

# Functional Hemostasis Monitoring with the Sonoclot Analyzer

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# Today's Discussion

- ☞ Hemostasis Issues For Perfusion
- ☞ Functional Hemostasis Management
- ☞ Canine Lab Examples
- ☞ Summary

# Typical Hemostasis Challenges for Perfusion

- **Proper Anticoagulation Management**
- **Effective Clinical Bleeding Management**
- **Efficient / Cost-Effective Use of Blood Products**
- **Quality Control**
- **New Issues Affecting Hemostasis**

# Tools for Hemostasis Management

- ☞ Clot Timers (ACT, PT and aPTT)
- ☞ Factor Assays
- ☞ Cell Counters (platelet count)
- ☞ New Platelet Function Analyzers
- ☞ Functional Hemostasis Monitors
  - ☞ Sonoclot Analyzer
  - ☞ Thromboelastogram (TEG)

# Functional Hemostasis Monitoring

with the Sonoclot® Coagulation & Platelet Function Analyzer

A simple tool to gain insight into the performance of the hemostatic system by monitoring:

- ☞ Coagulation
- ☞ Fibrin Formation
- ☞ Clot Retraction, i.e. Platelet Function
- ☞ Hyperfibrinolysis

# Benefits of Functional Hemostasis Monitoring

Quick hemostasis performance answers to:

- ➡ Manage Anticoagulation (Sonoclot)
- ➡ Manage Blood Product Usage
- ➡ Differentiate Mechanical vs. Hemostatic Bleeders
- ➡ Identify Hypercoagulable Patients

# Sonoclot Analyzer & Graphics Printer



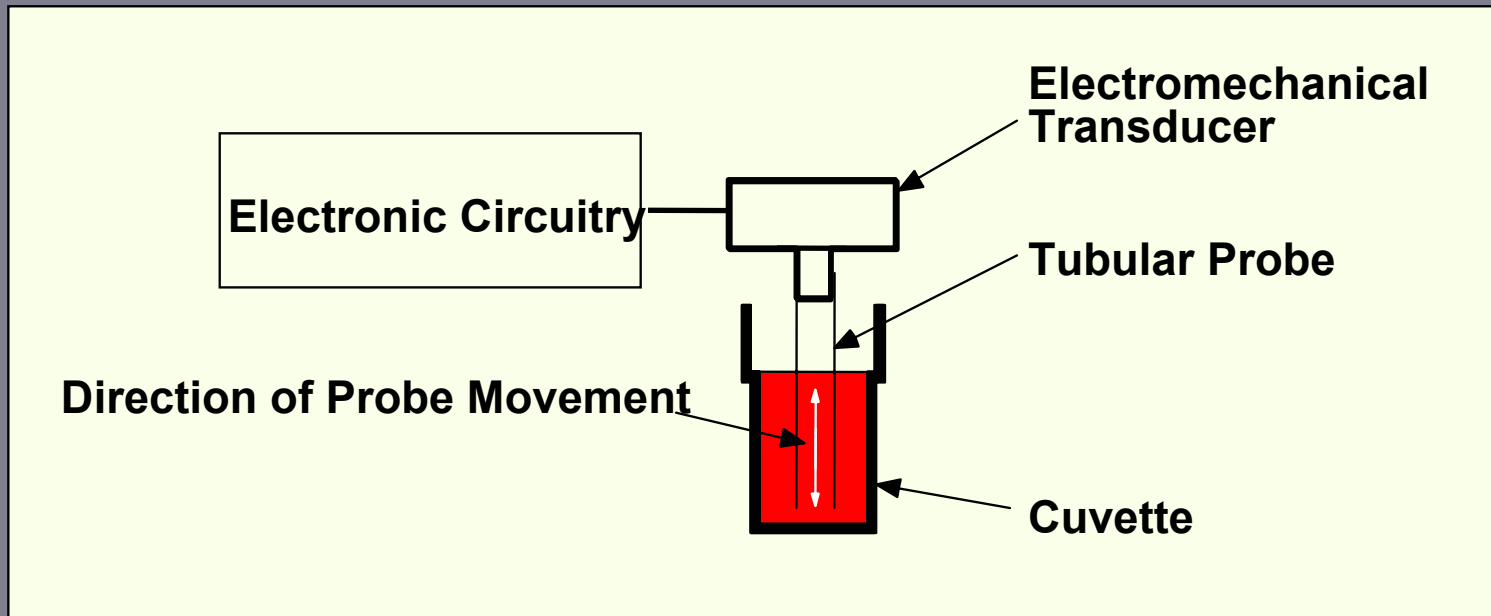
# Sonoclot Analyzer & Signature Viewer™ Software



**For Windows or Macintosh**

# How does the Sonoclot Analyzer Work?

## Principle of Operation: Microviscometer



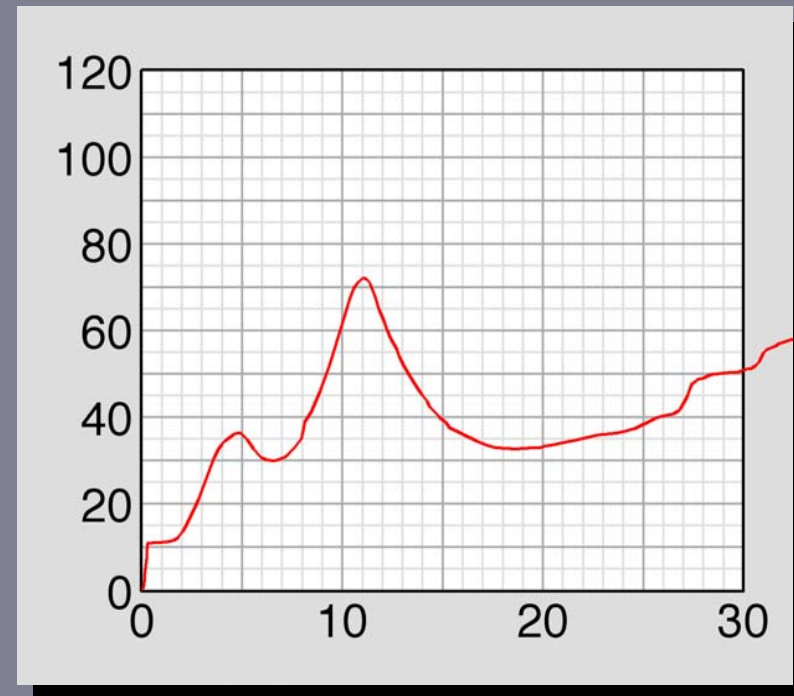
# What Does the Sonoclot Analyzer Generate?

## Graphical and Automated Results:

- ☞ Time Until Initial Clot Formation (Activated Clotting Time)
- ☞ Clot Formation RATE
- ☞ Clot Retraction Value (Platelet Function)\*

\*with Signature Viewer™ Software

## Sonoclot Signature™



# How is a Sonoclot Test Interpreted?

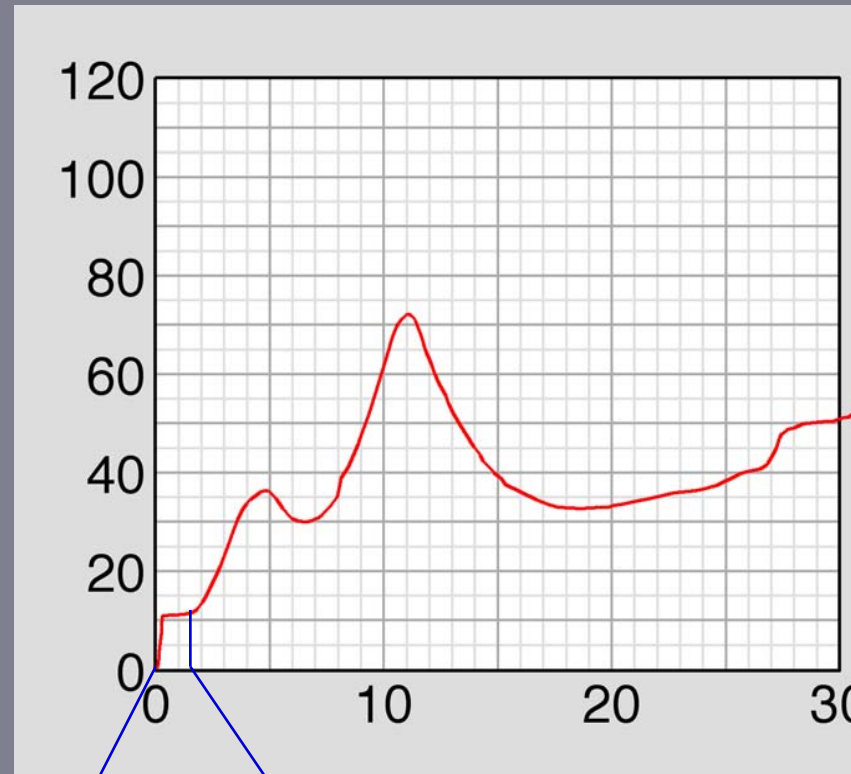
## Three Straightforward Steps:

- ➡ 1: Time until initial clot formation
- ➡ 2: Rate of fibrin gel formation
- ➡ 3: Clot retraction of the fibrin gel

# Step 1 - Initial Clot Formation Time

Automated Result:

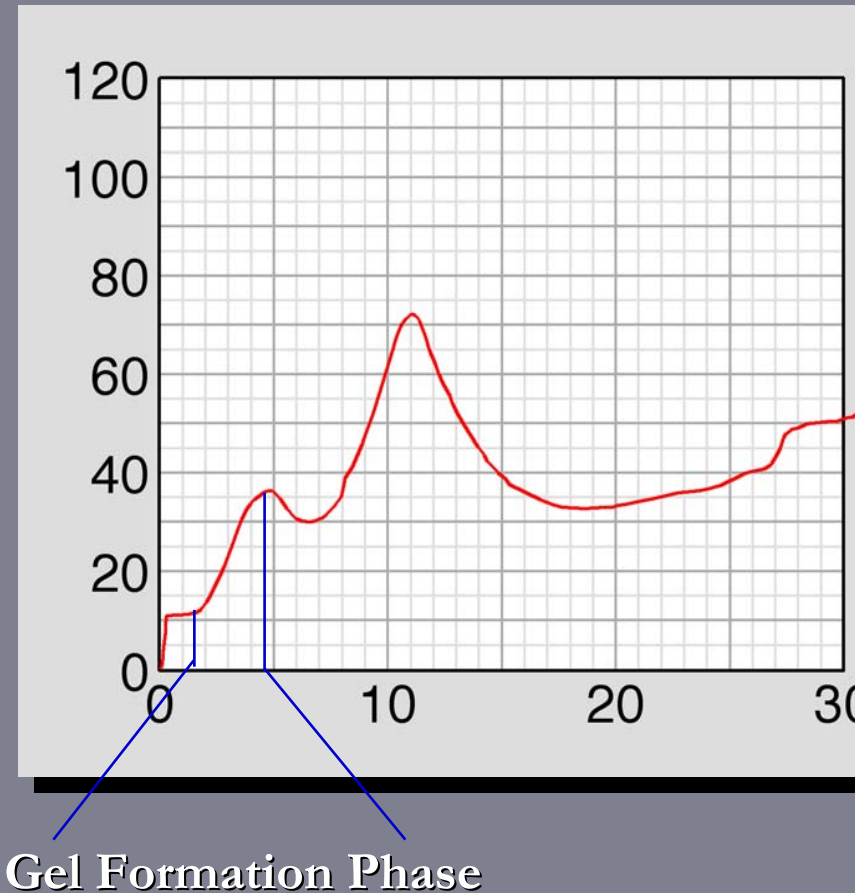
Onset Time or  
Activated Clotting Time



Liquid Phase

## Step 2 - Fibrin Gel Formation

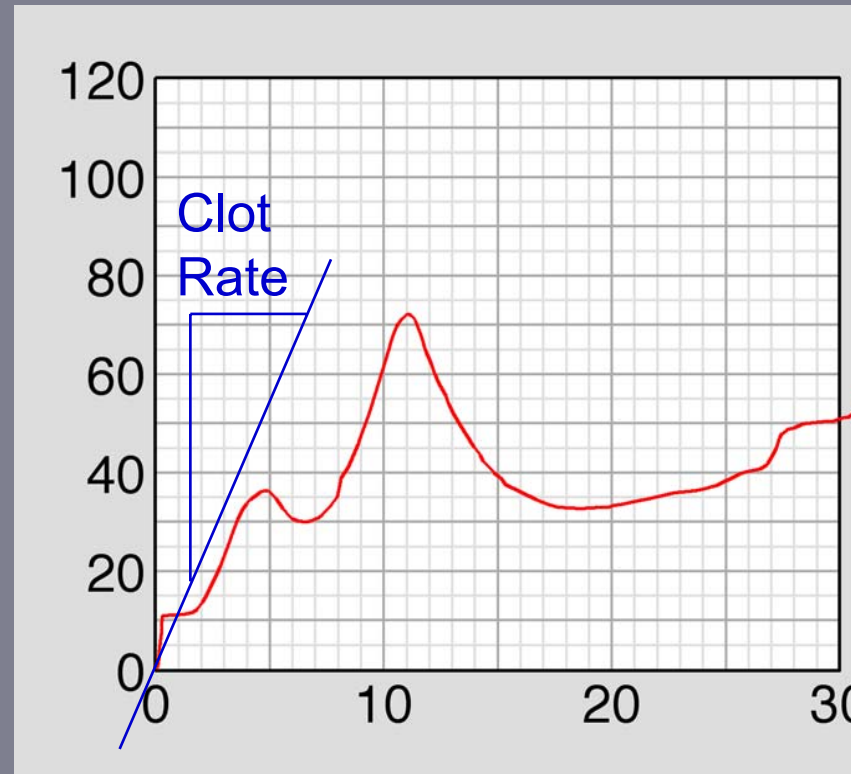
Fibrinogen converts  
into a fibrin gel



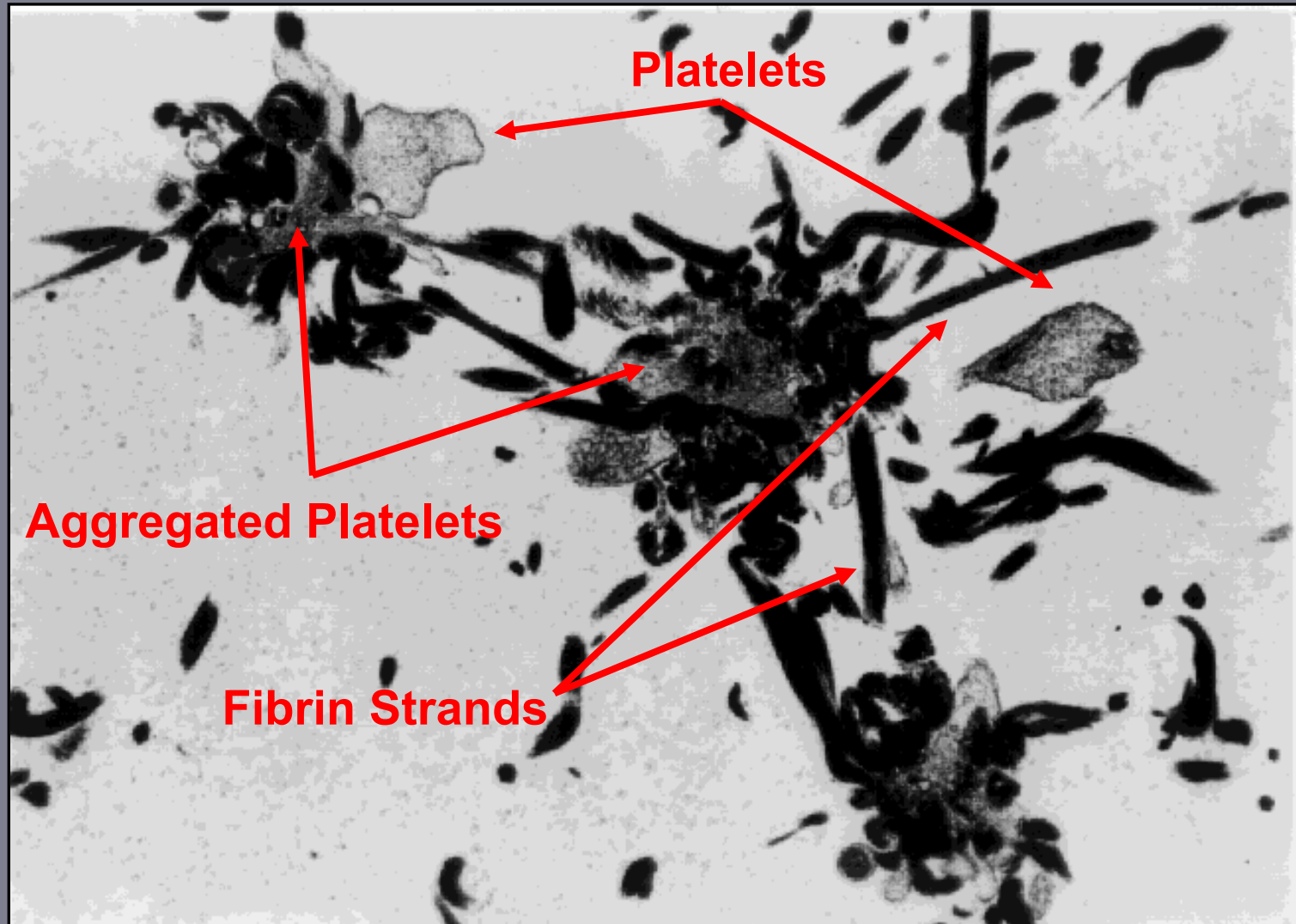
## Step 2 - Fibrin Gel Formation

### Automated Result:

**Clot RATE:** The slope of the Sonoclot Signature during gel formation

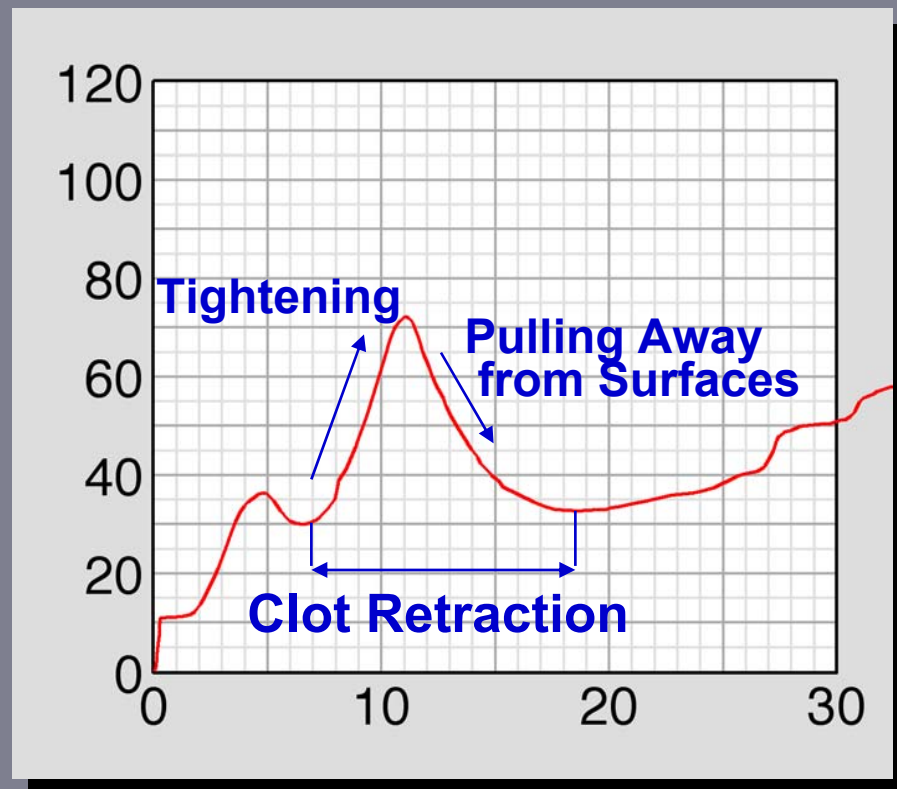


## Step 3 - Clot Retraction: Cellular Level



# Step 3 - Clot Retraction: Sonoclot Signature

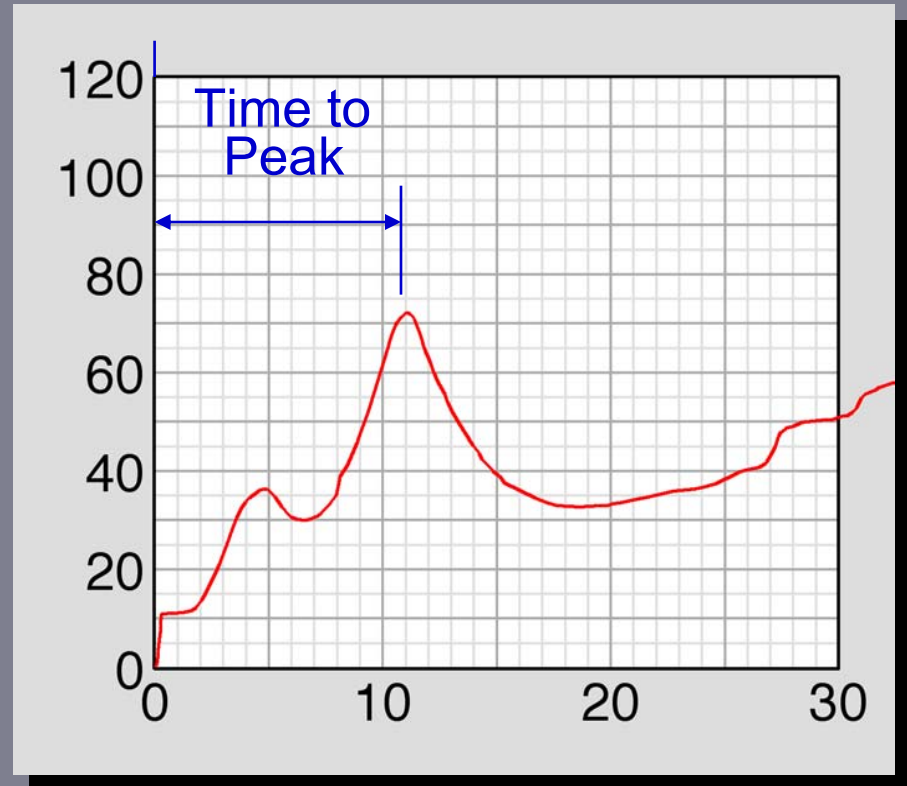
Clot retraction causes a peak or peaks on the Sonoclot Signature



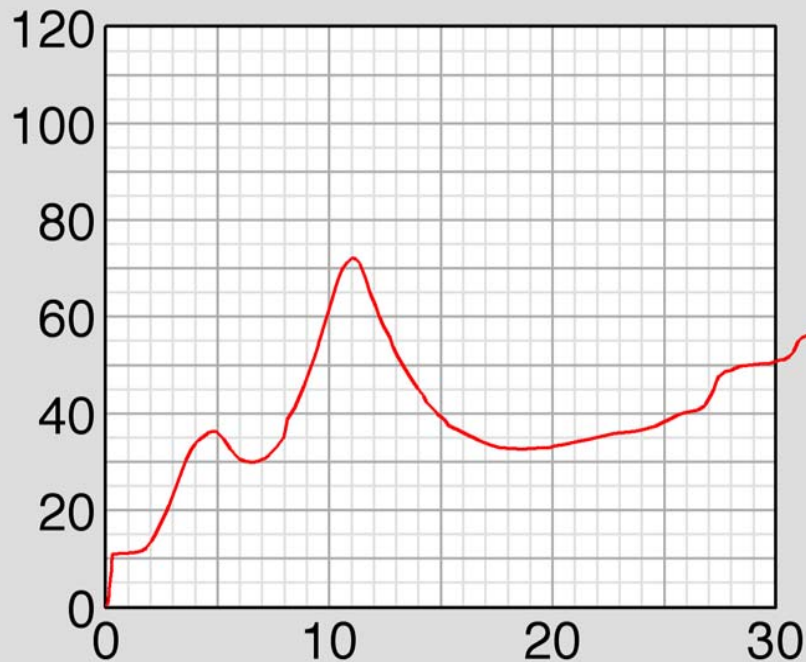
## Step 3 - Clot Retraction Interpretation

Historically, platelet function has been characterized by several graphical indicators such as the Time-to-Peak.

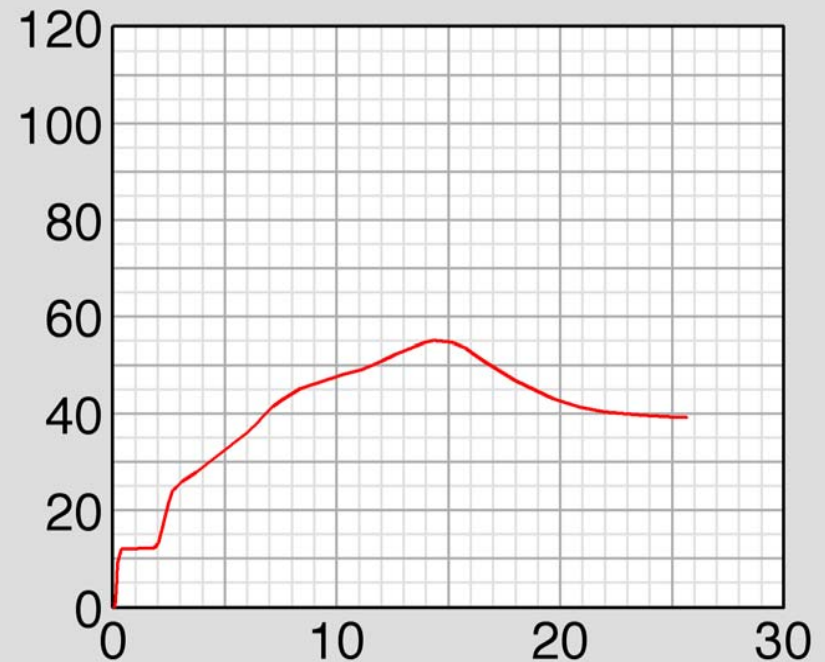
Now a numerical indicator, “Platelet Function” is available.



# Step 3 - Clot Retraction Interpretation

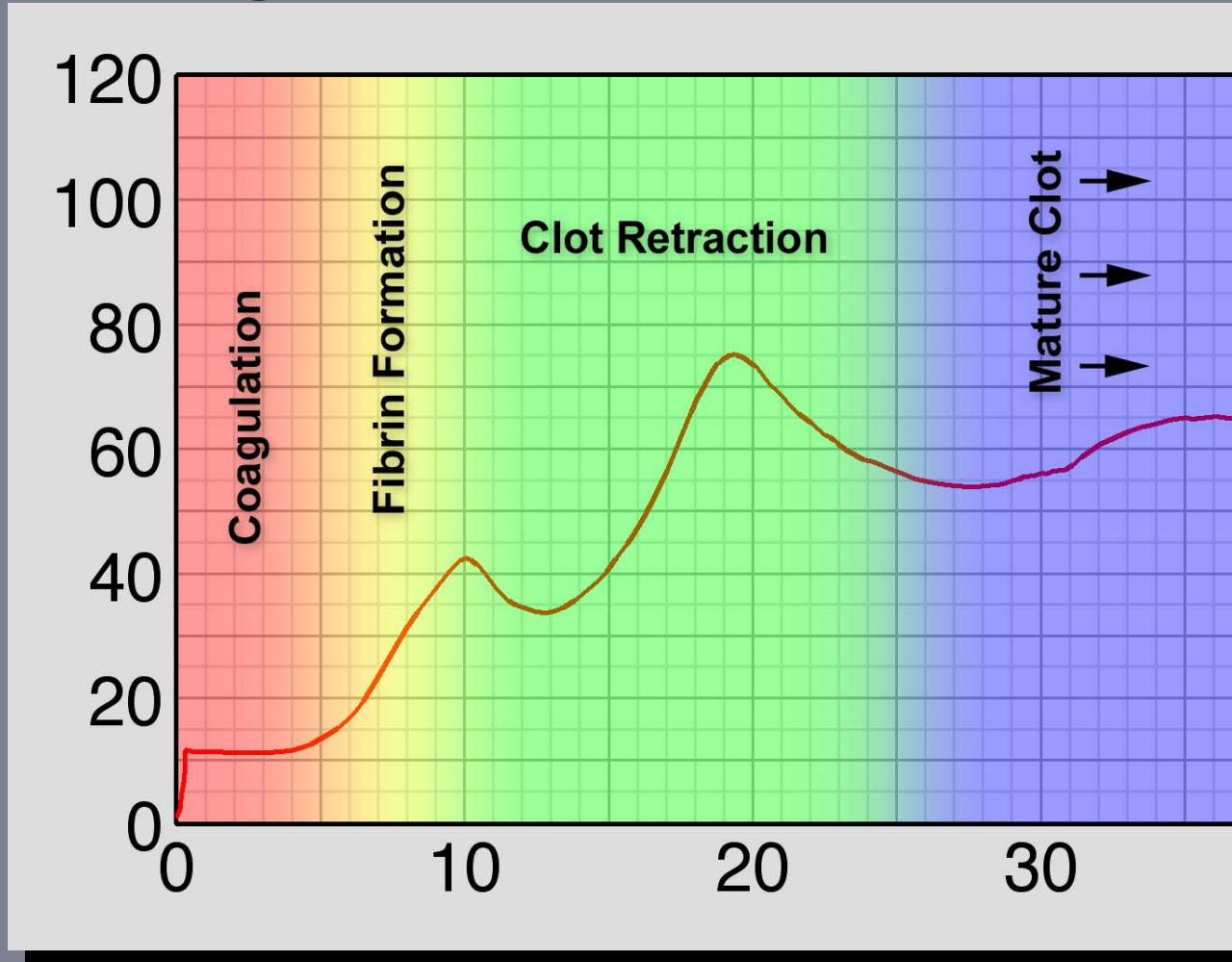


**Strong Clot Retraction**  
**Platelet Function = 4.3**

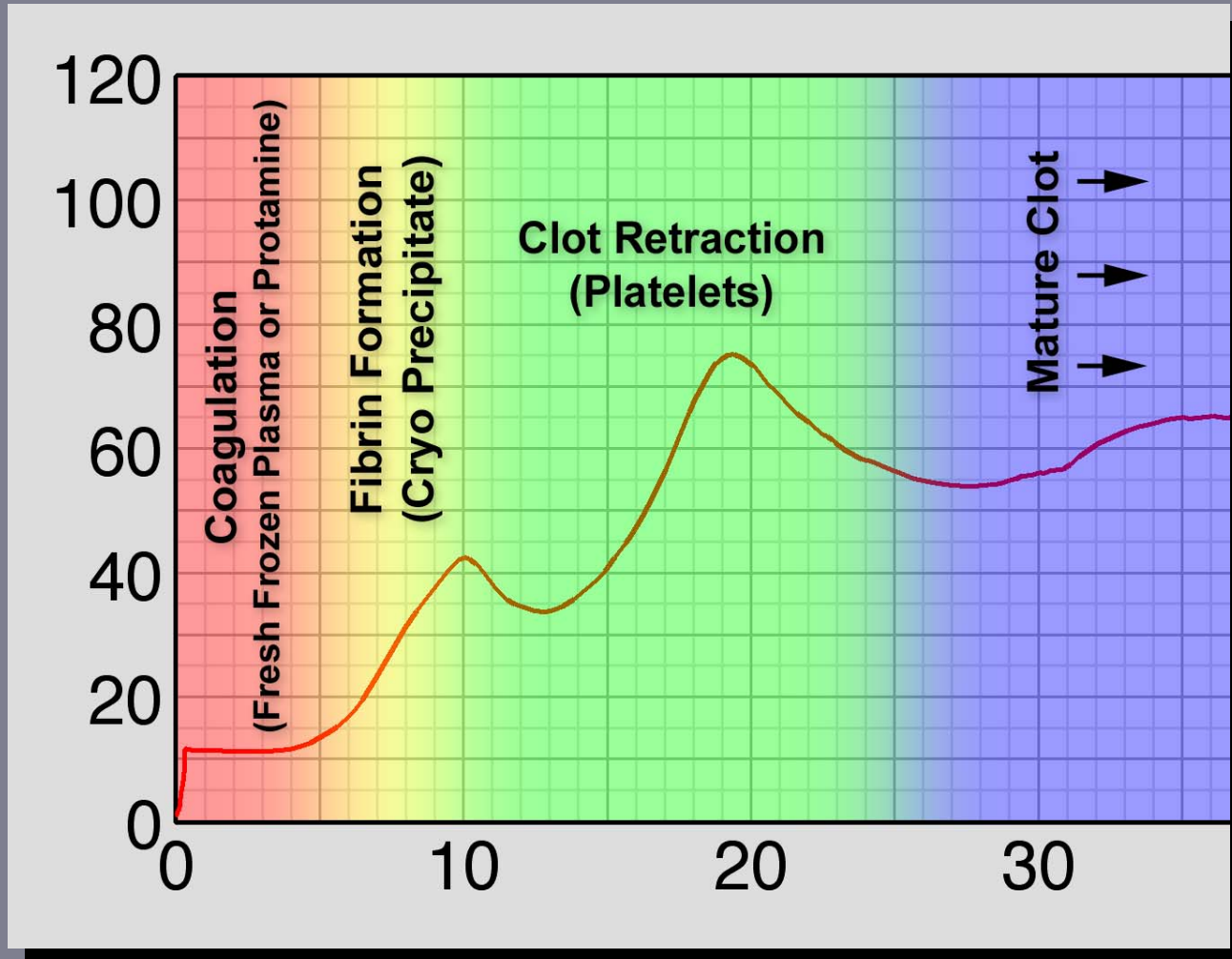


**Weak Clot Retraction**  
**Platelet Function = 1.1**

# Hemostatic Phases of the Sonoclot Signature



# Blood Product Management Using the Sonoclot Signature



# Summary of Signature Interpretation

## Automated Results:

Step 1 - Time for initial clot formation  
(typically the Activated Clotting Time)

Step 2 - Fibrin formation (Clot RATE)

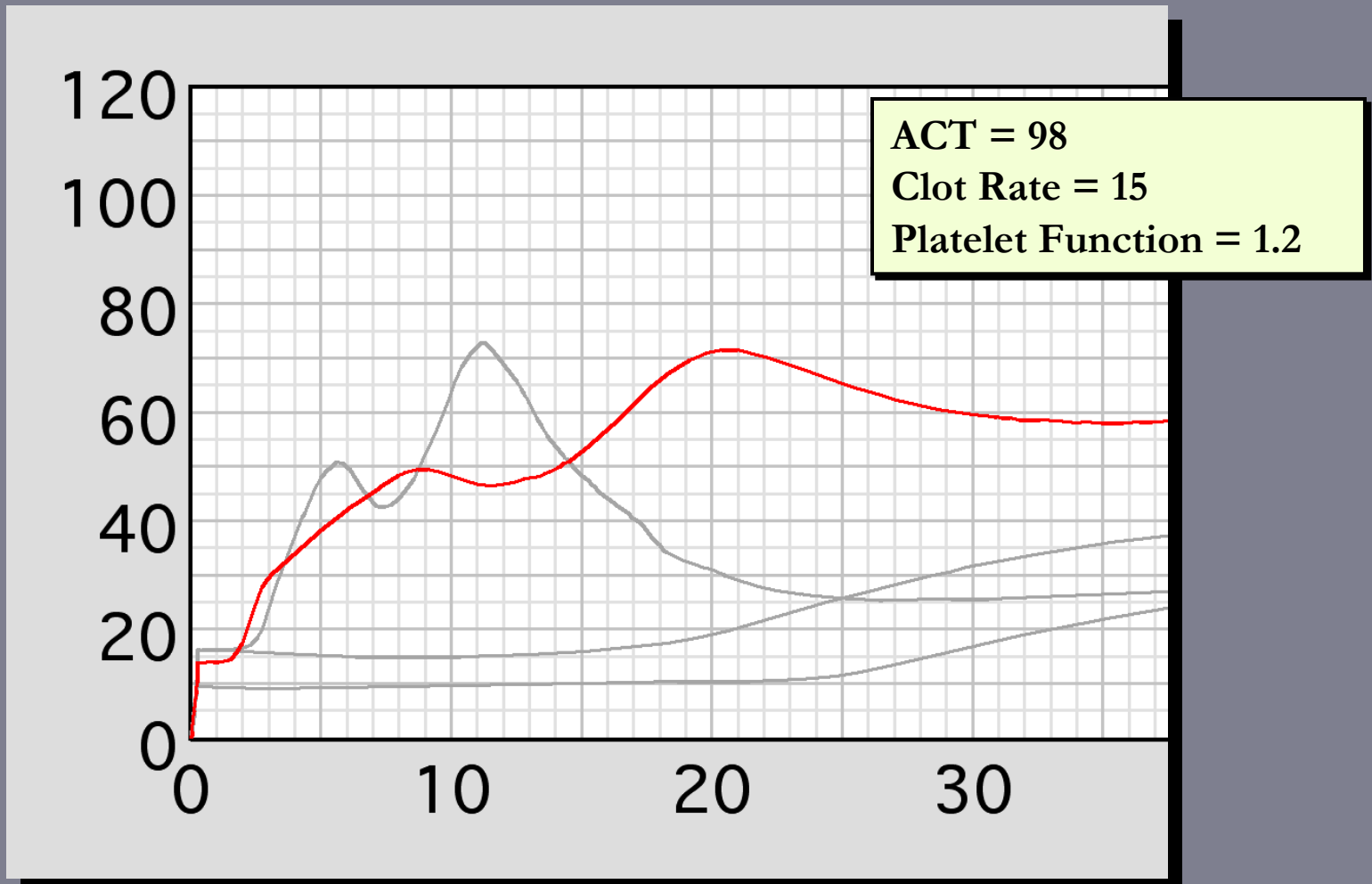
Step 3 - Clot retraction (Platelet Function)

## Quantitative/Qualitative Results:

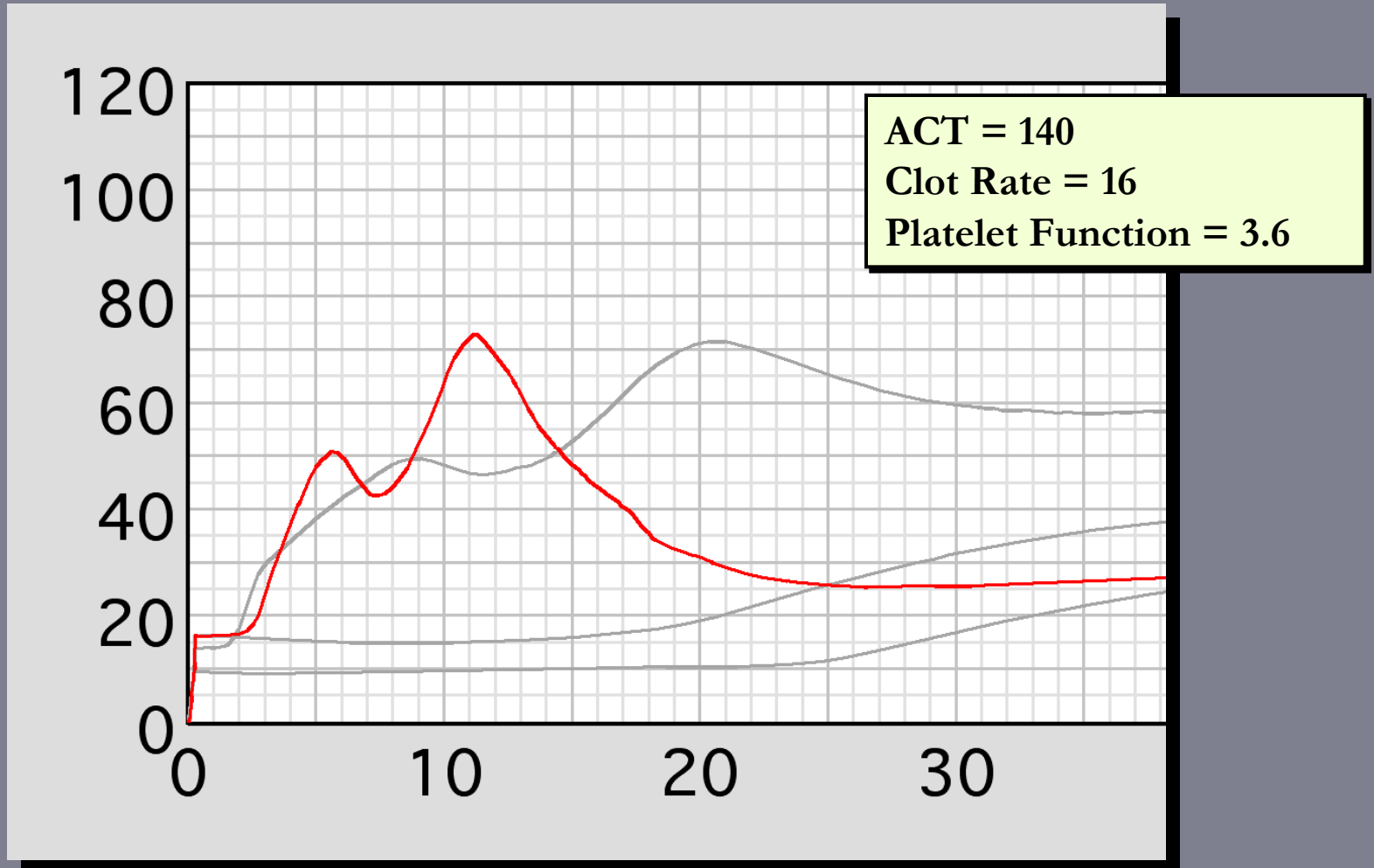
Step 3 - Clot retraction (Platelet Function)

Step 4 - Hyperfibrinolysis

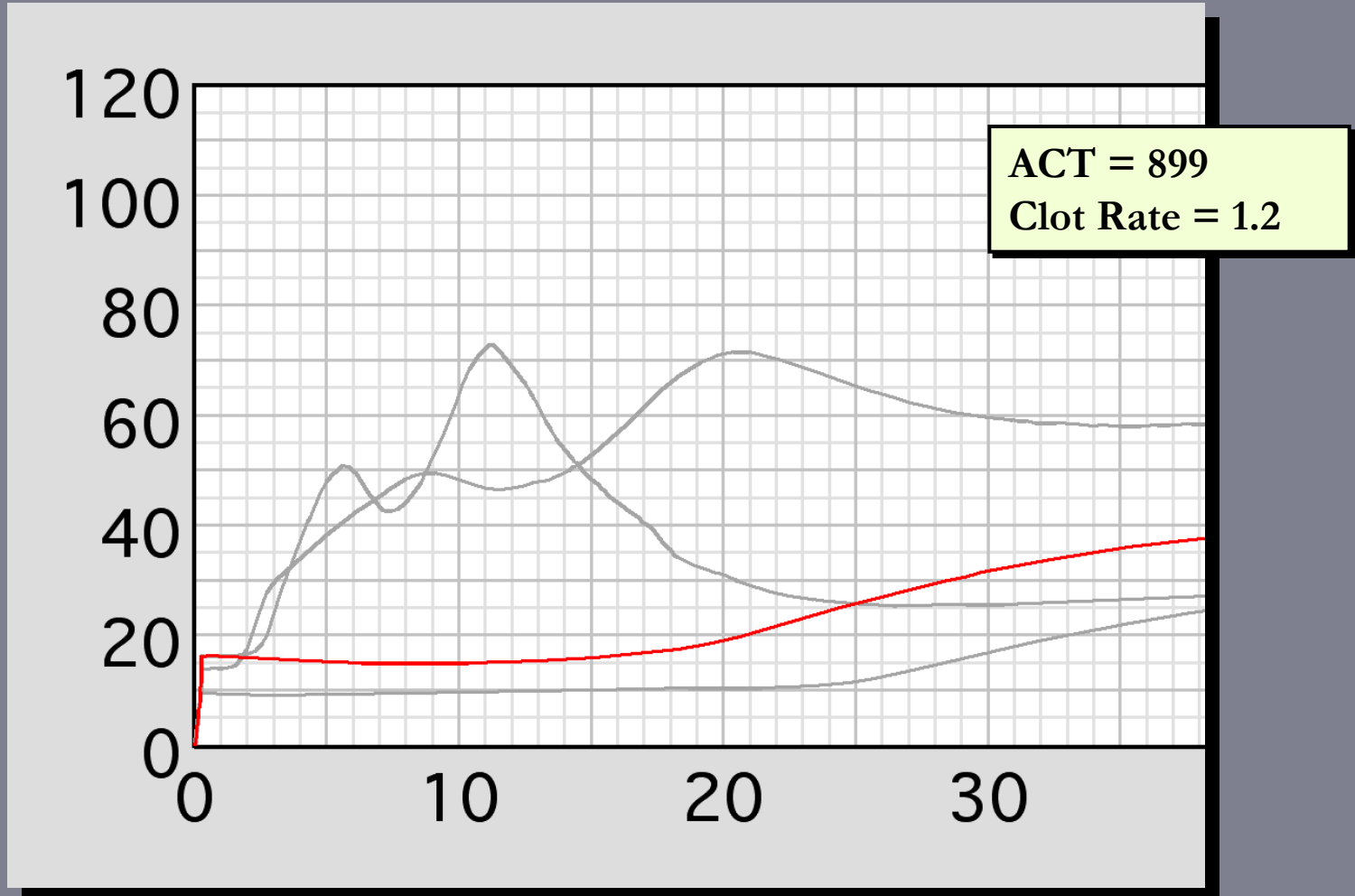
# Example 1: Pre-Bypass 8:36am



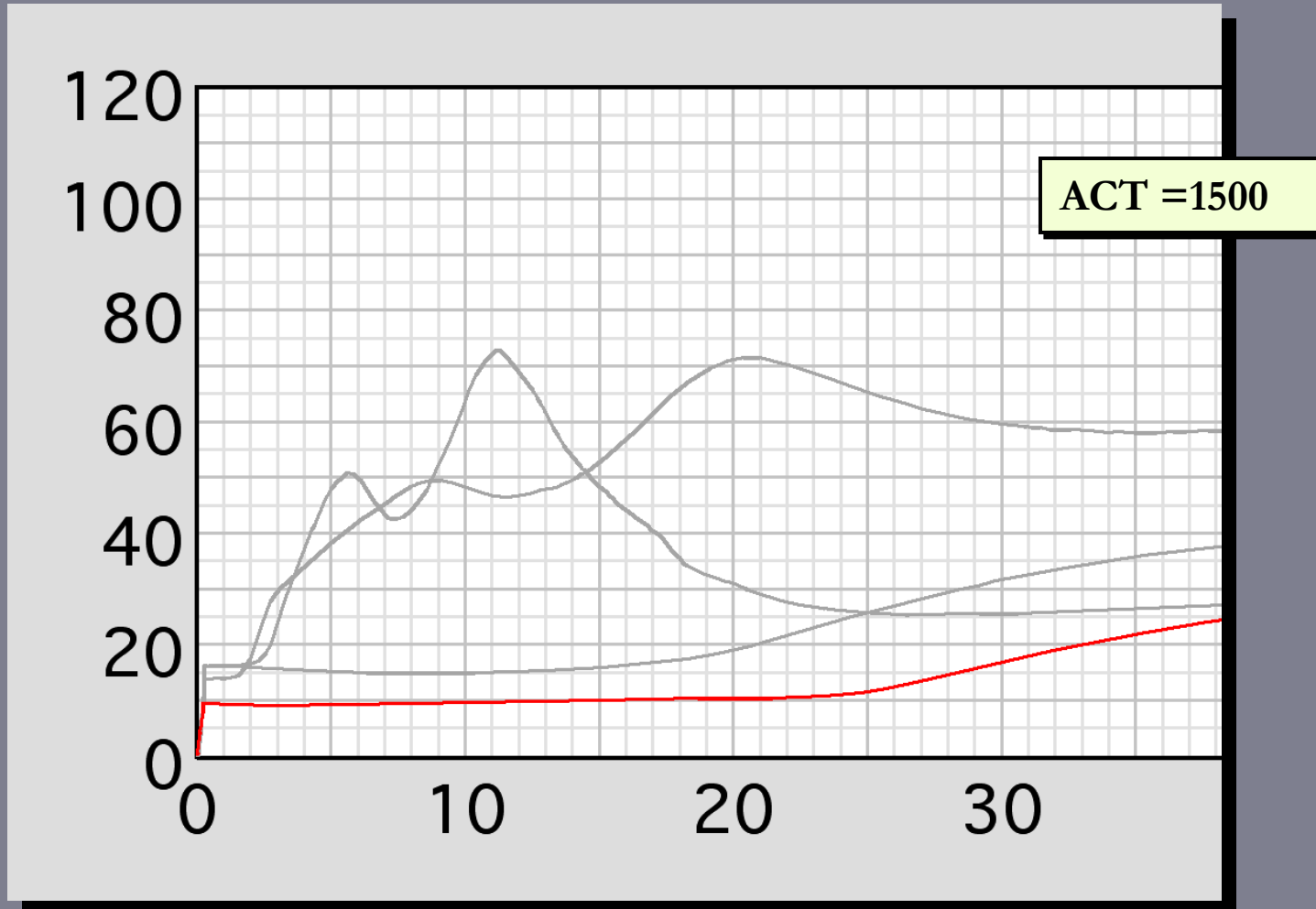
# Example 1: Pre-Bypass 9:56 am



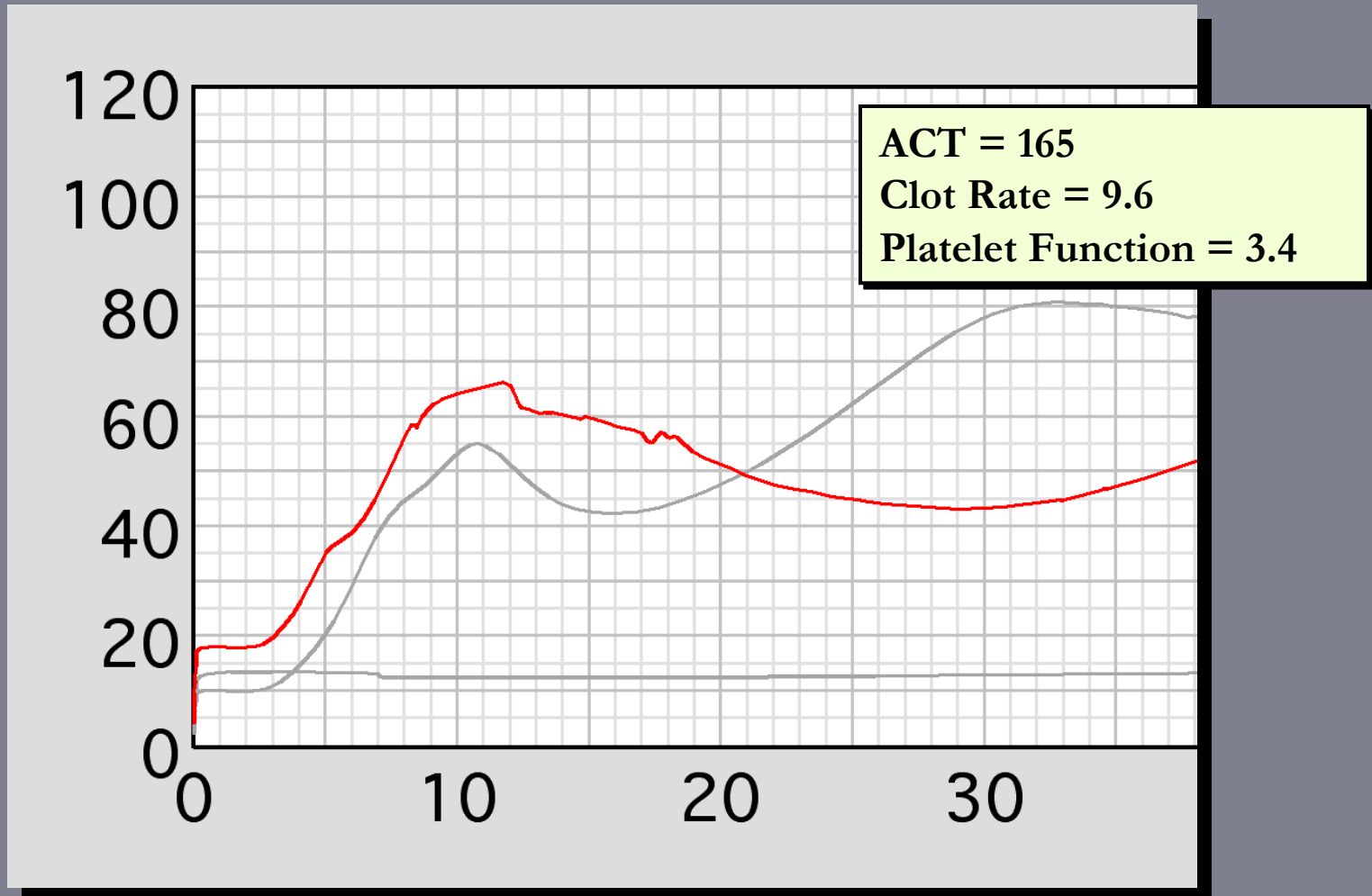
# Example 1: Post-Heparin 11:12 am



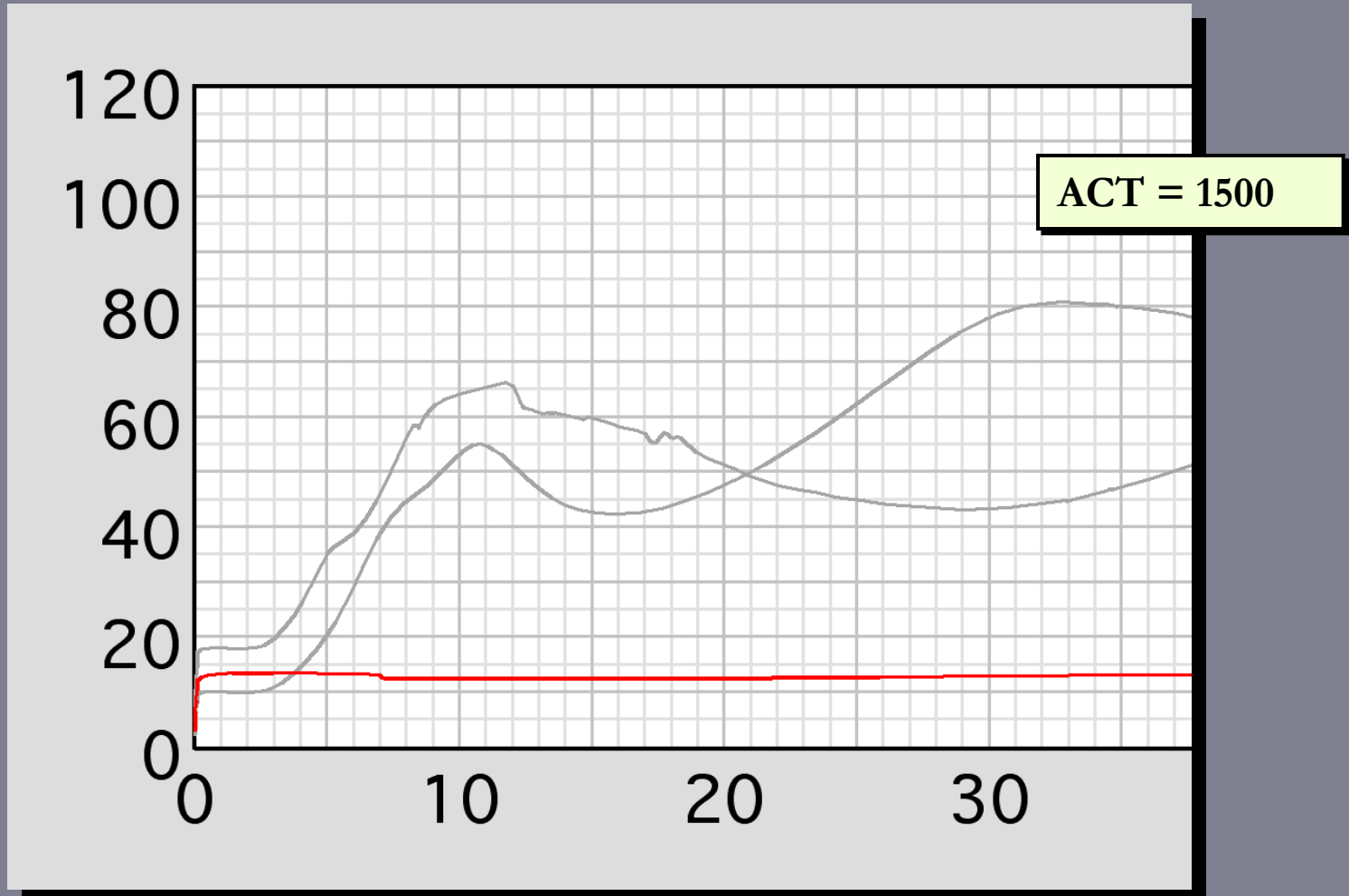
# Example 1: Post-Heparin 12:51pm



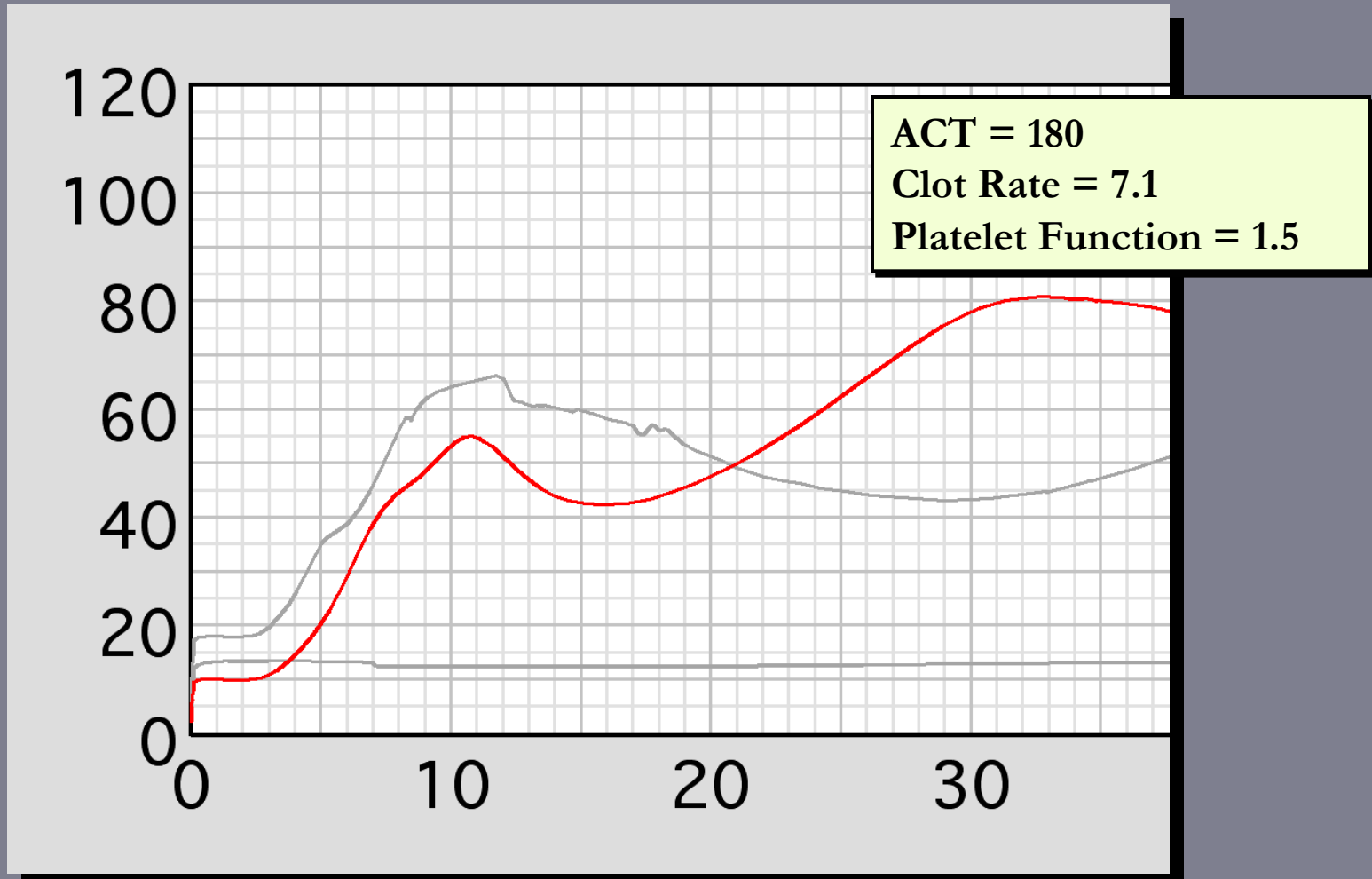
## Example 2: Pre-Bypass 8:53am



## Example 2: Post-Heparin 2:58pm



## Example 2: Post-Bypass 4:25pm



# Summary

- ☞ Hemostasis is Complicated
- ☞ Functional Hemostasis Monitoring Offers Many Clinical Benefits for Cardiovascular Surgery
- ☞ Functional Hemostasis Monitoring Can Add Value to Perfusion Professional Services