BASIC GUIDE TO
TEG® INTERPRETATION
# Cardiac Protocol

All samples are kaolin activated

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>When</th>
<th>Cup Type</th>
<th>Why Do It?</th>
</tr>
</thead>
</table>
| 1          | On induction           | • Plain (clear) cup and pin  
If heparin suspected use heparinase bonded (blue) cup and pin as part of a split sample | Gives baseline haemostatic profile                                         |
| 2          | Re-Warmed (approx 36°C) | • Heparinase bonded cup and pin (blue)                                   | Early identification of any coagulopathy that starts to develop during bypass |
| 3          | 10 mins post protamine | Split sample:  
• Plain (clear) cup and pin  
• Heparinase bonded cup and pin (blue) | 1. Checks heparin reversal  
2. Gives post bypass haemostatic profile – identifies cause of coagulopathy in bleeding patient (see suggested treatment protocol) |
| 4          | Post op ITU – if indicated | Split sample:  
• Plain (clear) cup and pin  
• Heparinase bonded cup and pin (blue) | 1. If it is indicated by a developing coagulopathy profile seen in samples 1–3  
2. If patient is bleeding or ‘going off’ clinically |

**NB**

1. When using two cups ensure Plain cup is on the left of the heparinase cup  
2. This is the point the patient comes off the pump/ end of last anastomosis in off pump case.
**Suggested Treatment Protocol**

For kaolin activated samples

<table>
<thead>
<tr>
<th>TEG® Values</th>
<th>Clinical Cause</th>
<th>Suggested Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>R between 11 – 14 min (2)</td>
<td>↓↓ clotting factors</td>
<td>X2 FFP or 8ml/kg</td>
</tr>
<tr>
<td>R greater than 14 min (2)</td>
<td>↓↓↓ clotting factors</td>
<td>X4 FFP or 16 ml/kg</td>
</tr>
<tr>
<td>MA between 42 – 47 mm G between 3.6 – 4.4 K (3)</td>
<td>↓ platelet function</td>
<td>X 1 Platelet Pool</td>
</tr>
<tr>
<td>MA &lt; 42 mm G less than 3.6K (3)</td>
<td>↓↓ platelet function</td>
<td>X 2 Platelet Pools</td>
</tr>
<tr>
<td>LY30 at 7.5% or greater, with CI less than 1.0</td>
<td>Primary fibrinolysis</td>
<td>Antifibrinolytic of choice</td>
</tr>
<tr>
<td>LY30 at 7.5% or greater, with CI greater than 3.0</td>
<td>Secondary fibrinolysis</td>
<td>Anticoagulant of choice</td>
</tr>
<tr>
<td>R less than 3 min MA greater than 75 mm G greater than 15K</td>
<td>Prothrombotic state</td>
<td>Anticoagulant of choice</td>
</tr>
</tbody>
</table>

**NB**

1. Blood product and antifibrinolytic treatment is only suggested if your patient is bleeding at a level you wish to treat
2. These guidelines apply after you have ruled out heparin as a cause for the long R time
3. A normal kaolin activated MA does not rule out platelet inhibitor effects. If the patient is/was on antiplatelet agents PlateletMapping™ results should be used to assess platelet function and hence need for treatment with platelets
What Does TEG® Report?

Clot strength
(Platelet function)

Clotting time
(clotting factors)

Clot kinetics

Clot stability/
Clot breakdown
**TEG® Parameter Definitions**

- **R = Reaction time**
  - The reaction time is the time from when the blood was placed in the TEG® analyser until the initial fibrin formation ie how long it takes for the blood to start to clot, and is therefore a measure of clotting factors.

- **K = Kinetic time**
  - The K time is a measure of the speed taken to reach a specific level of clot strength. Together with the alpha angle it is a measure of clot kinetics.

- **Alpha Angle**
  - Measures the speed of fibrin build-up and cross-linking (clot strengthening).

- **MA = Maximum Amplitude**
  - The maximum amplitude represents the ultimate strength of the clot and is a measure of platelet function. It is a direct function of the maximum dynamic properties of fibrin and platelet bonding via GPIIb/IIIa.

- **LY30 = Lysis 30 minutes after MA**
  - It shows any breakdown of the clot and therefore gives an idea of clot stability.
TEG®® Directed Therapy For Bleeding Patient

Coagulation

Fibrinolysis

Platelets (MA)

Enzymatic (R)

Fibrinogen (K, α)

Thrombolysins (Ly30, EPL)

Prolonged R (not heparin) FFP indicated

Clot kinetics

Low MA Platelets indicated

High LY30 antifibrinolytics indicated

(c) 020 8371 9908
Qualitative Analysis

Normal

Coagulopathy/anticoagulants
Long R time

Reduced platelet function
Low MA

Primary fibrinolysis
High LY30

Hypercoagulable
Short R time, High MA

DIC
Stage 1 – hypercoagulable state with secondary fibrinolysis

DIC
Stage 2 – hypocoagulable state
There is a kit for monitoring the effect of platelet inhibiting drugs such as aspirin and clopidogrel.

**AA** (if looking at aspirin) or **ADP** (if looking at clopidogrel) – Represents fibrin & platelets unaffected by platelet inhibiting drugs ie platelets that are still functioning

**A** (activated) – represents fibrin only clot ie no platelet aggregation

**K** or **KH** – represents fibrin & thrombin-activated platelets ie maximum platelet aggregation

The traces run for a maximum of 20 minutes. Overlaying the traces causes the software to calculate and display % inhibition and % function.
What To Look For In An Etest

- Numbers in min/max are changing
- Final value 1800 – 2300
- Message etest ok
- If message is ‘not at equilibrium’ – retry
- If message is ‘etest is off centre/out of range’ – can be tweaked with trimmer tool – report to Site Administrator