Why choose ROTEM®?

ROTEM® benefits
**Thromboelastometry**

ROTEM® is fast

ROTEM® can discriminate between dilutional coagulopathy and thrombocytopenia

ROTEM® is precise

ROTEM® is effective:  
General  
Cardiac  
Trauma

ROTEM® is predictive

ROTEM® quickly detects fibrinogen deficiency, also during cardiac surgery

**Aggregometry**

ROTEM® measures platelet aggregation

**Benefits**

ROTEM® features
ROTEM® is fast

“Preliminary test results were available after a 5-minute waiting period, and the majority of the full test information after 10 to 20 minutes.”

“ROTEM is a point-of-care device that rapidly detects systemic changes in in vivo coagulation in trauma patients.”

“With a threshold of clot amplitude at 5 mins of <35 mm, rotational thromboelastometry can identify acute traumatic coagulopathy at 5 mins and predict the need for massive transfusion.”

“We recommend the use of A5 or A10 values since they exhibit an excellent linear correlation to MCF with a fixed bias for each ROTEM test.”

“A5 as an early variable of clot firmness is effective in detecting critically low PLT and Fib. A5 can therefore be a reliable fast index guiding transfusion therapy in hypocoagulable patients undergoing LDLT.”

“ROTEM® variables demonstrated clinically relevant correlations with PLT counts and fibrinogen levels. Decreasing levels of fibrinogen can be quickly determined (<15-20 min) using FIBTEM.”

“We recommend the use of Clot Firmness after 5 or 10 min to allow earlier assessment and potential therapeutic action.”
“ROTEM® results were available within 15 min and therefore much faster than standard tests.”

Using reagent-supported thromboelastometry (ROTEM) to monitor haemostatic changes in congenital heart surgery employing deep hypothermic circulatory arrest.


“Turnaround time for ROTEM tests, 12 minutes, was comparable with emergency requests for platelet count, 13 minutes, and shorter than emergency requests for fibrinogen levels, 37 minutes.”

“EXTEM A5 and FIBTEM A5 showed an excellent correlation with A10 and MCF.”

Diagnostic Performance and Therapeutic Consequence of Thromboelastometry Activated by Kaolin versus a Panel of specific reagents.


“Simultaneous assessment of extrinsic and intrinsic coagulation pathways, investigating fibrin polymerisation and the influence of heparin or fibrinolysis (TEM) provides more detailed and accurate diagnosis than using kaolin (TEG) alone, shortens the time for diagnosis, and helps to avoid administration of platelet concentrates when fibrinogen substitution would be more appropriate.”
Interoperator and Intraoperator Variability of Whole Blood Coagulation Assays: A Comparison of Thromboelastography and Rotational Thromboelastometry


“All interoperator CVs were significantly lower for ROTEM analyses compared with TEG.”
“This series of results suggested ROTEM analyses are more reproducible than TEG and, consequently, that ROTEM may be better suited for use in a multiuser environment.”

Reduction of Fresh Frozen Plasma Requirements by Perioperative Point-of-Care Coagulation Management with Early Calculated Goal-Directed Therapy.


“The implementation of perioperative POC coagulation management algorithms based on early, calculated, goal directed therapy with fibrinogen concentrate and PCC is associated with a reduction in the transfusion requirements for FFP, PRBC and platelets as well as with a reduced incidence of massive transfusion.”
“The postoperative chest tube drainage and the numbers of major bleeding and surgical revisions resulting from bleeding were significantly lower in the group with thromboelastometry guidance.”

“Transfused units of RBCs, FFP, and any allogeneic blood products were significantly lower in the group with thromboelastometry guidance.”

“Implementation of POC algorithms including a comprehensive bundle of POC diagnostics (thromboelastometry and whole blood impedance aggregometry) … seems to be complex but most effective in reducing perioperative transfusion requirements and has been shown to be associated with a decreased incidence of thrombotic/thromboembolic events, transfusion-related adverse events, as well as with improved patients' outcomes including 6-month mortality.” (review 16 studies, 8507 cardiovascular surgical patients)

“Hemostatic therapy based on POC testing reduced patient exposure to allogenic blood products and provided significant benefits with respect to clinical outcomes.”

“The secondary outcome parameters of fresh frozen plasma and platelet transfusion rates, postoperative mechanical ventilation time, length of intensive care unit stay, composite adverse events rate, costs of hemostatic therapy, and 6-month mortality were lower in the POC group.”

“ROTEM-guided transfusion algorithm was associated with a significant decrease in the cumulative number of transfused allogeneic blood units.”

“ROTEM usage was associated with a reduced risk of massive perioperative transfusion.”

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**Transfusion of Allogeneic Blood Products in Proximal Aortic Surgery With Hypothermic Circulatory Arrest: Effect of Thromboelastometry-Guided Transfusion Management.**

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**Potential value of transfusion protocols in cardiac surgery.**

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**Point-of-Care Testing A Prospective, Randomized Clinical Trial of Efficacy in Coagulopathic Cardiac Surgery Patients.**
Weber C F et al.; Anesthesiology 2012; 117:531–47

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**Thromboelastometrically guided transfusion protocol during aortic surgery with circulatory arrest: A prospective, randomized trial.**
TEM-guided haemostatic therapy with fibrinogen concentrate and PCC reduced the exposure of trauma patients to allogeneic blood products.

“POC testing combined with administration of coagulation factor concentrates was associated with decreased incidence of blood transfusion”

“POC testing combined with administration of coagulation factor concentrates was associated with decreased incidence of thrombotic/thromboembolic events”

“Following algorithm implementation, the incidence of massive transfusion and unplanned reexploration decreased.”

“Postoperative plasma transfusion (p = 0.038), recognized incidents (p = 0.048), and resulting costs on coagulation treatment (p = 0.049) were significantly reduced.”

Transfusion in trauma: thromboelastometry-guided coagulation factor concentrate-based therapy versus standard fresh frozen plasma-based therapy.


First-line Therapy with Coagulation Factor Concentrates Combined with Point-of-Care Coagulation Testing is Associated with Decreased Allogeneic Blood Transfusion in Cardiovascular Surgery: A Retrospective, Single-center Cohort Study.


Thromboelastometry Based Early Goal-Directed Coagulation Management Reduces Blood Transfusion Requirements, Adverse Events, and Costs in Acute Type A Aortic Dissection: A Pilot Study.


ROTEN® is effective in cardiac surgery

ROTEN® is effective in trauma
“Our experience implementing and adhering to a transfusion algorithm is in accordance with previous studies showing significant reduction in the number of transfusions administered and decrease of blood loss and costs.”

“Thromboelastometry (ROTEM) allowed rapid and reliable diagnosis of the underlying coagulopathy and guided the haemostatic therapy”.

“Observed mortality appeared lower than the mortality predicted by the TRISS and by the RISC score”.

“In the present study, EXTEM A5 and FIBTEM A5 showed an excellent correlation with A10 and MCF. Consequently, EXTEM A5, A10, and MCF showed a comparable correlation with platelet count, and FIBTEM A5, A10, and MCF were similarly correlated with fibrinogen levels. In addition, A5, A10, and MCF had the same ability to predict clinically relevant thrombocytopenia and hypofibrinogenemia during cardiac surgery.”
“The amount of cryoprecipitate needed for replacing mainly the fibrinogen could be predicted with high sensitivity and specificity.”

“In contrast to a fixed ratio of FFP:PC:RBC, goal-directed coagulation therapy aims to adapt treatment to the actual needs of the individual patient, based on viscoelastic test results. This “theragnostic” concept offers several potential advantages:

• Rapid assessment of coagulation status and prediction of the need for massive transfusion
• Improving and maintaining clot quality in TIC”

“FIBTEM A10 and FIBTEM MCF provided similar predictive values for massive transfusion in trauma patients to the most predictive laboratory parameters.”

“When compared with standard coagulation tests, ROTEM® parameters accurately detect TIC and also proved to be independent factors associated with both mortality and RBC transfusion”.

“With a threshold of clot amplitude at 5 mins of <35 mm, rotational thromboelastometry can identify acute traumatic coagulopathy at 5 mins and predict the need for massive transfusion.”
Fibrinogen Concentration Significantly Decreases After On-Pump Versus Off-Pump Coronary Artery Bypass Surgery: A Systematic Point-of-Care ROTEM Analysis.


Fibrinogen Concentration Significantly Decreases After On-Pump Versus Off-Pump Coronary Artery Bypass Surgery: A Systematic Point-of-Care ROTEM Analysis.


Use of fibrin-based thromboelastometry for cryoprecipitate transfusion in cardiac surgery involving deep hypothermic circulatory arrest during cardiopulmonary bypass.


Fibrinogen concentration reduces intraoperative bleeding when used as first-line hemostatic therapy during major aortic replacement surgery: results from a randomized, placebo-controlled trial.


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Bleeding management with fibrinogen concentrate targeting a high-normal plasma fibrinogen level: a pilot study.


*In cardiac surgery, the use of liquid system reagents is recommended
**ROTEM® quickly detects fibrinogen deficiency, also during cardiac surgery**

“FIBTEM MCF did not change significantly with addition of low-dose heparin, high-dose heparin and protamine, and tranexamic acid... compared to the native sample.”

Reduction of Fresh Frozen Plasma Requirements by Perioperative Point-of-Care Coagulation Management with Early Calculated Goal-Directed Therapy.


“FIBTEM MCF did not change significantly with addition of low-dose heparin, high-dose heparin and protamine, and tranexamic acid... compared to the native sample.”

Comparison of Whole Blood Fibrin-Based Clot Tests in Thrombelastography and Thromboelastometry.


“FIBTEM MCF did not change significantly with addition of low-dose heparin, high-dose heparin and protamine, and tranexamic acid... compared to the native sample.”

**ROTEM® measures platelet aggregation**

“The discrimination between normal and Aspirin-samples was identical between Multiplate® and ROTEM® platelet using AUC=30 as cut-off and arachidonic acid for stimulation. Also Aspirin resistance is reliably detected by both devices.”

Evaluation of the new device ROTEM® platelet.

Lang et al.; Hämostaseologie, Heft 1 2014 (1-108)

“The discrimination between normal and Aspirin-samples was identical between Multiplate® and ROTEM® platelet using AUC=30 as cut-off and arachidonic acid for stimulation. Also Aspirin resistance is reliably detected by both devices.”

*In cardiac surgery, the use of liquid system reagents is recommended*
ROTEM® benefits

Easy POC operation
- Touch screen monitor
- Intuitive software operation
- Fully automatic system pipette
- Single Use Reagents or Liquid Reagents for multiple use
- Only 300 µl blood sample volume for 1 test

Fast results
- 30-35 sec. to start measurement (ROTEM® delta)
- 5-10 min. to first reliable result interpretation
  (ROTEM® delta and ROTEM® platelet)
- 4 independent thromboelastometry measuring channels/device
- 2 independent impedance aggregometry measuring channels/device

Easy differential diagnosis
- 8 standardized tests
- Dedicated APTEM assay for hyperfibrinolysis
- EXTEM / FIBTEM to evidence fibrinogen or platelet deficiency
- On-board interpretation help resulted from expert consensus

Wide variety of tests
- Thromboelastometry: INTEM, EXTEM, FIBTEM, APTEM, HEPTEM
- Aggregometry: ARATEM, ADPTEM, TRAPTEM

Quality management
- Standardized automatic pipetting
- Automatic start of the measurement for repeatable results
- Continuous automatic self check
- Automatic calibration
- Weekly control
- Integrated, dedicated, secure computer
- Virus safe, closed Linux software

Mobility
- Easily transportable on dedicated trolley

Connectivity
- Real time transmission of graphs and results on any hospital PC with Secure Viewer (included in the software)
- Several devices (on any location anywhere in the hospital) can be connected to the hospital information system

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