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Increased rate of prophylaxis against venous thromboembolism due to eAlerts

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Introduction

Pharmacological or mechanical prophylaxis remains underused despite the fact that it effectively reduces hospital-acquired venous thromboembolism (VTE). Previous studies have shown that prophylaxis can be increased by electronic alerts (eAlerts) in wards of internal medicine. The purpose of this cluster randomised controlled trial was to determine the impact of a hospital-wide roll-out of eAlerts on the rate of VTE prophylaxis in a teaching hospital.

Methods

The 6 departments (31 divisions) of our institution were assigned to the two study groups by cluster randomisation. In the intervention group, an eAlert was displayed in the electronic patient chart if no pharmacologic or mechanical prophylaxis had been ordered within 6 h after admission or transfer. The eAlerts provided evidence-based guidelines on VTE prophylaxis. The rates of prophylaxis were determined as the primary endpoint for both (i) the admission wards and (ii) the wards patients were transferred to. All patients staying at least 24 h in a ward were included. Patients transferred from an intervention to a control ward and vice versa were excluded. The use of VTE prophylaxis was analysed during both 3 months periods before (6–8/2011) and after (9–11/2011) the roll-out of the eAlert system. Additional parameters were assessed as secondary endpoints in a limited random sample of 496 patients, to detect unexpected major effects on clinical outcome. Two angiologists retrospectively reviewed the patient charts and adjudicated the adequacy of the presence or absence of prophylaxis.

Results

In (i) admission wards, the prophylaxis rate in the intervention group increased by 5.1% from 64.5% (1886 patients with prophylaxis vs. 1040 without) before to 69.6% (2043 vs. 891) after activation of the eAlerts (p <0.0001), whereas no significant change was observed in the control group (64.4% before [2132 vs. 1179], 65.6% after [2372 vs. 1242], p= 0.29). In (ii) transfer wards, a similar effect was observed, increasing in the intervention group by 5.6% from 82.1% (968 vs. 211) to 87.7% (1045 vs. 147) following the eAlert activation (p = 0.0002), compared to no significant change in the control group (77.1% [1410 vs. 419], 78.9% [1588 vs. 424], p = 0.17). The impact of the eAlerts was also reflected in the intervention group by a significant increase of prophylaxes ordered immediately after displaying the eAlert (p = 0.0004), whereas no significant increase was observed in the control group. No significant differences were found in a random sample of 496 patients analysed for events of VTE or bleeding (occurring in <1%) and adequacy of VTE prophylaxis during hospitalisation.

Discussion

To overcome alert fatigue, the eAlert was displayed only if no prophylaxis orders were placed within 6 h after admission or transfer of a patient, giving the physician sufficient time to order prophylaxis. This advanced design successfully reminded the physicians of indications for VTE prophylaxis. In conclusion, eAlerts providing evidence-based guidelines increase the use of VTE prophylaxis not only in internal medicine but also on a hospital-wide scale.

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