

Written evidence submitted by the Automating for Better Care (A4BC) Forum (PHA0071)

Submission to the Health and Social Care Committee Inquiry on Pharmacy

We are writing as co-chairs of the newly established Automating for Better Care (A4BC) Forum. Hospital medicines management automation technologies can help counter increased demand on the NHS workforce, ongoing concerns about safe medication practices, and rising NHS costs. The Forum will initially explore why these technologies are neither as comprehensively deployed and nor digitally connected as they could be and what can be done to resolve this. The chairs will seek views and advice from independent experts. The Forum is supported by Beckton Dickinson and has been established as a consequence of their recently published policy vision on connected medicines management (1).

This note sets out some historical policy context about hospital medicines management, looks at the changing NHS landscape, and makes the case to commission a review of hospital medicines management focused on how automation technology would deliver productivity improvements.

The scale of the challenge - reports on hospital medicines management strategy

In 2001 the Audit Commission published “A Spoonful of Sugar – medicines management in NHS hospitals” (2). This was the last external and comprehensive review of hospital medicines management. At the time the annual medicines spend in English NHS hospitals was approaching £1.5 Bn - equivalent to £2.7 Bn today (3), representing around 22% of the annual NHS spend on medicines. By 2022/23 the hospital medicines spend was £9.5 Bn (4) – an over 6-fold increase in 20 years (or 3.5 times taking into account inflation), now representing 50% of the annual NHS spend on medicines. Over the last 4 years medicines spend in hospitals has increased by nearly 40% (4). Of course, over the last 20 years hospital activity has increased and alongside local medicines bill management arrangements, successive Governments have put in place medicines policies to help manage expenditure on medicines. For example, the Pharmaceutical Price Regulation Scheme and its successor schemes have attempted to achieve a reasonable balance between value for money for the public purse and investment in UK PLC; NICE has become very established to help the NHS focus on clinical and cost effective new medicines; NHS England has developed commercial arrangements that have meant good prices and access have been achieved for some expensive new medicines; and of course there have been some important therapeutic developments delivering better patient outcomes. But the fact remains that the spend on medicines has risen considerably, will continue to do so, and probably at even faster rate as demand increases and more new expensive technologies become available.

The same report (2) in 2001 reported that 1,100 patients died each year from medication errors in hospitals. They recommended further development and deployment of clinical pharmacists at ward level to work with prescribers and nurses to improve medicines safety. Research commissioned by the Department of Health and Social Care and published in 2018 (5) reported 1,081 deaths per year from adverse drug events in hospitals. One could argue, despite these avoidable and tragic deaths, that in the context of significantly increased patient throughput and increased usage and complexity of medicines, safety has improved since 2001. But there is clearly a lot of scope for much more

improvement. The researchers also estimated a further 627 deaths per year from adverse drug events from primary care and went on to estimate associated cost of £98.4M pa and occupying 181,626 hospital bed days (6). This led to central investment which accelerated deployment of hospital electronic prescribing systems in hospitals and whilst there is more coverage of this important technology it is still not comprehensive across the NHS.

The Audit Commission in 2001 also reported that hospital nurses can spend 40% of their time on medicines administration using paper drug charts to identify which patient is due medicines. The traditional medicines round in hospitals where wheeling a drug trolley bed to bed checking drug charts for whether medicines are due to be given is still the norm although the impact of e-prescribing deployment, depending on how it has been implemented, will mean that some elements of the drug round will be more efficient and safer.

In-between 2001 and the present day, a review published in 2016 (7) of NHS productivity led by one of us (LC) and, for the pharmacy elements, professionally steered by the other (KR), led to considerable improvements in hospital medicines productivity generating savings well in excess of the £850M expected. This was achieved primarily by reducing unwarranted variation in hospital pharmacy service provision. Medicines stockholding reduced and procurement practices improved, including co-ordinating the response to important branded biological medicines coming off patent. The proportion of hospital pharmacists time on non-clinical activities reduced, allowing them to focus more on patient facing duties and Trust boards and leaders were provided with greater visibility of relevant data, including comparative benchmarking data between organisations.

A further Government commissioned report led by one of us (LC) and professionally overseen by the other (KR) on the provision of NHS aseptic services (where injections are provided by NHS hospital pharmacies and private sector manufacturers to ward nursing staff in ready to administer products rather than having to be prepared and manipulated by nursing staff at ward level) and published in 2020 (8) identified significant scope for productivity and safety improvements. For example, several thousands of nursing staff could be freed up to provide more direct patient care whilst reducing errors by eliminating the need for injections to be prepared by nurses. Government accepted all the recommendations which included rationalisation of products and investment in large, centralised, modern manufacturing facilities serving local hubs, both including the adoption of robotic technologies to carry out labour intensive, repetitive tasks. Implementation by NHS England is underway but for a programme of this size, complexity and importance it is under-resourced and progress is unsurprisingly slow.

The deployment of automated medicines management technology across this period

Whilst medicines management is defined as a series of processes and activities from procurement to medicines administration (9), the core elements directly impacted by technology are: prescribing by clinicians at ward level, dispensing/supply in the pharmacy department, and medicines storage and administration at ward level. There some 50 different processes that underpin these core elements (10) all occupying staff time, many of which could be digitised and/or automated.

The Audit Commission in 2001 recognised that automation technology could play an important part in improving hospital medicines management. It was consequent to this report that automated

dispensing equipment has become commonplace in hospital pharmacy departments. Over the years, this has helped free up pharmacy staff to deliver more clinical, patient facing services, whilst improving safety of the dispensing process and reducing wastage.

Whilst the Audit Commission also recommended deployment of electronic prescribing technology it has taken many years to get to the current level of deployment. There are a number of reasons for this and, despite more widespread deployment following a Government commissioned Short Life Working Group (11) that examined how to reduce medication related harm led by one of us (KR) and overwhelming evidence demonstrating patient safety improvements (12), there are still significant gaps in deployment, and evidence is starting to emerge that poor configuration may be impacting on the delivery of patient safety benefits (13).

Automation of drug storage at ward level was also recommended by the Audit Commission in 2001 but this was seen as lower priority at the time. It is only recently that deployment has begun but it is piecemeal and patchy and largely driven by Trusts wish to gain digital maturity recognition. Drug storage technology frees up staff from resupply of medicines stocks, reduces the opportunity for diversion and theft, and allows nursing staff to focus more on patient care.

Going further, evidence indicates that linking electronic prescribing with bar code driven supply processes and medicines administration (so called “closed loop”) increases safety (14). This digital connection is rare in the NHS hospitals. It can be seen in some private hospital facilities such as the Cleveland Clinic in London.

Overall, reducing staff time spent on stock management, and introducing bar code driven, closed loop, medicines systems, including medicines administration, significantly frees up scarce nursing and other staff to spend more time with patients. These are major benefits that much of the NHS is missing out on.

Interoperability, data generation and data utilisation as a result of deploying and connecting medicines management technology

One of the potential benefits of automation technology is the data generated that can influence the whole medicines management process. For example, automation in the hospital pharmacy department helps with stock control and reduces medicines wastage resulting in significant savings. It can also help with more efficient procurement.

Electronic prescribing systems can be set up to influence medicines choice, whilst also enabling analysis of trends of medicines use. Where automated drug cupboards are used at ward level these will drive resupply and procurement processes whilst also reducing waste. The data generated increases security of medicines by detecting theft and diversion, reducing the risk of both patient harm and medicines abuse. But what is largely missing is interoperability between the various technological elements of the medicines management process. This leads to practical and time-wasting issues such as rekeying prescriptions in pharmacy departments. But it also leads to far less sophisticated data analysis. The standards required to enable to such interoperability are now defined as an NHS data standard.

Connecting the various elements of medicines management would make more sophisticated analysis much more practical which in turn would, for example, drive further efficiencies in the procurement of medicines. It would also facilitate a much greater understanding of real-life value and outcomes of medicines, which would assist in population health studies and play a part in reducing health inequalities.

More sophisticated analysis could inform different models of procurement and reimbursement, as well as facilitate different approaches to the supply of medicines from wholesalers, such as consignment stock arrangements which would improve cash flow. Such interoperability could lead to far more effective data and medicines policy co-ordination (including the management of medicines between and across hospitals and primary care), easier service integration and procurement collaboration across different Trusts, ICS's, regions and nationally. There could be practical benefits such as further rationalisation of some back-office functions in pharmacy and finance departments. It would also lead to more effective negotiations with medicines suppliers, as well as supply chain efficiencies through improved e-commerce arrangements.

Interoperability across and between Trusts would also lead to a more effective response to emergencies, including pandemics, when locating and sharing of medicines across and between Trusts can be critical, as well as informing important clinical and procurement decisions at national level. The technical standards to permit interoperability between the components of medicines management are now in place (15) but again deployment is slow.

For all of the above reasons, it is essential that these technical standards are made mandatory in the Data Protection and Digital Information Bill currently making its way through the Parliamentary process (16).

The changing NHS and pharmacy landscape

For well documented reasons, whilst demand on NHS services will continue to increase, there will be insufficient staff to meet the demand. The NHS Long Term Workforce Plan will help address workforce shortfalls, but the marked increase in staffing that the plan envisages will not materialise for many years. At the same time the nature of the workforce is likely to change too, with more staff focused on clinical care, and less on manual tasks. For the pharmacy profession, all new pharmacists who register from 2026 will automatically become independent prescribers. The NHS is offering the legacy pharmacist workforce opportunities to train as prescribers and to deliver more patient facing clinical services. Skill mix in the pharmacy professions is also set to change as pharmacy technicians take on more responsibility. Automated medicines management technology must be exploited to the fullest extent if clinical professionals are to focus on direct care of patients.

Looking forwards, some new medicines are set to become more complex, in part as a consequence of advances in genomics. These medications can require sophisticated preparation techniques and manufacturing facilities, including at a patient's bedside. Significant changes in professional practice will be needed to ensure the medication is prescribed, prepared and administered safely and efficiently. That said, mainstream care will continue to rely on "traditional" tablets and injections, with increasing volumes used as the population ages, multi-morbidity grows, and patient throughput increases. Again, the necessary technology will need to be in place to meet this demand.

In structural and organisational terms, the NHS aims to become more integrated across sectors, with Integrated Care Boards tasked to make this happen. More financial control will be delegated to ICBs to facilitate this change in approach, whilst also addressing local population health needs. In medicines terms, the development of a more integrated approach to service delivery will require a more joined up and collaborative local medicines policy arrangements, for example bringing together medicines formulary and related mechanisms across an ICB. Again this will be easier and risks better managed if the right technology is in place.

Medicines budget arrangements

In the case of how the medicines budget is deployed, currently there are different financial arrangements across primary and secondary care. In hospitals, medicines are procured by Trusts taking advantage of national deals for branded medicines and national framework contracts for generic medicines. Adherence to the latter is important if the system for generic medicines procurement is to work well and deliver both best value for the NHS and resilient supply of medicines. On occasion some Trusts do not adhere to these arrangements, instead deciding to go down a more local path, ultimately to the disadvantage of the NHS.

VAT is charged on medicines procured in hospitals. In primary care, community pharmacies procure medicines and are reimbursed against what is prescribed by GPs. VAT is not charged on primary care medicines. The VAT differential can lead to services being developed that are dependent on VAT rebates for funding. Homecare medicines services are a good example of this, which has recently been subject to an inquiry by the House of Lords following serious patient safety incidents (17).

Current budget arrangements can also contribute to perverse behaviours with, for example, GPs sometimes refusing to prescribe or take responsibility for some expensive or more complex medicines, or hospitals sometimes pushing medicines cost onto GPs. Outpatient and discharge medication quantities can also be the subject of who pays for what. It is patients that are caught in the middle of these bureaucratic tensions, and can lead at best to inconvenience, at worst to lack of timeliness of treatment.

A single medicines budget across an ICB would simplify this situation. It would help drive integration and innovation such as re-engineering the discharge medicines process, whilst ensuring patients are not caught in the middle of bureaucratic processes. Such reforms would be easier if medicines management systems are more digitised and better connected.

The management of Controlled Drugs

Controlled Drugs are regulated differently to other medicines. Controlled Drugs sit under legislation led by the Home Office. It's primary purpose is to protect the public by preventing diversion and illicit use. This leads to stringent licensing and other arrangements for how they are supplied and used. For example, most Controlled Drugs must be recorded in a register on receipt and supply, storage cupboards are strictly specified, and waste has to be destroyed has to be undertaken through witnessed arrangements. Governance arrangements were also strengthened following the Shipman Inquiry. This is all, of course, appropriate, but in the digital age it can be unclear what is and what isn't permitted, with some elements of the legislation clearly needing updating, for example permitting electronic signatures rather than ink. This lack of clarity and some historic requirements can lead to barriers in the deployment of automated medicines management technologies,

particularly at ward level, despite the technologies leading to improvement in the management of Controlled Drugs. So there is now an urgent need for clarity through national guidance on what can and can't be done with technologies used for Controlled Drugs, as well as modernisation of aspects of the relevant legislation, otherwise the pace and scope of deployment will be markedly slowed down. Of course there must be no risk of undermining the changes and improvements to Controlled Drugs management brought about by the Shipman Inquiry. The necessary checks and balances must remain but technology can aid this given the ready access to digital audit trails.

Leadership and engagement

If change and improvement is to be achieved in hospital medicines management, then leadership will be critical. Rightly, hospital chief pharmacists are seen as the key leaders in this territory. Their expertise is unparalleled. There is evidence that hospital chief pharmacist leadership was critical to benefits delivered during the implementation of the 2016 NHS Productivity Review. But if they are to deliver the further changes needed to medicines management, they will need help from other senior leaders. Trust boards must see medicines management as a priority. It is biggest budget after staff, affects nearly every patient seen, is a core clinical intervention, and occupies a lot of staff time. The modernisation we suggest will deliver significant benefits so whilst the chief pharmacist is central, the CEO, finance director, medical director and nursing director must offer visible and tangible support. This multidisciplinary team effort must be replicated at ICB, regional and national level.

A recent change to medicines legislation which requires hospitals to have a chief pharmacist (all NHS hospitals have a chief pharmacist but it is now a legal requirement) should help with driving the modernisation of medicines management. As a consequence, the General Pharmaceutical Council, the pharmacy professional regulator, is currently consulting on regulatory standards for hospital chief pharmacists (18). These require chief pharmacists to, for example, provide safe services and strategic and professional leadership. The consultation is open until 16 April 2024. Modernisation of medicines management would be an excellent way to help meet those professional regulatory expectations.

Summary

Whilst there have been improvements in hospital medicines management over the last 20 years, current and anticipated changes in the NHS are likely to bring challenges, such as:

- Rising medicines expenditure
- Improving patient safety
- Increased patient demand
- Inadequate staffing levels
- Increased medicines complexity
- Budgetary arrangements that are barriers to integration

- In the light of the pandemic, improvements needed to emergency planning, resilience and response

The NHS productivity review of 2016 delivered improvement to hospital pharmacy services and aspects of medicines management. The acceleration of the deployment of e-prescribing from 2018 has helped improve safety but good medicines management extends far beyond prescribing. So in the context of future increased demand, workforce changes and financial pressures, and insufficient engagement of non-pharmacy senior managers and clinicians, there is now a need to go further and faster.

A comprehensive review of hospital medicines management should be commissioned. It should include foci on:

- how digitally connecting all the elements of medicines management and deploying automation can improve productivity by freeing up staff and improving patient safety
- monitoring and controlling drug expenditure in a more informed, data driven way, delivering significant financial benefits to the NHS,
- how digitising and connecting medicines management processes can underpin an integrated, system wide approach to medicines use, budgets and medicines aspects of emergency planning, resilience and response
- identifying gaps in the evidence base for the use of connected medicines management technology, and set out a plan to fill them.
- engaging the wider NHS leadership team in supporting hospital chief pharmacists in deploying connected medicines management technology
- preparing hospitals for a new type of clinically focused prescribing pharmacist workforce
- examining how best to accelerate the implementation of existing initiatives such as the modernisation of NHS aseptic services and medicines management interoperability standards (including securing their place in the Data Protection and Digital Information Bill) so that the benefits identified are achieved in a timely manner.

We have no doubts that such a review will point the way to very significant financial, safety and workforce deployment benefits for the NHS and the patients it serves.

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References

1. Becton Dickinson. A win-win situation: How optimising medication management technology delivers for patients, taxpayers, and the UK healthcare system. 2023
<https://www.bd.com/documents/UKI/NPM-2816%20CMM%20Policy%20FINAL.pdf>
2. Audit Commission. A Spoonful of Sugar – medicines management in NHS hospitals. 2001
3. Bank of England Inflation Calculator <https://www.bankofengland.co.uk/monetary-policy/inflation/inflation-calculator>
4. NHS Business Services Agency. Prescribing Costs in Hospitals and the Community - England 2018/19 to 2022/23 <https://www.nhsbsa.nhs.uk/statistical-collections/prescribing-costs-hospitals-and-community-england/prescribing-costs-hospitals-and-community-england-202122/prescribing-costs-hospitals-and-community-england-201819-202223>
5. Elliott RA , Camacho E , Campbell F . Prevalence and economic burden of medication errors in the NHS in England. Rapid evidence synthesis and economic analysis of the prevalence and burden of medication error in the UK. Policy Research Unit in Economic Evaluation of Health and Care Interventions. Universities of Sheffield and York, 2018
6. Elliott RA, Camacho E, Jankovic D, et al Economic analysis of the prevalence and clinical and economic burden of medication error in England BMJ Quality & Safety 2021;30:96-105.
<https://qualitysafety.bmj.com/content/30/2/96#xref-ref-5->
7. Department of Health and Social Care. Operational productivity and performance in English NHS acute hospitals: Unwarranted variations. 2016
https://assets.publishing.service.gov.uk/media/5a80bdfae5274a2e87dbb8f5/Operational_productivity_A.pdf
8. Department of Health and Social Care. Transforming NHS Pharmacy Aseptic Services in England. 2020
9. Hospital Pharmacy, 2nd Edition, Ed M Stephens, 2011 Pharmaceutical Press
10. Watcher Robert. The Digital Doctor. Hope, Hype and Harm at the Dawn of Medicine’s Computer Age. 1st Ed. NYC McGraw Hill 2015
11. Department of Health and Social Care. The Report of the Short Life Working Group on reducing medication related harm. 2018
12. Sheikh A, Coleman J, Chuter A, Williams R, Lilford R, Slee A, et al. Electronic prescribing systems in hospitals to improve medication safety: a multimethods research programme. Programme Grants Appl Res 2022;10(7)
13. Personal communication: A. Slee 2024
14. Medication without Harm—WHO Global Patient Safety Challenge on Medication Safety. WHO; Geneva, Switzerland: 2017.
15. Introduction to medicines interoperability NHS Digital 2021
<https://digital.nhs.uk/services/digital-and-interoperable-medicines/guides/introduction-to-medicines->

[interoperability#:~:text=Medicines%20Interoperability%20Standard&text=An%20informatio n%20standard%20which%20sets,computer%20system%2C%20between%20care%20locatio ns.](#)

- 16.** The Data Protection and Digital Information Bill. Government Bill. Originated in House of Commons, Session 2022-23
- 17.** House of Lords Public Service Committee. Homecare medicines services could reduce strain on the NHS and transform patient care. How can the service live up to this potential? 2023
- 18.** General Pharmaceutical Council. Consultation on standards for chief pharmacists 2024

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