

Editorial Focus

More on thromboprophylaxis: Electronic alerts in hospitalized patients at risk of venous thromboembolism

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Venous thromboembolism (VTE) is a severe but predictable disease. Nowadays it represents one of the main causes of morbidity and mortality in developed countries. The occurrence of VTE is especially high in hospitalized patients (1, 2), pulmonary embolism being the more frequent cause of death in these patients (3, 4). Scientific societies and working groups on thromboembolism have put a lot of effort into editing and spreading clinical guidelines and protocols to lower the incidence rates of VTE.

Using the knowledge of risk factors associated with the appearance of VTE a valid point-scale-system which quantifies the degree of risk of developing VTE, and suggests a tailor-made thromboprophylaxis has been established (5, 6). Nevertheless, recent publications or audit systems practiced from time to time in hospitals reveal that the use of a thromboprophylaxis is not optimized and more must be done to prevent VTE (7, 8). The lack of systematic evaluation of thrombotic risk in hospitalized patients and concomitant diseases associated during their stay in hospital, result in a low evaluation of the risk and an underuse of prophylactic action (9).

One of the ways to improve the efficiency and introduction of the thromboprophylaxis is the implementation of computerized systems of alerts, the like of which have already been in use in medical care for the last five years (8). In hospitals in which patients' clinical histories are computerized, with the use of current technology and a specific software program, it is now possible to systematically evaluate the risk of VTE and indicate a suitable prophylactic measure. This information is then of great value in order to apply the correct therapeutic measures. Unfortunately, these computer systems are not always accepted by the physician, their efficiency being just 30% in hospitals in which they have been implemented (10).

In this issue of *Thrombosis and Haemostasis*, Lecumberri et al. (11), show the results of the efficiency of an electronic alarm system for the prevention of VTE. The authors use a computer program linked to the patients' database of a University Hospital (University Clinic of Navarra). It is an interventional study that includes study and control groups. The program uses the risk fac-

tors included in the PRETEMED guide (12) for medical patients and the guide of the ACCP for surgical patients (13). After calculating the final score, an alarm is sent to the patient clinical history, giving the physician the freedom to apply or not to apply thromboprophylaxis measures. Medical and surgical patients were considered separately in order to analyze the efficiency of sent alarms. The primary end point was the appearance of symptomatic VTE, 24 hours after admission and during hospitalization.

The authors included 12,397 patients stratified in two groups: intervention group and control group. The recruitment period was from January to June 2006 and January to June 2007. The control group was compromised of consecutive patients admitted from January to June of 2005. In this study, 32% of the patients were considered at high risk for VTE, most of those being of surgical pathology, few alerts appearing for medical patients. The alerts undoubtedly improved the prevention, especially in patients with medical pathologies, statistical differences even being seen between the first period of intervention and the second one, and both with the control group. The relative reduction of VTE was 46.6%. Probably the most useful conclusion from the study is the need to do more and better thromboprophylaxis in medical patients who are classified as being at high risk.

The authors indicate limitations of the study: the use of a historical control group; the risk factor differences between groups; short follow-up (only during hospital stay); and the lack of information about bleeding complications. As in other similar studies recently published, the results may be affected if the clinician is forced to recognize the alert, or if he feels that he is being observed (14). On the other hand, Baroletti et al. (10) indicated that 66% of the alerts are ignored, and they suggest the introduction of a software which would give friendly alerts and would be of easy management.

In a similar article, Kucher et al. (14) reported that the rate of VTE reduction was 41%, although they performed a long follow-up for 90 days. This result is very similar to the one reported by Lecumberri et al. (11), indicating the fact that the majority of thrombotic complications appeared during the period of hospi-

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talization (2). These studies revealed that the situation surrounding thromboprophylaxis is not simple. It is necessary to adapt the computer programs to the clinical reality of daily hospital practice which will facilitate its use by medical staff. In addition, this software could be transferable to the majority of hospitals in

order to realize large cooperative studies with a higher number of patients. The electronic systems must not, however, replace the judgement by medical criteria, although in our information-driven society these electronic tools may help to support the complex tasks of professional physicians.

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