



Improving prevention of venous thromboembolism: a survey of hospital pharmacists

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A survey of hospital pharmacists in Europe highlights the need for improvements in knowledge about thromboprophylaxis and adherence to local guidelines.

For the first time in a decade, new oral anticoagulants are available for the prevention of venous thromboembolism (VTE). Hospital pharmacists interact closely with specialists and nurses from all disciplines, and they will be pivotal in helping to drive improvements in the implementation of VTE preventive strategies. They are in a unique position to educate all key groups and to help ensure that appropriate therapies are available to prescribers in a timely way and are used optimally.

Venous thromboembolic events result when blood clots form in the venous circulation; they comprise deep vein thrombosis (DVT) and pulmonary embolism (PE). In the general population, VTE is the third most common cardiovascular disease after ischaemic heart disease and stroke [1]. Without appropriate thromboprophylaxis, about 10–40% of all hospitalised patients will develop DVT [2]. Furthermore, 40–85% of patients will develop DVT following major orthopaedic surgery (including elective hip or knee replacement surgery) unless adequately protected with an antithrombotic agent [2]. Evidence-based guidelines, such as those published by the American College of Chest Physicians (ACCP), strongly recommend thromboprophylaxis in patients at risk of VTE. However, adherence to guidelines is poor, and many patients therefore remain unprotected [2]. For example, a survey of almost 70,000 patients admit-

ted to a medical or surgical ward across 32 countries revealed that only 58.5% of all surgical patients considered to be at risk of VTE received the appropriate, ACCP-recommended thromboprophylaxis [3]. Reasons for the current underuse and misuse of thromboprophylaxis could include: a poor level of awareness of the risk and burden of VTE; the sub-optimal benefit-to-risk profile of available therapies; and, until recently, the absence of convenient oral anticoagulants with favourable efficacy and safety profiles [4].

In view of their central role in helping to encourage appropriate use of drug therapies across all specialties, hospital pharmacists can have a major influence on clinical outcomes. Indeed, pharmacy-led programmes for VTE prevention in the US have been associated with a significant increase in the prescribing of VTE prophylaxis and a reduction in the incidence of confirmed cases of DVT [5]. It was therefore appropriate and timely to conduct a survey among European hospital pharmacists, to gain insight into their role, the challenges they face and the opportunities they have to shape future practice.

We report here on a survey that explores the role of the hospital pharmacist in VTE prevention in six European countries.

Methods

A qualitative telephone interview-based survey was conducted with 60 European

hospital pharmacists (19 chief pharmacists, 41 hospital pharmacists) from six countries (France, Germany, Italy, The Netherlands, Spain and UK). At least three cities or regions were covered in each country, and both large and small hospitals were included in the survey. The aims of the survey were to gain insight into:

- the role of the hospital pharmacist in VTE prevention
- the need for improved awareness of VTE and appropriate VTE prevention strategies across Europe
- current challenges and unmet needs in VTE prevention
- the scope for pharmacists to encourage best practice in their local institutions.

Findings

Role of the hospital pharmacist in VTE prevention

The survey results show considerable variation in pharmacy practice between countries, and even between hospitals within a single country. However common, crucial roles of the hospital pharmacist, in relation to VTE prevention, include:

- providing physicians with correct, up-to-date information on all the medications being prescribed
- developing local guidelines
- encouraging cost-effectiveness of pharmacological treatments
- monitoring whether drugs on the formulary are used in accordance with local guidelines
- ensuring that appropriate drugs are available to meet patient, carer and physician requirements.

Need for better awareness of VTE prophylaxis

Pharmacists were asked to consider the level of awareness of VTE preventive strategies in their establishment, and the implementation of these strategies. They assessed the extent to which improvements were needed among various specialist clinicians, among patients and hospital-wide (see Table 1).

Pharmacists

Pharmacists from Germany and Italy

were generally satisfied with the level of awareness of VTE prevention and management among their own profession: 6/10 pharmacists in Germany and 7/10 in Italy said no improvements were needed. Pharmacists from France, Spain and UK were the least satisfied with the current level of knowledge among their profession. Problems centred on the provision of adequate levels of information and training, and appropriate structures from which to operate (specific issues for pharmacists are outlined in Box 1).

Orthopaedic surgeons

Orthopaedic surgeons were generally considered to be well aware of the problems associated with VTE. Of the pharmacists surveyed, some felt there is room for orthopaedic surgeons to improve their adherence to anticoagulation protocols and recommended dosage regimens, their assessment of renal status (and its implications for treatment with low molecular weight heparins [LMWHs]) and in helping to ensure patient adherence to therapy after discharge.

Other specialists

Among the other specialists pharmacists were asked to consider (cardiologists, anaesthetists, haematologists, neurologists, internists and oncologists), it was commonly reported that they could benefit from improving their assessment of patient risk factors and awareness of drug–drug interactions. In general, haematologists were thought to have the greatest level of awareness of VTE and VTE prevention among this group.

Patients

Pharmacists from all six countries identified a need for improved patient education about VTE and the rationale for VTE prevention. Specific patient-related problems are outlined in Box 2.

Hospital-wide

In each country, all or most pharmacists stated that significant improvements could be made in the awareness and implementation of VTE preventive strategies across their hospitals. Specific problems included: inconsistent adherence to standards between departments; high-risk patients not receiving recommended medication (particularly medical patients and long-term inpatients); lack of communication between specialists and poor patient adherence to prescribed regimens following discharge. Common problems reported from all the countries included:

- administration of anticoagulant doses that are sometimes too high or imprecise
- inaccurate or inappropriate assessment of patient risk factors
- lack of awareness of drug–drug interactions

Table 1: Hospital pharmacists believe there is scope for improvement in awareness and management of VTE prevention among pharmacists, physicians and patients

	Level of improvement pharmacists considered necessary (% per rating [n = 60])					
	Big		Some		None	No score*
	1	2	3	4	5	
Hospital pharmacist	0.0	8.3	16.7	48.3	26.7	-
Anaesthetist	0.0	5.0	10.0	53.3	26.7	5.0
Orthopaedic surgeon	0.0	8.3	23.3	43.3	20.0	5.0
Cardiologist	0.0	3.3	13.3	51.7	25.0	6.7
Haematologist	0.0	0.0	10.0	40.0	33.3	16.6
Neurologist	0.0	8.3	23.3	41.7	6.7	36.7
Internist	1.7	8.3	28.3	45.0	13.3	3.3
Oncologist	1.7	5.0	26.7	40.0	16.7	10.0
At the hospital level	1.7	8.3	30.0	58.3	1.7	-
Patients	15.0	26.7	26.7	20.0	5.0	6.7

Pharmacists were asked to indicate their awareness/perception of current VTE prevention management for each of the groups listed, on a scale of 1–5 (where 1 = big improvements needed and 5 = no improvements needed).

*not available, or none of this group in the hospital.

Box 1: Common issues experienced by hospital pharmacists

- Inconsistent levels of knowledge between individuals
- Lack of influence in decision-making
- Lack of specific training in VTE
- Lack of appropriate hospital protocols to manage VTE
- Poor feedback from physician to pharmacist
- Need for new improved medicines

Box 2: Common problems for patients

- Lack of confidence to perform self-injection
- Need for an oral anticoagulant
- Lack of suitable information targeted at them – VTE is often a low priority for nurses or physicians to explain to patients
- Lack of influence of the pharmacist once the patient is discharged
- Inappropriate use of concomitant medications due to a lack of awareness of possible drug–drug interactions

- failure to adhere to anticoagulation protocols
- failure to consider the patient's renal status and its implications for treatment with LMWHs.

Current challenges in VTE prevention

Recording and surveillance of VTE events: is the burden underestimated?

The survey illustrated a need for more detailed follow-up of patients after discharge and better recording of VTE events to monitor the efficacy and safety of therapies. When asked: 'Is VTE increasing or decreasing?' there was a clear lack of consensus, suggesting that formal auditing processes are not generally in place. A lack of rigorous surveillance may account for a significant underestimation of the problem of VTE in some establishments.

Pharmacists have a leading role in developing appropriate hospital guidelines
Generally, hospital guidelines are developed based on international and national guidelines and advice from professional bodies. Hospital guidelines are reviewed and updated regularly every 1–2 years or as new therapies and/or important new information or advice become available. The process and the roles of different specialists in reviewing and updating the guidelines vary between countries. Hospital pharmacists in all the countries included in the survey play a leading role in this process and in ensuring the correct implementation of their local guidelines. Pharmacists in all six European countries stated that a change in the method of administration of a therapy or a new therapy would merit an update to their guidelines.

Common roles for pharmacists across the six countries surveyed included:

- membership of formulary committee
- compilation of clinical trial data for use in discussions
- review of evidence, including recommendations from professional societies
- collaboration across departments on dosage, formulation, etc.
- purchasing decisions
- developing terms for use once a drug is accepted onto the formulary.

Box 3: Key suggestions for hospital pharmacist to encourage best practice

Maintain a high level of knowledge of anticoagulants among all physicians and hospital pharmacists, ensuring that patients receive the correct drug at the correct time

Increase communication between healthcare professionals to improve continuity of care

Pay particular attention to patient adherence to anticoagulant regimens after discharge from hospital

Encouraging cost-effective treatment and optimising formulary resources

The number of anticoagulants on a hospital formulary for VTE prevention varied among the countries from two to seven. Hospital pharmacists form a key part of multidisciplinary committees to evaluate and approve new therapies. Pharmacists from all six countries reported similar responsibilities in the evaluation process including: reviewing physicians' reports requesting the therapy, collecting information (which may include performing literature analyses and evaluating the therapy), assessing overall costs (pharmacoeconomics, cost comparisons and budget impact), preparing reports and determining benefits for a new agent over existing therapies. Among the key drug evaluation criteria cited by all countries were efficacy, cost, safety/tolerability, and convenience for patient and physician.

Responses from pharmacists at the hospitals represented in the survey indicated that pharmacoeconomic data were crucial to the drug evaluation process in Germany, Italy, Spain and The Netherlands, but appeared to be used less often in France and UK. Cost-effectiveness of a new therapy was deemed more important than cost in isolation. Thus, the hospital pharmacists in general thought a drug that is more expensive than current best practice could be accepted if some or all of the following criteria were met: superior efficacy in preventing VTE; more favourable safety profile; reduction in hospitalisation; reduction in overall costs, i.e. reduced risk of acute event; and greater convenience compared with current therapies.

Scope for pharmacists to encourage best practice

The hospital pharmacists surveyed were clear that improving awareness of the burden of VTE and the strong rationale for VTE prevention among both physicians and patients is crucial to improving patient outcomes. There were several suggestions common across countries (see Box 3). The hospital pharmacists noted that the availability of new, oral anticoagulants, with the potential to offer cost-effective, convenient therapy, with good efficacy and safety profiles, offered a potential solution to some of the difficulties revealed by the survey (see Box 1 and Box 2).

Discussion

This survey highlights the important and wide-ranging role of the hospital pharmacist in the prevention of VTE in six European countries. Although differences between the countries were evident, common to all was the key involvement of hospital pharmacists in: keeping all specialists informed about established and new therapies; updating guidelines; evaluating new drugs; and ensuring availability of the most appropriate therapies, which offer favourable efficacy and safety profiles, cost-effectiveness and convenience.

However, this survey revealed that pharmacists felt there are significant gaps in the awareness of VTE and knowledge of VTE preventive strategies among many healthcare professionals. Clear opportunities exist for hospital pharmacists to improve education about VTE among many specialists and patients, and therefore to improve care. Poor awareness of the risk of VTE and the resulting

suboptimal management of thromboprophylaxis among hospital specialists may be due, in part, to a lack of auditing and follow-up of patients, which prevents capture of the true incidence of VTE.

There was general consensus among the hospital pharmacists that key challenges in VTE prevention were:

- improving awareness among specialists of the burden of VTE
- increasing knowledge of anticoagulants and the strong rationale for VTE prevention
- improving understanding of VTE and its management among patients
- increasing communication between different healthcare specialists
- ensuring rapid access to new, improved anticoagulant therapies.

This survey suggests that hospital pharmacists are in a strong position to address many of these challenges. For example, the pharmacist can contribute significantly to improving patient education and ensuring that patients have sufficient information on discharge. Where pharmacists are not currently contributing to patient education, increased involvement offers an opportunity to improve care and patient outcomes. Pharmacists can also have a role in improving continuity of care from hospital to outpatient supervision.

The evaluation criteria for new therapies were similar in all countries. There was agreement that the introduction of additional antithrombotic therapies with a higher cost was acceptable if such therapies demonstrated superior efficacy and/or safety in preventing VTE, a reduction in hospitalisation, a reduction in overall costs and/or improved convenience compared with established therapies. New oral anticoagulants are in development and becoming available that are likely to satisfy the majority of these criteria. Ensuring that guidelines are regularly updated and promptly disseminated to all relevant stakeholders will facilitate

rapid uptake and optimal use of new anticoagulants.

Conclusion

Significant improvements need to be achieved in the level of awareness of VTE among physicians and patients and in the optimal use and management of anticoagulants. Hospital pharmacists can play a key role in driving these improvements. Pharmacists will need to be vigilant in communicating efficacy and safety data to all specialist groups, and in ensuring that local guidelines are followed. They are in a unique position to help educate all key groups on the benefit-to-risk profile of both current and emerging anticoagulant therapies, and to help ensure that appropriate therapies are available to prescribers in a timely way and are used optimally.

Conflict of interest

The authors report receiving honoraria and acting as consultants to Bayer Healthcare AG.

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