

TECHNICAL PROCEDURE

SOP Number: S_HA_CD_SOP0050

SOP Name: Viewing Thromboelastography (TEG) Results

Document review and amendment history held on Q-Pulse

Acknowledgement & Understanding of SOP documented in Q-Pulse

Location of Copies: 1. Coagulation SOP Folder (JCUH) 2. Intranet



File name: S_HA_CD_SOP0050	Revision: 4
Current author: Daniella M Winterburn	Copy No.:
Approved by: Daniella M Winterburn	Page 2 of 12

Table of Contents

Introduction	5
Principle and Purpose of Examination	3
Clinical Relevance	3
Requesting Requirements	}
Specimen Requirements	ŀ
Transportation Requirements4	ŀ
Health and Safety and COSHH, Risk Assessment4	ŀ
Contact Information	ŀ
Computer and Software Login	5
Viewing Traces	;
Displaying Reference Ranges for Test Results	7
Viewing Group Traces	7
Viewing Multiple (Composite) Traces	3
Exported Test Results)
Basic Trace Interpretation11	
Citrated Kaolin (CK)11	L
Citrated Rapid TEG (CRT)12	<u>)</u>
Citrated Kaolin Heparinase (CKH)12	<u>)</u>
Citrated Functional Fibrinogen (CFF)12	2

NHS	File name: S_HA_CD_SOP0050	Revision: 4
South Tees Hospitals NHS Foundation Trust	Current author: Daniella M Winterburn	Copy No.:
Pathology Service, Department of Coagulation	Approved by: Daniella M Winterburn	Page 3 of 12

Introduction

Principle and Purpose of Examination

TEG is a real time analyser of whole blood that can quickly provide patient results to allow for faster treatments and decision-making. The concept of individualised goal-directed therapy allows clinicians to treat each patient more appropriately. From testing whole blood, TEG measures the viscoelastic properties in a functional way. TEG is a diagnostic tool that provides clinicians with the most complete information to determine the right blood product or drug, at the right time, to manage a patient's risk for haemorrhage or thrombosis.

Clinical Relevance

TEG has been shown to help differentiate between surgical bleeding and a pathological coagulopathy; this information can support the need for further exploration of surgical sites to ensure surgical haemostasis. TEG can express function and pinpoint dysfunction in the haemostatic process. By doing so, it can reference the types and amounts of blood products to stop bleeding. It can also be used to monitor anti-platelet drugs and anticoagulants to help reduce thromboembolic complications.

The TEG service is provided by the Coagulation department at James Cook University Hospital where the testing is performed. Live remote viewing can be accessed from the South Tees NHS Trust Intranet page



On the intranet page, go to IT Systems and then TEG Manager

Requesting Requirements

TEG requests can be ordered through Weblce.

There are two options on Weblce for TEG requests:

• Routine TEG profile (this incorporates a CK, CKH, CFF and CRT and is used for major trauma and routine monitoring of patients)

NHS	File name: S_HA_CD_SOP0050	Revision: 4
South Tees Hospitals NHS Foundation Trust	Current author: Daniella M Winterburn	Copy No.:
Pathology Service, Department of Coagulation	Approved by: Daniella M Winterburn	Page 4 of 12

• Platelet Mapping (this determines the MA (clot strength) and the level of inhibition caused by antiplatelet therapy).

Theatres without access to Weblce (cardiothoracics) may use a manual requesting form for TEG requests.

Ensure the provided TEG request form is filled in appropriately with date and time, requesting clinician and telephone extension. TEG request forms contain four categories. Fill in the appropriate group whether you are using the TEG in the major haemorrhage protocol, a general TEG screen, for cardiac surgery or as a pre assessment screen. Please ensure all drugs and products given are indicated.

Specimen Requirements

Whole blood collected into 1x vacutainers containing tri-sodium citrate (blue top). Used for Routine TEG

Whole blood collected into 1x vacutainers containing Lithium Heparin (green top). Used for Platelet Mapping

Note Lithium Heparin (green top) samples MUST have a date and time on them and cannot be tested until 30 minutes post-venepuncture.

Samples should ideally be tested within 30 minutes (unless platelet mapping, which should be tested at 30 minutes) but should not be tested more than 2 hours post venepuncture.

Sample must be labelled with at least 3 points of identification which must include surname, forename, date of birth and/or hospital number.

Transportation Requirements

The TEG requests MUST reach the Laboratory within 30 of venepuncture.

Health and Safety and COSHH, Risk Assessment

N/A

Contact Information

If further advice is required please contact the Coagulation Laboratory:

Extension	54315	(09:00 - 17:30)
Extension	52630	(17:30 - 09:00)

Daniella M WinterburnLead Clinical Scientist in Coagulation daniella.winterburn@nhs.netRachel WebbSenior Biomedical Scientist in Coagulation rachel.webb5@nhs.netLee Ford-HugginsSenior Biomedical Scientist in Coagulation lee.ford-huggins@nhs.net

For clinical advice please contact Dr A Wood, Dr J Maddox, or the on-call Haematologist if neither are available.

NHS	File name: S_HA_CD_SOP0050	Revision: 4
South Tees Hospitals NHS Foundation Trust	Current author: Daniella M Winterburn	Copy No.:
Pathology Service, Department of Coagulation	Approved by: Daniella M Winterburn	Page 5 of 12

Computer and Software Login

On the intranet page, go to IT Systems and then TEG Manager

STARS	Saving Lives Redrey process, adverge International Care	••• 😨	Specialist Services Referral portal	nscid:
S T A R S	Saving Lives Audit	Smartcard	Specialist Services Referral Portal	Spinal Cord Injuries Referral
Rectification Strive Room Booking STRIVE room booking	TEG Manager	Theatre Scheduler	TRUST SYSTEMS ACCESS FORMS Trust systems access forms	UpToDate [®] UpToDate
VitalPAC* Administrator VPAdmin	VitalPAC*	VitalPAC* PERFORMANCE VPPerformance	webice	

Log in to TEG Manager using your username and password

If you have forgotten your username/password, please contact a member of the coagulation senior team (see contact information) or Ian Whitehead (<u>ian.whitehead@nhs.net</u>) for a password reset.

TE	:G°	
Login		
	Password	
	Login	

Once logged in you will immediately be greeted with the search scree	en
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Search		O [→ Utilities Logout
Patient ID		
Patient Name Patient Name		
Date of Birth DD/MM/YYYY	Test Date Range To DD/MM/YYYY DD/MM/YYYY	day
	Q Sear	ch

Select today for quick access to active or recent tests or enter desired **patient ID** (hospital number) or **patient name**

Print date: 26/02/2024

NHS	File name: S_HA_CD_SOP0050	Revision: 4
South Tees Hospitals NHS Foundation Trust	Current author: Daniella M Winterburn	Copy No.:
Pathology Service, Department of Coagulation	Approved by: Daniella M Winterburn	Page 6 of 12

Viewing Traces

After you perform a search, up to a maximum of 100 search results are displayed on the *Search Results* screen. The **Test Date** column displays the date of each patient's most recent test.

Showing Results For Patient Name: Patient Q New Search Patient ID Patient Name Date of Birth Test Date 12345 Patient A 11/15/1977 12046 Date of Date 2100/0015	Showing Results For Patient Name: Patient Colspan="2">Colspan="2">Colspan="2">New Search Patient ID Patient Name Date of Birth Test Date 12345 Patient A 11/15/1977 9/23/2015 12346 Patient B 7/30/2015	Search			O (→ Utilities Logout
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100/0015	12346 Patient B 7/30/2015	12345	Patient A	11/15/1977	9/23/2015
12346 Patient B 1/30/2015		12346	Patient B		7/30/2015

On the *Search* results screen, select a patient record. Tests associated with that patient record are displayed on the *Main* screen

After you select a search result from the *Search Results* screen, the most recent active and completed tests are displayed on the *Main* screen. The *Main* screen enables you to view the tracings, and export the results.

When you select a search result on the *Search Results* screen, all of the selected patient's tests are displayed on the *Main* screen. The tests are sorted by date, with the most recent test displayed first.

∠ Mu	Iti Combine	2 Patient	\$ Ranges	Export	D 🔪 D Reassign	Q Search	n Ser	10 to LIS	Ö Utilities	Log	→ jout
Patie	ent ID: Batch Va	lidation	Patient N						Sort by	: Date ·	•
	PlateletMapping 07/11/2019 07:03					R (min)	K (min)	ANGLE (deg)		MA (mm)	LY30 (%)
		_		нкн		3.6	1.1	75.5		61.3	2.0
	\sim			ActF						14.0	
	_			ADP						49.3	
				AA						17.7	
	Add Note									I	Device Name: TEG 3
	CM Citrated K,KH, 30/09/2019 16:50	RT,FF			TEG-ACT (sec)	R (min)	K (min)	ANGLE (deg)	A10 (mm)	MA (mm)	LY30 (%)
				СК		1.0	0.7	81.0		38.0	0.0
				CRT	78.5	0.3	0.7	80.2	33.5	33.6	0.0
	~			СКН		1.1	0.7	80.4		36.9	
	<u> </u>			CFF					35.7	35.9	
✓	ABNORMAL QC										
	CM Citrated K,KH, 30/09/2019 14:36	RT,FF			TEG-ACT (sec)	R (min)	K (min)	ANGLE (deg)	A10 (mm)	MA (mm)	LY30 (%)
		$\int c$		СК		5.4	0.8	79.8		70.4	0.0
				CRT	78.5	0.3	0.7	81.3	70.2	71.2	0.0
					1	_ <u></u>		70 0		70 0	
Т	EG Mana	ger®₄	.119	rwebb	b 14/11/2019	16:08			FDA UDI: (01)(0812747010	156(10)4.0.0

Print date: 26/02/2024

NHS	File name: S_HA_CD_SOP0050	Revision: 4
South Tees Hospitals NHS Foundation Trust	Current author: Daniella M Winterburn	Copy No.:
Pathology Service, Department of Coagulation	Approved by: Daniella M Winterburn	Page 7 of 12

Displaying Reference Ranges for Test Results

Selecting the ranges button (highlighted in red) will display the normal reference ranges below each parameter (highlighted in yellow).



Viewing Group Traces

On the main screen, double click a cartridge name to open the Group Tracing Details screen.



Print date: 26/02/2024

NHS	File name: S_HA_CD_SOP0050	Revision: 4
South Tees Hospitals NHS Foundation Trust	Current author: Daniella M Winterburn	Copy No.:
Pathology Service, Department of Coagulation	Approved by: Daniella M Winterburn	Page 8 of 12

At the bottom of the screen the parameters table displays each test name and result. Each row is labelled using a unique colour. Each colour corresponds to the colour of a single trace within the group trace.

Click a row in the parameters table to hide or re-display the corresponding trace within the group.

A group trace is comprised of multiple overlapping traces; click **offset** to see the individual traces more clearly.



Percent Inhibition/Aggregation results are displayed at the bottom of the parameters table, if they are applicable.

Viewing Multiple (Composite) Traces

You can combine any number of single tracings or group tracings into a multiple (composite) tracing. The selected tracings are overlaid in a single trace. This enables you to compare test results.

On the main screen, click **Multi** Select two or more single tracings Click **Combine**

The selected tracings are combined into a composite tracing

NHS	File name: S_HA_CD_SOP0050	Revision: 4
South Tees Hospitals NHS Foundation Trust	Current author: Daniella M Winterburn	Copy No.:
Pathology Service, Department of Coagulation	Approved by: Daniella M Winterburn	Page 9 of 12





Exported Test Results

This enables you to export test results to PDF or to a PNG image file, including exporting composite tracings.

NHS	File name: S_HA_CD_SOP0050	Revision: 4
South Tees Hospitals NHS Foundation Trust	Current author: Daniella M Winterburn	Copy No.:
Pathology Service, Department of Coagulation	Approved by: Daniella M Winterburn	Page 10 of 12

On the *Main* screen either select a group tracing or a single tracing; or click **Multi** and then select two or more tracings to export them.

Export 🛛	
Sample Options	
Selected Sample(s) (currently 0)	
All TEG 6s Samples (total of 7)	
All TEG 5000 Samples (total of 6)	
Graphic Options	
Tracing Grid Lines	
Numeric Results Ranges	
Patient Options	
Patient ID	
Name	
Demographics (Report Only)	
Create Report (PDF) Create Capture (PNG) Cancel	

Select from the following options to specify what to include in the export:

- Selected Samples, All TEG 6s Samples, or All TEG 5000 Samples
- Tracing
- Grid Lines
- Numeric Results (parameter values and percent inhibition/aggregation results)
- Ranges
- Patient ID
- *Name* (patient's name)
- Demographics (Report Only) patient's age, birthdate and gender.

Click Create Report (PDF) or Create Capture (PNG). The PDF or PNG file is created automatically.

View the file, print it, or save it for later viewing.

NHS	File name: S_HA_CD_SOP0050	Revision: 4
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Pathology Service, Department of Coagulation	Approved by: Daniella M Winterburn	Page 11 of 12

Basic Trace Interpretation

a1-INITIATION 2-STRENGTH 3-STABILITY



Citrated Kaolin (CK)



This is the standard TEG profile expressing initiation, amplification, propagation and dissolution phases of clot development and breakdown

- R-Time: This represents the clot initiation
- K-Time. This represents the rate of clot development
- MA: This represents the clot strength
- LY30: This represents the clot stability

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Pathology Service, Department of Coagulation	Approved by: Daniella M Winterburn	Page 12 of 12

Citrated Rapid TEG (CRT)



The Rapid TEG® essentially provides a quicker assessment of the clot development and clot breakdown. It provides a more immediate MA value and can be used in conjunction with the R-Time of the CK curve and the MA of the CFF to provide a quick initial assessment of clot initiation, strength and stability.

Citrated Kaolin Heparinase (CKH)

This is used in conjunction with the CK to assess heparin effect. If the R-Time of the CK trace is prolonged but the R-Time of the CKH trace is normal, this indicates the presence of heparin.

Citrated Functional Fibrinogen (CFF)

This provides the clot integrity based on fibrinogen contribution.

- The MA is the key value:
 - \circ \uparrow MA = increased fibrinogen contribution to the clot
 - $\circ \downarrow$ MA = decreased fibrinogen contribution to the clot



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