PrescQIPP Community Interest Company

Medicines adherence and waste

This bulletin focuses on medicines adherence and waste. It provides guidance, advice and examples of good practice for medicines optimisation teams to develop local initiatives and campaigns. This bulletin is part of a PrescQIPP adherence and waste webkit which includes tools such as a project planning document, webinars, prevent medicines waste campaigns, and public and professional materials, for example, posters, leaflets, animations and media messages.

Recommendations

- Due to the complexity of the causes of medicines wastage, a multifaceted and long-term approach across all healthcare sectors is required.
- An extensive social marketing and communication strategy is essential.
- Encourage engagement and partnership working with other third sector organisations such as Age UK, Healthwatch, voluntary groups and local councils.
- Engage with:
  - Community pharmacies and GP practices (receptionists and prescription clerks) to improve systems and processes for ordering repeat prescriptions.
  - GP receptionists and prescription clerks for support and training and upskilling to improve knowledge when issuing repeat prescriptions.
  - Secondary care to improve medicines reconciliation throughout the patient journey; including improving the quality of hospital discharge communications when medications are stopped, started or changed to help reduce waste/avoid repeat ordering of stopped medicines and improve patient safety.
  - Care homes to ensure ongoing medicines optimisation.
  - Local community services and multidisciplinary groups. For example, district nurses and care agencies with the aim to reach those patients who are complex and housebound.
  - Patient participation groups.
  - The local fire service to distribute promotional materials within their organisation and also to be integrated into their home fire check visits, sometimes called “Safe and Well visits”. This supports the distribution of promotional materials to a wider cohort of people.
  - Local school children to promote key messages to prevent medicines waste, via competitions, talks and distributing promotional materials.
- Consider service redesign and process change for ordering repeat prescriptions. See the PrescQIPP adherence and waste webkit for examples: https://www.prescqipp.info/our-resources/webkits/adherence-and-waste/
- Implement the recommendations on optimising medicines use. These are discussed in the National Institute for Health and Care Excellence (NICE) guideline ‘Medicines Optimisation: the safe and effective use of medicines to enable the best possible outcomes’. See the National Guidance section of this bulletin for further details.

Recommendations

- Promote the use of the 'My Medications Passport' app developed by the Collaboration for Leadership in Applied Health Research and Care (CLAHRC) for North West London (NWL) in collaboration with Imperial College Healthcare NHS Trust. A downloadable app for Android or iPhone/iPad can be obtained from app stores. These resources are available free of charge.
- Consider the use of Electronic Prescription Service (EPS), electronic Repeat Dispensing (eRD) or Serial Prescriptions (NHS Scotland) to support the reduction of medicines waste.

Background

Medicines prevent, treat or manage many illnesses or conditions and are the most common intervention in healthcare. It has been estimated that between 30% and 50% of medicines prescribed for long-term conditions are not taken as intended.[1]

Medicines optimisation is defined as a person-centred approach to safe and effective medicines use, to ensure people obtain the best possible outcomes from their medicines. Optimising a person's medicines is important to ensure a person is taking their medicines as intended and can support the management of long-term conditions, multimorbidities and polypharmacy. Medicines optimisation applies to people who may or may not take their medicines effectively.[1]

Shared decision-making is an essential part of evidence-based medicine, seeking to use the best available evidence to guide decisions about the care of the individual patient, taking into account their needs, preferences and values. Involving people in decisions about their medicines means that medicines are more likely to be taken and used properly.[1]

Adherence presumes an agreement between prescriber and patient about the prescriber's recommendations. Adherence to medicines is defined as the extent to which the patient's action matches the agreed recommendations. Non-adherence may limit the benefits of medicines, resulting in lack of improvement, or deterioration, in health. The economic costs are not limited to wasted medicines but also include the knock-on costs arising from increased demands for healthcare if health deteriorates.[2]

A simple definition of medicines waste would be:[3]

"*Any substance or object the holder discards, intends to discard or is required to discard*" is waste.

It can be split up into five types:[3]

- **Non compliance –** patient does not take medicines as prescribed. For example, taking at irregular intervals or in incorrect doses.
- **Intentional non-adherence –** patient stops taking medication due to adverse side effects or personal beliefs.
- **Unintentional non-adherence –** patient stops taking medicine, or fails to take at correct intervals due to forgetfulness.
- **Non-preventable waste –** patient dies and unused medicines are wasted, or a change in treatment means current dispensed medicines are no longer required.
- **Preventable waste –** patient stock piles medicines "just in case". All items from repeat prescription are dispensed even if patient no longer takes the medicine.

All the five types will lead to therapeutic loss and/or medicines waste. Therapeutic loss occurs where the effects of the medicines are reduced or negated by the patient's failure to take them as prescribed. Medicines waste occurs where the medicines are physically unused and either disposed of, returned

to the pharmacy, or stock piled in the patient's home. Non compliance for example can lead only to therapeutic loss as the medicines are taken, but not in the manner in which they are prescribed.[3]

What is the scale of medicines waste?

Unnecessary wastage of medicines has a huge burden on NHS financial resources. In 2019/2020 the NHS in England and Wales spent £9.794 billion on medicines in primary care, it is estimated that medicines worth over £350 million are wasted each year.[3-6] In Scotland £1.4 billion per year is spent on drugs, of which almost £1 billion (70 per cent) is spent in general practice. The estimated avoidable drug wastage for Scotland is between £12 million and £18 million a year.[7]

Research performed by the York Health Economics Consortium (YHEC) and The School of Pharmacy, University of London in 2010 documented the scale and the causes of medicines waste. The report stated that:[8]

- The gross annual cost of prescription medicines waste in primary and community care is £300 million per year in England.
- This sum represents approximately £1 in every £25 spent on primary care and community pharmaceutical and allied product use.
- An estimated £90 million worth of unused medicines are retained in people's homes at any one time.
- £110 million worth of medicines are returned to pharmacies for disposal, over the course of a year.
- £50 million worth of NHS supplied medicines to care homes are disposed of unused.

Not all medicines wastage is avoidable, or the result of poor practice. This study also estimates that less than 50% of medicines waste is likely to be preventable in a cost effective way. Allowing for this and factors such as the additional costs of further enhancing existing control measures, the average English primary care organisation seeking further medicines waste reductions will be unlikely to realise more than £0.5 million net per annum. That is between £1-2 per head of population served.[8]

The Community Pharmacy Wales Waste Medicines Campaign states that more than 250 tons of out of date, surplus and redundant medicines are returned each year to pharmacies and dispensing GP surgeries across Wales at an estimated cost of £50 million to the NHS. This is in addition to medicines that are probably disposed of incorrectly through household waste.[6]

There is evidence of considerable public and professional concern about NHS medicines wastage. Reductions in its scale and costs would not only be financially desirable, but might also be politically popular. Yet the research presented in section five of the report by YHEC/University of London indicates that, in welfare terms, significantly greater returns could be generated by better medicines use, as opposed to waste reduction. Improving adherence in medicines taking can improve health outcomes. The estimated cost due to incorrect medicines taking in just five therapeutic areas is in excess of £500 million per annum.[8]

What are the general causes of medicines wastage?

The causes of waste vary from inefficient prescribing and stock piling to patient recovery and non-adherence. Pharmaceutical waste can occur at any stage from the point of prescribing to the taking/not taking of medicines by the patient, and can occur through failures in existing processes or patient behaviours.[3] The causes of waste are:[3]

- Repeat/Habitual dispensing - Medicines on repeat prescriptions are dispensed without checking if they are required.
- Stock piling/Over-ordering - Patients habitually order every line on a repeat prescription, regardless of need due to fear over loss of drug through non-use.

- Patient recovery/Change of medication - Instances where a patient recovers, or has a change in condition that necessitates a change in medication. Remaining older medication is wasted.
- Patient death - Drugs may be changed or dispensed on precautionary basis during final stages of palliative care. May also reveal previously unused medicines.
- Prescription durations - Many prescriptions are dispensed for longer periods than are required (i.e. Patient recovers or changes medication two weeks into a three month prescription).
- Incorrect disposal - Often Care Homes will dispose of all medications at end of the month regardless of shelf life.
- Patient non-adherence - Patients intentionally, or unintentionally fail to adhere to instructions. Often due to forgetfulness, (unintentional) or change in beliefs/side-effects (intentional).

NHS Health Boards in Scotland found an additional cause for medicines wate, the effect of abolition of prescription charges, which were phased out from April 2008. The abolition of prescription charges could lead to people who previously paid for drugs over the counter now requesting a prescription from their GP for the same drugs.[7]

The prescriber, dispenser and patient all play a part in waste creation. One of the major concerns is that patients may not be experiencing the intended outcomes of their prescribed treatment. This can be due to either the patient not taking treatment as directed or by their treatments not being reviewed regularly enough to ensure their prescription meets their evolving treatment needs. The impact on patient outcomes is of primary concern to NHS. Focus needs to be put on both personalising patient's experience, but also avoiding the unnecessary demand that not optimising this experience can put on the NHS system.[3]

National guidance

The NICE guideline Medicines Optimisation: the safe and effective use of medicines to enable the best possible outcomes [NG5], identifies key areas for improvement and developing a patient centred approach to taking medication.[1]

The key recommendations from the guideline are:[1]

- Organisations should ensure that robust and transparent processes are in place to identify, report, prioritise, investigate and learn from medicines-related patient safety incidents.
- Organisations should have robust medicines-related communication systems in place when patients move from one care setting to another.
- In primary care, medicines reconciliation should be carried out for all people who have been discharged from hospital or another care setting. This should happen as soon as is practically possible, before a prescription or new supply of medicines is issued and within one week of the GP practice receiving the information.
- A medication review should be carried out in people of all ages.
- Consider carrying out a structured medication review for some groups of people when a clear purpose for the review has been identified. These groups may include:
  - Polypharmacy
  - Chronic or long-term conditions
  - Frail and elderly.
- Consider using an individualised, documented self-management plan when discussing medicines with people who have chronic or long-term conditions to support a person's self-management of their condition using medicines.

- Consider using patient decision aids in consultations involving medicines to give people the opportunity to be involved in making decisions about their medicines.
- This will ensure a shared decision-making approach allowing patients and their family members or carers (where appropriate) to make well-informed choices that are consistent with the person's values and preferences.
- Consider using computerised clinical decision support systems to support clinical decision-making and prescribing, but ensure that these do not replace clinical judgement.
- Consider a multidisciplinary team (MDT) approach to improve outcomes for people who have long term conditions and take multiple medicines (polypharmacy).
- Organisations should involve a pharmacist with relevant clinical knowledge and skills, when making strategic decisions about medicines use, or when developing care pathways that involve medicines.

The Royal Pharmaceutical Society produced a guide about 'Medicines Optimisation: Helping patients make the most of medicines' (2013) to support the medicines optimisation agenda. This guide suggests four guiding principles for medicines optimisation, aiming to lead to improved patient outcomes:[1,9]

1. Aim to understand the patient's experience. Have an open and continued dialogue with patients/carer regarding choices and experiences to ensure the best possible outcomes from medicines. Also recognise experiences may change overtime.
2. Evidence based choice of medicines. Ensure that the most appropriate choice of clinically and cost effective medicines (informed by the best available evidence base) are made that can best meet the needs of the patient.
3. Ensure medicines use is as safe as possible. The safe use of medicines is the responsibility of all professionals, healthcare organisations and patients, and should be discussed with patients and/or their carers. Safety covers all aspects of medicines usage, including unwanted effects, interactions, safe processes and systems, and effective communication between professionals.
4. Make medicines optimisation part of routine practice. Health professionals routinely discuss with each other and with patients and/or their carers how to get the best outcomes from medicines throughout the patient's care.

The essence of these four principles is to have a patient-centred approach and improve patient outcomes. The document encourages healthcare professionals to think about these principles to change practice.

The ultimate goal of both of these key documents is to give best practice advice for healthcare professionals. By implementing these guidelines, those patients receiving sub-optimal benefit from their prescribed medicines with hopefully have improved adherence and this in turn should reduce medicines waste.

The Royal Pharmaceutical Society document, 'Keeping patients safe when they transfer between care providers - getting the medicines right' recommends improving the quality of hospital discharge communications when medications are stopped, started or changed,[10] as this will help to reduce waste/avoid repeat ordering of stopped medicines.

The Department of Health published an action plan in 2012 for improving the use of medicines and reducing waste. This guidance looked to minimise waste in the NHS by reducing the amount of medicines sent away to be incinerated, improving repeat prescribing and dispensing systems and encouraging rational cost effective prescribing to minimise the reduced health outcomes that result from people not taking their medicines as intended. The report covers:[11]

- Primary and community care
- Secondary care
- Care homes and end of life care.

NHS England produced a report called "Pharmaceutical waste reduction in the NHS" in 2015. This report was aimed at commissioners and highlights best practice in relation to reducing waste from local initiatives with the purpose of encouraging others to introduce similar initiatives where appropriate. The report outlined initiatives and case studies which have a common theme to improve patient outcomes, optimise medicines, improve adherence and reduce waste.[3]

Electronic Prescription Service (EPS), electronic Repeat Dispensing (eRD) and Serial Prescriptions

EPS allows prescribers to send prescriptions electronically to a dispenser (such as a pharmacy) of the patient's choice. This makes the prescribing and dispensing process more efficient and convenient for patients and staff.[12] It supports the reduction of medicines by:[13,14]

- Using a standardised drug dictionary to complete electronic prescriptions, improving prescription accuracy and reducing the risk of patients receiving the wrong medication.
- Reducing the risk of duplicate prescriptions as electronic prescriptions can't be lost.
- Prescriptions can be cancelled at any time until they have been dispensed, and replacements can be sent electronically.

eRD is an integral part of EPS, which offers many extra benefits over paper repeat dispensing and repeat prescribing. It allows the prescriber to authorise and issue a batch of repeatable prescriptions for up to 12 months with just one digital signature. All issues of the eRD prescriptions are stored securely on the NHS Spine and are automatically downloaded to the patient's nominated community pharmacy at intervals set by the prescriber. eRD supports medicine waste reduction as items and whole prescriptions can be cancelled (for all subsequent issues) on the spine. Dispensers are mandated to ask patients if they require all items on their prescription before each issue, to avoid medicines wastage.[15] In Scotland, Serial Prescriptions are also written by prescribers for a period of up to 12 months with a set dispensing interval (e.g. every 28 days).[16]

Published medicines waste and adherence resources and case studies

Campaigns that address some of the issues that contribute to medicines waste and highlight best practice will lead to improved adherence and waste reduction. Issues to focus on could include:

- Reviewing repeat prescribing management at GP practices or pharmacies.
- Improving management of repeat prescriptions by patients, e.g. by encouraging them to download the NHS App and using this to order repeat prescriptions.
- Encouraging ownership by the patients of their medication.
- Increasing awareness of pharmacy services, such as the Discharge Medicines Service or New Medicines Service (NMS) to patients, GPs and practice staff.
- Medication reviews to discuss and dispel preconceived ideas (from patients) around taking prescribed medicines.
- Preventing the ordering of medicines on prescription that are no longer required.
- Review the duration of prescribing to prevent wastage if the medication has changed or stopped, the patient's health condition has changed and new medications are started or the patient has died.
- Ensure regular medication reviews to prevent failure by healthcare professionals to support taking prescribed medicines.
- Improving medicines reconciliation at the interface between NHS care providers.
- Improving medicines management procedures at residential or care homes.

- Providing advice and information to prevent patients feeling frightened or worried about asking for help regarding taking their prescribed medicines.

PrescQIPP have a number of resources which are relevant to this bulletin and are hyperlinked below.

Adherence and waste webkit

This webkit brings together all the PrescQIPP medicines adherence and waste resources as well as showcase good practice examples of projects focusing reducing medicines waste. Each set of resources contains tools that can be adapted for local use before implementation. Resources include webinars, patient facing campaigns, resources for professionals, and shared good practice examples of both medicines waste and repeat prescription management.

Patient centred approaches to medicines adherence webinar

The NHS Specialist Pharmacy Service Medicines Use and Safety team present their work on patient centred approaches to medicines adherence.

Bulletin 255. Prevent Medicine Waste Campaigns - inhalers, insulin, ONS (sip feeds) and general campaign

Four separate waste campaigns for inhalers, insulin, ONS (sip feeds) and a general waste campaign. The general campaign can support potential over ordering with messages such as, “Don’t tick it if you don’t need it” and “Everyone has a part to play in reducing medicine shortages”. Resources available include how to manage insulin, inhaler or ONS supplies patient information sheets, receptionist guide on insulin and inhaler ordering quantities, insulin quantities guide for prescribers.

Bulletin 291. Prescribing, ordering and receiving medicines in care homes

A good practice guide to help reduce waste aimed at GP practices and care home staff. It provides useful tips to consider when generating prescriptions and when ordering and administering medicines.

Bulletin 292. Repeat prescriptions

This bulletin focuses on repeat dispensing, repeat prescribing, Electronic Prescription Service (EPS) and prescription ordering services. Template training packs for practice staff and patient information letters are available as supporting resources.

Shared good practice award winning webinars included in the webkit:

- Prescription Ordering Direct scheme with Coventry and Rugby CCG (2016)
- Reducing medicines waste; improvements to repeat medicines management - Luton CCG (2016)
- Practice Medicines Co-ordinators (PMCs) - Nene CCG and Corby CCG (2016)
- ‘Integrated care clinical pharmacist (older people)’ - Guy’s and St Thomas’ NHS Foundation Trust (2015)
- What a Waste - East Staffordshire CCG (2015)

Other PrescQIPP shared good practice includes:

- Medicines Waste:
  - Medication Amnesty - Harrogate and Rural District CCG (2019)
  - Adherence and waste - Northern Eastern Western Devon CCG (2018)
  - Medicines Waste Project - West Lancashire CCG (2017)
- Repeat prescription management:
  - Community Pharmacy eRD referral - Medway CCG (2019)
  - Supporting electronic repeat dispensing to reduce repeat prescribing waste - North East and North Cumbria CCGs with NHS Digital and North East Commissioning Support (NECS) (2019)
  - Digital Repeat Prescription Demand Management Solution - Dartford, Gravesham and Swanley CCG (2019)

- Medication reviews:
  - The impact of pharmacist led medication reviews in a patient's home - Hywel Dda University Health Board (2019)
  - Tackling polypharmacy in patients aged >60 years and prescribed 8 or more medicines - West Kent CCG (2018)
  - Pharmacist-Led Polypharmacy Reviews in Solihull - Birmingham and Solihull CCG (2018)
- Medication reviews in care homes:
  - Care Home Ordering Processes - Medway CCG (2019)
  - Improving Medication Ordering Processes in Care Homes - Rotherham CCG (2019)
  - On-line ordering in the care home setting - Bedfordshire CCG (2019)
- Secondary care interface:
  - Reducing the risk of medicines-related hospital admissions through CCG medicines management team identification, triage and review - High Weald Lewes and Havens CCG (2015)
  - 'HELP FOR HARRY' Discharge Referral Service - Derby Teaching Hospitals NHS Foundation Trust (2015)
  - Ward based pharmacy assistant to reduce medicines waste and improve medicines transfer - Western Sussex Hospitals NHS Foundation Trust (2014)

The case studies in the NHS England pharmaceutical waste reduction document assist in ensuring that each patient receives the right medicine, at the right dosage, at the right time. Whilst each initiative has a positive financial outcome, this is seen as a secondary benefit, with the key focus being on improving patient outcomes. Case studies included campaigns that focused on waste reduction, care homes and repeat prescribing:[3]

- East Staffordshire "What a Waste" focuses on:
  - Patient centred medication optimisation clinics.
  - Improved patient adherence.
  - Medicine wastage prevention strategies.
- Nene Care Home Advice Pharmacist Team (CHAPs) focuses on:
  - Medicines optimisation using Pharmacist led interventions for care home residents.
  - Reducing medicine wastage and improved prescribing quality.
  - This project achieved savings of £122 per patient per annum.
  - There is a potential saving of over £40m per annum if scaled nationally.
- Northumberland "SHINE" focuses on:
  - Medicines optimisation using Pharmacist led interventions for care home residents.
  - Reducing medicine wastage and improved prescribing quality.
  - This project achieved £184 per patient per annum.
  - There is a potential saving of over £60m per annum if scaled nationally.
- Northumberland "Care Home Medication Review Pilot" focuses on:
  - Medicines optimisation using pharmacist led interventions for care home residents.
  - Reducing medicine wastage and improved prescribing quality.
  - This project achieved £150 per patient per annum.
  - There is a potential saving of over £50m per annum if scaled nationally.

- Ipswich/East Suffolk "SIP Feeds" focuses on:
  - Implementation of tighter controls to the prescribing, dispensing and administration of SIP Feeds.
  - Improving patient outcomes and reducing prescribing costs.
  - This project achieved 23% reduction in SIP feed spend.
  - There is a potential saving of about £35m per annum if scaled nationally.
- Sheffield "Bulk Prescribing project" focuses on:
  - Management and control of PRN medicines within care homes through the introduction of bulk prescribing.
  - Reducing prescribing costs and medicine wastage.
- Walsall "Repeat Prescription Management Service" focuses on:
  - Pharmacist led interventions, managing repeat prescriptions within GP Practices.
  - Reducing medicine wastage and improved prescribing quality.
  - This project achieved savings of £3.05 saved for every £1 invested.
  - There is a potential to save over £100m per annum if scaled nationally.

The Department of Health 'Action plan for improving the use of medicines and reducing waste' advises commissioning a "not dispensed scheme" through community pharmacies. The guidance also contains case studies from primary and community care, secondary care, care homes and end of life care, as well as examples of "not dispensed" schemes and other case studies such as:[11]

- NHS South Central - targeting MURs to improve inhaler technique.
- NHS Isle of Wight - targeting patients at high risk of being readmitted to hospital to assess their ability to manage their medicines.
- NHS South Central - tackling medicines waste across both primary and secondary care.
- Derby Hospitals NHS Foundation Trust - improving patients' use of their own medicines.
- NHS Leeds - Clinical Value in Prescribing project, pharmacist-led clinical medication reviews in care homes focusing on patients with dementia and/or learning disabilities.

All of the above schemes provide a good starting point for organisations who wish to undertake a project to reduce medicines waste and improve adherence. They can be built upon and support the evidence base needed in a business case to secure funding for implementation of this work.

Summary

- The cause of medicines waste is multifaceted and therefore too complex to define one single cause. Medicines waste and adherence projects/initiatives need to be multi-layered and long term in their approach. Standalone posters and leaflets campaigns will not change behaviours. An extensive social marketing and communication strategy is essential and partnership working across many organisations and stakeholders is encouraged.
- Implementing the NICE guidance on medicines optimisation[1] and using shared good practice and case studies to build up a business case to support investing in medicines adherence projects should reduce waste overall.
- Review the good practice examples and supporting resources available within the PrescQIPP medicines waste and adherence webkit: https://www.prescqipp.info/our-resources/webkits/adherence-and-waste/

Useful Links and further reading to support medicines adherence and local delivery

- NHS Discharge Medicines Service
- New Medicine Service
- The Royal Pharmaceutical Society - Medicines adherence: Quick reference guide
- Specialist Pharmacy Service - What products or interventions are available to aid medication adherence?
- Specialist Pharmacy Service - Improving Medicines Adherence for all patient groups
- Nine Tips for Improving Medication Adherence
- 10 Strategies to Improve Patient Compliance with Medication
- National Community Pharmacists Association & the American Association of Colleges of Pharmacy – Medication Adherence Educators Toolkit
- Kvarnström K, Airaksinen M, Liira H. Barriers and facilitators to medication adherence: a qualitative study with general practitioners. BMJ Open 2018;8:e015332. doi: 10.1136/bmjopen-2016-015332
- Gadkari AS, McHorney CA. Unintentional non-adherence to chronic prescription medications: How unintentional is it really? BMC Health Serv Res. 2012;12:98. Published 2012 Jun 14. doi:10.1186/1472-6963-12-98
- Molloy GJ, Messerli-Bürgy N, Hutton G, Wikman A et al. Intentional and unintentional non-adherence to medications following an acute coronary syndrome: A longitudinal study. J Psychosom Res. 2014;76(5):430-432. doi:10.1016/j.jpsychores.2014.02.007
- Unni E, Farris KB. Determinants of different types of medication non-adherence in cholesterol lowering and asthma maintenance medications: A theoretical approach. Patient Education and Counseling 2011;83(3):382-390. https://doi.org/10.1016/j.pec.2011.02.017

References

1. NICE. Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes. NICE guideline [NG5]. Published March 2015. https://www.nice.org.uk/guidance/ng5
2. NICE. Medicines adherence: involving patients in decisions about prescribed medicines and supporting adherence. Clinical guideline [CG76]. Published January 2009. https://www.nice.org.uk/guidance/cg76
3. NHS England. Pharmaceutical waste reduction in the NHS. Version 1. June 2015. https://www.england.nhs.uk/wp-content/uploads/2015/06/pharmaceutical-waste-reduction.pdf
4. NHS Digital. Prescribing Costs in Hospitals and the Community 2019-2020. November 2020. https://digital.nhs.uk/data-and-information/publications/statistical/prescribing-costs-in-hospitals-and-the-community/2019-2020
5. Welsh Government 2020. Prescriptions in Wales, 2019-20. Statistical First Release SFR 147/2020. September 2020. https://gov.wales/sites/default/files/statistics-and-research/2020-09/prescriptions-wales-april-2019-march-2020-610.pdf
6. NHS Wales. Health in Wales. Major campaign aims to save millions by reducing wasted medicines. 14 September 2010. https://www.wales.nhs.uk/news/17032
7. Audit Scotland. Prescribing in general practice in Scotland. January 2013. https://www.audit-scotland.gov.uk/docs/health/2013/nr_130124_gp_prescribing.pdf
8. York Health Economics Consortium & The School of Pharmacy, University of London, Evaluation of the Scale, Causes and Costs of Waste Medicines. November 2010. https://discovery.ucl.ac.uk/id/eprint/1350234/1/Evaluation_of_NHS_Medicines_Waste__web_publication_version.pdf

9. The Royal Pharmaceutical Society. Medicines Optimisation: Helping patients to make the most of medicines. May 2013. https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Policy/helping-patients-make-the-most-of-their-medicines.pdf
10. The Royal Pharmaceutical Society. Keeping patients safe when they transfer between care providers – getting the medicines right. June 2012. https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Publications/Keeping%20patients%20safe%20transfer%20of%20care%20report.pdf
11. Department of Health. Action Plan for Improving The Use Of Medicines And Reducing Waste. October 2012. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/212837/Improving-the-use-of-medicines-for-better-outcomes-and-reduced-waste-An-action-plan.pdf
12. NHS Digital. Electronic Prescription Service. March 2021. https://digital.nhs.uk/services/electronic-prescription-service
13. NHS Digital. Electronic Prescriptions for dispensers. September 2020. https://digital.nhs.uk/services/electronic-prescription-service/electronic-prescriptions-for-dispensers
14. NHS Digital. Electronic Prescriptions for prescribers. June 2021. https://digital.nhs.uk/services/electronic-prescription-service/electronic-prescriptions-for-prescribers
15. NHS Digital. Electronic repeat dispensing for prescribers. June 2019. https://digital.nhs.uk/services/electronic-prescription-service/electronic-repeat-dispensing-for-prescribers
16. Community Pharmacy Scotland. Serial Prescriptions (SRx). https://www.cps.scot/serial-prescriptions-srx?rq=serial%20prescriptions

Additional PrescQIPP resources

Briefing	https://www.prescqipp.info/our-resources/bulletins/bulletin-294-medicines-adherence-and-waste/
Implementation tools	

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