

Meeting: NHS Highland Board

Meeting date: 30 January 2024

Title: Director of Public Health Annual Report:
Medication and Public Health –
Do the Right Thing

Responsible Executive/Non-Executive: Tim Allison, Director of Public Health & Policy

Report Author: Tim Allison, Director of Public Health & Policy

1 Purpose

This is presented to the Board for:

- Awareness and Discussion

This report relates to a:

- Legal requirement

This report will align to the following NHS Scotland quality ambition(s):

Safe, Effective and Person Centred

This report relates to the following Strategic Outcome(s)

Start Well		Thrive Well		Stay Well		Anchor Well	
Grow Well		Listen Well		Nurture Well		Plan Well	
Care Well		Live Well		Respond Well		Treat Well	
Journey Well		Age Well		End Well		Value Well	
Perform well		Progress well		All Well Themes	X		

2 Report summary

2.1 Situation

The Annual Report of the Director of Public Health for 2023 is presented.

2.2 Background

Directors of Public Health are required to produce an annual report concerning the state of health of their local population. There is no set format for the report and in recent years the reports have tended to focus on individual themes rather than acting as a repository for population health intelligence.

2.3 Assessment

The report for 2023 is brought to the Board of NHS Highland along with a presentation. A link is provided for the full report.

The theme for the report is medication and public health and there is a sub-title of Do the Right Thing. Public Health challenges cannot be solved simply by prescribing medication. There are areas of public health where medication plays a huge role in improving health but conversely it is important to be aware and take action where medication causes harm such as impacts on the environment.

The report presents information about the health of the population of NHS Highland then gives examples of how medication affects public health. The areas selected for this report are not intended to provide a comprehensive picture of the relationship between medication and public health but rather serve as examples of wider themes. The report contains six chapters as follows with key points, it also sets out recommendations:

Demography and health inequalities

- Information on NHS Highland's population is essential for planning health and care services across the life course.
- An ageing population is increasing the demand on health and care services as more people are living with one or more long-term health conditions and with increasingly complex needs.
- Population data from Scotland's Census 2022 will provide a detailed picture of the characteristics of our people and communities, including information on: ethnic group, armed forces veterans, sexual orientation and trans status or history; health, disability and unpaid care.
- Improving the health of our population requires a fundamental shift towards prevention and mitigating the underlying issues that can impact on health, such as poverty and deprivation.

The Environment: How medication can make our environment sicker

- There is growing evidence of the negative effects of medicines on our environment. When medicines are excreted from our body or flushed down toilets or sinks, they can end up in our water environment and soils. They can have negative effects on aquatic organisms and end up in the crops we eat.
- NHS Highland is at the forefront of research and action to reduce the impact of the medicines we use on the environment and is a co-founder of the One Health Breakthrough Partnership ([www.https://ohbp.org](https://ohbp.org)).
- There is something that everyone can do to help reduce pollution of our environment with medicines.

Hepatitis C: How medication is transforming treatment and prevention

- Hepatitis C (HCV) is a blood borne virus (BBV) which can lead to cirrhosis of the liver and hepatocellular carcinoma.
- The management of HCV has been revolutionised in recent years by the introduction of new therapies. This development has played a significant role in the increase in treatment initiatives and the potential across Scotland to achieve HCV elimination.

- The availability of effective treatment that can be taken over a short period of time with few side effects should encourage more people to come forward for testing for Hepatitis C and provide a major step towards elimination of the virus.

Social Prescribing: How an alternative to medication can work

- It is estimated that 20% of people visit their GP with non-medical needs and up to one fifth of GPs' time is spent on issues related to social needs.
- Social prescribing provides an evidence-based potential to complement management of a wide range of health conditions through providing a holistic person-centred model of care to improve health and wellbeing and reduce reliance on medication and health services.
- The social determinants of health play an important role in the development of risk factors for a range of diseases and the health outcomes that people experience throughout life. Supporting people with wider social and environmental issues is important for improving health and wellbeing and reducing demand on health and care services.
- There is promising evidence that social prescribing provides a positive return on investment from between £2.30 and £7.08 for every £1 invested.

Analgesics and Opioids: How medication can have long lasting effects on public health

- There is little doubt that analgesics and opioid use can bring great benefits to individual but there are serious disadvantages as well.
- There are negative impacts of opioid prescribing, particularly the management of chronic pain. Alternatives are available such as social prescribing programmes, psychologically based interventions and physical therapies.
- Leadership and support for the continued implementation of the Medicines Assisted Treatment Standards, and in particular the use of Opioid Substitution Therapy, is vital in assisting individuals with problematic drug use to turn their lives around.

Recommendations for action for both NHS Highland and for partners.

NHS Highland and its partners should ensure that planning addresses the change in demography and ageing population.

NHS Highland and its partners should prioritise tackling health inequalities and the causes of those inequalities.

NHS Highland and those prescribing medicines should prioritise actions which will reduce the impact of medicines on the environment.

Citizens should take up actions which will reduce the impact of medicines on the environment.

NHS Highland work to eliminate Hepatitis C should promote the effectiveness of new medication and so encourage more people to be tested and successfully treated.

NHS Highland should increase the number of health and social care staff who are aware of social prescribing by developing and promoting a social prescribing network and a Directory of Services and by creating targeted messaging through staff and service newsletters, bulletins and social media.

NHS Highland and partners should improve the knowledge and skills of health and social care staff in relation to social prescribing by providing learning and development opportunities.

NHS Highland and partners should improve the infrastructure and availability of social prescribing by embedding link workers in a range of health and social care services and increasing use of the community benefits gateway through public sector procurement and commissioning processes.

Alcohol and Drug Partnership members should support further work relating to opioid and analgesic prescriptions, including needs assessment and development of alternative programmes for chronic pain.

Alcohol and Drug Partnership members should continue to support the delivery of the Medicines Assisted Treatment standards and the increased choices offered to individuals through the Opioid Substitution Therapy programme.

2.4 Proposed level of Assurance

This report proposes the following level of assurance:

Substantial	<input checked="" type="checkbox"/>	Moderate	<input type="checkbox"/>
Limited	<input type="checkbox"/>	None	<input type="checkbox"/>

Comment on the level of assurance

There is substantial assurance that the requirement for the publication of the report is met. Other elements of public health reporting will continue to need further work as will implementation of the recommendations from the report.

3 Impact Analysis

3.1 Quality/ Patient Care

Medication is an important part of both quality and patient care. NHS systems and processes are all affected by this complex topic of medication and board members will want to consider how to “do the Right Thing”.

3.2 Workforce

From a preventative perspective the main workforce recommendation is about increasing awareness of the number of health and social care staff who are aware of social prescribing and to promote a social prescribing network and a Directory of Services. This also has the potential to improve the health of the

workforce through job satisfaction and staff being recipients of interventions. NHS Highland should continue delivering and supporting all staff in adhering to the principles of realistic medicine and safe and effective prescribing.

3.3 Financial

There are no direct financial implications from the paper. A focus on prevention, for example, social prescribing, would incur costs, but net savings are possible from NHS budgets for many prevention initiatives. Some could also be cash releasing.

3.4 Risk Assessment/Management

Risks are managed in line with NHS Highland's policy.

3.5 Data Protection

No personally identifiable information is involved.

3.6 Equality and Diversity, including health inequalities

The report addresses equality issues. The chapter on demography clearly outlines, for the Highland and Argyll and Bute populations, trends in health inequalities for selected health outcomes. This chapter also discusses the need for a fundamental shift towards prevention and mitigating the underlying issues that can impact on health such as poverty and deprivation.

3.7 Other impacts

No other impacts to note.

3.8 Communication, involvement, engagement and consultation

The principles of public and user involvement and engagement are embedded in public health actions.

This is an independent report from the Director of Public Health.

3.9 Route to the Meeting

This is an independent report from the Director of Public Health. Considerable work has been undertaken within the Public Health Directorate to produce the report.

4 Recommendation

The Board is asked to note and discuss the 2023 Director of Public Health Annual Report.

4.1 List of appendices

The full report will be provided separately as an appendix.

The Annual Report of the Director of
Public Health

2023

Medication and Public Health – Do the Right Thing



Acknowledgements and list of contributors

Thanks are due to the following colleagues for their contributions to this year's report:

Alison McGrory
Barry Collard
Carolyn Hunter-Rowe
Cathy Steer
Eilidh Moir
Elisabeth Smart
Ewen Mackay
Jenny Wares
Karen Mackay
Karen Stockdale
Katy Allanson
Lydia Niemi
Nicola Schinaia
Noelle O'Neill
Padraig Lyons
Pip Farman
Rory Munro
Samantha Campbell
Sandra MacAllister
Sara Huc
Sharon Pflieger
Susan Birse
Tracy Beauchamp

Thanks also go to Medical Illustration, NHS Highland for their help with the design and production of the report.



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Introduction

“Medication and Public Health” is the subject that I chose for the Public Health Report this year. We cannot solve public health challenges simply by prescribing medication for them. However, there are areas of public health where medication is a crucial if we want to deliver the most effective overall approach. Medication has transformed how we deal with infections, and it is hard to imagine the time before antibiotics. Yet we are now faced with the spectre of antibiotic resistance and the environmental impact of medication.

Our overall health is affected both in good ways and in bad ways by medication. I did originally think of tying this into an overall theme for the report of the good, the bad and the ugly. The idea was to pick up on the title of the 1966 spaghetti Western and look at different aspects of medication and public health, some good, some bad and some ugly. However, I was reluctantly

persuaded that this was style over substance. I have though chosen the title of another film, one I saw when I was spending a couple of months as a student in Chicago – Do the Right Thing. The film focuses on varying perceptions from different groups of people; audiences sometimes had different responses depending on their background and experiences. When we look at medication and its different effects on public health we come from different backgrounds and experiences.

We will have varying perceptions about the power of medication to change lives or the influence of powerful pharmaceutical companies. We will also all want to do the right thing and I hope that this report will help to give further information and insight to help us judge what are the right things to do for the people of Highland and Argyll and Bute.



Dr Tim Allison MD MRCP FFPH

Director of Public Health and Health Policy, NHS Highland
Stiùriche na Slàinte Phoblach, Bòrd Slàinte na Gàidhealtachd

Structure of this Report

The report presents information about the health of the population of NHS Highland then gives examples of how medication affects public health. There are many ways in which medication affects public health. Some of these effects, such as antibiotic resistance, are of great significant and have received considerable attention.

The areas selected for this report are not intended to provide a comprehensive picture of the relationship between medication and public health but rather serve as examples of wider themes.

The Environment: How medication can make our environment sicker

Hepatitis C: How medication is transforming treatment and prevention

Social Prescribing: How an alternative to medication can work

Prescriptions for Pain: How medication can have long-lasting effects on public health

Case Study: How medication and other measures can work together to improve health

Summary and Key Findings

Demography and health inequalities

Information on NHS Highland's population is essential for planning health and care services across the life course.

An ageing population is increasing the demand on health and care services as more people are living with one or more long-term health conditions and with increasingly complex needs.

Population data from Scotland's Census 2022 will provide a detailed picture of the characteristics of our people and communities, including information on: ethnic group, armed forces veterans, sexual orientation and trans status or history; health, disability and unpaid care.

Improving the health of our population requires a fundamental shift towards prevention and mitigating the underlying issues that can impact on health, such as poverty and deprivation.

The Environment: How medication can make our environment sicker

There is growing evidence of the negative effects of medicines on our environment. When medicines are excreted from our body or flushed down toilets or sinks, they can end up in our water environment and soils.

They can have negative effects on aquatic organisms and end up in the crops we eat. NHS Highland is at the forefront of research and action to reduce the impact of the medicines we use on the environment and is a co-founder of the One Health Breakthrough Partnership (<https://ohbp.org/>).

There is something that everyone can do to help reduce pollution of our environment with medicines.

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The management of HCV has been revolutionised in recent years by the introduction of new therapies. This development has played a significant role in the increase in treatment initiatives and the potential across Scotland to achieve HCV elimination.

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Social Prescribing: How an alternative to medication can work

It is estimated that 20% of people visit their GP with non-medical needs and up to one fifth of GPs' time is spent on issues related to social needs.

Social prescribing provides an evidence-based potential to complement management of a wide range of health conditions through providing a holistic person-centred model of care to improve health and wellbeing and reduce reliance on medication and health services.

The social determinants of health play an important role in the development of risk factors for a range of diseases and the health outcomes that people experience throughout life. Supporting people with wider social and environmental issues is important for improving health and wellbeing and reducing demand on health and care services.

There is promising evidence that social prescribing provides a positive return on investment from between £2.30 and £7.08 for every £1 invested.

Analgesics and Opioids: How medication can have long lasting effects on public health

There is little doubt that analgesics and opioid use can bring great benefits to individual but there are serious disadvantages as well.

There are negative impacts of opioid prescribing, particularly the management of chronic pain. Alternatives are available such as social prescribing programmes, psychologically based interventions and physical therapies.

Leadership and support for the continued implementation of the Medicines Assisted Treatment Standards, and in particular the use of Opioid Substitution Therapy, is vital in assisting individuals with problematic drug use to turn their lives around.

Recommendations

NHS Highland and its partners should ensure that planning addresses the change in demography and ageing population.

NHS Highland and its partners should prioritise tackling health inequalities and the causes of those inequalities.

NHS Highland and those prescribing medicines should prioritise actions which will reduce the impact of medicines on the environment.

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Progress on recommendations from the 2022 report

Last year's report focused on the importance of prevention and the need to give more attention to activities that promote good health in addition to those that tackle poor health. Since the publication of the report there have been the following developments:

- The overall approach to prevention has been reviewed within NHS Highland and new arrangements are being put in place designed to increase preventative activity and links in patient pathways.
- The Highland Community Planning Partnership Board has highlighted prevention and health inequalities work and how to build on existing work.
- The new Living Well programme has been launched in Argyll and Bute, supporting people to improve their physical mental emotional and social wellbeing.
- NHS Highland has developed its plan as an anchor institution, helping to address the wider determinants of health.
- Infant feeding activity in Highland and Argyll and Bute has developed well and received positive external assessment.
- Work to address the harmful effects of tobacco and alcohol has progressed steadily, but plans are in place for significant development.
- Immunisation rates have been largely in line with past trends, but the steady slow decline in uptake needs to be tackled and uptake increased.

Chapter 1:

Demography and health inequalities



Chapter 1: Demography and health inequalities

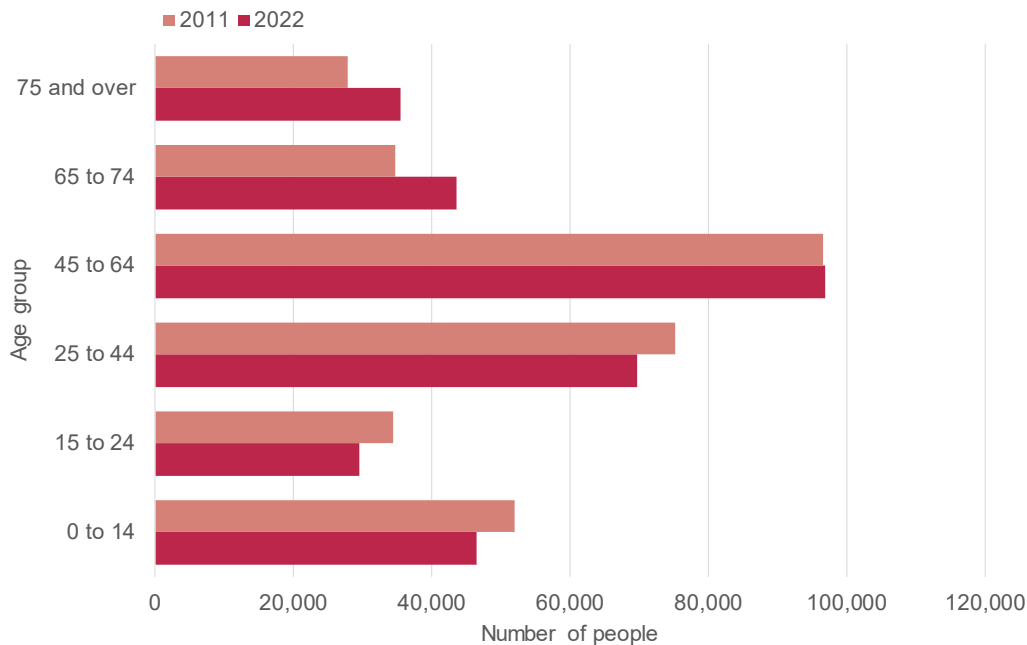
Demographic trends

Demographic changes in the population of NHS Highland are having a significant and increasing impact on the provision of health and care services in the region. At the recent Scotland's Census 2022, the population of NHS Highland was estimated to be 321,500 people. This was an increase of 1,200 people (0.4%) since the previous census in 2011. Population growth was seen in the Highland council area (up 1.4%) but Argyll and Bute council area saw a decrease (down 2.4%).

The population is continuing to age, with many more people in the older age groups

than previously recorded. Figure 1.1 shows the changing number of people living in NHS Highland by age group between 2011 and 2022. There are now over 79,000 people aged 65 and over (24.6%) compared with 46,400 people under 15 (14.4%). Increasingly the population structure includes a smaller and older workforce and fewer children and young people. The proportion of people in older age groups varies across council areas. Argyll and Bute council area had a higher proportion of people aged 65 and over (27.2%) compared with the Highland council area (23.7%).

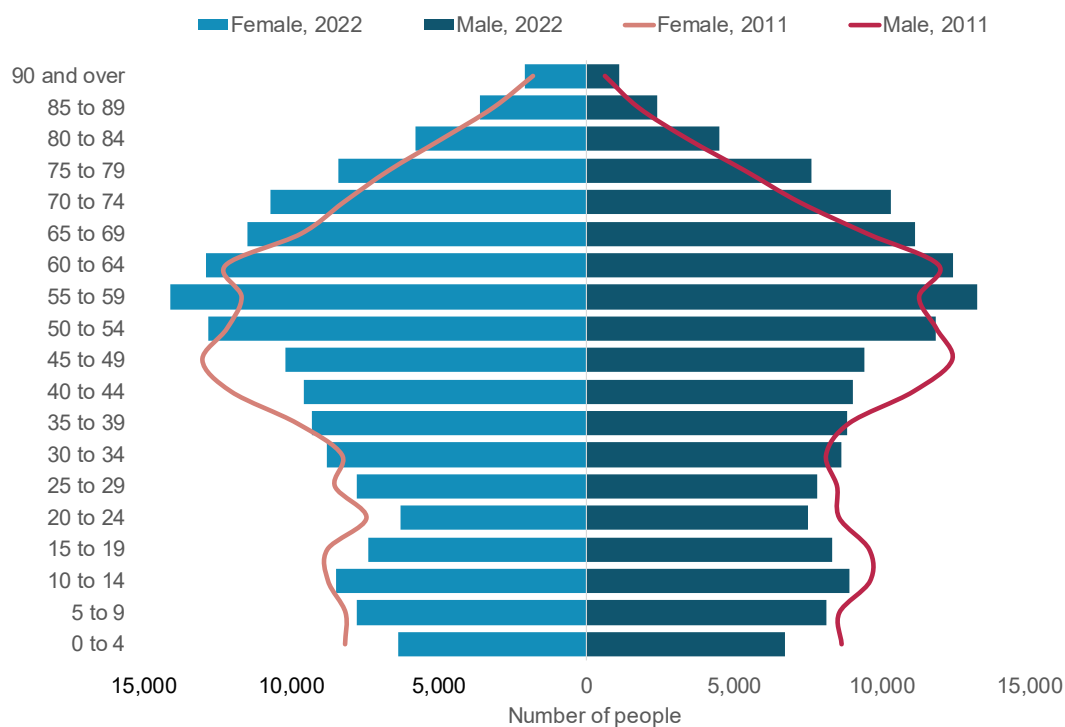
Figure 1.1 – Number of people resident in NHS Highland by age group, 2011 and 2022



Source: National Records of Scotland, Scotland's Census ^{1,2}

This is also seen in the changing shape of the population pyramid shown in Figure 1.2. The bars show the population of NHS Highland by five-year age groups and sex from the 2022 census and the lines show population data from the 2011 census.

Figure 1.2 – The structure of NHS Highland’s population by age group and sex in 2011 and 2022



Source: National Records of Scotland, Scotland’s Census ^{1,2}

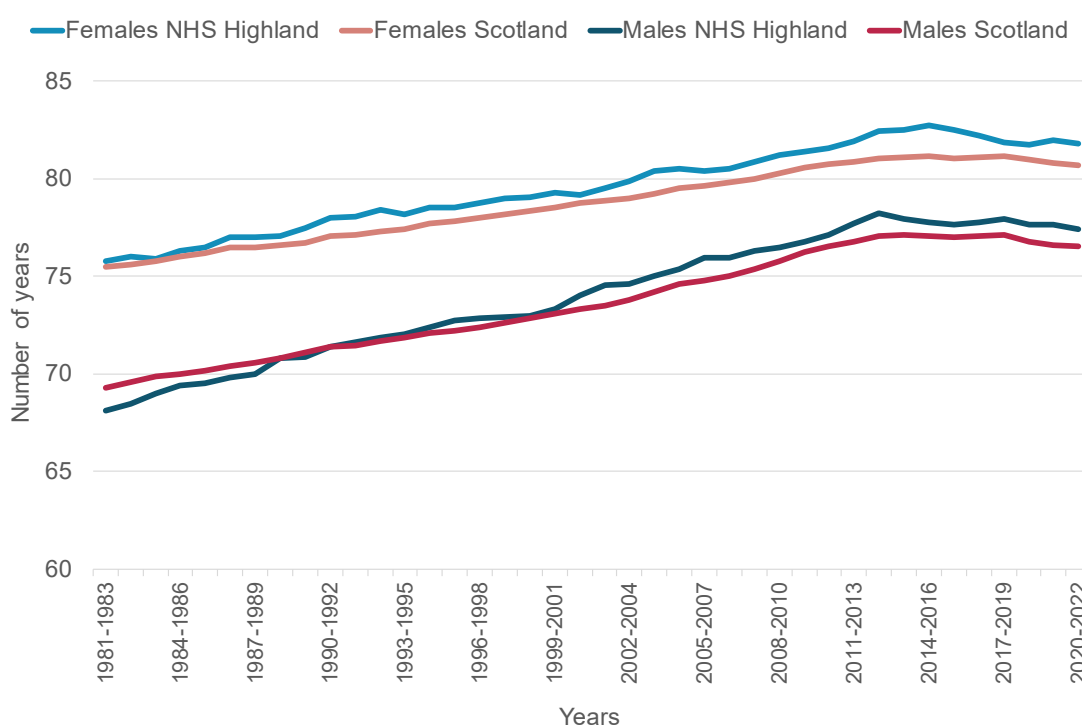
Information showing the rise in the population of older people in NHS Highland is not new and has been set out in previous years³. However, the extent of the increase is still considerable.

Information on NHS Highland’s population is essential for planning health and care services across the life course. Population data from Scotland’s Census 2022 will provide a detailed picture of the characteristics of our people and communities, including information on: ethnic group, armed forces veterans, sexual orientation and trans status or history; health, disability and unpaid care.

Life expectancy

People are living longer lives than in previous generations. Life expectancy in NHS Highland has increased over time for both males and females, with only minor variation from year to year. However, following the pattern in Scotland, average life expectancy has stopped improving. Recent trends show life expectancy in NHS Highland has decreased for both males and females as shown in Figure 1.3.

Figure 1.3 – Life expectancy at birth, NHS Highland and Scotland, from 1981–1983 to 2020–2023

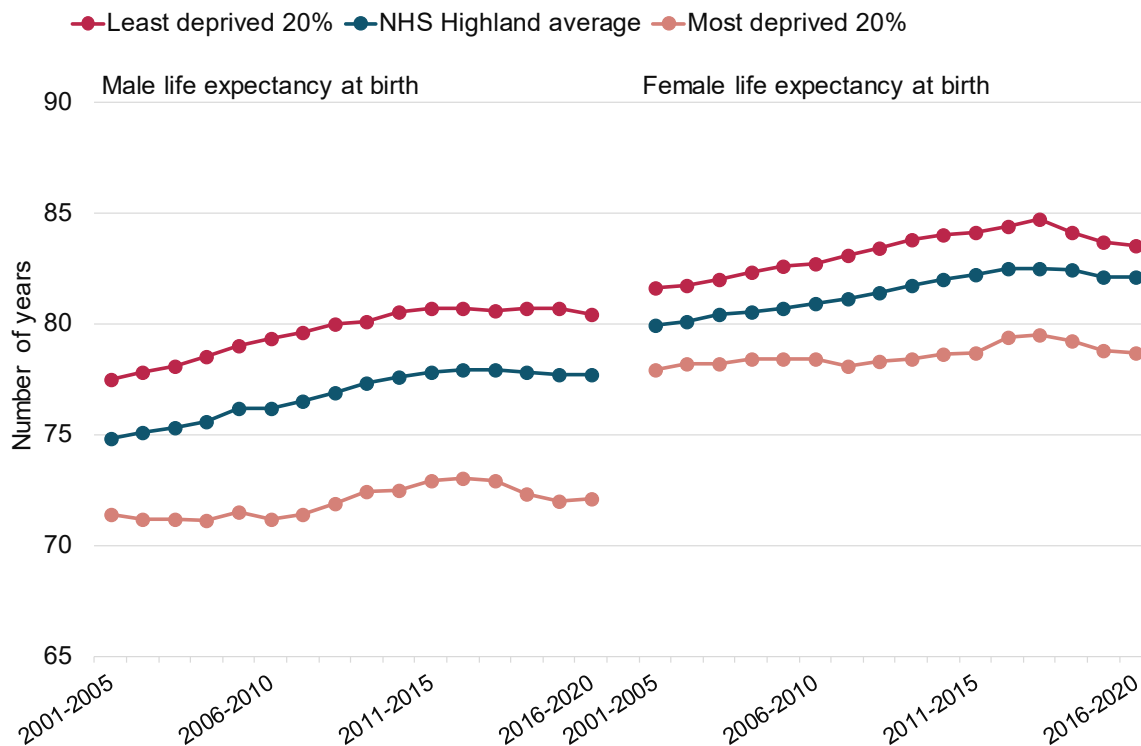


Source: National Records of Scotland, Life expectancy in Scotland⁴, Scottish Public Health Observatory, Online Profiles Tool⁵

Notes: y-axis scale does not start at zero

Gaps in life expectancy between the most and least deprived areas of NHS Highland highlight significant health inequalities. People in our poorest neighbourhoods are dying younger than their peers. In 2016–2020, the gap in life expectancy between the most deprived and least deprived areas of NHS Highland was 8.3 years for males and 4.8 years for females. Gaps in life expectancy have increased over time for both sexes and highlight widening inequalities in society (Figure 1.4).

Figure 1.4 – Life expectancy at birth by deprivation quintile in NHS Highland between 2001–2005 and 2016–2020

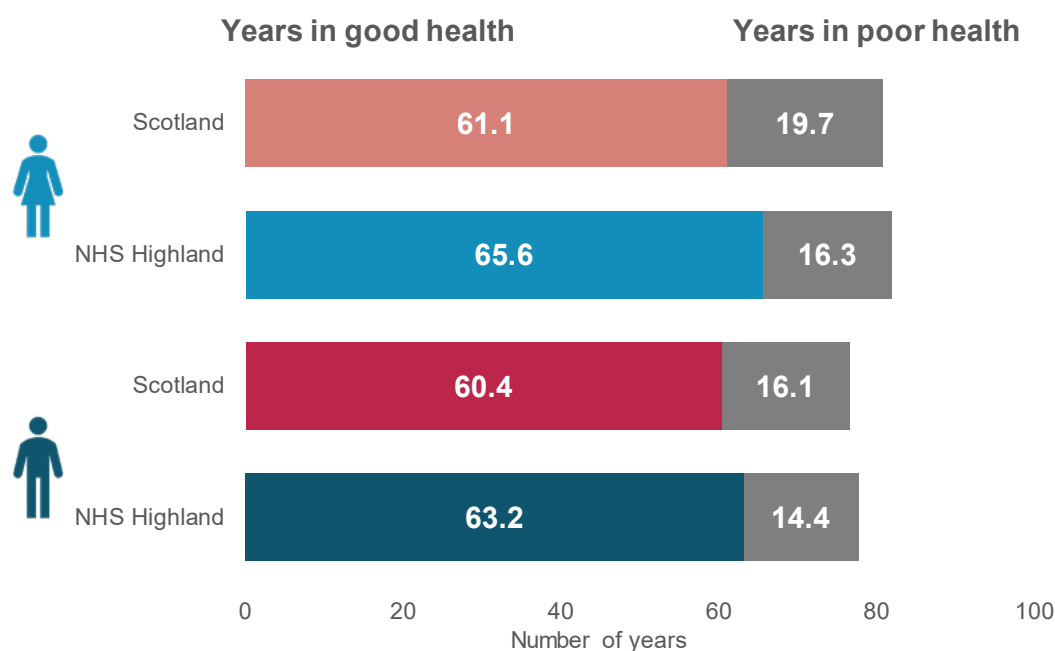


Source: National Records of Scotland, Life expectancy in Scotland⁴, Scottish Public Health Observatory, Online Profiles Tool⁵

Health status

Despite overall improvements in life expectancy, healthy life expectancy has been decreasing in Scotland in the last decade⁶. Figure 1.5 shows the difference in the average number of years lived in good health compared to the average number of years lived in poor for the NHS Highland and Scotland population. It is now estimated that in NHS Highland the average proportion of life spent in poor health is 18.6% (14.4 years) for males and 19.9% (16.3 years) for females. Inequalities in healthy life expectancy between more wealthy and poorer areas are also particularly stark.

Figure 1.5 – Estimated number of years spent in good health and poor health in NHS Highland and Scotland in 2019–2021

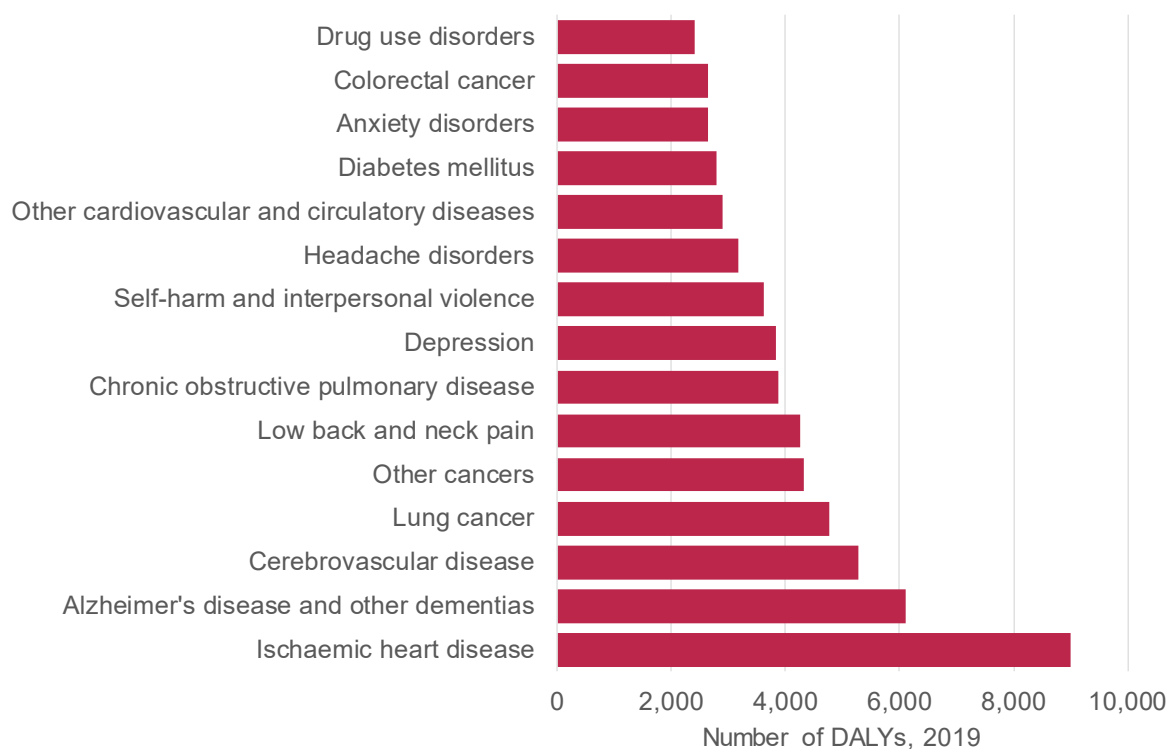


Source: National Records of Scotland, Healthy Life Expectancy (HLE) in Scotland 2019-20216

The leading causes of poor health in NHS Highland are summarised in Figure 1.6. Disability adjusted life years (DALYs) are a measure of the number of years of healthy life lost to physical and mental ill-health, disability and early death⁷. These estimates show the proportionate impact of different causes of ill health and mortality on population health. This can help inform priorities for disease prevention and planning for health and care services.

Cardiovascular diseases (such as ischaemic heart disease and cerebrovascular disease) make the biggest contribution to health loss, followed by Alzheimer’s disease and other dementias. Cancer is also an important cause of ill health and mortality. These conditions are linked to risk factors including smoking, poor diet, and physical inactivity. In addition, mental health conditions such as anxiety and depression and injuries associated with self-harm and interpersonal violence substantially contribute to poor health in the NHS Highland population.

Figure 1.6 – Leading 15 causes of population health loss in NHS Highland in 2019



Source: Scottish Burden of Disease Study, Public Health Scotland⁸

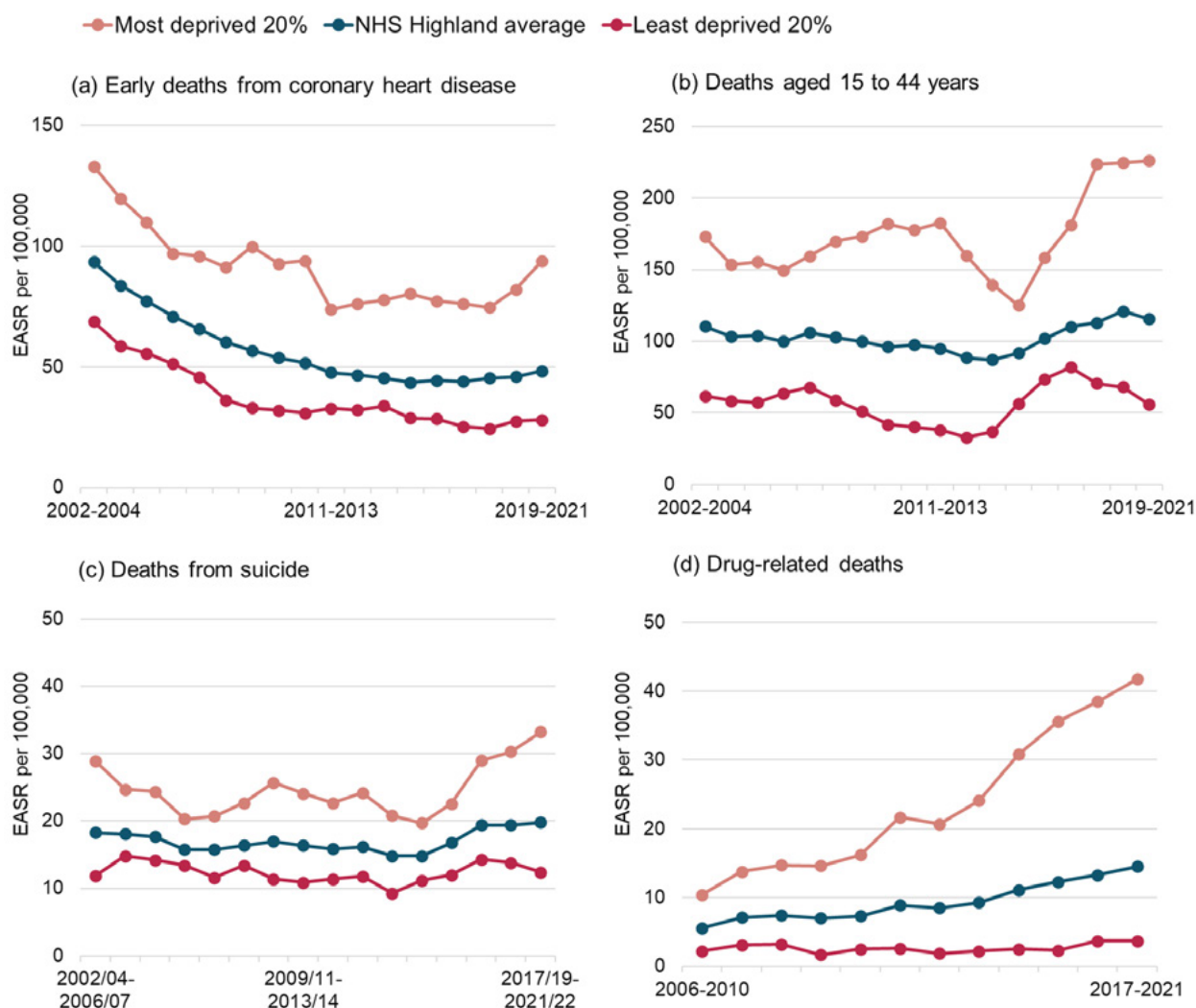
Notes: Number of Disability adjusted life years (DALYs), all ages, both sexes

Health inequalities

Health inequalities are the “systematic, avoidable and unfair differences in health outcomes that can be observed between populations, between social groups within the same population or as a gradient across a population ranked by social position”⁹. In NHS Highland, as in other areas, the levels of health experienced by different groups of people are not equal.

The level of health inequalities across NHS Highland can be calculated and shown by summarising health outcomes in five groups based on levels of area deprivation. Figure 1.7 highlights the difference between the 20% most deprived and 20% least deprived areas of NHS Highland for four health outcomes: early deaths from coronary heart disease, deaths in people aged 15 to 44 years, deaths from suicide and drug related deaths. The gap in death rates between the most deprived and least deprived neighbourhoods has widened, highlighting the extent of growing health inequalities in NHS Highland.

Figure 1.7 – Trends in health inequalities for selected health outcomes in NHS Highland



Source: Scottish Public Health Observatory, Public Health Scotland

Notes: Based on Scottish Index of Multiple Deprivation (SIMD) 2020 local quintiles

EASR: European age-sex standardised rate, directly standardised to the 2013 European Standard Population

Health inequalities are largely a consequence of differences in people’s living conditions and experiences through life. Inequalities in power, money and resources at a local and national level can make people’s daily lives more challenging and more vulnerable to poor health¹⁰.

Evidence shows factors driving these health outcomes include long-term health implications of economic recession, austerity policies, a stagnation of living standards and people experiencing multiple disadvantage^{11,12}. The rising cost-of-living will disproportionately affect low-income populations, disabled people, older people, minority ethnic people and rural populations with long term effects on children¹¹.

Summary

The health concerns facing our region are common in Scotland and in other countries. An ageing population is increasing demand on health and care services as more people are living with one or more long-term health conditions and with increasingly complex needs. Research has shown that by 2043, the level of illness in Scotland is expected to increase by over 20%, with cancers, cardiovascular disease and neurological conditions contributing the most to poor health¹³.

The causes of ill-health are complex and longstanding economic and social inequalities are impacting on the health of individuals and communities in NHS Highland. As previously reported, improving the health of our population requires a fundamental shift towards prevention and mitigating the underlying issues that can impact on health, such as poverty and deprivation¹⁴.

Chapter 2:

The Environment: How medication can make our environment sicker



Chapter 2: The Environment: How medication can make our environment sicker

Medicines are used extensively in everyday life, whether prescribed or bought over-the-counter. This is mainly due to an ageing population, new technological advances and a “pill for every ill” culture where people tend to turn to a medicine first to make them better.

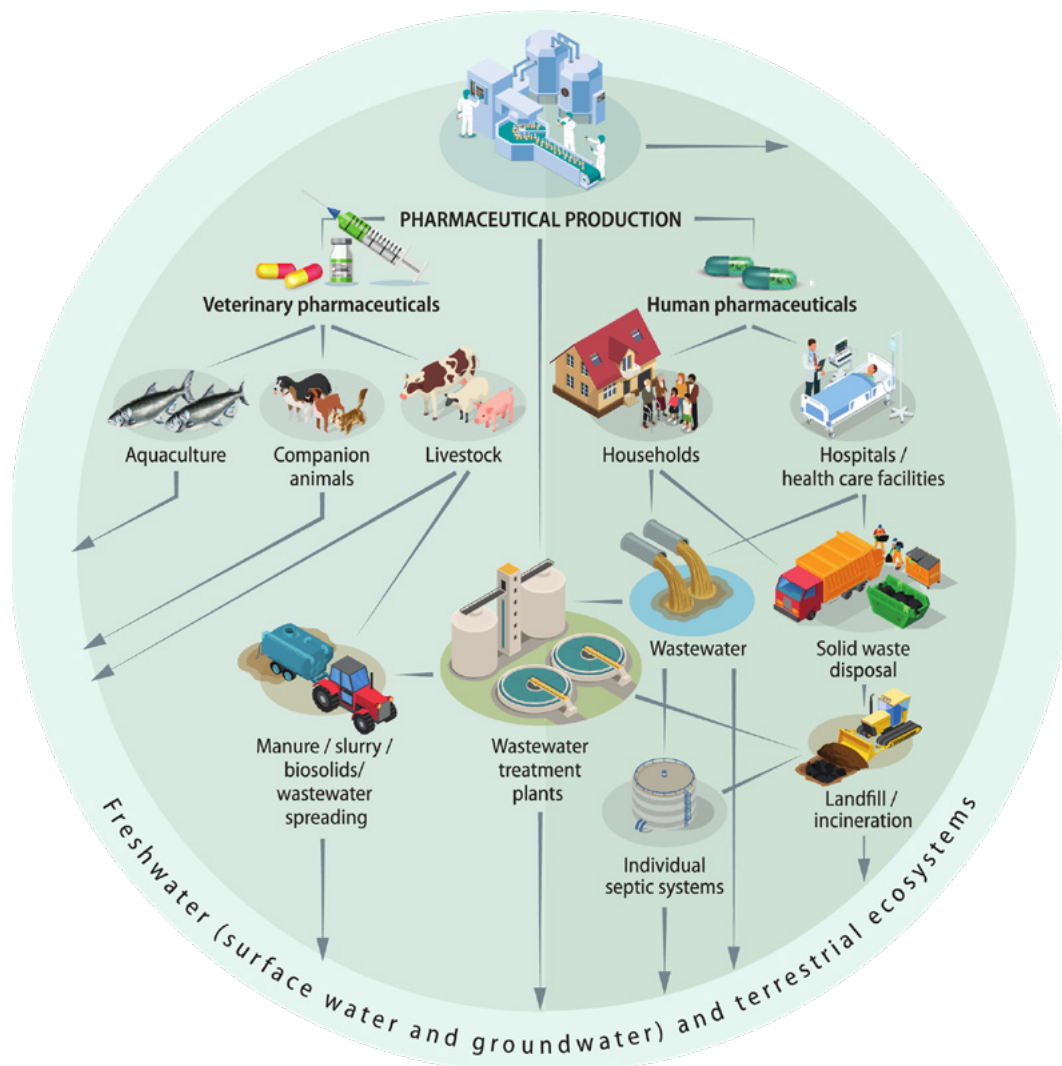
However, medicines can have negative effects on the environment. They account for 25% of the NHS total carbon footprint and contribute to pollution of the environment and are now classed as emerging environmental contaminants¹⁵. This section of the report focuses on pharmaceuticals in the environment (PiE) and groundbreaking work taking place in NHS Highland.

How do medicines enter the environment?

There are three ways in which human medicines can enter the environment.

- 1. Pharmaceutical manufacturing processes** including industrial wastewater discharge and solid waste disposal.
- 2. Incorrect disposal by users** - many people flush medicines down the toilet or pour them down the sink thinking this is the safest thing to do but this means that unmetabolised, active medicines are directly entering the wastewater system¹⁶. Putting them in household waste means they enter landfill and can leach into the soil eventually ending up in groundwater, surface water bodies and in crops.
- 3. Excretion by users** - between 30 to 100% of an oral dose of medicine will be excreted as the parent pharmaceutical or a metabolite in urine or faeces into toilets and enter wastewater treatment plants or septic tanks. Pharmaceuticals are present in hospital and domestic wastewater. Excretion by patients via discharge of treated or untreated wastewater from domestic households is the main route for human pharmaceuticals entering the aquatic environment.

Figure 2.1 – Major pathways of release of human and veterinary medicines into the environment



Source: OECD (2019) ¹⁷

Why is PiE an issue?

Wastewater treatment plants (WWTPs) were never designed to remove small, complex chemical molecules¹⁸. They were designed to remove biological solids, pathogens, organic and inorganic material rather than removal of modern chemicals at low concentrations¹⁹.

Therefore, depending on several variables such as the pharmaceutical or the amount of rain, pharmaceuticals will be present in the effluent (the treated wastewater coming out of the WWTP) in unchanged form or as transformation products and be pumped into rivers and oceans. WWTPs are thought to be the main source of human pharmaceuticals entering the environment, although landfill sites, septic tanks and manufacturing sites also contribute²⁰.

Figure 2.2 – How do pharmaceuticals get into the environment

How do pharmaceuticals get into the environment?

Human pharmaceuticals and the urban water cycle



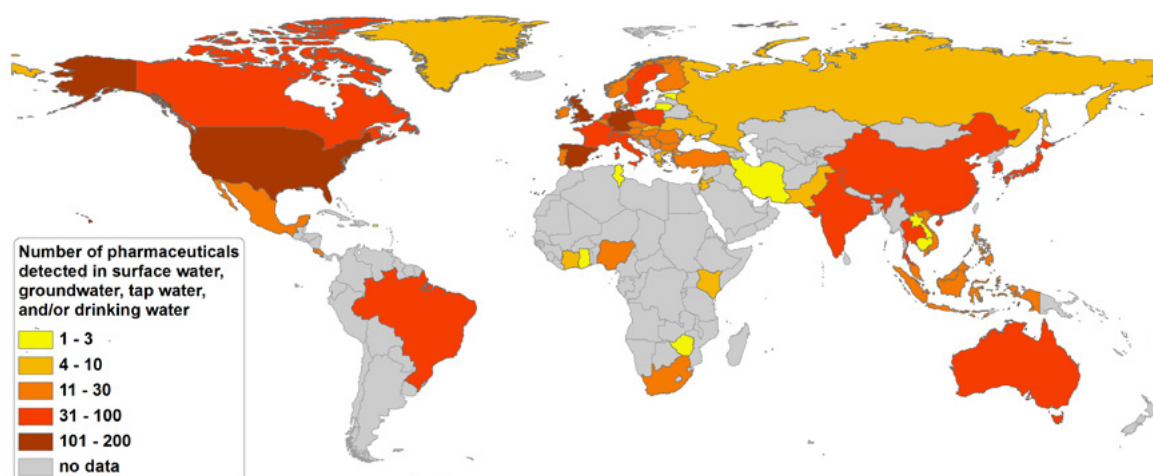
Source: Niemi (2020)¹⁵

1. Active pharmaceutical ingredients (APIs) are designed to interact with a living system and have a biological effect at extremely low doses. They can do this across a range of organisms²⁰ such as fish, frogs, duckweed, for example, and then unintentional harmful effects may occur.
2. Pharmaceuticals are designed to be stable (persistent) to reach and interact with their target molecules²¹. Persistent substances which can withstand natural degradation increase the potential for long-term effects in the environment²². Even if a pharmaceutical is degradable, a high volume of use means that it is “pseudo persistent” as it is continuously entering the environment. Examples of such pharmaceuticals include paracetamol and ibuprofen because the rate at which they are used and enter the environment is greater than the environmental degradation rate²³.
3. Pharmaceuticals can be bioaccumulative which means that they are incorporated into living tissue without being properly excreted or degraded, remaining within the organism. This has implications for the human food chain.
4. Pharmaceuticals can be toxic to humans or ecosystems and their transformation products can be more toxic than the parent compound²⁴.

Why should we care about pharmaceuticals in the environment?

Pharmaceuticals have a direct pathway into the environment via wastewater processes. More than 630 pharmaceuticals have been found in rivers, lochs, seas and estuaries across the world with antibiotics, anti-inflammatories and painkillers topping the list²⁵.

Figure 2.3 – The number of pharmaceuticals detected in surface water, groundwater or drinking water globally



Source: aus der Beek et al. (2016)²⁵

The most recent and largest study of pharmaceutical pollution of the world's rivers across all continents found that over 25% of rivers tested pose a threat to environmental and/or human health. The river Clyde in Glasgow rated 26th highest out of 137 river catchments for concentration of pharmaceuticals.

There is growing evidence of the negative effects on ecological and human health. Behavioural changes in aquatic species have been reported such as: altered salmon migration in the presence of anti-anxiety medicines²⁶; impaired development of frogs exposed to anti-depressants²⁷; population collapse in fish exposed to estrogen hormones²⁸; near extinction of vulture populations in India resulting in 47,000 human deaths from rabies, since vulture loss led to an increase in feral dogs and their bites²⁹.

Future projections on pharmaceuticals in the environment

Pharmaceutical consumption has grown rapidly over the last decade due to aging populations, epidemiological changes, technological advances and changes in clinical practice³⁰. This trend is expected to continue.

In addition, climate change is likely to affect the amounts and types of medicines used and released to water bodies. Non-communicable diseases such as cardiovascular disease and mental illness, respiratory, water-borne and vector-borne disease are expected to become more common^{31,32}. This will lead to an increase in associated medicine usage and increased pollution of the environment.

Many other aspects of climate change will also affect the fate and transport of medicines in the environment, for example heavy rainfall will trigger storm overflows bypassing WWTPs, while lower rainfall and increased water scarcity will reduce the dilution of pharmaceuticals.

It is therefore essential that public health interventions such as health improvement and social prescribing are employed to ensure as healthy and resilient a population as possible as climate change begins to increase its impact on human health. Healthy humans depend on a healthy planet.

What is NHS Highland doing to reduce the impact of PiE?

NHS Highland is a founding member of the One Health Breakthrough Partnership (<https://ohbp.org>), a collaboration between the Scottish Environment Protection Agency (SEPA), Scottish Water, Scotland's Centre of Expertise for Waters (CREW) and the Environmental Research Institute (part of UHI). Formed in 2017, the OHBP has brought together key regional and national stakeholders across the environment, healthcare, and water sectors with a commitment to generate positive One Health outcomes and create a 'non-toxic' environment. The OHBP mission is closely aligned with the Scottish Government's Hydro Nation agenda, recognising that Scotland has internationally significant and high-quality water resources, which are of vital importance to its economy and the health of its population.

OHBP recognises One Health to be an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It works across organisational and disciplinary boundaries, collectively and collaboratively, to ensure optimal outcomes for the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems).



To date, the focus of work has been on sustainable medicines and addressing anti-microbial resistance. Impacts and achievements so far include:

- achieving a world first in Water Stewardship at Caithness General Hospital (<https://a4ws.org/download/aws-case-study-caithness-general-hospital/>)
- developing an action plan to substitute environmentally harmful medicines with less toxic ones
- engaging >6000 clinicians across the world on the environmental impact of pharmaceuticals
- developing a database of pharmaceuticals in the water environment (2021) and visualisation tool to compare environmental data with prescribing data in Scotland – the first of its kind in the world (<https://ohbp.org/2022/06/13/pharmaceuticals-in-the-water-environment-new-data-tool-launched-by-sepa/>)
- publications in international, peer-reviewed scientific journals e.g. First, do no harm: time for a systems approach to address the problem of health-care-derived pharmaceutical pollution – The Lancet Planetary Health ([https://www.thelancet.com/journals/lanph/article/PIIS2542-5196\(22\)00309-6/fulltext](https://www.thelancet.com/journals/lanph/article/PIIS2542-5196(22)00309-6/fulltext))

- launching a website in Aug 2021, viewed in >30 countries (<https://ohbp.org>), Twitter/ X @OneHealthBP and a Twitter conference #OHBP2023
- developing and evaluating a free to use public education video on antibiotics and the environment: <https://www.youtube.com/watch?v=VBJztG3ljRs>
- promoting public awareness e.g. BBC Radio Brainwaves programme, BBC Alba television programme
- contributing to an international online course ‘Water, Soil, and Health’ with experts from Grenada, Jamaica, Kenya, and Scotland on sustainable environmental change
- promotion at national and international conferences (e.g., COP26, Planetary Health Alliance and NHS Scotland sustainability conference)
- helped developed a Policy Brief for the House of Lords (<https://ohbp.org/2023/07/28/new-policy-recommendations-launched-for-eco-directed-and-sustainable-prescribing-of-pharmaceuticals-at-uk-parliament/>)
- won several awards including VIBES (<https://vibes.org.uk/>)

Summary and potential for action

The presence of pharmaceuticals in the environment has been gaining recognition over the past decade. Whilst evidence on human and environmental health is still being developed, drinking water regulators and providers, governments, healthcare professionals and the public are raising concerns. The German Environment Agency (UBA) estimate that 10% of pharmaceutical products indicate potential environmental risk with hormones, antibiotics, painkillers, antidepressants and anti-cancer medicines being of greatest concern³³.

Scotland has a vested interest in the Hydro Nation and One Health agendas, which are multi-sector strategies to effectively manage the water environment and improve public health (respectively). These concepts recognise that human health and environmental health are closely interconnected, and that water quality is a central and significant factor to the wellbeing of both.

Many parts of the private and public sectors across Scotland and the UK may be affected by pharmaceutical pollution and have an interest in addressing this issue. This includes pharmaceutical manufacturers and the healthcare sector, the food and drink sector (including agriculture and fisheries), and public organisations including water regulators, environmental protection bodies, healthcare, researchers/academics, and policymakers. The OHBP is providing leadership in this area driving research, innovation and policy change.

Whilst more evidence is developed there are many things that healthcare professionals and the public can do to reduce the impact of pharmaceuticals on the environment.

How the public can help

- Stay healthy with exercise and a balanced diet.
- Accept invitations for screening and vaccinations to prevent ill health.
- Use good respiratory hygiene to prevent spread of viruses such as coughs, colds and flu.
- Ask your prescriber about the risks and benefits of medicines and whether there is any alternative.
- Only order what you need for repeat medicines and do not stockpile.
- Ask your prescriber or community pharmacist how to get the best out of your medicine.
- If you use an inhaler ask your pharmacist to check your technique.
- Return any unused, unwanted or out of date medicines to your community pharmacy or GP practice for safe disposal.

How healthcare professionals can help

- Ask the patient what matters most to them. It may not be getting a medicine.
- Explain the risks and benefits of a medicine, whether there is an alternative and why it might be best to do nothing.
- Consider social prescribing rather than a pharmacological intervention.
- Always prescribe the lowest dose and smallest quantity when starting a new medicine to avoid waste should side effects occur.
- Plan in a medicines review to check whether the expected clinical outcomes are being achieved.
- Advise patients to return unwanted medicines to their community pharmacy or GP practice for safe disposal.
- Learn more about PiE.

Chapter 3:

Hepatitis C: How medication is transforming treatment and prevention



Chapter 3: Hepatitis C: How medication is transforming treatment and prevention

Background

Hepatitis C virus (HCV) is a blood borne virus (BBV), spread through contact with blood or body fluids from an infected individual, which can lead to cirrhosis of the liver and hepatocellular carcinoma. HCV is a significant issue across the world with around 1.5 million new infections and 290,000 deaths each year globally according to data for 2019³⁴.

The Scottish Government’s Hepatitis C Action Plan and the subsequent Sexual Health and Blood Borne Virus (SHBBV) Strategic Framework provided a world leading structure for the prevention, diagnosis, treatment and care of HCV. The management of HCV has progressed enormously over recent years with current treatment options providing the potential to cure more than 90% of those infected with HCV. This has led to the global ambition to eliminate viral hepatitis as a public health threat through effective treatment and prevention of transmission by 2030. Within Scotland, the Scottish Government has made a commitment to treat more people with hepatitis C with the aim of eliminating HCV infection and HCV related severe disease and death as a major public health concern in Scotland by 2024. This is an ambitious target which seeks to achieve elimination six years ahead of the target set by the World Health Organization.

The latest surveillance data has identified that there are just over 4,000 individuals who are estimated to be diagnosed and living with chronic HCV infection in Scotland. A breakdown by NHS Board of residence is shown in the table below³⁵.

NHS Board data on the prevalent number of people diagnosed with hepatitis C virus (HCV) in Scotland and last known to have chronic infection, up to August 2023

NHS Board of Residence	Estimated number diagnosed and living with chronic HCV	Distribution by NHS Board
NHS Ayrshire & Arran	376	9.3%
NHS Borders	69	1.7%
NHS Dumfries & Galloway	73	1.8%
NHS Fife	279	6.9%
NHS Forth Valley	257	6.4%
NHS Grampian	460	11.4%
NHS Greater Glasgow & Clyde	1055	26.1%
NHS Highland	102	2.5%
NHS Lanarkshire	495	12.3%
NHS Lothian	641	15.9%
Island health boards (Orkney, Shetland and Western Isles)	20	0.5%
NHS Tayside	209	5.2%
Total	4036	100%

Development of new Direct Acting Antiviral (DAA) therapies

One aspect which has revolutionised the management of HCV has been the development of Direct Acting Antiviral (DAA) therapies. These pharmaceutical developments have significantly increased the efficacy of antiviral treatments which eradicate HCV infection as detailed in the table.

The efficacy of antiviral treatments over time³⁶

Year	Treatment	Sustained Viral Response % (Genotype 1)*
1994	Interferon	7-11
1998	Interferon + Ribavirin	28-31
2001	Pegylated Interferon + Ribavirin	42-46 (note 70-80% for G3)
2011	Pegylated Interferon + Ribavirin + First Generation Direct Acting Antivirals (DAAs)	67-75
2014/15	Interferon-free Direct Acting Antiviral Therapy (especially for genotype 1 but increasingly for other genotypes)	93-100

*Clinical trial data

Whilst the early Direct Acting Antivirals (DAAs) were particularly focussed on one type of the virus, genotype 1, these treatments are now increasingly covering all types. In addition to the increased efficacy, the new all-oral DAA regimes provided a safe treatment with far fewer side-effects and of relatively short duration compared with the interferon-based therapies. This development has played a significant role in the increase in treatment initiatives and also the ability across Scotland to achieve HCV elimination.

Despite the ever-expanding treatment options, a significant proportion of HCV cases remain undiagnosed. The high proportion of undiagnosed cases, combined with the increasing range of HCV therapeutics underlies the need for effective approaches to awareness raising, HCV case-finding, re-engagement and scale-up of treatment and care. A national Short-Life Working Group (SLWG) was convened in 2018 to review approaches to each of these aspects of HCV prevention and treatment. As a result of this, 18 recommendations were developed in order to support the aim of eliminating HCV-related disease as a major public health concern.

The COVID-19 pandemic had a significant impact on the ability of boards to progress action towards elimination as planned. This arose due to a number of factors including more limited capacity for professionals to support this agenda due to the need to respond to the pandemic but also a change in the way that some services were provided. However, there has been a renewed emphasis on this elimination commitment in addition to refreshed HCV treatment targets for NHS Boards.

NHS Highland's Blood Borne Virus Managed Clinical Network (BBV MCN) is committed towards the ambition of eliminating HCV in Scotland. A local elimination strategy details the range of activities pertaining to case-finding, testing, awareness raising and access to care that are being undertaken in support of this aim.

Effective detection of those who have been infected with HCV combined with the provision of accessible treatment options enables more of our patients to be treated as early as possible and prior to progression to advanced liver disease which improves health outcomes. In addition to the health benefits for the patients, eliminating HCV will also result in cost-savings to the NHS in the longer term. Effective treatment also has wider public health benefits due to the reduction in onward transmission of hepatitis C. Scotland's commitment to eliminate HCV is an exciting opportunity and one to which NHS Highland's BBV MCN is fully committed.

This is an excellent example of where new medication has the potential to improve public health. The availability of effective treatment that can be taken over a short period of time with few side effects should encourage more people to come forward for testing for Hepatitis C and provide a major step towards elimination of the virus.

Chapter 4:

Social prescribing: How an alternative to medication can work



Chapter 4: Social prescribing: How an alternative to medication can work

Introduction

Social determinants such as poverty, isolation, employment and housing have a substantial effect on people's health^{38,39}. It is estimated that 20% of people visit a GP with non-medical needs⁴⁰ and up to one fifth of GPs' time is spent on issues related to social needs rather than issues best solved by medical interventions such as medication. In areas of high deprivation, many GPs report that they spend significant amounts of time dealing with the consequences of poor housing, debt, relationships, and loneliness⁴¹.

Supporting people with wider social and environmental challenges is therefore important to improve their health and reduce demand on health services. Furthermore, it has been shown that the effectiveness of some medication can be reduced if people are facing adversity in their everyday lives, for example depression medication has been shown to be less effective if a person has employment or housing issues⁴².

Inappropriate pharmaceutical prescribing, particularly for older people and those experiencing inequality was highlighted as a contributory factor for increased drug reactions and hospitalisation in up to 1 in 5 people in the over 65-year age group⁴³. Social prescribing is increasingly being recognised as one potential solution for a proportion of people who attend health care services with non-medical needs.

What is social prescribing?

There are many definitions of social prescribing currently used but the core common principles of Social Prescribing are to support person-centred care and shared decision making, and to encourage a non-clinical approach to address aspects of health and wellbeing³⁷.

In 2022, the Scottish Social Prescribing Network was invited by the Global Social Prescribing Alliance to take part in a research study to find an internationally accepted definition of social prescribing. This definition was agreed on by 48 experts from 26 different countries, including Scotland, and has recently been accepted by the BMJ.

Social prescribing is “a means for trusted individuals in clinical and community settings to identify that a person has non-medical, health-related social needs and to subsequently connect them to non-clinical supports and services within the community by co-producing a social prescription – a non-medical prescription, to improve health and wellbeing and to strengthen community connections.”

Source: Muhl et al. (2023)⁴⁴

Social prescribing can take place within clinical and community settings but will have a focus on the social determinants of health. The overall aim of social prescribing is to improve health and wellbeing and can be more than just signposting. For maximum impact, it is likely to involve a link worker who will work with people to co-create a social prescription based on individual need. The link worker will help to remove barriers to individuals accessing support.

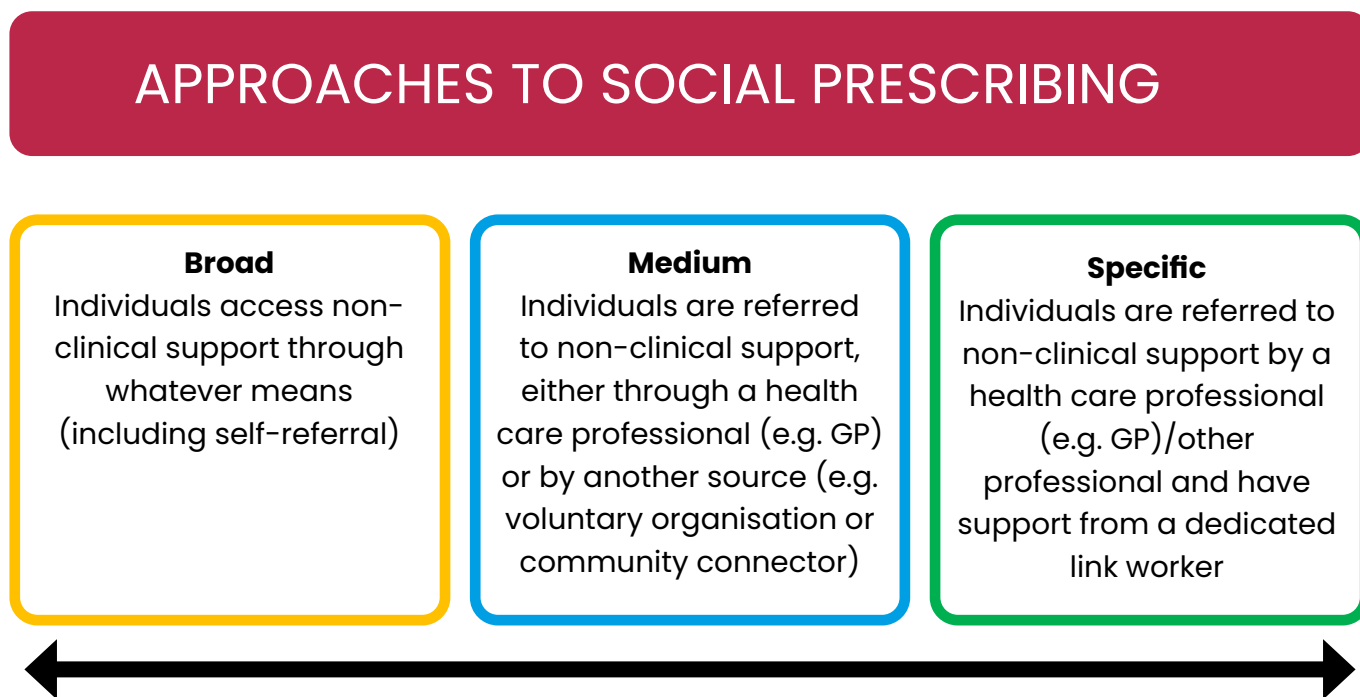
Use of medicines and social prescribing

Realistic Medicine advocates a shared decision-making approach which supports people and families using healthcare services to discuss their treatment through a personalised approach to care. This approach provides opportunities to develop social prescribing through focusing on non-clinical, non-pharmacological interventions which can improve health and wellbeing through reducing medication use and environmental harms⁴⁵.

Social prescribing effective medication in a number of areas of mental health⁴⁵

More research is needed to demonstrate that social prescribing is effective at reducing medicine prescribing but there is a growing recognition that a social prescription can be as effective as medication in several areas including managing mental health and wellbeing⁴⁵. The Royal College of Psychiatrists and the Royal College of Occupational Therapists have published a joint position statement advocating for social prescribing.

Figure 4.1 – Spectrum of definitions of social prescribing



Source: Adapted with permission from Lejac (2021)³⁷

Example of broad, medium, and specific social prescribing approaches are described below

Broad social prescribing can be where a conversation identifies the need for non-medical support and an individual is told about support services or where an individual recognises, they need help and is able to access it for themselves.

Medium social prescribing can be where a health professional or a support worker recognises an individual needs support and actively directs them or signposts them to services or an organisation that could help. For example, a referral to an exercise programme where there is a single issue and support is targeted primarily to that issue. This may also involve additional signposting if appropriate but is not part of the planned intervention.

Specific – involves a referral to a dedicated link worker who will work with individuals to identify what is important to them, co-produce a social prescription and support them to access the right non-medical services or community support. The link worker will also help remove barriers to accessing services or support and is likely to work with an individual over an extended period of time.

Evidence

Evidence suggests that on an individual level social prescribing can have a positive impact on health and wellbeing and complement medication prescribing to manage a wide range of health conditions. The following table outlines some of the impacts that social prescribing can have on individuals and health services:

Impact of social prescribing approaches on the individual

Increased confidence and reduced social isolation^{43,46}

Physical activity referrals from a link worker can result in the following:

- Improvements in physical health such as the lowering of BMI and blood pressure⁴⁷
- Improvements in mental health such as a reduction in anxiety and depression and increased sense of wellbeing⁴⁷.

Reduction in use of health services⁴⁷.

Improvement in quality of life and mental well-being through addressing practical issues such as housing, care and finances^{48,49}.

Improved glycaemic control for certain age groups with type 2 diabetes⁵⁰.

Referral to activities such as the Arts, cultural activities including attending museums and music related activities has demonstrated:

- Increased social interaction and decreased stress⁵¹.
- Improvements in employment and enhancement of skills, and economic development⁵¹.

Nature-based interventions can positively impact health and wellbeing through:

- reducing social isolation and fostering a connection to nature⁵².
- reducing postoperative complications and has been shown to reduce cardiovascular risk⁵³.

Impact of social prescribing approaches on health and care services

A 14% decrease in admissions to emergency inpatient services⁵⁴.

Reduction in the number of hospital admissions and outpatient appointments. One study found a 75% decrease in non-elective inpatient episodes among those who had accessed support through Social Prescribing⁵⁵.

Reduced demand for GP appointments by an average of 28% (range 2% to 70%) and A&E referrals by an average of 24%⁵⁶.

A 40% reduction in GP appointments for participants at a 3-month follow-up, compared to those who did not use a Social Prescribing service⁵⁷.

Opportunities and Challenges

There are opportunities to develop and embed social prescribing approaches in health and care services as an alternative to or alongside medicines prescriptions.

Two recent events to explore how social prescribing could be developed in Highland identified a number of local enablers and barriers to embedding this approach in health and social care services. These included:

Key Enablers	Enablers identified from the Highland events 2023
Capacity of primary healthcare services and a shift in ethos towards person-centred care ⁴³	Social prescribing to be recognised across Highland as an integral part of Health and Social Care where clinicians are encouraged and supported to move away from a 'medicalised' model of health.
Link worker practice and developing trust through co-produced services ^{47,58}	Local multi-agency working in Highland with a shared understanding of Social Prescribing best practice to promote more consistent and coordinated practice across all sectors.
Peer training and providing support to use new technologies ⁵⁸	Standardised training to upskill staff and consider the remote and rural nature of Highland, especially when developing digital and technological solutions.

Key Barriers	Barriers identified from the Highland events 2023
Resources ⁴³	For statutory and community organisations there is a lack of long-term, consistent funding and link worker capacity' across Highland.
Awareness ⁴³	Lack of awareness of what social prescribing is amongst those delivering, supporting, and accessing it. Particularly in smaller communities. Issues such as stigma relating to financial problems, particularly in smaller communities.
Knowledge ⁴³	Shared knowledge of local assets, organisations and connections across Highland requiring development of a Directory of Community Services.

Social Return on Investment

Social return on investment (SROI) is a method of assigning monetary values to social value as well as traditional assets and offers one way of evaluating social prescribing initiatives. It is recognised that this is an area that would benefit from more research but a range of studies that explored SROI for Social Prescribing initiatives found positive financial returns on investment:

- **For every £1 invested the social return on investment ranged from £2.30 to £7.08⁵⁹**

Currently, the University of the Highland's and Islands is undertaking an evaluation of the Highland Community Link Worker Programme including exploring SROI in the context of delivering a Community Link Worker service in remote and rural areas. This will provide valuable information to inform future development of Link Worker services across Highland and Argyll and Bute.

A study exploring the economic benefits following a social prescribing intervention for patients who were frequent attenders and frequent non-attenders at primary care found a cost saving for frequent attenders of £78.37 and a reduction in health care usage suggesting that social prescribing interventions be targeted at this group for maximum cost benefit⁶⁰.

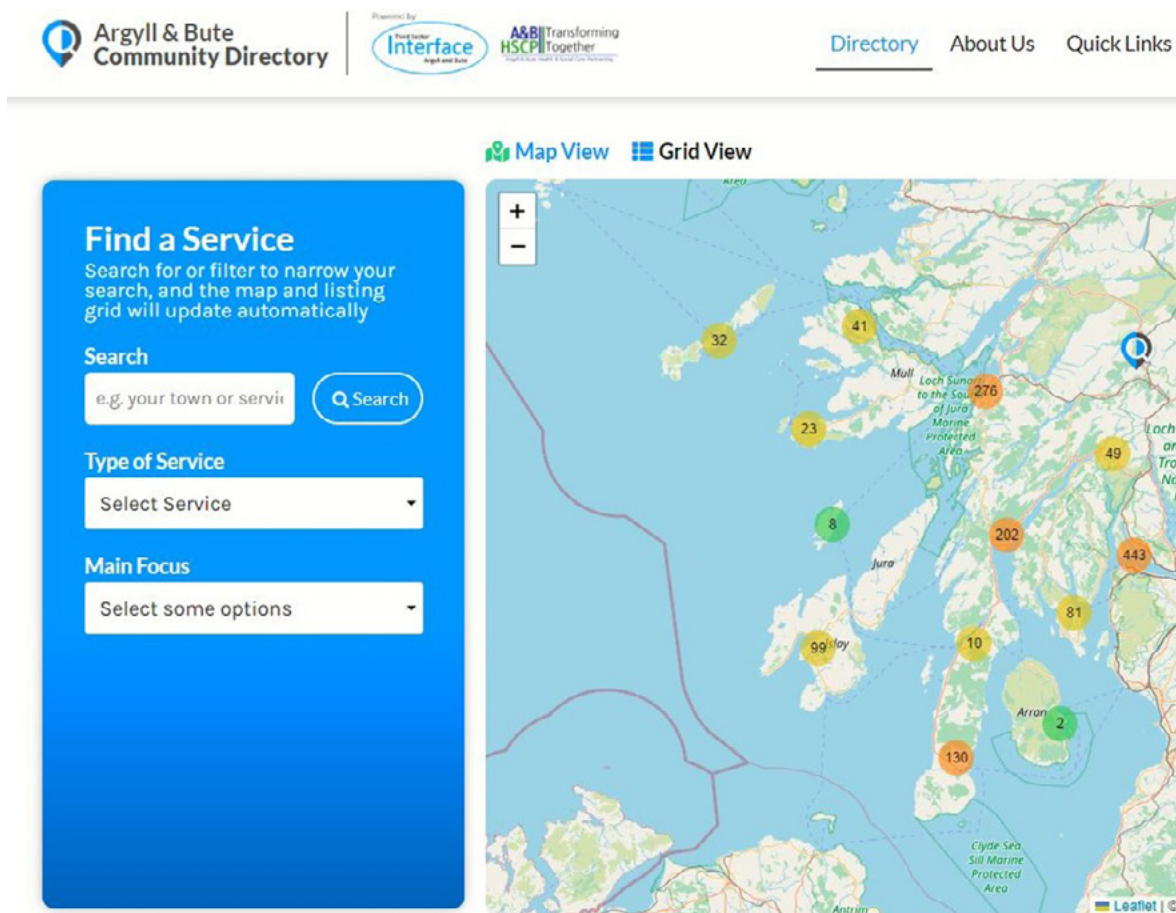
Examples of social prescribing initiatives in NHS Highland

Third Sector Interface (TSI) Community Directory

Argyll and Bute Health and Social Care Partnership (HSCP) supported development of the Third Sector Interface (TSI) Community Directory. The directory is a website which provides details of many of the third sector organisations that provide community-based support throughout Argyll and Bute – available at www.abcd.scot. The directory is a single source of regularly updated service information for referring agencies, or those making a self-referral.

The Public Health Team have collaborated with the TSI to develop the content of the site. The directory is widely promoted to HSCP staff, particularly allied health professionals, to support active signposting to community resources that can support individuals with their health and wellbeing.

Figure 4.2 – Argyll & Bute Third Sector Interface (TSI) Community Directory



Active Health Project

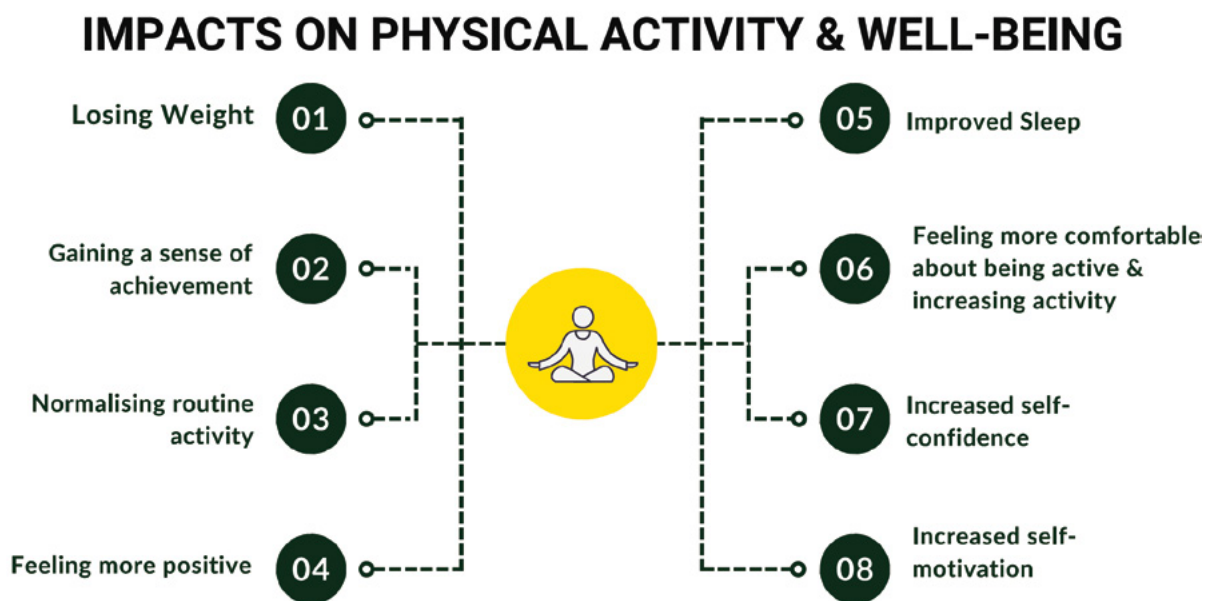
The Active Health project was set up in April 2019, funded by NHS Highland and Paths for All.

Active Health is a free and confidential service for people (aged 16+) living in the Highland area who would like to become more active to help their physical and/or mental health.

The project engages individuals in one-on-one conversations and additional follow-up discussions to assist them in developing a healthier and more active lifestyle. The service offers support to anyone registered with a GP practice in Highland who would benefit from being more physically active. Individuals can be referred by their GP, other health professional or self-refer.

From March 2019 to Sept 2023 there were 1042 people referred to the project with 772 people engaging (74%) with the service.

Figure 4.3 – Impacts of the Active Health Project on physical activity and well-being



Source: Active Health Link Workers Study, UHI Research Team, UHI

Prescribe Heritage Highland

Building on the Prescribe Culture initiative developed by Edinburgh University Museums, Prescribe Heritage Highland is a pilot project that aims to support health and wellbeing through heritage-based activities offered by local museums and heritage facilities.

A partnership between High Life Highland, University of Highland and Islands, Edinburgh University, NHS Highland and Museums Heritage Highland, Prescribe Heritage Highland aimed to explore whether, and how, the approach developed in Edinburgh could be scaled up in rural areas. Five local museums devised a programme of hands-on activities delivered over six weeks for participants to attend. Referrals came from a range of sources including health care professionals and 3rd sector support workers. Currently the project is seeking funds to expand and develop the initiative.

For more information on the pilot project, click the following link <https://vimeo.com/868658211/02bd10c902?share=copy>



Community Link Workers

NHS Highland has commissioned third sector organisations in Highland and Argyll and Bute to deliver inequalities focussed Community Link Worker Services in Primary Care as part of the national programme of work on Primary Care modernisation.

The aim of the service is to support people to live well through strengthening connections between community resources and primary care and developing pathways to community and third sector services and activities. Community Link Workers provide a person-centred service that is responsive to the needs and interests of patients registered with GP Practices in socio-economically deprived areas of NHS Highland. They work with people who face multiple and complex challenges: mental health, social isolation, loneliness, poor housing conditions, unhealthy relationships, poor physical health, financial worries, long term conditions, bereavement and more.

Community Link Worker's follow a social prescribing model and are embedded in the work of GP practices. They aim to address socio-economic and personal circumstances that affect health and wellbeing to improve the outcomes for patients and reduce pressure on GPs time.



Watch Video

Scan QR Code for video about Highland Community Link Workers or click 'Watch Video' button <https://vimeo.com/863137735/191292a64c?share=copy%20>



Chapter 5:

Prescriptions for Pain:

How medication can have long-lasting effects on public health



Chapter 5: Prescriptions for Pain: How medication can have long-lasting effects on public health

Be analgesic and opioid aware

This section is about the use of medication for pain – analgesics and opioids. There is little doubt that analgesics and opioid use can bring great benefits to individual but there are serious disadvantages as well. Analgesics are widely available, for example paracetamol, by prescription or over the counter. Opioids and synthetic opioids are regulated and available by prescription or lower strength through a pharmacy. The latter has an illegal market. Tackling drug related deaths is a Scottish national mission⁶¹, so this chapter will also describe analgesics and opioids within the context of drug related deaths.

What are analgesics and opioids?⁶²

An analgesic is a medicine that relieves pain. Analgesics are widely available through pharmacy over the counter and by prescription. There are three main types of analgesic: non-opioid analgesics, opioid analgesics and compound analgesics that combine the previous two forms. Most non-opioid analgesics work by reducing inflammation at the site of pain and opioid analgesics work by stimulating opioid receptors on neurons, which inhibit the release of chemicals (neurotransmitters) that transmit pain signals.

Opioids have analgesic and sedative effects, and medicines such as morphine, codeine and fentanyl are commonly used for the management of pain. The term ‘opioids’ includes compounds that are extracted from the poppy plant as well as semi-synthetic and synthetic compounds with similar properties. In the UK opioids are controlled and available on prescription because of the possible side effects including physical and psychological dependence. Opioids can be obtained illegally and increasingly from internet suppliers.

Prescribing and use of illegal drugs

There is a large body of evidence, including randomised controlled trials and systematic reviews, that concluded opioids may reduce pain for some patients in the short and medium term (less than 12 weeks). Opioid use in acute pain and for pain at the end of life is well established. There is, however, a lack of consistent good quality evidence to support a strong clinical recommendation for the long-term use of opioids for patients with chronic pain⁶³. Opioid dependence is one of a number of side effects although estimates of prevalence vary. Sign guideline 13: Management of Chronic Pain⁶⁴, cites from a systematic review opioid dependence ranged from 3% to 26% who were using opioids for chronic pain. The guideline also includes alternatives such as supported self-management, psychological based interventions and physical therapies. This is an area where social prescribing can play a significant role.

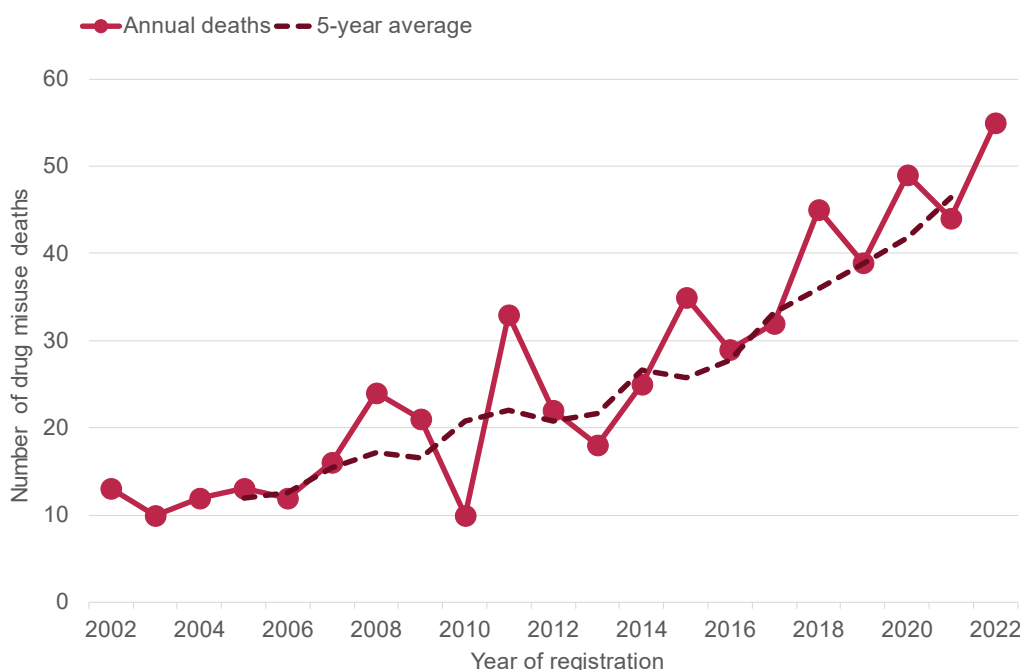
It is difficult to estimate how many people take opioids and analgesics that are not prescribed by a doctor. Estimates of prevalence can be derived from surveys, police seizure records or drug testing in prisons. Intelligence gathered from surveys suggests that most people obtain prescribed drugs from a friend or relative, from drug dealers and buy online.

All of these sources carry risks and include not knowing the strength of the substance or what the chemical ingredients are. In 2018–20, 9.7% of respondents to the Scottish Crime and Justice Survey (aged 16 years and over) had used illicit drugs compared with 7.4% in 2017–18⁶⁵. The report does not separate out opioids and analgesics. The Scottish Drug Misuse Database (SDMB) recorded for NHS Highland in 2020/21, 230 individuals and of these 82% reported illicit drug use⁶⁶. The Scottish percentage for the same time period was 75%.

Drug Deaths in Highland

Across Scotland, reducing drug related deaths was declared as a national mission in 2018. There were 55 drug-related deaths registered in NHS Highland in 2022⁶⁷. This was the highest number ever recorded and an increase of 11 deaths from 2021. Of these deaths, 42 were recorded in the Highland council area and 13 in the Argyll and Bute council area. The five-year average number of deaths shows an increasing trend and has more than doubled over the last ten years.

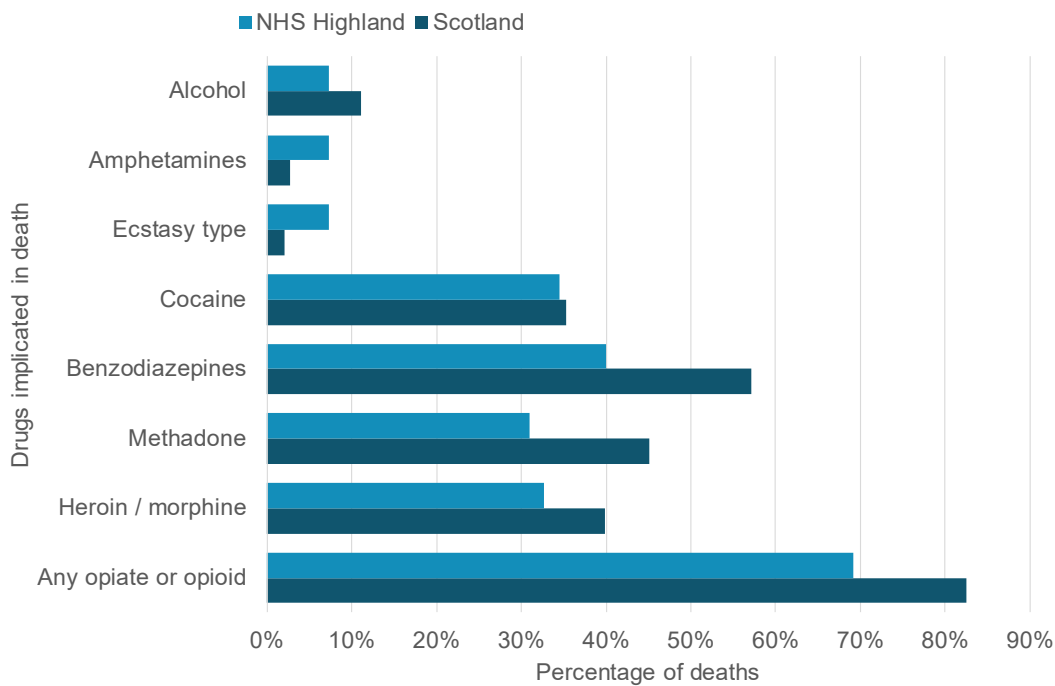
Figure 5.1 – Number of drug related deaths registered in NHS Highland between 2002 and 2022



Source: National Records of Scotland, Drug related deaths in Scotland 2022; Scottish Public Health Observatory

Information from the drug death review process is available and toxicology reports show what drugs had been taken at the time of death.

Figure 5.2 – Drugs implicated in drug related deaths registered in NHS Highland and Scotland in 2018 – 2022



Source: National Records of Scotland, Drug related deaths in Scotland 2022

The drugs implicated in drug related deaths in NHS Highland and Scotland between 2018 and 2022 are shown in Figure 5.2. Opioids or opiates were recorded in 69% of deaths in NHS Highland, followed by benzodiazepines in 40% of deaths and cocaine in 35% of deaths. Most drug related deaths are of people who took more than one substance.

The benefits of prescribing – Opioid Substitution Therapy

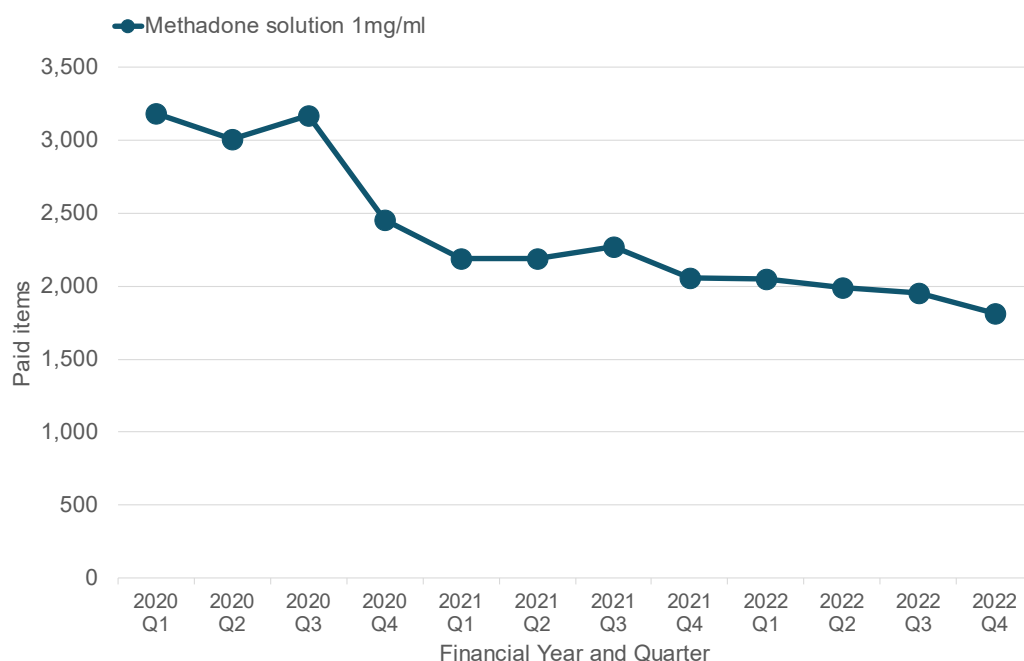
People who experience problematic opioid use may benefit from being prescribed Opioid Substitution Therapy (OST). The aims of OST are to decrease or stop the use of illicit opioids, as well as reduce the risk of other serious consequences of drug use. As mentioned earlier, drug related deaths became a national mission and the Scottish Government’s key policy was the implementation of the Medicines Assisted Treatment (MAT)⁶⁸ Standards. These standards include the increased choice of treatments such as opioid substitution therapy, earlier access and increased support.

Data on OST prescriptions dispensed in the community are recorded in the Prescribing Information System (PIS)⁶⁹. Current OST prescribed in Scotland include:

- methadone hydrochloride,
- buprenorphine,
- buprenorphine,
- naloxone and
- long-acting buprenorphine (including Buvidal© slow-release formulations)

Opioid Substitution Therapy (OST) can be a lifeline for individuals who have problematic drug use (such as heroin). Methadone has been commonly prescribed and is a synthetic opioid agonist; it is taken daily and comes as a powder, liquid or tablet. The treatment focuses on maintenance and harm reduction and enables individuals to manage and stabilise their lives, for example, successfully engage in work. The impact of OST can extend to families and children who often experience the negative impacts of someone with problematic drug use in the family. Figure 5.3 shows the number of paid methadone items dispensed within NHS Highland between 2020 and 2022 and shows a downward trend.

Figure 5.3 – Number of methadone paid items dispensed in NHS Highland between 2020 and 2022



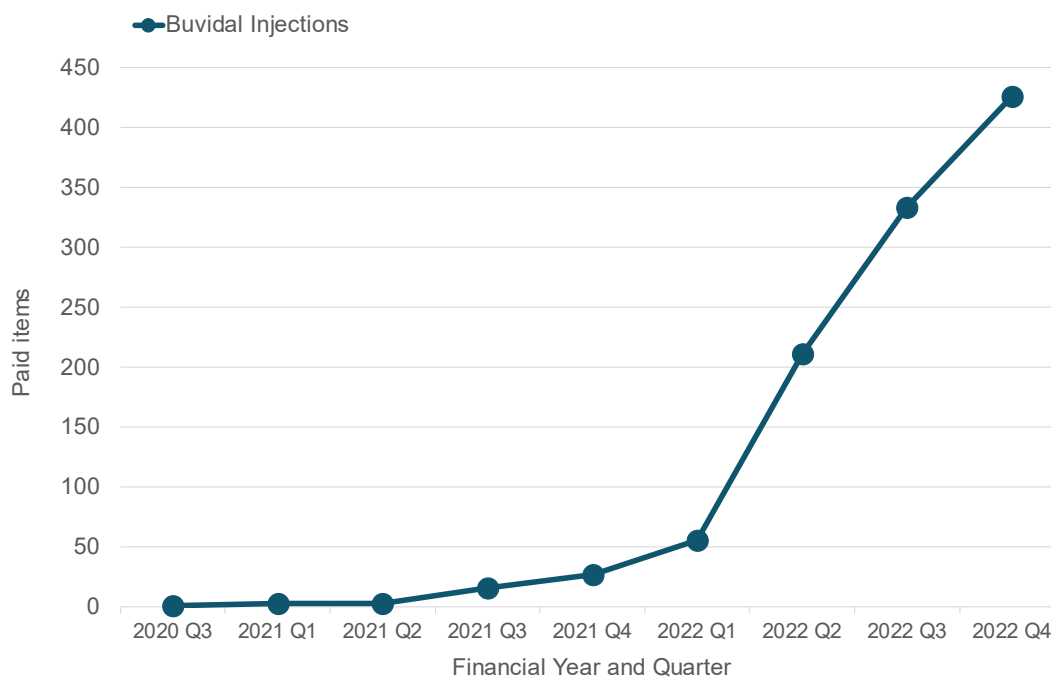
Source: Prescribing Information System

In contrast the number of prescriptions of Buprenorphine has increased. Buprenorphine, an OST, is a medicine used to treat dependence on opioid drugs such as heroin or morphine. It is long-acting buprenorphine and isn't suitable for all individuals with problematic drug use but for those who meet the prescribing criteria it can be transformational. Buprenorphine, is a subcutaneous injection administered weekly or monthly by a health care worker.

The benefits include reduced visits to a pharmacy and anecdotally individuals describe the process as liberating. Figure 5.4 shows the number of Buprenorphine injections paid items dispensed within NHS Highland between 2020 and 2022. The sharp rise in paid items dispensed in 2021 and 2022 is due to the implementation of the Medicines Assisted Treatment⁶⁸ programme because it includes a wider choice of medication. Within a prison setting the change from prescribing methadone to Buprenorphine cuts down on daily visits to the dispensing pharmacy and avoids the need for prisoner escorts. This potentially saves prison officer time as well as being of value to the person in the care of the prison.

A recent budget⁷⁰ analysis of the introduction of buprenorphine over a year in a defined population concluded a decrease in costs for care of those with an opioid use disorder. Cost savings were attributed to the indirect costs of lower crime rate, reduced supervision, avoidance of other infections and reduced hospital admissions.

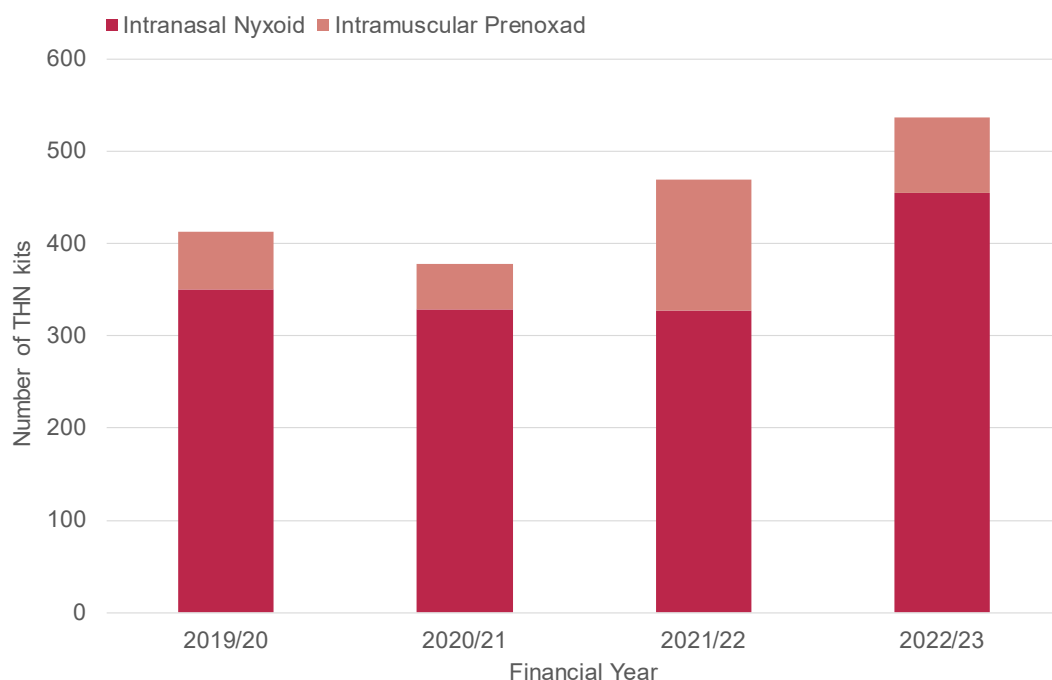
Figure 5.4 - Number of buvidal injection paid items dispensed in NHS Highland between 2020 and 2022



Source: Prescribing Information System

Naloxone is another opioid antagonist. It is a medication used to reverse or reduce the effects of opioids and used to counter decreased breathing in opioid overdose. Effects begin within two minutes when given intravenously, five minutes when injected into a muscle, and ten minutes as a nasal spray. Throughout Highland, naloxone kits along with training, have been made available to individuals, friends and family where a risk harm has been identified. Figure 5.5 shows the numbers of kits have increased each year since 2019⁷¹. In the calendar year 2022, 518 kits were issued by services based in the community and 11 kits were issued by HMP Inverness.

Figure 5.5 – Number of Take Home Naloxone (THN) kits issued by type of kit in Highland between 2019–2020 and 2022–2023



Source: National Naloxone Programme Scotland, Public Health Scotland

From a population-based approach the interface of substance use (both legal and illegal) and medication presents a complex picture. There is analgesic and opioid medication that is prescribed for pain, which can result in dependence and where long-term use may have limited benefit. This medication also has the potential to be used illicitly. Drug related deaths is a significant challenge across Scotland. However, medication in the form of opiate substitution therapy may offer great help in reducing the serious consequences of illicit drug use.

Chapter 6:

Case study –

How medication and other measures can work together to improve health



Chapter 6: Case study – How medication and other measures can work together to improve health

Introduction to case study

Risk factors leading to heart disease (more technically cardiovascular disease) are often lifestyle based, such as eating unhealthy food and lacking physical activity. There is also consistent evidence that the social determinants of health including economic, social, environmental and psychosocial factors play a significant role in the development of cardiovascular disease risk factors⁷². It is recognised that people with established heart disease are very likely to require medication to manage their condition. However, there are other approaches that might be beneficial to an individual's health and wellbeing that can be used alongside medication prescribing and that has potential to reduce the use of medication and health care services. In this chapter, we explore how a pharmacological (traditional) approach to managing such conditions can work alongside a social prescribing approach.

What is cardiovascular disease?

Cardiovascular diseases (CVDs) are a group of conditions affecting the heart or circulatory system. They include coronary heart disease, cerebrovascular disease (stroke), atrial fibrillation and peripheral arterial disease. Cardiovascular risk factors include high blood cholesterol, high blood pressure, diabetes and psychosocial factors such as anxiety, depression and social isolation. Other known risk factors include smoking, physical inactivity, alcohol consumption and poor diet⁷³. Research indicates a strong relationship between social deprivation and cardiovascular disease risks⁷⁴. The risk of CVD is greater in men and in people aged over 50 years. Risk increases with age, with those aged 85 years and over at particularly high risk. Treatment of CVD involves reducing modifiable risk factors and drug management.

Cardiovascular diseases are among the most common causes of health loss in NHS Highland, contributing to ill health and early deaths⁷⁵. The scale of cardiovascular disease in NHS Highland is summarised below.

The scale of cardiovascular disease in NHS Highland

- Cardiovascular disease is one of the leading causes of death and disability, accounting for 1,070 deaths (26%) in 2022⁷⁶.
- Overall, it is estimated that around 18% of men and 16% of women are living with a cardiovascular condition⁷⁷.
- In the past ten years, more than 12,000 people have been newly diagnosed with coronary heart disease⁷⁸ and around 8,500 people have been newly diagnosed with cerebrovascular disease⁷⁹.
- There were around 5,700 hospital admissions related to coronary heart disease or cerebrovascular disease in 2021-2022.
- More than 32,000 people in NHS Highland are recorded on general practice disease registers with atrial fibrillation, coronary heart disease, heart failure and stroke or transient ischaemic attack (TIA)⁸⁰.
- The number of patients prescribed drugs for the cardiovascular system, and cost of prescribing, has increased over the last ten years. Common medications include statins and antihypertensive drug treatment.

Description of example case studies

Case study 1 - Bill

Bill is a 59-year-old man with a family history of cardiovascular disease as his father had died from a heart attack aged 65 and his brother had suffered a heart attack aged 55. Bill was diagnosed with type 2 diabetes when he was 46 years old, high cholesterol when he was 49 years old and high blood pressure when he was 52 years old. He has been on oral glucose lowering medicines since he was diagnosed with diabetes. Bill smokes 30 cigarettes per day and has smoked since he was 15 years old. Bill is overweight and takes little exercise. He reports suffering regularly from breathlessness and fatigue.

He lives with his wife who has multiple health conditions and he is her main carer. He is currently unemployed, finding it difficult to get work that he can do given his various health conditions and his caring responsibilities. He meets up with friends once a week at the local social club and drinks alcohol socially but admits that he worries about money and thinks it will be difficult to keep this going given rising costs of energy and everyday essential items.

Case study 2 - Isobel

Isobel is a 58-year-old woman who was diagnosed with angina when she was aged 56. She has a history of anxiety and depression that was diagnosed in early adulthood and has been on medication to deal with this since she was in her early 20's. Isobel works part time as a secretary in a local builder's firm.

She lives alone and does not venture out much apart from going to work. Isobel admits to a lonely lifestyle and regularly uses alcohol to cope with her low mood. Isobel is overweight and takes little exercise outside of her short walk to work. She regularly attends her GP for support with her anxiety and depression which has worsened in recent months as well as regularly having her angina medication reviewed. Isobel has been struggling to stay at work recently, feeling overwhelmed by her circumstances. She is sometimes not sure if the physical symptoms she experiences relate to her angina or anxiety and she is finding that she has started taking her angina medication more regularly but is not sure if it is making a difference.

A medicinal approach to supporting people like Bill or Isobel

Medication prescribed could include the following:

- aspirin 75mg daily,
- atorvastatin 40mg daily,
- ramipril 10mg daily,
- bisoprolol 2.5mg daily,
- metformin 500mg twice a day,
- omeprazole 20mg daily.

This is a large number of drugs, that need to be taken more than once every day. They are aimed at controlling high blood pressure, elevated blood glucose (leading to type 2 diabetes), raised blood lipids (like cholesterol), as well as a drug to protect the stomach lining from being harmed by these drugs. Like other licensed medication, these have been rigorously tested and evaluated for evidence of effectiveness in tackling the symptoms of heart disease and helping to prevent worsening disease.

If for either person angina is the main clinical feature, the following could be prescribed:

- aspirin 75mg daily,
- bisoprolol 5mg daily,
- clopidogrel 50mg daily,
- ramipril 10mg daily,
- atorvastatin 40mg daily,
- nicorandil 10mg daily,
- Glyceryl trinitrate (GTN) spray (Isosorbide mononitrate 20mg twice a day for an acute attack).

This approach with medication has been shown to improve health and lengthen life, so it is important that people take the medication when it is prescribed for them. However, it cannot reverse changes that have already happened to the body. It also has a major impact on an individual's life, for example, repeat monitoring visits to the GP and the need for regular medicine reviews.

Use of a social prescribing approach alongside medication management to support people with cardiovascular disease

Social prescribing is a means of enabling health and care professionals to refer people to a range of local, non-clinical services. Recognising that people's health is determined primarily by a range of social, economic and environmental factors, social prescribing seeks to address people's needs in a holistic way. It also aims to support individuals to take greater control of their own health.

Case study 1 – Bill

During a recent visit to his GP practice, Bill's GP noticed that he was more down than usual and that his physical health although relatively stable, was not improving despite being given lifestyle advice about healthy eating, physical activity and stopping smoking. Bill's GP noted that he had gained additional weight and that his diabetes medication needed to be increased to control his blood glucose levels. Bill's GP offered to refer him to the practice Community Link Worker.

The Link Worker arranged to meet Bill, discussed how he had been feeling and helped him to identify what was important to him and what changes he would like to make to improve his wellbeing. The Link Worker helped Bill to identify how he could improve his health and wellbeing, what barriers there might be and how he could overcome these. Bill identified that he was struggling with his caring responsibilities, feeling increasingly that he was unable to leave his wife on her own and was becoming more and more concerned about money as he was unable to get work that would allow him to still look after his wife. Bill stated that he would like to stop smoking but wasn't ready to. He felt that he would benefit from being more active but was concerned about how that would affect his caring commitments.

The Link Worker was able to identify a carers organisation, an online carer peer support group and a disability activities group in the area. The Link Worker was able to link Bill with the carers' organisation, complete a carer's assessment and get a carer support plan in place. They were able to identify some befriending volunteers to help free up some of Bill's time to leave the house. The Link Worker also arranged for the local disabilities' activity group leader to contact Bill and talk about activities that were available at the local community centre.

The Link Worker identified the Money Advice service that was offered by Bill's GP practice, the local authority benefits advice service and the local Citizens Advice Bureau as options to support Bill explore his financial worries. Bill was a regular attendee at his GP practice and identified the practice-based service as the best option for him. The Link Worker made an appointment for Bill with the service and at Bill's request attended the appointment to support him. The Money Advice adviser was able to complete a financial assessment and identify several benefits that Bill was entitled to that he had not claimed. As a result, Bill was able to claim benefits to boost the household income and help him reduce his anxiety about his financial situation.

Bill had identified improving his levels of physical activity as important. The Link Worker was able to identify a range of community-based options for physical activity including a local walking group, a conservation group at the local nature reserve and a walking football team at the local football club. The Link Worker spent time going over the options with Bill and worked with him to create a social prescription. Bill identified the walking football club as a good option. The Link Worker contacted the coach and arranged for Bill to attend a session and accompanied him to his first session to help him overcome his anxiety about being in a new social situation.

One year on and Bill's life looks very different. Bill regularly attends the walking football club, and the weekly wheelchair bowling club with his wife where he has also taken on a volunteering role to support the running of the club. He is feeling more connected to his community and befriending volunteers allow Bill time to attend activities and have time to himself without worrying about leaving his wife alone. Bill has managed to lose around 10% of his body weight because of being more active and having more energy to prepare meals with fresh ingredients for himself and his wife. He has been able to reduce the dose of his diabetes medication and his blood pressure is more stable allowing him to reduce the medication required to control this.

Bill reports that he feels better able to manage his health conditions and as a result has reduced the frequency of visits to his GP practice. He praises social prescribing as an approach to improving health and wellbeing by helping people like him to identify the issues that are affecting their health and wellbeing and supporting them to make positive changes.

Case study 2 – Isobel

During a visit to her GP practice for a routine review of medication, Isobel spoke to the practice nurse about her low mood and opened up about her use of alcohol as a means of coping with feeling anxious. Recognising that Isobel needed more than just medication to help her maintain or improve her health, the practice nurse referred her to the Community Link Worker.

The Link Worker contacted Isobel and spent time with her to unpick her situation and identify the things that were important to her. The Link Worker was able to help Isobel systematically look at the issues that were affecting her health and wellbeing and make a holistic assessment of her situation. This meant looking beyond the initial condition that Isobel was referred for and helping her to identify things that she could do for her wellbeing.

The Link Worker encouraged Isobel to think about what was affecting her wellbeing starting from where Isobel felt she was at the time and helped her to identify options for things that could support her to improve her health and wellbeing. The Link Worker was able to identify a range of community-based options including an art group in the local community centre, a local health walks group, a gardening club, a singing group, a book club and a beginners yoga class.

The Link Worker gave information about the options to Isobel and spent time with her to create the social prescription by helping Isobel to identify the options that best fitted her circumstances. The Link Worker supported Isobel to identify what might get in the way of making any changes to her circumstances and helped her to identify how she could move forward.

In Isobel's case, she was keen to have opportunities that would get her out of the house regularly to do something that she had an interest in. Isobel had enjoyed art at school but had not put brush to canvas since leaving school.

Isobel was also keen to increase her levels of physical activity but was concerned that her low levels of fitness would get in the way. The local art group and health walks group were identified as a good fit for Isobel. The Link Worker and Isobel had identified lack of confidence as something that might get in the way of Isobel being able to make changes to her circumstances and the Link Worker arranged to accompany Isobel to her first art session and introduced her to the tutor. The Link Worker also arranged for the local health walk leader to meet Isobel to go over the options that would best suit Isobel's level of fitness. The Link Worker met with Isobel several times to review progress and continued to help Isobel identify any barriers to change and supported her to overcome them. One year on and Isobel

still regularly attends the local art group. She met some like-minded people at the art group and regularly meets up with them for coffee and outings to the cinema. Isobel was also able to identify a weekly walking group that suited her level of fitness and has gradually built up her confidence and fitness to a point where she is now able to walk longer distances and has been successful in reducing her weight. Isobel has reported that she feels less lonely, and the art and walking groups have helped her to focus on something other than her health conditions. As a result, she has felt less anxious, her mood has improved, and she no longer feels like she is struggling to attend work. She has managed to reduce the use of her angina medication as her symptoms have improved and she now recognises that her symptoms were probably related to her anxiety.

Isobel now reports that she feels like a functioning member of her community with improved connections and is better able to cope with the stresses of everyday life. She has reduced her use of alcohol and is getting a better quality of sleep. She reports that she does not feel the need to visit her GP as often as she did and the medication she was prescribed for anxiety and depression has reduced as Isobel feels that improved social connections, regular exercise and getting outdoors has helped her to better manage her condition rather than allowing it to manage her.

Final Remarks

Personalised care using socially prescribed interventions can be used to support the health of people with cardiovascular disease⁸¹. Medication remains an essential part of heart disease management, but additional approaches can work in combination to give considerable synergy and benefits.

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Notes:

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Publication produced and published by NHS Highland Public Health.

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