Experts in health

Improving productivity, quality and prevention

How the NHS can optimise health outcomes in a time of financial constraint

June 2025

PUBLIC

Context and aims

Context

The NHS needs to consider how it can increase healthcare value—i.e., deliver better outcomes and greater output from the amount of input. Delivering more from existing resource means increasing productivity. At the same time, it needs to understand the opportunity prevention and better managing illness can deliver. Together these things need to be possible for the NHS to be sustainable.

There is widespread concern about the current state of the National Health Service (NHS). The recent Darzi Report characterised it as "in serious trouble," highlighting the significant pressures it faces[1]. The NHS is experiencing declining—or at best, stagnating—performance even though it now absorbs approximately 29% of total public service spending[2].

The government has also made clear its commitment to a triple shift towards prevention, community and digital. Darzi points out that the commitment to prevention is two decades old and yet funding for acute hospital care has increased from 49% to 58% between 2002 and 2021 as a proportion of total health service spend, whilst proportional spend in other care settings has been flat or has fallen. The inverse of the strategic intent has happened.

A consequence of this is that the NHS perceives there is no new money—whilst the government view is that it has constrained or reduced spending elsewhere to invest in health. In recent speeches Prime Minister, Keir Starmer, and Health Secretary, Wes Streeting, have both asserted that any additional funding must sit alongside comprehensive reforms, underscoring the urgent need for systemic change.

Aims

This report seeks to understand at the highest level:

1) What is the **size of the productivity** opportunity in the NHS overall and what is driving it?
2) What is the **size of unmet needs** in chronic conditions, and what is the potential impact of closing these gaps through improved care and treatment?
3) What is the opportunity **for improved return on investment of prevention?**
4) What are the **critical enablers** to permit this to happen?

This report primarily focuses on secondary care due to comprehensiveness of the secondary care dataset and the high accuracy of the clinical coding aligned with therapeutic areas within secondary care.

Given the concentration of funding in the acute sector we have focused explicitly on acute sector impact in these three areas.

Source:

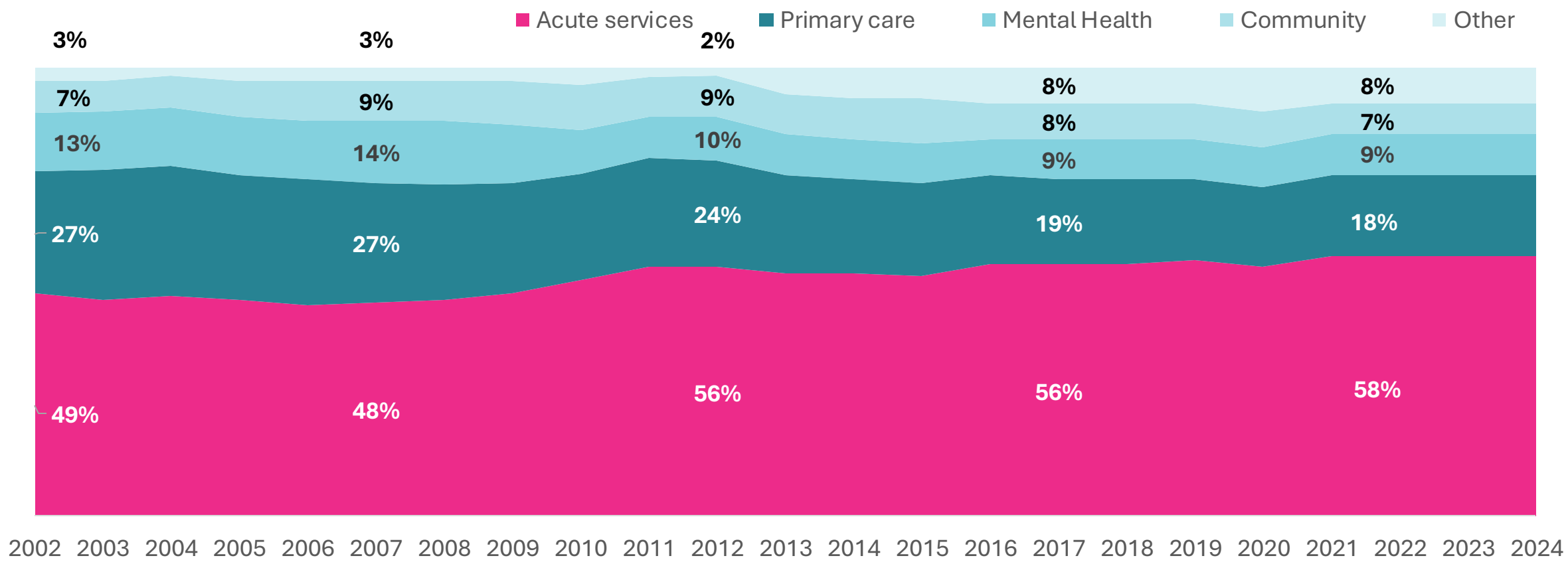
[1] Lord Ara Darzi's Independent investigation of the NHS in England (2024)

[2] Past and Future UK Health Spending, Institute of Fiscal Studies (2024)

Context: The Darzi report revealed that despite strategic intention to “shift left”, acute spend has continued to grow from 49% to 58%

Estimate of NHS spend by healthcare service

Percentage, 2002 - 2021



A substantial opportunity exists to improve productivity, increase congruence with guidelines in treating chronic conditions and better select investments in prevention

A substantial opportunity exists to improve productivity, address unmet patient needs in line with guidelines and improve investments in prevention:

- NHS productivity has declined in acute hospitals but not in the rest of the NHS; if addressed it could release **£12 - 17b** in resources in pure productivity gain from the acute sector. Productivity increased for first half of last decade and then started to fall in 2018/19, a year before Covid, as annual growth rate in clinical staff increased 2.3-3.7x. Note that inpatient care has managed to see rising numbers of patients with shrinking numbers of beds, but in comparison outpatients' volume has steadily risen 4x population growth.
- Significant unmet health needs exist in the management of chronic conditions relative to guidelines which contribute to the nation's ill health and increasing burden on the health system; closing these gaps could improve quality of life, improve life expectancy and lower acute sector resource utilisation costs on chronic diseases , estimated as **£6.1 - £9.2b** in total just from the cost of activity in the acute sector.
- Prevention spending is hard to identify and rarely evaluated but there is a wide range in impact from 0 to 35x; Improving the targeting of spending on prevention could double the impact it has from a median of 2x to an upper quartile of 4x, taking account of where the benefits fall suggests that the acute sector would receive **£3.3 - £7.2b** of the posited £11bn-22bn opportunity from improved investing in prevention.

Note: the NHS released its own productivity in February 2025 update whilst this report was under embargo:
https://www.england.nhs.uk/long-read/nhs-productivity-update-feb-25/
https://www.england.nhs.uk/long-read/nhs-productivity/

Realising the productivity opportunity requires an alignment of workforce and patient needs and a focus on major unmet health needs

Achieving this would require:

- Focusing on acute productivity to align workforce with patient needs (maximising activity per unit of input) within each provider and across providers on the one hand, and pursuing the transformation of outpatients through digitalisation to create new ways to address underlying demand
- Establishing an explicit focus on the major unmet health needs that driver ill health to close gaps in diagnosis and treatment with a greater emphasis on case finding and population health management; this will require using the disinvestment in acute and re-investment in primary and community care, diagnostics and medicine and data/digital to support this
- Taking a healthcare value approach, maximising impact and minimising costs to invest more in high impact prevention interventions, develop the commissioning approaches for high impact interventions and systematically evaluate these
- A common set of enablers including a much stronger focus on allocating resources where impact is maximised, ensuring the money follows the patient, linked patient level data, routine use of evaluation and data-driven evaluation

If the opportunity of £12 - 17b in acute productivity or £3.4b - £5.0b from reducing variation in chronic disease or £6.1 - £9.2b from closing care gaps would amount to **£15 to £27b** in opportunity to improve the resource use purely of the acute sector. Realising this benefit would allow the NHS to invest in spending more on the priorities of government including the additional activity that is needed to deliver elective waiting times, treat patients according to guidelines and invest in the triple shift (prevention, community and digital) that has been the stated priority of this government and previous ones.

Addressing these issues could release £10-16b in resources, cut chronic disease costs by 11% and boost prevention impact by £11b a year

Productivity

Looking back over the last decade, NHS spending has increased faster than output and hence productivity has fallen, in the acute sector in particular. If reversed, this would release £12-17b in resources.

Whilst spend in primary care and community care has fallen over the last 10 years, overall productivity in these areas has kept in level or increased as activity appears to have increased in line with spend.

Real spend per capita has increased by 23% across the NHS with spend in the acute sector growing 1.4 times faster than the whole NHS. However, whilst real spend has grown 41% and weighted activity output grew 21%, acute productivity has fallen 10-14%. The principal driver of this is workforce rising faster than output with doctors increasing 37% and nurses 34% since 2013/14.

The loss in acute productivity between 2019/20 and 2023/24 is estimated to have cost approximately 12-18% of the acute budget and is equivalent to £12-18b per year.

It is important to consider reasons why productivity may have decreased over the last 10 years including a clear change in policy toward “safer staffing” in 2018/19 and the suspension of payment by results (PbR).

This report has not examined the level of productivity 10 years ago and opportunities may exist to improve from this baseline level in any of these sectors.

Unmet health needs

Unmet health needs contribute to the ill health of the nation and place an increasing burden on the health system. Addressing these gaps could lower acute sector resource utilisation costs on chronic diseases (CVD, CKD and dementia), which can be conservatively estimated as £6.1-£9.2b

These conditions represent these represent a growing spectrum of CRM conditions. CRM accounts for £26 billion or 45% of the chronic disease burden and 56% of acute healthcare cost, with dementia contributing an additional £8 billion, for a total of £34bn.

Approximately 18% to 40% of patients remain undiagnosed and 32% to 94% of patients are not receiving optimal treatment across these conditions.

Optimising treatment could cut HCRU costs and mortality across five health conditions, with potential gross savings of £870 million to £4.8 billion—excluding long-term impacts like heart attacks and strokes. Applying a 15–29% gross opportunity rate to the £34b spend on CVRM and Dementia suggests savings of £4.7–9.0b. Extending this to other chronic conditions raises the total to £6.7–12.3b. After accounting for 25–50% reinvestment costs, the net opportunity ranges from £3.4–5.0b (variation) to £6.1–9.2b (guideline implementation).

Prevention

Secondary prevention (managing existing conditions) tends to generate savings mainly within the acute sector. Updating our previous analysis to take account of where the benefits fall suggests that the acute sector would receive £3.34bn - £7.24bn of the posited £11bn-22bn opportunity from improved investing in prevention.

Prevention is a stated priority for the NHS and the government, but what is spent on it is poorly captured and the return on investment is rarely analysed.

Analysis of prevention interventions shows median ±2x ROI and upper quartile ±4x ROI – with some interventions delivering far higher.

NHS and Local Authority (LA) colleagues indicated they do not use ROI routinely, hence there is no reason to think more than median impact.

Whatever the level of savings being targeted, the fact that the median ROI is 2x and upper quartile 4x, suggests it is reasonable to invest 25% to 50% of the expected savings from these initiatives in order to achieve the benefits of prevention.

Achieving this would require commissioning to adopt a healthcare value approach—maximising impact while minimising costs—to reinvest in high-impact prevention interventions. This includes developing effective commissioning strategies for these interventions and systematically evaluating their outcomes.

Productivity

Overview of section

What we've done and why:

- This section focuses on understanding how the productivity of the NHS has changed over the last decade and compares this to how much the NHS spends per head of the population.
- Productivity is one way to measure the performance of a sector as it compares the growth in the quantity of outputs to the growth in the inputs.
- We calculated how NHS productivity in the acute sector has changed to understand the cost of lost productivity within the acute sector.
- We also examined how activity, both inside and outside of hospitals, has changed in the past 5-10 years and whether changes in the workforce have been similar.
- It is important to understand that whilst productivity has decreased over the last 10 years, there are several factors that may have led to this including changes in policy and suspension of payment by results.

Key points covered in this section are:

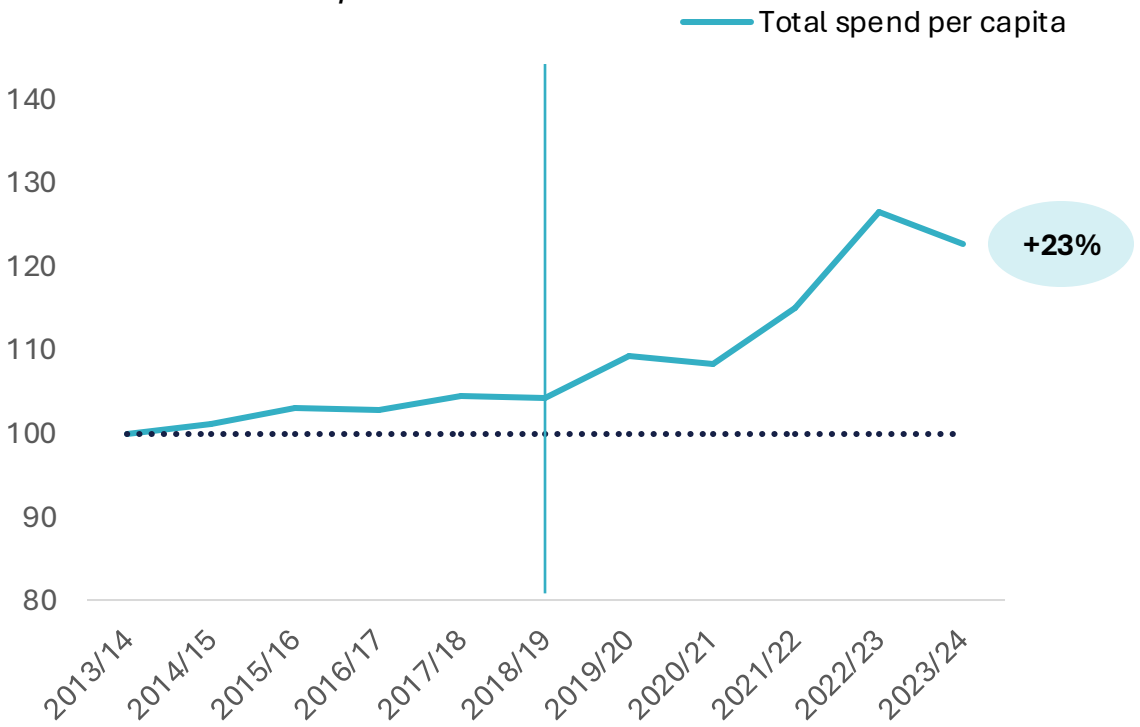
- NHS spend per capita increased 23% from 2013/14 to 2023/24 with acute sector growth 1.4x faster than the whole NHS. Primary care spend increased by 5% and community spend fell by 5%
- Productivity outside the hospital has kept level or increased from 2019/20 to 2023/24 as activity has increased in line with spend and workforce
- Acute activity generally increased until 2018/19 and fell before COVID, during COVID and has not recovered to pre-Covid levels as real funding per capita outstrips activity
- Acute productivity has fallen 10-14% from 2013/14 to 2023/24 as real spend has grown 41% while weighted activity output grew 21% and workforce 34-37%
- The annual rate of growth in the number of doctors and nurses was 2.3x and 3.7x higher in 2018/19 to 2023/24 than between 2013/14 and 2018/19
- Length of stay has increased in last 5 years, but this change can be attributed to the increase in complexity of spells—and hence is not responsible for lost productivity
- Care per patient in acute trusts has remained flat whilst nursing workforce has increased 12%, suggesting declining productivity
- Over last 10 years nursing workforce increased 34%, managers 79% and doctors 37% compared to OBDs 3% and weighted activity (WAU) has increased 23%
- Over last 5 years nursing workforce increased 22%, managers 33% and doctors 19% compared to OBDs 3% and weighted activity (WAU) has increased 6%
- The loss in acute productivity between 2019/20 and 2023/24 is estimated to have cost approximately 12% of the acute budget and is equivalent to £12b

[1] Lord Ara Darzi's Independent investigation of the NHS in England (2024)
[2] Past and Future UK Health Spending, Institute of Fiscal Studies (2024)

NHS spend per capita increased 23% from 2013/14 to 2023/24, with acute sector growth 1.4x faster than the whole NHS

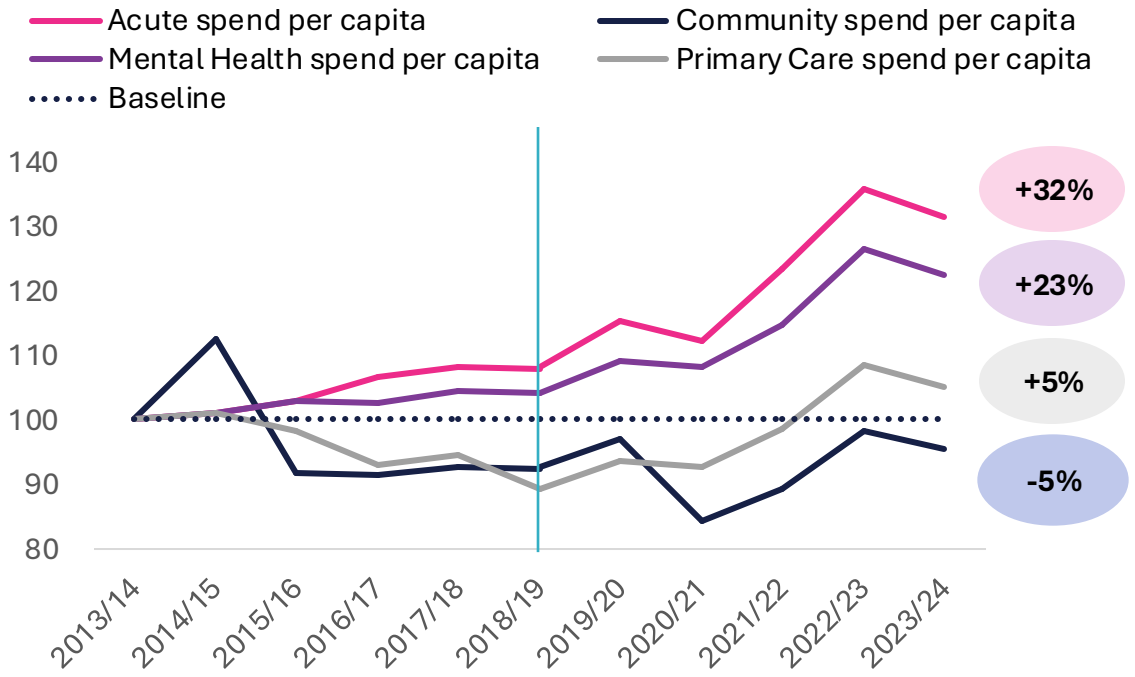
Total NHS spend per capita as a proportion of 2013/14 spend

£ spend per head between 2013/14 and 2023/24 indexed to 2013/14, constant at 2022/23 prices



NHS spend per head as a proportion of 2013/14 spend

£ spend per head between 2013/14 and 2023/24 indexed to 2013/14, constant at 2022/23 prices



NHS spend per capita increased 23% from 2013/14 to 2023/24, with acute sector growth 1.4x faster than the whole NHS, primary care only increased 5% and community fell 5%

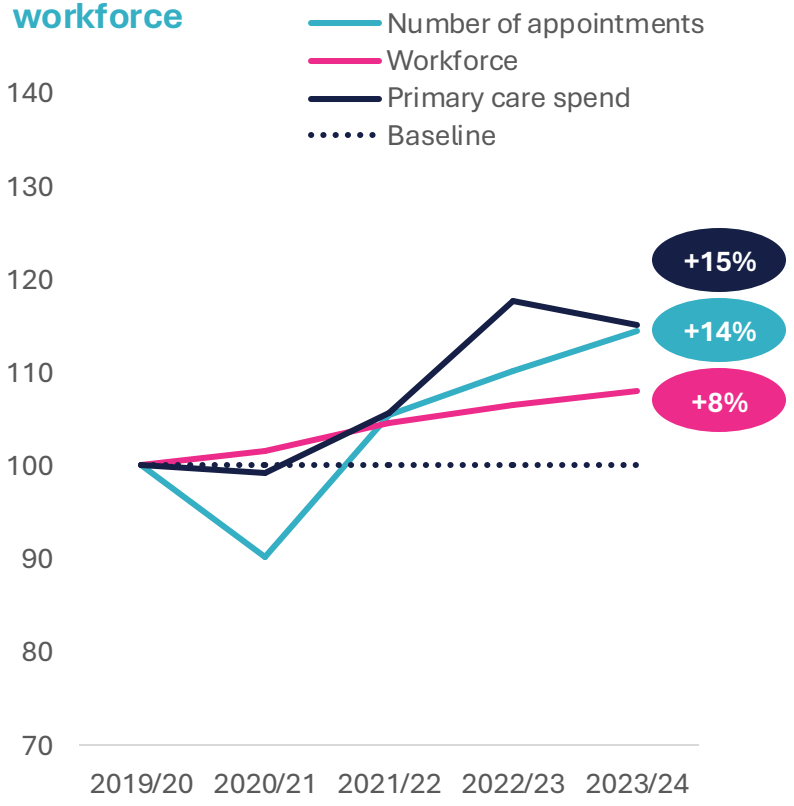
Source: UK House of Commons Research Briefing: NHS funding and expenditure (2024),Populations data is from ONS. Spend by care setting is taken from Darzi report (2024), 2021/22– 2023/24 splits are assumed to 2020/21 proportions documented in Darzi. Between 7-10% of spend categorised as 'Other' and not attributed to any care setting.

Productivity outside the hospital has kept level or increased from 2019/20 to 2023/24 as activity has increased in line with spend and workforce

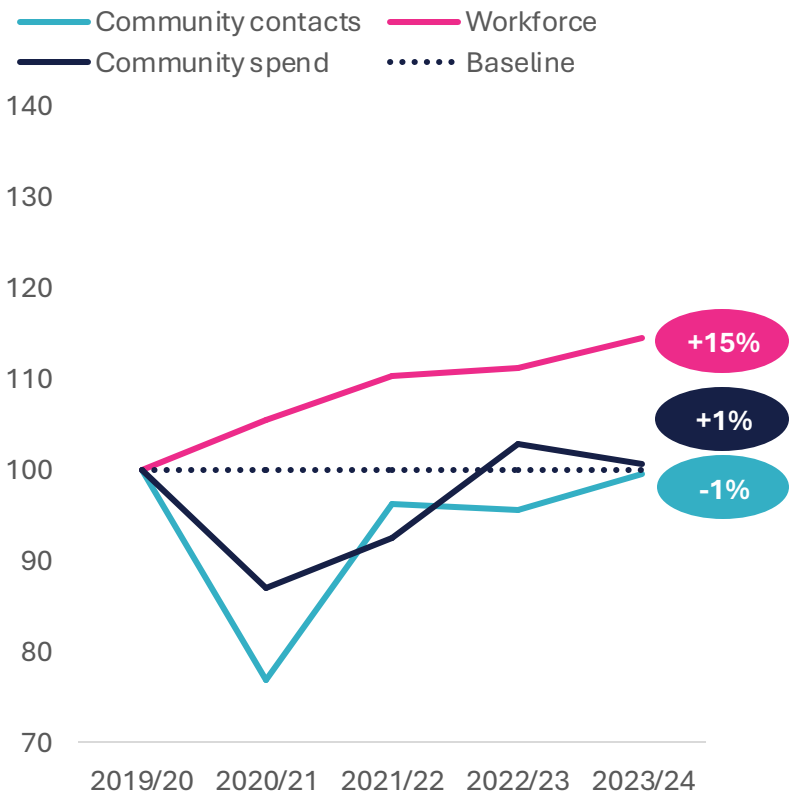
Total number of appointments/contacts, workforce (WTE) and spend per capita in England

All indexed to 2019/20 and per capita, spend is expressed in constant prices for 2022/23

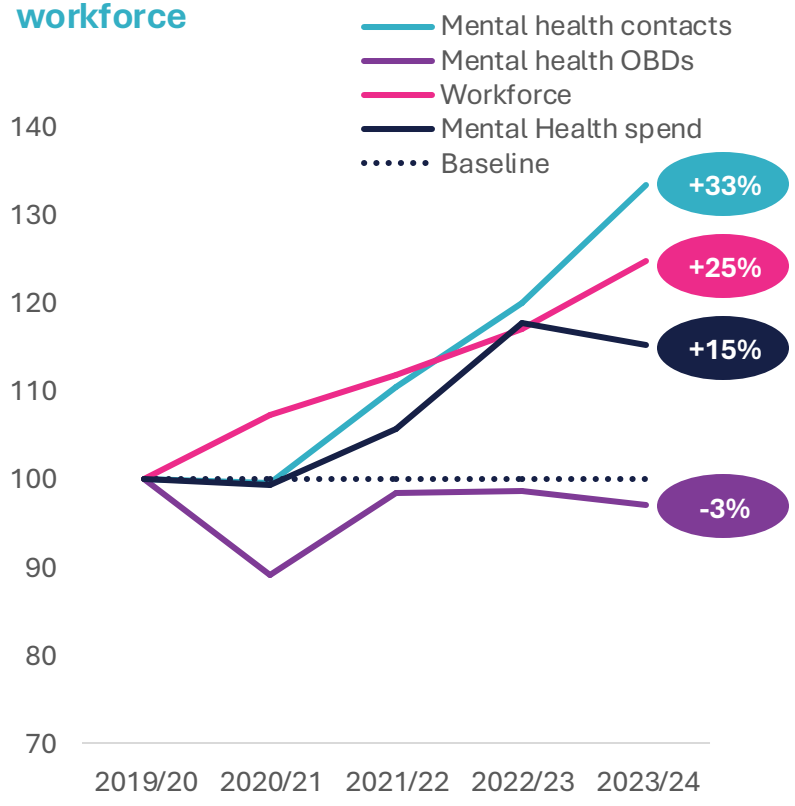
General Practice appointments and workforce



Community contacts and workforce



Mental health contacts, OBDs and workforce

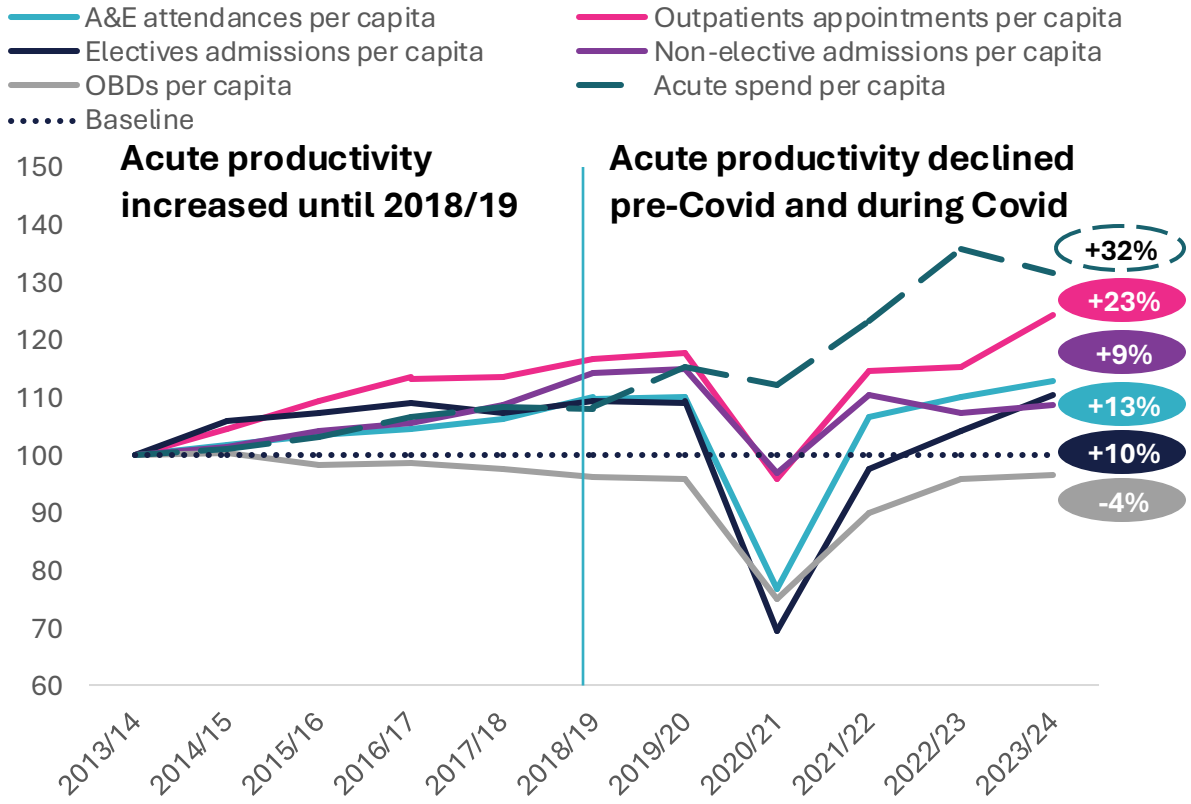


Source: Appointments in General Practices (NHS Digital), General Practice Workforce (NHS Digital) (2019/20- 2023/24), Mental Health Dataset (MHSDS; NHS Digital), NHS Workforce Statistics (HCHS Mental Health Workforce), Community Care Dataset (CSDS), NHS Workforce Statistics (NHS Digital– mapped to community trusts), CF analysis

Acute activity generally increased until 2018/19 and fell before covid, during covid and has not recovered to pre-Covid levels as real funding per capita outstrips activity

Acute activity and real spend per capita from 2013/14 to 2023/24

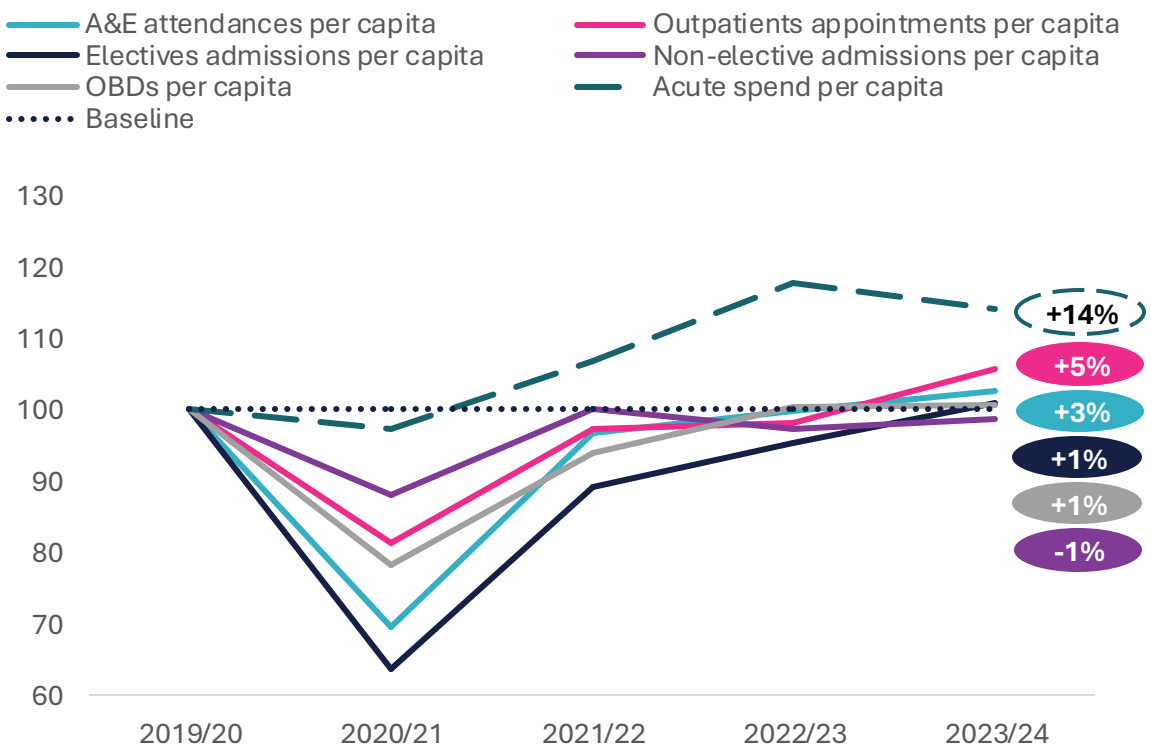
All items indexed to 2013/14, spend in constant 2022/23 prices



See page 41 for weighted activity unit calculation

Acute activity and real spend per capita from 2019/20 to 2023/24

All items indexed to 2019/20, spend in constant 2022/23 prices



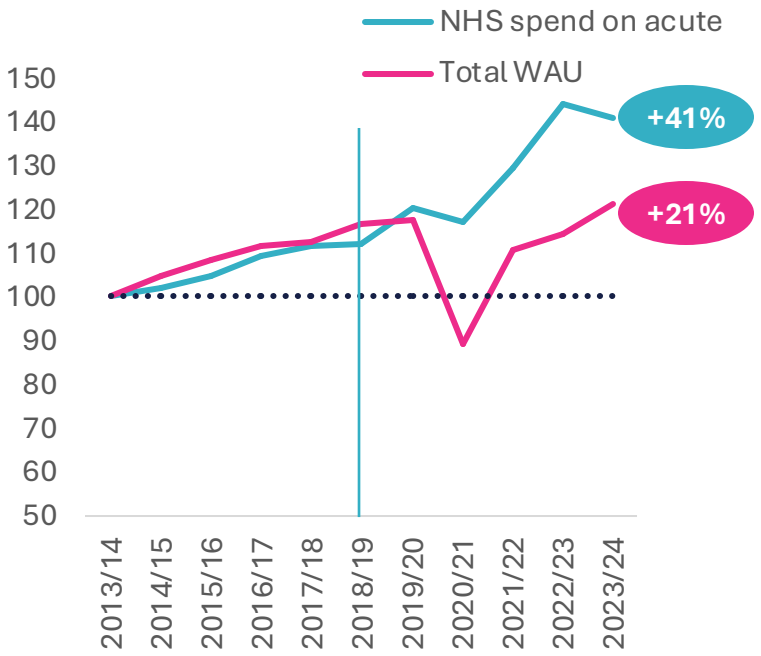
Note: Some of the outpatient growth is a reflection of the backlog being delivered

Source: UK House of Commons Research Briefing: NHS funding and expenditure (2024), Populations data is from ONS. Spend by care setting is taken from Darzi report (2024), 2021/22 – 2023/24 splits are assumed to 2020/21 proportions documented in Darzi. Between 7-10% of spend categorised as 'Other' and not attributed to any care setting. NHS A&E attendances, NHS Outpatients appointment dataset, NHS Emergency and Non-elective admissions, NHS Hospital Admitted Patient Care and Adult Critical Care Activity, NHS KH03 Occupancy Dataset.

Acute productivity has fallen 10-14% from 2013/14 to 2023/24 as real spend has grown 41% while weighted activity output grew 21% and workforce 34-37%

Real NHS spend on acute and output

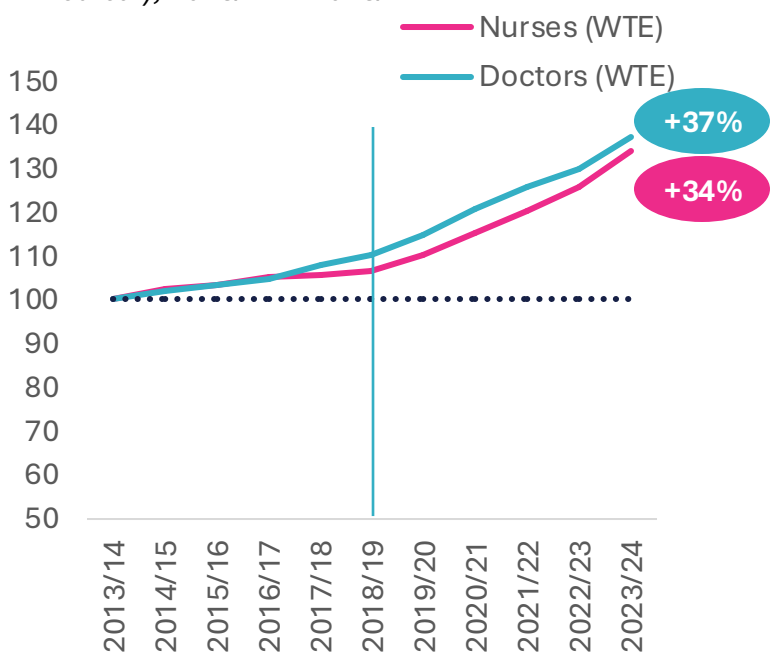
%, indexed to 2013/14, 2013/14 – 2023/24



- 41% increase in NHS acute spend vs 2013/14 (based on constant 2023/24 prices) (17% increase in NHS acute spend vs 2019/20)
- 21% increase in output as expressed by weighted activity unit vs 2013/14 (3% increase vs 2019/20)

Medical and nursing staff FTE

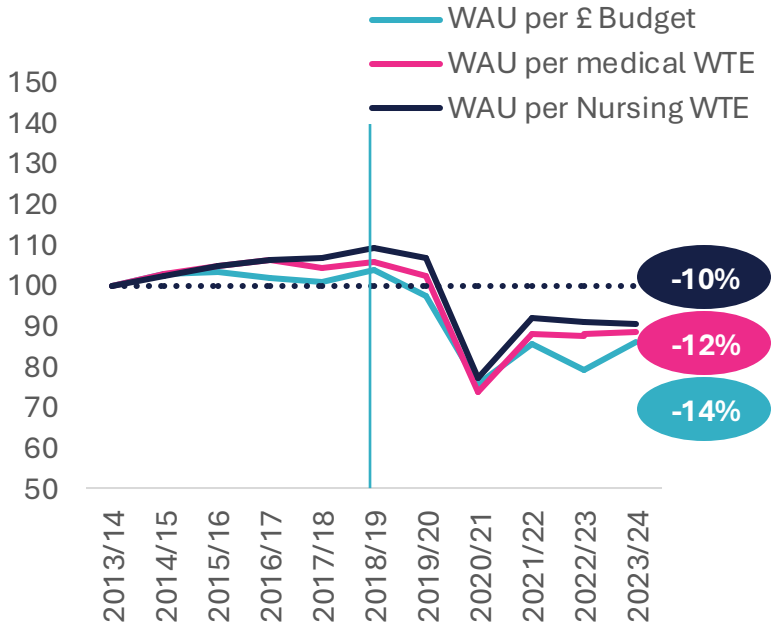
%, indexed to baseline (2013/14 – nursing or 2019/20 – medical), 2013/14 – 2023/24



- 37% increase in acute doctors since 2013/14 and 19% increase since 2019/20
- 34% increase in acute nurses since 2013/14 and 22% increase since 2019/20

Productivity

%, indexed to 2013/14, 2013/14 – 2023/24



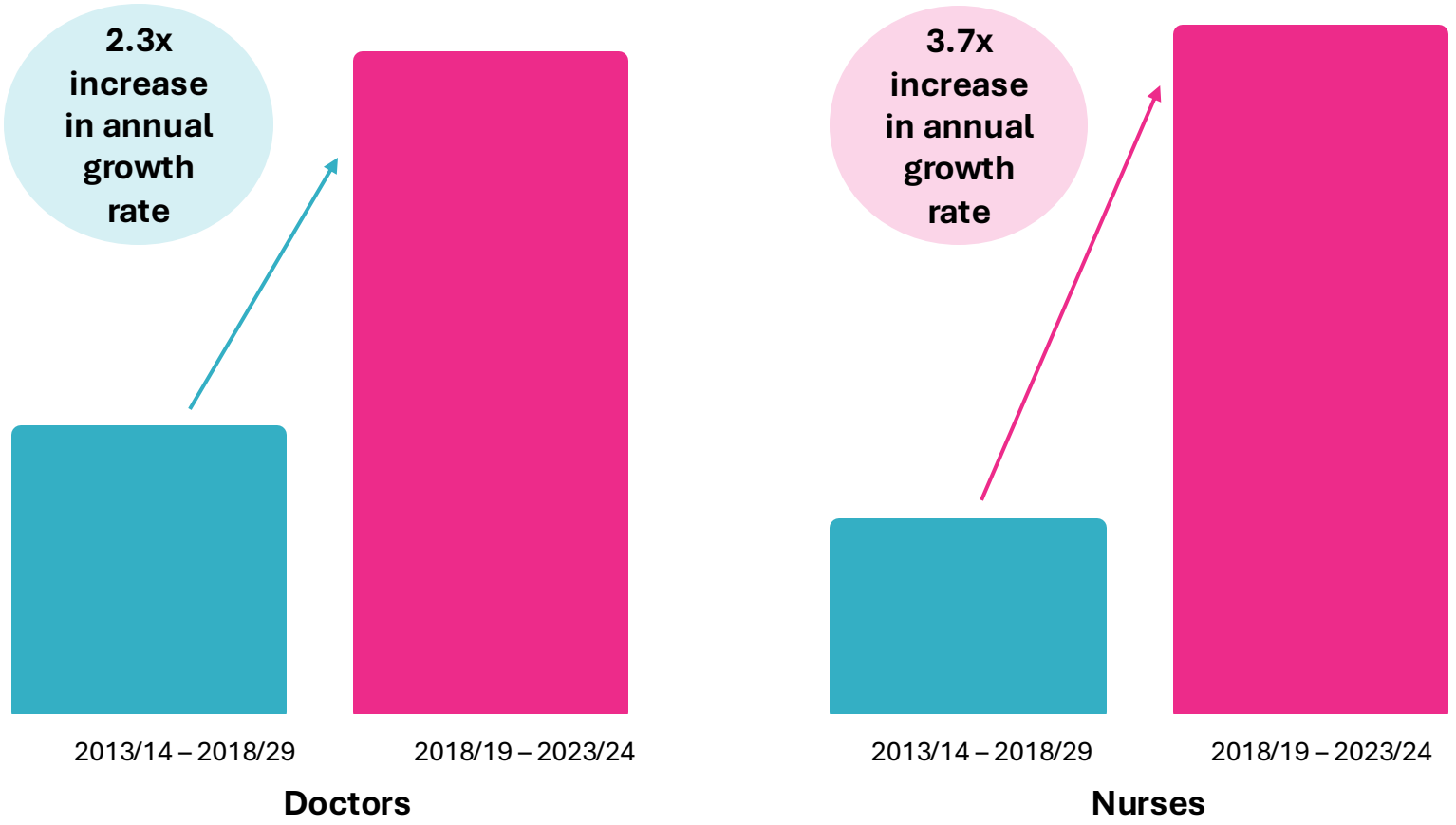
- Productivity rose through to 18/19
- Productivity fell in 19/20 and 20/21
- Improved productivity remains below pre-pandemic

Source: A&E Attendances and Emergency Admissions, Monthly Outpatient Referrals Data, KH03 Bed Occupancy, NHS Hospital Admitted Patient Care and Adult Critical Care Activity, Unit Costs of Health and Social Care 2023, NHS Workforce Statistics (Nursing Workforce), ONS (Medical Workforce), NHS funding and expenditure (Parliament papers, 2024), Populations data is from ONS. Spend by care setting is taken from Darzi report (2024), 2021/22- 2023/24 splits are assumed to 2020/21 proportions documented in Darzi. Between 7-10% of spend categorised as 'Other' and not attributed to any care setting.

The annual rate of growth in the number of doctors and nurses was 2.3x and 3.7x higher in 2018/19 to 2023/24 than between 2013/14 and 2018/19

Annual rate of growth for doctors and nurses

%, 2013/14 – 2023/24

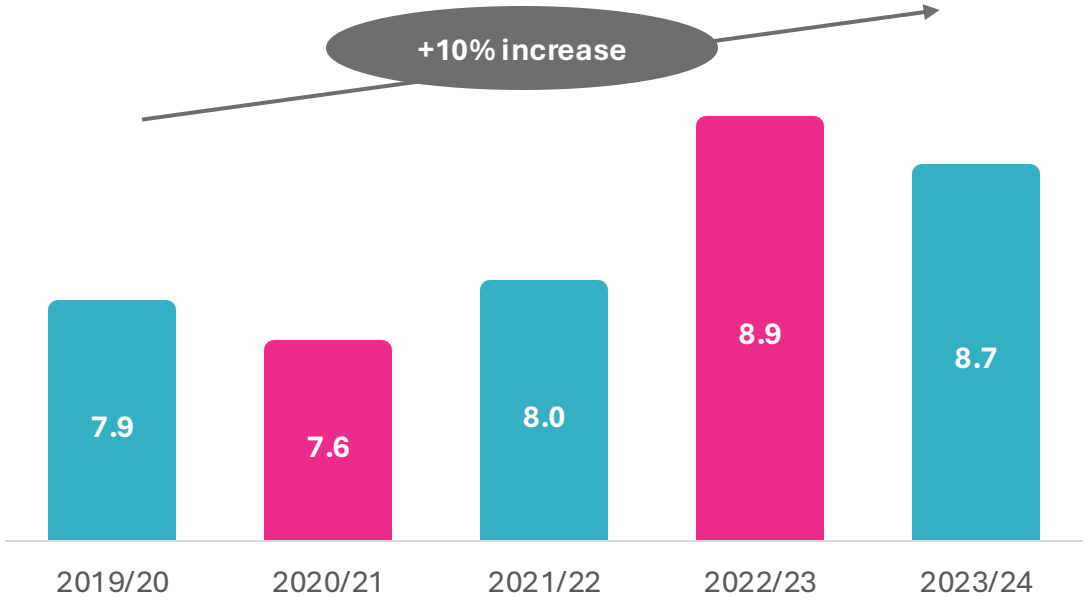


- Between 2013/14 and 2018/19, the annual increase in the number of medical FTE was 1.92%.
- In comparison, the annual growth rate in medical FTE between 2018/19 and 2023/24 increased to 4.68% which was 2.34x higher
- Similarly, the annual growth rate for nursing FTE in 2013/14 – 2018/19 was 1.28% in England.
- Between 2018/19 and 2023/24, the annual growth rate in nursing FTE had increased to 4.68% which is 3.7x the growth rate in previous 5 years.

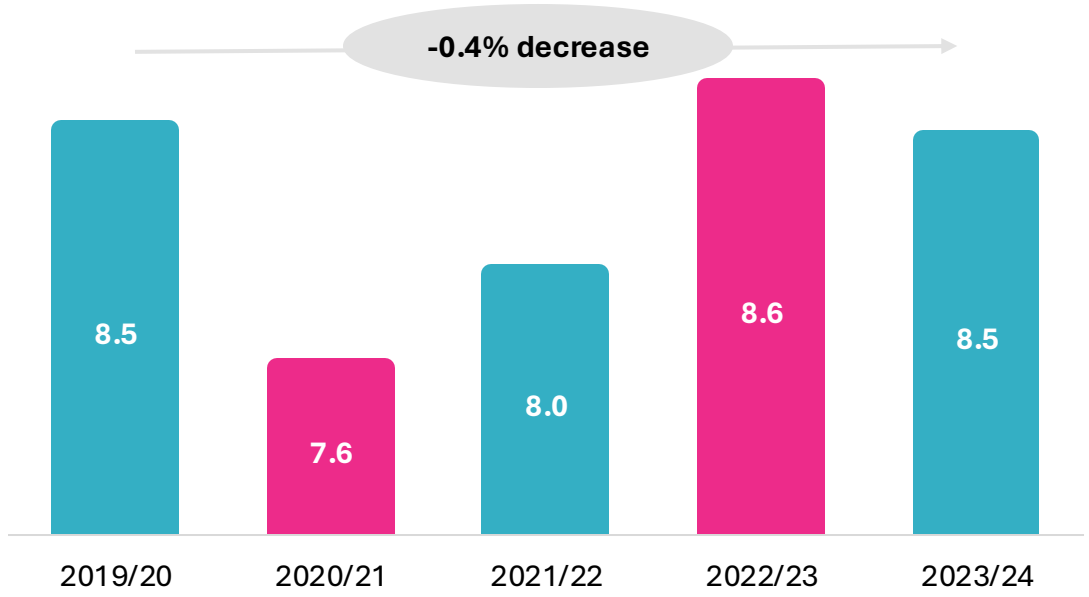
Source: NHS Workforce Statistics (Nursing Workforce), ONS (Medical Workforce)

Length of stay has increased in last 5 years, but this change can be attributed to the increase in complexity of spells—and hence is not responsible for lost productivity

Non-elective length of stay, days, exc. 0 day



Non-elective length of stay, days, exc. 0 day weighted for complexity



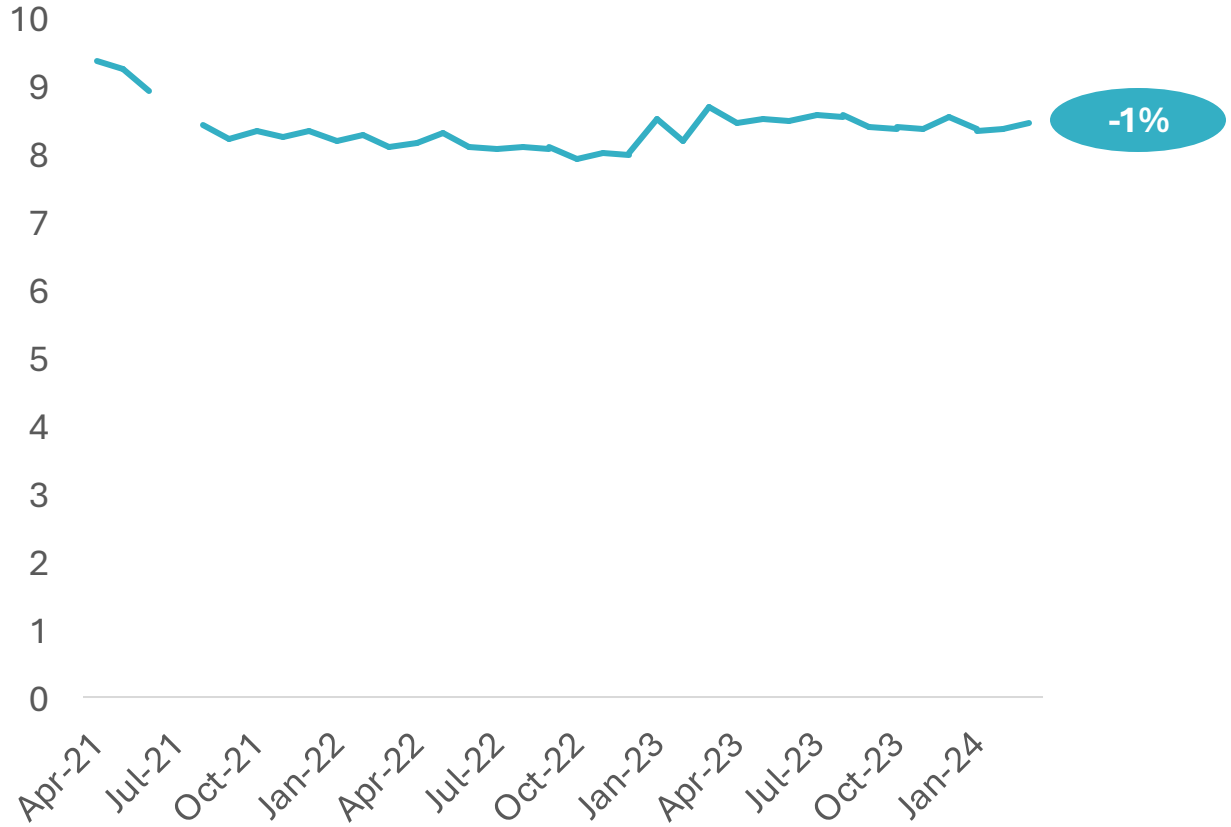
- 19/20 HRG base tariff prices used as a proxy for complexity
- Regression analysis performed to understand impact of length of stay on price and predict price for HRGs without tariff
- For each month, activity cost calculated for each HRG by multiplying number of spells for by associated price
- Within each month, HRG activity cost summed and divided by total number of spells to give average activity cost per spell
- Average activity cost per spell compared to 19/20 to determine complexity index
- Complexity index multiplied by spells for a given month to determine weighted spells
- Total bed days divided by weighted spells to give weighted average LOS
- Note: 19/20 baseline is assumed to be March 2019 to Feb 2020 to correct for impact of pandemic

Source: HES, CF analysis

Care per patient (measured by care hours per patient day) in acute trusts has remained flat whilst nursing workforce has increased 12% suggesting declining productivity

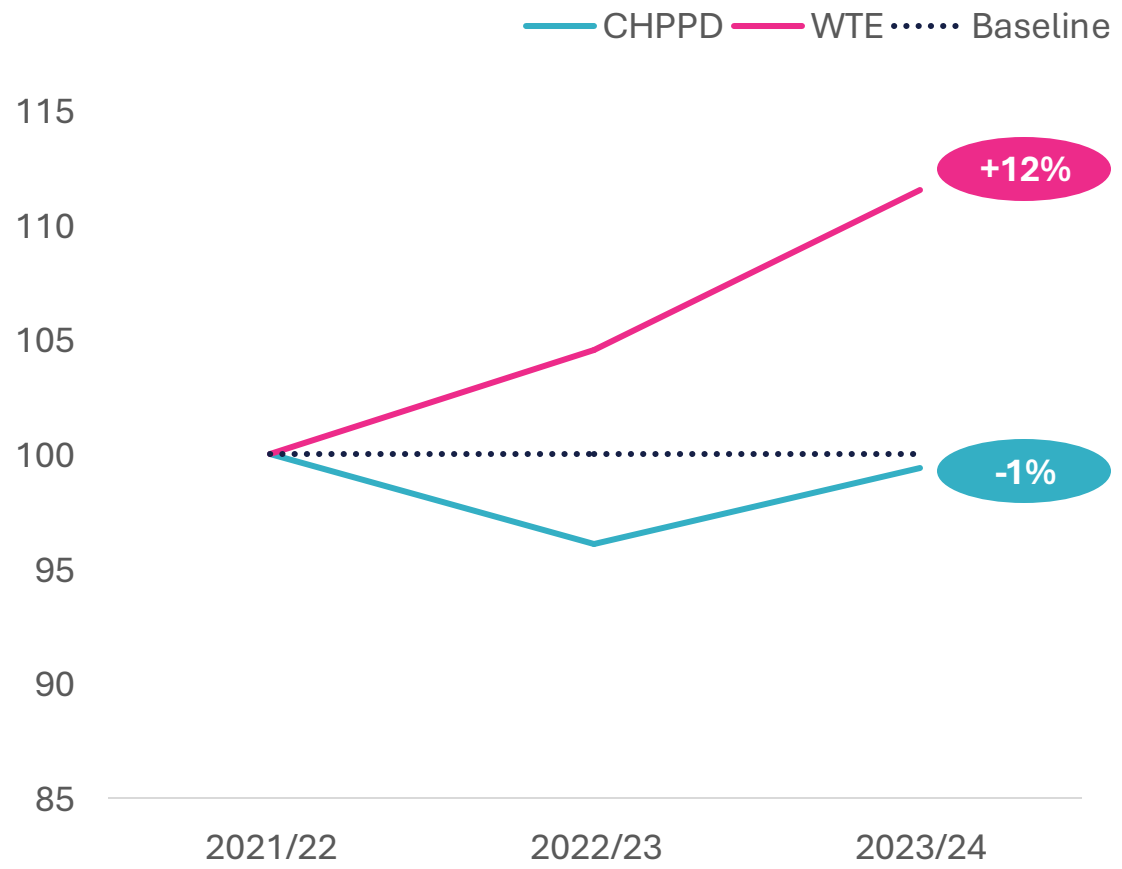
Care hours per patient in acute trusts

Average number of CHPPD by Nurses & Midwives and Nursing Associates, 2021/22 – 2023/24



Care hours per patient and nurse WTE in acute trusts

Hours or WTE indexed to 2021/22 (baseline)

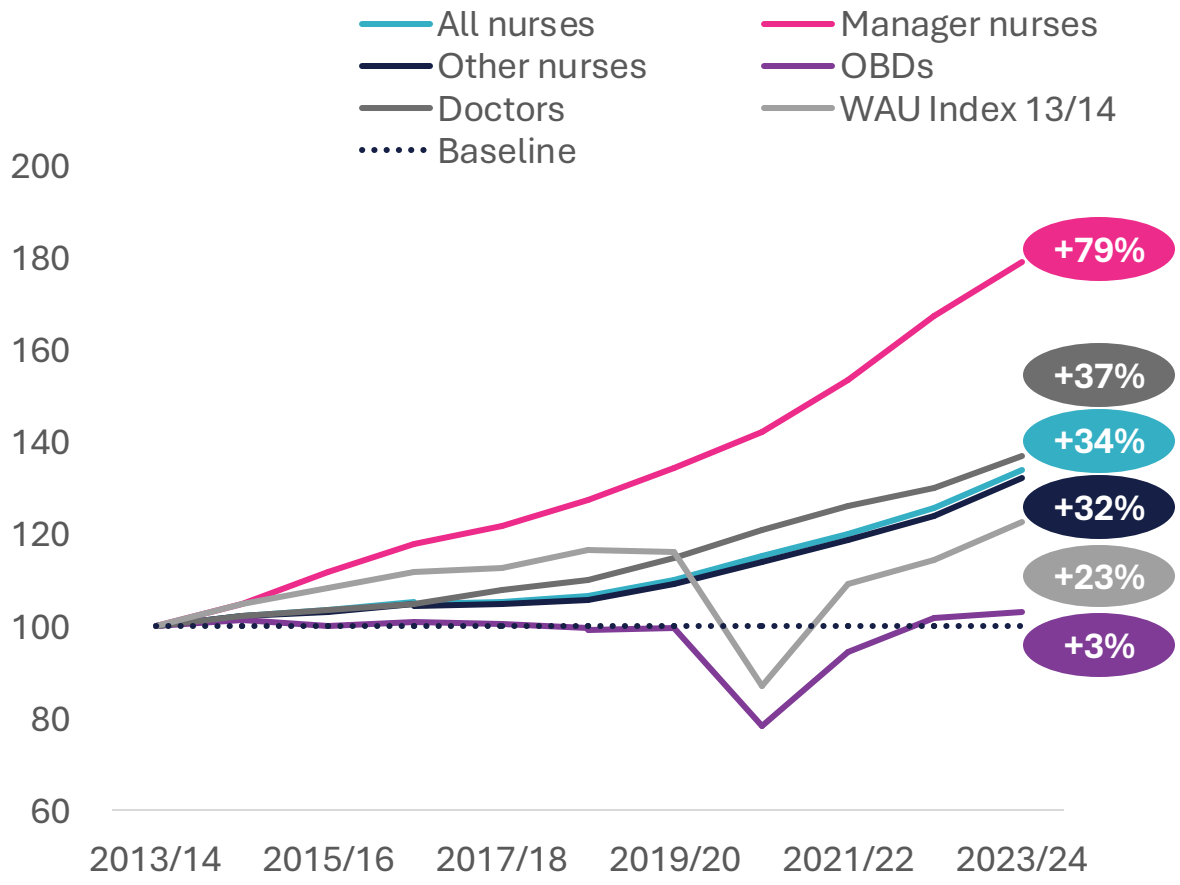


Source: Care hours per patient day (CHPPD) data (NHS Digital), NHS Workforce Statistics, CF analysis, Notes: Acute providers defined as per the list of trusts and foundation trusts in the TAC accounts

Over last 10 years nursing workforce increased 34%, managers 79% and doctors 37% compared to OBDs 3% and weighted activity (WAU) has increased 23%

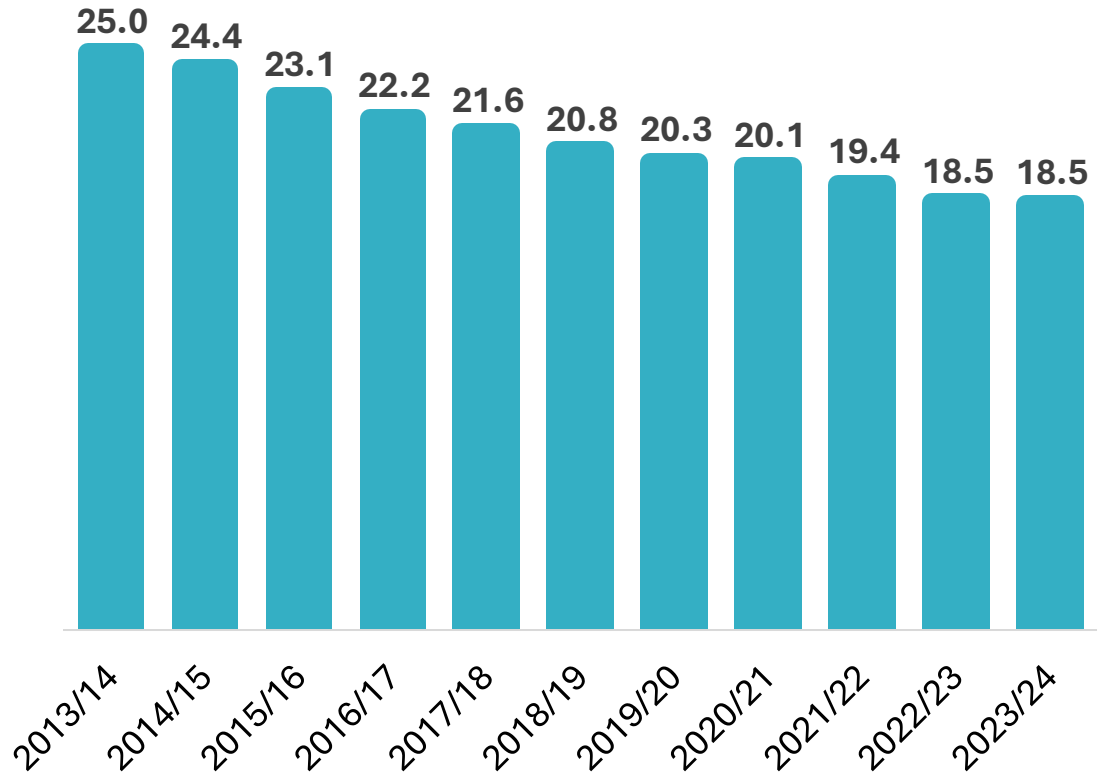
Nursing WTE, OBDs and productivity over time

WTE, OBDs and productivity indexed to 2013/14, 2013/14-2023/24



Number of non-manager nurses to manager nurses in acute trusts

Ratio of non-manager nurses to manager nurses in acute trusts in England, 2013/14 – 2023/24

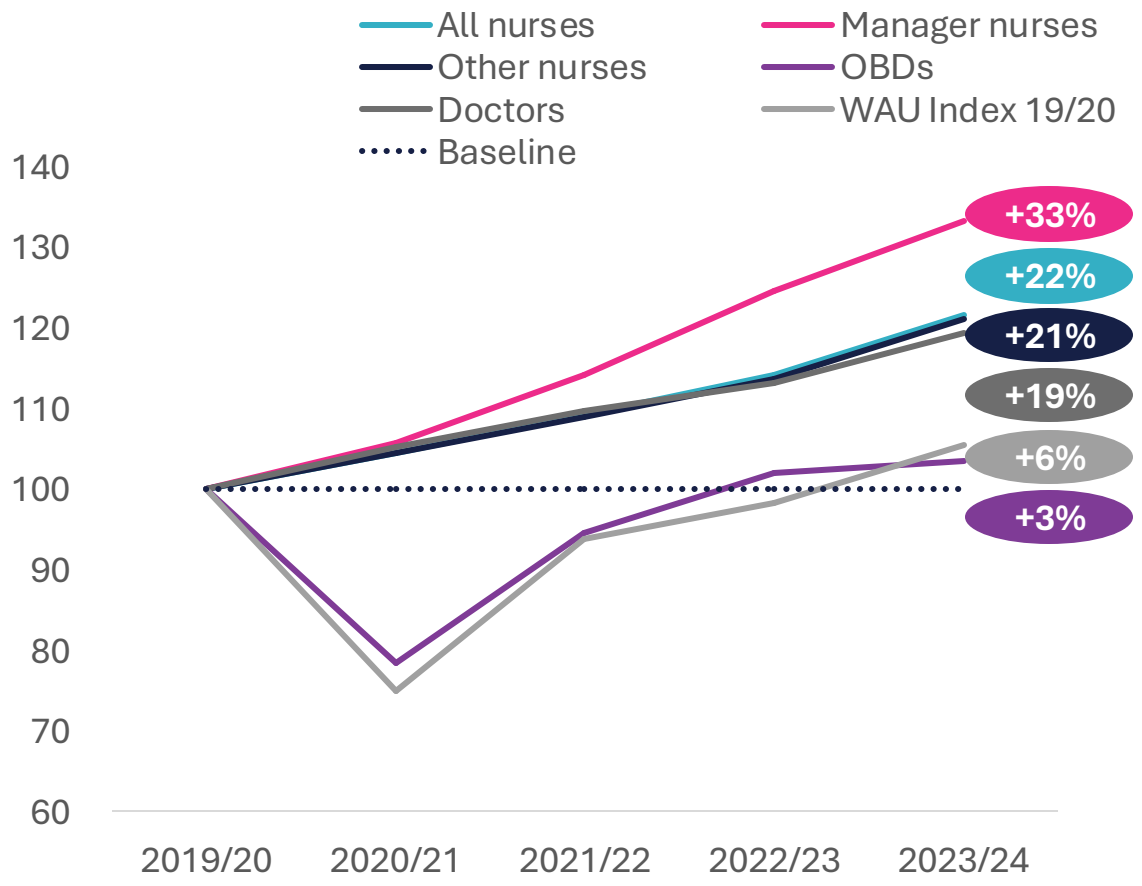


Source: KH03 Bed Available and Occupancy (NHS Statistics), NHS Workforce Statistics
Note: manager nurses include: Nurse Managers and Modern Matrons as defined by NHS England

Over last 5 years nursing workforce increased 22%, managers 33% and doctors 19% compared to OBDs 3% and weighted activity (WAU) has increased 6%

Nursing WTE, OBDs and productivity over time

WTE, OBDs and productivity indexed to 2019/20, 2019/20-2023/24



Absolute number of nurses and doctors per year (WTE)

2019/20 – 2023/24

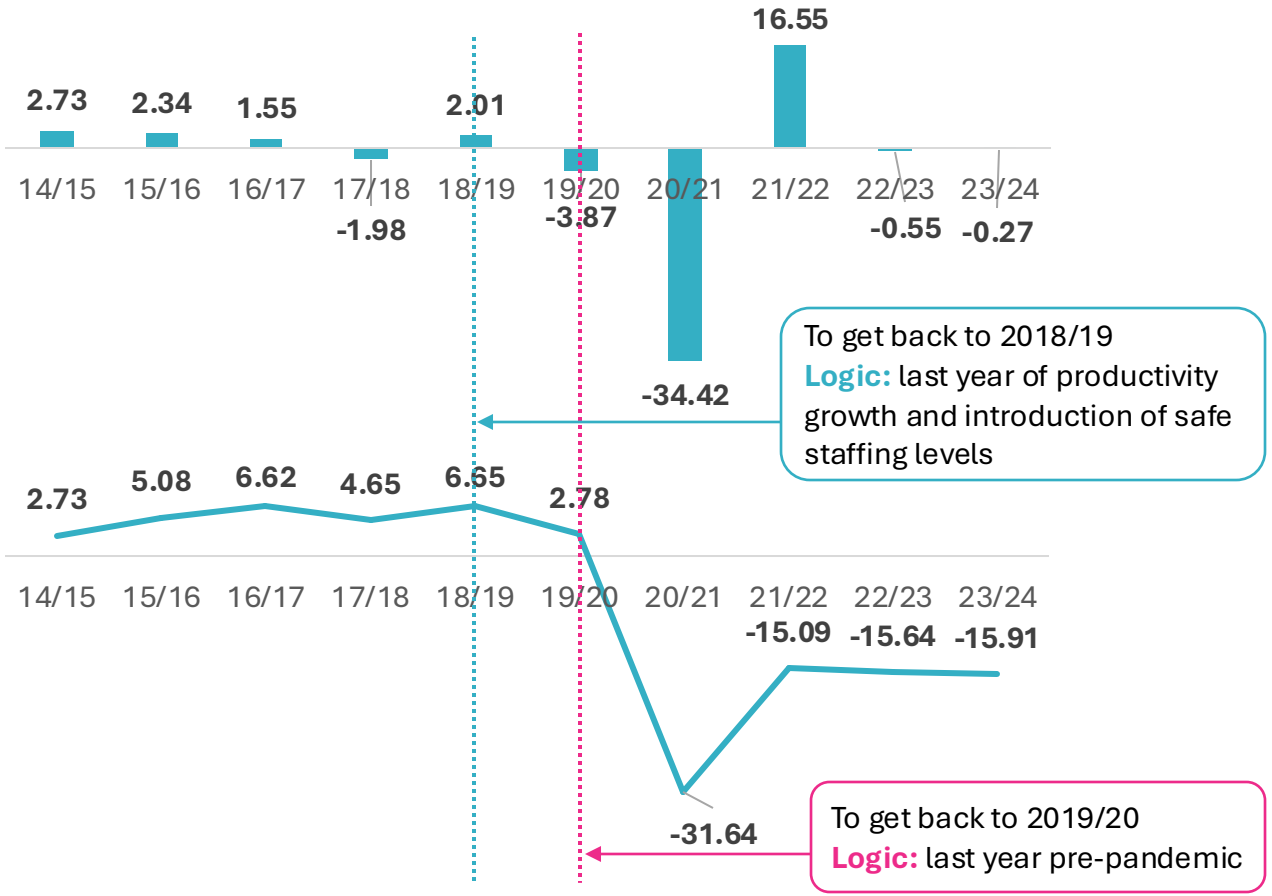
Year	Manager Nurses	Other Nurses	Adult Nurses	Doctors
2019/2020	8,772	178,205	186,977	99,564
2020/2021	9,276	186,149	195,425	105,975
2021/2022	10,021	194,020	204,041	110,977
2022/2023	10,927	202,462	213,389	116,266
2023/2024	11,697	215,855	227,553	123,019

Source: KH03 Bed Available and Occupancy (NHS Statistics), NHS Workforce Statistics
Note: manager nurses include: nurse managers and modern matrons

The loss in acute productivity between 2019/20 and 2023/24 is estimated to have cost approximately 12% of the acute budget and is equivalent to £12b

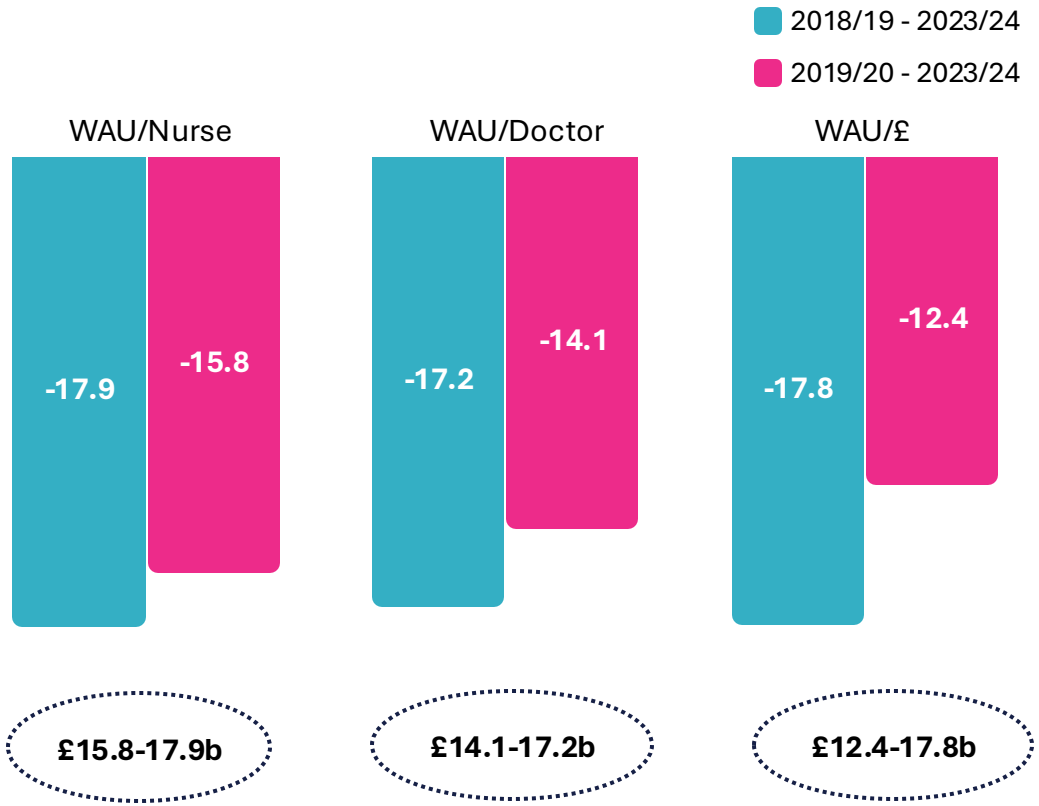
Change in acute productivity over time

Change in acute activity as a percentage of change in acute spend, 2014/15 - 2023/24



Change in acute productivity

Change in productivity between 2018/19 or 2019/20 and 2023/24



Source: A&E Attendances and Emergency Admissions, Monthly Outpatient Referrals Data, KH03 Bed Occupancy, NHS Hospital Admitted Patient Care and Adult Critical Care Activity, Unit Costs of Health and Social Care 2023, NHS Workforce Statistics (Nursing Workforce), ONS (Medical Workforce), NHS funding and expenditure (Parliament papers, 2024), Populations data is from ONS. Spend by care setting is taken from Darzi report (2024), 2021/22- 2023/24 splits are assumed to 2020/21 proportions documented in Darzi. Between 7-10% of spend categorised as 'Other' and not attributed to any care setting.

Latest NHS report largely aligns with CF analysis, whilst indicating recent gain in productivity using month 7 data

	CF analysis	NHS England analysis
Headline	**The fall in acute productivity between 2019/20 and 2023/24 has been estimated to cost the NHS approximately 12.4%** of its acute budget and is equivalent to £12b. By making use publicly available data, we calculated acute productivity in the NHS to have fallen by 10-14% between 2013/14 and 2023/24.	**NHS England analysis productivity is approximately 11% lower in 2023/24 compared to 2019/20.** Updated method for measuring productivity, acute productivity is estimated to have grown by 2.4% in the first 7 months of 2024/25 compared to the same period in 2023/24.
Data	Our analysis made use of publicly data that has been published by the NHS and parliament. All the data used for calculations included complete financial years from 2013/14 to 2023/24.	NHS England analysis used more granular data (currently unpublished)
Notes on Analysis	We calculated a **Weighted Activity Unit (WAU)** when assessing productivity for hospital activity. This allows for productivity to be expressed in a single, comparable metric by weighting each activity according to its relative cost and complexity (using 2022/23 prices). This methodology allows analysis of workforce-to-activity relationships to be fair and meaningful. Instead of simply counting activity volumes, we account for the fact that some activities are more resource-intensive or complex than others.	Month 7 analysis suggests 6.3% output (cost weighted activity) growth and 3.9% input (inflation adjusted spend) growth. The NHS notes that 2023/24 was also significantly impacted by industrial action. It had direct costs of around £1.2b and reduced aggregate activity. NHSE estimates an impact on productivity of around 3%. Based on this analysis, adjusted productivity (taking into account the above) would be around 11% lower than before the pandemic or 8% if we adjusted for the impact of industrial action.

Note: the NHS released its own productivity in February 2025 update whilst this report was under embargo:
https://www.england.nhs.uk/long-read/nhs-productivity-update-feb-25/
https://www.england.nhs.uk/long-read/nhs-productivity/

Considerations affecting productivity in the NHS

An older and sicker population with more complexity

- The Darzi investigation found that **the health of the nation has worsened** with an increasing number of people with long term conditions and mental health[2]
- A significant reduction in patients accessing healthcare during the COVID pandemic, led to the **delayed diagnosis of physical and mental health conditions, as well as delayed detection of deteriorating pre-existing conditions**[2]
- Average length of stay has increased by 10% between 2019/20 and 2023/24, **almost all of the increase in length of stay in the last 5 years can be attributed to the increase in complexity of spells**

Regulatory requirements affecting staffing

- The establishment of **safe staffing standards** with **minimum nurse-to-patient ratios and prioritising patient care**, establishing clear care standards to prevent future failings in healthcare[1]
- Implemented in 2018/19, it appears **introduction of safe staffing standards for nurses linked to the large increase in levels of staffing** which began in 2018/19 and continued uninterrupted since
- Note that this does not account for the increased number of doctors

Incentives and coding

- **Suspension of PbR removed linkage of activity and payment in acute** which had contributed to productivity in earlier periods
- **Inconsistent clinical coding in SDEC/ zero-day admissions** may have contributed to the observed productivity decline
- In comparison, primary care has continued to be incentivised for outcomes and activity (and is the only setting where in the NHS individuals have any incentive) and has high productivity and good data
- Community and mental health have poor quality data **and lack any incentive or link between activity and payment**

Challenges associated with recovering productivity

- **Longer lengths of stay and difficulty turning beds around** are challenges in recovering acute productivity, influenced by permanent COVID-19 measures and the balance between short and long stayers. Reduction in bed capacity has led to rising occupancy rate which has made it harder to ensure patients have appropriate beds.
- **Structural challenges make it complex to reallocate funds** from acute care to primary and community care
- Darzi highlighted the **number of managers and the degree of turnover of senior managers** may have contributed to decline in management capabilities, knowledge and efficiency across the NHS
- Loss of goodwill and high levels of burnout amongst staff has led **to industrial action and increased sick days**

Source: [1]Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry; [2]Independent investigation of the NHS in England (2024);National Quality Board, 'Supporting NHS providers to deliver the right staff, with the right skills, in the right place at the right time.' (2016) and NHSE 'Safe staffing guidelines in specific settings' (2018)

To capture this opportunity, we must boost clinical workforce productivity

Safer staffing models	• This starts with an economic review of safer staffing models to review the guidelines being operated within and whether the benefits of these is worth the cost.
Match workforce to demand	• Address the mismatch between clinical workforce growth and patient demand by leveraging granular data on activity and staffing at both the provider and system level. Localised workforce planning should be introduced to ensure clinical capacity is better matched to actual patterns of patient need.
Activity-based payments	• Create incentives for providers and potentially staff by ensuring the money follows the patient. Activity based payment across the board is needed to enable funding of activity, remove distortions from block funding, and provide a basis for value-based models on top of the baseline of counting of activity.
Data, digital and AI	• Data, digital and AI should be embraced to accelerate this. The FDP could enable replicable analysis to scale workforce productivity across the country and deploy AI tools that reduce admin, particularly through natural language processing and intelligent agents, freeing up clinicians to focus on patient care.

Quality

Overview of section

What we've done and why:

- This section focuses on five chronic condition: cardiovascular disease (CVD), type 2 diabetes, chronic kidney disease (CKD), obesity, and dementia. We examined the gaps in diagnosis and treatment for each, as well as the potential cost savings to the healthcare system if these conditions were treated more optimally.
- These conditions were selected due to their significant impact on mortality and disability, with dementia being the leading cause of death and CVD ranking second (ONS, 2022). Moreover, many of these conditions are closely linked and often coexist, compounding the burden on patients and healthcare systems.
- A key concern in addressing these conditions is the undiagnosed population and the gaps in diagnosis. These gaps hinder effective treatment and worsen health outcomes that could otherwise be mitigated with appropriate intervention.
- It is worth noting that this analysis does not include chronic obstructive pulmonary disease (COPD) and heart failure, both of which also contribute significantly to the burden of chronic disease. Future research could explore these conditions to provide a more comprehensive understanding of their impact on healthcare costs and patient outcomes.

Key points covered in this section are:

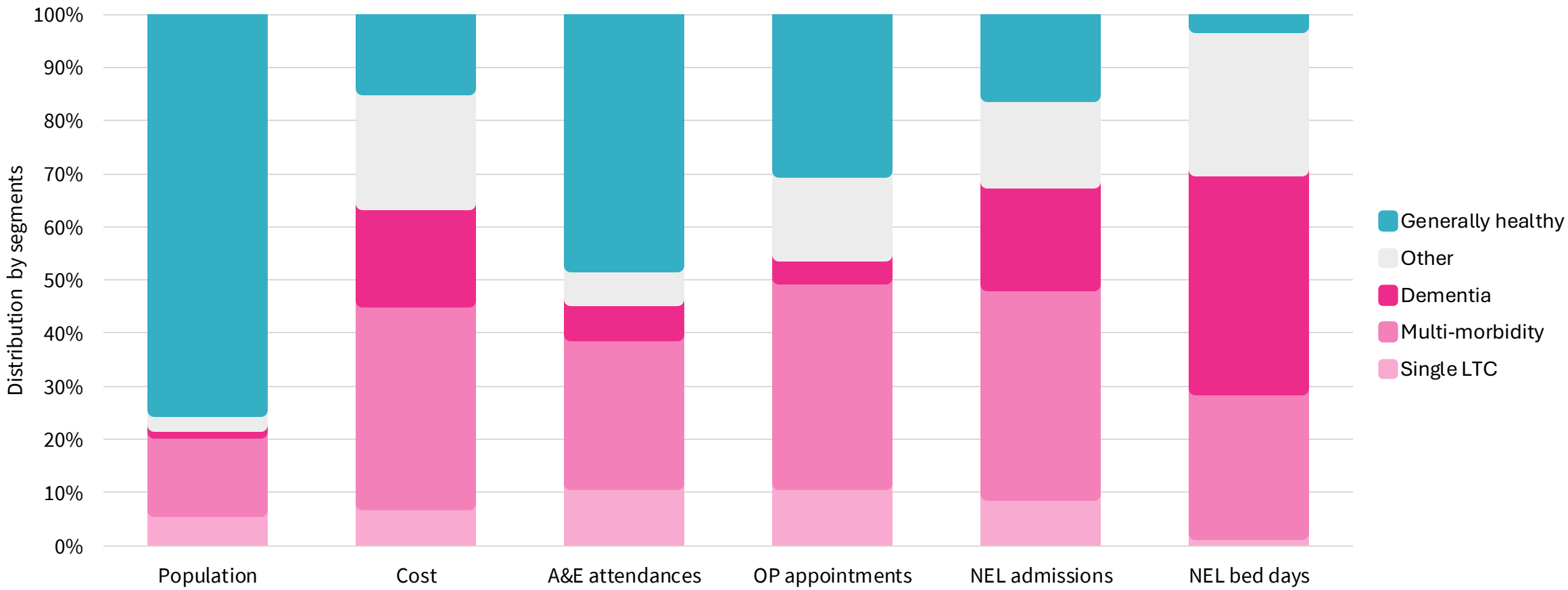
- Cardiovascular disease, chronic kidney disease, diabetes, dementia and obesity account for 50% of the chronic disease burden, 26% of acute healthcare cost and 37% of deaths per year, including those with singular or multiple conditions
- A comprehensive analysis of the disease burden of CVD, diabetes, obesity, CKD, and dementia highlighted the diagnosis and treatment gaps within each condition
- Optimising treatment based on intervention scenarios across the 5 disease areas with potential net opportunity of £3.4b-£5.0b from pure variation and £6.1-£9.2b based on the implementation of clinical guidelines
- Improving CVD treatment to lower LDL cholesterol levels can lead to gross savings of up to £4.8b and prevent 6.5k deaths from heart attacks and strokes
- Improving diabetes treatment to lower HbA1c levels can lead to gross savings of up to £1.6b, prevent 10k heart attacks and strokes, and avoid 1.6k amputations
- Reducing the overall obesity rate in the population could generate gross savings of £1.5b and prevent up to 5.1k CVD–related deaths associated with obesity
- Delaying the progression from mild to moderate and severe dementia through treatment can lead to gross savings of £1.8b in acute care costs

Source:https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsregistrationsummarytables/2022#leading-causes-of-death

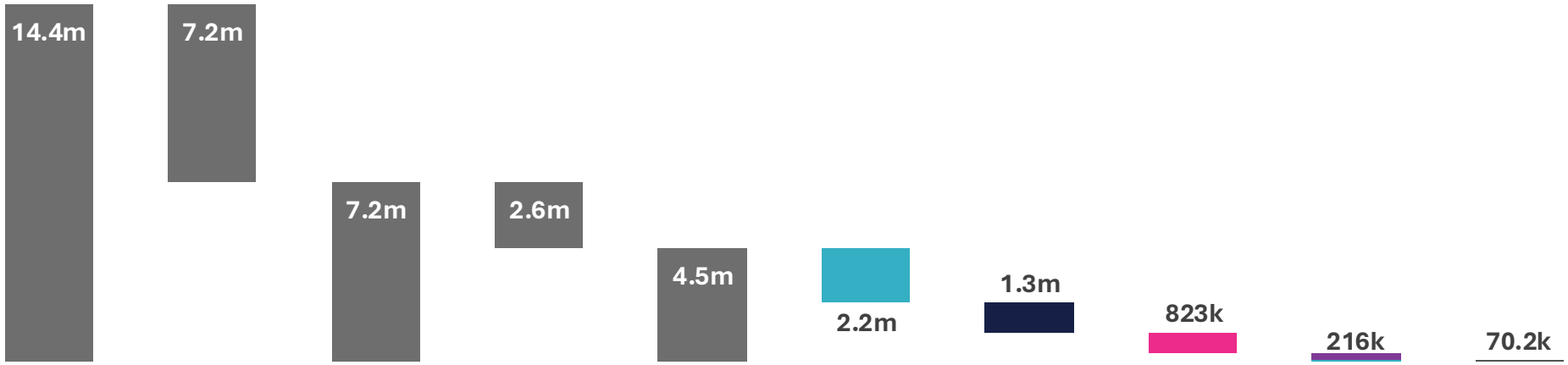
People with chronic conditions and dementia represent 21% of population and drive 64% of costs

Distribution across segments by population, total cost, and activity (all ages)

%, 2024



Cardio Renal Metabolic diseases account for 50% of the chronic disease burden and 26% of acute healthcare cost, including those with singular or multiple conditions



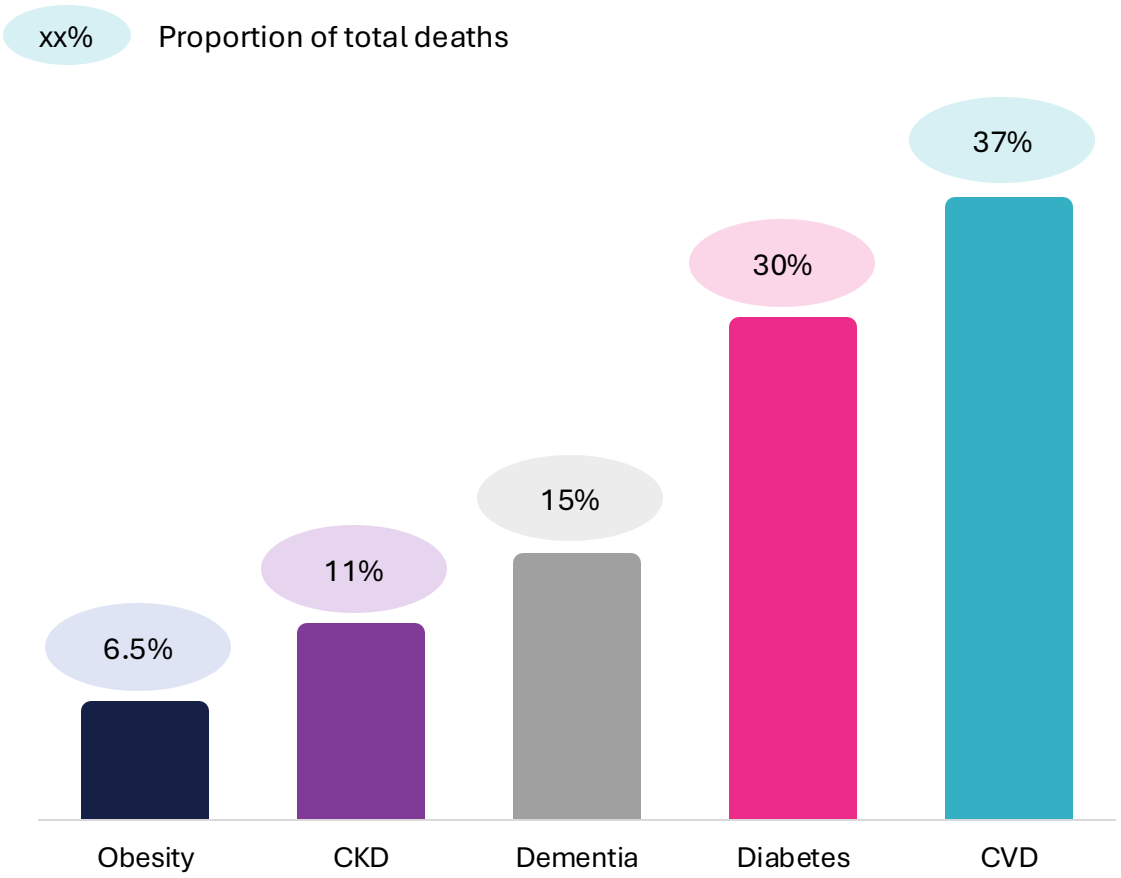
		People with LTCs incl. dementia	No core-5 condition	Core-5 conditions	Multiple core-5 conditions	Single core-5 condition	CVD	Obesity	Diabetes	CKD	Dementia
HCRU	Inpatient Spells	15.6m	5.67m	9.94m	4.93m	5.01m	2.68m	1.21m	682k	375k	69.5k
	Attendances	13.6m	6.06m	7.54m	3.44m	4.1m	2.22m	1.05m	588k	159k	83.1k
	Appointments	76.9m	30.9m	46.0m	19.5m	26.4m	12.7m	7.29m	4.8m	1.41m	247k
Costs	Non-Elective	£37.3b	£6.8b	£30.5b	£19.0b	£11.5b	£7.9b	£1.4b	£1.0b	£603m	£468m
	A&E	£3.9b	£1.5b	£2.4b	£1.2b	£1.2b	£693m	£273m	£158m	£50m	£32.4m
	Outpatient	£13.4b	£5.5b	£7.9b	£3.4b	£4.6b	£2.2b	£1.3b	£849m	£251m	£46.2m
	Subtotal	£54.6b	£13.8b	£40.9b	£23.6b	£17.2b	£10.8b	£2.9b	£2.1b	£904m	£547m
	Other	£18.1b	£6.8b	£11.3b	£4.9b	£6.4b	£3.1b	£2.1b	£766m	£367m	£36.3m
	Total costs	£72.7b	£20.6b	£52.1b	£28.5b	£23.6b	£13.9b	£5.1b	£2.8b	£1.3b	£583m

* In this infographic, population counts are derived from LTC diagnoses in secondary care settings only.

Millions with cardiovascular disease, chronic kidney disease, diabetes, dementia and obesity remain undiagnosed and at risk, which are associated with up to 37% of deaths

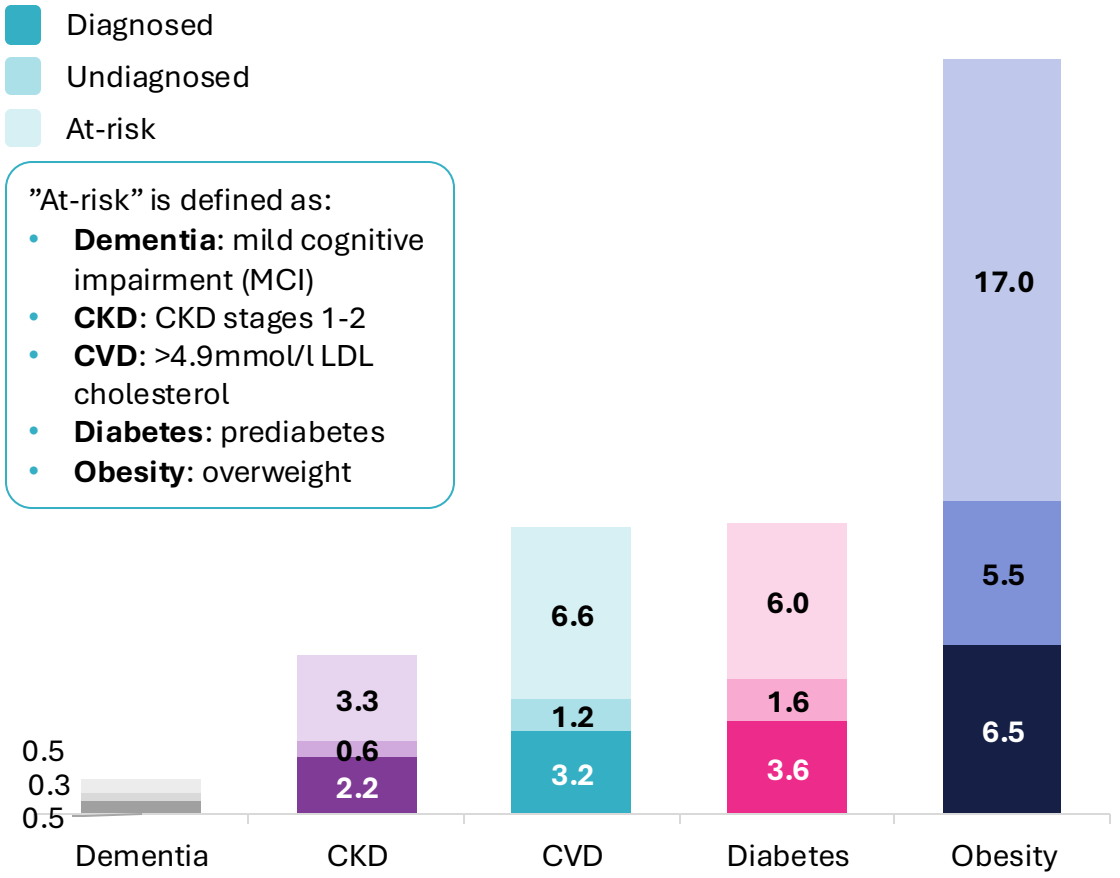
Baseline deaths

Number of deaths associated with condition ('000)



Diagnosed, undiagnosed, and at-risk population

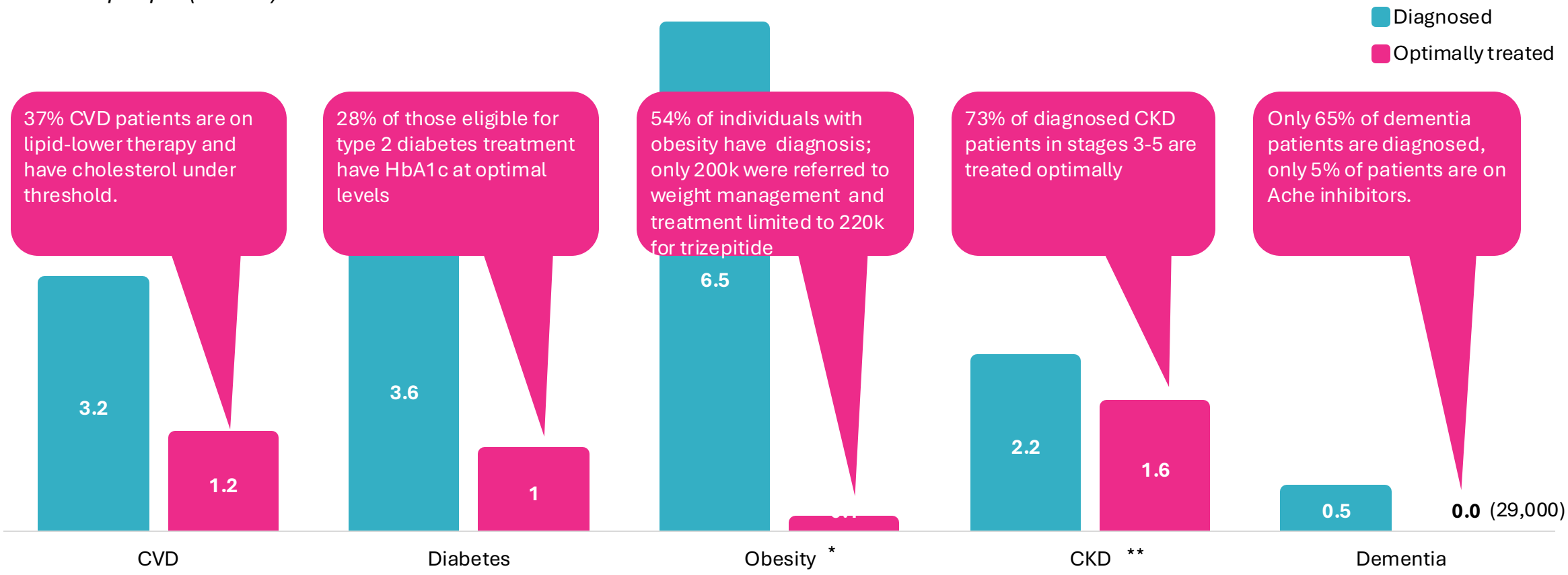
Number of people (million)



Significant gaps exists in the diagnosis and treatment of major health conditions

Diagnosis and treatment gap in CVD, diabetes, obesity, CKD and dementia

Number of people (million)



**Treatment statistics for obesity were not included as targets for obesity are subjective and differ for each individual*

***Treatment statistics for CKD were not included as the number of people on CKD medicines (independent of dialysis and/or transplant) are not widely reported*

Sources: CVD: CVDPREVENT, Health Survey England; NHSBSA; British Heart Foundation; Diabetes: QOF, NHSE, ONS; Obesity: Gov.UK, QOF, National Obesity Audit; CKD: Kidney Research UK, QOF; Dementia: NHSE Primary Care Dementia Data, DiscoverNOW, QOF, CF analysis

A comprehensive analysis of the disease burden of CVD, diabetes, obesity, CKD, and dementia highlighted the diagnosis and treatment gaps within each condition

Category	Cardiovascular disease (CVD)	Type 2 Diabetes	Obesity	Chronic Kidney Disease (CKD)	Dementia
Estimated prevalence vs. diagnosed vs. at-risk population	Prevalence: 4.4m[1,2] Diagnosed: 3.2m[2] At-risk (high cholesterol) including diagnosed and undiagnosed • 27m (59%) > 4.9 mmol/L TC[3] • 11m (24%) > 4.9 mmol/L LDL-C[4]	• Prevalence: 5.2m (9%)[5,6,7] • Diagnosed: 3.6m[5,6] • At-risk (prediabetes): 6m[8]	• Prevalence: 12m (26%)[9] • Diagnosed: 6.5m[10] • At-risk (overweight): 17m[9] • 29% of adults living with obesity (BMI ≥30 kg/m^2), and 64% living with overweight or obesity. **	• Prevalence: 6.1m (total CKD); 2.8m (G3-5)[11] • Diagnosed: 2.2m (G3-5)[12] • At-risk (G1-2): 3.3 m[11]	• Prevalence: 826k (1.4%)[13] • Diagnosed: 482k[14] • At-risk (MCI): 524k[15]
Diagnosis gap	• 1.2m	• 1.6m	• 5.5m	• 520k	• 344k
Eligible vs. Optimally treated population	• Eligible: 10.7m[16] • Optimally treated: 1.3m[17]	• Eligible: 5.2m[5,6,8,9] • Optimally treated: 1m[18]	• Eligible: 3.4m* • Treated: <200k referred to weight management • Trizeptiide limited to 220k**	• Eligible : 2.2m[12] • Optimally treated: 1.6m[19]	• Eligible: 482k[14] • Treated: 29k[14,20]
Treatment gap	• 9.4m	• 4.2m	-	• 675k	• 453k
Events (per year)	• 148k overall deaths (based on 175k UK figure)[21] • 102k heart attacks[22] (18k deaths[23]) • 88k strokes[22] (27k deaths[23])	• 119k overall deaths (based on 141k UK figure)[24] • 34k heart attacks[25] (6k deaths[26]) • 48k strokes[25] (15k deaths[26]) • 10k amputations[25] • 155k heart failures[25] • 49k retinopathy[27]	• 26k CVD deaths associated with obesity[28]	• 30k people receiving dialysis[29] • 3k people receiving transplant[29] • 45k deaths[30]	• 62k deaths*[31]

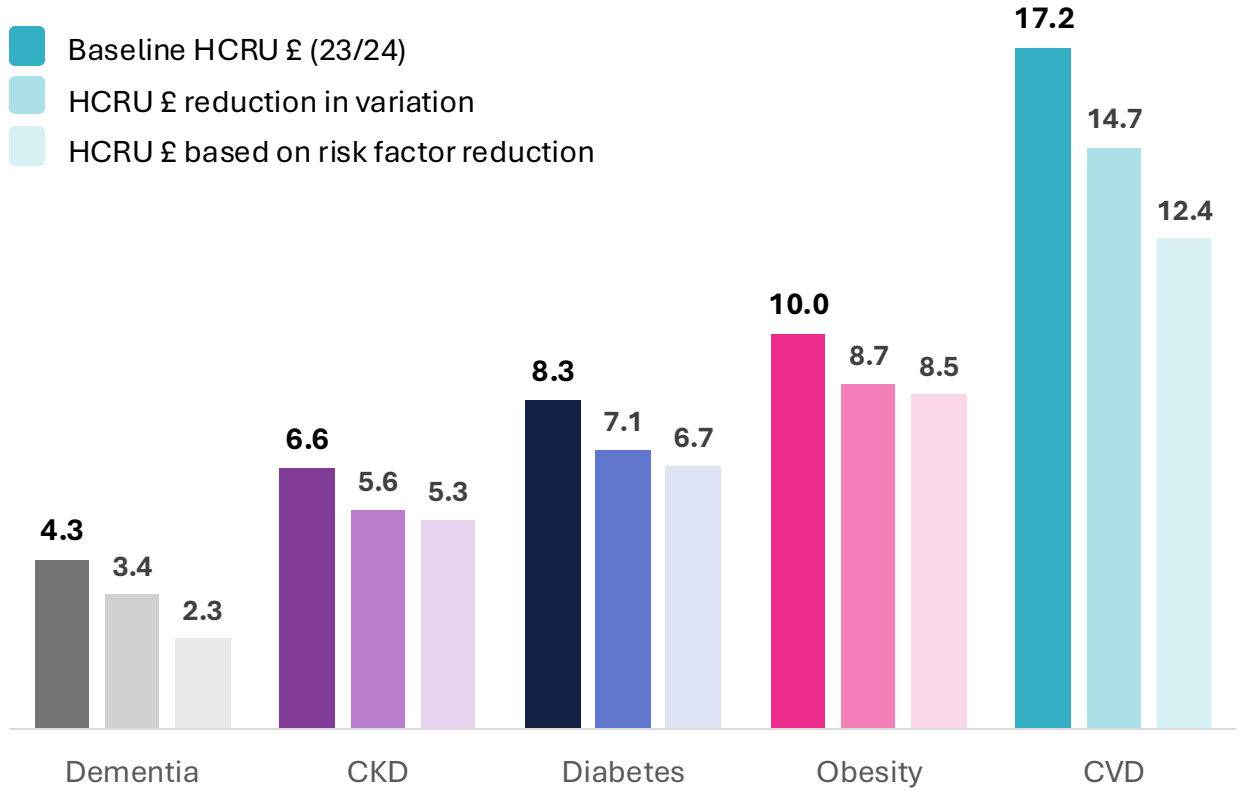
Note: List of sources and the links can be found on slides 46-51

Optimising treatment has the potential to reduce HCRU costs and mortality across the five health conditions with potential gross savings between £870 million to £4.8 billion

This analysis uses two different methods: 1) variation analysis of populations with similar conditions, controlling for age and deprivation, and 2) risk reduction based on the achievement of clinical guidelines and reducing underlying drivers of disease.

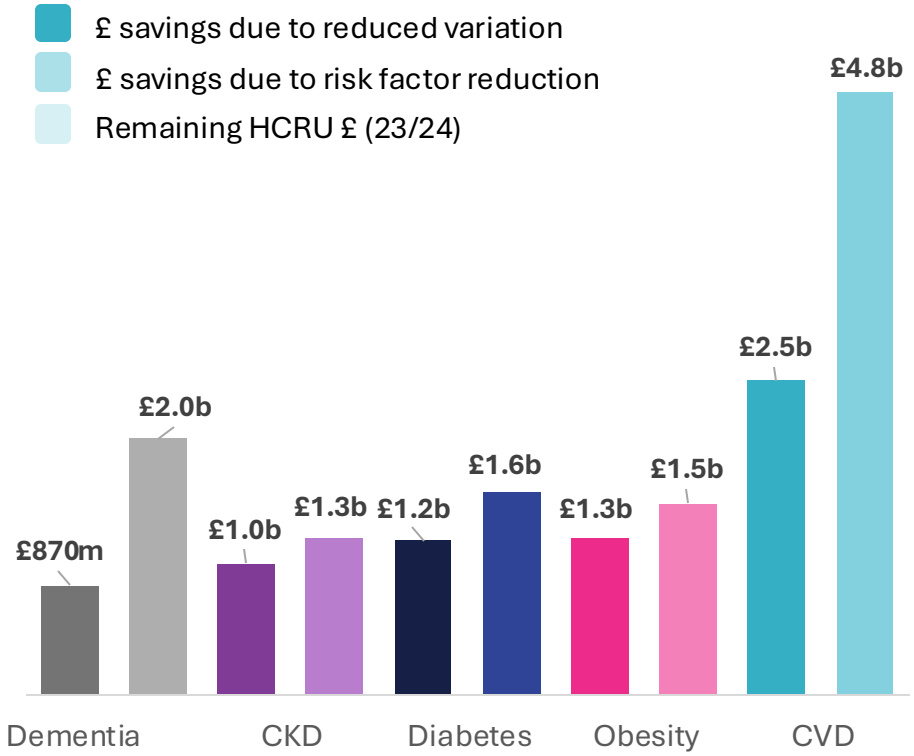
HCRU costs before and after intervention

Secondary care costs (£ billion), 2023/24



HCRU costs savings

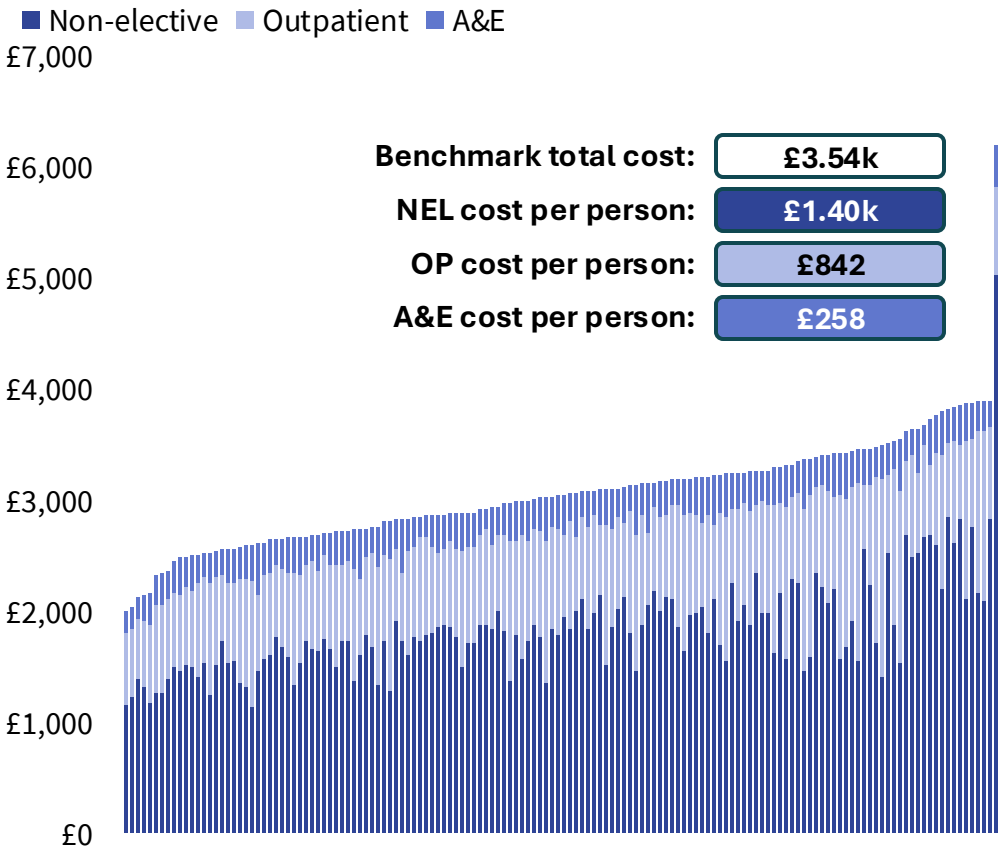
Secondary care costs (£ billion), 2023/24



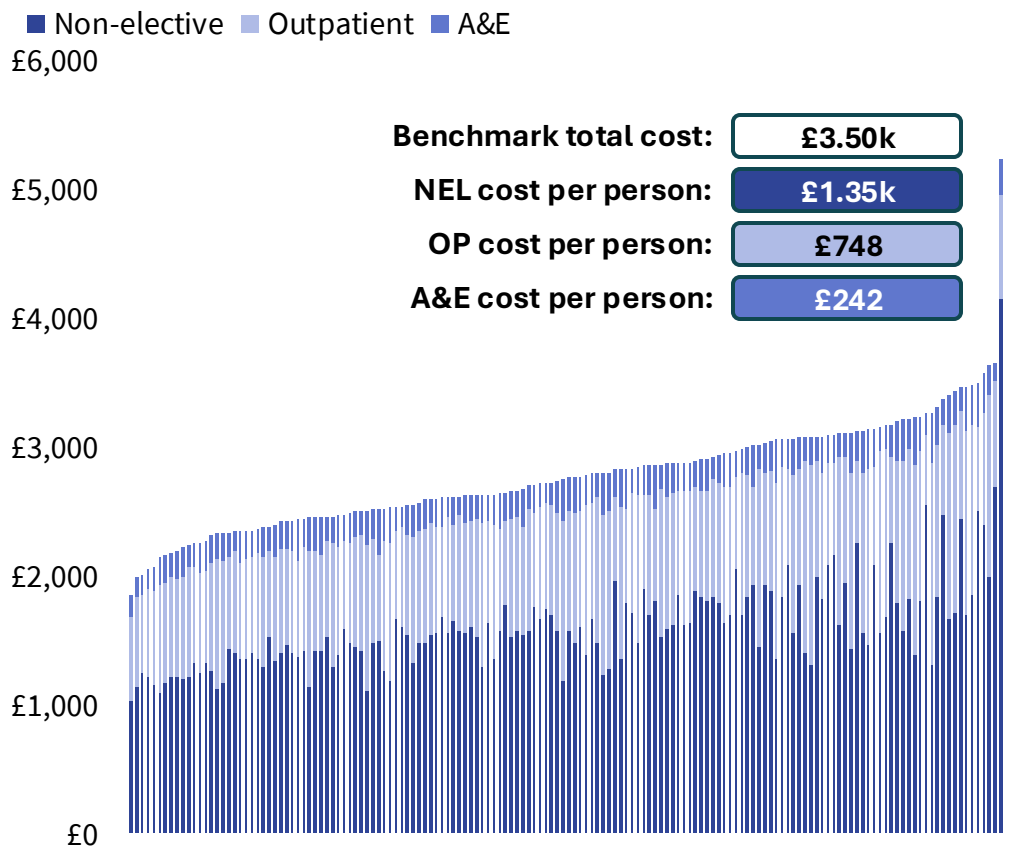
Variation analysis has considered segmentation by condition, age band and core 20 status to quantify the opportunity by segment

Cost per Core20 person with multi-morbidity across non-elective, emergency, and outpatient care in UTLAs

2024



Cost per non-Core20 person with multi-morbidity across non-elective, emergency, and outpatient care in UTLAs



Variation analysis method has calculated degree of variation in total acute cost per capita for NEL, A&E, OP by UTLA for core 20 and non core 20 by age band.

This result has been aggregated up to a total opportunity to best quartile and decile

Source: CF population segmentation model (HES, National Cost Collection, ONS); CF analysis

A new method of addressing care gap to address gaps in care

The potential impact of the interventions was measured through the following steps:

1. Estimate the population distribution across relevant clinical risk factors thresholds and/or disease progression rates
2. Calculate the HCRU based on risk factor distribution – patients were identified by using diagnosis codes in the Hospital Episode Statistics (HES) data set
3. Calculate the impact of interventions that shift population from high risk to low risk based on healthcare resource utilisation

Category	Cardiovascular disease (CVD)	Type 2 Diabetes	Obesity	Chronic Kidney Disease (CKD)	Dementia
Diagnostic assessment	Blood drawn and sent away; POC	Blood drawn and sent away	Scales and BMI calculator	Blood drawn and sent away	Clinical evaluations, neuroimaging, lab tests, and cognitive assessments
Criteria	LDL > 1.8 mmol/L	HbA1c > 48 mmol/mol	BMI > 30	eGFR < 90ml/min, proteinuria	
Treatment standard	• Statins, PCSK9 inhibitors, • siRNA	• DPP4, GLP1, SGLT2, Insulin	• GLP-1 agonists	• SGLT2 inhibitors	• Cholinesterase Inhibitors • NMDA Receptor Antagonists
Expected impact of treatment	• 1 mmol/L reduction in LDL results in 25% reduction in CVD events[1]	1% reduction in HbA1c associated with a • 25% reduction in risk of microvascular complications[2] • 14% reduction in risk of heart attack[3] • 21% reduction in the risk of death from any cause[4]	1 unit reduction in BMI is associated with a • 5% reduction in the risk of cardiovascular disease[5] • 16% reduction in the risk of developing type 2 diabetes[6] • 6% reduction in all cause mortality[7] • 4% reduction in risk of mortality[8]	Treating CKD to maintain an eGFR above 90 mL/min/1.73 m^2 can result in • 30% lower risk of major adverse cardiovascular events (MACE), including heart attacks and strokes[9] • up to 40% reduction in the risk of all-cause mortality[10]	Treatment with AChE inhibitors can • result in a 20-30% slower decline in cognitive function over 6-12 months compared to placebo[11] • show a 15-20% improvement in daily functioning scores[12] • delay nursing home admission by an average of 6-12 months[13] • reduce the risk of severe dementia by 31%[14] • slow progression from mild to moderate dementia by 50%[15]
Intervention scenario	• All eligible patients (according to NICE guidelines) are treated, and their LDL-C levels are reduced to below 2.5mmol/L	• All current patients' HbA1c levels are reduced to between 42-48 mmol/mol	• The body weight of all obese patients are reduced by 17.8% and overall obesity rate is reduced by 16.6%	• 100% of patients with CKD stages 3-5 are treated to the appropriate BP threshold	• Progression rate from mild dementia to severe dementia is reduced by 50% (from 25% to 12.5%) and the rate from moderate dementia to severe dementia is reduced by 31% (from 36% to 25%)

Sources: Silverman et al. Association between LDL-C and CVD risk; Diabetes.co.uk-hba1c; Furman et al. Diabetes Inside; Knowler et al. HbA1c as predictor of diabetes; Kompaniyets et al. BMI reduction; Inside Precision Medicine; NIH Research Matters; Inker et al. GFR decline; Marucci et al. Efficacy of AChE Inhibitors in Alzheimers; Moss, D. Benefits of AChE Inhibitors; Aneshensel et al. Transition from home to nursing home; Xu et al. Long term effects of ChE inhibitors; Zuin et al. AChE Inhibitors

In practice, the actual impact on cost savings and patient outcomes is likely to be greater than what has been estimated in the report

Quality of life	• The current analysis does not account for improvements in the population's quality of life, such as reduced pain, increased mobility, and better mental health • Incorporating these benefits into a health economic model could demonstrate the cost effectiveness and quality of life benefits of the interventions assessed in this report
Multi-year impact	• The current analysis only captures the impact of different interventions over a single year • In reality, the benefits of these interventions are likely to be recurring, extending across multiple years as they prevent disease progression, reduce healthcare utilisation, and improve long-term patient outcomes • Over time, this cumulative effect would amplify cost savings and health gains
Other direct costs	• The analysis in this report narrowed in and focused on NHS acute care costs • Chronic conditions also place substantial financial strain on primary care, community care, and social care services • The interventions could significantly reduce the burden across other care sectors, leading to much greater overall savings
Wider economic impact	• Our estimates do not consider the broader economic benefits of healthier individuals being able to remain active in the workforce and contributing to the economy • Reducing illness-related absences, improving productivity, and preventing premature deaths would generate significant additional economic value that is not captured in this analysis

Closing care gaps could use protocolised driven preventative-care, exemplified in local approaches to CVD interventions, which typically exhibit a high return on investment

What has worked in the past

- Protocol-driven delivery of care is **already implemented** in some areas
- This has allowed **co-location** and care for multiple pathways, thus streamlining care
- For example, diabetes and cholesterol management are being conducted by **the same pharmacists, co-located with vaccination centres**

Examples of protocol-driven diabetes and cholesterol care in a pharmacy cubicle also delivering COVID vaccinations

Suggestions for CVD Management

- Better management of CVD can support PHM and reduce UEC pressure focusing on the ABC model
- Establishing a consistent **protocolised model of care for CVD** that is data-driven and depends on taking precise measurements
- This allows for **adjustment of the skill mix required** for care from one that relies heavily on GP/nurse time to one that can be driven by pharmacists
- This will allow to develop ABC delivery model and **codesign neighbourhood teams** to carry out CVD management leveraging pharmacists and administrative roles – supported further by ARRS
- Establish the **governance model** that enables at-scale-delivery through PCN collaboration

Across cardio-metabolic and renal, a protocolised driven approach could be deployed outside of hospital, including community pharmacies and through local hubs

ABC provides a holistic approach for CVD monitoring and prevention, and shares common approach to case finding and protocol driven care – this common approach could also be applied to **renal, diabetes, and obesity**

	A Atrial Fibrillation	B Blood Pressure	C Cholesterol
Optimisation target	Optimise the treatment of every patient with a **CHA_2DS_2VASc score > 2**	Optimise the treatment of every patient with recorded hypertension above the **age-appropriate treatment threshold**	Optimise the treatment of every patient with recorded **non-HDL>2.5mmol/L**
Case finding	**Practice Nurses Identify at-risk CVD patients who are not optimised on medication and invite for a consultation with the potential of sending for follow up tests.**		
Out of hospital pathway	Pulse reading *In clinic - Pharmacist*	Blood pressure reading *In clinic - Pharmacist*	Blood test *In clinic - Pharmacist*
	ECG *outside of clinic*	Follow-up blood pressure reading *In clinic - Nurse*	
	Anticoagulant prescription *In clinic - Pharmacist*	Antihypertensive prescription In clinic - *Pharmacist*	Lipid-lowering prescriptions *In clinic - Pharmacist*

PHMv2.0 provides a way to operationalise data-driven protocol-guided for CVDRM

1. Identify

Identify key people within each cohort as defined by set criteria (using data and case finding)

- Using data insights from population segmentation and risk stratification to prioritise individuals before risk increases
- Professionals may also case find additional people as they present

2. Engage/ enrol

Proactive reach out to cohort to engage into the programme and triage onto the right pathway

- Proactive reach out to identified people to ensure they enter the right pathway
- Invite using text/ email/ call
- Enrol in session
- May need to work with individual and their family/care

3. Assess

Deliver a person-centred assessment of a person's needs that covers all needs

- Assessment may vary based on requirement
- Diagnostic tests may be required
- Fuller assessment of needs may be holistic
- Identification of priorities to address

4. Protocolised care

Address needs with professionals involved in person's care

- Protocolised care collaborating with key professionals and partners defining who will do what
- Management by thresholds where appropriate
- Identification of escalation needs

5. Manage

Ongoing effective case management of person with a single 'point person' (the care coordinator)

- Planning, co-ordinating and reviewing the ongoing effective case management of a person
- Tracking progress at individual level
- Supporting

Quality can be improved by addressing care gaps and optimising in line with guidelines

Explicit focus on the major drivers of ill health	• The huge impact of unmet patient need warrant an explicit prioritisation and goals of these areas as part of nation strategy. • Specific goals should be set for increasing the proportion of diagnosed patients reaching treatment goal and reducing number of undiagnosed. • CVD, Diabetes, CKD, obesity and dementia should all explicitly be prioritised
Change allocation of funding to increase community based and reduce acute spend	• More resource show be provided for diagnosing and treating patients in these chronic conditions to meet treatment targets • Increase spending on Primary and Community Care, pharmacy and prescribing—and reduce acute spending—will need to be enacted by ICBs • Integrated neighbourhood teams should focus on forming multi-disciplinary teams to manage chronic conditions more effectively. A targeted expansion of roles within community (e.g. specialist nursing capacity) would increase the capacity to enable the shift from hospital to community, and sickness to prevention.
Improve awareness and screening within at-risk population	• Limited awareness and screening contribute to gaps in diagnosis. Opportunities to detect early signs of disease or elevated risk factors—in primary care settings and especially in the wider community—are not fully realised. Awareness of risk factors and early disease symptoms is not high in public consciousness. Invitations for screening and health check programmes are pathway focused not person-centric, meaning at-risk populations may not be routinely or proactively invited. This leads to low levels of successful outreach and lower levels of uptake within targeted populations.
Improved access, capacity and waiting times	• Socioeconomic barriers – Deprived areas have higher rates of undiagnosed cases due to limited access, transport challenges, low health literacy, and cultural barriers. • System pressures – Post-pandemic capacity issues, backlogs, and clinic cancellations are delaying or disrupting diagnostic pathways. • Treatment delays – Longer waits are slowing treatment initiation and extending the time to optimise interventions.
Improved medicines optimisation in-line with guidelines	• Inadequate use of new and established therapies that have received regulatory approval (e.g. safe by MHRA, cost-effective by NICE, and reimbursable via NHS England), yet these “triple-approved” medicines may be under-utilised as innovation takes too long to spread. Ensuring that eligible patients actually receive these treatments remains a persistent challenge.

Prevention

Overview of section

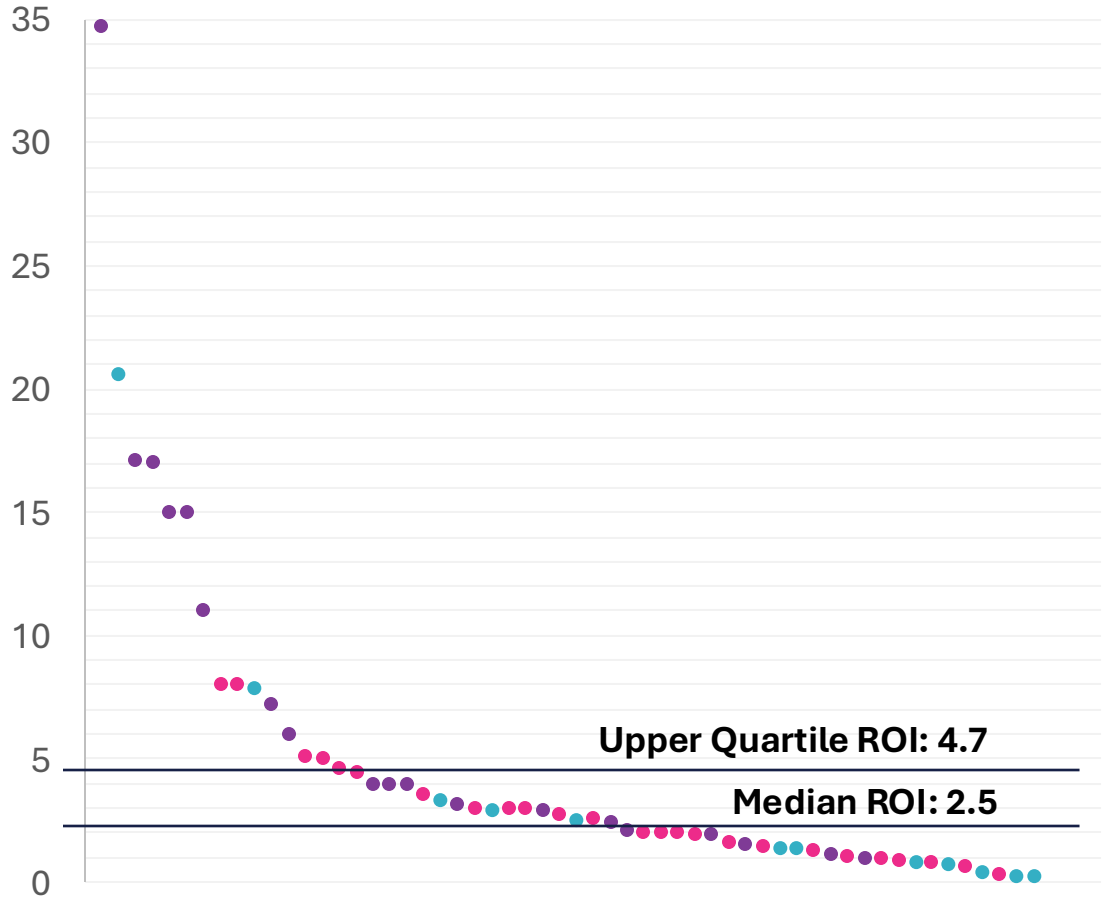
- This section highlights the importance of prevention interventions implemented at both the NHS and local authority levels, emphasising their significant return on investment (ROI). It provides an overview of the ROI across various intervention categories, including housing, education, and those targeting specific conditions such as CVD and diabetes.
- This is closely linked to the work that we've conducted, as many of these prevention interventions have a big potential to prevent the chronic conditions that are the primary focus of this report.
- By prioritising these interventions, we will not only improve health outcomes and prevent or slow the progression of these conditions but also achieve significant savings to the health system through the high return on investment they generate.

Key points covered in this section are:

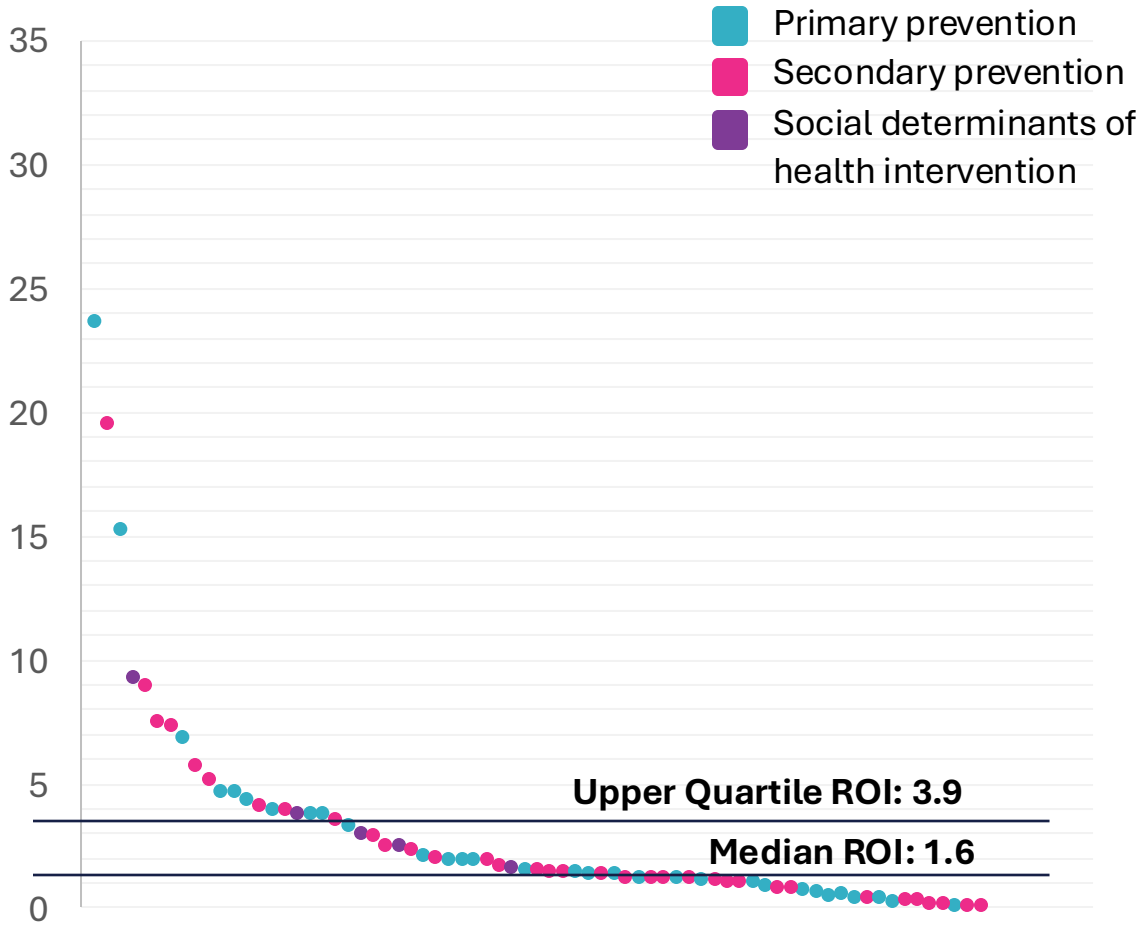
- Analysis of prevention interventions shows median ±2x ROI and upper quartile ±4x ROI – with some interventions delivering far higher
- There is significant variance in ROI between interventions, both between intervention categories and with studies of the same intervention type
- Combined NHS and Local authority could have an impact of £11b if they achieved the upper quartile ROI rather than median value
- Updating our previous analysis to take account of where the benefits fall suggests that the acute sector would receive £3.34bn - £7.24bn of the posited £11bn-22bn opportunity from improved investing in prevention.
- The NHS must develop a 'business-like' approach to systematically identify high-value interventions and limit low-value interventions

Analysis of prevention interventions shows median ±2x ROI and upper quartile ±4x ROI – with some interventions delivering far higher

Return on investment for LA interventions



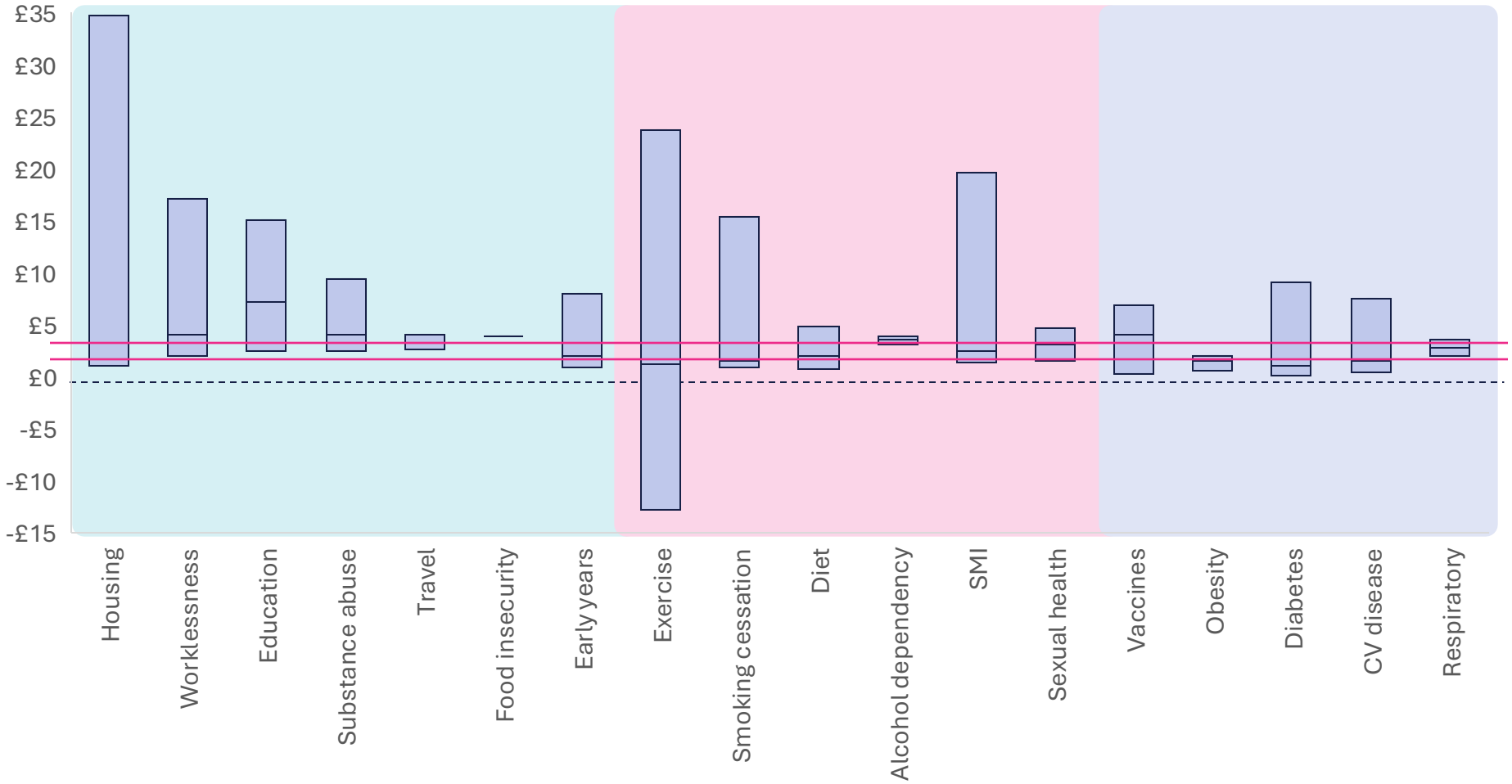
Return on investment for NHS interventions



Source: CF & NHS Confederation analysis, 2024

There is significant variance in ROI between interventions, both between intervention categories and with studies of the same intervention type

Return on investment range for each intervention category



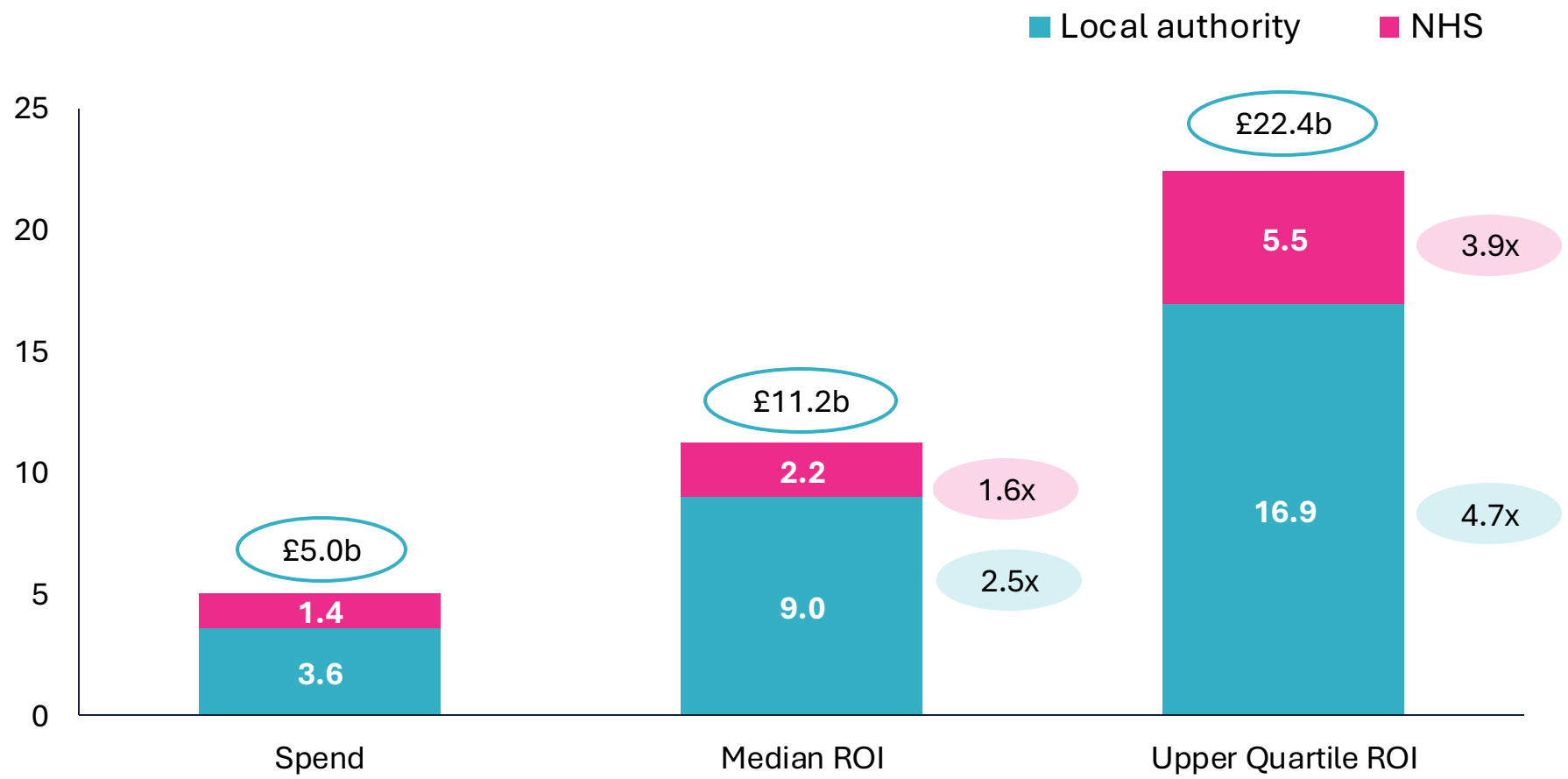
- Large amount of variance across intervention categories maximum ROI
- Even bigger variation within intervention categories
- Selecting not just the right categories but right interventions is critical
- Doing so requires making using ROI a key part of commissioning decisions
- All interventions should have rapid-evaluation using routinely collected data
- Leveraging the unrivalled access to linked data sets within the NHS can support this

Source: CF & NHS Confederation analysis, 2024

Combined NHS and Local authority could have an impact of £11bn if they achieved the upper quartile ROI rather than median value

Impact from investment in prevention, £billion

NHS and Local authority opportunity targeting median and upper quartile return on investment



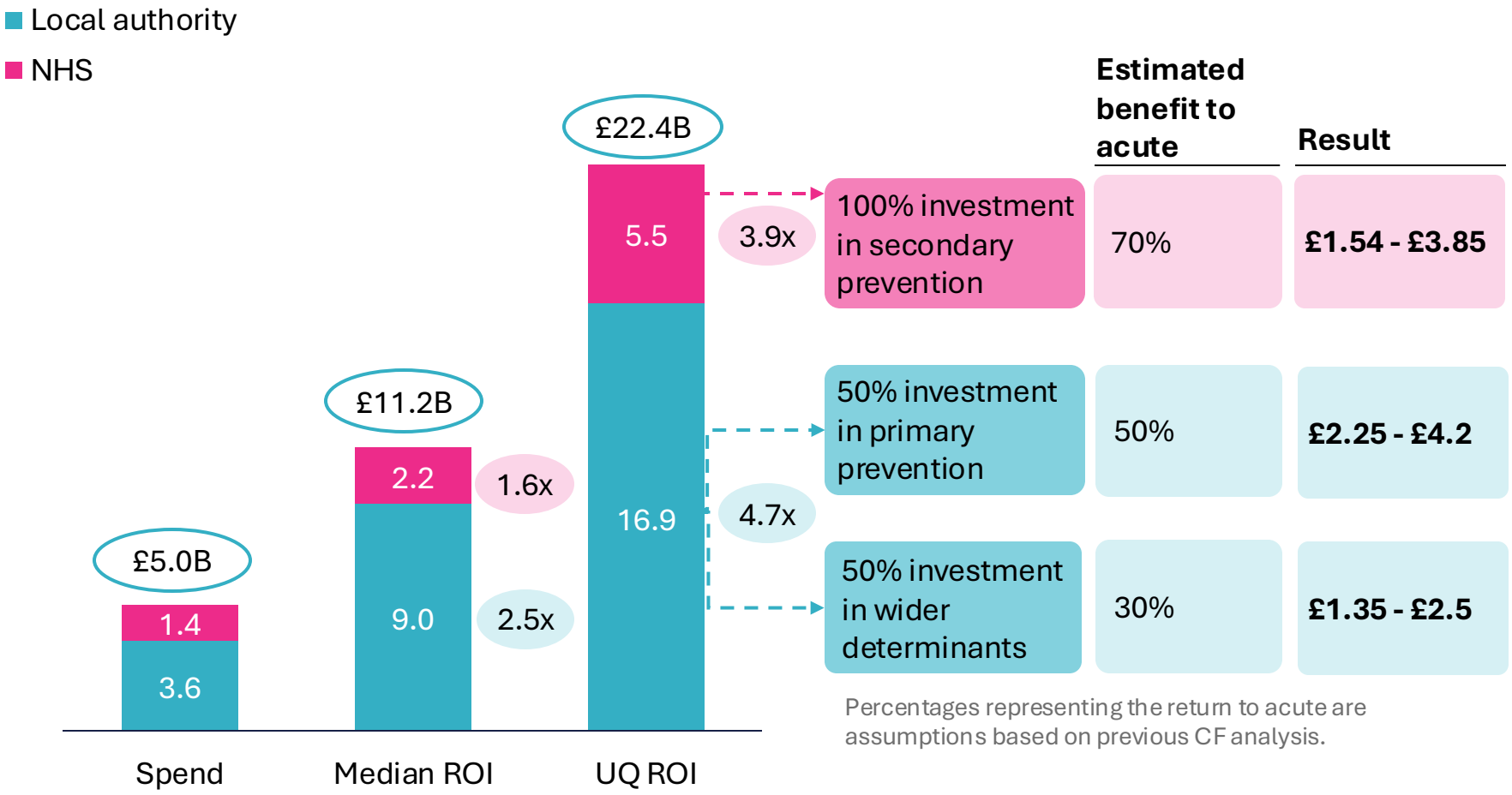
- The local authority public health grant given nationally was **£3.6b** in 2024/25
- A total of **£1.4b** was allocated as the NHS budget, which is made up of the health inequalities funding and the budget for NHS Section 7A
  - **£200m** was allocated as the NHS health inequalities funding for ICSs to specifically address health inequalities in their areas
  - **£1.2b** was allocated under Section 7A of the NHS Act 2006 which requires health and justice services to meet national targets and unique indicators

Source: DHSC; NHS Confederation; King's Fund; CF Analysis

By reinvesting the prevention ROI into the NHS and local authorities, there is potential to generate returns for the acute sector of £5.1B - £10.5b

Impact from investment in prevention, £billion

NHS and Local authority opportunity targeting median and upper quartile return on investment



	Estimated benefit to acute	Result
100% investment in secondary prevention	70%	**£1.54 - £3.85**
50% investment in primary prevention	50%	**£2.25 - £4.2**
50% investment in wider determinants	30%	**£1.35 - £2.5**

Percentages representing the return to acute are assumptions based on previous CF analysis.

- Previous analysis of ROI showed the local authority public health grant given nationally was **£3.6 billion** in 2024/25 and NHS spend was **£200 million** was allocated as the NHS health inequalities and **£1.2 billion** was allocated under the Section 7A of the NHS Act 2006 that requires health and justice services to meet national targets and unique indicators
- Engagement with key leaders indicates that the NHS prioritises secondary prevention while local authorities focus on primary prevention and social determinants of health (SDOH).
- Application of new analysis of yield suggests a benefit to the acute sector of **£5.1-£10.5b.**

Source: DHSC; NHS Confederation; King's Fund; CF Analysis

The NHS must develop a 'business-like' approach to systematically identify high-value interventions and limit low-value interventions

Capture and quantify amount of money being spent on prevention	• The amount of money spent on prevention should be recorded by each ICB and each local authority. • Aggregated information about the amount spent on prevention by area should be reported
Adjust allocation of prevention budgets to optimise ROI	• Spending that delivers low returns should be cut and spending that delivers high returns should be increased • NHSE should provide guidance on how best to decommission low value services and set an expectation that each area should decommission low return services each year in favour of investing more in high return
Commissioning approach for high impact interventions should be shared	• Whilst the decisions about what to commission sit with each ICB and Local Authority, best practice could be shared in what the commissioning of high impact interventions look like including specification, metrics, investment levels, etc
The skills and capabilities to prioritise interventions is crucial	• The habit, skills and capabilities to capture, record and review evidence on new and existing interventions remain underdeveloped across the system. A lack of discretionary spending, compounded by repeated cuts to local authority budgets—especially those reserved for public health—has only intensified this lack of skill and capability.
Effective prevention requires evidence-based investment	• Realising the full potential of prevention does not necessarily require increased spending but rather a reprioritisation of resources. Prevention must become a core focus of commissioning, requires robust frameworks for designing, implementing, and scaling initiatives and accountability. Evidence-based investment should be adopted, using data to measure the ROI of specific interventions. This involves taking a more business-like approach by systematically identifying high-value interventions and scaling back or stopping low-value interventions.
Longitudinal NHS data should be used to evaluate impact	• To achieve this, NHS longitudinal data should be fully harnessed to inform prevention strategies, monitor their effectiveness, and drive continual improvement. This data-driven approach enables the system to allocate resources more effectively.

Recommendations

Recommendations

	High workforce productivity	Unmet needs in chronic conditions	Investing effectively in prevention
Priorities	• Urgently review safer staffing guidance for impact on safety vs cost • Match workforce to level of demand through data-driven tools • Transform outpatient with digitalisation	• Set "left shift" strategy to focus on targeting unmet needs in chronic conditions with diagnosis and treatment • Commission care packages for chronic conditions – and make savings from acute care	• Take healthcare value approach to prevention spending, focusing investment on high impact prevention interventions • Evaluate the impact of prevention spending using routinely collected data • Either focus NHS on secondary prevention and LA on primary prevention/Social determinants or reunify prevention funding

Enablers

Data: use of existing NHS longitudinal data at patient, provider and ICB level to; evaluate staffing level vs demand and measure safety, measure gaps in care at ICB and PCN level, target individuals with unmet care, track impact, quantify expected ROI and measure impact

Funding: Make funds follow the patient; cost care packages for chronic conditions and increase spend in primary care, community, pharmacy and prescribing; establish bundled episode approach for elective care; consider reunifying prevention budget

Evidence: Use evidence-based approaches and strategies to guide investments and prioritise and allocate resources effectively. This requires an urgent assessment of safer staffing impact vs cost. Develop and then maintain evidence on interventions for prevention

Evaluation: Create a habit of using routinely collected data to support evaluation and learning about any interventions in health service. Require completion of evaluation to be incorporated in the commissioning approach

Regulation: Incorporate consideration of productivity and unmet needs in assessing the effectiveness of care. Adopt an approach to regulation based on the use of routinely collected information

Coordinated action across a common set of enablers are needed to support this

	Data	Incentives	Flow of funds	Evaluation	Effective regulation
Current status	• The UK has one of the largest longitudinal datasets globally, providing significant data to evaluate impacts and enhance productivity.	• The NHS uses activity-based payment for acute care, primary care, private sector provision, medicines, and medical devices.	• Increase in acute spending from 47% to 58% of current NHS budget with reductions in community and primary care.	• Medicines undergo thorough evaluation for safety, cost-effectiveness, and budget impact but services rarely evaluated	• CQC facing serious issues of credibility of methods in Dash report.
Gaps	• Underutilisation of data • Lack of integration in NHS data (e.g. workforce, activity, medicines). • Lack of IG to support linked patient level data. • Community and MH data collection is not fit for purpose.	• Suspension of PbR for acute trusts. • Lack of any activity-based payment for community and mental health services creates lack of productivity incentives.	• Lack of resources for PHM and case finding. • No mechanism to capture savings from preventive measures. • Medicine spending pressures with limited management tools at the ICB level.	• NHS service interventions lack economic evaluation. • Decisions on safe staffing have not been economically evaluated • ROI on investment in prevention not often measured.	• Primary focus on safety appears to failed to consider impact on staffing levels. • Lack of credible approach to regulation.
Recommendations	• Invest in IG to support linked data in each ICB by drafting GDPR-compliant data-sharing agreements and engaging clinicians and patients. • Rationalise and improve data collection for community and MH.	• Introduce activity-based payments in community and mental health. • Incentivise timely and accurate reporting, care plans, and shared goals. • Consider value-based payments, especially in primary and acute care.	• Create linkages between budget elements in the NHS. • Enable models of value-based payment. • Address funding flow issues to support preventive measures.	• Implement routine economic evaluations for NHS service interventions leveraging longitudinal data. • Ensure understanding of impacts before national rollout.	• Regulators need to adopt and use routinely collected data to inform rationale regulation Improve the use of data and data quality through regulatory adoption. • Ensure consistent information flow.

Data and source for productivity analysis

Funding data provided by NHS to parliament

Date	Cash prices (£billions)	2022/23 prices (£billions)	Real terms change (%)
2013/14	109.8	135.6	2.4%
2014/15	113.3	138.4	2.0%
2015/16	117.2	142.1	2.7%
2016/17	120.6	142.9	0.6%
2017/18	125.2	146.0	2.2%
2018/19	128.4	146.7	0.5%
2019/20	138.5	154.6	5.3%
2020/21	144.9	153.4	-0.8%
2021/22	153.1	163.4	6.5%
2022/23	181.7	181.7	11.2%
2023/24 planned	189.5	177.9	-2.1%

Breakdown of NHS spending £ Billion: real terms 2023/24 prices			Change over period	
	2015/16	2023/24	£ billion	%
Acute	49.3	63.6	+14.3	+28.9%
Specialised services	19.1	24.9	+5.8	+30.3%
Core mental health	9.4	13.7	+4.3	+45.3%
Primary medical care	11.2	12.9	+1.7	+14.8%
Community services	9.2	12.3	+3.1	+34.2%
Continuing care	5.6	6.5	+0.9	+17.1%
Other	24.4	20.0	-4.4	-18.0%
Total	128.4	153.8	+25.4	+19.8%

Source: Parliamentary Briefing: NHS funding and expenditure (2024)

Activity data from published NHS data

Date	A&E attendances	Outpatients	Electives admissions	NEL admissions	OBDs	Population
2013/14	21,778,657	101,844,824	7,760,623	5,565,567	36,848,377	53,918,686
2014/15	22,354,781	107,188,423	8,273,821	5,691,577	37,283,771	54,370,319
2015/16	22,920,435	113,298,661	8,464,215	5,885,604	36,782,169	54,808,676
2016/17	23,362,301	118,578,912	8,676,087	6,022,019	37,228,867	55,289,034
2017/18	23,830,120	119,378,895	8,583,947	6,243,151	37,029,010	55,619,548
2018/19	24,826,982	123,351,435	8,809,917	6,597,117	36,717,901	55,924,528
2019/20	25,017,116	124,927,782	8,842,098	6,398,352	36,753,847	56,230,056
2020/21	17,429,559	101,898,658	5,628,814	5,328,755	28,813,755	56,325,961
2021/22	24,374,967	122,325,785	7,931,133	6,112,702	34,718,080	56,554,891
2022/23	25,348,842	124,461,569	8,560,692	6,318,832	37,449,292	57,112,542
2023/24	26,321,069	135,445,596	9,165,026	6,776,814	37,988,331	57,690,323

Source: Quarterly Attendances & Emergency Admission monthly statistics, NHS and independent sector organisations in England, Hospital Outpatient Activity, Summary Table 1: FCEs, FAEs, Admission method, 2014-15 to 2023-24, Monthly Hospital Activity, Average Daily Available and Occupied Beds Timeseries, ONS England population.

Workforce statistics from NHS sources

Date	Adult nurses	Manager nurses (modern matron, nurse manager)	All other nurses	Ratio
2010/11	169,917	7,124	162,793	22.9
2011/12	167,593	6,822	160,770	23.6
2012/13	166,376	6,544	159,832	24.4
2013/14	169,862	6,526	163,336	25.0
2014/15	173,601	6,840	166,761	24.4
2015/16	175,820	7,282	168,538	23.1
2016/17	178,475	7,686	170,789	22.2
2017/18	179,035	7,932	171,102	21.6
2018/19	181,025	8,321	172,704	20.8
2019/20	186,977	8,772	178,205	20.3
2020/21	195,425	9,276	186,149	20.1
2021/22	204,041	10,021	194,020	19.4
2022/23	213,389	10,927	202,462	18.5
2023/24	227,553	11,697	215,855	18.5

Date	Medical workforce - Acute	Increased output if regained productivity of 2019/20
2013/14	73,701	1,179
2014/15	78,139	1,201
2015/16	78,438	1,185
2016/17	80,512	1,165
2017/18	86,390	1,153
2018/19	90,379	1,139
2019/20	99,564	1,109
2020/21	105,975	1,171
2021/22	110,977	1,194
2022/23	116,266	1,204
2023/24	123,019	1,200

Source: NHS Hospital & Community Health Service (HCHS) monthly workforce statistics

Sources for quality care gaps

List of sources

Category		Cardiovascular disease (CVD)	Type 2 Diabetes	Obesity	Chronic Kidney Disease (CKD)	Dementia	Multi-morbidity
Estimated prevalence vs. Diagnosed population		• 1) British Heart Foundation • 2) CVDPREVENT • 3) Health Survey England • 4) NHSBSA	• 5) NHS England • 6) QOF • 7) ONS • 8) Diabetes.co.uk • 9) EClinicalMedicine • 10) BMJ	• 7) GOV.UK • 8) QOF • 9) BMJ	• 9) Kidney Research UK • 10) QOF	• 11) Alzheimer's Society • 12) QOF	• 1) Royal Society of Medicine • 2) GOV.UK
Diagnosis gap		• CF Analysis					
Eligible vs. Optimally treated population		• 16) CVDPREVENT • 17) CVDPREVENT	• 18) NHS Digital		• 19) CVDPREVENT	• 20) Alzheimer's Society	
Treatment gap		• CF Analysis					
Events (per year)		• 21) NICE • 22) Hospital Episode Statistics (HES) • 23) NHS Compendium: Mortality	• 24) Statista • 25) Diabetes UK • 26) NHS Compendium: Mortality • 27) HES	• 28) British Heart Foundation	• 29) Kidney Research UK • 30) NHSE	• 31) Alzheimer's Research UK Dementia Statistics Hub	
Events prevented		• HES APC, ECDS, OP • CF Analysis					
HCRU	Spells OBDs Attendances Appointments	• HES APC, ECDS, OP • CF Analysis					
Costs	Inpatient A&E Outpatient Total costs	• HES APC, ECDS, OP • CF Analysis					
Gross savings		• CF Analysis					

CVD

Measures	Statistics	Source	Calculation	Link to source
Prevalence	• 4.4 million	• CVDPREVENT* • British Heart Foundation	• Estimated proportion of people diagnosed with heart failure at GP (3.2m): 73% • Total estimated number of people with CVD = 3.2m / 0.73 = 4.4m	• BHF • CVDPREVENT CVDP001CVD
Diagnosed population	• 3.2 million	• CVDPREVENT		• CVDPREVENT CVDP001CVD
At risk (high cholesterol)	• 27m (59%) > 4.9 mmol/L total cholesterol • 11m (24%) > 4.9 mmol/L LDL-cholesterol	• Health Survey England • NHSBSA Estimates Report	• (Adult population in England) x (Proportion of adults with high cholesterol levels) • *46m** x 0.59 = 27m* • *46m x 0.24 = 11m*	• NHS Digital • NHS Business Services Authority
Diagnosis gap	• 1.2 million	• British Heart Foundation • CVDPREVENT	• *4.4m – 3.2m = 1.2m*	• Listed above
Eligible population	• 10.7 million	• CVDPREVENT	• Number of adults with one or more risk factors for CVD: 7.9m • Number of people with CVD (narrow definition)***: 2.8m • *7.9m + 2.8m = 10.7m*	• CVDPREVENT CVDP008CHOL • CVDPREVENT CVDP009CHOL
Optimally treated population	• 1.3 million	• CVDPREVENT		• CVDPREVENT
Treatment gap	• 9.4 million	• CVDPREVENT	• 10.7m – 1.3m = 9.4m	• Listed above
Events (per year)	• 148k overall deaths (based on 175k UK figure) • 102k heart attacks (18k deaths) • 88k strokes (27k deaths)	• NICE • Hospital Episode Statistics (HES) (2023/24) • NHS Compendium: Mortality (2022)		• NICE • Mortality from acute myocardial infarction (NHS Digital) • Mortality from stroke (NHS Digital)

**CVDPREVENT includes 7 conditions in their wide definition of CVD: coronary heart disease, ischaemic stroke, acute coronary syndrome, peripheral arterial disease, transient ischaemic attack, heart failure and abdominal aortic aneurysm*

***Adult (18 and older) population in England (ONS), 2023*

**** Includes any or more than one of these conditions: CHD, non-haemorrhagic stroke and stroke cause not specified, TIA, and PAD)*

Type 2 diabetes

Measures	Statistics	Source	Calculation	Link to source
Estimated prevalence	• 5.2 million	• NHS England (2024) • QOF (2023/24) • ONS (2024) • EClinicalMedicine	• Proportion of people with type 2 diabetes (T2D) that are undiagnosed = 30% • Number of people diagnosed with T2D= (number of people diagnosed with diabetes) – (number of people with type 1 diabetes) • = 3.9m – 270k = 3.6m • (Total estimated number of people with T2D) x 70% = 3.6m • Total estimated number of people with T2D = 5.2m **Estimated 55% of T2D patients have 0 or 1 other comorbidity at time of diagnosis** Prevalence of T2D as a single LTC *= 5.2m x 55% = 2.9m* *"7.8% prevalence in England" = 4.4m (gov.uk) for Type 2*	• QOF (Fingertips) • NHSE • ONS • Variations in comorbidity burden in people with type 2 diabetes over disease duration: A population-based analysis of real world evidence
Diagnosed population	• Diagnosed: 3.6 million	• NHS England (2024) • QOF (2023/24) • BMJ	**Recorded prevalence of type 2 diabetes** = (recorded prevalence of overall diabetes) – (recorded prevalence of type 1 prevalence) = QOF records *3.9m – 270k = 3.6m* **Estimated 77% of T2D patients have at least one other comorbidity** Diagnosed T2D as a single LTC *= 3.6m x 23% = 828k*	Listed above (QOF and NHSE) • https://bmjopen.bmj.com/content/10/7/e033866
At risk (prediabetes)	• 6 million	• Diabetes.co.uk	• Percentage of England adult population with prediabetes = 13% • 46m x 13% = 6 million	https://www.diabetes.co.uk/
Diagnosis gap	• 1.6 million	• NHS England (2024) • QOF (2023/24) • ONS (2024)	• *5.2m – 3.6m = 1.6m*	Listed above
Eligible population	• 5 million	• Diabetes.co.uk • GOV.UK (2022/23) • NHS England (2024) • QOF (2023/24)	• Total eligible population = (number of people diagnosed with T2D) + (number of people with prediabetes that are eligible for treatment) • Obesity rate in England = 26% • Number of people with T2D = 3.6m • Number of eligible people with prediabetes = (Total number of people with prediabetes) x (obesity rate) *= 6 million x 26% = 1.6m* • *3.6m + 1.6m = 5.2m*	• Diabetes UK • UK Government
Optimally treated population	• 1 million	• National Diabetes Audit (2023)		• NHS Digital
Treatment gap	• 4.2 million		• *5.2m – 1m = 4m*	Listed above
Events (per year)	• 119k overall deaths (based on 141k UK figure)	• Statista • Diabetes UK	Derived from Diabetes UK statistics which are cited on weekly basis: • 660 x 52 = 34,320 heart attacks	• Statista • Diabetes UK

Obesity

Measures	Statistics	Source	Calculation	Link to source
Estimated prevalence	• Prevalence: 12m (26%)	• GOV.UK (2022/23) • BMJ	• 26% of adults in England are estimated to be living with obesity • Adult population in England = 46m • *46m x 0.26 = 12m* • **Estimated 17% of people have no other comorbidity** • *12m x 17% = 2.0m*	• GOV.UK • https://pmc.ncbi.nlm.nih.gov/articles/PMC8246368/#abstract1
Diagnosed population	• 6.5m	• QOF (2023/24)	• Recorded prevalence of obesity in England = 6.5m • 6.5m x 17% = 1.1m	• Fingertips • BMJ listed above
At risk (overweight)	• 17m	• GOV.UK (2022/23)	• In 2022 to 2023, 64.0% of adults aged 18 years and over in England were estimated to be overweight or living with obesity • *64% - 26.2% = 37.8%* • *46m x 37.8% = 17m*	• GOV.UK
Diagnosis gap	• 5.5m	• GOV.UK (2022/23) • QOF (2023/24)	• *12m – 6.5m = 5.5m* • *Obesity as a S-LTC = 2.0m - 1.1m = 900k*	• Listed above
Eligible population*	-			
Optimally treated population*	-			
Treatment gap*	-			
Events (per year)	• 26,000 CVD deaths associated with obesity in the England	• British Heart Foundation • ONS	• There are 31,000 CVD deaths associated with obesity in the UK • Given that the UK population is 67.6 million and England's population is 57.1 million (ONS, Mid-2022), we used this proportion to adjust the figures to England • *57.1 / 67.6 = 0.845* • *31,000 x 0.845 = 26,195*	• British Heart Foundation • Office for National Statistics

Chronic kidney disease

Measures	Statistics	Source	Calculation	Link to source
Estimated prevalence	• 6.1m (total CKD) • 2.8m (G3-5)	• Kidney Research UK (2023)	• Estimated total prevalence of CKD in adults in the UK = 7.2m • Estimated total prevalence of CKD stages 3-5 in adults in the UK = 3.25m • Given that the UK population is 67.6 million and England's population is 57.1 million (ONS, Mid-2022), we used this proportion to adjust the figures to England • 57.1 / 67.6 = 0.845 • 7.2m x 0.845 = 6.1m • 3.25m x 0.845 = 2.8m	• Kidney Research UK
Diagnosed population	• 2.24m (G3-5)	• QOF (2023/24)	• Recorded prevalence of CKD G3-5 in England = 2.24m	• Fingertips
At risk (CKD G1-2)	• 3.3m	• Kidney Research UK (2023)	• Estimated total prevalence of CKD in adults in the UK = 7.2m • Estimated total prevalence of CKD stages 3-5 in adults in the UK = 3.25m • Estimated prevalence of CKD stages 1-2 = 7.2 – 3.25 = 3.95m • 3.95m x 0.845 = 3.34m	• Kidney Research UK
Diagnosis gap	• 520k	• Kidney Research UK (2023) • QOF (2023/24)	• 2.8m – 2.2m = 0.6m	• Listed above
Eligible population	• 2.2m	• QOF (2023/24)	• Assumed that everyone diagnosed with CKD G3-5 is eligible for treatment • Recorded prevalence of CKD stages 3-5 in England = 2.2m	• Fingertips
Optimally treated population	• 1.6m	• CVDPREVENT	• Proportion of patients with GP recorded CKD (G3a to G5) with an ACR of less than 70 mg/mmol (controlled) = 70.2% • Number of people with GP recorded CKD G3-5 = 2.24m • 2.24m x 0.702 = 1.57m	• CVDPREVENT CVDP007CKD
Treatment gap	• 675k	• QOF (2023/24) • CVDPREVENT	• 2.24m - 1.57m = 675k	• Listed above
Events (per year)	• 30k people receiving dialysis • 3k people receiving transplant • 45k deaths	• Kidney Research UK (2023) • NHSE – Chronic Kidney Disease in England: The Human and Financial Cost	• In 2020, there were 29,354 adults receiving dialysis for end stage kidney disease in the UK • In 2021, there were 2,863 adults who received a kidney transplant in the UK • It is estimated that there are 40,000 – 45,000 premature deaths each year in people with CKD	• NHS England

Dementia

Measures	Statistics	Source	Calculation	Link to source
Estimated prevalence	• 826k	• Alzheimer's Society		• Alzheimer's Society
Diagnosed population	• 482k	• QOF		• Fingertips
At risk (mild cognitive impairment)	• 524k	• Globe News Wire	• Estimated prevalence of MCI in the UK = 610k • Given that the UK population is 67.6 million and England's population is 57.1 million (ONS, Mid-2022), we used this proportion to adjust the figures to England • 57.1 / 67.6 = 0.845 • 620,000 x 0.845 = 523,900	• GlobeNewswire (2024)
Diagnosis gap	• 344k		• 826k – 482k = 344k	• Listed above
Eligible population	• 482k	• QOF	• Assumed that everyone diagnosed with dementia is eligible for treatment • Recorded prevalence of dementia in England = 482k	• Listed above
Treated population	• 29k	• Alzheimer's Society • QOF	• Estimated proportion of people dementia that are on NICE approved medications = 6% • Recorded prevalence of dementia in England = 482k • 482,000 x 0.06 = 28,920	• Alzheimer's Society
Treatment gap	• 453k		• 482k – 29k = 453k	• Listed above
Events (per year)	• 62k		Number of deaths due to Alzheimer's disease in the UK in 2022: 74,000 • Given that the UK population is 67.6 million and England's population is 57.1 million (ONS, Mid-2022), we used this proportion to adjust the figures to England • 57.1 / 67.6 = 0.845 • 74,000 x 0.845 = 62,530	• Dementia Statistics

Multi-morbidity

Measures	Statistics	Source	Calculation	Link to source
Estimated prevalence		• Royal Society of Medicine GOV.UK (2022/23)	• 15% of people in England are living with two or more health conditions • Adult population in England = 46m • 46m x 15% = 6.9m	• Prevalence of multiple long-term conditions (multimorbidity) in England: a whole population study of over 60 million people • GOV.UK
Diagnosed population				
At risk (mild cognitive impairment)				
Diagnosis gap				
Eligible population				
Treated population				
Treatment gap				
Events (per year)				

Methodology

Methodology for calculation of weighted activity unit

A **Weighted Activity Unit (WAU)** allows for hospital activity to be expressed in a single, comparable metric by weighting each activity according to its relative cost and complexity (using 2022/23 prices).

By converting varied clinical activities into one unit, we can more accurately compare how different types of work use staff and resources.

This allows analysis of workforce-to-activity relationships to be fair and meaningful. Instead of simply counting activity volumes, we account for the fact that some activities are more resource-intensive or complex than others.

1. Index total activity per year

- The acute activity assessed were:
  - Elective admissions
  - Non-elective admissions
  - A&E attendances
  - Outpatient appointments
- Index each acute activity to the baseline year (2013/14)

2. Calculate the cost weighting of each activity

- Multiple the unit cost of each activity (Jones et al., (2023)) by the total level of activity per year
- Sum the total cost of each activity together to obtain total cost of acute activity per year
- Calculate the cost weighting of each acute activity for year

3. Calculate the WAU

- Multiple the cost weighting of each activity type with the activity index for the year
- Example: If in 2022/23 the cost weighting for A&E attendances was 5% of the total acute spend and indexed A&E attendances was 116%, the WAU would be 6%.

4. Calculate the integrated WAU

- The weighted activity index for each activity during a year were summed to provide the integrated WAU for the year

Quality gap methodology

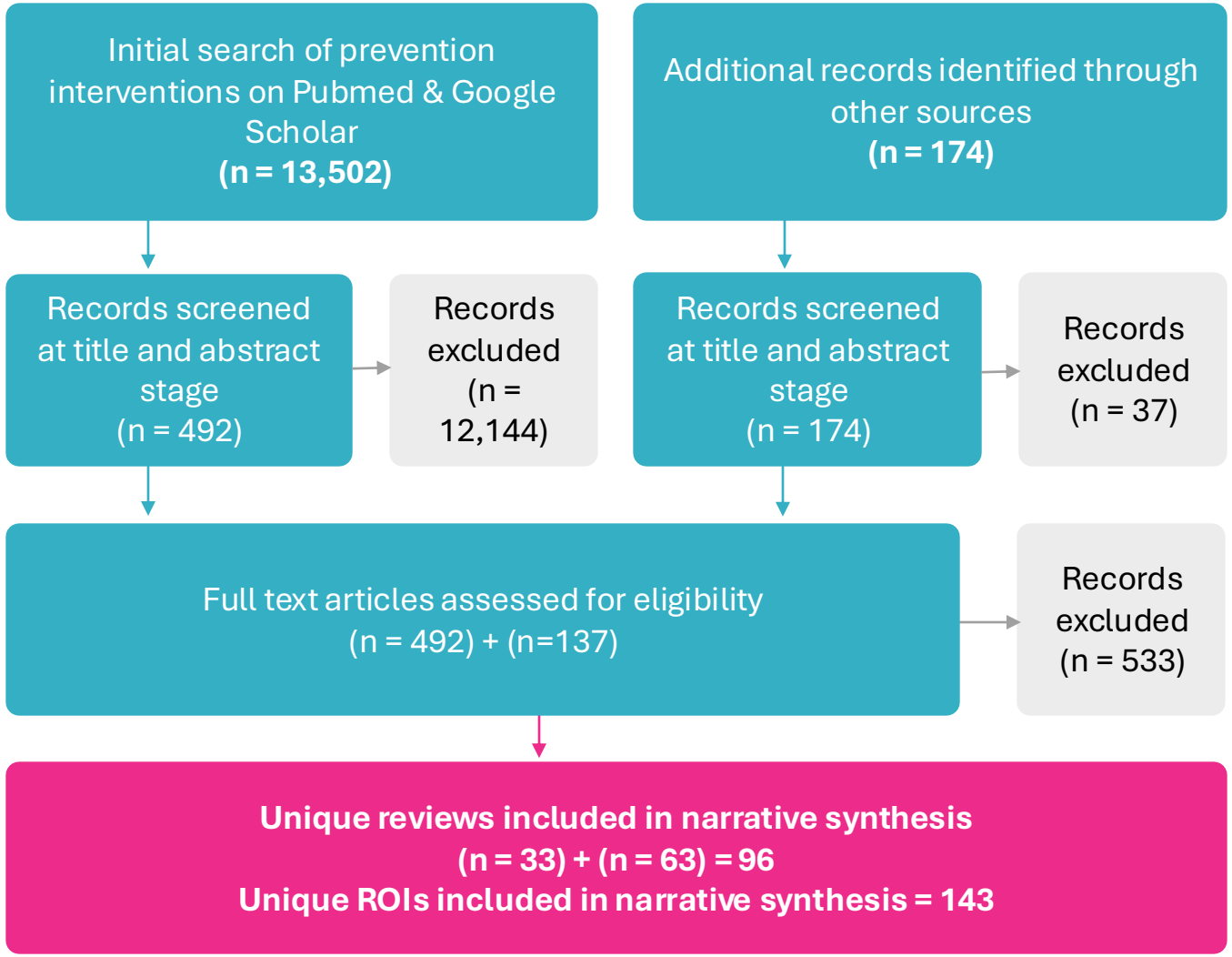
1	**Calculate prevalence of disease and elevated risk factors**	Understand the prevalence of disease	• Understand the diagnosed and undiagnosed populations using QOF and published literature
		Understand the split between treated and untreated populations	• Estimate the split between untreated and treated population using national prescribing data and published literature
2	**Attribute healthcare resource utilisation (HCRU) to different risk thresholds**	Calculate the distribution of disease risk factor across the population	• Estimate the distribution of population across the relevant clinical risk factor thresholds and/ or disease progression rates using QOF, published literature and surveys
		Calculate the healthcare resource utilisation based on risk factor distribution	• Identify patients with underlying disease using ICD-10 and SNOMED codes in Hospital Episodes Statistics (HES) and distribute the hospital activity across the risk factor populations based on established hazard ratios
3	**Calculate the impact of intervention on healthcare resource utilisation**	Estimate the eligible population for risk factor intervention	• Estimate the population that are eligible for intervention based on NICE guidelines • Understand the number of people currently treated who are sub-optimally managed based on QOF
		Calculate the impact of different interventions on healthcare resource utilisation	• Calculate the impact of interventions on healthcare resource utilisation and morbidity and mortality figures

A systematic literature review, grey literature review and expansive evidence review were undertaken to identify which generated the highest return on investments

To ensure we had the most holistic view of interventions, **a systematic literature review, grey literature review and expansive evidence review** were undertaken to identify the most **comprehensive database** of prevention initiatives that impact on clinical and social determinants of health to generate the best ROIs through impacts on inequalities

Exclusion Criteria

- Published before 2013
- Focused on specific populations e.g., female-only
- Systematic reviews, dissertations, conference abstracts or study protocols
- Outside of England, USA, Canada, Australia, New Zealand and Nordics
- ROI values were not noted
- Behind a paywall



Source: CF & NHS Confederation analysis, 2024

Limitations

Productivity:

- We have looked at high level national metrics around workforce and activity, but we are unable to make inferences about the exact reasons why output has not increased proportionally with the standard activity metrics that we have used.

Unmet needs:

- We based our estimates of healthcare resource utilisation on activity data from 2023/24, assuming these figures provide a representative measure of current trends.
- To determine the number of inpatient spells associated with a particular disease area, we counted any spell in which a relevant ICD-10 or SNOMED code appeared in a diagnosis field. This approach may include cases where the disease in question was not the primary reason for admission, but given the conditions examined are known risk factors, we considered it appropriate to adopt a more inclusive definition.