Viscoelastic point-of-care testing to assist with the diagnosis, management and monitoring of haemostasis: a systematic review and cost-effectiveness analysis

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Plain English summary

Diagnosis, management and monitoring of haemostasis

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Bleeding can occur as a result of surgery or injury, or because of problems with the blood clotting process. Patients with bleeding usually require a blood transfusion and/or (re)-operation, both of which may lead to increased illness and death. It is important to appropriately treat the cause of the bleed and reduce the blood loss. ROTEM (ROTEM® Delta, TEM International GmbH, Munich, Germany; www.rotem.de), thromboelastography (TEG® 5000 analyser, Haemonetics Corporation, Niles, IL, USA; www.haemonetics.com) and Sonoclot (Sonoclot® coagulation and platelet function analyser, Sienco Inc., Arvada, CO, USA) are 'viscoelastic' (VE) methods developed to monitor the clotting process. They are performed near the patient and can help differentiate between abnormal bleeding (due to surgery) and a clotting disorder. VE testing methods offer two key potential benefits over standard laboratory tests (SLTs): they provide results in a shorter timescale and provide the additional information on the clotting process. This means requirements for specific blood products can be targeted and so the patient is not subjected to risks associated with unnecessary transfusion.

This assessment aimed to determine the effectiveness of VE devices to assist with the assessment of clotting disorders during and after cardiac surgery or trauma; we also planned to include information on the management of excessive bleeding post childbirth but there was insufficient evidence. We found that VE testing using ROTEM or TEG may be effective in reducing the numbers of cardiac surgery patients receiving blood product transfusion. We did not find any studies on the clinical effectiveness of Sonoclot or on the clinical effectiveness of any VE device in trauma patients. Cost-effectiveness analyses indicated that VE testing was cost-saving and more effective than SLTs in both patients undergoing cardiac surgery and trauma patients.

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