A Case for the Management of Anticoagulation Clinics by Pharmacists

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Abstract
Warfarin is one of the most widely prescribed anticoagulants globally for the management of various hyper-coagulable diseases. Despite its potency and reliable bioavailability, it has a narrow therapeutic index and also interacts with several medications hence requiring close monitoring. Pharmacists in developed countries have taken up the role of the monitoring and management of patients on warfarin therapy occasioned by collaborative practice agreements. There has been evidence of cost savings and beneficial outcomes in patients who receive care at pharmacist-managed anticoagulation clinics. This article seeks to share the rationale behind executing anticoagulation clinics managed by pharmacists in Ghana and a potential roadmap to achieving that based on the evidence of other countries.

Keywords: Anticoagulation, pharmacists, warfarin, collaborative practice

Introduction

Anticoagulant drugs such as warfarin (Coumadin) are widely used in managing a myriad of conditions including atrial fibrillation, rheumatoid heart disease and venous thromboembolism. Warfarin, a vitamin K antagonist, is currently the most widely prescribed oral anticoagulant globally and remains the main oral anticoagulation medication for the prevention and treatment of various cardiac, thrombotic and hyper-coagulable diseases (Cabral, Ansell & Hylek, 2011). It has been the mainstay oral anticoagulant agent for the last several decades despite its narrow therapeutic index and difficulties in its use (Nutescu & Wittkowsky, 2004).

Venous thromboembolism (VTE), one of the main conditions which warrants the use of anticoagulant drugs, is currently a major cause of alarm worldwide. There are an estimated 10 million cases annually with the black population being 2.5 to 4 times more likely to be affected by VTE (Medscape, 2019). About 50% of patients with VTE are asymptomatic (McLachlin J *et al*, 1962) which makes this condition even more burdensome. Currently, management of VTE in Ghana is resource constrained. At Korle Bu Teaching Hospital, Ghana's biggest hospital, 340 cases were recorded in 2012, jumping to 1108 cases in 2013. VTE was also found to be the 8th major cause of Out-Patient Department (OPD) attendance at the Medical Department, with 1% of deaths in the Obstetrics and Gynaecology Department being attributed to pulmonary embolism (Korle Bu Annual Report 2011-2013). This data shows thrombotic diseases and hyper-coagulable states are consistently on the rise in Ghana and hence efficient and effective initiation and management of anticoagulant therapy is of great consequence.

Anecdotally, patients who require anticoagulation are often not started on warfarin because of the absence of efficient monitoring systems and the technical challenges associated with the monitoring of warfarin therapy. Patients are often offered the option between warfarin and the significantly more expensive rivaroxaban which requires no monitoring. The few patients who are placed on warfarin are followed up by physicians in the medical and cardiology clinics with little success due to the time-intensive and costly nature of laboratory monitoring of the international normalised ratio (INR). Consequently, patients on warfarin would seldom get their INRs checked on a regular basis. Moreover, there is inadequate laboratory infrastructure to provide timely INRs as most results would not appear in the patient's medical record until days after the test is requested.

Pharmacists Managing and Monitoring Patients in Healthcare Facilities

It is noteworthy that a study by Acheampong *et al*. (2016) detected that the most frequently reported drug with error — thus requiring the most interventions — at Korle Bu Teaching Hospital was warfarin. Pharmacist intervention played a major role in recovering from drug-related errors and preventing critical medication errors from reaching patients. Due to the high, and increasing, incidence of VTE, the need for anticoagulation therapy and monitoring is significant. Warfarin has a narrow therapeutic window and requires frequent monitoring and dose adjustments to maintain its optimal anticoagulant effect through monitoring of the patient's international normalised ratio (Nutescu, Chuatrisorn & Hellenbart, 2011).

Owing to the large need for increased access and improved

quality of anticoagulation care, there is the need for a collaborative practice agreement between pharmacists and physicians to develop an out-patient anticoagulation monitoring service (AMS) with pharmacists playing a vital role. With the current expanded focus on chronic disease management, there is a growing need for a shift in the role of pharmacists in resource-constrained settings from the outdated dispensary role to a more clinical, patient-focused role to address the healthcare workforce shortage (Pastakia SD *et al*., 2010). Ghana's doctor to patient ratio currently stands at one doctor to 10,450 patients as against the World Health Organisation's recommendation of one to 1,320 (Laar *et al*., 2019). This paints a dire picture of the health sector, whose already existing resource constraints have been worsened by the COVID-19 pandemic. In a post-COVID-19 pandemic world, it is important to reduce the burden on hospitals and their doctors, of conditions that could easily be handled at the community pharmacy level by using pharmacists trained in anticoagulant management. In a study by Dwamena J. (2012), patients admitted to the wards, had greater access to nurses and pharmacists, were seen to be more knowledgeable and had better controlled INR levels compared with patients who came directly to the OPD and were educated by doctors/physicians. In another study by Hall *et al*. (2011), it was shown that pharmacist-managed anticoagulant therapy resulted in lower expenditure and better therapeutic outcomes for patients. This study, amongst several others done in the past (Anderson RJ, 2004; Chamberlain MA *et al*., 2001; Poon IO *et al*., 2007; Rudd *et al*., 2010), changed how anticoagulant therapy is managed in the United States of America. With our current resource-constrained environment, it is important that we adopt this strategy to ostensibly reduce the cost burden on patients requiring anticoagulant therapy and improve their therapeutic outcomes. It then becomes, not just advisable, but imperative that more pharmacists are trained and employed in active management of anticoagulation monitoring and dosage adjustments to ensure better healthcare outcomes in Ghana.

With the establishment of a pharmacist-managed anticoagulation clinic, there will be increased collaboration between healthcare providers especially at the community level, which ultimately benefits patients and fulfils the third Sustainable Development Goal which is "ensuring healthy lives and promoting well-being for all". There will also be provided medication therapy management to patients discharged from the hospital to these clinics leading to a decreased incidence of drug errors requiring interventions and further complications which cost the patient time, money and life. Pharmacies and pharmacists also offer the advantage of being more accessible hence patients can be comfortable in accessing anticoagulation services in their communities. These pharmacist-managed anticoagulation clinics will also reduce the burden on hospitals and physicians and reduce the number of emergency department visits as well as hospital admissions. Meanwhile, the physicians will be kept in the loop on their patients' health and patients' cost of therapy will be reduced.

Collaborative practice agreements are one of the bedrocks of healthcare that has been missing in the Ghanaian healthcare scene for too many years. Pharmacists have been operating without giving input into patient care provided by other health professionals. It is time care is centred around the patient, with anticoagulation clinics being one of the avenues to look at. In establishing a pharmacist managed anticoagulant clinic, the foundation for better care in thrombotic disease states will be set, drug errors reduced, patient costs decreased and the patient's quality of life increased.

Initiating and Strengthening Collaborative Practice Agreements

The establishment of any pharmacist- managed anticoagulation clinic will only be as a result of collaborative practice agreements between physicians and pharmacists as seen in the original article by Crader M. *et al*. (2010). As such, the Ghana College of Pharmacists along with the Ghana College of Physicians and Surgeons and the respective governmental agencies would have to draw up the legal framework that protects the patient, health practitioners, and facilities. In addition to this, a standard management protocol or guideline would have to be developed to lead practice and implementation. These nomograms should be established to result in standardised care for all patients on anticoagulant therapy. To pilot the program, key community and hospital pharmacists should be trained and certified in these guidelines. A key aspect to this collaborative practice is the technology needed to implement it. With point-of-care INR test kits now available in most parts of the world as well as the spread of medical laboratories nationwide, there is the potential to expand the collaborative practice. Another key aspect for the management of the anticoagulation clinic will be a management database. Such a database will, among other things, store patient medical data, transmit information from laboratories to clinicians and facilitate the billing process. This database could also serve as the communication platform for the management of other chronic diseases that could be managed outside the hospital.

Conclusion

The rising burden of VTE and the lack of convenient, affordable monitoring and management systems for patients pose a huge health risk to the nation. Empowering pharmacists through the establishment of collaborative practice agreements to manage anticoagulation clinics as done in other healthcare settings is a useful solution to curbing the burden.

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