

What a Waste!

Understanding how health and care can reduce inappropriate waste

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01

EXECUTIVE SUMMARY

Dealing with the issue of waste in health and care has been discussed by policy makers, politicians and healthcare professionals since the NHS was founded in 1948. This report calls for a focus on the problem of inappropriate waste in the delivery of health and social care in Wales and urgent action to address it. Reducing waste will play a crucial role in tackling the enormous challenges ahead and in developing more prudent and economically, socially, and sustainable services and support. There are already several good examples of how the 5 Rs' ('Reduce, Reuse, Reprocessed, Renewable, Recycle') are informing practices in the NHS but more needs to be done. It will need everyone to take responsibility and play a part.

Waste occurs across a wide range of areas, some of which may be more evident and tractable than others. This paper provides an initial overview of the spectrum of waste in health and care, drawing upon wider evidence and particularly the work undertaken by Berwick and Hackbarth (2012) on healthcare waste in the USA. We build on their argument to suggest that the triple issue of climate change, austerity and the covid backlog has heightened the urgency for professionals, patients, and politicians alike, creating a unique opportunity to take concerted action to address this. We also maintain that any response should be underpinned by the principles of prudent healthcare.

Our typology redefines waste into 6 categories: workforce, administration, services, treatment, energy, and systems (WASTES). We set out the prevailing issues under each of these headings and suggest how the concept of prudent healthcare can help us to tackle waste in health and care settings.

WASTES allows us to more clearly see the major areas which need to be tackled. It identifies examples of issues such as overtreatment and energy use, medicines and equipment waste and the opportunities to make changes and monitor impact. It has also exposed the gaps or inconsistencies of data collection and opportunities to address these moving forward.

We recognise that waste is not the responsibility of any one organisation or professional – it is indeed everyone's responsibility, the public, patients, and professionals. If we are to address the future sustainability of the health and care system, economically, environmentally, and socially, then we will also need to explore further the concepts of acknowledge, inform, persuade, and pay, to encourage the full engagement and responsibility of all stakeholders in reducing waste.

In response, the Bevan Commission's 'Let's Not Waste'[1] programme has been established to address this, providing a platform and 'call to action' to begin to bring people and organisations together to find better solutions to reduce waste together.

Everyone involved in writing this report was aware of waste and the need to tackle it. While there is support at all levels for the drive to reduce waste there is no framework for ensuring collective responsibility and accountability for action to drive waste reduction.

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INTRODUCTION

The aim of this paper is to review the broad spectrum of waste in health and care to help stimulate action and guide a wider discussion and debate with health and care users, policy makers, suppliers, commissioners, and providers about our collective responsibility to tackle waste. It will also help identify what actions and interventions are likely to have the greatest impact, how we might measure progress and how an emphasis on driving down and eliminating waste may better enable health and care services to meet their environmental, economic, and social sustainability challenges.

This paper provides a first step towards tackling the issue of waste in health and care, as part of achieving more sustainable solutions for the future. A key area of investigation will be to identify tractable areas within the health and care sectors in which short- and long-term gains can be made and to identify waste hotspots in the sectors. Currently, there are a range of initiatives, many of which are part of the wider Carbon reduction plans[2], aimed at driving down waste in specific areas e.g. food, energy and single use. There is a pressing need now to identify and collect data on waste more broadly and to develop an action plan to tackle it. These plans based on the mantra of the '5 Rs' (Reduce, Reuse, Reprocessed, Renewable, Recycle) are underway and are by no means a new endeavour [3, 4] but the triple issue of climate change, austerity and the covid backlog has heightened the urgency for professionals, patients, and politicians alike.

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03

BACKGROUND

The health and social care system in Wales is facing unprecedented challenges in the wake of the Covid-19 pandemic, a cost-of-living crisis, and the global climate emergency. Spending on health and care in Wales each year is estimated at £8.5bn, a figure which continues to grow. In 2020 Welsh spending on Health and Social Services was about half of its income[5, 6] a figure which has remained more or less consistent over the last decade [7]. The finances of the NHS and social care providers across the UK and wider afield are stretched to the limit. Budgets and workforce are under unprecedented pressure as we move into a post-COVID phase of dealing with increasing demand and the backlog of care, alongside the urgent demands of climate change and the need for more sustainable solutions.

Taken together these require us to urgently act and think about how we can use all the resources we have available to us more efficiently, and how we can minimise waste in all its forms across the sector to help meet the targets set out in Prosperity for All: A Low Carbon Wales. Similarly, the 2021 Academy of Medical Sciences (AMS)[8] report discusses the need to deal with these problems simultaneously as a way of delivering “co-benefits” and sets out “the health benefits that could be achieved by climate mitigation policies. The size of the estimates varies depending on the assumptions about the amount of change achieved in key exposures and the exposure–response relationships.”

Thinking about health and care delivery in this way further reinforces the shift and emphasis from treatment of disease to a model based on behaviour change and prevention of ill-health, consistent with the Bevan Commissions thinking set out over the last few years[1, 9, 10].

The approach we set out provides a sound basis for improving more sustainable health and social care provision[9]. It also draws upon the OECD 4-step framework for tackling waste in health and social care through: acknowledgement, information, persuasion, and payment which is discussed later in this paper.

Governments and providers tend to concentrate their efforts on finding efficiencies by reducing use costs, but a less harmful, more prudent, and impactful strategy economically and environmentally would be to reduce waste. The OECD has argued that:

“a considerable part of health expenditure makes little or no contribution to improving people’s health. In some cases, it even results in worse health outcomes. Countries could potentially spend significantly less on health care with no impact on health system performance, or on health outcomes [11]”

Existing studies of healthcare systems around the world have previously estimated that approximately 20-30% of health care spending may be considered to have been waste [4]. While there are some concerns about the costs associated with tackling waste in the form of carbon emissions the AMS[8] argues that:

“The main health co-benefits of climate mitigation policies stem from actions to phase out fossil fuels, develop more energy-efficient housing, promote healthier dietary choices, and encourage more active travel (walking and cycling) ...Evidence suggests that the value of the health benefits of climate change mitigation has the potential to offset most of the initial mitigation costs.”

If such estimates are correct, then waste can be said to reach into every aspect of health and care service provision. Some aspects of waste are being tackled across the health and care sector, but often in silos and without a single systematic drive and commitment to tackling it. The scale of this challenge is vast and will require significant leadership from everyone and especially the public sector in areas such buildings, transport and procurement[12].

What waste?

Berwick and Hackbarth (2012) argue that “Waste in healthcare has been defined very broadly as any activity that doesn’t add value to patient care”[4]. Given its provenance some terms used are typical of the discussions in the American literature but are used and unpacked here in the context of the UK health and care sectors. The Bevan Commission also extends this definition to anything that does not add value to patients and the wider public which looks at the issue of waste through the lens of Prudent Healthcare.

Waste occurs in the NHS and social care in a myriad of ways, depending on varying practices and the focus of the intervention and the area of concern. In some cases, waste is easy to see and tangible, such as missed appointments, time spent on meaningless or redundant/ duplicative tasks, supplies discarded, unscientific care, or mindless energy use. In other cases, waste is less tangible, though no less costly, such as demoralisation and turnover of staff, needless administrative burdens, or missed opportunities to intercept clinical patient deterioration or early intervention.

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04

WHAT DOES THE EVIDENCE TELL US?

Existing work on waste in health and social care is premised on the assumption that reducing waste can lead to a reallocation of resources which are otherwise being diverted from caring for patients and makes services less sustainable [4, 7, 11]. In some cases waste is caused by the treatment itself as evidenced in the concerns about overtreatment[4, 13] and a range of programmes and interventions aimed at reducing overtreatment that have been rolled out across the NHS and social care.

The idea that only health and care that is proportionate to need should be delivered is a key part of the Prudent Healthcare principles [9].

At its core is a system that is less wasteful will be better for everyone (staff and patients alike) and better for the planet. In fact, Berwick has gone further and described waste in healthcare as akin to theft. Any discussion about waste needs to ensure that the focus remains on supporting everyone to make better choices that enables them to focus on need.

As we can see from the above discussion the idea that health and care services are potentially wasteful is not new [11, 14, 15]. Some types of waste can be more easily addressed than others and a wide range of interventions to help reduce waste are already being undertaken across the system. Berwick and Hackbarth [4] have categorized these into 6 main areas as set out below. They argue that effective waste reduction can help to address a range of issues facing the health and care sectors. These include shortages in the workforce and financial pressures, as well as supporting the goals of reducing the carbon footprint, continuous quality improvement and ultimately the long-term sustainability of the health and care sector.

Waste involves a broad spectrum of areas. To help us clarify this we have drawn upon Berwick and Hackbarth' s[4] work which divides healthcare activity that generate waste into 6 categories:

- Overtreatment
- Failures of care coordination
- Failures in execution of care processes
- Administrative complexity
- Pricing failures
- Fraud and abuse

Their argument is that systems which reduce waste across these six categories could go a long way to avoiding cuts to services and patient care and can in turn reduce the impact of healthcare costs on the wider community. This typology, developed in 2012, did not specify carbon as a category. Carbon reduction should also accrue from these changes, due to reduced consumption, travel and logistics costs including carbon gas emissions.

Regardless of how waste is categorised, each category serves as an important opportunity to improve patient care and public safety and to progress the Prudent Healthcare principles into practice.

Overtreatment

The classic definition of overtreatment is often seen to be that set out by Illich who identified some of the risks and threats posed by healthcare[16]. However, overtreatment to this day is a problem in medicine[17]. In the UK we are inclined to think of overtreatment as a vagary of an insurance based or “paid for” services where physicians are financially incentivized to recommend invasive procedures that have not been shown to outperform less invasive therapies. However, despite interventions like those of the National Institute for Health and Clinical Excellence (NICE) and campaigns for non-evidence-based awareness campaigns (e.g., antimicrobial resistance), inappropriate polypharmacy and overdiagnosis and treatment are growing concerns. Schemes and policies aimed at reducing overtreatment can be found in the NHS and internationally. Understanding and reducing waste in this area needs to be done safely and with due consideration for treatment needs of patients. Programmes like Slow Medicine[18] can challenge the notion that it is always better to do more for improving health[18]. Similarly, Choosing Wisely[19] an American initiative aimed to pause the process whereby new treatments are adopted by healthcare providers. This is part of a recognition of the rising concern of the medical community regarding the appropriate use of procedures and treatments placed into the market before an adequate evaluation of risks and benefits[20].

Failures of care coordination

The problem of care coordination is related to the problem of overtreatment where different teams

end up contributing to healthcare waste in different ways. This includes repeating investigations and doubling up on medications. Fundamentally it refers to poor communication and coordination within and across teams. According to Berwick and Hackbarth’s research, encouraging teams to regularly take time out to review their performance and interactions with other services and professionals to understand how it can be improved, can reduce waste in health and care. For example, poor coordination of care may lead to adverse events which can exacerbate conditions thereby prolonging hospital stays. For us an important and urgent area of concern are delays in transfers of care where hospitals are used because of a lack of more appropriate alternatives outside of hospitals[21]. This may be a product of poor coordination, lack of staffing/ beds, inadequate information or communication and missed opportunities for early intervention by parties involved in the planning and delivery of health and care.

Failures in execution of care processes

Berwick and Hackbarth highlighted the problem of failures in execution of care processes as among the leading cause of waste in which health and care are delivered. It can refer to mistakes, omissions, errors and more. This issue is discussed at length in by Edmondson as errors and problems[22]. He defines errors as “unnecessary or incorrectly executed action that would be avoided with appropriate distribution of pre-existing information”. Errors can lead to severe consequences but can also lack apparent negative consequences, at least in the short term. The second category of “problems” which are defined as “disruptions in a caregiver’s ability to execute a

prescribed task because either something he or she needs was unavailable in the time, location, condition, or quantity desired”, can include missing supplies, information, or staff availability which can in turn lead to wasted time for the patient and service.

Administrative complexity

Berwick and Hackbarth identify administrative complexity as the ‘worst offender in contributing to waste in health and care delivery.’ They highlight the paradox that responding to problems of overtreatment etc is one way in which the system becomes more complex. As quality improvement systems, risk management and oversights are introduced, they add to the administrative complexity of healthcare. According to Berwick “It’s like we’re trying to bail out our sinking boat, but instead of dumping the buckets back into the lake we’re dumping them on the person next to us”[23]. In the NHS and social care this problem has been highlighted by successive administrations each vowing to deal with the problem of “red tape”[24, 25]. When administrative processes are too complex or poorly coordinated the experience can “change how people feel about health services, which has implications for how they interact with the NHS, leading to delays in treatment and, potentially having an impact on their health outcomes” [26]. The King’s Fund recommends a codesign approach to administrative processes to improve outcomes and to reduce complexity. Key to this would be the need for communication to be two-way and based on equality of access, consistent with prudent healthcare principles.

Pricing Failure

At first glance the issue of pricing failure identified by Berwick and Hackbarth may appear to be a problem of pay per use systems as in the USA, but pricing failure also appears in the NHS and social care in perhaps more covert ways and can become a more intractable issue. The NHS Confederation citing the example of antibiotic use identifies that where costs are not passed on to patients in a transparent way then the social cost may be greatly increased[27].

Fraud and abuse

The final category of waste identified by Berwick and Hackbarth is fraud and abuse. This type of waste can and does occur across the whole of the health and care sector. Patients and staff can be involved in fraud and abuse, but its prevalence and impact are unclear. All areas of activity are at risk and the NHSCFA estimates that the NHS is vulnerable to up to £1.198 billion worth of fraud each year with £56.7m worth of fraudulent access each year [28]. This is a highly contentious issue but no less worthy of discussion.

SECTION

05

ADAPTING THE BERWICK AND HACKBARTH FRAMEWORK FOR USE IN THE UK

The six categories of waste identified by Berwick and Hackbarth prove useful in thinking about waste and how it becomes baked into the system. This thinking however does not always easily map onto the systems in use in the Wales and the wider United Kingdom. Instead, we draw upon this typology to cover the situation in Wales as well as include the sustainability issues of carbon and energy waste. According to the AMS[8] reducing the carbon footprint of health and care service through initiatives to reduce energy use can yield significant gains for the sector.

The items identified in the typology are not intended to be exhaustive and are used as examples of areas that could be targeted for improvement. We look at areas of activity and consumption to suggest where and how inappropriate waste is being created.

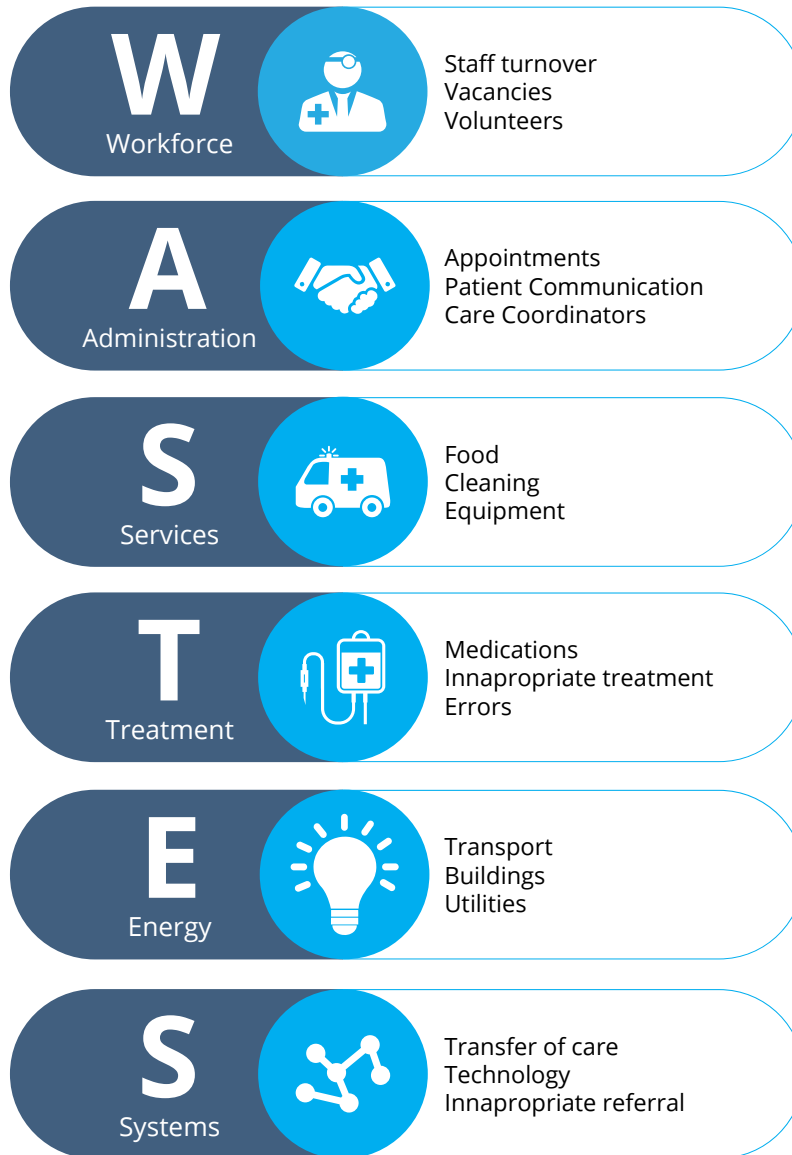
A new typology for waste in health and care

The above discussion shows widespread agreement of the need to tackle the issue across of waste across every sector in health and social care[29]. Some work is being done across the sector to tackle carbon waste and tangible waste like foodstuffs, medicines, and continuation of unproven practices. This paper considers these forms of waste alongside the more intangible forms of waste like time, skills, and effort.

The more intangible forms of waste are likely, we argue, to be incurring as much if not more of the waste in health and care provision in Wales and beyond. The health and care budget for Wales stands at half its annual budget, with over half of it spent on staffing. Tackling the tangible forms of waste e.g., overuse of medications is only half the problem. The problem of inappropriate use of staff time and expertise must also be given serious consideration.

Bevan Commission Categories	Berwick and Hackbarth's Categories
Workforce	Overtreatment Failures in the execution of care processes Administrative complexity
Administration	Administrative complexity Failures of care coordination
Services	Failures in execution of care processes Failures of care coordination
Treatment	Overtreatment
Energy	Administrative complexity Failures of care coordination Overtreatment
Systems	Pricing failure Failures of care coordination Failures in execution of care processes

Our rethink of the Berwick and Hackbarth[4] categories highlighted below enables us to do just that. The graphic below shows how the Bevan Commission considers these concepts can be extended to link to relevant areas within health and care in the Welsh system, and the associated actions and means to help monitor impact .



Our *WASTES* typology enables us to understand waste in a broader context allowing us to consider both the financial and environmental implications. This typology is not intended to be exhaustive but help to identify a range of measurable areas that can act as useful proxies to understand and help monitor “waste”. The items selected are all readily measured in the health and care sectors and provide useful starting points from which to build a further understanding about how any change in activity can lead to reductions in the associated waste.

Staff turnover

Staffing is therefore one of the NHS' primary concerns. It causes nurses' own health to be impacted on, and is a major cause of staff turnover, exacerbating the problem[40]. Any strategy for shoring up the NHS workforce cannot be viewed in isolation from the need to invest in and support the wider health and care workforce, including people working in social care.

Staff retention is a drain on NHS resources the costs of poor staff retention estimated at £27.1bn. The overall NHS staff shortage is put at 110,000 posts unfilled, including 40,000 nursing vacancies in the UK.

Source: Key facts and figures about the NHS | The King's Fund ([kingsfund.org.uk](https://www.kingsfund.org.uk)) Accessed 3 February 2023

Administration

A key aspect of administration of health and care is the way in which health and care appointments are made for patients [26]. Many of the ways in which information about health and care appointments is communicated to patients are out-moded and predominantly reliant on postal systems which can create additional administration, delays and postal and paper costs etc often leading to missed appointments and DNAs (did not attend) and wasted provider time[44].

Studies in England have shown the potential of digital communications to save money in e.g., postage costs. According to NHS England's Transformation Directorate GP practices in East Lancashire estimate that text reminders have reduced 'did not attends' with an annual saving of £767,844. By using SMS, email

and voice calls to invite patients for annual reviews, there has been a reduction in postage costs which has resulted in practices saving £813,495[45].

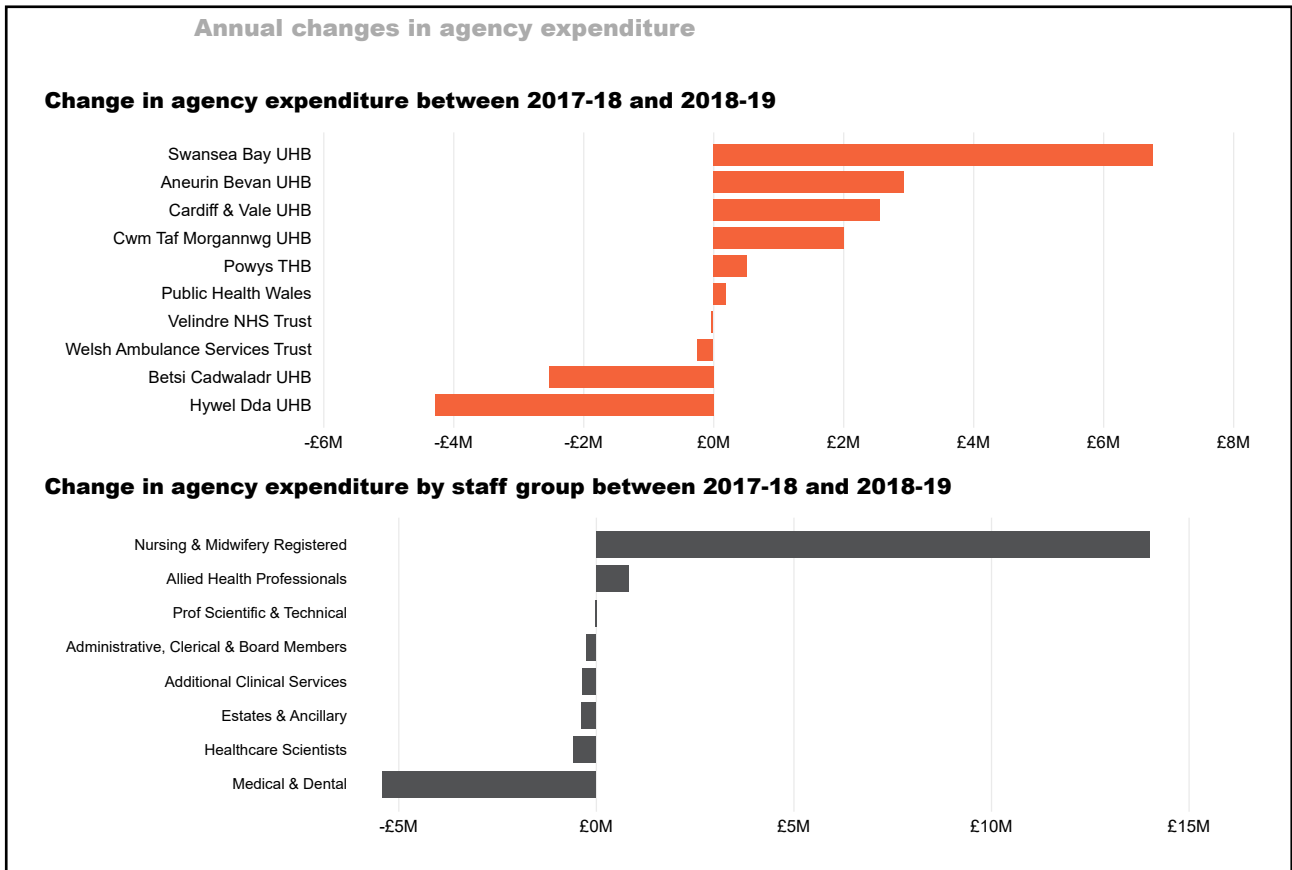
The Welsh Government [46] has undertaken a review of the idea of waiting lists in favour of a prehab or "waiting well" approach with improved communication with patients at its centre. Coupled with better use of digital technologies [47] the potential savings from improvements to the appointment system are well documented. Improving the coordination of care would release staff and bedspace as well as appointments [42, 48] and in turn lead to shorter stays for patients.

In the years 2018/19, 19/20, 21/22 and 22/23 show that an average of over 251,000 appointments were missed due to DNAs (Did not attend) across Wales*

**Data for 20/21 is excluded due to the impact of lockdown on the number of appointments being offered. However, even when included the average only drops to >232,000 DNAs.*

Workforce

Waste in the use of the health and care workforce is a hotly debated issue. When considering workforce as a source of waste we are including the widescale disputes about the number of staff leaving the health and care services in pursuit of better life balance leading to soaring vacancies in the NHS and the need to train new staff locally as well as recruit from abroad. This also includes the use of locum and bank staff to plug gaps in staff rotas at a very high cost to payroll, staff morale and patient safety[30, 31].



Source: [Microsoft Power BI](#) Accessed 2 May 2023

In June 2022 nurses.co.uk estimated:

£12,000 = the cost of replacing a fully trained Nurse (NHS) and £3.6 million = spent each year by each Trust to replace Nurses (NHS) and £21.7 billion = cost to NHS of not addressing retention (MSI / WF) £6,371.41 = cost of recruiting a Nurse from overseas (NHS)

£1.7 million = cost of sickness absence for an average Trust each year (MSI / HWF) and £2.4 billion = cost per year to NHS of staff absence due to poor health (NHS)

Source: *The NHS Staff Retention Review: It's Costs and Impacts* ([nurses.co.uk](#)) Accessed 27 April 2023

The use of locum and agency staff was highlighted in a 2017 Welsh Health Circular[32] and it appears to have had some impact. In the following year agency expenditure was reduced in health board areas but the figures need careful interpretation due to health board boundary changes. It will be helpful to see updated figures from Audit Wales[33] in due course.

Perhaps more important is the problem of loss of expertise and brain drain from services[34]. One suggested solution to the problem of waste around workforce is to make better (more prudent) use of volunteers[35-38] and wider community support. Advocates of volunteers[39] as part of the solution to the problem of wasted workforce claim that an average return on investment in volunteering of “at least 11 times the actual cost...Achieving the full benefits of volunteering across England will involve

leadership, commitment and investment in recruiting, training and mobilising volunteers – but these are limited costs with huge returns.”

In 2019/20, the total cost of NHS staff was £56.1 billion which amounted to 46.6 per cent of the NHS budget and this does not include primary care staff.

Source: *Key facts and figures about the NHS | The King's Fund* ([kingsfund.org.uk](https://www.kingsfund.org.uk)) Accessed 3 February 2023

Food waste in health and care

Food has long been a target of waste campaigners as a way of reducing waste in health and social care. The climate change NGO WRAP estimates that not only is as much as 18% of food in hospitals may be wasted, but they also remind us that the carbon emissions generated through growing, transporting and preparing a meal is wasted when it is thrown away[51]. Medical professionals agree that quality food is key to central to a patient's recovery. Alongside this is the use of non-compostable food servings trays and cutlery.

A study undertaken by WRAP Cymru at C&VUHB in 2014 showed that food waste amounts to 0.52kg of waste per bed per day. If we extrapolate this based on 10,500 beds in Wales with an average occupancy of 81.2% then that amounts to almost 4500kg of food wasted in hospitals per day across Wales.

Sources: <https://www.wrap.org.uk/resources/guide/introduction-food-waste-reduction-roadmap-and-how-get-involved> and *NHS beds by organisation and year, 2009-10 onwards* (gov.wales) Accessed 14 March 2023

Services

The health and care sectors provide a range of services to patients, staff, and the public. The potential for waste in these areas has been widely documented. For instance, food waste has been a source of concern in the NHS for many years. In this typology we also look at cleaning services and use this term to cover all issues of cleaning, decontamination, and waste management. According to the Net Zero Plan for the NHS the widescale treatment of reusable equipment as single use leads to a great deal of waste.

The NHS supply chain is considered to produce 66% of overall carbon emissions in the NHS. The move to reusable (cleanable) equipment and would save money and reduce carbon emissions. According to the NHS moving to reusable versions of equipment needn't change therapy that can be offered and may indeed improve it. Schemes to ensure that reusable equipment e.g., walking aids can be returned to the NHS are being relaunched across Wales after covid restrictions have been lifted.

The NHS recycles unwanted walking aids. In C&VUHB in 2021 over 1,500 walking frames and 2,000 pairs of crutches that would have otherwise ended up in landfill sites were cleaned and reissued. This equated to around £28,000 worth of equipment but only accounted for 50% of walking aids issued.

Source: *We are relaunching our Walking Aids Recycling Scheme - Cardiff and Vale University Health Board* (nhs.wales) Accessed 24 February 2023

The last system issue in this category refers to the ways in which health and care procurement “bake

in" overpricing and what Berwick and Hackbarth call pricing failure. Procurement in health and care is complex and the issues of appropriate pricing have never been more apparent than in the post COVID-19 PPE debacle [45]. Even in the aftermath of the PPE fiasco about 30% of a hospital's expenditure on the purchasing of devices, equipment, supplies when procurement of these is inefficient and wasteful the costs add up significantly. Cleaning services have also been identified as sources of waste in health and social care. The pandemic focussed a lot of attention on PPE use in health and social care for the first time, but there is a growing recognition that the use of single use PPE exacerbates the problem of waste[49]. A move to reusable asthma inhalers is a key target for the NHS[50].

Schemes to reduce the use of single use plastics e.g., asthma inhalers are gaining in popularity with funding from the Health and Social Care Climate Emergency National Programme to pilot the responsible disposal of inhalers containing hydrofluorocarbon (HFC) gases.

Source: *Inhaler recycling scheme helping reduce NHS Wales emissions as £800k funding pot launches* | [GOV. WALES](#) Accessed 25 February 2023

Vacancies

The problem of vacancies in the NHS and in the wide care sectors has long been acknowledged as a source of waste in health and care spending. In 2018 the Government in England introduced a cap on how much could be spent on agency staff but the bill for agency and locum staff continues to grow. Vacancies are being created not only by people retiring and leaving the

sector but also through early exits from services. Staff working in the service, are experiencing burnout and significant numbers say they intend to leave their posts.

Between 30 September 2021 and 30 September 2022, the total staff headcount IN the NHS in Wales increased by 2,913 (2.8%) to 105,968.

At the end of 2021 there were 1719 nursing vacancies in the NHS in Wales alone, up from 1,612 in 2020. NHS Wales spent £69.04m on agency nursing in 2019. This is the equivalent salary spend of 2,691 newly qualified nurses. In every week in 2021 nurses give the NHS an additional 34,284 hours in overtime. This equates to 914 full time nurses.

Source: *Royal College of Nursing RCN Wales Publishes Nursing in Numbers 2021 Report Revealing Current Workforce Statistics* | News | Royal College of Nursing accessed 3 February 2023

Treatment

Treatment decisions are a key area in which waste can be introduced. Some treatment decisions can involve overuse of medications or the use of unproven treatments as well as inappropriate treatment including INNUs[52].

In Wales the incidence of INNUs is monitored across Wales. For example, the total number of radiology requests for non-specific lower back pain (an INNU) in 2018 were 312 compared to 292 in 2022.

Source: see 51 above

Prudent Healthcare involves a commitment to evidence-based treatment only and a commitment to only do what is necessary for patients (and do no harm). Overuse of medications is wasteful in that the medicines are not needed and often end up being incinerated[53] but also in the potential to cause adverse events which can result in longer/more frequent health use and a reliance on care[54]. In 2021 15% of people in England were taking 5 or more medicines a day, in some cases to deal with the side effects of another medicine, more needs to be done to listen to patients and help clinical teams tackle overprescribing.

Across Wales 72,657,354 items were dispensed with an estimated £21.6 million worth of medicines being wasted. A report by the Department of Health estimates that unused medicines cost the NHS around £300 million every year, with an estimated £110 million worth of medicine returned to pharmacies, £90 million worth of unused prescriptions being stored in homes and £50 million worth of medicines disposed of by Care Homes.

Source: Press Call (medicinewaste.com) Accessed 14 March 2023

The traditional model of routine follow up is being replaced by the see on symptoms (SOS) and patient initiated follow up (PIFU) model. These changes in practice have the potential to reduce waste and free up care for those who are waiting[55].

An RCT conducted in Canada (n=489 older adults), the percentage achieving discontinuation of a targeted inappropriate prescription at 6 months was 43% among patients receiving the intervention vs 12% receiving usual care, which represents a significant difference

Source: Effect of a Pharmacist-Led Educational Intervention on Inappropriate Medication Prescriptions in Older Adults: The D-PRESCRIBE Randomized Clinical Trial | Clinical Pharmacy and Pharmacology | JAMA | JAMA Network Accessed 1 March 2023

The last category here is medical errors (sometimes due to negligence). Berwick and Hackbarth discussed this in their original paper and it is relevant here too. Errors can range from delivering a prescription late to a patient undergoing the wrong surgical procedure. It is estimated that 237+ million medication errors made every year in England[56]. Unsurprisingly given the proliferation in treatments as well as the high number of medications often in use by the same patient errors can happen at any point at which a patient comes into contact with a drug or a healthcare professional. While most medication errors are not clinically important some errors are very costly indeed leading to large compensation payments being made by already stretched services.

A freedom of information (FOI) request by the Welsh Conservatives found that between 2016-17 and 2019-20 a total of £265,503,877 was paid out following 3,081 separate medical negligence claims. Hywel Dda and Cardiff and Vale University Health Boards were unable to provide information about payments made in 2019-2020 therefore the overall figure is likely to be even higher.

Source: More than £265m paid out following medical blunders by Welsh NHS - Wales Online Accessed 12 May 2023

Volunteers

The King's Fund discusses the importance of utilising volunteers to support the work of health and care staff across the sector[41]. They raise the idea of using volunteers to save money, however, they acknowledge that there is a financial case for investment in volunteering. The starting for them is not 'could we save money?' but instead "we're wasting talent, we could get more out of placing more value on volunteering". A systematic review of nurses' attitudes to volunteers in mental health settings concluded that nurses generally viewed volunteer support positively and perceived that it benefited patients and assisted nurses. Some concerns were raised about the burden of additional supervision of volunteers and lacked knowledge of the volunteer role, recruitment, and training so any impact needs to be monitored and measured with caution[42, 43].

71% of nurses feel less stressed with volunteer support (n=92). (All sites)

73% of staff feel that volunteer support is helpful in allowing more time to deliver good care to patients (n=228)

26 mins of nurse time saved per day per nurse (n=73) (24 minutes of 'all staff' time saved per day per 'all staff', n=152). (Avg reported across all sites)

Source: Helpforce (2020) Impactful volunteering roles in hospitals. Accessed 3 February 2023

Energy

The additional category of waste in our model is energy which was not explicitly considered by Berwick and Hackbarth. The climate emergency is widely recognised as a public health emergency, but it is important to remember that NHS organisations themselves make a significant impact on the environment and are some of the largest contributors to climate change and air pollution, with health systems accounting for 5 per cent of global carbon emissions[57].

One key area in which health and care providers are attempting to tackle energy waste is in patient and staff travel. The increased use of remote appointments has gone some way in this regard but according to the AMS [4] promoting the use of active travel for patients could also reduce demand for health services through the promotion of healthy exercise. The NHS confederation [57] found that the covid pandemic and the associated innovations around remote medicine has reduced transport emissions associated with the NHS fleet with the Welsh Ambulance Services Trust (WAST) being held up as a great example.

The mile-per-gallon of the WAST's new rapid response car will increase from around 22mpg to 31mpg, which equates to a reduction of around 125 tonnes of CO2 emitted per year.

Source: Welsh NHS Confederation (2021), How NHS Wales is responding to the climate emergency. Accessed 24 February 2023

A systematic review undertaken in 2021 estimates that e-consultations save between 0.70–372 kg CO₂e per consultation[58] But as the AMS report highlights, staff commuting from home to base and patient and visitor travel to place of care contribute to emissions

significantly and these also need to be tackled if progress is to be made.

In 2020 the NHS Wales set out plans in several areas e.g., reducing the proportion of journeys commuting to and from work made by car from 87% to 77%, increasing the proportion of staff who commute via public transport from 3% to 8%.

C&VUHB installed a power plant in the UHW which produces 60 per cent of UHW's needs, saving the Health Board around £1m every year.

Source: *Embracing sustainability across Cardiff and Vale UHB - Cardiff and Vale University Health Board* ([nhs.wales](https://www.nhs.uk)) Accessed 2 March 2023

The problem of energy is of course twofold. While efforts are made to reduce carbon emissions by reducing inappropriate or overuse of energy there is also the considerable cost attached to energy use in health and social care in Wales. In a recent interview with BBC Wales[59] the Minister for Health and Social Services in Wales said

“we've had a £207m energy bill that we weren't expecting at the beginning of the year...just to give you context, we put by £170m to address the backlog, so it's more money than we had to address the backlog.”

Any efforts to reduce energy use will overtime help with the energy bills as well as with the net zero target for public services set by the government in Wales.

The NHS Wales 2018/19 carbon footprint was calculated as ~1 million tCO₂e. This has an associated estimated cost of £1,965m of direct NHS Wales spend.

Source: *How NHS Wales is responding to the climate emergency* | NHS Confederation Accessed 25 January 2023

Systems

The final category in our new typology is systems. We use this term to encompass a wide range of activities undertaken in health and social care. In this section we highlight the need to look at things like delayed transfers of care (DTOC) We see this issue raised each year in the NHS especially during the Winter. A key aspect of service provision is the way in which the system escalates patient care (often inappropriately) and then struggles to step patients back down to more suitable care, so-called bed blocking. Inappropriate referral to services in the first place is also contentious in health and care sectors, causing anxiety for patients and taking up appointments that could otherwise be used by patients in greater need. It has been estimated that services such as outpatients could be cut by as much as half overall with suggestions for how to make these improvements based on using schemes such as Patient Initiated Follow up (PIFU) or See on Symptoms (SOS). Inappropriate escalation of care can be found across all services from primary care to systems of self-referral and telephone-based triage via the 111 service.

Delayed transfer of care (DTOC) is a key source of waste and inefficiency across health and care systems. Data to enable monitoring of this is essential and the plan to reinstate this reporting in May 2023 is welcome[60].

An estimated 2.7 million bed days are occupied each year in England by older people no longer in need of acute treatment, estimated to cost £820 million (2014/15) in inpatient care”.

Source: *Hinde, S., et al., Delayed transfers of care for older people: a wider perspective. Age Ageing, 2021. 50(4): p. 1073-1076.*

The final systems example highlighted is technology. Digital Health and Care Wales was launched in 2021 with the remit of taking forward digital transformation in health and care by providing national technology and data services needed by patients and clinicians. This is in keeping with the commitment to better prevention and self-management set out as a core pillar of A Healthier Wales.

Healthcare technology refers to the use of technologies developed for the purpose of improving any and all aspects of the healthcare system and includes things like digital health records, wearable technology, online booking and more[61]. Evidence supports the use of technology to enable more effective care and use of resources, however we also see reports of technology rollouts etc that have hindered rather than supported the delivery of health and care services and have often resulted in increased costs rather than the anticipated savings.

There is a great deal of discussion across the health and care sectors around innovation however we often see these not fully implemented and the research and development work wasted. As a corollary to innovation we also highlight here the concept of exnovation[62, 63] which involves the conscious pruning and cessation of practices that are of little or no value. This approach encourages practitioners and managers to think about discontinuing some activities and practices that have now served their purpose or are no longer needed[64] .

1 Hospital discharge data - Delays to the Discharge to Recover then Assess (D2RA) pathways, by type of delay and date.					
2 Source: NHS Delivery Unit					
	Date	People awaiting transfer from hospital to recovery pathways	People awaiting transfer out of recovery pathways and on to longer-term care	People awaiting transfer from hospital to longer-term care, bypassing recovery pathways	Total Delays
57	20/12/2022	520	356	320	1,196
58	27/12/2022	505	288	320	1,113
59	03/01/2023	442	295	284	1,001
64	07/02/2023	499	259	282	1,040
65	14/02/2023	475	229	296	1,000

Source: hospital-discharge-data-discharge-pathway-delays-by-type-of-delay-and-date-december-2022-and-january-2023-462.ods (live.com) Accessed 14 March 202

SECTION

06

WHAT CAN BE DONE?

This paper recognises work is being undertaken in some of these areas. However, the urgency and impact of these interventions will need to be taken to a much more significant level and intensity if we are to address the urgent economic, environmental, and social sustainability challenges and meet the health and care needs of people most effectively.

Without an urgent and concerted effort by everyone the challenges will threaten the existence of the health and care system as well as the wider environmental sustainability. To make this 'fit for the future' we must challenge the way we think and work, we must change, and we must all take responsibility and be held accountable for this change, starting with reducing the waste in the system.

To help achieve this the WASTES framework exposes the key issues and the need for a concerted effort and culture change by everyone to reduce waste. At its most fundamental waste created for example by overtreatment and poor care coordination leads to variation in care, which is unfair, costs money and impacts on patient confidence. Waste also has considerable impact in areas such as greenhouse gas emissions contributed by patients travelling to seek out care, unused supplies, food waste etc.

Tackling waste through a Prudent lens: Making an impact

Prudent Healthcare presents an ideal framework that we can use to tackle waste in health and social care[9]. At its centre is a commitment to improving patient care in a holistic way based on a commitment to a culture of working with all stakeholders to improve the wellbeing of patients and the public.

1. **Principle 1 states that we can achieve better health and well-being for patients and the public when we work with them as equal partners through a process known as co-production.**
2. **Principle 2 sets out the need to care for those with the greatest health need first, making the most effective use of all skills and resources. This principle is all about matching need and resource most fairly.**
3. **Principle 3 requires that the health and care services do only what is needed, no more, no less; and do no harm to patients and the public.**
4. **Principle 4 requires that we reduce inappropriate variation using evidence-based practices consistently and transparently.**

The prudent principles require a commitment that patients can access high quality health care regardless of location and based only on need. The care provided should be evidence-based and use all skills and resources to best effect. The effect of implementing these more widely would be to examine the performance of the different parts of the health service and identify and implement the best practices for everyone. These principles dovetail well with the work of the OECD on tackling waste in practice.

The OECD framework is based on the following four steps:

- *Acknowledge – that the problem exists.*
- *Inform – generate and publicise indicators on waste more systematically.*
- *Persuade - patients and clinicians must be persuaded that the better option is the least wasteful one.*
- *Pay – reward the provision of the right care in the right setting.*

Each of these steps enables health and care clients and providers to think about the ways in which waste is baked into their experience of services. By asking everyone to recognise and acknowledge their part in the problem from overuse of medications, missed appointments, their travel and refreshment choices the issue of waste comes into clear focus. In the discussion above we have begun to sketch out some of the wasteful practices that may be easier to quantify and therefore to hopefully tackle.

Acknowledging the problem of waste has already been shown to have some impact on healthcare around overuse of antimicrobials. But this relies on the second pillar of **informing** patient education about the impact of e.g., overuse of antibiotics [65]. Working with people through co production and educational interventions can bring about a transformative focus on value in health care system with patients on board with decisions.

Similarly, the emphasis on the need to **persuade** acknowledges that change can be achieved if patients and clinicians are persuaded that the better option is the least wasteful one[13]. This involves educating patients and public about the need to change their habits in terms of their consumption of health and care services and support e.g., campaigns to convince patients not to attend A&E for inappropriate conditions or to reduce medicines waste.

The final pillar of the OECD model is to **pay** and incentivise changes in the delivery of health and care. They suggest that policy makers should aim to create an environment that rewards the provision of the right services in the right setting [54].

All the above relies on a commitment to develop and publish indicators on waste, which we advocate here. Until we can measure the scale of the problem and identify and monitor progress towards results the problem of waste will not be tackled. When approached in this way tackling waste in health and social care become part of a complex intervention. Implementing such a strategy will involve getting everyone engaged with the problem and ensuring that the benefits of waste reduction are visible in terms of services delivered and quality of care.

SECTION

07

CONCLUSION: TACKLING WASTE IS EVERYONE'S RESPONSIBILITY

Tackling waste should form a core part of the health and care system in the future with key indicators, accountability, and incentives to reduce waste across all categories.

The Bevan Commission's "Let's not waste" initiative, with the support of all partners, will provide a focus to stimulate collaborative action as well as a dynamic learning environment to share ideas and find solutions. This project will also utilise the OECD steps 2 and 3 which will be captured and evaluated in real time. Step 4 will need to be part of a wider policy discussion around the future model of health and care in Wales and beyond and the work being undertaken by the Commission, which will shortly be published by the Bevan Commission.

Tackling inappropriate waste relies on a shared responsibility from professionals, patients and the public understanding their role in reducing wasteful consumption of health and social care as well as tackling the waste produced through the process of delivering health and care services.

Success will rely on dynamic and adaptive leadership at all levels, both within and outside of the health and care system. We will need to build upon the passion and commitment the public and professionals, their engagement, and a shared responsibility to take action to reduce waste as part of a concerted action to support a more sustainable Wales including health and care that is fit for the future.

SECTION

08

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