PM Healthcare
PROGRESS THROUGH PARTNERSHIP

JOURNAL

Incorporating *The Journal of Pharmacy Management* and *The Journal of Medicines Optimisation*

Autumn 2023 | Issue 06

Key contents:

Editorial

A message from our Chairman

Readers of the Journal will notice that it has undergone something of a redesign for this issue. As well as changes to the cover and simplifying the arrangement and display of contents, we have also incorporated the titles of our former journals – *The Journal of Pharmacy Management* and *The Journal of Medicines Optimisation* – into the new title.

We have done this because the legacy of our brand is an important part of both the Journal's history and also its relevance for the future. At a time of so much challenge in the NHS and pharmacy, the skills and experiences of managers, practitioners and support roles in all sectors have never been more important. In exactly the same way, those involved in medicines optimisation are essential to the success of ongoing reforms in pharmacy and the wider healthcare service.

Ted Butler
Chairman
PM Healthcare

Our mission today is as it has always been – to bring you up-to-the-moment examples of best practice and experience in pharmacy and wider, that will contribute to the discussion of how services are changing and need to change to deliver improvements.

You will also see in this issue a 'call for action' for the January 2024 PM Healthcare Journal. In collaboration with our quality assurance partners at the University of Bradford School of Pharmacy and Medical Sciences, our January focus will be on Digital, Data and AI Solutions in Pharmacy. If you would like to contribute to this important area, then do please get in touch.

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The future of pharmacy in the new NHS

An interview with Felicity Cox
Bedfordshire, Luton and Milton Keynes
ICB Chief Executive

Felicity Cox talks to PM Healthcare Chair Ted Butler about her career and the changing role of pharmacy in the new NHS. You can hear more from Felicity on social media - @fcox246

Hello Felicity. Could you give us an overview of your career journey to date, from when you started as a pharmacist to where you are now?

Hello Ted. I did my initial training at the University of London and then became a community pharmacist. I did my pre-Reg with Moss, when they were E.Moss Limited, and I did that for a very particular reason. I was offered a number of pre-reg appointments and Moss was the only company in those days, possibly the only one ever, where you could be instantly dismissed if the pharmacist was not counselling the patient on their medicines use, as well as handing out the medicines. If any of the directors came in and found that, then that was it, and that was what you signed up to. And I thought that was really important, the commitment to the patient, and it became a professional ethos for me.

So, I went to work for Moss as a pre-reg and I worked in community pharmacy for four years. Whilst doing that, I did a diploma in marketing and a diploma in public relations because I had this little plan. Goodness knows what kind of 20-year-old I was, but I had this plan of doing these courses and becoming a marketing person in community pharmacy.

However, as time went on and different things happened that opportunity closed. And then my father died when I was quite young, only 25. And he was doing a job that he didn't need to do for the money, but he thought, I'll do a couple more years, to be more comfortable when I get my pension. But he died. And that made me reevaluate things and I thought, where I am now isn't taking me in the right direction, so I went to an agency and said, can I talk to you about a job in pharmaceutical marketing? And they said, well it's going to be difficult because you're a little different!

I then successfully applied for a job with Smith and Nephew Pharmaceuticals, and I think I got the job partly because I was a bit 'odd', because I had both over-the-counter and ethical experience. I worked in the pharmaceutical industry for a few years and was promoted and became a marketing manager.

I think one of the things that pharmacists often forget is that our skills are very transferable. We have a strong clinical training core – I still do my CPD and maintain my registration – and that core acts as a foundation. It enables you to think logically, to project plan, for example to map the course of a disease, to map the course of a product that you want to launch, to map the course of the implementation of a clinical service. So we have a really good foundation that allows us to do many things in different environments.

I stayed in pharmaceutical marketing for a few years and was fortunate enough to have a lovely team who were great, but I thought that I wasn't being stretched anymore. I looked for a new challenge and found a job as a director of marketing and quality in a community and mental health trust, which is how I moved over into the NHS corporately. My pharmacy qualification was something of an added bonus in my new role, at times a very useful one – especially when I had to recruit a chief pharmacist!

I was fascinated by my new working environment, especially in the patient experience of how things worked, for example how they received services, how medicines changed the course of a disease, how people took their medicines, how patients cooperated or worked with a service. And in mental health you see that at scale, because medicines and service delivery and the involvement and support of the patient are hugely important. It's true in any setting of course, but in mental health it is absolutely true. I did that for a period and then I worked in London Regional Office as the head of public affairs, because I had this funny mixture of skills to offer. And from there I became a primary care trust (PCT) chief executive.

> **"Then the 'NHS wheel' turned again and I went to work in management consultancy for a few years, exclusively with the pharmaceutical industry and the NHS. After this, I came back as a PCT chief executive, in 2009."**

From there, I worked in Bassetlaw, which in those days was in in South Yorkshire, now Nottinghamshire, and I became really interested in some of the conundrums that patients had to wrestle with. For example, my patient population lived in Worksop and Mansfield, but they went to Sheffield for both their shopping and their secondary care. Now, I wonder if I would have thought differently about how services were provided, as we are trying to move care out of hospital.

Thank you, Felicity. I wonder if you could tell us something about the key skills that you have developed in your varied career and how these have been of use to you.

That's a good question – I think that one of the skills I learnt, particularly in community pharmacy, was how to influence, very useful in system working and integration. Influencing skills are phenomenally important, because although I am the system leader, I actually have few levers that I can pull, so I have to operate through influence and collaboration.

And if you think about it, this is very much the way we work with patients. For example, how we encourage patients to take their medicine in the right way. We do this through influence, and this works in different ways. Some patients will be

influenced by the facts and the data, for others it's a more personal experience – what works for my friend Maureen down the road – for others it might be what another hospital is doing and what the patient thinks is working or not.

So we learn a lot about what motivates people individually, which develops good influencing skills, particularly in community pharmacy. And what I have found is that if you are successful in your patient counselling and your patient support, then the skills you learn are really useful in system working and integration because you start to think about linkages and how things work together as well as individually.

Moving now to medicines, how important do you see pharmacy and the medicines agenda within the overall ICB agenda? How important is that particular part of it?

I think it's absolutely crucial and we forget it at our peril. It is the second biggest cost to the NHS after staff and a huge part of the patient journey, running through all of our services.

One of the things we talk about in health and social care is how we support staff with giving medicines and making sure medicines are taken properly. And this runs right through the patient pathway, whether someone is seriously ill in hospital, being given IV drugs and intensive therapy, to someone who is relatively well at home but may be in need of additional support. Whatever the situation, the patient needs to understand how to take their medicines correctly, because that is what keeps them well – it is the golden thread that runs through health and social care.

People look to their pharmacists for advice and support, and not just about how they take their medicines, but about how they take their medicines within their life. So, if you think about people who have to take steroids, for example. Steroids can make you feel a little shaky, a little unsteady. But a simple little intervention, like the pharmacist saying that they don't have to be taken first thing in the morning, but can be taken last thing at night, when these side effects will be less of an issue, can make a real difference to whether somebody takes their medicine and recovers or not.

Pharmacy is so valued by the wider NHS because pharmacists and their colleagues see a cohort of people that we don't see in the NHS. They see young mums whose children may not have any particular health issues, but who can still be provided with advice and support if needed. Similarly, they will be able to see if an older person is not managing well at home, just by seeing them or talking to them in the pharmacy, or noticing that they haven't come in.

"I think that some of the most under used resources in pharmacy are technicians and counter assistants. I am talking about community pharmacy in particular here. They are quite often the peers of the people who come into the pharmacy, which means that they too can be highly influential."

If a member of the public talks to someone who sits behind a desk, perhaps wearing a white coat, and has a very different life to them, someone who is telling them what to do, they might think 'What do you know about my life?' But they may relate better to someone who works behind the counter in the pharmacy, who lives along the same road as them and whose life is similar.

There is a lot of advice and support that people will take from a peer that they won't necessarily hear from a professional. So I think there is an important role for the wider pharmacy profession in providing advice, not just pharmacists but the whole team.

It's an interesting point about high-cost medicines, which look set to increase in price as industry develops innovative treatments for conditions that in the past were not treatable by drugs.

How would you assess the importance of the pharmacy in the evolving NHS, and where would you say the opportunities are for the profession – for pharmacists, technicians and support staff?

I definitely think the pharmacy workforce is developing and growing in importance, and for a number of reasons. One is that we really need everyone to work at the top of their licence, and pharmacists are no strangers to that. Also, as I've said, pharmacists and community pharmacy can influence things that other parts of the health system do not reach, which is fantastic.

Another is that we are focusing increasingly on tackling inequalities and how we can support people with access and capacity problems in the NHS. Pharmacy provides a key workforce for enabling that, an adaptable workforce that can flex to meet new challenges both in the hospital and the community. For example, if we consider the challenge of robotics, I think hospitals could be supporting some of the independent pharmacies with robotic dispensing, because not everyone has a large back office like the big multiples have. So there is an opportunity for combined system working. In addition I think that the pharmacy profession could be doing a lot more with point of care testing and some diagnostics and prevention.

But I will also say, having been a part of the pharmacy contract framework negotiations when it originally came out in 2005, I think the contract is now not fit for purpose. The flexibility to move between the cost of medicines, particularly in this environment, and service delivery is just not there now, and I think we really need to relook at all of our primary care contracts, but pharmacy would obviously be the one closest to my heart!

Do you think there are opportunities for sharing the experiences of pharmacists in different sectors – some community pharmacists going to hospital and hospital pharmacists coming out into the community?

I think that's exactly right, and I would love to see far more posts that are rotational. If you rotate through a GP practice, through a community pharmacy and through a hospital, you will see all aspects of work.

We have a primary care training hub in our patch that we run within the ICB, and we also do multidisciplinary training as well. I think this is a very effective way of making sure that GPs, pharmacists, nurses and allied health professionals all trained together understand each other's world. I would be a big fan of having a core first year degree that is across all of the health sciences. I think that would be a great way to build understanding and links.

Are you seeing examples anywhere of this integration of pharmacy and medicines – the closer working between hospitals and primary care within the ICS?

I think it's early days, but already we have seen some really good community pharmacy teams become a part of our primary care network (PCN) in a way that perhaps they were not before. Most of our COVID vaccinations were delivered through community pharmacy not through our GP practices, which brought with it a different level of integration.

Also, I think there is a lot more thought going into how public health and community pharmacy work together. This is starting to happen but there is a lot more work that needs to be done. Acute hospital chief pharmacists are not really thinking about what their role might be in supporting community pharmacy because they are very busy people with

their own demanding job to do. But this is something that all senior pharmacists have a responsibility for, not just those in our bit of the forest as it were.

"We are looking at cross sector undergraduate placements and portfolio roles across our system, and as a part of our primary care training hub we have a pharmacy placement coordinator. So we are trying to provide different experiences for people. But the other thing about integration and working together to consider is that there is a lot of burnout at the moment. People are exhausted and we must not forget that."

Along with hospitals and GP practices, pharmacies were open all of the time during COVID, and were probably the most accessible part of the health service. We therefore need to remember that there is a fair level of burnout and distress out there as well. Having said that, one of the proven strengths of the pharmacy workforce is its adaptability – I know that it can do great things.

One last question for you Felicity – looking at your career and the situation now as you have described it, what piece of advice would you give to pharmacists and pharmacy technicians about how to professionally develop in the ICB.

Another great question! I would say, think broadly about your skills because they are greater than you imagine. One of the things that I see, and it applies to many professions, is that people tend to narrow themselves down. But I think that pharmacists and their colleagues are in a unique position to see the whole pathway of care, which is hugely valuable.

For community pharmacy in particular, one of the things that is often talked about in the NHS is personalised care. Well, good community pharmacy has been providing personalised care for many, many years, and it is a skill that can really be ratcheted up to support integration.

The whole profession – community, primary, secondary and even in the care sector where pharmacy also works, shows that there is no part of the care pathway, no part of the life pathway, that pharmacy does not touch and positively affect.

A great place to end I think. Thank you so much Felicity.

The most rewarding moment in my pharmacy career so far

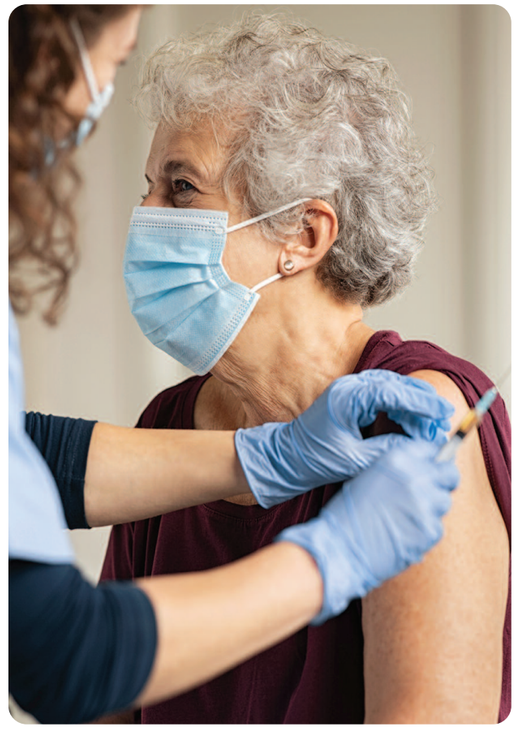
Hemant Patel
MRPharmS BSc (Pharm), MSc (iPres), MSc (Healthcare Leadership)
Director of Medicines and Clinical Policy at Black Country Integrated Care Board

I'm certain many pharmacy professionals will have examples of how their most rewarding moment in their career was during the Covid-19 pandemic. Many will recall the challenges faced during 2020, the graphic pictures each night followed by the harrowing statistics. I have no doubt my recollection is no different to many others, where every system, organisation, profession came together to keep patients safe. Be that via implementing Covid safe practice, increasing testing or encouraging vaccine uptake whilst keeping the integrity of the vaccine at its optimum so our population would have the best chance of surviving this deadly virus.

"However, my most rewarding moment in my career came a few months after the vaccine programme was in full swing. It came when we first heard about the availability of Covid 19 treatments for those highest at risk in our population."

The difference compared to the vaccine roll out was we were having to make plans without having the information regarding the medicines that would become available, with limited local expertise of using these treatments. In addition, we did not have the national or regional communication, or funding that we had with the vaccine program.

I was bestowed the honour of being the Director for COVID-19 Neutralising Monoclonal Antibodies (nMABs) programme for our system from the very beginning. Each system was expected to establish their services to meet the needs of their



population. It came at a time where there was little knowledge of the treatments that were expected, how they needed to be stored, adminstered, prescribed or which patients would be eligble.

Time was certainly against us, so there was a need to quickly bring a program board together with appropriate governance as well robust clinical, technical, strategic, and operational groups set up to ensure there was appropriate onboarding of these technologies once available to our community cohort. Over the ensuing weeks we had set up two Covid Medicines Delivery Units (CMDUs) with support from all four of our acute trusts.

Having only taken on the role for Director for Medicines and Clinical Policy for the ICB months

before this opportunity arose, what was most pleasing was when I called the first system meeting – there was a feeling that we simply needed to role our sleeves up and get this done, even though we didn't have any funding or the exposure the vaccine programme received.

"It was so satisfying seeing professionals support one another, share resources, avoiding duplication of effort irrespective of which organisation they were employed by. There was tremendous comradery, collaboration and cooperation throughout the programme and each person involved was willing to support one another."

The data up to April 2023 showed the CMDUs triaged over 7000 patients and provided treatments to 1300 patients. The trial evidence for these treatments suggests a significant number of lives were saved and hospital admissions avoided because this population received these treatments in a timely fashion. Although the planning and implementation came before the inception of integrated care systems (ICSs) it is an example of what good looks like for our system and how we can achieve the best outcomes for our population. It has left a legacy which will remain with those involved in this programme and has already demonstrated benefits in other programmes that have come along since.

Chapel Pharmacy. Delivering community pharmacy services in a changing healthcare environment

James Martin, Pharmacy Manager at Chapel Pharmacy, provides a personal reflection on how the pharmacy has risen to the challenge of providing community pharmacy services in a changing and demanding healthcare environment.

(Chapel Pharmacy, 102-104 Chapel Lane, Farnborough, GU14 9BL.)

Chapel Pharmacy is an established, independent pharmacy serving the local community. Registered as Vectrum Services in 1993, Mak Johal, the superintendent and owner, has been an ever-present member of the community and team, serving three generations of local people.

"We aim to be the first port of call for any advice and assistance, from minor ailments to major diseases, and pride ourselves on our friendly and accessible service, as well as the special relationships we have fostered with our patients over the past 30 years."

We aim to be the first port of call for any advice and assistance, from minor ailments to major diseases, and pride ourselves on our friendly and accessible service, as well as the special relationships we have fostered with our patients over the past 30 years.

At Chapel Pharmacy we offer a range of NHS and private services, designed to help manage patient health and medicines use. We also offer a prescription collection and delivery service. Our ethos is to provide excellent advice, delivered in a professional, friendly and highly competent way, providing an exceptional service to our community.

Using technology to improve services

Our pharmacy has benefitted from the adoption of technology for the last 17 years, during which time we have employed a state-of-the-art robot that ensures everything we do is optimised for safety. Our first robot dispenser was acquired 15 years ago, with a new model installed in 2019 (and an additional picking head added in 2023). This all but eliminates human error from the dispensing process, ensuring that medicines are prepared more efficiently, enabling us to spend more time talking to patients and other healthcare practitioners. Utilising this technology has allowed us to redeploy our pharmacy team to focus on 'actual' dispensing, allowing the robot to manage stock and picking to patient level.

An overview of services

In addition to core NHS services, we also benefit from being in an area where local NHS services such as the free emergency contraceptive service are available. This has been of great value to patients (many of whom are having to cope with factors such as the ongoing cost of living crisis and problems accessing healthcare services), where they can obtain advice and emergency contraception free of charge from a pharmacist without the need for an appointment. The service allows the provision of either levonorgestrel or EllaOne via Patient Group Directions (PGDs). Recently the addition of the simple urinary tract Infection service for 16–64-year-olds allows the

supply of a three-day course of antibiotics based on the patient's symptoms.

If patients have two of the following: dysuria, nocturia or cloudy urine, then we can supply nitrofurantoin (if no exclusionary criteria are met). This UTI service has been hugely successful as it not only allows patients to be referred directly from GP practices, but also allows the onboarding of patients within the pharmacy. Unlike the NHS Community Pharmacist Consultation Service (CPCS), where patients are reliant on a referral for reimbursement, patients that present directly to the pharmacy can still be treated.

We have also fully engaged with the CPCS, which was first launched for referrals via NHS 111 for minor ailments and urgent supply, and then opened to include referrals from GP practices. We now receive regular and consistent referrals (approximately 40 referrals a month with a peak of 110 in December), and have worked closely with the local clinical director and GP practices to help make the CPCS service successful. This has involved regular communication and providing feedback to both parties when the service has been successful and also when it has not.

> "To ensure we are maximising and most efficiently using our time, we check PharmOutcomes (a clinical service platform to capture outcomes data) at least twice a day, and also contact patients to book face-to-face appointments. Booking appointments directly allows us to manage patient visitors to the pharmacy, preventing unnecessary waiting time, which in turn allows us to see walk-in patients more effectively."

To ensure we are maximising and most efficiently using our time, we check PharmOutcomes (a clinical service platform to capture outcomes data) at least twice a day, and also contact patients to book face-to-face appointments. Booking appointments directly allows us to manage patient visitors to the pharmacy, preventing unnecessary waiting time, which in turn allows us to see walk-in patients more effectively.

Our pharmacists have all undertaken further training to allow them to utilise an otoscope, so any referrals regarding ear concerns can be directly addressed in the pharmacy. We can also 'bolt-on' CPCS referrals with PGDs or private prescribing services if the patient does not want to be referred to their GP. Patients have been positive about this offering as it allows them to access treatment quickly and at an affordable price.

A further NHS service that has proved to be invaluable to our patients and to our pharmacy is the New Medicine Service (NMS), which was started in 2011 in response to concerns that between 30-50% of new medicines were not taken correctly. Pharmacies can complete the NMS for 1% of their total dispensing figures. So, if they dispense 10,000 items per month, they are eligible to complete 100 NMS consultations, generating £2,800.

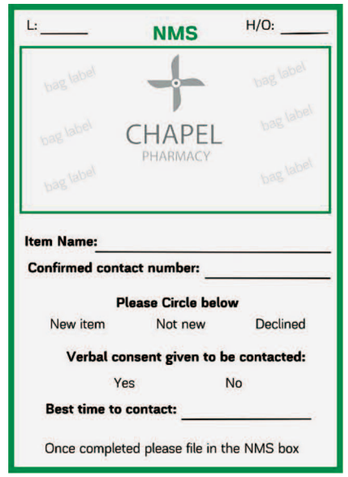
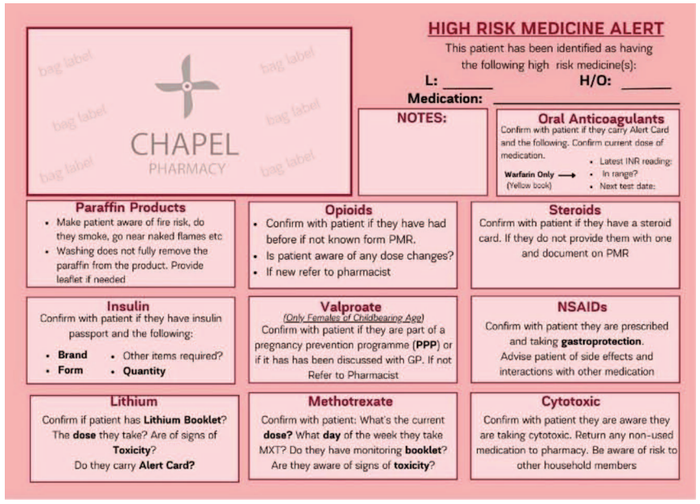


Figure 1: NMS slip used to increase patient engagement



High-Risk Medicines Alert form

Patients are positive about the service, particularly if they are experiencing problems with their medication, and even patients who are not experiencing issues with their new medication appreciate the follow-up phone calls included in the service. To maximise our NMS potential, we have focused heavily on patient engagement and making sure that all eligible patients are offered an NMS by inserting a slip (see Figure 1) into the patient's prescription at the time of labelling, which makes the counter assistant aware of the need to ensure that the duty pharmacist will hand out the medication if possible. The slip allows the eligibility of the patient to be confirmed, as well as the capture of simple information such as the consent for the service, the best time to contact the patient and the confirmation of a contact number.

Another form that we use in store is the High-Risk Medicines Alert. This is filled out by the dispensary team to ensure that counter assistants are aware of any pertinent counselling points that can be discussed with the patient when medicines are provided. Utilising this tool helps us prioritise patient safety.

As a pharmacy we are always willing to adopt practices that will benefit our patients and increase the variety of services we can offer. One such opportunity was to work with a local GP with a special interest in cardiology and echocardiography, in a pilot study. The aim of the pilot was to detect in the community early signs of heart valve disease, thereby preventing worsening disease progression and quality of life for the patient. Furthermore, reducing the incidence of undiagnosed heart valve disease would reduce the incidence of patients becoming increasingly unwell and needing advanced care.

The pilot consisted of identifying patients over 75 years of age, or had hypertension, type 2 diabetes, ischaemic heart disease or atrial fibrillation. Once identified, patients were invited to attend the pharmacy on a specific day where the pharmacist would auscultate them using a digital stethoscope that was partnered with an A.I. platform, eMurmur. The digital stethoscope would take a 15 second recording that was then analysed by the A.I. software, which determined if there was a pathological murmur or not. If a pathological murmur was detected, then the patient would be referred to the GP, who would conduct an echocardiogram.

Over a 6-month period, we detected a murmur in 39 (45%) of 86 patients and referred them to the community echocardiography clinic. Eight (21%) patients were classed as having moderate or severe HVD, 9 (23%) with mild HVD and 22 (56%) as 'normal' or with 'trivial' HVD upon review of their echocardiography results. This pilot was very well-

received by our local community. Once patients felt comfortable being auscultated by the pharmacist, the service expanded, with patients referring friends and neighbours for investigation.

In addition to the wide variety of NHS services offered, Chapel Pharmacy also provides an array of private services such as a travel clinic (including yellow fever vaccination), ear examination and ear wax removal, and independent prescribing for skin conditions. We also use EMIS clinical services hub that has 44 different PGDs not related to travel vaccinations. This includes PGDs for skin conditions such as acne, eczema and psoriasis, as well as period delay, erectile dysfunction, oral thrush, aciclovir for shingles and many more.

We offered ear wax removal to our local community at the beginning of 2021, after attending training on how to perform microsuction using eye loops (treating two to three patients a week). Later the same year, we adopted a service called Tympahealth, which utilised a bespoke system comprising a mobile phone in a specifically designed cradle to allow digital otoscopy. With training accredited by the British Society of Audiology and The British Society of Hearing Aid Audiologists, the Tympahealth system allows us to improve the level of service provided to our patients. There is also the facility to flag images for review by an off-site audiologist, who can refer if necessary to an ENT specialist. This has given us the confidence and support to develop the service. We now have four members of staff (three pharmacists and one counter assistant) trained to deliver the service to approximately 20 people a week at our peak.

The travel clinic in the pharmacy is exceptionally busy, with some patients travelling up to 30 miles to get vaccinated. An important factor in the popularity of the clinic is that in addition to the 20 different PGDs available, we also offer yellow fever vaccination and certification. Averaging 100 consultations a month, we rely on efficient working systems to be able to accommodate such high demand. When patients contact the pharmacy, they are sent a digital risk assessment form to complete prior to their appointment, which is then reviewed by a pharmacy technician and the pharmacist.

Having suitably trained members of staff and a good skill mix, as well as bilingual staff able to communicate with those in hard-to-reach local communities, is vital to the successful running of multiple services, whether NHS or private. Staff training also allows the wider team to directly provide services, freeing pharmacists' time where appropriate.

Equally important is our team knowing the full range of services on offer, so we can drive patient engagement at all stages of contact. For example, we ensure that anyone enquiring about or purchasing olive oil is offered an ear examination in the pharmacy for £15. If microsuction is then required, the cost of the examination is deducted from the cost of treatment.

How do we stay on top of all these services?

We use a product called Waitwhile (see Figure 2), which allows not just the booking of appointments, but also the creation of a 'waitlist' that helps manage queues. Prior to using Waitwhile, we would have many walk-in patients who would arrive at the pharmacy seeking advice alongside those who had pre-booked appointments. It sometimes became difficult to manage the resulting queue, with patients occasionally being seen out of turn.

Now, with the waitlist function, appointments from the calendar are automatically added to the waitlist 15 minutes prior to the appointment time. When a patient arrives and they present at the counter they are marked as arrived, and any walk-in patients are also added to the waitlist (along with details of the service required). Waitwhile can be accessed from any computer, so the pharmacy team are always aware of who is next to serve.

We also have the pharmacist rota on Waitwhile, for example there will be a 'Duty Pharmacist' (normally the RP) who is responsible for checking waiters, dealing with telephone queries or dispensary queries, as well as serving patients and completing some OTC consultations. A second pharmacist is responsible for those walk-in consultations that are more involved (requiring the use of a consultation room), as well as contacting CPCS referrals and completing the NMS call. The third pharmacist is more appointment-based – for services such as travel, arranged CPCS appointments, and completing other walk-in consultations.

Using Waitwhile has greatly increased the effectiveness of our team and the level of patient care has also increased as we have much more structure within our operation.

Linking in with other healthcare services

We have an open-door policy with other healthcare professionals (HCPs) who want to experience what life in a community pharmacy is like, and we regularly engage with a range of HCPs who are undertaking their independent prescribing course and are required to spend time in a pharmacy. This provides an important opportunity

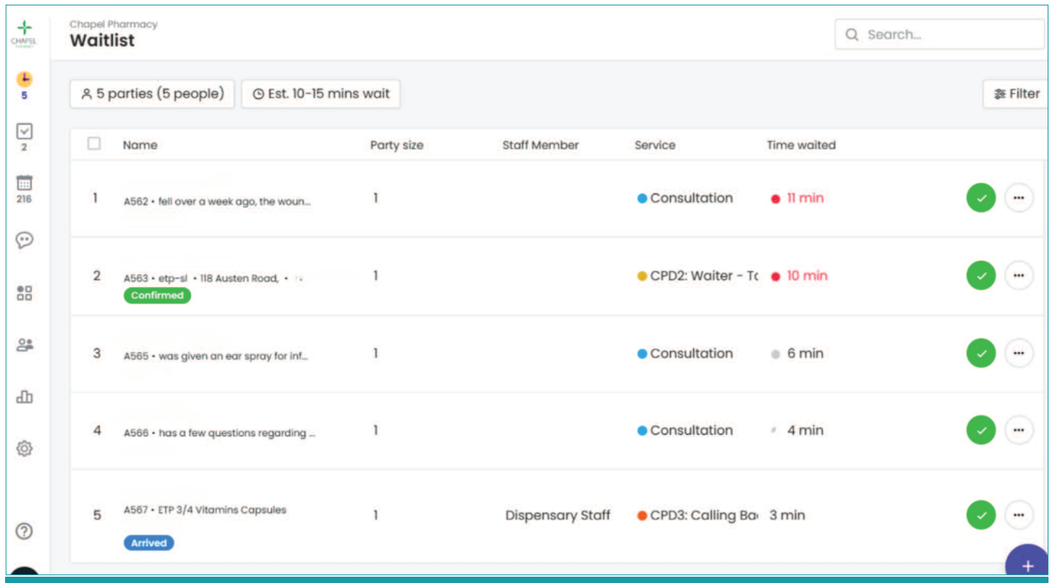


Figure 2: Waitwhile waiting list. There are tabs on the left-hand side to navigate to the calendar function. (Patient names redacted.)

to know and build relationships with other HCPs working in the same community and providing care to patients.

One of the ways we maintain open communication is the utilisation of instant-messaging apps such as Telegram and WhatsApp, connecting to contractors, clinical pharmacists, practice-based pharmacy technicians, paramedics, and other relevant persons. Utilising these apps allows for the quick transfer of information such as stock availability, prescription-release requests, and requests for contact to be made where necessary. Such groups were vital during covid and continue to be highly useful.

"Having excellent working relationships with local healthcare providers allows for greater quality of care for the community and ensures GP practices and other HCPs are aware of the services we offer, both NHS and private, and can effectively signpost to appropriate care available in the pharmacy."

We have engaged closely with local GP practices, for example providing training on the CPCS and which conditions are suitable to be referred to the pharmacy, and also how to reduce refer-back rate. Reducing refer-backs not only improves the effectiveness of the GP practice and pharmacy but is also important in maintaining patient confidence and satisfaction. Meetings with reception teams at our local GP surgeries revealed that staff were not necessarily aware of the services that can be offered in a community pharmacy, demonstrating the importance of proper communication in facilitating the understanding of our role in service provision, and the difference this can make to the lives of patients.

We have also applied to become an independent-prescribing pathfinder site, which will enable our pharmacists to write NHS prescriptions, furthering our integration with local healthcare teams and enhancing the services we provide.

The future of community pharmacy

Community pharmacy is a vital lifeline for the NHS and the local communities it serves. It is recognised that pharmacies maintained a face-to-face service during covid, providing many patients with invaluable help during a time of great need.

Community pharmacy, if appropriately funded and supported to ensure bricks and mortar pharmacies remain open, can become one of the NHS's most powerful tools in the early detection of disease and the prevention of ill-health.

We hope that the renewed interest in community pharmacy from the government, the talked-about Pharmacy-first initiative, and the upcoming cohort of ready to prescribe pharmacists, will only add to the powerhouse that community pharmacy can be.

Digital, Data and AI Solutions in Pharmacy

PM Healthcare Special Issue – January 2024

Call for articles

Building on the recommendations from the Wachter Report (2016), digital transformation and improving the digital literacy of the workforce is one of the key elements of the NHS Long Term Plan (2019), with areas of focus including the need to provide digital services and tools to give people more control over their own health.

Experience from how the NHS responded to the COVID-19 pandemic strengthened recommendations of the Topol (2019) review for the need of extensive education and training of the clinical workforce and in particular for pharmacy, relating to robotics, health-related apps ('digiceuticals'), remote consultations, pharmacogenetics and genomic data.

This special issue of PM Healthcare Journal aims to gain insight into the current use of and learnings from digital solutions in delivering pharmacy services and supporting patients. Supplementary to this, it aims to identify key technologies which offer benefit to our pharmacy teams, create a repository of sources and contribute to our objective of sharing best practice and identifying excellence.

Topics of interest include the following, but other related topics will be considered:

1. The role of the patient in the design/use of digital solutions to support their health
2. The use of technology to support patient remote monitoring and service provision
3. The use of technology in diagnosis, treatment and outcomes
4. Data security and governance
5. Robotics in all pharmacy settings
6. Digital solutions in pharmacy workforce development
7. Solutions to drive efficiency and effectiveness
8. The impact of AI on practice, drug development, manufacturing and clinical trials
9. Learning from other sectors and industries to enhance pharmacy operational practice

Submission details

Submission will be made via the normal PM Healthcare process and will be subject to peer review. Guidance for authors and further details of this Special Issue can be requested from editor@pmpublications.co.uk

Timeline for submissions.

1. Expressions of interest 31/10/23
2. Receipt of first outline/draft 15/11/23
3. Review and creation of final draft 10/12/23
4. Publication date 15/1/24

You may direct any issues regarding article content to the Special Issue editors: Mr Atif Saddiq (a.saddiq9@bradford.ac.uk) and Professor Liz Breen (l.breen@bradford.ac.uk).

Supporting references

NHS (2019). *The NHS long term plan.*

Parry, C. (2023) *AI chatbots in pharmacy: a brave new world or looming threat?*

Topol, E. (2019). *The Topol Review. Preparing the healthcare workforce to deliver the digital future. An independent report on behalf of the Secretary of State for Health and Social Care.*

Wachter, R (2016). *Making IT Work: Harnessing the Power of Health Information Technology to Improve Care in England.* Department of Health.

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PM Healthcare PROGRESS THROUGH PARTNERSHIP

The challenges of managing short-acting bronchodilator over-reliance in general practice

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Ever since the publication of the NRAD (National review of asthma deaths)[1] in 2014, over-reliance on short-acting bronchodilators has been well recognised as an area that needs to be targeted in managing asthma in primary and secondary care. First-line inhaler therapy in the management of asthma should be inhaled corticosteroids to control the inflammatory nature of the condition and use of short-acting bronchodilator inhalers should be for relief of breathlessness symptoms and ordering of bronchodilator inhalers should be monitored.[2] Adherence to preventer therapy should be explored in an asthma review as well as explanation of markers of poor control in the context of a personalised asthma self-management plan.[2]

GINA guidelines reflect the difficulty in achieving concordance with regular preventer and recommend a track of therapy where step one relies on 'when required' use of combination inhalers containing inhaled corticosteroid and formoterol as the long-acting beta agonist (ICS/LABA) before stepping up to regular use of the ICS/LABA combination inhaler.[3] It is regarded that the overuse of salbutamol (more than 3 puffs a week) is an indicator of poor asthma control.[4] Short-acting bronchodilator (SABA) overuse is defined as use of more than three inhalers per year and is a widely recognised issue[5] which has strong correlation with increased exacerbation rates and healthcare utilisation.

A previous study,[6] conducted pre-Covid, examined an approach across a CCG area where high usage of SABA was acknowledged to tackle overuse of SABAs in primary care. Data utilisation, guideline development, educational interventions and feedback was used and resulted in a reduction of 7% SABA prescribing and a reduction in emergency asthma related activity.

> "SABA metered dose inhalers account for approximately two thirds of the green house gas emissions in the UK.[7] As the current aim for the NHS in the UK is to achieve net zero carbon emissions by 2040 and the acknowledging the contribution of SABA inhalers, there are potential sustainability and environmental benefits through reduced SABA inhaler use. Reduced costs are also possible, both from addressing inappropriate inhaler use and the potential for reduced admissions due to poor control."

As part of the development of pharmacotherapy service in General Practice in Scotland,[8] pharmacy teams assist in reviewing medication use for chronic disease. Pharmacy teams are variously involved in chronic disease management and assisting the general practice team with targeted review of prioritised patients with asthma who over-order SABA inhalers may be a sensible use of the pharmacy resource. Chronic disease management was largely suspended in General Practice in the aftermath of the first COVID lockdown from March 2020, however there was subsequently a need to prioritise those patients with asthma at most need of review and potential intervention.

Taking into account the need to address prioritisation of asthma reviews, in a general practice environment where time and workload are ever increasing, especially in the context of restricted access to the practice due to Covid-19 restrictions, the management and review of people with asthma who were ordering over 12 SABA inhalers a year was felt to be a key area to target.

As a small test of change, to determine whether telephone reviews could be utilised as a timely review for respiratory patients. A targeted, prioritised review of patients with asthma was carried out, reviewing those ordering more than 12 SABA inhalers a year in a primary care setting, carried out by a pharmacist carrying out a specialist respiratory clinic, utilising telephone and video consultation methods in the post-covid era.

Methods

The setting was two urban practices in a rural area of Scotland, with patient populations of approx 10,000 and 7,000, starting in May 2020.

The Scottish Therapeutic Utilities (STU) facility was used for patient identification. STU is a computer programme that utilises immediate data from GP IT systems (EMIS and VISION) with a focus on repeat prescribing and other clinical areas including respiratory prescribing. It is licensed by the Effective Prescribing and Therapeutics Division at the Scottish Government and is available to GP practices throughout Scotland free of charge. STU generates reports to facilitate targeted medicines management activity, working alongside the clinical system to provide direct access to the individual patient clinical record for ease of use to make changes if required and supports identification and prioritisation of patients for review. Whilst similar data systems are available, STU has a national user group which helps to formulate searches required in practice therefore all GP practices in Scotland have access to the same complex, reliable searches which create lists of patients for review. The respiratory search was used which identifies patients ordering 12 or more SABA inhalers, excluding those with a diagnosis of COPD. (See figure 1 below.)

Telephone consultations took place, starting in May 2020, working through the list of patients identified through STU, essentially 'cold calling' the patients. They were offered the option for 'Near Me' video

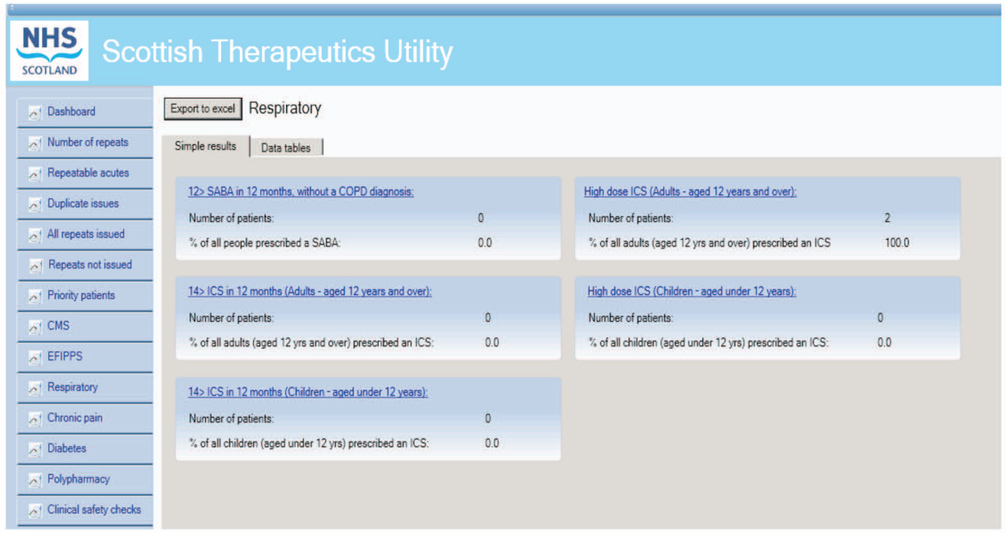

Figure 1. Screenshot from respiratory searches available on the STU facility

consultation or face to face follow up if needed. A telephone asthma review was conducted to review current symptoms, adherence to therapy and they were asked about inhaler technique. Interventions such as patient education, addition of spacers and changes in drug therapy were initiated as appropriate, for example stepping up to a combination inhaled corticosteroid and long-acting beta-agonist inhaler. An Asthma UK Management plan was issued to all patients. Patients were signposted to inhaler technique videos on patient orientated websites (How to use your inhaler | Asthma + Lung UK (asthmaandlung.org.uk) and My Lungs My Life | Patient Respiratory Self-Management Toolkit). In addition, patients were directed to their community pharmacy for assistance with inhaler technique guidance if needed. Follow up appointments were made as needed.

Results

Patients were generally keen to engage and appreciated the offer of a telephone asthma review, given the circumstances of restricted General Practice access due to Covid at the time. If telephone calls were not convenient at that time, an alternative appointment was made.

Advantages of telephone consultations included:

- The ability to talk to people in the comfort of their own home, particularly useful for those who found travelling to the surgery difficult (housebound, elderly patients)
- Assisted targeting the frequent non-attenders at face-to-face consultations due to reasons such as work or caring duties were more able and willing to conduct a telephone call. One such example was a long-distance lorry driver who was delighted to be contacted and arranged to have his break to coincide with the telephone consultation

Disadvantages included:

- Difficulties if people were hard of hearing or found telephone conversations tricky. Face to face reviews could be arranged if this was the case
- Inability to observe inhaler technique as part of the asthma review. Videos such as those on the Asthma Lung UK website were signposted, and there were opportunities for the community pharmacist to check inhaler technique when the person collected their inhaler

A benefit of utilising the community pharmacy for assistance with inhaler technique guidance was the fostering and growth of the good links with them, which are essential to enable a joint approach to improved respiratory care. A telephone call to explain the project was made at the outset and simple communication was used such as a note added to the prescription to indicate when a patient may benefit from an inhaler technique check. Community pharmacists welcomed the opportunity to interact meaningfully in their patient's chronic disease management. In turn pharmacists felt able to prompt or flag people to the practice that were in need of an asthma review, enhancing the flow of two-way clinical communication.

Interventions made included:

- Patient education (using asthma slide rule as aid, see figure 2[9])
- Addition of large volume spacers
- Changes in drug therapy e.g. stepping up to a combination inhaled corticosteroid and long-acting beta-agonist inhaler or use of maintenance and reliever therapy (MART)
- Asthma UK Management plan issued to all
- Signposted to websites (Asthma Lung UK and MyLungsMyLife) for inhaler technique videos
- Follow up appointments made as needed (e.g. Spirometry for diagnosis confirmation)

A reduction in numbers of patients ordering over 12 SABA inhalers in 12 months was noted, however this was not maintained without ongoing review. It is acknowledged that some of these patients will be new, which emphasises the need for continuing review and patient education and engagement.

This small test of change could be applied to a wider population: incorporating a focus on SABA over-reliance in the annual reviews conducted by all health care professionals, such as the practice nurse, general practice pharmacist or GPs in the practice would assist in the success of this intervention. This work is being progressed in the Health Board area, including dissemination of learning to all health care professionals in General Practices in the Health Board area to assist effectiveness of asthma reviews and help with prioritisation of asthma reviews, including how to optimise the use of STU. This is especially important given the workload and time pressures in General Practice currently.

Further work

Opportunities for further work to address SABA over-reliance in General Practice include:

- Review the impact of labelling of salbutamol to reinforce its use as a reliever. For example, suggested labelling is: 'Take two puffs when needed as an emergency reliever inhaler. Take your preventer inhaler regularly if you are not already doing so'
- Investigate the impact of changing the quantity of salbutamol inhalers to a single issue each time for people with asthma. Many practices also either limit the issue of salbutamol to three in one year, or only issue salbutamol as an acute prescription, and the effect of this could be reviewed. Practices should have a consistent approach to salbutamol prescribing and ensure that this is supported by effective respiratory review

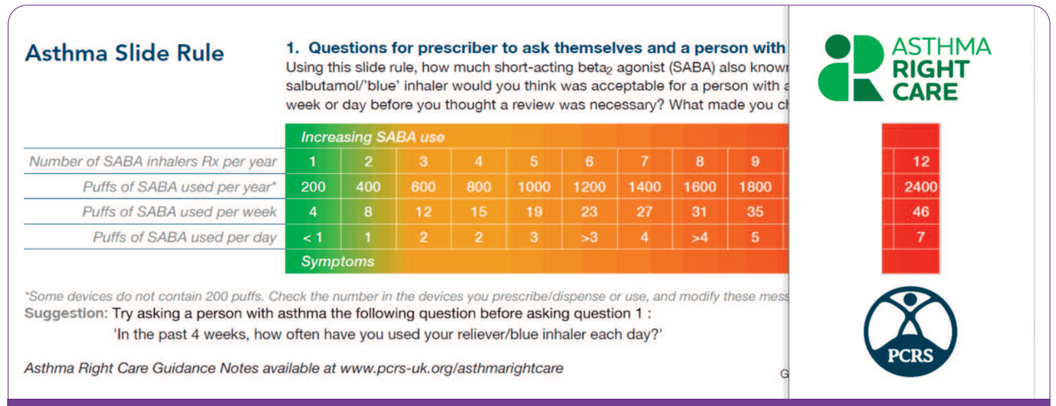

Figure 2. Asthma Slide Rule[9]

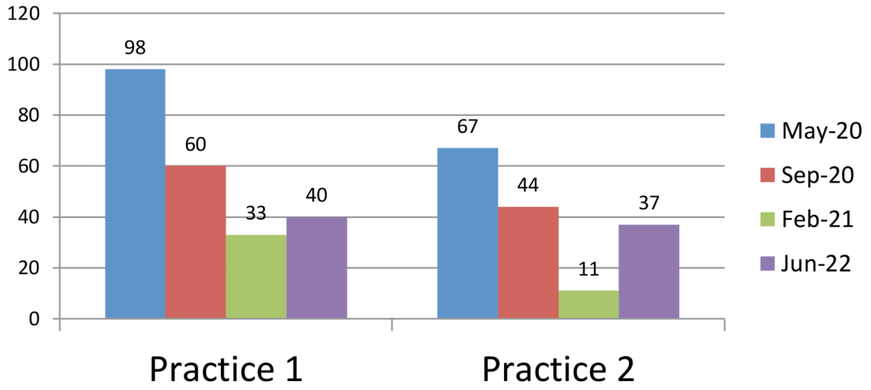

Table 1. Patients ordering more than 12 SABA inhalers in 12 months (STU data)

- Review subsequent clinical control on individuals with asthma as a result of any changes to treatment and management made. The desired outcome is that achieving better control with regular preventer therapy should reduce the emergency use of relievers and health care utilization
- Ensure that ongoing education and support is given to people with asthma. There are local patient support groups (e.g. Breathe easy groups operated by Asthma Lung UK) and many patient apps are available, some of which produce a tailored self management plan based on symptom responses

Conclusion

Asthma reviews conducted opportunistically by telephone or video link, with appropriate follow up, can be effective in reduction of over-ordering SABA inhalers and targeting those patients that find it difficult to attend the surgery. The reviews allowed efficient use of time for both the clinician and the patient and reassurance was offered to the patients that if a face-to-face assessment was required, that would be carried out, therefore acting as an effective triage and identifying prioritised patients where more clinician input was required. Reviews should be ongoing and carried out by all of the health care team managing long term conditions and continue to prioritise those over-ordering SABA, as a marker of poor control. Reinforcement of patient education is required to maintain adherence to preventer therapy and reduction in reliance on SABA reliever therapy.

References

1. Royal College of Physicians. Why asthma still kills: the National Review of Asthma Deaths (NRAD) confidential enquiry report. London: RCP, 2014. Available at https://www.rcplondon.ac.uk/projects/outputs/why-asthma-still-kills
2. SIGN 158 British guideline on the management of asthma - Revised edition published July 2019 https://www.britthoracic.org.uk/quality-improvement/guidelines/asthma/
3. 2022 GINA Main Report - Global Initiative for Asthma - GINA (ginasthma.org)
4. Janson C, Menzies-Gow A, Nan C, Nuevo J, Papi A, Quint JK, Quirce S, Vogelmeier CF. SABINA: An Overview of Short-Acting β2-Agonist Use in Asthma in European Countries. Adv Ther. 2020 Mar;37(3):1124-1135. doi: 10.1007/s12325-020-01233-0. Epub 2020 Jan 24. PMID: 31981105; PMCID: PMC7089727.
5. Patient safety spotlight: the risks of overprescribing Salbutamol inhalers for asthma. May 2022. https://www.pharmacyregulation.org/regulate/article/patient-safety-spotlight-risks-overprescribing-salbutamol-inhalers-asthma
6. Varia, M. Tackling overuse of short-acting beta-2 agonists (SABAs) in asthma in primary care. JOMO 2020; 3 (6): 92 -95. https://www.pharman.co.uk/uploads/imagelib/pdfs/Journal_articles_by_issue/JoMO%20Dec%202020/Tackling%20overuse%20of%20short-acting%20beta-2%20agonists%20(SABAs)%20in%20asthma%20in%20primary%20care.pdf
7. Wilkinson A, Menzies-Gow A, Sawyer M, et al S26 An assessment of short-acting β2-agonist (SABA) use and subsequent greenhouse gas (GHG) emissions in five European countries and the consequence of their potential overuse for asthma in the UK. Thorax 2021;76:A19.
8. New pharmacotherapy service to be set up as part of Scottish GP contract - The Pharmaceutical Journal (pharmaceutical-journal.com)
9. Asthma Slide Rule | Primary Care Respiratory Society (pcrs-uk.org)

Health inequalities in older people: implications for medicines optimisation

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Introduction

The health of a population is determined by the socio-economic and environmental conditions into which people are born, grow, live, work and age in, also known as the social determinants of health.[1] They include income, education, access to green space and healthy food, occupations and the quality of homes they live in, which determine the opportunities and resources that people have to live healthy lives. In addition, the health of some groups of people are impacted by protected characteristics such as age, disability, ethnicity and gender. Differences in these social conditions and characteristics can impact negatively on health and lead to health inequalities.

In 2022, The Kings Fund[2] defined health inequalities as avoidable, unfair and systematic differences in health between different groups of people. For older people these differences can independently or in combination result in health inequalities in their health outcomes (e.g. life expectancy, healthy life expectancy, prevalence of long-term conditions (LTC) or access to healthcare services. The concurrent combination of one or more of these factors leading to exacerbation of health inequalities is known as **intersectionality**. For example, older people of female gender or certain ethnicities, living with disabilities or in areas of high deprivation or from a lower socioeconomic background, are at even higher risks of the widening gap of health inequalities because of intersectionality.

In the UK, although people are living much longer (life expectancy) overall, in recent years, the number of those living well (healthy life expectancy) into old age has decreased,[3,4] especially where there is intersectionality.[1]

Health status or outcomes: impact of long-term conditions, frailty and polypharmacy

Older people are disproportionately more likely to have a long-term condition (LTC) or the coexistence of two or more LTCs (multimorbidity) than younger people, due to age-related changes in physiology and increased exposure to risk factors which have accumulated and been reinforced over their lifetime. 46% of people over 65 years have multi-morbidities increasing to 69% in those over 85 years.[4]

Certain conditions like dementia, frailty, osteoporosis, falls, hearing loss, visual impairment, cognitive impairment and incontinence that impact negatively on healthy life expectancy, and lead to loss of independence or high dependency on others for daily functioning, are almost exclusive to old age. Also, the prevalence of frailty, (a state of high vulnerability and decline in health status) increases with age, deprivation and female gender. Frail people have a higher prevalence of multi-morbidities, disability and social isolation, which add to health inequalities.

A Canadian Study[5] showed that 90% of older people with moderate frailty and 99% with severe frailty had a cognitive impairment. Of those with dementia, 60% and 93% were urinary incontinent and 58% and 63% had impaired mobility. The chronicity and multiplicity of these conditions means they are more likely to be taking many medicines (polypharmacy). Worse still, the coexistence of frailty and multi-morbidities and polypharmacy are independent and combined predictors of increased mortality[6] disability and hospitalisation.

Medicines are useful to manage or relieve the symptoms of LTCs and improve quality of life.

However, older people are overly more vulnerable to medicines-related problems which lead to adverse health outcomes and health inequalities. When prescribed inappropriately or not taken as prescribed, medicines can contribute to adverse outcomes such as worsening frailty, falls, cognitive impairment, gastrointestinal, central nervous system and haematological side effects which may also result in a care home or hospital admission.

The National Overprescribing Review (NOR) report[7] identified health inequalities in overprescribing with increasing age, deprivation, learning disabilities, and Black and Asian ethnicities. People aged 65 and over were prescribed more medicines in total and more likely to be taking eight medicines or more[7] while there was a 21% increased risk of polypharmacy in people over 55 years with the lowest socio-economic status.[8]

Similarly, an Age UK report[9] highlighted that 1 in 10 people over 60 years take eight or more medicines, increasing to one in four for people 85 years and over. People on 10 or more medicines are 300 times more likely to be admitted into hospital because of an adverse drug effect[7] and frail people taking 10 medicines or more are six times more likely to die within three years compared to non-frail people taking less than five medicines.[6] Most people living in UK care homes are older people and they take more medicines than their counterparts living in their own homes, with 7 in 10 exposed to at least one medication error daily.[10]

Older people are more likely to transition between care settings and are more vulnerable, with 1 in 3 experiencing a medicines related problem within four weeks post discharge.[11] This may be due to a lack of coordination and timely transfer of information between healthcare providers during transitions of care, poor communication and lack of shared decisions between patients and clinicians, which puts them at undue risk of adverse drug events, medication incidents and errors.[12]

Finally, older people are more likely to suffer with conditions that require the use of drugs with high-risk profiles such as opiates for pain, anticholinergics for incontinence, antipsychotics for challenging behaviour in dementia, and sedatives, which put them at higher risks of medicines related morbidity and mortality.[13,14]

Access, uptake of services and experience of care

Older people may also experience health inequalities in how they access and experience health care. As people get older, they typically need to access health and care services more regularly. Those in rural areas or socially isolated may face challenges that lead to poor uptake and/or access to pharmacy or medicines related services. They may be unaware that certain services like medication reviews exist, face barriers travelling long distances to get their medications or health care which can be particularly challenging for those with reduced mobility.[15] There may be affordability issues to obtain self-care treatments like over the counter medicines, healthy lifestyle interventions like gym or swimming classes or digital devices needed to access essential information or services that can reduce overprescribing.

"Those who are frail, live alone or housebound may have to depend on loved ones to find a convenient time to collect medicines, take them for medication review or follow up appointments and tests. The overall burden of drug monitoring for long term conditions like INR, blood pressure and blood glucose tests, as well as the pill burden, may be problematic for some."

Those without adequate support networks to help them navigate health care services may suffer unduly (e.g. minority ethnic groups, asylum seekers and refugees far away from their own communities[16]). For example, those without adequate help to manage their medications may be at risk of medication errors and non-adherence, which may lead to adverse events or preventable drug-related hospital admission. People in care homes or receiving adult social care support experience delays getting medicines supply in a timely way which could lead to missed doses and poor symptom control for those taking time-sensitive medicines.[17]

For care home residents, access to interventions that potentially could reduce overprescribing, adverse drug effects and promote self-care vary depending on local arrangements or whether it is a residential or nursing home. For example, homely remedies, non-drug options through social prescribing, talking therapies and community-based therapies (physiotherapy, dietetics), specialist services (diabetic nurses, memory clinics), district nursing services, access to safe medicines disposal at a local pharmacy.[10,18] Only 44% of care home residents get a planned GP medication review and older people who are housebound are less likely to get domiciliary based pharmacy interventions like medication review or reconciliation unless commissioned. Some care home providers have policies that do not allow the use of homely remedies, which may delay treatment for minor ailments compared to older people living at home. This inequitable access to health care in certain groups of older people can lead to poorer experiences, outcomes and health status.

Older people may have difficulties independently accessing timely, reliable and appropriate services or information about their treatment or medicines that are culturally relevant and sensitive to their choices and needs. This includes translation services for face-to-face consultations, to read medicines instructions, patient information leaflets or discharge letters. For some older people with cognitive impairment, learning difficulties, sensory impairments, their voices may not be heard about what matters most to them, where conversations about medicines or treatments are directed solely at third parties such as carers or relatives and decisions made about them without their involvement.

Since the COVID-19 pandemic, information (patient information leaflets) and interventions (including medication review consultations, ordering and repeat prescriptions) are more frequently accessed digitally and remotely in primary care. While some older people are digitally literate and embrace these technologies, those living with learning difficulties, sensory and cognitive impairments, frailty or dementia find remote consultations difficult. 20% of people aged over 75 live with sight loss, and 71% of people over the age of 70 have a hearing loss, which can have an impact on the activities of daily living and accessing digital technology.

Intersectionality with race, ethnicity, gender and socioeconomic status

Older people from ethnically diverse and non-English speaking groups, refugees and asylum seekers, may experience discrimination, stereotyping, disrespect, biases, poor communication, language and low literacy barriers[16] which impact negatively on their understanding of, and adherence to their treatment or medicines, and lead to disparities in health outcomes. Generally, minority ethnic groups report poorer health and having a LTC compared to white populations.[16] For example, the average health of a 60-year-old Bangladeshi, Pakistani, and Arab woman is similar to a typical white British 80-year-old. However, it is worth noting that the patterns of health inequalities within ethnic minority groups are not homogeneous. For example, Asians are more likely to report poor experiences at their GPs, while Black Africans have a longer life expectancy and Black Caribbeans a lower life expectancy.[16] Black people have a higher prevalence of chronic pain in England[19] while older people, those living in deprived areas and female gender, are more frequently prescribed opioids and drugs with high risk of addiction.[14]

Although older women have a longer life expectancy than men, they have a shorter healthy life expectancy, suffer more from discrimination, and may experience unique health challenges like menopause, increased risk of osteoporosis and heart disease.[20]

Compared to those living in the least deprived fifth of the population, people in the most deprived fifth are more likely to develop multi-morbidities 10-15 years earlier and with higher severity.[21] Older people in areas with higher deprivation experience poorer health outcomes because of limited access to healthcare services and social support, inadequate nutrition, poor housing, and exposure to environmental toxins over time. A fifth of people over 65 years live in 'non-decent' housing, which can lead to reduced mobility, exacerbations of respiratory conditions, falls, depression, and isolation.[4]

With an increasingly ageing population it is pertinent that we identify the most disadvantaged and vulnerable older people and address the health inequality problems as a matter of urgency, to improve healthy life expectancy alongside longevity.

Addressing health inequalities in older people through medicines optimisation

Pharmacy teams in all settings are well positioned to reduce health inequalities associated with adverse effects of medicines by optimising medicines in a variety of ways.[22,23] For strategies and approaches to be successful, they will need to be implemented across health and care systems, collectively and individually, at various steps of the patient journey. They must be multifaceted, easily accessible and available, as well as address the gaps in the modifiable wider determinants of health.

At the core of these approaches should be the provision of patient centred, culturally sensitive care and information which involves and considers what matters most to the older person and includes shared decision making. As well as new strategies, making existing services and interventions align with these principles as a priority may enable easy wins.

For example, the Discharge Medicines Services allows NHS trust pharmacy teams to identify and refer patients at high risks of medicines-related problems during transfer of care to community pharmacy. Community pharmacists will provide early intervention, refer or liaise with primary care pharmacy teams and act as the coordinator of the medicines-related aspects of care to prevent medicines-related harm further along the patient journey.

Other opportunities include using structured medication reviews as shared decision-making conversations to ensure that older peoples medicines work well for them, manages their long-term conditions, improves their quality of life and reduces unnecessary hospitalisation. A hospital admission for whatever reason is a strong and independent risk factor for functional decline in people aged over 75 (within a year), accelerates frailty and death. Yet a significant number of drug related admissions can be prevented[24,25,14] for example by reducing overprescribing (polypharmacy) and better communication across the interface of care.

"Pharmacy teams have ample opportunities to reduce overprescribing at various points in the medicine process, e.g. guidelines development, medicines reconciliation, prescribing (deprescribing), supply (repeat prescribing and dispensing) and medication review. Community pharmacies can be local hubs to provide a range of information and resources to support older people to adhere to their medicines so they can get the best outcomes."

Local policies and guidelines should be written in a way that clinicians can easily interpret and implement them without further widening existing gaps in accessing care like affordability, literacy, digital access, physical and cognitive barriers, etc. They should consider the implications of health inequality impact assessments e.g. in NICE guidelines for their older population, then develop and implement plans to close the gaps.

Better data, research and population health management

Pharmacy teams can reduce health inequalities by proactively screening or case finding to identify the most vulnerable groups, which improves access to preventive care and chronic disease management. For example, identifying the frail older population helps address underlying causes such as poor nutrition, lack of physical activity, and social isolation that cause decline in function and health status. Once identified, populations can be stratified so the appropriate interventions tailored to their needs are provided.

Good quality and assessable data is vital for clinicians and organisations to identify the needs of various groups of older people to address the disparities and monitor progress. Since the late 1990s, primary care prescribing data has been used to identify patterns and trends and to drive medicines optimisation. The NHS Business Support Authority (NHSBSA) ePACT data and more recently OpenPrescribing and PINCER data are used to identify patients and populations at high risks from medicines-related harm, or where medicines use is not optimised, for example the NHSBSA polypharmacy and opioid indicators can identify people taking eight or more medicines and opiates respectively. For the future, using prescribing data with CORE Plus data (proxy for deprivation) or frailty score data may help target inequalities in specific groups of older people.

There is a need for more clinical research in drug treatment for older people, especially those living with frailty and multi-morbidities but also social research that looks at the nuanced differences between different ethnic groups that account for the disparities in experience, outcomes and access to health care. Following the NOR report, in May

2022, the National Institute for health and Care Research published a call-out for studies to understand the links between overprescribing, deprivation, ethnicity, age and inequalities and the impact these have on the health of the population and how this can be addressed.

Prevention of ill health and creating healthy communities including outreach

Patient-facing pharmacy teams such as community pharmacies are easily accessible heathcare providers located in rural areas, high streets and areas with high deprivation or concentrations of minority groups. They can tackle health inequalities by being more proactive in reaching out to them at locations they already visit such as community hubs, day centres, lunch clubs and carers groups to raise awareness about services available and to provide culturally sensitive information that is tailored for their specific needs. Many community pharmacy staff are drawn from local communities and reflect their make-up (in relation to understanding the culture and languages), so can usefully engage with their older population to get insights about the barriers they face and ideas about the unique solutions to tackle them. This is important for older people groups that are less likely to engage or access the more traditional NHS services, e.g. homeless, refugees, minority groups and non-English speaking groups, who may more be comfortable discussing their medicines and conditions in the less formal environment of community pharmacy.

"Health champions from Healthy Living Pharmacies (HLPs) can deliver health promotion advice and interventions on nutrition, weight management, self-care and management as well as signposting to other teams and services such as the local council health and wellbeing websites."

Newer strategies like expanding and enabling pharmacy teams to refer patients for non-drug or social prescribing options at the point older people access care will avoid delays which occur because of first having to refer to a GP. For example, to local gyms, social prescribers, voluntary and community services to provide befriending services, support for activities of daily living including medicines etc, may reduce the need for high risk or potentially addictive medicines like opiates and antidepressants which cause falls or other adverse effects.

Improving care during transitions

Improving transfer of information and communication between services in high-risk situations, especially during transitions of care, reduces medicines-related harm and ensures that the most vulnerable older people do not receive disjointed care or fall through service gaps. Pharmacy teams in all settings have a major role to play in ensuring safe transfer of information and care. Also, implementing the e-discharge summary standards set out by the Professional Record Standards Body as part of implementing the NOR recommendations will go a long way to improve clinician and patient access to medicines record at the point of care and reduce needless medicines-related errors or harm.

Culturally appropriate (or competent) information and support to take medicines

Culturally competent information and support is a part of person-centred care that recognises and respects the unique cultural background of each older person and acknowledges the impact of culture on their beliefs, behaviours, conventions and lifestyle about their health.[26] Culture plays a vital role in their understanding of their LTCs and treatments, including the role of medicines, and whether they adhere to medicines or not. This is essential to various aspects of delivering care for older people, e.g. engaging family members in decision-making about their medicines, providing information in their own language or 'easy read' text, in print rather than just digital, appropriate text fonts for the visually impaired, about

complementary or alternative remedies they may choose to use alongside prescribed medicines, about the impact of religious and cultural dietary preferences and restrictions that impact on medicines taking.

Pharmacy teams are not expected to know everything about every culture, but they can start by recognising and challenging our own biases, being open and curious to expand their knowledge about the cultures of the people they serve, then gaining the skills and competences to deliver care that is fit for purpose.

In encounters with patients, pharmacy teams must seek to build rapport and trust, to understand the patient's values, perspectives and what matters most to them, and understand what sits behind their attitudes and behaviours, particularly when they are different from the clinician's own. This is facilitated through patient-centred conversations and shared decision-making. It is only then that advice, information and support can be given that is personalised and in the context of the patient's reality. Practical support to improve adherence should be provided to resolve the specific support needs jointly identified. Too often decisions about prescribing or intervention to support adherence is made by care practitioners without involvement of the patient or their family, which can lead to adverse effects, therapeutic failures or further non-adherence.

Conclusion

There are health inequalities between different older people groups as well as between the old and younger populations. Intersectionality of multiple factors including ethnicity, female gender and socioeconomic status widens the gaps for different older people groups. Pharmacists are well placed to deliver care and have ample opportunities to make a difference in their communities or practice settings through their expertise in medicines optimisation, managing LTCs, health promotion, early identification and assessment of high-risk populations, and self-care. There is a need for more data and research looking into the reasons for disparities that occur in certain ethnic groups, as the current grouping of minority groups disguises important differences. Also, there is a need to understand and interpret existing data and be more intentional about using it to drive the change needed to narrow the health inequalities gaps for older people.

In the future, there might be scope for older people to register with their chosen community pharmacists who will be commissioned to be responsible for coordinating the medicines-related aspects for older people. With a history of success with COVID vaccines, blood pressure screening and the range of services now available through pharmacy, alongside the expansion of independent prescribing in community pharmacy

and primary care, perhaps we will see pharmacy teams able to start and finish episodes of care in primary care. This will improve access to high quality care closer to home for older people to prevent ill health, promote wellbeing and manage their LTCs, ultimately reducing some of the health inequalities they currently face.

Glossary

Life expectancy
The further number of years a person can on average expect to live given the age they have attained.

Healthy life expectancy
This estimates time spent in 'good' or 'very good' health, based on how people perceive and report on their general health.

A long term condition
One that cannot, at present, be cured but is controlled by medication and/or other treatment/therapies. People with long term conditions experience poorer quality of life.

Access to healthcare
Having the timely use of personal health services to achieve the best health outcomes

References

1. Michael Marmot, Peter Goldblatt, Jessica Allen , et al. Fair Society, Healthy Lives (The Marmot Review) 2010 Institute of Health Equity. Accessed on 10/5/23 https://www.instituteofhealthequity.org/resources-reports/fair-society-healthy-lives-the-marmot-review
2. Kings Fund 2022 https://www.kingsfund.org.uk/publications/what-are-health-inequalities
3. The Health Foundation. Health Equity in England: The Marmot Review 10 Years On February 2020. Accessed on 10/5/23 https://www.health.org.uk/publications/reports/the-marmot-review-10-years-on
4. Age UK 2019. Later Life in the United Kingdom https://www.ageuk.org.uk/globalassets/age-uk/documents/reports-and-publications/later_life_uk_factsheet.pdf
5. Rockwood K, Song X, MacKnight C, Bergman H, Hogan DB, McDowell I, Mitnitski A. A global clinical measure of fitness and frailty in elderly people. CMAJ. 2005 Aug 30;173(5):489-95. doi: 10.1503/cmaj.050051. PMID: 16129869; PMCID: PMC1188185
6. Herr M, Robine JM, Pinot J, Arvieu JJ, Ankri J. Polypharmacy and frailty: prevalence, relationship, and impact on mortality in a French sample of 2350 old people. Pharmacoepidemiology and Drug Safety. 2015 Jun;24(6):637-646. DOI: 10.1002/pds.3772. PMID: 25858336.
7. Department of Health and Social Care 2021. Good for you, good for us, good for everybody https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1019475/good-for-you-good-for-us-good-for-everybody.pdf
8. Iqbal A, Richardson C, Iqbal Z, O'Keefe H, Hanratty B, Matthews FE, Todd A. Are there socioeconomic inequalities in polypharmacy among older people? A systematic review and meta-analysis. BMC Geriatr. 2023 Mar 18;23(1):149. doi: 10.1186/s12877-023-03835-z. PMID: 36934249; PMCID: PMC10024437.
9. Age UK 2019. More harm than good. https://www.ageuk.org.uk/globalassets/age-uk/documents/reports-and-publications/reports-and-briefings/health--wellbeing/medication/190819_more_harm_than_good.pdf
10. Barber ND, Alldred DP, Raynor DK, et al. Care homes' use of medicines study: prevalence, causes and potential harm of medication errors in care homes for older people. BMJ Quality & Safety 2009;18:341-346.
11. Parekh N, Ali K, Stevenson JM, Davies JG, Schiff R, Van der Cammen T, Harchowal J, Raftery J, Rajkumar C; PRIME study group. Incidence and cost of medication harm in older adults following hospital discharge: a multicentre prospective study in the UK. Br J Clin Pharmacol. 2018 Aug;84(8):1789-1797. doi: 10.1111/bcp.13613. Epub 2018 May 31. PMID: 29790202; PMCID: PMC6046489.
12. Care Quality Commission (2009). Managing patients' medicines after discharge from hospital.
13. Gnjidic D, Hilmer SN, Blyth FM, Naganathan V, Cumming RG, Handelsman DJ, McLachlan AJ, Abernethy DR, Banks E, Le Couteur DG. High-risk prescribing and incidence of frailty among older community-dwelling men. Clin Pharmacol Ther. 2012 Mar;91(3):521-8. doi: 10.1038/clpt.2011.258. Epub 2012 Feb 1. PMID: 22297385.
14. Public Health England 2019. Dependence and withdrawal associated with some prescribed medicines: An evidence review https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/940255/PHE_PMR_report_Dec2020.pdf
15. Public Health England 2019. An evidence summary of health inequalities in older populations in coastal and rural areas https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/824723/Health_Inequalities_in_Ageing_in_Rural_and_Coastal_Areas-Full_report.pdf
16. Age UK 2021. Breaking down the barriers of ethnic inequalities in health https://www.ageuk.org.uk/discover/2021/october/breaking-down-the-barriers-of-ethnic-inequalities-in-health
17. Care Quality Commission: Medicines in health and adult social care 2019. https://www.cqc.org.uk/sites/default/files/20190605_medicines_in_health_and_adult_social_care_report.pdf
18. British Geriatric Society 2012. A quest for quality in care homes. https://www.bgs.org.uk/sites/default/files/content/attachment/2019-08-27/quest_quality_care_homes.pdf
19. Public Health England 2017. Chronic pain in adults 2017. Health Survey for England https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/940858/Chronic_Pain_Report.pdf
20. Scottish Government 2023. Women's experiences of discrimination and the impact on health: research. https://www.gov.scot/publications/womens-experiences-discrimination-impact-health/pages/4/
21. NHS Business Support Authority. Health care inequalities and prescribing in England. Jan 2023 https://nhsbsa-data-analytics.shinyapps.io/healthcare-inequalities-nhs-prescribing-and-exemption-schemes/
22. Royal Pharmaceutical Society. Tackling health inequalities: Delivering accessible pharmaceutical care for everyone. https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Policy%20statements/Tackling%20Health%20Inequality-110123-A.pdf
23. Public Health England 2021. Pharmacy teams – seizing opportunities for addressing health inequalities https://cpe.org.uk/wp-content/uploads/2021/09/Pharmacy-teams-seizing-opportunities-for-addresssing-health-inequalities.pdf
24 Rogers S, Martin G, Rai G. Medicines management support to older people: understanding the context of systems failure. BMJ Open 2014;4:e005302. doi: 10.1136/bmjopen-2014-005302
25. Howard R, Avery A, Bissell P. Causes of preventable drug-related hospital admissions: a qualitative study. BMJ Quality & Safety 2008;17:109-116.
26. Care Quality Commission 2022. Culturally appropriate care assessed 23/9/23 https://www.cqc.org.uk/guidance-providers/adult-social-care/culturally-appropriate-care

Use of needle-free infusion bags to reduce risks of particulate contamination in the final product

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Abstract

Introduction

This audit aimed to assess the impact of needle-free infusion bags on reducing particulate contamination risks in the final product. The objectives included evaluating the financial implications, identifying potential time savings, and analysing the effect on discarded doses due to particulate contamination.

Methods

Data was collected from an aseptic dispensing unit at Weston Park Hospital, Sheffield Teaching Hospitals NHS Foundation Trust. The study compared two time periods: August to October 2021 (traditional infusion bags) and August to October 2022 (needle-free, **free***flex*+ infusion bags). Data on discarded doses, drug formulations and costs were analysed using Microsoft Excel software.

Results

The implementation of needle-free infusion bags resulted in a significant reduction in discarded infusion bags due to particulate contamination. Comparing 2021 and 2022, there was a 75.3% decrease in discarded bags. The most commonly discarded drug, gemcitabine, showed a decrease from 11 doses in 2021 to 1 dose in 2022. The study estimated cost savings of £19,286.49 over a 3-month period. The isolator time savings were approximately 740 minutes per 3 months, equivalent to an estimated annual saving of 2,960 minutes.

Discussion

The use of needle-free infusion bags demonstrated a positive impact on reducing particulate contamination risks in the final product. Implementation of these bags resulted in significant cost savings and improved time efficiency. The findings suggest that needle-free infusion bags offer a cost-effective and time-saving solution, enhancing patient safety, workflow, and overall patient experience. However, further research and long-term evaluation are recommended to fully understand the comprehensive impact of needle-free infusion bags on aseptically prepared products and their ability to address challenges faced by pharmacy IV SACT services in the United Kingdom.

Conclusion

In conclusion, adopting needle-free infusion bags reduced the risk of particulate contamination, providing substantial benefits to patients and healthcare facilities.

Keywords

Needle-free infusion bags, Particulate contamination, Pharmacy, IV SACT services, Drug discard rates, Cost savings, Time savings, Audit, Patient safety, Aseptic technique.

Introduction

Intravenous Systemic Anti-Cancer Therapy (SACT) medicines can be prepared in a variety of dosage forms following reconstitution and/or dilution, with intravenous (IV) infusion bags being one of the most common vehicles for administration of the final product. NHS trusts in the United Kingdom manage IV SACT preparation through compounding via in-house aseptic units, buying pre-made products from licensed external compounding facilities, or even in some cases by clinical area preparation via the use of closed-system devices. When compounding the product using traditional infusion bags, needles are the mainstream device to transfer reconstituted or concentrate solutions to the infusion bags. However, the use of needles introduces the risk of plastic particles from scraping of additive ports (SPS, 2020). As a result, particles administered to patients through IV infusion may lead to complications, as well as an increased risk of venous thromboembolism (Perez et al., 2016). Therefore, if any particulate contamination is identified at the point of product release or prior to product administration to the patient, the product should be discarded as per British Pharmacopoeia (BP) standards due to risk of patient harm. Use of needle-free bags may be considered in the management of the risks due to particulate contamination (SPS, 2020). This article summarises audit findings from the aseptic dispensing unit in Weston Park Hospital, Sheffield Teaching Hospitals NHS Foundation Trust, which switched from traditional **free***flex*+ (Fresenius Kabi) infusion bags to needle-free **free***flex*+ (Fresenius Kabi) infusion bag for the compounding of chemotherapy and monoclonal antibody products. Currently, **free***flex*+ stands as the exclusive needle-free infusion bags in the current market. While alternative approaches, such as bag-spikes, can be contemplated for establishing needle-free connections, they are associated with distinct limitations and inherent risks.

Method

The data for aseptically prepared products which have been rejected at final release stage has been continuously collected since 2018 as trending of all types of deviations, such as rejected product data should be reviewed and investigated. This includes information such as drug name, date of compounding, dosage form and reason for rejection. This data has been stored in the local Quality Management System (QMS) which complies with ALCOA+ data integrity principles.

Needle-free, **free***flex*+ infusion bags in Weston Park Hospital have been solely in use since the start of August 2022 when transition from standard infusion bags was made in order to reduce particle rejection rates. Therefore, it was decided that the data periods studied would be August to October for years 2021 where traditional infusion bags were used and August to October 2022 where needle-free infusion bags were utilised in compounding of SACT. The data was extracted from the QMS and analysed using Microsoft Excel software to identify relevant products. Data filter has been applied to identify products with a specific timeframe of 01/08/2021 to 31/10/2021 and 01/08/2022 to 31/10/2022. This was further filtered to determine products that were intravenous infusions bags, and finally filtered to identify product rejection due to particulate contamination. This data was then consolidated into two tables to demonstrate product range and the number of doses discarded.

"To identify financial implications, a dispensing software was used to determine the price of the raw materials required to compound the product. These costs were then added together for each period of August to October to give the wastage cost of medicinal products for each year. The cost of consumables such as needles, vial spikes, syringes or cleaning products were not included in this analysis."

To identify financial implications, a dispensing software was used to determine the price of the raw materials required to compound the product. These costs were then added together for each period of August to October to give the wastage cost of medicinal products for each year. The cost of consumables such as needles, vial spikes, syringes or cleaning products were not included in this analysis.

The cost of **free***flex*+ infusion bags is greater than that of traditional injection port infusion bags. Therefore, the price difference per dose unit against the amount used for the 3-month period was taken into account. The total cost for each period was calculated for comparison.

Standard operating procedure for capacity planning was utilised in order to categorise each product into simple or complex preparation. Consequently, this allowed for determination of the time loss due to remaking of discarded products. The procedure sets non-negotiable preparations times of 10 minutes for simple products and 29 minutes for complex products. It is vital to outline that transfer disinfection times into isolator are included in these timings. These timings were multiplied by the identified number or each category, to give a total time wasted from discarding products due to particulate contamination.

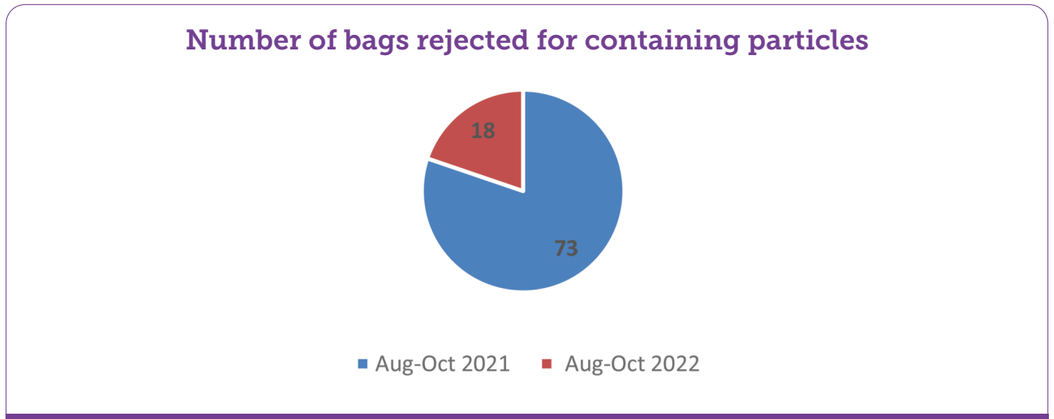
Results

Cost Savings from using free*flex*+ infusion bags August to October (2021 vs. 2022)

When comparing the data for products discarded due to particle contamination, it was found that there was a significant decrease in the number of particles identified when compounding in **free***flex*+ infusion bags. In August to October 2021, 73 infusion bags were discarded due to particulate contamination, compared to only 18 for the same time frame in 2022; a 75.3% reduction in particulate contamination (Graph 1).

The 73 infusion bags discarded due to contamination during August to October 2021 equated to a total of £22,906 of waste. This is in comparison to the 18 **free***flex*+ infusion bags being discarded due to particulates during the same time period in 2022, with an overall cost of £3,619.51. The cost difference calculated between the studied periods of 2021 and 2022 equalled an estimated saving of £19,286.49 over a 3-month period.

The most discarded drug in 2021 was gemcitabine, with 11 doses being discarded due to particle contamination. Graph 3 shows this number was reduced to just 1 dose discarded with particle contamination in the 2022 period. The only drugs to show an increase in discard rates with particle contamination are paclitaxel, with 3 doses discarded in 2022 compared to 2 in 2021 and bendamustine with 0 doses discarded in 2021 and

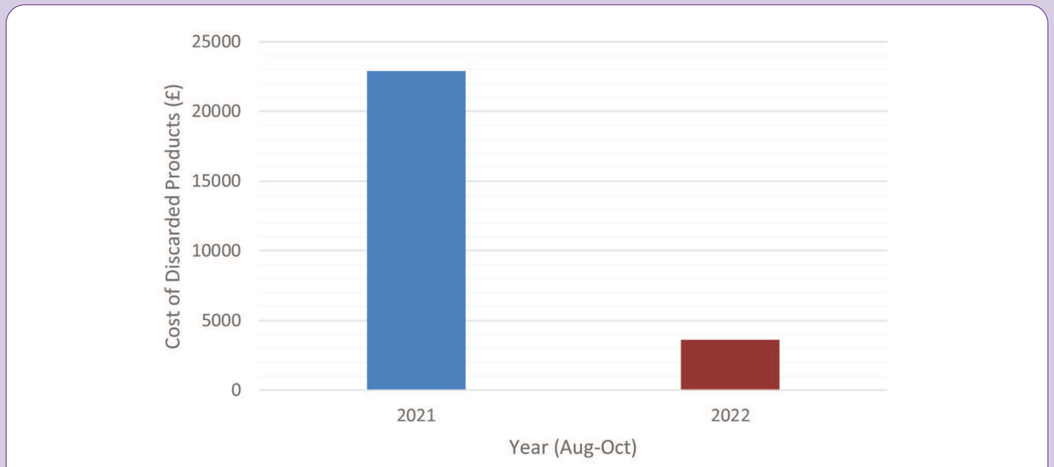


Graph 1: A graph to show the comparison of infusion bags discarded due to particulate contamination.

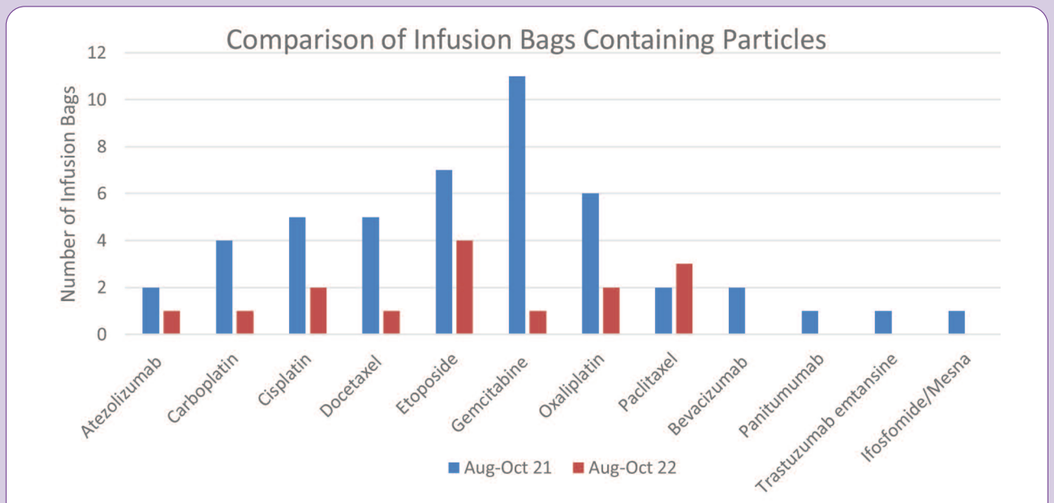
1 in 2022. In the time periods studied, the top 5 most expensive drugs (cost per dose) to be discarded were pembrolizumab, carmustine, trastuzumab emtansine, atezolizumab and ifosfomide/mesna, in descending order. As can be seen from Graph 3, there was a reduction in discarded doses for all top 5 most expensive formulations, with atezolizumab being the only one present in both periods. Overall, 29 different drug formulations were discarded due to particulate contamination in 2021 and 2022 (Aug-Oct); 28 formulations in 2021 and 11 formulations in 2022.

Time Savings from Using free*flex*+ infusion bags

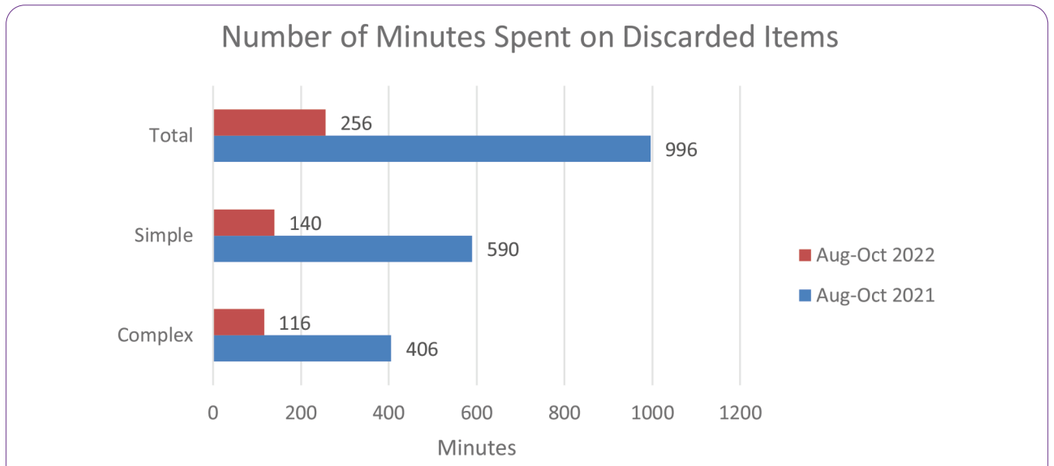
After calculating the time spent remaking discarded products for both time periods, an estimated time saving of 740 minutes per 3 months was achieved by switching to 18 **free***flex*+ bags. In August to October 2021, 73 IV infusion bags were



Graph 2: A graph to show the cost of discarded infusion bags due to particulate contamination during months August to October of sequential years.



Graph 3: A graph to show the comparison of the most commonly and most expensive discarded doses between 2021 and 2022 (Aug-Oct).



Graph 4: A graph to show the comparison of time lost from discarding IV Infusion bags due to particulate contamination.

discarded equating to 996 minutes of time lost. In contrast whilst using the 18 **free***flex*+ bags for the same time period in 2022, 18 IV infusion bags were discarded equating to 256 minutes of time lost. This would equate to an estimated saving of 2,960 minutes per annum.

The breakdown of complex and simple items discarded for each period can be seen in Graph 4, with a decrease in waste for both categories in 2022.

Cost implications of moving to free*flex*+ infusion bags

The total quantity of bags used within the 3-month periods was calculated and multiplied by the cost of the base units. Between August to October 2021, £3,438.70 was spent on glucose 5% w/v and sodium chloride 0.9% w/v infusion bags. During the same period of 2022, a total of £9,097.60 was spent on the new infusion bags. The total cost difference of moving to **free***flex*+ infusion bags over the studied time periods was an increased spend of £5,658.90.

Discussion

The gathered data across the 3-month periods indicates that move to **free***flex*+ infusion bags has had a positive financial impact for the aseptic facility. If the overall cost savings are considered, combining the cost of drugs discarded and the cost of the different infusion bags, it is estimated that an aseptic unit would achieve a saving of £54,510.36 per annum.

"This improvement in lowering the number of particulate contaminations has also had a positive impact on patient safety and patient experience. If a dose is discarded due to a particulate contamination, the patient may have to wait whilst the dose is remade. This might be in addition to waiting for blood results or investigations prior to patients receiving the treatment, and altogether can lead to delays of hours. There is also the improved safety by reducing the likeliness of contamination in the infusion."

The only drugs to have an increase in discard rates in 2022 were paclitaxel and bendamustine. Paclitaxel formulation is notoriously challenging and is known to cause issue with precipitation (Trissel, 2012). It is common practice to filter paclitaxel infusions with a 0.2-micron filter giving set prior to administration to patients as precipitation is extremely common. Due to this, it could be suggested that some of the contamination noted in 2021 and 2022 were in fact drug precipitate. (A risk that, in the opinion of the author, cannot be removed with the use of needle-free bags.)

The benefit of time savings should also be noted. These savings are even more crucial when staffing levels at the aseptic unit are considered. For several years, concerns have been expressed across the UK regarding pharmacy aseptic SACT services and their ability to meet the ever-increasing demand for intravenous systemic anticancer therapy (IV SACT), (Duncombe, Foreman and Biliune, 2022). Any time saving initiative is useful as it allows the work to stay on time or ahead of scheduling and hence improve the workflow within the aseptic unit. Moreover, the ability of nurses to deliver the treatments to patients on time leads to a better staff and patient experience.

In terms of differences between **free***flex*+ and **free***flex* infusion bags, **free***flex*+ bags are lubricated with silicone oil which may present compatibility issues with a very small number of products. Other than this difference, they are identical in composition and production method to the existing **free***flex* infusion bags. There are some changes in maximal addition or overage volumes, therefore impact on the final product specification and shelf-life must be taken into account. It is important to note that extrapolation of any extended shelf-life data (outside of the Summary of Product Characteristics) for biopharmaceuticals requires expert opinion to cover **free***flex*+ infusion bags (Santillo, 2022).

Conclusion

The use of needle-free infusion bags is an alternative solution to traditional infusion bags in the management of risks due to particulate contamination. While the benefits of needle-free infusion bags are clear from this 3-monthly audit, further research is required to characterise the positive impact on aseptically prepared products. As pharmacy IV SACT services are under considerable strain, and approaching a crisis point in the United Kingdom, the benefits of needle-free infusion bags are likely to become more apparent.

Declaration of interests

The authors have no interests to declare.

References

Duncombe, R., Foreman, E., Biliune, J. (2022) *A National Evaluation of Capacity in Intravenous Systemic Anti-Cancer Therapy (IV SACT) Preparatory Services.* Available at: https://www.bopa.org.uk/resources/national-capacity-ivsact-evaluation/ Accessed on 12/02/2023.

Perez, M., Maiguy-Foinard, A., Barthélémy, C., Décaudin, B., Odou, P. (2016) Particulate Matter in Injectable Drugs: Evaluation of Risks to Patients. *Pharmaceutical Technology in Hospital Pharmacy;* 1(2): 91–103.

Santillo, M. (2022) *Review of Fresenius Kabi* **free***flex*+ *intravenous infusion bags to cover all aspects of their potential use in aseptic services and commercial aseptic compounding within the UK.*

SPS (Specialist Pharmacy Service) (2020) Management of Particulate Contamination of Aseptically Prepared Products. Available at: https://www.sps.nhs.uk/wp-content/uploads/2020/11/Management-of-Particulate-Contamination-in-Aseptically-Prepared-Products-V1-November-2020.pdf Accessed on: 12/02/2023.

Trissel, L. (2012) Pharmaceutical Properties of Paclitaxel and Their Effects on Preparation and Administration. Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy; 17(5P2): 113S-139S.hH

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An Assessment of a Patient Self-Ordering Portal in Optimising Delivery Schedules of Homecare Medicines

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Declaration of interests: The author has no interests to declare.

Introduction

Medicines are the most common therapeutic intervention in healthcare and the second highest spend after staff.[1] Medicines optimisation often falls in and out of focus for many large NHS hospital Trusts depending upon priorities. The austerity years that followed the 2008 economic crash saw the Department of Health and Social Care budget rising at a slower pace than before,[2] moving medicines optimisation, and in particular medicines wastage, up the priority list for health policy makers. Austerity prompted several medicines optimisation initiatives, including Steering Groups established by the Department of Health specifically to improve medicines use and reduce waste,[3] and good practice guidance for medicines optimisation developed by the Royal Pharmaceutical Society.[4] These initiatives were extremely timely as in 2014/15 the NHS was tasked with finding £20 billion in efficiency savings to re-invest in frontline care.[5]

The recent challenges caused by the COVID-19 pandemic, which have resulted in more than £60 billion of extra funding allocated to the Department of Health and Social Care in 2020/21 in response to the pandemic, have dramatically diluted the emphasis on medicines optimisation and wastage in secondary care.[2] On the backdrop of the post-COVID austerity measures, it is worth preparing for the future and implementing change that is going to afford better management of medicines. One area of potential focus should be reducing wastage for ongoing medicine supplies delivered directly to the patient's home as part of the homecare model.[6] Clinical homecare is often associated with high-cost drug treatments, accounting for £2.1bn or 30% of the NHS secondary care medicines budget; this would rise to 60% if extended to all medicines known to be suitable for homecare.[7] Given that the use of clinical homecare has been recently growing at over 20% year on year and is anticipated to grow further,[7] it would seem sensible to analyse medicines wastage related to homecare.

A study by Wong et al (2015) evaluated the extent of medicines wastage in homecare for adult renal transplant and HIV patients at Nottingham University Hospitals NHS Trust.[8] The analysis found that medicines wastage in homecare incurs a loss equal to 0.2% of the annual drug expenditure within these treatment areas, and much of it is preventable. The study also highlighted the need for an accurate prescription management database to minimise wastage and avoid costs.[8] The majority of homecare medicines used in the treatment of HIV and renal transplant require ambient storage temperatures; however, a significant proportion of secondary care drugs dispensed and delivered to patients in their own homes require a temperature-regulated supply chain, whereby the treatments need to be transported to and stored in the patient's home at a temperature between 2°C and 8°C.

The purpose of the present paper is to report findings from a comparison between homecare patients treated by the University Hospitals Birmingham NHS Trust (UHB), whose medicine deliveries were managed by a homecare company, and patients who self-managed their deliveries through an online portal. The key objectives of this analysis were: to identify any differences in scheduling between the two delivery models; and to ascertain whether wastage of the selected drugs, which required a temperature-regulated supply chain, was improved for those patients who self-managed their deliveries.

Methodology

Risk assessment

A risk assessment for a typical homecare supply of products requiring temperature-regulated distribution and storage was undertaken. The assessment used a simple 5 x 5 matrix that multiplies the likelihood of the risk event occurring with the impact or consequence of the risk (the higher the score, the higher the risk). Four potential causes of product waste through the homecare process were identified:

1. Temperature deviations within the homecare company's distribution network
2. Incorrect storage of the product by the patient in the patient's home
3. Patient dose changes mid-prescription resulting in wasted product stored in the patient's home
4. Incorrect self-administration of the product by the patient

The amount of product waste is likely to be related to the amount of product prescribed, the amount of treatment delivered to the patient's home, as well as the number and timing of deliveries.

Patient data

This analysis used data from patients who received home deliveries of three drugs requiring a temperature-regulated supply chain: etanercept (including biosimilars), adalimumab (including biosimilars) and darbepoetin alfa. The data set was supplied by Fresenius Kabi, the homecare provider of erythropoietin treatments for UHB patients. Erythropoietin and biologics require temperature-regulated distribution and storage, and erythropoietin patients often undergo dose adjustments that can result in drug waste.

The data was collected between October 2019 and December 2020 from a cohort of 2199 patients under the care of UHB. Since the investigation focused on delivery scheduling, data from the 299 patients who received only one delivery was excluded (only one delivery of the same drug i.e. have not had two or more deliveries), leaving a cohort of 1900 patients who received multiple deliveries.

"The data set used for ongoing analysis contained pseudonymised patient details limited to product type, product dose, home delivery dates and amount of product delivered. Data was examined to reveal patterns of delivery, as well as the dose and drug amount delivered for each patient. Statistical analysis was performed using the SPSS software platform; descriptive statistics are presented."

Delivery schedules

Data was extracted to quantify early or late treatment deliveries, as well as early and late deliveries that coincided with a change of dose. Late deliveries were defined as any delivery to a patient which is greater than the average delivery frequency. For early deliveries, the following 4 categories were defined for analysis:

1. Early delivery irrespective of how early the delivery was
2. Early delivery 7 days in advance of their average delivery cycle
3. Early delivery 14 days in advance of their average delivery cycle

4. Very early deliveries, i.e. another delivery within 4 weeks of their previous delivery or, for darbepoetin alfa, within 84 days of a previous delivery or 4 weeks earlier than the average delivery cycle (this patient cohort received deliveries every 16 weeks on average)

Once patients who had received early deliveries were identified, a validation analysis was undertaken by the UHB Pharmacy team to assess the reasons for early delivery.

Wastage

Product wastage was deemed likely in relation to points 2 to 4 from the risk assessment analysis if a patient had received an early delivery that either did or did not coincide with a dose change. Wastage was assessed in this study based on the fact that each patient who required an early or repeat delivery was likely to do so in order to replace a product that had become unusable for some reason.

Comparative analysis

A comparative analysis was carried out between the UHB patient cohort and a dataset provided by the HealthNet Homecare company, whereby patients used a self-service portal to schedule their own medication deliveries. The purpose of this analysis was to investigate whether the number of late and early deliveries decreased when patients self-managed their delivery times. For the purpose of analysis, HealthNet provided anonymised information from 1646 patients who received a total of 8142 deliveries of etanercept (Enbrel and Benepali) or 2040 deliveries of adalimumab (Humira) over a ~29-month period.

Results

Dose presentations

An initial analysis of 2199 patients receiving 8615 home deliveries identified 13, 3 and 8 different dose presentations for darbepoetin alfa, adalimumab and etanercept, respectively **(Tables 1, 2 and 3).**

Dose presentations	Count of Actual Product Name
Aranesp 60micrograms/0.3ml solution for injection pre-filled syringes (Amgen Ltd)	419
Aranesp 50micrograms/0.5ml solution for injection pre-filled syringes (Amgen Ltd)	344
Aranesp 40micrograms/0.4ml solution for injection pre-filled syringes (Amgen Ltd)	263
Aranesp SureClick 80micrograms/0.4ml solution for injection pre-filled disposable devices (Amgen Ltd)	171
Aranesp 30micrograms/0.3ml solution for injection pre-filled syringes (Amgen Ltd)	113
Aranesp 100micrograms/0.5ml solution for injection pre-filled syringes (Amgen Ltd)	86
Aranesp 20micrograms/0.5ml solution for injection pre-filled syringes (Amgen Ltd)	30
Aranesp SureClick 60micrograms/0.3ml solution for injection pre-filled disposable devices (Amgen Ltd)	25
Aranesp SureClick 40micrograms/0.4ml solution for injection pre-filled disposable devices (Amgen Ltd)	22
Aranesp 130micrograms/0.65ml solution for injection pre-filled syringes (Amgen Ltd)	16
Aranesp 150micrograms/0.3ml solution for injection pre-filled syringes (Amgen Ltd)	3
Aranesp SureClick 100micrograms/0.5ml solution for injection pre-filled disposable devices (Amgen Ltd)	2
Aranesp 10micrograms/0.4ml solution for injection pre-filled syringes (Amgen Ltd)	1
Total	**1495**

Table 1. Dose presentation for darbepoetin alfa

Dose presentations	Count of Actual Product Name
Humira 40mg/0.8ml solution for injection pre-filled pen (AbbVie Ltd)	4291
Humira 40mg/0.8ml solution for injection pre-filled syringes (AbbVie Ltd)	105
Humira 80mg/0.8ml solution for injection pre-filled pen (AbbVie Ltd)	78
Total	**4474**

Table 2. Dose presentation for adalimumab

Dose presentations	Count of Actual Product Name
Benepali 50mg/1ml solution for injection pre-filled pen (Biogen Idec Ltd)	1794
Enbrel 50mg/1ml solution for injection pre-filled MyClic pen (Pfizer Ltd)	397
Benepali 50mg/1ml solution for injection pre-filled syringes (Biogen Idec Ltd)	264
Enbrel 50mg/1ml solution for injection pre-filled syringes (Pfizer Ltd)	131
Enbrel 25mg powder and solvent for solution for injection vials (Pfizer Ltd)	33
Benepali 25mg/0.5ml solution for injection pre-filled syringes (Biogen Idec Ltd)	12
Enbrel 25mg/0.5ml solution for injection pre-filled MyClic pen (Pfizer Ltd)	10
Enbrel 25mg/0.5ml solution for injection pre-filled syringes (Pfizer Ltd)	4
Total	**2645**

Table 3. Dose presentations for etanercept (Benepali and Enbrel)

Following patient-specific investigation of prescriptions and deliveries, the UHB Pharmacy Team found that the product associated most frequently with a dose change was darbepoetin alfa, where 6.5% of patients had a change of dose throughout the analysis period. This was in contrast to adalimumab and etanercept, where only 5 patients in both cohorts, or 0.6% and 1.0% respectively out of each patient cohort, had an altered dosing regimen.

Early deliveries

Across all three products, 1501 patients received one or more early deliveries **(Table 4).** The percentages of patients receiving early deliveries were similar across the product groups, i.e. 90%, 89% and 91% for adalimumab and etanercept (Enbrel + Benepali), respectively. By contrast, only 45% of darbepoetin alfa patients received an early delivery **(Table 4).** Additionally, 34% of darbepoetin alfa, 77% of adalimumab and 77% of etanercept patients received a repeat delivery 7 days earlier than their average delivery frequency **(Table 4).** The analysis also revealed that 20%, 57% and 55% of darbepoetin alfa, adalimumab and etanercept patients respectively received a repeat delivery 14 days earlier than their average delivery cycle. Meanwhile, only 0.63% of darbepoetin alfa patients, 6.5% of adalimumab patients and 23% of etanercept patients received a very early delivery, i.e. within 28 days of a previous delivery **(Table 4).**

Further analysis of data from patients treated with darbepoetin alfa, who were on a 16-week delivery cycle, found that almost 15% had a delivery one month earlier than their average delivery cycle and 3% (14 patients) had an early delivery that coincided with a dose change. Meanwhile, no patients in the adalimumab cohort, and only one patient in the etanercept cohort, had both an early delivery and a dose change. Across all three products, 1460 patients received an early delivery without any obvious cause.

BASED ON PATIENTS	darbepoetin alfa	adalimumab	Enbrel	Benepali	Total
No. patients	685	969	118	430	2202
1st time	208	65	3	23	299
No. patients who had early deliveries (< Average)	216	813	102	370	1501
% Patients who had early deliveries (< Average)	45%	90%	89%	91%	79%
No. patients who had early deliveries (<(Average-7))	161	692	87	315	1255
% Patients who had early deliveries (<(Average-7))	34%	77%	76%	77%	66%
No. patients who had early deliveries (<(Average-14))	96	516	57	229	898
% Patients who had early deliveries (<(Average-14))	20%	57%	50%	56%	47%
No. patients who had very early deliveries (<28)	3	59	14	106	182
% Patients who had very early deliveries (<28)	0.63%	6.53%	12.17%	26.04%	9.56%

Table 4. Proportions of patients receiving early home delivery of darbepoetin alfa, adalimumab and etanercept (Benepali and Enbrel); UHB data*

**Some patients had both early and late deliveries, and therefore the percentages will not equate to 100%*

Late deliveries

It was found that 90% of adalimumab patients (813/903) and 91% of etanercept patients (472/520) received late deliveries compared to the darbepoetin alfa cohort (45%; 216/477 patients). Across all three cohorts, the number of patients receiving a late delivery that coincided with a dose change was low (5% for darbepoetin alfa, 0.5% for adalimumab and 1% for etanercept). In total, 1469 patients received a late delivery without any obvious cause.

Wastage

This study yielded a potential frequency of 17% for product waste across the total patient cohort included in the analysis, i.e. patients who had very early deliveries (within 28 days of a previous delivery for etanercept and adalimumab, or 4 weeks early in the case of darbepoetin alfa).

Comparative analysis

As with the UHB cohort, patients using the HealthNet portal experienced a mixture of early and late deliveries **(Table 5)**. With regards to early deliveries, percentages were similar across the UHB and HealthNet cohorts **(Table 5)**, with a C2 value of 1.23 and 0.75 in the Benepali and Enbrel groups, respectively (against 3.48 for a 5% significance level and one degree of freedom); the differences within the Humira group failed to reach statistical significance. However, HealthNet patients had considerably fewer percentages of very early deliveries (defined as less than 28 days before the delivery due date) compared to those in the UHB cohort, with a variance between the two cohorts of 38%, 84% and 93% for etanercept (Benepali and Enbrel) and adalimumab (Humira), respectively. With regards to late deliveries (> (Average + 14 days)), a low variance was found between the HealthNet and the UHB patient data, apart from the adalimumab (Humira) cohort, where the variance was circa 41%.

	Benepali (etanercept)		Enbrel (etanercept)		Humira (adalimumab)	
BASED ON PATIENTS	Healthnet	UHB	Healthnet	UHB	Healthnet	UHB
No. Patients	1021	429	83	117	542	968
1st time	149	23	8	3	157	65
No. Patients (excl. 1st time)	872	406	75	114	385	903
No. Patients who had early deliveries (< Average)	777	370	70	102	253	813
% Patients who had early deliveries (< Average)	89%	91%	93%	89%	66%	90%
No. Patients who had early deliveries (<(Average-7))	701	315	65	87	208	692
% Patients who had early deliveries (<(Average-7))	80%	77	87%	76%	54%	77%
No. Patients who had early deliveries (<(Average-14))	557	229	55	57	168	516
% Patients who had early deliveries (<(Average-14))	64%	56%	73%	50%	44%	57%
No. Patients who had very early deliveries (<28)	165	106	5	14	13	59
% Patients who had very early deliveries (<28)	18.92%	26.11%	6.67%	12.28%	3.38%	6.53%
No. Patients who had late deliveries (> Average)	777	370	70	102	253	813
% Patients who had late deliveries (> Average)	89%	91%	93%	89%	66%	90%
No. Patients who had late deliveries (<(Average+7))	695	317	60	85	195	692
% Patients who had late deliveries (<(Average+7))	80%	78%	80%	75%	51%	77%
No. Patients who had late deliveries (<(Average+14))	612	252	46	66	159	556
% Patients who had late deliveries (<(Average+14))	70%	62%	61%	58%	41%	62%

Table 5. Comparison of two homecare patient cohorts treated with three separate cold-chain medications, with one cohort (HealthNet) managing their own delivery schedule*

**Some patients had both early and late deliveries and therefore the percentages will not equate to 100%*

Discussion

Key findings

The present study described and compared treatment delivery patterns in homecare patients treated with three cold-chain products: adalimumab, etanercept and darbepoetin alfa.

An important finding of this analysis is the high percentage of early deliveries identified, which may reflect the definition of the 'early' category, whereby all patients were included irrespective of how early the delivery was. A typical homecare process involves patients having their second delivery one or two weeks early to create a "buffer stock", which is designed to mitigate the risk of patients being left without medication. The amount of buffer stock often depends upon the physical size of the delivery, as patients need to store their treatment in their domestic refrigerator, and this becomes problematic if the delivery is too large. From an NHS budget perspective, medication costs impact the frequency of delivery and the amount of buffer stock created. With high-value treatments such as adalimumab and etanercept, buffer stock is usually contained to 1 week to reduce the risk of increased drug waste if a patient stops taking the treatment. The frequency of home deliveries for biologic treatments such as adalimumab and etanercept is currently 8-weekly, which may alter as the price of these treatments decreases with the introduction of biosimilars. The price of darbepoetin alfa has decreased significantly in recent years and therefore the 16-week delivery cycle assigned to this treatment reflects the reduced cost risk associated with waste.

Another finding of relevance is the relatively high frequency of dose changes for patients prescribed darbepoetin alfa compared with the other two therapies. Often, a dose change will result in a new prescription being produced and a new delivery via the homecare provider, with the likely outcome of the medication already within the patient's home being wasted. However, the frequency of waste may be even higher depending on the homecare process, as patients may have "buffer-stock" in their homes too.

"It is difficult to accurately calculate the amount of drug waste associated with the analysed products, mainly due to inconsistent information and poor data records within the hospital database. Nevertheless, our analysis suggests that waste associated with homecare medicines is approximately 17%."

It is thought that between a third and a half of all medicines prescribed for long-term conditions are not taken as recommended, which may incur costs that are both personal and economic.[9] The comparative analysis of the UHB patient cohort and the HealthNet self-managed cohort showed that patients who self-manage their deliveries have significantly fewer very early deliveries. A reduction in early deliveries will invariably result in a reduced likelihood of product treatment waste if a patient has to stop taking their medication or they need a change in dosing regimen compared to a patient who has had repeated early deliveries and has accumulated treatment in their home.

Strengths and limitations

To our knowledge, this is the first study analysing waste associated with homecare delivery of temperature-regulated products. In 2007, the Office of National Statistics carried out an assessment of prescribing costs in primary care and found that 'the full cost of wastage is difficult to quantify because of a lack of robust data and a wide range of reasons for waste',[10] a conclusion echoed by our study. Further work will be required to validate the emerging body of results.

This study also has a number of limitations, mostly stemming from the poor quality of the hospital database records. The dataset from the homecare company was also inconsistent and contained multiple errors. A further limitation was that HealthNet did not have data on darbopoetin alfa, making a direct comparison between self-managed and UBH data impossible. During the analysis, it has become apparent that more accurate data recording is critical to mitigate the waste associated with homecare delivery and, broadly, to inform and develop future medicines optimisation strategies.

Recommendations and future perspectives

Following their analysis of wastage and prescription management of HIV and renal home-delivered medication, Wong et al (2015)[8] made a number of recommendations, including: ensure patients are stable on treatment before starting homecare; rationalise repeat prescriptions; track drug waste via homecare suppliers; and improve communication between all stakeholders involved in the management of a patient's homecare prescription.

We concur and support the above recommendations; in addition, we recommend that measures be taken to ensure homecare patient level data within NHS systems is accurate. Another key recommendation from this study is for UHB to transition current patients who repeatedly have late or early deliveries onto the self-management portal and monitor the impact of the change, rather than relying on the analysis of two separate patient cohorts to inform the medicines optimisation strategy. However, given the recent issues experienced by Healthcare at Home (Sciensus) caused by inadequate risk assessment and testing prior to implementing a new information system, which resulted in avoidable harm to some patients,[11] any change initiated by UHB, and especially one that relies on technology, should be carefully managed. Also, a key consideration when adopting homecare patient self-management delivery portals within a medicines optimisation strategy is to ensure a frequent review of patient behaviour and action any anomalies. Thus, very early or very late deliveries can be identified early, allowing the Homecare Pharmacy Team to act quickly and investigate any unexpected deviations from the schedule.

We appreciate that the workload caused directly by COVID-19 in the short term, as well as the indirect impact of a backlog of clinical work and an increase in waiting times, may not allow the UHB NHS Trust's pharmacy team to closely scrutinise their working practices around dispensing and delivery of cold-chain medications. However, in the longer term, this objective will be prioritised on the trust's medicines optimisation agenda and will be included in the revision of the Hospital Pharmacy and Medicines Optimisation Project.[12]

Conclusion

"The present analysis, undertaken on patients receiving homecare and treated with three different products requiring a temperature-regulated supply chain, shows that patient self-management of medicines delivery has an impact on the number of patients receiving very early deliveries, although the same cannot be said for those receiving late deliveries. Taken together, these results suggest that the use of patient self-management portals as a mechanism of tighter management of the amount of stock in the patient's home is worthy of further investigation."

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these results suggest that the use of patient self-management portals as a mechanism of tighter management of the amount of stock in the patient's home is worthy of further investigation.

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References

1. NICE (2015) Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes (2015). Available from: https://www.nice.org.uk/guidance/ng5. Last accessed October 2023.
2. The NHS budget and how it has changed | The King's Fund. Available from: https://www.kingsfund.org.uk/projects/nhs-in-a-nutshell/nhs-budget Last accessed October 2023.
3. Action plan for improving the use of medicines and reducing waste (2012) Department of Health and Social Care. Available from: https://www.gov.uk/government/publications/action-plan-for-improving-the-use-of-medicines-and-reducing-waste. Last accessed October 2023.
4. Medicines Optimisation: Helping patients to make the most of medicines, Good practice guidance for healthcare professionals in England, Royal Pharmaceutical Society, May 2013. https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Policy/helping-patients-make-the-most-of-their-medicines.pdf Last accessed October 2023.
5. National Audit Office (2011) Delivering efficiency savings in the NHS. Available from: https://www.nao.org.uk/wp-content/uploads/2011/12/NAO_briefing_Delivering_efficiency_savings_NHS.pdf. Last accessed October 2023.
6. Royal Pharmaceutical Society (2013) Professional Standards for Homecare Services in England. Available from: https://www.rpharms.com/recognition/setting-professional-standards/homecare-services-professional-standards. Last accessed October 2023.
7. Clinical Homecare Services Explained, National Clinical Homecare Association. https://www.clinicalhomecare.org/clinical-homecare-explained/for-clinicians/ Last accessed October 2023.
8. Wong et al (2015) Medicines Wastage Evaluation and Prescription Management in Homecare Medicines in Nottingham University Hospitals NHS Trust. Eur J Hosp Pharm. 22;369–371. https://ejhp.bmj.com/content/22/6/369 Last accessed October 2023.
9. NICE (2009) Medicines adherence: involving patients in decisions about prescribed medicines and supporting adherence. Available from: https://www.nice.org.uk/guidance/cg76. Last accessed October 2023.
10. Prescribing Costs in Primary Care. National Audit Office (2007). https://www.nao.org.uk/reports/prescribing-costs-in-primary-care/ Last accessed October 2023.
11. Healthcare at Home – Head Office Inspection report. Care Quality Commission, (2021). https://api.cqc.org.uk/public/v1/reports/3234b3fc-e3d8-43e8-8b10-f640aa53e2b8?20211029000508 Last accessed October 2023.
12. Hospital Pharmacy and Medicines Optimisation Project (2017) Heart of England NHS Foundation Trust – Hospital Pharmacy and Medicines Optimisation Project. Available from: https://hgs.uhb.nhs.uk/wp-content/uploads/Attachment-1-2.pdf. Last accessed October 2023.

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