NHS SCOTLAND

Realistic Medicine: Taking Care

Chief Medical Officer for Scotland Annual Report 2023–2024

People – Planet – Progress – Purpose

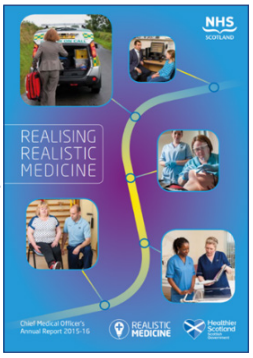
REALISTIC MEDICINE

Scottish Government
Riaghaltas na h-Alba

The Evolution of Realistic Medicine

2014

2016



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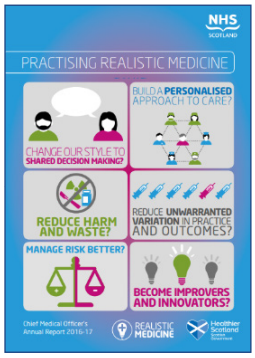

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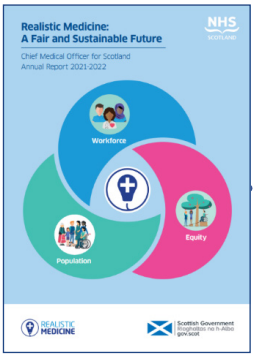

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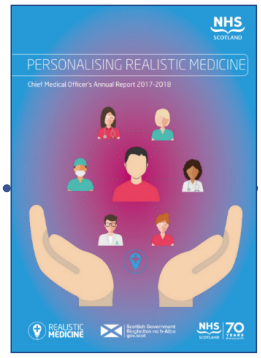

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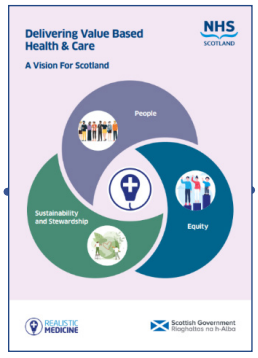

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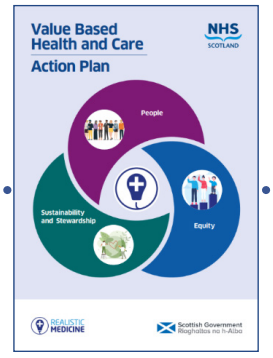

2023

2024

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Foreword

We continue to experience a more uncertain and volatile world. The accumulation of events bringing insecurity – the global pandemic, conflict-related humanitarian disasters and the energy and cost-of-living crises – have compounded existing challenges and rattled the resilience of health and care systems across the world.

On top of this, the most significant long-term threat to human health remains the **climate emergency and its impact on planetary health**. It is clear to me that health and care professionals globally must use our trusted position and influence to help us mitigate and adapt to the planetary crisis with greater urgency.

Despite this uncertainty, I remain optimistic that we can meet the four concurrent challenges to population health in Scotland: the ongoing threat of infectious disease; widening health inequalities; the need to create a more sustainable health and care system; and the need to address the planetary crisis. I remain optimistic because I continue to be struck by your dedication and kindness in working towards a sustainable future. It's obvious to me that as we manage uncertainty, we have a pressing need to do things differently and I remain convinced that practising **Realistic Medicine** will help us to respond, adapt and deliver the change needed for our communities and our planet to thrive.

Last year, in **Doing the Right Thing**, I spoke about the way we deliver care. I shared my thoughts on the need to resist the industrialisation of care because this leads to generic and transactional relationships between professionals and the people we care for. This industrialisation gets in the way of human connection, which is fundamental to the art of caring.

In this year's report, I'd like to develop this theme further. I believe that by nurturing trust, by understanding both the biology and the biography of the people we care for, we can make meaningful connections and deliver **careful and kind care**.

Taking this approach will help to create not only the fairer and more sustainable system that we all wish to see, but also the outcomes that really matter to the people we care for.

Looking towards this fairer, climate-resilient and sustainable system means embracing **innovation**. It is central to the pursuit of wellbeing, equity and Scotland's wider socioeconomic success. This year, I am thrilled to be celebrating our proud tradition of research and innovation and the 50th Anniversary of the Chief Scientist Office. I will also share my reflections on our progress towards improving lives in communities

across Scotland and beyond. **In his recent report**, the Auditor General highlights the challenges our system is facing. He identifies **Value Based Health and Care** as an opportunity to address them and recommends that Government and health and care professionals must work together to deliver it. He has emphasised the need to empower our colleagues to practise **Realistic Medicine** and recognise how it can impact positively on outcomes and sustainability.

I hope that the content of this report will resonate with you, lead to further innovation and new and sustainable ways of working and I very much hope it will help us connect in a meaningful, human way with the people we care for.

Professor Sir Gregor Smith
Chief Medical Officer for Scotland

Enabling careful and kind care

Focus on understanding what matters to the people we care for and focus on helping them achieve their goals

As care providers we often enter people's lives at a moment of vulnerability; we must respect this, and hear and seek to understand the voice of those we serve in order to deliver the outcomes that matter to people we care for. Shared decision making sits at the heart of doing the right thing.

Balance biography and biology when applying evidence-informed practice

We must ensure the right balance between the science and the art of care; the best care has biometric and biographical care in equilibrium, balancing evidence, professional judgement, people's preferences and compassion.

Kindness and compassion sit at the heart of the way we deliver care.

We are all human and vulnerability is exhausting; we all have physical and emotional limits and a tolerance to risk that is dynamic as a consequence. We should reasonably expect the people and system in which we work to acknowledge and respect this, ensuring that we are supported to practise compassionately and manage clinical risk appropriately.

Collaboration is key to providing care that people value and greater job satisfaction

We should give way on professional and personal prerogatives in order to be part of something greater; define what we do as individuals as part of a wider multidisciplinary team and nurture and protect civility, trust and belonging within it. Our teams are greater than the sum of their individual parts, and they will help to support and sustain us.

Use resources wisely to provide sustainable care for our service and our planet.

However well intentioned, some care can be wasteful, risking harm to people and the environment; using a value based approach allows us to balance personal and population-based care better so maintaining, and making best use of, all our resources.

Measure the right things including outcomes that matter to people.

Measurement works best when it is meaningful, proportionate, transparent and used for the purpose of improving quality; when measurement drives transactional care it risks moral injury and harm to staff as well as the people we care for and must be avoided.

Chapter 1:

Taking Care of Our People

Careful and kind care

What is “care”? What do we mean when we talk about “receiving care”? Do we mean healthcare? Social care? Spiritual care? Loving or romantic care? At different times for different people, it may be any or all these things. All these elements of care contribute in some way to enhancing the quality and the experience of our life, our wellbeing, or to alleviate some of the pain or discomfort of negative experiences we inevitably face.

Care should mean alleviating or easing of this pain, even in the most difficult or challenging of moments. It should be given for the purpose of aiding; perhaps not always exactly what is sought, and often not intending to cure, but compassionately judged, nonetheless. It should recognise with full fidelity the unique circumstances of the people we care for, be mindful of the encumbrance, however well intentioned, it may place upon them, and be informed by careful conversations that enable this understanding.

The **Cambridge Dictionary** defines care as “the process of protecting someone or something and providing what that person needs”. This definition feels limited in our context. It suggests a paternalistic response, reducing agency and diminishing necessary wider holistic considerations. It feels like the imperfect model of healthcare, well-intentioned but ultimately falling short of what is required for the complex concept of health and wellbeing we pursue.

Fisher and Tronto suggest that care is “everything that we do to maintain, repair and improve our ‘world’ so that we can live in it as well as possible”. Engster builds on this, suggesting **“caring is everything we do directly to help individuals satisfy their basic biological needs, develop or maintain their basic capabilities, and avoid or alleviate pain and suffering”**. This encapsulates wider positive contributions to our health and wellbeing from beyond traditional concepts of caring; activities like cooking, our participation in the arts, or being in green spaces. This helps to provide coherence to our lives and roots us to a sense of ease from which the conditions for achieving health are developed.

Care is not then solely about healthcare or social care, though these are important components of a society in which care flourishes. Our health and care systems, like many others across the world, have responded to rising demand and pressure by taking new approaches – by innovating and improving and by pursuing efficiency. However, we must beware of focussing solely on the pursuit of efficiency. A reductionist approach may reduce measurable costs at the expense of difficult-to-measure benefits.

Likewise, performance measures are incompletely suited to managing or controlling the way we deliver care. I agree with **Mintzberg's** contention that treating people or managing risk in specialties such as general practice, or psychiatry, where so much of "care" cannot be measured, is not suitable for approaches such as this. Some of the highest quality care, using these wider definitions, comes from compassionate conversations that address concerns, issues or distress and manage risk without quantitative record of the benefits that are derived to individuals and to society. It is a mistake to assume that all healthcare can be managed in the same way as other industries, through the pursuit of increased productivity and by minimising costs.

If we attempt to do this, to design and promote a system of transactional care, we run the risk of losing the art of care – **the human connection that makes care caring** – and promoting moral injury to our staff.

We must continue to seek novel approaches – to consider how we can update and evolve our practice. We need to make space for conversations about what realistic care looks like. This means finding out what matters – to understand people and their circumstances – and then doing what matters.

Outcomes that matter

I want to see this biographical understanding of people translated into personalised care that people value. This approach sits at the heart of a culture of **Value Based Health and Care** – where care is both careful and kind.

Careful care is founded on principles of quality, safety and the tailored use of best available evidence. More importantly, this approach means considering a person's health conditions in the context of their unique circumstances and priorities, not just their biological data.

Kind care means having respect for a person's most precious resources – their time, energy and attention – and making sure that healthcare's footprint upon these resources is minimally disruptive.

I was pleased to find these principles embedded in the General Medical Council's updated **Good Medical Practice**, which says that we "must treat patients with kindness, courtesy and respect". These very human ideas are integral to our practice, but I know from my own experiences that meaningful kindness in care is complex. I recognise that the act of being kind can come easily when we are well-rested, well-nourished, supported and feeling valued. It can feel difficult when our intentions meet the at-times overwhelming realities of clinical and care practice.

While careful and kind care are central to what it means to be a healthcare professional, this not something that can be imposed. The role of our organisations and leaders is to foster an environment where careful and kind care can flourish through meaningful conversations with the people we care for. I would go further and suggest that leadership, though important, is not enough by itself and **"communityship"** is what is needed within the organisations and teams that we work.

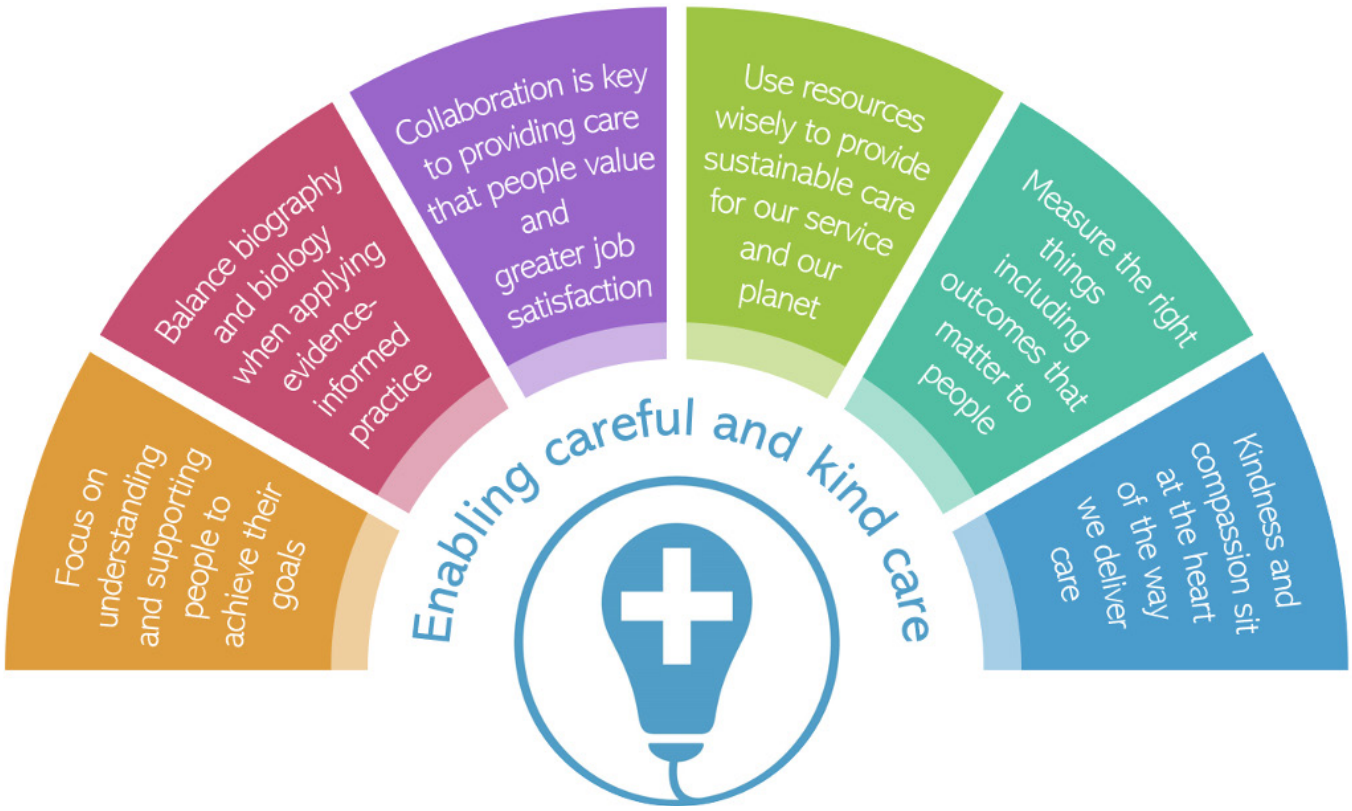
As **Mintzberg** says, "effective organisations are communities of human beings, not collections of human resources."

Collaboration between professionals where vested interests and prerogative are set aside is vital. Healthcare is a vocational career, a "calling" for many of us, especially for those who feel the privilege of serving their local communities. We must ensure that our health and care professionals are provided with the support to enable this sense of service to thrive. To belong and to be valued as part of something much bigger; that contributes meaningfully and cares for society.

"Nobody cares how much you know, until they know how much you care"

Theodore Roosevelt,
US President and conservationist

People need to feel a sense of genuine care from others before they are willing to listen, learn or be influenced by their knowledge. Embedding these six principles in the organisations that we work will enable us to practise the way we wish to practise and deliver careful and kind care:



Taking a careful and kind approach to healthcare, **NHS Forth Valley's framework for type 2 diabetes prevention, early detection and intervention** links healthcare professionals with other cross-sector community support mechanisms to provide the right support tailored to the individual. The local diabetes team are working in an area with high levels of social and economic deprivation, discussing each person's priorities, listening to their stories and helping them navigate the complex networks of services using current staffing and resource. They have taken a **Human Learning System** approach with important lessons for others seeking to establish community services.

Human Learning Systems in NHS Forth Valley

Human

People's priorities are often different from those of healthcare professionals. People put the needs of their family above their own health needs, with household dynamics influencing engagement and outcomes. Person-led conversations can encourage healthy awareness and management of behaviour drivers. Shared local knowledge, understanding and connection empower people to form relationships with healthcare professionals.

Learning

Rapid access to "key actors" builds trust and reduces anxiety. Diverting from standard practice to support personal outcomes critical.

Systems

Traditional healthcare tends not to consider social complexity and its impact on outcomes. Embedding a human approach throughout healthcare requires system change.

Jim's Story

The benefits of this very human approach are clear. Take the example of Jim, who was referred to the NHS Forth Valley team as part of a pre-diabetes pathway. A human-human conversation clarified that his key concern at that moment in time was not diabetes – it was weight loss.

The team could have delivered pre-diabetes counselling and referred him on to other services. However, they chose to find out and focus on what mattered to Jim: investigating and supporting him with his weight loss promptly, locally and with the involvement of his family.

This approach of doing what matters, rather than strictly abiding by the traditional limits of the services we offer, meant that Jim avoided multiple onward referrals, potentially lengthy waits for appointments and the associated stress and uncertainty. This team has been working creatively and with great care to deliver outcomes that matter to the people they care for.

Taking care of our population

"Care is the most important social determinant of health"

Victor Montori

So what of this broader concept of care as it relates to the very real challenges we face? Health inequalities are one of the defining issues of our time and are woven through every health challenge Scotland's population faces.

Over the next 20 years, the **Scottish Burden of Disease study** projects that illness will rise by 21%. Health and wider societal inequalities, along with an ageing population, will see this increase in illness fall disproportionately on a smaller population. To turn the tide, we need radical reform focussed on prevention and the fundamental building blocks of a healthy life.

We know that most of the influences on health inequalities lie outside health and social care systems. A wide range of socioeconomic factors influence the pursuit of a healthy life and affect the underlying determinants of health, including food and nutrition, good housing, safe and healthy working conditions and a thriving natural environment.

As professionals, we must acknowledge that the greatest influence on an individual's health is not the result of our work, but rather the wider circumstances of the individual. The core drivers of health inequalities are inequalities in income, wealth and power. People with lower incomes, or who are socially disadvantaged in other ways, can consistently expect to be in worse health than those with greater socioeconomic power in society. Those experiencing poverty, deprivation and prejudice exist within our health and care systems, and we need to acknowledge and act on this.

Health inequalities, human rights and the planetary crisis

In **Chapter 2**, I'll share my thoughts on the unfolding planetary crisis. I think it's important to highlight here that, directly and collectively, the planetary crisis is both a public health and a human rights crisis that will worsen existing inequalities and drive new forms of inequity.

We all have a right to a safe and sustainable environment. I am very proud that Scotland is taking its human rights responsibilities seriously and has shifted its focus to inter-generational justice. This year, we have taken the bold, proactive and historic step of enshrining children's rights in law – through the **United Nations Convention on the Rights of the Child (Incorporation) (Scotland) Act**. This is a lever to ensure that the best possible start in life is respected, realised and protected. This also sets a clear direction: to care for our natural environment for the benefit of future generations.

Stigma, discrimination, poverty, violence, complex trauma; people who are socially excluded and marginalised often experience these interacting risk factors for poor health. These factors do not occur randomly or by chance – they are socially determined, disadvantaging people and limiting their opportunities. We must continue work to establish a more equitable society, that recognises everybody has different circumstances but that acts to ensure everyone has access to the same opportunities.

While health and social care contribute **only 20%** of the modifiable determinants of health, meaningful care through a well-developed universal healthcare system is important. What we do matters. Successful action necessitates both intervening upstream – tackling fundamental whole-system and wider environmental causes of health inequity to ensure maximum reach – and intervening downstream – focussing on people's own experiences and what matters to them.

Care goes beyond the relationship between us as health and care professionals and the people we care for. Our purpose is also to understand and support the wider communities of those we care for and the environment that sustains us. The evidence in **Chapter 4** sets out some of the main factors driving inequalities in our society. In this chapter I'd like to share solutions which demonstrate how care can help tackle them. I'll reinforce these approaches and share more examples of how care can impact positively on communities and our planet in **Chapter 2**.

Making healthy weight a priority

People living in less economically affluent communities are disproportionately burdened with the **ill health and mortality linked to poor nutrition**.

Cost-of-living pressures have put healthier food options out of reach for many. The foods we'd like to see in a varied and healthy diet can be **twice as expensive** per calorie compared to unhealthy foods. Those living with food insecurity would need to spend around **half of their disposable income** on food to meet the cost of the **Eatwell Guide** whilst food-secure households need only spend 11%.

As health and care professionals, we understand how a healthy diet is fundamental to healthy growth and development in children. Children's chances of eating well **depend**

strongly on where they grow up and those living in less affluent areas are **more likely to be exposed to unhealthy food** in their high streets, **more likely to have the poorest diets** and **less likely to be a healthy weight**.

The **World Health Organization** states that obesity cannot be seen simply as an issue of personal responsibility but as a critical health, economic and societal issue. It is a critical issue in **Scotland** too – where **1 in 3** children are at risk of overweight and obesity, and obesity affects 2 in 3 adults. We cannot afford to ignore this problem. **Nesta** estimated the cost of obesity to Scotland to be as much as £5.3 billion annually - of which £4.1 billion is the value lost to people through reduced quality of life.

Our **most disadvantaged communities have fewer opportunities** available to positively shape day-to-day health, not just through access to healthy food, but also safe and affordable opportunities for active travel and exercise.

This lack of opportunity worsens and embeds health inequalities, as these same communities are more adversely affected by overweight and obesity. We must support our population to make healthy eating choices, maintain a healthy weight and participate in regular physical activity. This is critical if we want to meaningfully tackle inequalities in our society.

Shared local spaces and local knowledge can help us take a broader approach to our social purpose as health and care professionals. Joining the communities we serve helps us to see the context of the people we care for, adding an essential biographical understanding to the care we provide.

I have been encouraged to see colleagues like the diabetes team in Ayrshire & Arran doing just that. With support from the **Realistic Medicine** Value Improvement Fund, they have established a weekly service in a community hub with a morning eye screening clinic, community treatment and care nurse clinic and drop-in services throughout the day. This is bringing care closer to home with better outcomes as a result – and represents a crucial opportunity to directly connect people's diabetes management to support for the wider building blocks of good health.

The Dalmellington Community Health Hub

In Ayrshire, the **Dalmellington Community Health Hub** is a place where people can meet, talk with and receive support on everything from weight management, **disease prevention and early intervention** and **smoking cessation**, to financial, housing and energy advice. This is a community-driven group that focuses on human connection.

Co-locating eye-screening here has led to the highest uptake in **NHS Ayrshire & Arran** – improving from 70% to 89% – and low-risk foot screening has also improved from 9.1% to 36.1%. There is earlier detection of disease which means quicker time-to-treatment – the timely treatment of new foot ulcers has increased from 50% to 100%. Crucially, the team have also found that this gives them the opportunity to support people to adapt their lifestyles before more serious complications develop. This is care that is kind, thoughtful and realistic – doing what matters in the right way by bringing care closer to home.

Missingness in health and care

It will come as no surprise that, in an inequitable society and with a system under pressure, we sometimes fail to appreciate the time, emotional investment and disruption that comes with accessing healthcare. There is a misconception that when people do not engage with health and care services, they cannot need health and care services.

But "missingness" – **the repeated tendency not to take up offers of care such that it has a negative impact on the person and their life chances** – is a major patient safety issue linked to high health needs and poor health outcomes. **Research by the University of Glasgow** has found that an average of two or more missed GP appointments per year was linked to a very high risk of premature death. In addition, those considered missing tend to have multi-morbidity and experience high socioeconomic disadvantage.

So what drives missingness? It can feel easy to attribute lack of engagement to chaotic personal lives and distrust of professional support – to assign blame. However, first and foremost, perceptions about healthcare are informed by experience and whether people feel that they are deserving of and will receive the care they need. Competing demands for a person's time, the lack of opportunity to choose healthy options and difficulties reaching virtual and in-person healthcare add to this burden. And we cannot forget that fear, denial, stigma and shame often influence their decision-making.

From our side as professionals, we need to provide stable, consistent and caring relationships with the people we care for. Dr Carey Lunan, Chair of the **Scottish Deep End Project**, says these human connections work best when they are "sticky and inclusive". Our services can only be sticky and inclusive if we act to make them accessible to all and particularly to "the missing". We must offer careful and kind care that works alongside people's lives, respecting the biography and circumstances that exist beyond care. To become responsive, wherever people seek help, we must take a "no wrong doors" approach and support people navigating our complex health and care system.

A note on continuity

Healthcare is not a series of interchangeable and faceless tasks. For many of us, the most fulfilling professional relationships are those we build with the people we care for over time. These deep interpersonal connections help us learn about them as people: their lives, their context and what matters most. It is no surprise to me that for those experiencing healthcare inequalities, relational continuity (seeing the same face) is important. And for those with the **most complex health and social care needs**, who may find it difficult to establish and maintain trust in our systems, continuity is all too often a missing element of care. When we get this form of relational care right, the people we care for face **fewer hospital admissions, lower mortality and reduced use of wider services resulting in less waste**.

Victor Montori talks about the privilege of the bedside: the awesome responsibility of trust we share when a person is at their most vulnerable. To enable sustainable and equitable care into the future, we need to strengthen this connection through continuity of care and recapture the privilege of looking beyond the bedside to see people as they want to be seen.

Vulnerabilities can be at their starkest as we approach the end of our lives. Most people **prefer to die at home**, and, in our culture, this is seen as an important aspect of a good death. However, people from the most socioeconomically deprived areas in the UK are **less likely to die at home and more likely to die in hospital**.

Late last year, I was moved by the **Dying in the Margins** exhibition – the culmination of a research study exploring experiences of home dying for people struggling to make ends meet. This is an area we don't speak much about, but we should, because it's not unusual. There were **many powerful stories**, but one that has stayed with me was **Max's story**.

Max's Story

Max (right) at home with his dog Lily, and his friend who was caring for him.

Max wanted to remain in his local community at the end of his life, to be with his friends, who were caring for him and his dog Lily. He was an army veteran with prior experience of homelessness and trauma and he felt trapped by institutions: "I prefer being at home. No one wants to be in a hospital."

Each time Max's symptoms became too severe, or his carers could no longer manage, he was admitted to a hospice. According to his friend and carer, at one point Max "did a runner from the hospice basically to get back to his dog." He felt that the hospice environment was too restrictive. From then on, his care team took a **trauma-informed** approach to his care, which was more flexible and responsive to his needs. Max was able to be supported at home up until his final week.

Doing the right thing is at the core of **Realistic Medicine** – and takes on urgency as someone approaches the end of their life. Although Max's story exposes the inequalities that exist in our society, I was moved by the care he received from friends and professionals alike.

Maximising Independence

The way we traditionally deliver health and social care isn't keeping up with changes in the population and rising demand. By transforming the ways we work to reflect these changes, through careful and kind care and by practising **Realistic Medicine**, we will support people to live independently and achieve their full potential.

In striving for a sustainable system which supports people to live the lives they want to live, we must recognise that health and care professionals cannot provide all the answers, or services. But we can listen, act in partnership through honest and transparent conversation and understand the biography and biology of people and their communities.

As we grow older, **social isolation and loneliness** can affect our independence, along with increasing our risk of cardiovascular disease, physical frailty, cognitive decline and dementia. Taking Scotland to a place where individuals and communities develop meaningful relationships, regardless of age, status, circumstance, or identity, is desirable. That is why initiatives like **The Knightswood Connects Project** are so important, enabling and empowering people to rediscover human connection and helping them engage with society in a way that matters to them, **Maximising Independence**.

Social isolation in older men

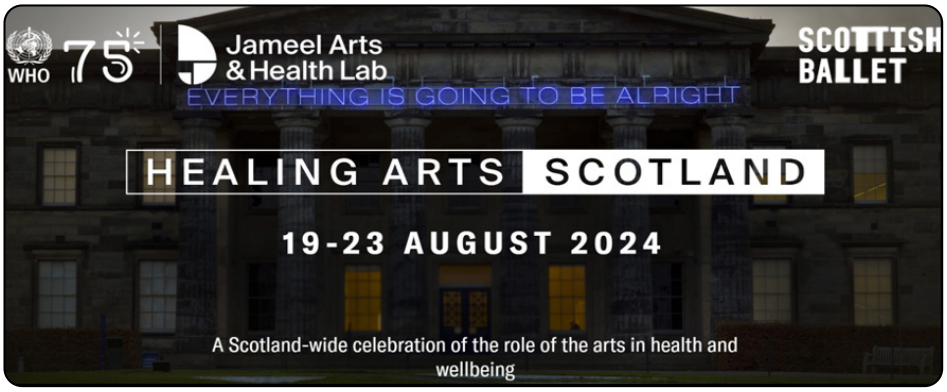
Ann Harvey, Community Engagement and Activities Coordinator for the **Knightswood Connects Project**, maximises independence through her relentless commitment to achieving the best outcomes for older people.

Ann organises regular weekly activities such as art and exercise classes and health walks, short-term programmes and one-off events. I was struck by the human connection fostered in one of these short-term programmes – a six-week accessible golf course delivered in partnership with GP Link Worker Wullie Pearson from the **Cairntoul Practice** in Knightswood.

This programme was specifically aimed at men who might be more at risk of isolation and who could benefit from a bit of support to get out to play golf and meet new people. Six men who previously felt lonely and isolated built their confidence, developed skills and created a peer support group. This inclusive men's group has gone from strength to strength, has doubled in size and the group are now attending weekly indoor bowling classes. Human connection matters and Ann's passion for reconnecting isolated older people with their communities is inspiring.

Community initiatives like this teach us how to engage with the "missing". For those who find that traditional means of accessing care challenging, embedding and co-locating services in communities is a very practical solution. I strongly advocate that we go to where the people we care for live their lives.

Across the country, care can be found in many guises. The **Healing Arts Scotland** network is an activation of health and arts organisations across Scotland. Their aim is to mobilise and strengthen local arts and health projects and organisations to help address health concerns, with a focus on loneliness and isolation, mental health in younger people, dementia and mental health in prisons.



Healing Arts Scotland 19-23 August 2024

Scottish Ballet are at the forefront of this exciting network and their **Dance for Parkinson's** class is an excellent example of how the arts can contribute meaningfully to improve people's experience of chronic disease whilst also improving social contact. This innovative class is part of a bespoke Dance Health programme of wellbeing support for people living with long-term health conditions, their carers and health professionals.

Parkinson's disease causes movement problems such as tremor, stiffness and slowness. This class aimed to help people achieve the outcomes that matter - regain confidence, express themselves and build balance and fluidity of movement through structured and supported dance.

Care is a concept that goes far beyond the boundaries of healthcare alone. Our aim must be the enrichment of life if we are to improve health and wellbeing. It is a holistic response, social and cultural, that recognises individuality and serves to enhance the experience of life from the position and perspective of each individual. Care helps people to live and to fulfil their potential.

We must take time to properly understand the needs and wishes of the people and communities we serve; to see them in glorious high definition. We must work in partnership with them, meet them on their own terms and in their own spaces and empower them to get involved and support and care for each other. **Not all suffering demands a healthcare response, and not all responses to suffering need to be professional.** This perspective can promote more sustainable healthcare for fellow citizens of the communities in which we serve and help us reduce the impact of healthcare on our environment.

Chapter 2:

Taking Care of Our Planet

"I believe we can create a healthy society that protects the planet and safeguards future generations. And although the climate emergency is a global issue, we need a local response in every community.

What drives my passion for greener practice is that this local response is one that can transform our communities so that they are healthy and fulfilling places to live."

Dr Deepa Shah
GP at **Levenwick Medical Practice** in Shetland
Chair of **North East Scotland Greener Practice Group**

The planetary crisis

We are in a worsening planetary crisis – facing the triple realities of climate change, pollution and loss of biodiversity. Last summer saw Scotland's **hottest June since records began**, **last winter was one of the UK's wettest** and **global sea levels are rising twice as fast as they were in the 1990s**. **Around the world**, lives are being disrupted, food and water insecurity is worsening, and even as existing inequalities deepen, this crisis is leading to new forms of inequity.

What we choose to do now matters. Many of the anticipated health impacts of climate change in the UK are **still avoidable**. We must safeguard our natural environment for future generations whilst we still have agency to act. Not only do we need to reduce greenhouse gas emissions to **mitigate** the warming that our planet will experience, but we urgently need to **adapt** to the current and future effects of climate change.

We must choose to be responsible global citizens: our wellbeing, our health and the lives of this and future generations depend on this.

Last year, I shared my thoughts on our three priorities for action:

1. **The impact of healthcare on the planetary crisis**
2. **The impact of the planetary crisis on health and care**
3. **Mitigation and adaptation**

I must emphasise the urgency of addressing this planetary crisis and the public health crisis that is unfolding consequently. This year, I would like to put these thoughts into further context. I would like to share real-life examples of action in our systems and

beyond. And I would like to inject some realism into the conversation: mitigating and adapting to the planetary crisis must be our number one concern as we work towards our climate-resilient, low-carbon, equitable and sustainable health and care system of the future. We must act quickly, collectively and decisively.

The impact of climate on our health

A **quarter of a million additional deaths** will occur globally every year between 2030 and 2050 as a result of humanity-driven changes to the climate. This is because climate change affects most of the basic building blocks of health by influencing the day-to-day weather conditions that we experience. How severely this impacts us depends on how much warming occurs.

The **United Nations Framework Convention on Climate Change** established an **upper limit of 2° Celsius** warming above pre-industrial level. Beyond this, we are likely to experience rapidly escalating, irreversible and unacceptable effects – on everything from water security to healthcare. But even today, as **we approach 1.5° Celsius** of warming, the changing climate is already affecting our health in Scotland.

Winter saw **Storm Babet** sweep across the country, with half the average monthly rainfall for October falling in days and tragically leading to loss of life and hardship. Unpredictable storms and flooding will continue to become more common. By 2050 **winter rainfall is expected to increase by 8-12%** and **sea levels in Edinburgh are expected to rise by 12-18cm**. More flooding will **compound existing inequalities** and the greatest health burden associated with flooding is likely to be the **long-term mental health impacts**.

While flooding is expected to get worse during Winters, our Spring and Summer temperatures are likely to rise – in tandem with an increase in heat waves. **Water scarcity in the summer** will add to the burden of winter floods and increase our **risk of food insecurity**. **Nearly half** of the UK's food is imported from abroad and the proportion of food coming from **climate-vulnerable countries** is increasing. This leaves our food chain vulnerable to climate shocks both at home and abroad. This might affect what we have access to and what we can afford – with the hardest hit likely to be those already struggling with the cost-of-living and existing barriers to accessing healthy, nutritious food.

We must carefully consider how the long-term health impacts of food insecurity could affect the pressures on our system and think of other climate-related risks on the horizon.

Our changing weather and climate also mean a changing pattern of vector-borne diseases. These are illnesses caused by bacteria, parasites and viruses and transmitted by carriers such as fleas, mosquitoes and ticks. **Scotland has a disproportionate share of the UK burden of Lyme disease** and cases have been increasing over the past five years.

Looking further ahead, **climate modelling** suggests that invasive mosquito species, which transmit serious diseases like **dengue**, **chikungunya** and **Zika**, may become

endemic in England by the 2040s and parts of Scotland by the 2060s – due to a hotter and more humid climate. This is one of the most significant risks that climate change poses to public health in our country and we need to be prepared to respond through **contingency planning, habitat management plans and targeted human, animal and vector surveillance**.

Being realistic in our response to the planetary crisis means having a sense of what to expect. The **Local Climate Adaptation Tool** tells us how the climate will change where we live, who will be the most vulnerable and what the health impacts will be. These impacts are major, multifaceted, co-occurring and inequitable and affect us directly, as individuals, and collectively through disruption of the fundamental building blocks of a healthy and fairer society.

Our health and care system must adapt and enact plans to address the immediate and worsening impact on health of flooding, overheating, high winds and storms and water scarcity. **NHS National Services Scotland** has a **critical role** here which will underpin our success: to increase resilience of our systems and minimise the impact of climate change, to assure other NHS Boards' progress towards adaptation and preparedness for worsening natural events and to support the mapping of vulnerabilities across the system, including risks to hospital sites and disruption to the ways staff and patients reach them.

The impact of healthcare on climate

NHS Scotland is making progress towards working in a sustainable way. However the impact of health and care on the climate is significant. **Healthcare remains the fifth biggest emitter of carbon dioxide** (CO_2) – a major greenhouse gas – in the world. This year, three quarters of the **Thirteenth Citizens' Panel**, which aims to capture and reflect the views of the Scottish public, agreed that NHS Scotland has a responsibility to reduce its impact on climate change. However, **we are not seeing the reductions in emissions required** to achieve our goals on **Net Zero:** the time when we are no longer adding to the total amount of greenhouse gases in the atmosphere.

It was no accident that this year's **Realistic Medicine** conference fell on **Earth Day**. As people around the world gathered and demonstrated in support of our natural environment, it was my great pleasure to hear from the inspirational Maria Gaden, who heads the **Centre for Sustainable Hospitals** in Denmark. Like us, Denmark is at the start of a sustainability journey. Maria and I know it's hard for people to change the world from just one country – but I'm optimistic that there is an international community within which we can collaborate, find solutions and drive change at home and further afield through deep global connections.

Maria shared her experience of three approaches to reducing climate impact:

1. **Reduce** – Not using something saves 100% of the possible carbon impact
2. **Reuse** – Reusing products recouped 60% of the lifetime carbon impact of the product
3. **Recycle** – Recycling consistently could recoup 3-4% of the carbon impact of the product

To help address the climate emergency, the number one thing we can do as professionals is to create less waste when we deliver healthcare.

Carbon accounting will feel intuitive one day. We're not quite there yet, so we need to apply some common sense and use a currency that we all understand. For example, if we can't calculate the carbon cost of what we're using, we can simply weigh the amount of waste we generate and work to reduce that weight.

Reducing waste in surgery

In the Central Denmark region, the consumption of **single-use surgical products in hip replacement surgery** ranged from 7.1 kg to 12.5 kg per procedure, depending on the surgeon, with similar outcomes. In some cases, products were not used during the surgery but disposed of anyway. Variation was mainly a result of surgeon preference, culture, assumptions and local habits – not clinical need.

A surgical drape and surgical equipment.

Everything not on the blue drape above is being phased out: saving resource, plastic and CO2. We should follow suit and consider what we can safely stop using.

Maria also questions the purchasing of single-use equipment. She has studied the carbon footprint of multiple-use versus single-use suturing sets (i.e., scissors, tweezers and needle holder). **Multiple-use sets had 90% lower CO2 emissions** than single-use sets, with the same lifetime costs. There was no evidence that single-use sets improved safety and clinicians preferred multiple-use sets because of the quality of the products.

While there are many examples of good practice in Scotland, single-use has become the standard in many places. Switching will take initial investment, changes in procurement, remanufacturing services and building sterilisation capacity. However, this is an investment that should **pay for itself** over the lifetime of the equipment.

Maria's lessons – reduce, reuse, recycle – are easy to follow. They are about how getting the basics right can benefit people, planet and pound.

The changes our society needs to make cannot be accomplished by health and care professionals alone, but we can start the conversations and leverage our trusted positions to role-model best practice.

Culture of stewardship

While addressing CO2 emissions from health and care is fundamental to planetary health, I'd also highlight that the most harmful care for our planet is the wasted and futile care that makes no difference to the lives of the people we care for. The Organisation for Economic Co-operation and Development estimates that **20% of healthcare spend does not meaningfully improve our health**.

This consumption of resource without benefit is also more likely to prevent those who are disadvantaged from receiving the care that they need. It is also a drain on our natural resources and increases harmful emissions – wasteful care is poor care for the people we care for and our environment and increases the potential for harm to them both.

To fully tackle the climate emergency, effective collaborative working across the healthcare system will be vital. Health and care professionals must be supported as we develop a culture of stewardship, where resources – everything from the gloves we wear to how our time is used – are safeguarded and used responsibly.

Your impact

Interested in your impact? You can use **this tool** to calculate the non-clinical carbon footprint of your GP surgery. This accounts for about **40% of primary care emissions**. Then connect with your local **Greener Practice** team to find out how other GPs are reducing their impact!

Transitioning towards sustainability can be complicated by hygiene, costs, work environment, cooperation, efficiency, culture and behavioural considerations. While it is easy to feel overwhelmed, we must question established practices and we must take

action to reduce consumption in a safe and responsible way.

And through careful and kind care, we can also focus on delivering the outcomes that matter. We can reduce waste and potential harm, deliver better value care, reduce our environmental impact and help to create a more sustainable health and care system. Tackling this crisis is challenging – but we know that many of the changes we need to make that are good for the planet will also be good for our health.

Zero emissions fleet

My colleagues in Health Infrastructure and Sustainability have been gathering data related to our emissions across NHS Scotland. Between 2016 and 2023, NHS Scotland's total heat and power emissions have reduced by 32%. This is great – and mostly driven by decarbonisation of the electricity grid.

NHS Scotland is aiming to fully decarbonise its fleet of vehicles by 2032. This is a critical step on our journey to a Net Zero service, as we know that domestic transport is the sector which produces the most greenhouse gas emissions in Scotland (**29% of the total for 2019**) and that car travel makes up the most carbon-intensive mode of transport.

Between October 2022 and March 2023, the proportion of Zero Emissions Vehicles (ZEV) in our fleet increased from 19 to 33% – with NHS Ayrshire & Arran moving from only 5% to nearly half their fleet.

I'll talk later in this chapter about our role as anchors in our communities – taking the lead on ZEVs will improve our local air quality, reduce our carbon footprint and serve as a beacon for our direction of travel.

Some of the tools we need to reduce emissions are already here. In my report **A Fair And Sustainable Future** in 2022, I highlighted **Near Me**, a video-based virtual consultation service which saw huge expansion at the height of the COVID-19 pandemic as we sought to minimise transmission risk. Near Me is **now embedded** across health and care in Scotland– a business-as-usual service providing **nearly 400,000 consultations** last year. The average journey saved per consultation was **43 miles** – a potential saving of millions of miles per month. Kind to people and kind to our planet.

NHS Highland has embedded a pathway for kidney replacement therapy which is underpinned by a philosophy of careful and kind care. This pathway aims to minimise the impact of healthcare on people's lives and the planet and strikes the right balance between the science and the art of care – placing biometric and biographical care in equilibrium while caring for the environment. It's a great example of locally-led climate-first innovation from NHS Highland's specialist renal team.

Incremental dialysis

Nearly 2,000 people in Scotland currently benefit from haemodialysis, a form of kidney replacement therapy. Haemodialysis is a life-saving intervention in chronic kidney failure, but one that comes at a high cost to the people we care for, our system and the environment. **A single dialysis session** uses 400 litres of water (2/3 of which is wasted) and it has been calculated that 7.1 tonnes of CO2 are emitted per year for each dialysis patient.

Taking an evidence-informed approach, the specialist renal team in NHS Highland has transformed the service that they deliver – establishing an incremental dialysis pathway. Incremental dialysis means providing the minimum effective amount of kidney replacement therapy, rather than taking a one-size-fits-all approach.

648,000 litres of water	53,090 miles of travel	74 tonnes of CO2 from being emitted
In just one year, the specialist renal team saved:		3.6 tonnes of non-recyclable waste
£84,072 in taxis	£27,850 in consumables	£2,722 in medication

Most importantly, patients appreciated this realistic approach to their care – as "It made starting dialysis a bit less scary," meant they could "spend more time with family," and it ensured that dialysis wasn't "affecting my ability to work".

This team have viewed national guidelines through the lens of local clinical expertise to achieve outcomes that matter, and this willingness to approach old problems in new and dynamic ways is at the heart of **Value Based Health and Care.**

Pollution and our health

Worldwide, pollution is responsible for **16% of all deaths** and for economic losses totalling **6.2% of global economic output**.

In Scotland, outdoor air pollution is implicated in approximately **1,800 to 2,700** deaths every year, making it the largest environmental risk to public health. Air pollution is caused by fine particulate matter released from a variety of sources. We have some of the most stringent air pollution regulations in the world – but these fall short of **WHO recommendations** and, in countries with similar ambient levels of air pollution to Scotland, there is compelling **evidence of harm**.

Environmental Standards Scotland reported this year that we need to consider where the most vulnerable people in society live and **take targeted action**.

Children are disproportionately affected by air pollution because they spend more time outdoors than adults and because their developing lungs are more sensitive.

Air pollution drives paediatric admissions

Researchers at the **University of Dundee** recently **looked into 35,000 admissions** to **Ninewells Hospital** and matched these admissions to trends in local air pollution. They found the number of children admitted into hospital rose when markers of air pollution were high and that children seemed markedly more vulnerable to rising levels of air pollutants than adults. They concluded that two out of every five children admitted to hospital with breathing concerns in Dundee could avoid admission in the future if air pollutant levels could be kept within safe recommended limits.

The healthcare we provide is also a major source of pollution. The most common therapeutic intervention in our system is the prescription of medicines. We are all aware of the harm medicines can sometimes do – but we don't often think of them harming the environment.

The recent **Citizens' Panel** found that 7 in 10 people would support considering the environmental impact of their treatment options as part of deciding their treatment with their health professional, and nearly 8 in 10 would support choosing one medicine over another because it has less impact on the environment.

iSIMPATHY – Stimulating Innovation in the Management of Polypharmacy and Adherence Through the Years – is a European Union-funded collaboration between Scotland, Northern Ireland and the Republic of Ireland. This project aimed to tackle the health, climate and financial harms associated with the use of multiple medicines through innovate collaborative pharmacist-led medicines reviews.

Key findings from **the evaluation** include:

- 82% of interventions were clinically significant, while 4% of interventions potentially prevented major organ failure or significant adverse drug reactions
- the appropriateness of medicines improved in 92% of reviews, with an average reduction of one medicine (from 12 to 11)
- economic benefits to the wider healthcare system were identified, with direct medicines cost savings of £13,100 and a potential total of £168,800 savings from avoided healthcare resource usage per 100 reviews
- patients reported better understanding of their medicines, improved adherence and experienced less harm
- an average of 7.4 Quality-Adjusted Life Years (QALY) were gained per 100 patients

iSIMPATHY has set a blueprint for undertaking reviews for people taking multiple

medicines and will have implications for practice and environmental sustainability across NHS Scotland - find out how to do these **on Turas.** There is work already underway to embed the successful models used by the project in medicines reviews and Patient Reported Outcome Measures which gather views of people using services.

Our food

Climate has a profound impact on our food supply. Changes in temperature and precipitation patterns can affect crop yields and livestock productivity both here in Scotland and abroad. Extreme weather events like droughts, floods and storms can damage crops and infrastructure, disrupting food productions and distribution. All of this can increase the costs of production and the price people pay for food. Increasing food prices impact most on our communities who are already struggling to make ends meet. An inability to buy healthy food has an adverse impact on our health and wellbeing.

The biodiversity of our natural world is one of Scotland's greatest assets. We must look at ways in which we can better understand the impact of climate on our food and the importance of our connection with nature.

I am adding my voice to the need for a fundamental shift in our society's relationship with food. Our diet needs to move towards healthy food habits that consider water, emissions and land usage. **Good nutrition is the cornerstone of good health** – but agriculture takes up **half of the planet's habitable land** and worldwide food systems are responsible for a **quarter of the planet's greenhouse gas emissions**. Of that quarter, the majority is down to the production of **meat and dairy products**.

On any given day, **86% of adults in Scotland** consume some kind of meat and almost everyone consumes dairy in one form or another. **Food Standards Scotland** modelled the impact of reductions in meat and dairy consumption. It's a complicated picture – diets in Scotland are just not healthy and varied enough to say we can do away with the crucial micronutrients that meat and dairy contain. What we can do is aim for our intake to be less than 70g per day of red and red processed meat. If we can manage this as a society, there will be an estimated **reduction of around 10,000 cases** of Type 2 diabetes over a ten-year period, and a reduction in the rate of colorectal cancer.

We can take a leaf out of **Keep Scotland Beautiful's Pocket Garden** book and inspire a positive relationship with food in the next generation. This project connects children with their food and with nature: a Pocket Garden is a miniature garden that uses edible plants, plants that attract wildlife and that reuses something which would otherwise have been thrown away.

Pocket Gardens

Staff and pupils at Firpark Primary School in Motherwell produced a "Fairy Herb Garden," last year, celebrating the hard work of NHS staff. All the plants in the garden are edible and are being used to make healthy meals.

Firpark Primary School's **Fairy Herb Garden** – A Celebration of Our NHS

The benefits of children and young people eating well cannot be overstated. In every culture, food is a vehicle for connection, and **Community Food Initiatives North East (CFINE)** takes this idea to heart. This is a truly inspiring third sector organisation working in the North of Scotland that uses affordable locally sourced fruit and veg as an opportunity to have human conversations. Making it easy to access healthy food allows their staff and volunteers to ask: "What else is going on that brought you to us? And can we help?"

This local team "knows what's out there" to help disadvantaged, vulnerable and low-income families and communities to live the lives they want to live by supporting access to education and work. This approach, which starts with finding out what matters, then working together to find solutions, is something that I feel we need to see more of.

Our role as anchors in our communities

We must achieve a culture of stewardship within NHS Scotland, where resources are safeguarded and responsibly used to provide environmentally sustainable healthcare. Care and caring are fundamental to what we do. We should be thinking about the triple focus of improving outcomes for the people we care for while reducing environmental impact and ensuring the sustainability of our services – people, planet and pound.

The communities which we serve, and are often a part of, can help us tackle the planetary crisis. NHS Scotland's **anchor institutions** are driving positive change across our society. Our healthcare service is made up of large organisations which have significant presence in local communities. This presence – anchored in place – gives them significant power to distribute wealth and assets within our communities through deliberate decisions to recruit and procure locally, and to ensure land and assets are used to the benefit of the local community.

Our systems are built on a model of continuous consumption and this leaves us vulnerable. **By deliberately choosing environmentally friendly options** while supporting our local communities, decision-makers in our anchor institutions can work towards a **wellbeing economy** in concert with people, equity and the planet.

Places for people and planet

With **278 hospital sites and buildings** alone in Scotland, NHS Scotland owns a significant amount of land and buildings. Land and assets can be made available and used in ways which benefit local communities. This is a key way for the NHS to boost local social, environmental and economic wellbeing.

GP surgeries are time-tested assets in every community and will be pivotal in our move towards a greener and more sustainable health and care system. **Greener Practices** is a network of GPs leveraging their passion for the environment through practical, local action on sustainability in Primary Care and the community. Colleagues in Dundee have shared their story of greening with their local community:

Greener Practices in Dundee

Douglas Medical Centre in Dundee teamed with local government, NatureScot, academia, the arts, the third sector and a local school to create, nurture and enjoy a **Wee Forest** – a tennis court-sized, densely-planted and fast-growing, native species-rich woodland in urban Scotland, nurturing citizen science and volunteering.

Dundee City Council provided seven raised beds to get going and **Scottish Water** provided water butts to harvest rainwater from the surgery for watering the garden areas.

Greenery flourishing in Douglas Medical Centre's Wee Forest

They are putting the space to good use – collaborating with **RockSolid Youth Project** to develop a community gardening group, growing vegetables for the Community Larder, sharing ideas with Claypotts Primary School for the adjacent plot, working with the local **Men's Shed** to create an outside seating area and, last summer, **Art at the Start** came along once a week to run outdoor art classes for preschoolers.

The power of community and the privileged role health and care professionals hold in this community have created a special place for wellbeing and connection – an asset to people and an asset to the planet.

Strengthening local communities

Providing good quality and stable employment can address health inequalities and the social determinants of health. This includes supporting people who are furthest from the labour market into employment, ensuring staff have opportunities to grow and progress throughout their career.

NHS Scotland is Scotland's biggest employer – a community of **more than 180,000 people** that make up 7% of all people in work in Scotland. We have huge power as a community and can leverage our connections for local benefit. The NHS Scotland **Community Benefits Gateway** is helping to deliver community benefit support to local Ayrshire charities, including equipment, repairs to buildings, assistance to build community facilities, training support or advice and much more.

Community Benefits Gateway in action

Last year, 25 Ayrshire community need requests were registered on the gateway and NHS Scotland and NHS Ayrshire & Arran suppliers have supported the delivery of a number of community benefits.

The Ayr Housing Aid Centre asked for assistance to replace and upgrade their headquarters' ageing IT equipment. NHS supplier Hewlett Packard supported their request by reviewing the centre's IT equipment and providing advice on upgrading the equipment. They put the charity in touch with the **Edinburgh Remakery**, an environmental social enterprise which champions the circular economy refurbishing unwanted electronic devices and passing them on to be used again. Edinburgh Remakery donated modern specification refurbished IT equipment to Ayr Housing Aid Centre. The new modern up-to-date refurbished computer equipment has greatly improved the centre's computing capacity and efficiency at a vastly reduced cost.

This is a great example of organisations working together to support the wellbeing of local communities.

Supporting local businesses

NHS Scotland purchases **£2.5billion worth of goods** and services each year from around 8,000 suppliers. By sourcing and procuring locally, with organisations that work ethically and sustainably, NHS boards can help bring wealth back into the community.

NHS Ayrshire & Arran has taken this message to heart – working with **214 local suppliers** and **increasing local procurement spending by 36%** in just a year to more than £13million. This focus on local procurement is supporting local suppliers and generating wealth in the local community. NHS Ayrshire and Arran are also **supporting small and medium enterprises** by increasing spend from £53million in 2022 to £69million in 2023.

Wellbeing Economy Governments partnership

In the face of increasing pressure on public services and funds, traditional approaches to economic growth are deepening inequalities in our society, while limiting our ability to respond to the climate crisis. A new approach, where the economy serves people and planet first, is needed.

As a founding member of the **Wellbeing Economy Governments** partnership, Scotland has ambitious plans to reshape our economy into something fairer and greener. To effect this change the aspirations of all sectors including health and care must align. Our communities are at the core of sustainable change. Further radical action by our anchor institutions and local and global communities is needed.

We are making excellent progress with the development of our anchor institutions to enable the people in our communities to flourish. Our anchor institutions are already modelling success – like investing in **community polytunnels for fresh vegetables** by **NHS Orkney**. We must continue to find ways to maximise our impact on local health and wellbeing, and meaningfully deploy our significant power, including by providing more employment opportunities for local people and buying more often from local suppliers.

Imperial College Healthcare NHS Trust in London is using their **Health & Equity Framework** to help to join the dots between initiatives already underway and, importantly, to spot and address key gaps. They are attempting to get the right balance between actions to improve equity of access, experience and outcomes for the people they care for – not only in their core activities (clinical care, research and education), but also those that contribute to wider efforts to improve health and to reduce inequalities due to social determinants of health (such as employment, housing, literacy levels and structural racism).

Developing a sense of connection to the local community can be difficult when starting a new job. Dr Dominique Allwood, CMO at **UCLPartners**, recently shared a project she is leading where new NHS staff members are invited to a walking tour around the community they serve, and encouraged to spend time in local cafes and businesses to get an understanding of the lives of the people living there. This is an innovative and very human idea. Perhaps we might think about taking a similar approach in Scotland?

A future where we flourish

The planetary crisis is the single biggest threat facing our collective wellbeing across the world. As health and care professionals, we have a duty to practise sustainably, to use resources wisely. We must leverage our expertise, insight and humanity to help set the natural world on the road to recovery.

But progress can be slow, and action is not keeping pace with aspiration or with need. We must accelerate our efforts towards a more sustainable system that will benefit the people we care for, our population and our planet.

We must stop using resources when we don't need to, especially single-use equipment, and we must remake what we can and recycle the rest. We must identify and halt wasteful and futile care that makes no difference to the lives of the people we care for. The continuing consumption of resource without benefit and that results in planetary harm will affect those who are from our disadvantaged communities the most, and only increase inequity.

To fully tackle the planetary crisis, we must continue to collaborate and strengthen our links with industry and the third sector whilst developing our pivotal role as anchors within the communities we serve. By understanding their needs in their place, we can provide care and outcomes that matter to them – ensuring our communities and our planetary health prosper.

Chapter 3:

Taking Care of Progress

"It's the 50th anniversary of the Chief Scientist Office, so let's talk about innovation – and why we need to grasp the innovation revolution now.

The most satisfying thing for me is taking discoveries, new things, from bench to bedside for the benefit of the people we care for – this is my passion. I want it to be your passion too – innovation, science and technology applied to your clinical arena."

Professor Dame Anna Dominiczak
Scotland's Chief Scientist for Health
Regius Professor of Medicine at the **University of Glasgow**

Introduction

Research and innovation are essential to support sustainable healthcare. They help refine and validate new technologies, techniques and treatments and foster collaboration between healthcare professionals, scientists and patients to drive improvements in care and outcomes.

Scotland has been at the forefront of medical developments, and our NHS is seen as a world-leader in healthcare quality and research. We continue to build on our successes to meet the changing needs of the people of Scotland.

In this chapter I celebrate the 50th anniversary of the Chief Scientist Office (CSO), research and innovation in Scotland and how they continue to help the way we care, and the people we care for, to flourish.

Looking back at the past decade of CSO achievements

2023

CSO **celebrates 50 years** of supporting research, development, and innovation across Scotland

Partnership with **TechScaler launched** to boost health innovation and link business and clinical expertise

2022

CSO is part of a consortium of funders granting more than **£70 million to Health Data Research UK (HDR UK)** to accelerate trustworthy access to health data

Accelerated National Innovation Adoption (ANIA) pathway launched to deliver a once for Scotland approach to the identification, assessment, and adoption of innovative technologies

The CSO **Innovation Academic Fellowship Scheme** launched to help develop future innovation leaders within the NHS

The CSO joins leading organisations across the UK in the launch of the **Shared Commitment to Public Involvement** in health and social care research

2021

Precision Medicine Alliance Scotland (PMAS) funding call launches - a Programme for Government commitment to support research in precision medicine

Scotland joins other nations in the launch of a new **UK vision for clinical research** to create a patient-centred, pro-innovation and data-enabled clinical research environment

2020

Scotland's research and development community plays a critical role in **responding to the COVID-19 pandemic,** enabling and delivering over 200 COVID-19 studies

National network of CSO innovation hubs (**North**, **South**, **West**) to enable innovative solutions to be tried out in a real-world environment and ensure they are fit for purpose – clinically, financially and operationally – before being brought into wider use in NHS

2019

2017

CSO is one of the founding funders of the **UK Prevention Research Partnership** – supporting research into the prevention of non-communicable diseases to improve population health and reduce health inequalities

2015

The CSO Strategy – **Delivering Innovation through Research** – is launched at the NHS Research Scotland conference

The Scottish Genomes Partnership, a major Scotland-wide research programme launches to explore how our genes are involved in health and illness

We can all be **innovators and improvers** by taking the best of science, technology and new techniques and transforming them into care and outcomes that matter. Improving and innovating must be central to the way we care. It sits at the core of **Realistic Medicine**. We must embrace innovation if we are to deliver **Value Based Health and Care**.

Scotland values research and innovation

For centuries, we have been innovators – educators and philosophers, technicians and scientists, nurses and doctors and the whole spectrum of colleagues who carry, promote and advance health and care in Scotland.

Our **National Innovation Strategy** pitches innovation as our forward-thinking and outward-looking obsession and I could not agree more. It is powering our **Economic Transformation** into a wealthier, fairer and greener **Wellbeing Economy**. And we know that it can change and save lives. I was not surprised to hear that **nearly two thirds (64%)** of our colleagues consider themselves innovators – and, importantly, feel they have the ideas we're looking for to safeguard and improve our NHS. I am extremely encouraged by this.

Research is vital in delivering care that matters. It sits at the heart of evidence -informed practice. Indeed, the **General Medical Council** now advises that we should all consider opportunities for research and let people know we can support them if they themselves want to participate in research. In doing so we can collaborate with the people we care for and make a real and positive difference to the health and wellbeing of Scotland. And we know that society wants to make a difference because over 300,000 people have registered for **SHARE – The Scottish Health Research Register and Biobank**. I was delighted to hear that we have such an enthusiastic movement of people supporting medical science across the country – and know that they will welcome **even more volunteers**.

We have no end of home-grown powered-by-people initiatives, like **Generation Scotland**. This collection of studies, looking at the health and wellbeing of over 7,000 families in Scotland, is a true collaboration between the Chief Scientist Office, NHS Scotland, researchers in four of our great universities (**Aberdeen**, **Dundee**, **Edinburgh** and **Glasgow**) and the communities they serve. Family studies like this are foundational to managing risk by helping us understand how heritability shapes us and influences our health.

4.9 million people across the UK live with diabetes – 90% of whom have **Type 2 diabetes**. In recent years, there has been a **rapid rise** in under-40s in the UK diagnosed with Type 2 diabetes. This has a huge impact on these individuals, their families and the health and care systems supporting them.

Analysing changes to DNA in the blood can help us predict who these people are going to be – and this can tell us who needs the most support to avert the onset of diabetes before problems develop. This is the **groundbreaking finding** of Generation Scotland's **recent study**.

Scientists looked at the influence of these changes – known as DNA methylation – alongside other risk factors in nearly 15,000 volunteers to predict the likelihood of developing the condition years in advance of any symptoms developing.

The findings could help us identify those most likely to develop Type 2 diabetes – and put the targeted support in place to nurture a healthier lifestyle. This is how we can use innovation to manage risk and reduce the huge impact of the issues that are linked to Type 2 diabetes – including heart disease, kidney disease and dementia.

This proof-of-concept means similar approaches could be taken for other common health conditions – generating broad health predictors from a single blood or saliva sample. But **Generation Scotland** needs you to help – the more people that join these studies, the more precisely we can identify these signals and help delay or prevent the onset of diseases as we age. The **Next Generation** is recruiting families now!

I often talk about the need to work in partnership with the people we care for and research should be no different. Empowering people to play an active role in our vibrant research community, whoever and wherever they are in Scotland, means meaningful inclusion. This is the understanding that their individual history, both biology and biography, will lead to better research and, down the line, better outcomes.

Our research and innovation landscape must also represent and reflect the diversity of our society if we are to achieve outcomes that matter.

The more we understand about the biology and biography of the people of Scotland, the greater scope we have to tailor healthcare to the individual. Scotland is the home of **Precision Medicine** – the opposite of a one-size-fits-all approach to healthcare. This is a careful approach to care - powering earlier diagnoses, targeted treatments and prompt interventions. The right plan, and the right treatment at the right time, will increase our chances of delivering careful and kind care, as well as the outcomes

that matter.

Here are just a few examples of the cutting-edge Precision Medicine innovations in Scotland:

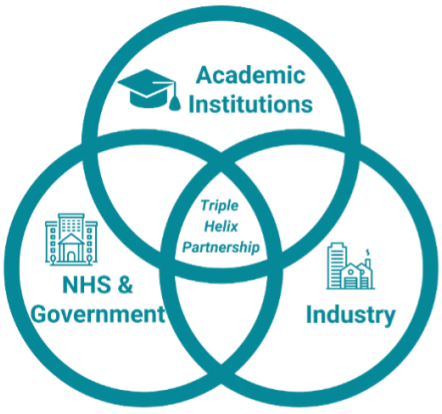
Precision MS
Integrating precision metrics of brain health into early treatment of multiple sclerosis.

iDiabetes
Tailoring diabetes treatments through enhanced testing and sophisticated analysis of health data.

PRaCTicAL
Accelerating the translation of precision cell therapies for the liver, from the lab bench through to adoption in NHS Scotland.

TRAITS
Enabling time-critical decisions in critically ill patients presenting to emergency departments and Intensive Care Units throughout Scotland.

Triple Helix and the Discovery – Translation – Adoption continuum



Triple Helix Model

A crucial piece of the puzzle is the unified ecosystem that innovation needs to flourish. We have a vibrant life sciences sector in Scotland, contributing significantly **to the economy**. We have created a continuum between discovery, translation and adoption to capitalise on this, ensuring healthy lives and a sustainable system. I am pleased to share with you our unified efforts to develop a whole-system approach across Scotland, a bench-to-bedside pathway for research, development and innovation. This is already helping to deliver transformative changes to our ways of working.

Central to the success of this ecosystem is our forward-thinking and collaborative approach – academia, the NHS and industry working together, driving change and sustaining success for the benefit of the people we care for.

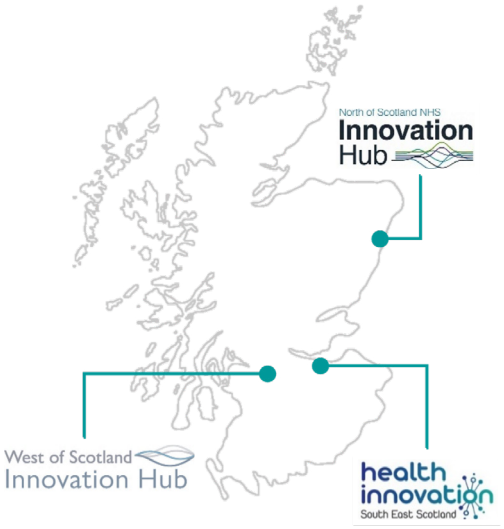
Discovery

Our academic pedigree, of which we are rightly proud, is led by our higher education sector. The **Research Excellence Framework**, the UK's peer-review process for assessing quality of research in higher education providers, reported that each of Scotland's 18 universities is involved in "**world-leading**" research – and 86% of their research output is internationally excellent. Our great universities, ancient and modern, are fuelling our revolution in health and care. Long-term thinking places discovery science, the earliest explorations of what might be, at the core of future success.

Discovery, by its nature, is outward-looking and open. We should actively seek inspiration beyond the traditional sources, which will give us the best chance of achieving outcomes that matter. We all have networks – professionals, peers, friends – and we can tap into these human connections to find out what works elsewhere and drive local innovation.

Translation

Translation, or taking scientific discovery to the bedside for patient benefit, is the next step. I am proud of our national network of CSO-funded Regional Test Beds which are translating discovery science into reality and improving the lives of those we care for. Our three hubs – **North**, **South East** and **West**, bringing universities and NHS Boards across each region together and fostering practical connections with the life sciences industry.



(Above) Map of Scotland with locations of innovation hubs

I'd like to share an example of game-changing innovation from the hubs which is already making a positive difference to the lives of people in the North of Scotland:

Grampian's Radiology Assist Chest XR Evaluation (GRACE)

This artificial intelligence-driven decision support tool has been a collaborative endeavour involving the Centre for Sustainable Delivery, the Scottish Health Technologies Group, NHS Grampian and Annalise.ai. The tool uses sophisticated pattern recognition to identify possible issues on Chest X-Rays (CXR).

Harnessing this technology, NHS Grampian launched their Rapid Lung Cancer Diagnostic Pathway – with all CXRs across the NHS Board rapidly analysed and flagged if suspicious for lung cancer. The 12-month trial found a reduction between the CXR to CT report time of 22 down to 10.1 days, and the proportion of people with lung cancer meeting the 62-day treatment target increased from 52% to 100%.

This means more people with lung cancer will get an early diagnosis – and treatment can be started earlier when it has a better chance of curing the disease.

It's tools like this – pushing time-consuming processes to the background of care – that will help clinicians work at the top of their game rather than working at the top of their capacity. There are more initiatives like this in the pipeline, and I hope these will support my colleagues to provide the high-quality care that only their expertise can deliver. However, across the broad spectrum of cancer disease, we must also continually appraise the effectiveness of these new technologies, to ensure that their introduction does not simply result in the overdiagnosis of indolent lesions that otherwise would not have impacted on health outcomes. Developing these insights are important as well for a harm-free, sustainable healthcare future.

Adoption

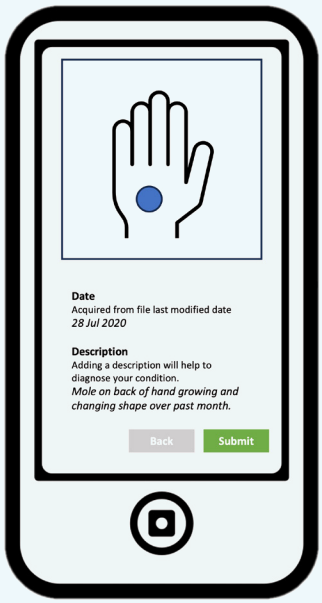
The NHS was founded on the principle of **universalising the best healthcare**, but more than 75 years later, we struggle with this concept. Widespread adoption of innovative practice has **long been a stumbling block**. In response to competing needs, philosophies and priorities, the different parts of our system can sometimes default to siloed thinking and the successes we see up-and-down the country, delivering better quality and better value care, are often confined to the departments or NHS Boards that pioneered them. This approach needs to change and this is why the **Accelerated National Innovation Adoption** (ANIA) pathway exists.

ANIA is a critical component of our end-to-end innovation pathway – the part that makes the best ideas, the highest impact products, and the most evidence-informed interventions a reality for all the people we care for across the country. Through ANIA, we can ensure the quick and safe rollout of tech innovations – minimising waiting and maximising outcomes that matter.

Rapid adoption of proven innovations is most welcome and much needed.

Digital Dermatology

Digital Dermatology will introduce a standard and straightforward way of capturing a series of triage-quality skin images at the point of referral. These images are then securely transferred, as part of a person's referral to Dermatology services.



The use of digital images as part of the referral enables, where clinically appropriate, senior dermatology decision-makers to triage, diagnose and assess skin conditions without the patient being physically present. This can improve productivity whilst still providing the same level of access to high quality care, clinical outcomes and patient satisfaction.

This is an innovation that values people's most precious resource, their time, and could be transformational in the early diagnosis of skin cancers like melanoma. Streamlining a process like this will benefit patients by reducing waiting times and benefit the planet by reducing the need for carbon-intensive travel. And we mustn't forget that an advantage of these innovations is to free up our time too – so that we can concentrate on the business of caring.

Adapted depiction of the Digital Dermatology App

Crucial to the success of this project, and anything large-scale and forward-thinking that we hope to do, is a more joined-up data environment.

Joined-up thinking

While the COVID-19 pandemic tested the limits of our systems of care, it also presented an opportunity to show the world the value of a connected and enabled National Health Service in a time of crisis.

Scotland's research community was among the first in the world to produce comprehensive whole-country COVID-19 infection mortality data and followed this with near real-time data on vaccine effectiveness. This was possible because of our unique position – a relatively small population, with world class healthcare infrastructure and academia.

EAVE II

This enhanced surveillance study, led by researchers at the University of Edinburgh, was a global leader in tracking the impact of the COVID-19 pandemic and provided the first real-world data on **vaccine effectiveness**. The research team managed this in near real-time across Scotland using a rich dataset of all 5.4 million people registered with a GP – around 98% of the Scottish population.

The impact of EAVE II has been profound. EAVE II has **directly influenced** the decision-making of the Scottish and UK Governments, including when to ease social distancing restrictions.

Several countries around the world – including France, Canada and Germany – altered their policy positions following publication of EAVE II findings, such as making the Oxford-AstraZeneca vaccine available to older people. This shows the outsize impact we can have on people's lives, not just in the UK, but around the world. This research tells us who would be more or less likely to benefit from a vaccine – helping us, as clinicians, manage risk and provide more personalised care.

EAVE II has shown, unequivocally, just how effective and **safe** COVID-19 vaccines are – while demonstrating how Scotland can rapidly perform critical whole-population cohort studies in a crisis.

My colleagues in academia have told me that the landscape feels very different as compared to the height of the pandemic, and we may have lost some of the urgency and agency we once had with large-scale studies like this. The biggest barriers to realising this ambition seem to be related to data and information governance and

often in the interpretation of this.

We must maintain this world-leading capability if we want to deliver outcomes that matter. The pandemic has shown that Scotland has the potential to be a world-leader in using health data to inform public policymaking, at home and abroad, with huge opportunity in using this to inform a precision approach to population health.

Here's to the next 50!

We are all aware of the pressure on our health and care system and we know some of the big challenges coming our way. There are lots of difficult calls to make, but we cannot afford to move away from our pursuit of research excellence and, especially, our need to innovate. This is how we ensure that we improve and deliver careful, kind, more sustainable care.

Innovation is everyone's business – and we know that the greatest innovations spring from a place of passion and expertise. That's why I am pleased to be supporting a suite of fellowship opportunities, including **CSO Innovation Academic Fellowships**. Fostering the talents of our health and care professionals through these fellowships will help strengthen our innovation culture, teach how to solve real problems through service transformation and, ultimately, improve the quality, efficiency and sustainability of health and care delivery in Scotland.

Digital technology and artificial intelligence are not replacements for human care – they are merely tools to support us in our role providing the careful and kind care that matters. Artificial intelligence, machine-learning and technology-enabled care have a role to relieve the friction in our system and help us make time for the human connections at the core of our practice.

I am proud of the research that Scotland has given the world – the lives it has improved as well as the lives it has saved.

I am certain that CSO will remain firmly in the vanguard of a collaborative, dynamic and caring health and care system, embracing the future on behalf of Scotland's people, and it is imperative that it continues to receive the support to do so.

Chapter 4:

Our Purpose: The Health of the Nation

"If we want a bright and sustainable future, we must invest in the building blocks of a healthy population and the mechanisms that safeguard our environment and wellbeing."

Dr Fatim Lakha
Consultant in Public Health Medicine
Public Health Scotland and NHS Tayside

Health and wellbeing are **fundamental** to a flourishing society. However, after decades of improvement, Scotland's health is now worsening. In **Chapter One** and **Chapter Two**, I shared some of the solutions addressing this issue. In this chapter, I will set out in depth the main factors driving inequalities in our society.

The **Scottish Burden of Disease** study predicts a 21% rise in reported cases of key diseases with cancers, cardiovascular disease and neurological conditions making up two-thirds of the projected increase. Many of these cases are preventable.

While NHS Scotland provides universal access to care it is not necessarily equal nor equitable. By "equal", I mean giving the people we care for the same resources or opportunities while, by "equitable", I mean going further to address the fact that some people or groups may need additional support, due to their circumstances, to get to the same place.

These challenges are deeply concerning but they are not insurmountable if we approach them resolutely and collectively, with empathy and action for those who experience inequality.

We know that most of the fundamental influences on changing health inequalities lie outside the health and social care systems. A wide range of factors impact the pursuit of a healthy life, and affect the underlying determinants of health, including food and nutrition, good housing, safe and healthy working conditions and a thriving natural environment.

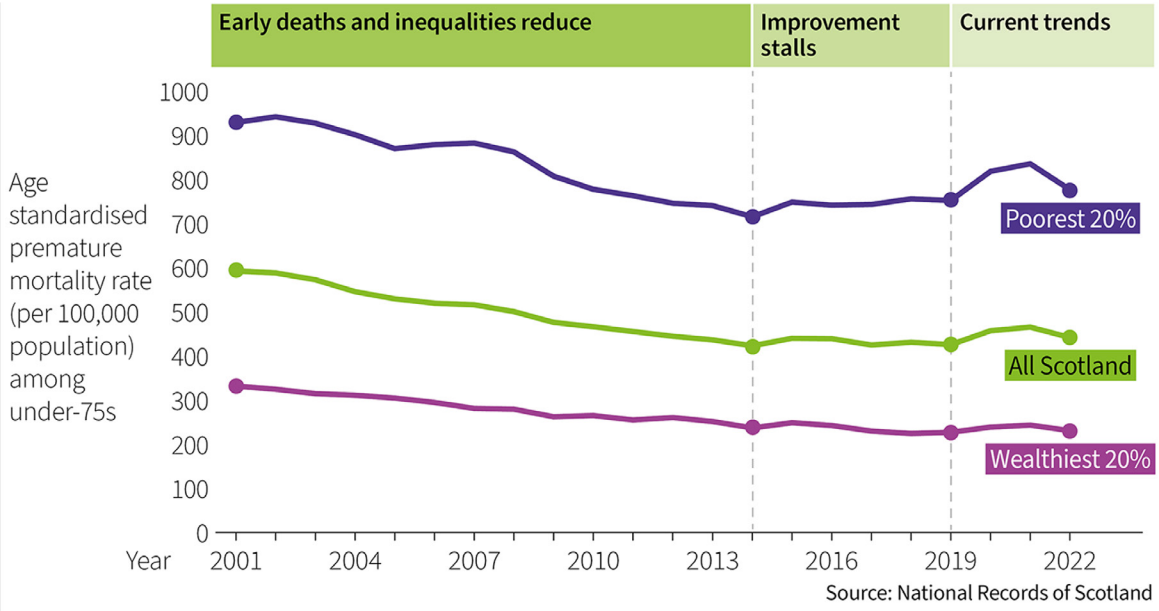
To achieve a healthier, more equitable Scotland, greater focus should be placed on promoting good health and preventing health conditions from developing in the first place using the wider concept of care that we discussed in **Chapter One.** The pursuit of healthy ageing must begin at the earliest stages of life.

In the last two decades Scotland has implemented world-leading public health legislation, including **smoke-free enclosed public places**, **smoke-free prisons** and **minimum unit pricing** for alcohol. These policies are estimated to have saved lives, yet tackling health influencing behaviours alone is not sufficient to address the fundamental causes of inequality and poor health. We must address the wider determinants of health.

Life expectancy and mortality

For many decades life expectancy in Scotland had been increasing, influenced by improvements in working and living conditions, changing habits and medical advances. However, since the early 2010's Scotland's health gains have stalled, and many measures of illness are now worsening.

There has been a change in the overall trend in life expectancy since the early 2010's, and some segments of the population have fared worse than others. The difference in life expectancy between the most and least deprived areas narrowed during the 2000's but then widened from 2011. This is because the least deprived areas have experienced a slowing in the rate of improvement while those living in the most deprived communities have experienced either a **stalling (men)** or a **reversal (women) in improvement**.

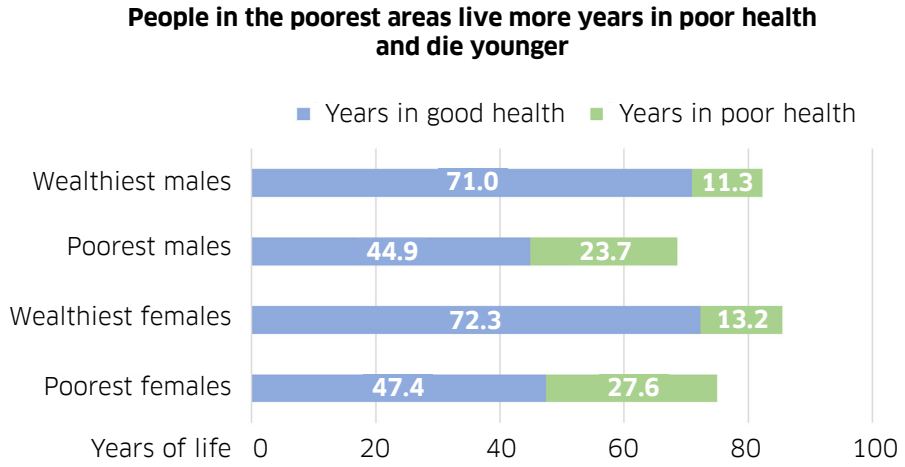


This change has happened in all parts of the UK. However, of the four UK nations, Scotland consistently has the lowest estimated life expectancy at birth for males and females – and is **amongst the lowest** in Western Europe. In 2020-22, life expectancy in Scotland overall was 76.5 years for males and 80.7 years for females.

Alongside these concerning trends in mortality and life expectancy, people are also spending more of their life in ill health, and again **the impact is greatest in those living in the most deprived fifth** of the population meaning that with increasing levels of deprivation, people are living a **greater proportion of shorter lives in poor health**.

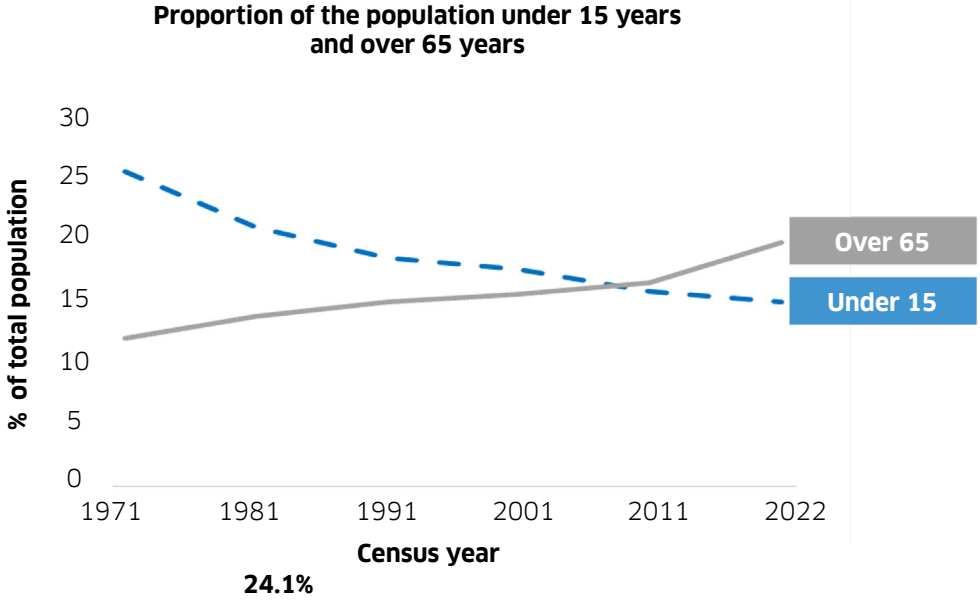
Males living in our poorest areas live an average of 14 years less than males in the most affluent areas and experience poor health for 26 years longer, whilst for women it is 10 years and 25 years respectively.

On average, by the time people in our poorest communities have died, people in our most affluent communities are only just beginning to experience ill-health.



Ageing population

Although recent life expectancy has stalled, the proportion of older people is increasing whilst the proportion of younger people is decreasing. In 2011 the proportion of people aged 65 or over was similar to the proportion who were under 15 years – 17% and 16% respectively. **By 2022** that had shifted, and 20% of people were aged 65 years or over, whilst those under the age of 15 had dropped to 15%.



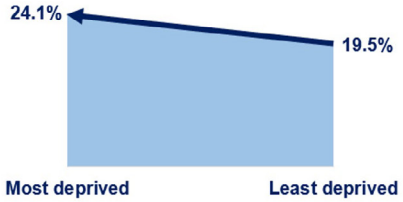
Multimorbidity

With older age there is an increasing likelihood of experiencing two or more long-term physical or mental health conditions. Multimorbidity is also **socially patterned** with a **much higher prevalence in** **d are**

Living with multiple conditions is **more common** in Scotland's most deprived areas

Overall, 1 in 4 people in Scotland live with two or more health conditions

Multimorbidity begins some **10-15 years earlier in the most deprived areas**, compared with the least. It is associated with reduced physical and cognitive function, increased health and social care resource use and a higher risk of mortality.



There is some evidence that patients with multimorbidity experience **gaps in continuity of care** due to poor coordination across multiple health professionals and this can then widen inequalities further.

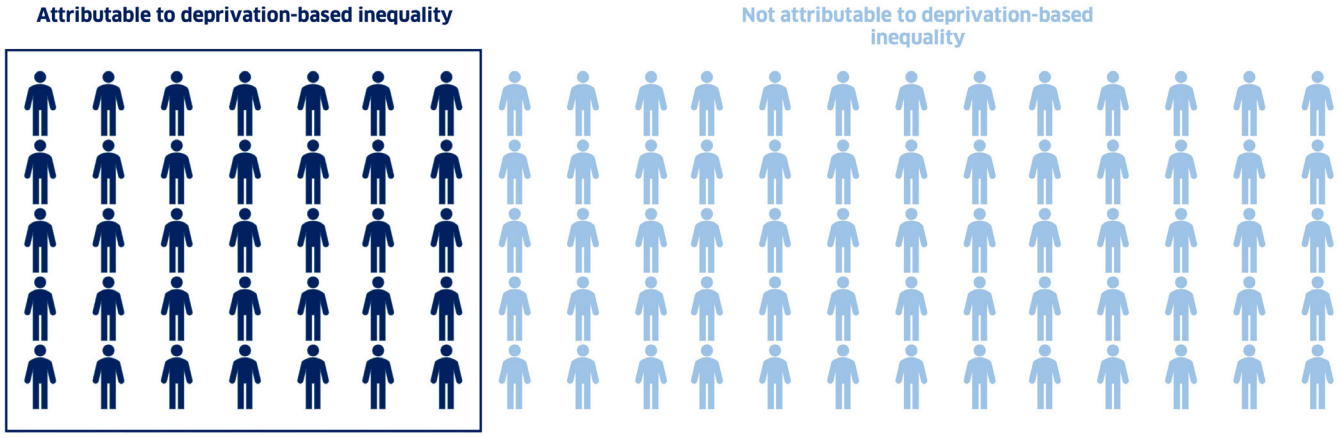
Disease conditions making the largest contribution to poor health and premature death in Scotland

International data shows that Scotland has a higher prevalence of largely preventable, non-communicable conditions, relative to comparable European countries.

When grouped together, the conditions which made the largest contribution to poor health and premature death in Scotland in 2019 were cancers, cardiovascular diseases, neurological disorders, mental health disorders and musculoskeletal disorders. These five grouped causes accounted for **63% of the burden of preventable disease** in Scotland in 2019.

This burden is not borne equally across the population. The overall disease burden was double in the most deprived fifth of the population compared to the least deprived fifth.

Socioeconomic deprivation is a key driver of poorer health outcomes and **over a third of health loss** from early death and ill-heath is attributable to deprivation-based inequality.



In Scotland, 35 out of every 100 years of life lost to ill-health and early death are attributable to deprivation-based inequality. This is avoidable.

Mental wellbeing

A number of reports have highlighted the increasing trend in poor mental health and wellbeing of the children and young people of Scotland, including the Scottish Adolescent Lifestyle and Substance Use Survey (**SALSUS**).

The SALSUS indicates an increasing trend in poor mental wellbeing between 2013 and 2018 from 30% to 38% and it is likely that the prevalence of mental health problems has increased further during the COVID-19 pandemic. Anxiety and depression are among the leading causes of ill health and disability in adolescents.

Inequalities have a great impact on mental health, with associations between mental health and gender, **age**, ethnicity, social position, deprivation and being looked after/ accommodated. **Older adolescents (S4 pupils) have worse mental health** than younger ones (S2 pupils) and **girls, in particular**, those at age 15, experience poorer mental health than boys.

Adolescents and young adults from the most socioeconomically deprived areas were **twice as likely** to die by suicide compared to the least deprived areas.

Prevention of mental health conditions and promotion of mental wellbeing need to start at the beginning of the life course as **50% of lifetime mental health problems start by the age of 14** and 75% by the mid-20s.

Poor mental health in childhood tracks into adulthood and can affect life chances, including academic attainment, employment opportunities and the formation of relationships further perpetuating inequalities. Adults who report four or more **adverse experiences in childhood** are more likely to report smoking, harmful drinking, obesity and cardiovascular disease.

This demonstrates the importance of actions to support parents, including prioritising adequate incomes for families with children, promoting parental mental health, **addressing time poverty** in family life and enabling nurturing caregiving, to create

positive early life environments and experiences for all children.

Obesity

Whilst at the population level childhood obesity has remained at around **18%**, this figure hides worrying trends within different socioeconomic groupings. The risk of obesity has been increasing in the most deprived areas and decreasing in the least deprived areas. By 2020, children living in the most deprived areas were **twice as likely** to have obesity compared to those in the least deprived areas.

However, whilst children living in deprived areas are at higher risk of obesity, overall levels of physical activity show that they are **just as active** as their more advantaged peers. This illustrates the negative consequences of other health-harming factors accumulated over the life course, including food insecurity, exposure to poor quality food, low quality green space, targeted advertising as well as time constraints and access to high quality preventative health services and treatment.

Around two thirds (67%) of all adults in Scotland are living **outside of healthy weight parameters** with rates in the most deprived areas persistently exceeding those in the least deprived. Of all **health years** lost in Scotland **one in ten are attributable to excess weight**.

The **stigma associated with obesity exacerbates the difficulties** associated with weight issues – both at an individual level in terms of discrimination and barriers to accessing support – and **at societal level** in terms of attitudes and responses.

Implications of poor health

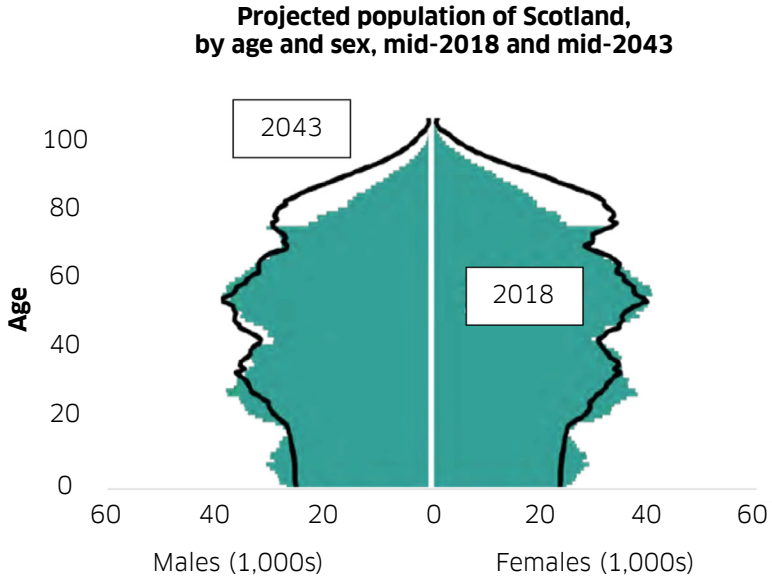
Poor health has implications for individuals, communities, health systems, public services and the economy. There is rising illness among people in employment - from April 2023 to March 2024, an estimated 32.7% of those people aged 16-64 who were economically inactive was due to long-term sickness or disability.

More than a third of those aged 25-64 living in the most deprived areas are economically inactive due to long term sickness or disability.

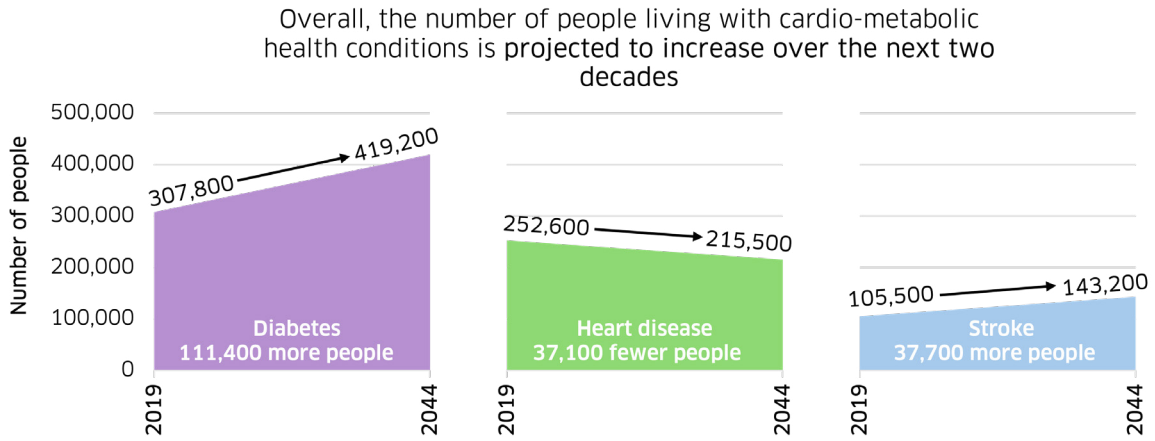
This combination of increased illness burden and rising economic inactivity is having an impact on demand for, and staffing of, health and care services.

Where are we going?

Over the next 20 years, the overall population is forecast to decrease by 1.2%.



However, because of population ageing, the overall amount of poor health and premature death experienced by the population is forecast to increase by 21% over the same period. This predicted increase assumes unchanged levels of morbidity and mortality at each age and is therefore based only on the changing age structure of the population. The largest absolute increases are forecast to be in those aged 65 and above, particularly those aged 65-84 years (35%). This highlights the importance of acting now to create environments that enable people to stay in good health for more of their lives.



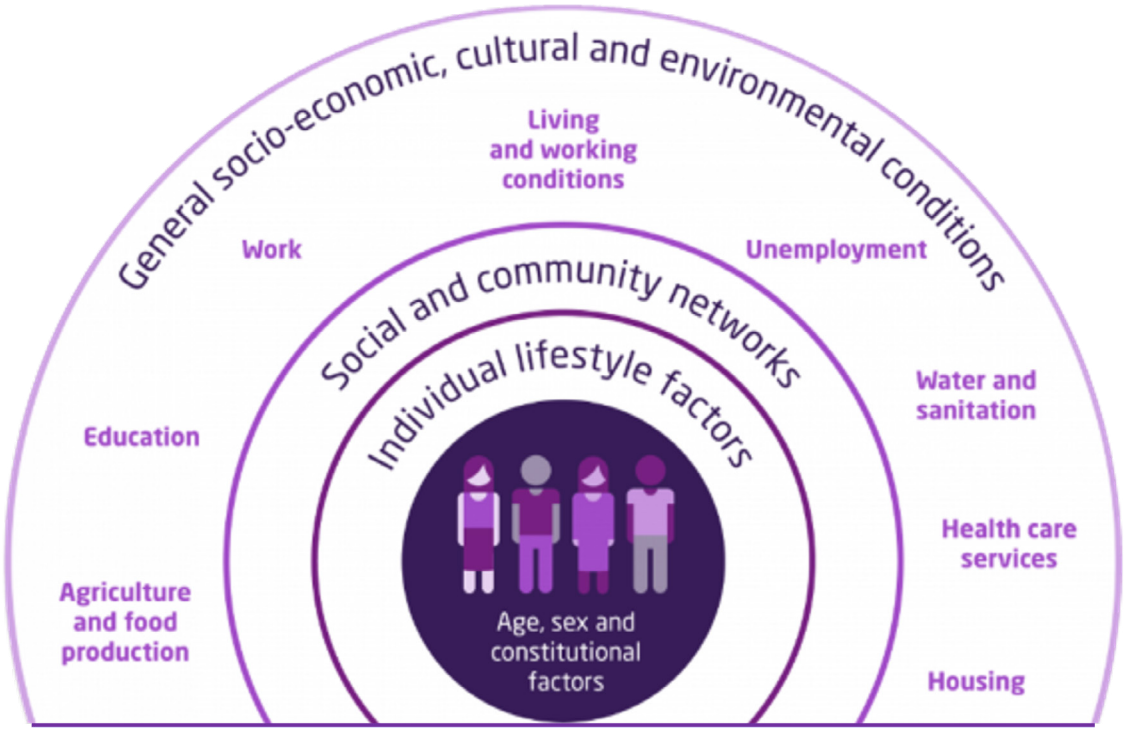
In considering the ageing of the Scottish population, and historical epidemiological trends, the number of people living with cardio-metabolic health conditions is projected to substantially increase over the next two decades. Much of these projected rises are attributed to the increased risks from ageing. These projections are sobering but they are not inevitable and we can change the course of this trajectory.

Increasing levels of poor health in the population will have an impact on the health and social care system. Much of the projected growth in illness relates to conditions which are predominantly managed in primary care and the community. Therefore the impact on these services is likely to be substantial.

Alongside this, the working age population (16-64 years) is estimated to decrease, meaning a smaller workforce overall. Again, this highlights the importance of acting now to create environments that enable people to stay in good health for a longer period of their lives.

What is driving the current direction of travel?

The population's health is influenced by a complex interplay of various factors, often categorised into four broad categories: fundamental causes including social and economic factors, wider environmental influences like the food environment, individual experiences and access to healthcare services.



Factors influencing health, adapted from **King's Fund**

Fundamental causes

Socioeconomic inequalities

The steep and increasing health inequalities reflect significant disparities in income, wealth and power in Scotland. Despite overall economic growth over the last decade, **this has not been distributed equally**. In 2018/20 the wealthiest 2% of households held 18% of all wealth. Wages have stagnated and in-work poverty has increased, so that **1 in 5 working age adults and 1 in 4 children now live in poverty**.

This has been exacerbated by high inflation, causing adverse health impacts through food insecurity, fuel poverty, housing insecurity, transport poverty and reduced social support and interaction.

Marginalisation and discrimination – Intersectionality

The complex interaction between an individual's characteristics, such as their ethnicity, disability, sexuality and religion, and existing societal structures can **contribute to health disparities**.

The importance of better understanding and addressing structural racism was brought to the fore when we saw its disproportionate impact on the health of people from **minority ethnic groups** during the COVID-19 pandemic. Alongside this it is key we also consider intersectionality, which is the complex, cumulative way in which effects of multiple forms of discrimination (such as racism, sexism and classism) combine or intersect to impact a person's health.

Politics and legislation

After the financial crisis of 2008 a number of governments restricted growth in some classes of public expenditure, including public services and social security, as part of an 'austerity' approach that sought to restore fiscal balance after the large interventions made to prevent banks from failing. These policy decisions inevitably had a disproportionate effect on those on the lowest incomes and have been considered by a number of **studies** to have contributed to negative trends in mortality, life expectancy and healthy life expectancy.

Wider Environment

As we explored in **Chapter One**, a healthy diet and food environment are essential for supporting healthy growth and development in children. The wider environment, including commercial determinants of health, place and access to health services, also affect our health.

Commercial determinants of health

Non-communicable diseases (NCDs) are a leading cause of ill health and death in Scotland. Many of these are preventable. Harmful alcohol drinking, tobacco use, physical inactivity, and the consumption of unhealthy diets, particularly of ultra-processed food products, are the **main risk factors for developing NCDs**. Commercial determinants of health are **strategies and approaches of the private sector** that promote products and choices that are harmful to health.

The prevalence of health-harming risks is high, leading to adverse impacts on the population's health:

Smoking	Obesity & overweight	Harmful alcohol use	Drugs	Physical inactivity
Estimated prevalence				
15 in every 100	67 in every 100	22 in every 100	12 in every 100	35 in every 100
Estimated life years lost to ill-health and early death attributable to risks				
17 in every 100	10 in every 100	6 in every 100	3 in every 100	1 in every 100

Place – Movement, resources, space

The places in which people live, work and socialise **also affect their health**.

Low-income groups have **less access to well-maintained parks** or safe recreational

facilities than those in higher income groups. Their neighbourhoods are more likely to lack features that support active travel and less likely to have access to supermarkets and places stocking healthy fresh food.

If we take the example of **transport poverty**, this impacts health in various ways. It can limit access to the building blocks of good health such as good work, training and education; it makes it difficult to access health and care services and it reduces the opportunity for community engagement.

Health and other services

Access to health and social care and the quality of these services is a significant determinant of health and **tends to be worst for those who need it the most**. This phenomenon is termed the '**inverse care law**'; people living in areas of higher deprivation, those from Black, Asian and minority ethnic communities and those from an inclusion health group, for example the homeless, are still most at risk of experiencing healthcare inequalities.

Addressing the causes of low engagement in healthcare, including missingness, is a **prerequisite** for reducing health inequalities and it is important to consider system factors as these have been found to have a stronger influence than patient factors.

What can we do about it?

Good health and ultimately how long we will live is shaped by **a variety of interlinked factors**: social and economic factors; health services; health behaviours; and the places we live and work.

Poverty, discrimination, poor-quality housing, low paid or unstable jobs all impact negatively on people's physical and mental health. Education and skills, close relationships, productive employment, a benefits system that responds to need, debt support and legislation that makes it easier for people to avoid health harming exposures and activities: all have their part to play.

Tackling poverty, discrimination and addressing the widening inequalities in health we face as a nation will require cross-sectoral collective action and whole system working.

Support the building blocks of health

The largest drivers of population health are socioeconomic factors. Investing in building blocks like good quality education and employment, affordable housing, safe public and community transport, a benefits system that is responsive to need, debt support, youth services and community spaces designed with young people in mind, can create personal and community resilience. This will help keep people healthy and prevent increased pressure on health and care services in the future.

Public sector organisations, including the NHS, can commit to developing as **anchor organisations**, which I discussed in more detail in **Chapter 2,** and by adopting a

Community Wealth Building approach to provide good quality employment, ensure investments maximise benefits for local communities, support inclusive enterprises, gain best use of land and property and recirculate wealth in local economies.

Adopt a health-in-all-policies approach across Scottish Government

Many of the drivers of poor health require action across Scottish Government and Community Planning partners. A health-in-all-policies approach means working to ensure policies across all sectors are designed to maximise benefits to health and prevent any risks to health.

This often involves completing a Health Impact Assessment (HIA), a structured process to assess the potential impacts of policy proposals. Public Health Scotland has a **HIA Support Unit** that is working to build capacity for HIA in Scotland.

Take a life course approach

Children have the right to enjoy good health. Children's early experiences have an important effect on their long-term health and wellbeing. Positive early experiences are associated with better social and emotional development, better school performance, improved work outcomes, higher income and higher life expectancy.

On the other hand, adverse childhood experiences – including poverty/material deprivation, abuse or parental substance misuse, mental ill-health or imprisonment – are associated with **poor long-term outcomes**.

Children are not currently getting an equal start in life. **Inequalities emerge early in life**, in the prevalence of low birthweight, early child development concerns and risk of obesity at the start of school. **Poverty and inequality constrain** children's access to the environments they need to thrive. Improvements are possible by investing in high quality support for parents from pregnancy through early years, primary school and beyond to deliver better outcomes in education, health, social behaviours and employment in the long term.

Create a health and care system focussed on equity, prevention and early intervention

To achieve the progress we want to see, greater focus will be required on promoting and maintaining good health and preventing health conditions from developing in the first place.

Embedding **prevention is one of the most cost-effective interventions** the public sector can make in relation to improving population health and reducing inequalities as well as delivering sustainable services.

Recent examples where action has been taken and made an impact include:

HPV vaccine
89% reduction in pre-cancer cervical cell changes from 2008-2014.

Minimum Unit Pricing
Estimated to have **Reduced alcohol hospital admissions** (4.1%) and **deaths** (13.4%) from 2018-2020.

Childsmile
Halved tooth decay amongst children between 2003 and 2020.

Hep C prevention
Will **eliminate the hepatitis C virus** by 2024.

COVID-19 vaccines
An estimated 22,138 **lives were saved in Scotland by COVID-19 vaccines.**

Smoking ban
Reduced admissions for **child asthma** (18%) and **heart attacks** (17%).

The World Health Organization has **compelling evidence** that shows that investing in prevention promotes health and wellbeing and contributes to wider sustainability, with economic, social and environmental benefits. Examples where benefits are seen within just 1-2 years include mental health promotion, promoting physical activity, housing insulation and healthy employment.

Proportionate universalism and inclusion health

We need to ensure services are designed, delivered and prioritised to have maximum impact on health inequalities given the observed trajectory of health outcomes in Scotland. This requires applying a **human rights-based approach** to healthcare so everyone experiences fairness, respect, equality, dignity and autonomy and resourcing across the country according to need.

A recent example of an initiative which is taking both approaches is the Inclusion Health Action in General Practice project. This has provided additional funding to GP practices with high concentrations of patients from the most socioeconomically deprived areas in Greater Glasgow and Clyde to address some of the barriers to providing high quality, accessible, care to those who need it the most.

Themes within the project cover proactive outreach to those patients identified as being a high risk through missing multiple appointments, extended consultations to address the high levels of multimorbidity within the most socioeconomically deprived populations, building community voice to allow co-production of services to meet the

needs of the population and staff training on inclusion health topics to facilitate this.

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Dying in the Margins – Dr Naomi Richards, Principal Investigator; Margaret Mitchell, photographer. This work was supported by the Economic and Social Research Council, part of UKRI (grant no. ES/S014373/1) with support from Marie Curie. Thanks also to Max and his carers for agreeing to share their stories.

Greener Practices network

iSIMPATHY – Alpana Mair, Dr Iain Wilson and Dr Emily Kennedy

Keep Scotland Beautiful and the staff and pupils of Firpark Primary School

Maximising Independence – Marion Ballantyne (Communications) and Ann Harvey (Community Engagement and Activities Co-ordinator, Wheatley Care)

Obesity Action Scotland

Royal College of General Practitioners – Dr Munro Stewart (GP) and Dr James Morton (GP)

Scottish Ballet – Catherine Cassidy (Director of Organisational Culture and Engagement)

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Riaghaltas na h-Alba

This publication is available at www.gov.scot

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St Andrew's House
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ISBN: 978-1-83601-144-6 (web only)

Published by The Scottish Government, August 2024

Produced for The Scottish Government by APS Group Scotland, 21 Tennant Street, Edinburgh EH6 5NA
PPDAS1442606 (08/24)