QUALITY IMPROVEMENT

Factoring patients' beliefs and values into decisions around anticoagulation: a community-led multi-cycle quality improvement project

Authors: Natalie Smith,[A] Leonie Williams,[B] Sam Harding,[C] Kate Singh,[D] Dur e Shahwar Soomro,[E] Sughra Alawi,[F] Monira Chowdhury,[G] Vardeep Deogan,[H] Ellie Parker,[I] Alex Henson,[J] Fraser Easton,[K] Nixon Leung,[L] Alison Staples,[M] Seema Srivastava,[N] Huzaifa Adamali[O] and Shaney L Barratt[P]

ABSTRACT

Low-molecular-weight heparin (LMWH), prescribed for prophylaxis of venous thromboembolism, is derived from porcine animal products. An audit in our Trust showed that most healthcare professionals (95%, n=58/61) did not consider religious or dietary preferences when prescribing LMWH. Focus groups with local stakeholders helped develop project aims. Quality improvement methods were used to develop, test and optimise interventions over two cycles in our medical unit. Interventions included written and audiovisual information for patients, a staff eLearning module, a policy to guide switching from LMWH to a synthetic alternative and a written prompt reminding doctors to consent patients before prescribing LMWH. The proportion of patients being appropriately consented for LMWH prescriptions increased following our interventions (from <5% at baseline to >80%). Patient and staff feedback was positive, with high demand for a non-animal-derived alternative to LMWH. Simple measures, increasing awareness and knowledge among staff and patients, can improve the number of patients being appropriately consented for LMWH prescriptions.

Authors: [A]respiratory registrar, Southmead Hospital, Bristol, UK; [B]quality & safety improvement practitioner, NHS North Bristol Trust, Bristol, UK; [C]health psychologist and research fellow, Southmead Hospital, Bristol, UK; [D]project support manager, Southmead Hospital, Bristol, UK; [E]clinical fellow, Southmead Hospital, Bristol, UK; [F]fellow in respiratory medicine, Southmead Hospital, Bristol, UK; [G]head of equality, diversity and inclusion, Southmead Hospital, Bristol, UK; [H]senior continuous improvement manager, Southmead Hospital, Bristol, UK; [I]senior communications officer, Southmead Hospital, Bristol, UK; [J]consultant respiratory registrar, Bristol Royal Infirmary, Bristol, UK; [K]intensive care physician, Bristol Royal Infirmary, Bristol, UK; [L]pharmacist, Southmead Hospital, Bristol, UK; [M]pharmacist, Southmead Hospital, Bristol, UK; [N]consultant in peri-operative medicine, Southmead Hospital, Bristol, UK; [O]consultant respiratory physician, Southmead Hospital, Bristol, UK; [P]consultant respiratory physician, Southmead Hospital, Bristol, UK

KEYWORDS: heparin, porcine-derived medications, animal-derived medications, religion

DOI: 10.7861/fhj.2023-0034

Introduction

The National Institute for Health and Care Excellence (NICE) recommends venous thromboembolism (VTE) risk assessment in all patients presenting to hospital.[1] Low-molecular-weight heparin (LMWH), such as enoxaparin (Inhixa®), and unfractionated heparin (UFH), are commonly prescribed first line for the pharmaceutical prophylaxis and treatment of VTE for inpatients. Both LMWH and UFH are derived from porcine animal products, which some patients might object to based on their faith, cultural beliefs or dietary preferences. A synthetic alternative, fondaparinux (Arixtra®), can be used as a replacement in most clinical scenarios. However, this option is not always discussed with patients in hospital.

A variety of religious, cultural and lifestyle beliefs guide people in their dietary decisions and behaviour. These should be considered when providing healthcare and prescribing medication.[2] Many of the common religions in the UK, including Judaism and Islam, have followers who refuse to ingest certain animal products, such as pork, and an increasing number of people are choosing vegan and vegetarian lifestyles.[3]

Academic literature has mainly focused on the knowledge and acceptability of animal-derived products in medicine, through surveying doctors, patients or religious leaders.[4–8] There has been little guidance on how to address this issue and improve conversations with patients around prescriptions.[9]

North Bristol NHS Trust (NBT) serves a diverse community from across Bristol, South Gloucestershire and Somerset. Following a complaint from a Muslim patient who had received enoxaparin without being consented for it, we undertook a root-cause analysis and audit (unpublished). This highlighted that religious and non-religious beliefs were not routinely documented on the majority of hospital admissions (95%, n=41/43), and most healthcare professionals (95%, n=58/61) did not routinely consider religious or non-religious beliefs when prescribing medication. Of prescribers, 23% were unaware of the porcine content of

enoxaparin (n=14/61), and there was poor prescriber awareness of the non-porcine alternatives available (43% aware (n=27/61).

We launched our project in July 2021, working with healthcare professional and stakeholder groups to improve patient communication on heparin prescribing in the Trust and educating staff on the issue. Our project is the first that we are aware of that has addressed this issue using a community engagement approach to change.

Methods

Context

A multidisciplinary project team was led by consultants, and included postgraduate doctors, input from the Quality Safety Improvement Team, the associate director of pharmacy, the Communications department, a health psychologist, a pharmacy support role and a project manager. The project was registered with the Audit Department at NBT (QI Project Number 13301).

The project team consulted local stakeholders, including religious leaders and members of the community, in three patient public involvement (PPI) focus groups. These helped us understand healthcare users' experiences and needs and ensured that we were implementing changes that would address them. A staff survey was administered to understand gaps in staff knowledge, the support they would require and options to address these needs.

The 64-bedded acute medical unit (AMU) at NBT was selected to pilot the developed interventions. AMU is where most medical patients are first prescribed LMWH on admission and, thus, is an ideal location to encourage changes in practice. It also has a rapid turnover of patients, a large staff group and a wide range of patients, allowing for regular, repeated data collection over a diverse group. Our project aim was for 90% of patients admitted to AMU, who are prescribed LMWH, to have had a discussion about their values, beliefs and preferences with regard to the most suitable anticoagulation prescription.

Interventions

A Driver Diagram (Fig 1) was developed to identify the key drivers for change, and possible interventions to address these. An intervention plan was developed based on stakeholder consultations (including PPI) and the project team's work as follows:

Staff training

An E-learning module was created, providing guidance for staff on how to consent patients before prescribing LMWH, as well as the alternative available. It included information about dosing, legal responsibilities of prescribers and patient case studies, and emphasised how consenting patients can positively impact their wellbeing.

Switching Policy

A Switching Policy was developed, containing information on suitability, the indications and dosage of anticoagulants and how to switch from enoxaparin to a synthetic alternative (fondaparinux). This was approved by the Medicines Governance and Management team.

Patient information

Written information on enoxaparin, as well as audiovisual information in four different languages (Somali, Urdu, Arabic and Polish) were developed (see supplementary material S1).[10] Users and staff worked together in the development of this information, incorporating feedback to refine the end result. Four native language speakers guided the tone and use of culturally appropriate language.

Staff communication

Posters, trust E-newsletter articles and direct engagement with staff at handovers and ward rounds raised awareness of the project in the week before and during the piloting.

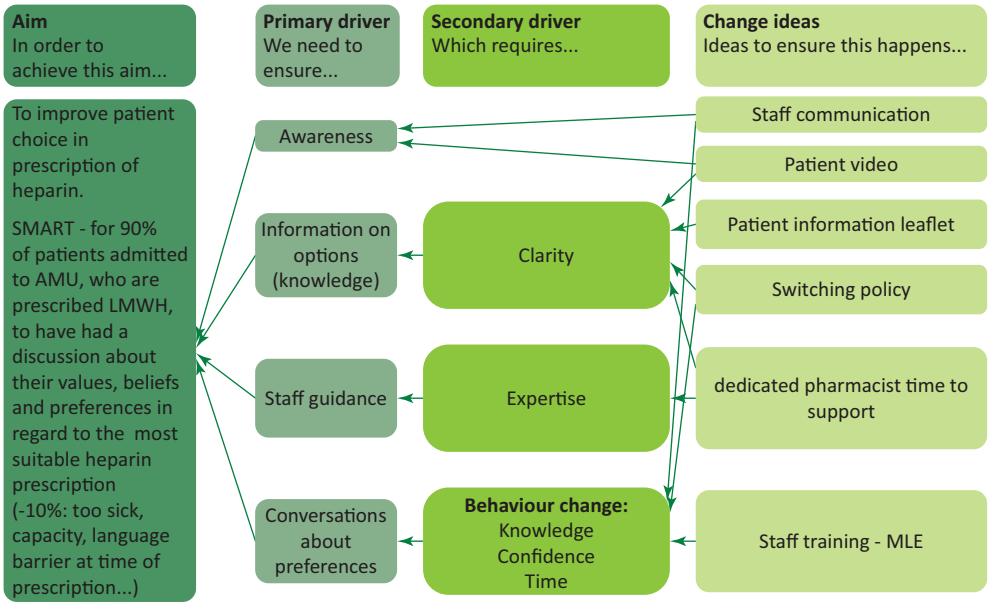

Fig 1. Driver diagram for improving patient choice around the prescription of low-molecular-weight heparin (LMWH). MLE = Managed Learning Environment (Trust electronic learning portal).

Measures

The project drew upon the Institute of Healthcare Improvement's 'Model for Improvement',[11] and techniques from co-design and human-centred design thinking.[12,13] Our primary outcome measure was the proportion of patients admitted to the AMU and prescribed LMWH who were informed and consulted on their beliefs and values before being prescribed the medication. We collected these data in daily reviews by speaking with patients to confirm whether a conversation had happened. Data were collected for 2 weeks following each intervention to audit change and better assess the impact of each package of interventions.

The impact of interventions was evaluated through a patient survey focusing on their experience. This was completed in a convenience sample of eligible patients daily during the 2-week evaluation cycle. A staff survey administered to prescribing staff on AMU, once before and again after the pilot, was used to assess their confidence and knowledge of the topic.

To understand the factors that were supporting improvements, we collected a variety of process measures. These included: data on the number of staff completing our E-learning module; self-reported improvements in staff knowledge and practice; and use of our patient education materials (including views of patient information videos). Balancing measures recognising potential cost differences in the price of medication were monitored by collecting data, via reviews, on the number of patients switching to fondaparinux.

Implementation

PDSA Cycle 1: knowledge and awareness raising: 6–17 June 2022

For our first Plan-Do-Study-Act (PDSA) cycle, we implemented several complementary interventions over a 2-week pilot, all focused on improving staff knowledge and awareness in our pilot setting.

The E-learning module and Switching Policy (guidance on switching from LMWH to synthetic alternative) were launched on our intranet, with a dedicated information page to aid navigation to resources. Targeted emails were sent to postgraduate doctors working in AMU asking them to complete the E-learning module, information posters were put up directing staff to the module with a QR code, and information was included in the weekly Trust newsletter. Project team members attended board rounds regularly throughout the 2 weeks, encouraging staff to discuss anticoagulation decisions with patients and directing them to the resources.

Solicited and unsolicited feedback from patients and staff was collected in addition to planned data collection. Following Cycle 1, all data were analysed and reviewed, areas of improvement were identified, and barriers and facilitators to implementation were considered. Initial learning points included:

- feedback from patients about how important this issue was to them, and welcoming more detailed information;
- staff highlighted that a prompt in the medical notes would be helpful to remind prescribers to discuss this with patients before prescribing LMWH and enable documentation of conversations;
- refinement of the data collection process early on to include verification using medical notes and drug charts as well as patient conversations, to ensure accurate data collection.

This led directly to the refinement of the second intervention.

PDSA Cycle 2: documentation: 22 August–2 September 2022

As part of the second cycle, the project team designed a written prompt and tick box on the medical clerking proforma, aimed at improving the number of patients being appropriately consented before LMWH prescription. A sticker was chosen because of the challenges of changing the Trust-wide paper proforma, as well as an expected migration of clerking paperwork to electronic format in the medium term.

The awareness-raising activities and interventions of Cycle 1 were used in Cycle 2. In addition, information was added into the postgraduate doctor's handbook and the e-learning module was included as part of the training modules for new doctors joining the trust. The second cycle was performed in the same pilot setting.

Data were collected as in Cycle 1, with additional information recorded on whether the tick box in the VTE sticker had been completed.

Results

Results showed an increase in the proportion of patients being consulted on their beliefs and values before being prescribed LMWH (Fig 2).

The fluctuations, especially in Cycle 1, were associated with extreme and unusual operational pressures within the hospital and AMU on those days. A repeat check 9 days following Cycle 1 showed a sustained change in practice, with 53% of patients being consented appropriately for LMWH on admission; however, a subsequent deterioration was seen between the two PDSA cycles. We hypothesised that this could have been because of new doctors joining the Trust or new staff rotating into the department.

Following the introduction of the VTE sticker and the amended interventions in Cycle 2, a sustained improvement was seen in the number of patients being consented for LMWH, with fewer fluctuations. This mirrored the rapid increase in the use of VTE stickers, which were used for 80–90% of patients by the final week of data collection.

Data from the patient surveys indicated the change in practice was welcomed and viewed by patients as important, irrespective of their views or beliefs:

'I was happy it was discussed and I could make the change'

'This is really important for some people so I'm glad I was asked.'

A regular topic was the change in the doctor–patient relationship, with patients feeling valued, respected and engaged in care decisions.

'Makes me feel valued'

'Happy to be thought of and them value my opinions'

'Empowered to be able to make own decision about what medications to take'

Patients were engaged in the topic and open to sharing their views, which were often more complex and nuanced in nature than simply identifying with a certain faith or dietary lifestyle.

'I feel we must have choice. I am against using animals for research and making medicine. It's so important that we learn from this work'

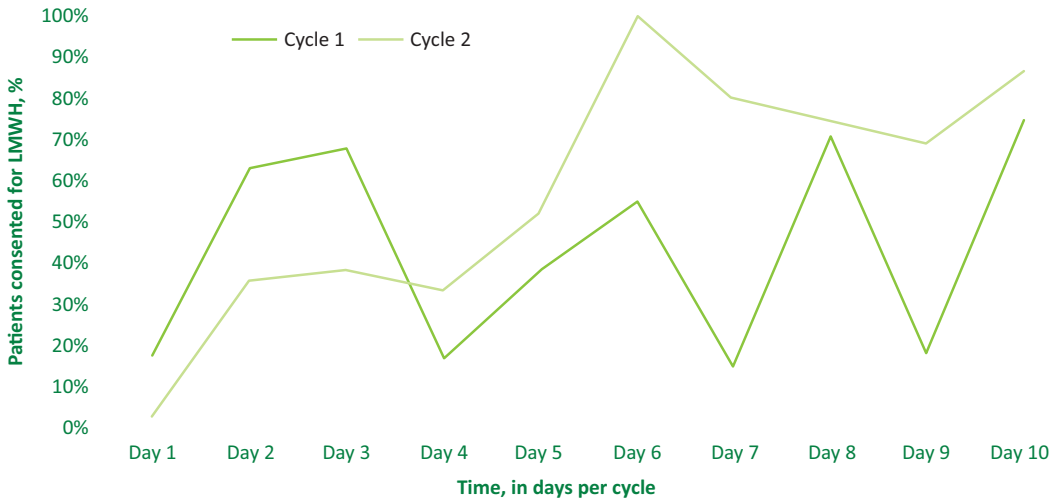

Fig 2. Proportion of patients being consented for low-molecular-weight heparin (LMWH) prescriptions on admission to the acute medical unit (AMU) during both Plan-Do-Study-Act (PDSA) cycles. Fluctuations in Cycle 1 were associated with extreme operational pressures within the hospital. There was a more sustained improvement following the interventions in Cycle 2.

'I don't mind animal products as long as animal been reared happily and not stressed during kill'

The E-learning, targeted at doctors working in AMU, was completed by 64 staff members, reflecting a good uptake of the intervention. A mix of professionals completed the module, including doctors of different grades, nurses, healthcare assistants and pharmacists.

Data collected 2 weeks following the end of Cycle 2 showed a sustained change, with 94% of patients being appropriately consented for LMWH (n=17/18), and high use of the VTE stickers (91% of patients, n=21/23).

The patient information videos were viewed a total of 551 times, across five different languages, emphasising the value of the resource.

Data collected indicated that every 11th patient who was requiring prescription of a LMWH preferred a non-animal-derived alternative (37 patients chose fondaparinux, out of 396 patients eligible for LMWH).

Discussion

Multiple studies over the past decade have shown that most patients and healthcare providers remain unaware of the animal or porcine content of medication, such as LMWH.[4,5] They also reveal that most patients think doctors should inform patients before prescribing such medication[4,7,14] and that a high proportion would choose to avoid animal-based medication if offered a choice.[5,6] Our data are in keeping with this literature, showing that patients welcomed discussions about the animal content of medication, with many opting for a synthetic alternative to LMWH. A recent review on the topic suggested targeting initiatives at three stakeholder groups, including healthcare professionals, patients and the pharmaceutical industry.[9] However, no studies have explored ways of doing this. Our work provides the first example in the literature of how a series of interventions can be implemented within healthcare settings, aimed at patients and staff, to improve the consent process before prescribing LMWH.

The project aimed to increase the proportion of patients being appropriately consented for LMWH prescriptions in AMU. We anticipated that embedding change into an acute admissions ward, with high patient and staff turnover, would provide challenges. We expected engagement to fluctuate according to the pressures within the hospital and the medical take, that different staff groups could prove harder to engage in the project and that embedding lasting change might take longer than our initial cycles.

A key strength of the present project was the early involvement of PPI in the form of our community focus groups. Our aims and interventions were guided from the start by these stakeholders, ensuring that the project remained true to its overall intention of ensuring patients' beliefs and wishes were being respected.

We involved a multidisciplinary team from the outset and aimed our interventions at different staff to increase the engagement across professional groups and promote collective responsibility. This was successful in that the E-learning module was completed by a range of professionals, and different staff groups shared ideas for interventions to help change practice, highlighting the importance of non-prescribers, and their roles, in supporting change.

Our results showed that, during periods of pressure within AMU, the proportion of patients being appropriately consented for LMWH reduced. There was less fluctuation during the second cycle, possibly reflecting the importance of adding a prompt intervention, which placed less demand on the individual and, thus, helped promote and sustain behaviour change, even during periods of high competing demands.

Limitations of our project include its small size and the limited number of cycles carried out thus far. Despite this, we demonstrated considerable improvement in our outcome with our package of interventions. Next steps will focus on the sustainability of practice and its spread across different wards, with the aim that every patient is fully informed before being prescribed LMWH.

Conclusion

The project successfully identified barriers to patients being adequately consented for LMWH prescriptions and addressed these with interventions aimed at patients and staff. The PDSA cycles demonstrated how a series of simple measures can increase staff awareness and knowledge of the porcine content of LMWH, and increase conversations being had with patients before they are prescribed this drug.

Our results demonstrated that there is demand from patients for non-animal derived alternatives and that staff and patients reacted positively to this issue being discussed, with a significant positive impact on patients feeling respected and valued. The current work supports evidence in the literature demonstrating the importance of considering patients' religious, dietary and lifestyle beliefs before prescribing them medication.[6,9]

This is exploratory work and plans are in place to implement the interventions on wards across the Trust, with the goal of ensuring all patients have their beliefs and wishes considered before LMWH is prescribed. It is clear that engagement of healthcare professionals with such issues can wane over time, and that sustained encouragement is required to ensure that positive change is reinforced and embedded. ■

Acknowledgements

This work was sponsored by Southmead Charity. We would like to acknowledge the vital contribution of the individuals involved in our community focus groups, the staff and patients taking part in our project, and the support of the following organisations: Shahporan Islamic Centre, Southmead Bristol Multifaith Forum, The Bristol Muslim Strategic Leadership Group, The Vegan Society and The Dawoodi Bohra Community. We would also like to thank the Southmead Move Makers for helping support this work.

Supplementary material

Additional supplementary material may be found in the online version of this article at www.rcpjournals.org/content/futurehosp: S1. Written information on enoxaparin.

References

1 National Institute of Health and Care Excellence. *NICE Guideline 89: Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism*. NICE, 2018.
2 General Medical Council. *Good medical practice*. GMC, 2013.
3 The Vegan Society. *Worldwide growth of veganism statistics*. www.vegansociety.com/news/media/statistics/worldwide [Accessed 28 September 2023].
4 Sattar SP, Ahmed MS, Madison J *et al*. Patient and physician attitudes to using medications with religiously forbidden ingredients. *Ann Pharmacother* 2004;38:1830–5.
5 Avasarala S, Vaghela K, Dabbagh M *et al*. *Is heparin Halal: a cross-sectional study assessing the acceptability of using subcutaneous heparin products for venous thromboembolism prophylaxis among Muslim patients*. https://apha.confex.com/apha/144am/meetingapp.cgi/Paper/354012 [Accessed 28 September 2023].
6 Babos MB, Perry JD, Reed SA *et al*. Animal-derived medications: cultural considerations and available alternatives. *J Osteopath Med* 2021;121:361–70.
7 Enoch S, Shaaban H, Dunn K. Informed consent should be obtained from patients to use products (skin substitutes) and dressings containing biological material. *J Med Ethics* 2005;31:2–6.
8 Koshy RM, Kane EG, Grocock C. A review of the use of biological mesh products in modern UK surgical practice: a religious and cultural perspective. *Ann R Coll Surg Engl* 2020;102:566–70.
9 Tieu L, Uchi J, Patel N *et al*. Embracing medication needs of patients based on ethical, dietary, and religious preferences. *Am J Lifestyle Med* 2022, in press (DOI: 10.1177/15598276221135538).
10 North Bristol NHS Trust. *Blood thinning medication whilst in hospital*. https://youtube.com/playlist?list=PLKKpDzGOAKLpTYx8jIC7kySI2riJZOrT6 [Accessed 28 September 2023].
11 Institute for Healthcare Improvement. *How to improve*. www.ihi.org/resources/Pages/HowtoImprove/default.aspx [Accessed 28 September 2023].
12 Melles M, Albayrak A, Goossens R. Innovating health care: key characteristics of human-centered design. *Int J Qual Health Care* 2021;33(Suppl_1):37–44.
13 Fylan B, Tomlinson J, Raynor DK *et al*. Using experience-based co-design with patients, carers and healthcare professionals to develop theory-based interventions for safer medicines use. *Res Social Adm Pharm* 2021;17:2127–35.
14 Eyre D. Time to offer patients an alternative to porcine heparin? Rapid response to: reducing the risk of venous thromboembolism (deep vein thrombosis and pulmonary embolism) in inpatients having surgery: summary of NICE guidance. *BMJ* 2007;334:1053.

Address for correspondence: Dr Natalie Smith, Respiratory Medicine, Southmead Hospital, Bristol, UK.
Email: nataliesmith10@nhs.net
Twitter: @natsmithdoc