Improving the Quality of Care – the Case of Anticoagulant Therapy

With each year, medical care has more to offer, yet often at higher costs and seldom without increased risk. Hence, it is not surprising that there is an increasing concern about its quality both among patients and professionals. Continuous improvement is required to provide acceptable quality of medical care, which – given the resources available – minimizes the risks and maximizes the benefits (1).

Long-term oral anticoagulant therapy is a case in point. It has been shown effective in the prevention of embolic strokes due to atrial fibrillation or prosthetic heart valves. However, the treatment may either not benefit patients or can carry risks if not given in an appropriate way.

Improving the quality of care proceeds in several steps, as follows:

a) collecting information about the process of care (as implemented by medical practitioners) and about outcomes (immediate and delayed);

b) discerning and interpreting patterns of performance from the information obtained that characterize and localize both good and questionable practice;

c) intervening to correct deficiencies observed, depending on the nature of the underlying problem; and

d) verifying the effectiveness of undertaken corrective action (2).

A recently published article on assessment and improvement of the oral anticoagulant therapy with warfarin illustrates the above mentioned steps and their results (3). In the text that follows, it is brought, in a shortened version, to the attention of readers of this Journal.

The study included 110 patients, 58 with prosthetic heart valves who were managed by a cardiac institute team and were chosen by proportional sampling, and 52 consecutive patients with atrial fibrillation who were managed by primary care physicians. Patients were included in the study if their international normalized ratio (INR) values had been monitored at least 20 times before the study and if the longest interval between tests did not exceed one month.

Between November 1995 and August 1996, INR values were measured by tests performed on blood samples from the 110 patients. The intervention was implemented during the last months of 1997, and the post-intervention analysis of INR values from the same cohort of patients was done between April and December 1998. All blood samples were collected at patients’ primary care clinics and transported to the regional hematology laboratory for analysis. This laboratory regularly conducts internal quality control.

In the group of patients with atrial fibrillation, primary care physicians managed the dosing and scheduling. The patients with prosthetic heart valves were managed by a nurse of the cardiac institute team in consultation with an attending physician. In either case there were no protocols for the management of the anticoagulant care.

For the purposes of the study, effective therapeutic ranges of INR were determined as follows: between 2 and 3 for the patients with atrial fibrillation, between 2.5 and 3.5 for the patients with aortic prosthetic heart valve, and between 3 and 4.5 for the patients with mitral prosthetic heart valve. Values above and below these were considered outside the therapeutic range.

It was found that 52% of the INR values were below and 16% were above the range, and only 32% were within the therapeutic range. The patient’s diagnosis did not affect anticoagulation control; however, the source of care did, since the INR values within the desired range were found in 35% of the patients treated by the cardiac institute team, and in only 26% of the patients treated by the primary care physicians (p = 0.018). Only 6% of the patients were adequately controlled, and as many as 80% were poorly controlled.

The intervention to improve the quality of this care was introduced. It addressed all steps of blood sample collection for INR testing and of warfarin administration, as follows:

1) Information forms for patients and physicians were distributed.

2) Guidelines for blood sampling and treatment were issued to physicians, nurses, and patients.

3) An education program was established: physicians gave their patients detailed information on the purpose and importance of the therapy; the correct method of taking the drug, its potential side-effects, and how to prevent and identify them; and the effect of food, alcohol, and other medications on anticoagulant control.

4) The technique of collecting samples and their transport from the collection station to the central laboratory was improved. This included collection of samples with a correct blood/citrate ratio, use of tubes not past expiry date, and transport of samples at the appropriate temperature.
After the intervention, the percentage of INR results within the determined therapeutic range increased from 32% to 43%, that below the range decreased from 52% to 36%, and that above the range increased from 16% to 21%. Chi square analysis showed that these changes were significant.

The researchers chose to compare pre-intervention with post-intervention control rather than control of the cohort that received the intervention with a cohort that did not, because they wanted to achieve delivery of acceptable quality of care to all patients.

As the reader can see, the interventional strategy was multidimensional, consisting of an educational program, preparation of guidelines for the management of the oral therapy with warfarin, and preparation of technical instructions for appropriate collection and transportation of blood samples. The study showed that improvement in the quality of long-term anticoagulant therapy was possible. The improvement was considerable, though still not fully adequate since there remained a group of patients with INR values below the determined therapeutic range, and in some, the risk of bleeding was increased due to overcoagulation. Thus, efforts should be continued and a continuous quality improvement instituted, aiming particularly at the causes of deficiency in the two last-mentioned groups of patients and applying appropriate solutions (4). It should be emphasized that the study intervention did not focus on activities of physicians and nurses only, but rather on other parts of the system in which these interact as well, an important prerequisite for continuous quality improvement (5).

This study exemplifies the importance of continuous quality assessment and improvement not only in routine medical practice, but also in clinical research. Efforts to measure and improve the quality of care can directly affect results of clinical research and their subsequent application in medical practice.

Acknowledgment

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References