefit from this intervention, or has more severe psychological needs, then they should be offered an appropriate intervention at the correct level of the stepped care approach. Delivery of this approach must form a core part of the nationally agreed pathways for people with heart disease, and we should consider the most appropriate way to effectively deliver a stepped care approach, taking account of the role played by the third sector, primary care, and specialist support.

A limiting factor to achieving this provision, is the lack of clinical psychologists across Scotland with a specific remit for providing psychological support for people living with heart disease. Therefore support for those providing lower level interventions and potential for referral on for more intensive interventions is limited.

To appropriately support the spread and adoption of the stepped care approach, there is a requirement for psychology liaison roles to support health care professionals providing cardiac rehabilitation or specialist nursing care to deliver levels one and two interventions and to act as a resource for onward referral. These roles may be best organised at regional or national level and in collaboration with efforts to improve psychological provision for other conditions.

5.3.3 Palliative Care

Appropriate and optimal palliative care can reduce the number of hospital inpatient days, improve symptom control, increase the likelihood of people dying in the setting of their choice, and improve the satisfaction of the patients and carers[34].

However, many people with end stage heart disease are not considered for a palliative approach, or palliative care when they would benefit from it. Compared to

other conditions, people with organ failures, including heart failure, are far less likely to have access to palliative care services or a palliative approach[35].

Case Study: The Caring Together Programme.

This was an innovative partnership programme from Marie Curie, the British Heart Foundation and NHS Greater Glasgow and Clyde to improve the quality of palliative and end of life care for patients in the advanced stages of heart failure. An evaluation in 2016 showed that the programme[36]:

- improved symptoms and quality of life for people with advanced heart failure
- provided individual patient planning
- reduced hospital admissions and healthcare costs.

The need for access to palliative care is increasingly acknowledged as important for people with advanced heart failure, and access to palliative care is widely supported by heart failure services across Scotland. There remain challenges however, for people with heart failure who are not referred to a heart failure nursing service. It is also important to consider how to extend such support to people with other forms of heart disease, including coronary, valvular and congenital heart disease if and when required.

To support improvement in this area, access to palliative care should be considered as part of the national pathway development work. Furthermore, it will also be necessary to include access to palliative care as in indicator, where appropriate, within wider work on data collection and quality improvement.

Anticipatory care planning is a person-centred, proactive, “thinking ahead” approach, requiring services and health and care professionals to work with individuals, carers and their families to have the right conversations and set personal goals to ensure that the right thing is done at the right time by the right person with the right outcome.

Resuscitation issues are an important part of anticipatory care planning. As far as possible, and at an appropriate stage, it is recommended that a proactive resuscitation or Do Not Attempt Cardiopulmonary Resuscitation (DNACPR) decision should be communicated in a way that informs the actions of health professionals when an individual’s pulse or breathing has stopped.

However, many people with heart disease are living with cardiac implanted electronic devices (CIEDs), such as an implanted cardioverter defibrillator. As a person moves closer to the end of life it may become appropriate for the device to be switched off.

Providing a person with a cardiac implanted electronic device with high-quality end-of-life care and enabling them to have a dignified death requires consideration and discussion of deactivation of the shock function of their device. If a device is not deactivated in this way, a person may receive distressing shocks from the device during the last hours or days of their life. In some instances the device may delay the person’s natural death with shock delivery that the patient would not have chosen to receive if they had been given a chance to discuss deactivation[37].

Device deactivation is therefore an important component in anticipatory care planning and we will work to ensure that health professionals are well equipped to have sensitive conversations with patients around deactivating cardiac devices.

5.4 Actions

1. We will establish nationally agreed pathways of care for heart disease and provide a resource to support their implementation across Scotland. All aspects identified in this chapter (diagnosis, access to specialist care, cardiac rehabilitation, psychological and emotional support, long-term management and palliative care) should be addressed by the pathways.

2. We will establish referral guidelines for common symptoms (palpitations, breathlessness, chest pain and syncope) to support timely access to diagnostics.

3. We will pilot innovative models of care for cardiac diagnostics with the aim of improving diagnostic capacity for heart disease, and understanding the resource requirements to spread such models of care across Scotland.

4. We will ensure that the needs of people with heart disease are included within the implementation of the Recovery and Rehabilitation Framework in Scotland. In particular we will;

- Support the spread and adoption of holistic assessment for people with cardiac disease.
- Ensure appropriate self-management resources are available to people with cardiac disease.
- Work collaboratively with NES to develop rehabilitation resources to ensure that quality information and training about cardiac rehabilitation is available to health professionals.
- Ensure that workforce aspects of the rehabilitation and recovery framework support people with heart disease to access the right professional, at the right point in their journey.

5. We will work closely with the Mental Health Directorate to ensure that the psychological and emotional needs of people with heart disease are addressed. In particular we will;

- Support the expansion of the Computerised CBT programme and ensure that the needs of people with heart disease are embedded within that.
- Deliver access to Computerised CBT across all cardiac rehabilitation and specialist cardiac nursing services in Scotland.
- Promote and reflect the needs of people bereaved by sudden cardiac death within the implementation of the mental health transition and recovery plan.

6. We will support the development of psychological liaison roles to deliver the implementation of a stepped care approach to delivery of psychological support for people with long term conditions, including heart disease.

7. We will ensure appropriate implantable cardiac device deactivation features within Anticipatory Care Planning resources.

8. We will ensure that understanding access to timely diagnostic tests, access to specialist services, and access to cardiac rehabilitation and palliative care for people with heart disease is embedded within wider work on data and quality improvement to enable us to address unwarranted variation.

6. Priority 3: Workforce

We will ensure appropriate staff resource and training to deliver timely and equitable services across Scotland for people with heart disease.

Ensuring equity of access to timely diagnosis, treatment and care for people with heart disease depends on having the appropriate staff resource and on the provision of appropriate education and training to ensure that health care professionals have the information necessary to support people with heart disease.

To inform our understanding of what staff resource is required across services for people with heart disease in Scotland, it will be necessary to conduct a gap analysis, informed by the nationally agreed pathways of care. This gap analysis will take account of the key aspects of the cardiac workforce, including cardiologists, cardiac surgeons, cardiovascular perfusionists, specialist nurses, cardiac physiologists, clinical pharmacologists, clinical psychologists and specialist pharmacists. Addressing the key issues highlighted by a gap analysis will be vital to ensuring the appropriate staff resource to deliver timely and equitable services across Scotland.

There are also some additional actions that we will take to address particular concerns around workforce capacity. These include:

- Training pathways for cardiac physiology
- The development of a competency framework for specialist roles relating to cardiac services, to support advanced practice training.

6.1 Cardiac physiology

There are crucial workforce issues relating to diagnostic services. A shortage of cardiac physiologists impacts on the ability to deliver timely diagnosis, treatment and care for people with heart disease.

Work carried out by NES Healthcare Science Team[38] highlighted that over the last 5 years there has been a 46% increase in the demand for cardiac physiology services in NHS Scotland, but vacancies in half of cardiac physiology units across Scotland is at 15%, with a comparable fraction within five years of retiring. Most departments (70%) have 1 or more vacancies. There are particular challenges around training routes into cardiac physiology, which need to be addressed.

In addition to the wider work in understanding and addressing the gaps in the cardiology workforce, we will also take a nationally coordinated approach to specifically address the challenges facing physiology. We will develop a 'Once for Scotland' approach to cardiac physiology which will encompass recommended

models of care, workforce planning and the establishment of a sustainable training and educational pathway.

6.2 A Competency Framework to support Advanced Practice

Cardiology is a multi-professional discipline with care provided by cardiologists, cardiac surgeons and increasing roles for specialist nurses, cardiac physiologists, cardiac scientists, clinical pharmacologists, pharmacists and clinical psychologists.

There are many examples of nurse led models of specialist care for people with heart disease. For example, people with heart failure are supported by heart failure specialist nurses, many rapid access chest pain clinic services across Scotland are nurse-led, and a genetic testing service for hypertrophic cardiomyopathy (HCM) is supported by specialist nurses. There are also examples of nurse-led models of care for arrhythmias, valvular and congenital heart disease in some health boards in Scotland. There are also examples of pharmacist led clinics[39] and cardiac physiology led clinics.

To inform our gap analysis and future workforce planning for cardiology, it is important to be clear about opportunities for advanced practice and to set out the competencies of such roles. This helps to ensure that the work of the multi-disciplinary team is as seamless as possible, that there is opportunity for career advancement for a range of health professionals working within cardiology, and to ensure that people with heart disease can see the right person, at the right time.

A number of competency frameworks have been established at UK and European level. It is important that we map these to identify where competencies have already been clearly established, and use these as a basis upon which to learn from and to support implementation within the Scottish context.

The pathway development work is an opportunity for clarity on the competencies and roles of a range of health care professionals working within cardiology and their interfaces and channels of communication with the wider multi-disciplinary team including those providing generalist care.

6.3 Training

To support the maximisation of roles identified as part of the approach to workforce planning requires a co-ordinated effort to identify and develop appropriate training opportunities for healthcare professionals in line with the needs of people with heart disease. The competency framework outlined above will support us in understanding and shaping those training opportunities and we will work closely with NES Scotland to identify and address any gaps in training and education provision.

6.4 Actions

1. We will undertake a robust workforce modelling of the cardiac physiology workforce in Scotland in 2021.

2. We will develop a sustainable training and education pathway for cardiac physiology in Scotland.

3. We will produce a nationally agreed competency framework for health care professionals working to provide care for people with heart disease in order to support nationally agreed pathways of care. This will include consideration of the integral role played by cardiologists and cardiology trainees, specialist nurses, specialist pharmacists and cardiac physiologists, the interplay between specialist and generalist care, and identify opportunities for advanced practice in all sectors of care.

4. We will carry out a gap analysis of the cardiology and cardiac surgery workforce informed by the nationally agreed pathways and the developed competency framework.

5. We will work with NES to ensure education and training related to heart disease adapts as changing models of care (including more widespread provision of technological models of care) are implemented.

7. Priority 4: Effective use of data:

We will ensure that high-quality, standardised data is available and used effectively to support clinical decision-making, understand patient outcomes and enable better service-planning.

To support all the ambitions and actions in this plan it is necessary for healthcare professionals and policy makers to have access to a range of information and intelligence to support services and enable improvements in patient outcomes. Improved access to data supports high quality research and quality improvement.

Providing national leadership and support on this area is crucial. This will involve the development of quality indicators, the identification of key questions which could drive improvements in patient care and outcomes across Scotland, and the mapping and standardisation of datasets to make measurement against those indicators possible.

There are a number of areas relevant to heart disease where we must make a particular effort to improve our data collection and utilisation. As noted in previous chapters, there are particular gaps in our understanding of access to diagnostics, gaps in the information held about access to, and outcomes from inclusion in, services such as specialist nursing services, palliative care and cardiac rehabilitation.

7.1 Quality Indicators

It is important to be able to identify and reduce unwarranted variation to help drive improvements in safe, effective and patient centred care for people with heart disease across the country.

The identification of key timescales, interventions and outcomes enables measurement to support learning, and service development, evaluate new models of care and identify unwarranted variation. Such indicator development should be co-produced by healthcare professionals and people with lived experience of heart disease. Inclusion of patient reported outcome measures can help to ensure that we are delivering improvements in line with the needs of people with lived experience.

To ensure that such indicators are evidence based, they should reflect relevant NICE and SIGN guidelines.

The delivery of truly person-centred care requires careful consideration of any unintended consequences that may widen inequalities and so indicator development, and data collection based on them, must consider this to ensure that addressing inequalities forms a core part of the learning and development of services.

7.2 Data

The ability to measure against those quality indicators, is dependent upon effective use of data from a wide range of sources, including important data collected in primary care and community settings, secondary and tertiary care. There must also be consideration given as to how to incorporate patient experience and input. Linking all this data together where appropriate provides a deeper view of quality across the pathways and provides a perspective of care closer to the patient.

The ability to access high quality, linked data also provides important opportunities for research which will drive improvements in cardiovascular health. Utilising data for research helps to uncover improved strategies for prevention, innovative new therapies and medical breakthroughs that will ultimately improve the lives of people affected by cardiovascular disease.

There is an abundance of data relevant to heart disease in Scotland that is routinely collected within the healthcare system. However, it is not always recorded, coded or used consistently and this has significantly limited the ability to identify variation and support learning. Accessibility of data for researchers and health care professionals is another often cited barrier.

We will take a national approach to mapping, streamlining and standardising the data currently collected, improving the interoperability of systems in different care systems or across geographical areas and identifying and addressing gaps in data collection based on the heart disease indicator requirements.

Similar work has already taken place at national level for data relating to cancer. The Innovative Healthcare Delivery Programme (IHDP) and National Services Scotland (NSS) collaborated to create the Scottish Cancer Registry and Intelligence Service (SCRIS). A key remit of this programme was to develop a National Cancer Intelligence Platform that enables healthcare professionals to access cancer-related information and intelligence. The Scottish Cancer Registry and Intelligence Service Dashboard went live for NHS users in May 2019. It provides a single point of entry to national cancer data, bringing together a range of cancer indicators presented at Scotland, NHS Board and Regional Cancer Network level.

We will learn from that work and bring together key stakeholders to improve access to data relevant to heart disease in Scotland.

7.3 Actions

1. We will work with Public Health Scotland to deliver a Scottish Cardiac Audit Programme with an effective governance structure to support audit and improvement of services for people with heart disease.
2. As part of a Scottish Cardiac Audit Programme we will support the development of a wider range of heart disease and risk factor quality indicators to gain a better understanding of the provision of care for people with heart disease across the full pathway of care.

3. We will support the inclusion of patient reported outcome measures within indicator development.
4. We will take a national approach to improving access to data relevant to heart disease in Scotland. This work will include, using the agreed indicators to support data mapping, streamlining and standardisation of information currently collected relevant to heart disease in Scotland.
5. We will establish a platform that that enables healthcare professionals and researchers to access current heart disease related data and intelligence.

8. Appendix A: Progress report – Heart Disease Improvement Plan (2014).

The Heart Disease Improvement Plan (2014) set out a number of priority areas and actions to support improved prevention, diagnosis and management of heart disease in Scotland. These Priorities were;

- **Prevention:** To champion focused work on inequalities and people at high risk of developing cardiovascular disease.
- **Mental Health:** To improve wellbeing for patients with heart disease and reduce risk of further clinical deterioration.
- **Secondary and Tertiary Care**: To ensure patients receive the right investigation and treatment.
- **Management and Rehabilitation:** To support patients with heart disease to live longer, healthier and independent lives.
- **Heart Failure:** To improve the journey of care for patients with heart failure by developing a whole system approach to the delivery of care.
- **Arrhythmias:** To improve the journey of care for patients with arrhythmias.

These key priorities were underpinned by a further two overarching areas of focus which were;

- **Patient Information and Engagement:** ensure patients and carers have the opportunity to be equal partners.
- **Data:** deliver high quality data.

8.1 Key progress and achievements within each priority area

Prevention

- The National Advisory Committee on Heart Disease championed the Keep Well project which sought to address health inequalities within heart disease.

Mental Health

- A robust mental health assessment is now embedded within cardiac rehabilitation programmes.
- Establishment of a pilot project in NHS Lothian which was then fully adopted into routine practice, establishing the 'house of care' philosophy within cardiac rehabilitation services. The House of Care model supports the design of services around patients' physical, mental and emotional needs, in a more integrated way.
- The Heart Failure Hub has worked to include a mental health assessment and delivery corresponding delivery of level one and two psychological interventions within heart failure nursing services across Scotland. All Scottish Heart failure services report that they undertake assessment of psychological distress (Scottish Heart Failure Nurse Forum report 2019). Heart failure teams

in many Boards have additional access to expert psychology services for onward referral.

- Heart Failure Hub national conference included a presentation by Psychologist from University of Strathclyde on “Psychologically Informed Heart Failure care” to enable knowledge exchange.
- Psychosocial support needs feature in the Scottish Congenital Heart Disease Specialist Standards which will guide the delivery of these services in Scotland.
- Information, education and sign posting for healthcare workers and patients/carers is accessible via the public facing Heart Failure Hub website.
- Heart Education Awareness and Training e-learning – HeartE Phase II include modules in Psychological Impact of Cardiac Disease to support health care professionals in identifying and addressing the psychological needs of people with heart disease.

Secondary and Tertiary Care

- Regional pathways developed and implemented for Transcatheter Aortic Valve Replacement and optimal reperfusion in STEMI (acute myocardial infarction).
- Referrals to Scottish Health Technologies Group for Mitraclip and Left Atrial Appendage Closure concluded. National Services Division now commissioning both as a national service.

Management and Rehabilitation

- Cardiac Rehabilitation Champion supported redesign of cardiac rehabilitation services across Scotland in line with SIGN guideline 150.
- Heart Failure Hub worked with the REACH-HF team to test an evidence based, ‘home-based’ cardiac rehab programme that will provide an appropriate rehabilitation for people living with heart failure. HRUK grant won in October 2019 to test the REACH-HF cardiac rehab programme in five NHS Scotland Boards.
- Covid-19 recovery and restoration. Cardiac Rehabilitation worked collaboratively with third sector partners to establish and promote a rapid implementation of virtual assessment and intervention. Short life working group created to provide guidance/consensus on virtual CR assessment and safe and effective tools regarding risk assessment. Draft framework presented at CRIGS conference in November 2020.
- Building on the success of the series of national webinars, an MS Teams communication channel was developed and launched in December 2020 for all Cardiac Rehabilitation professionals to share examples of best practice and latest research.
- Ongoing participation in British Association for Cardiovascular Prevention and Rehabilitation and Cardiac Rehabilitation Interest Group Scotland to

contribute to knowledge exchange and shaping standards and practice across the UK.

Heart Failure

- Promoted awareness of heart failure among health care professionals and within health boards. The Heart Failure Hub has representation from every Scottish Health Board and members actively participate on local Board level and regional planning committees to ensure that needs of people with heart failure are represented in local decisions.
- A National "Ensuring Success in Heart Failure" conference delivered for healthcare professionals in Jan 2020 saw a Scotland – Ireland collaboration being initiated for the first time.
- Promoted general awareness of heart failure in a number of ways, including initiatives undertaken throughout European Heart Failure Awareness week (May 2019), and the delivery of annual National 'Living Well with Heart Failure' conferences delivered for patients and carers.
- The Heart Failure Hub website provides an education platform for health professionals, patients and carers.
- Increased access to Brain Naturietic Peptide testing, a blood test which can rule out a diagnosis of heart failure for people who present with breathlessness. All Boards now have access to BNP in primary and or secondary care, nine health boards currently provide access to BNP in primary care.
- Publication of National Heart Failure guidelines for diagnosis of Heart Failure (SIGN 147).
- Supporting all Health Boards to develop pathways to diagnose heart failure
- Improving access to palliative care for people with heart failure through the Heart Failure Hub's 'Supportive and Palliative Care in Heart Failure' project undertaken in collaboration with BHF.
- Pilot projects supported to understand the potential use of novel innovation to improve earlier disease detection (using artificial intelligence driven techniques including machine learning risk stratification algorithms) and facilitate better/quicker access to diagnostic investigations.

Arrhythmias

- Report for AF in development by Public Health Scotland. This is designed to support optimisation of anticoagulation rates within primary care.
- Network for Inherited Cardiac Conditions Scotland (NICCS) established pathways and guidelines for the treatment of people with inherited cardiac conditions (including arrhythmias) in Scotland.
- National Atrial Fibrillation Steering Group established to drive improvements in detection and management of AF in Scotland.

Patient Information and Engagement

- The National Advisory Committee and the Heart Failure Hub have patient, carer and 3rd sector representation.

Data

- Worked with NHS GG&C eHealth to develop an eRegistry for heart disease data collection across all Boards. ERegistry now functional with data storage in local SafeHaven.
- The HF Hub have engaged 5 NHS Scotland Boards to undertake a scoping exercise around HF data linkage.
- The HF Hub worked closely with ISD to produce a HF platform on NSS Discovery. Platform went live in 2019. Data includes HF admission rates, 30 day readmission rates, 30 day and 1 year mortality rates, length of stay and accuracy of HF coding. These data can now be viewed at National, Board and Hospital level.
- The HF Hub worked closely with Scottish Atlas of Variation team and a heart failure map of HF hospitalisation rates was published in 2019.
- Improvement in heart failure coding through raising awareness of issues, education and working with coders to include the use of echocardiography when coding hospital discharge letters.

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