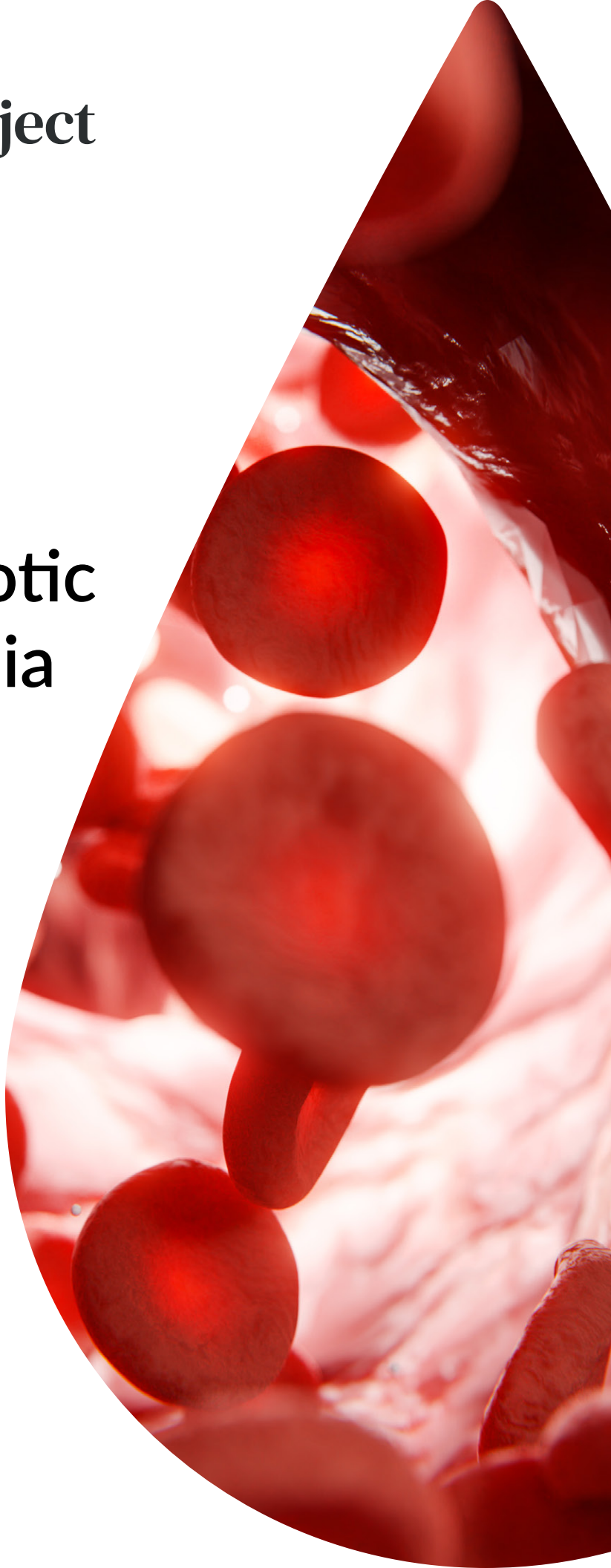
The Blood Project

Pocket Resource

Diagnosis and Management of Immune Thrombotic Thrombocytopenia Purpura (TTP)

A Pocket Resource for Clinicians



William C. Aird, MD

Diagnosis

SUSPECT DIAGNOSIS of immune TTP (iTTP) in adults with:*

- Microangiopathic hemolytic anemia (MAHA)
- Thrombocytopenia
- New focal neurological findings
- Prior history of TTP

CONFIRM DIAGNOSIS of immune TTP by demonstrating:

- Reduced plasma ADAMTS13 activity (< 10%)
- Presence of a functional inhibitor of ADAMTS13

ADAMTS13 activity levels usually take several days to come back. Thus, CONDITIONAL DIAGNOSIS (to initiate appropriate treatment) is based on clinical scoring system such as the **PLASMIC score:**

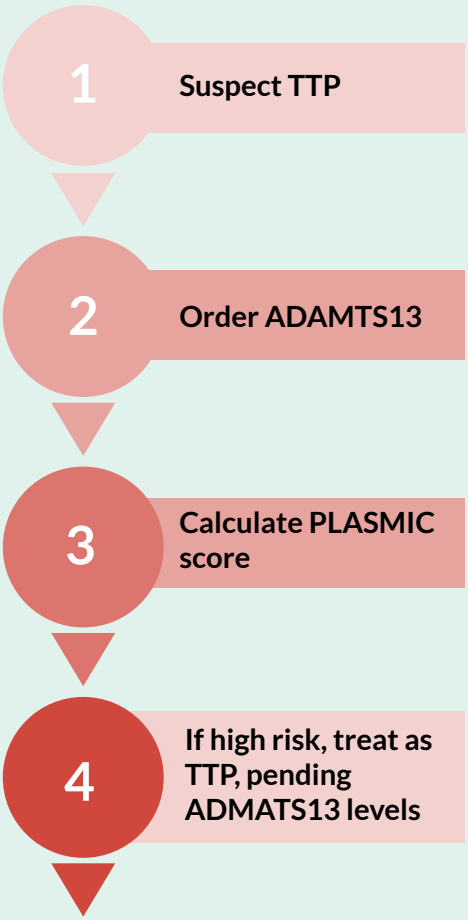
Plasmic Score

Parameter	Result	Points
Platelet count	< 30	+1
Hemolysis	Indirect bilirubin > 2 mg/dL or retics > 2.5% or undetectable haptoglobin	+1
Creatinine	< 2.0 mg/dL	+1
No active cancer in past year		+1
No history of transplantation		+1
INR	< 1.5	+1
MCV	< 90 fL	+1

Plasmic score	Risk Group
0-4	Low
5	Intermediate
6-7	High

MCV, mean cell volume

Workflow



ORDER SET
ADAMTS13

MAHA Low PLT

- CBC
- Retic count
- Peripheral smear
- LDH
- Haptoglobin
- Indirect bilirubin

Organ dysfunction

- Creatinine
- Troponin
- LFTs
- EKG
- CT/MRI of brain if CNS findings

Secondary causes, other causes of TMA

- HIV
- HCV
- HBV
- ANA
- PT/aPTT
- B12
- DAT

PLT, platelet count; **TMA**, thrombotic microangiopathy; **LDH**, lactate dehydrogenase, **LFTs**, liver function tests; **ANA**, antinuclear antibody; **B12**, vitamin B12; **DAT**, direct antiglobulin test

Treatment (1st acute event)

Based on 2 clinical practice guidelines: International Society of Thrombosis (ISTH) and Haemostasis and British Society of Hematology (BSH)

ISTH

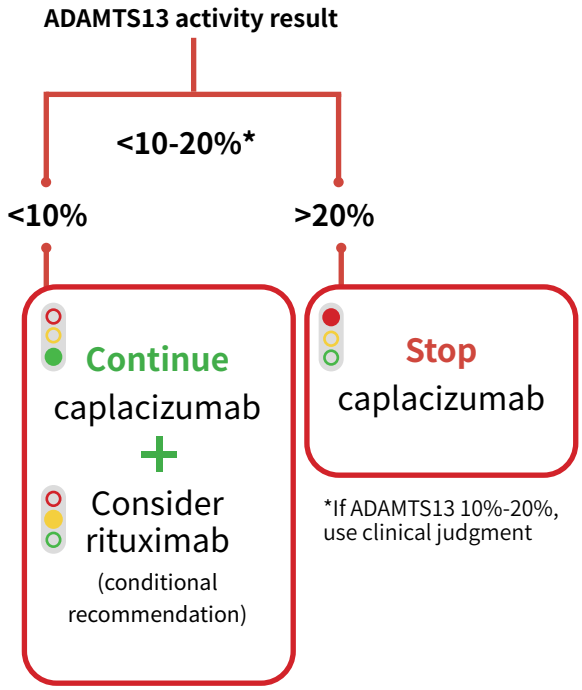
J Thromb Haemost. 2020;18:2486
J Thromb Haemost. 2020;18:2496

If high clinical suspicion based on risk assessment method

While waiting for results of ADAMTS13:

- Start **TPE** and **corticosteroids** *without* waiting for the results of ADAMTS13 testing (strong recommendation)

- Consider early administration of **caplacizumab** (conditional recommendation)



In general, prophylactic platelet transfusions are avoided in nonbleeding TTP; may be considered if serious bleeding

TPE, therapeutic palsma exchange

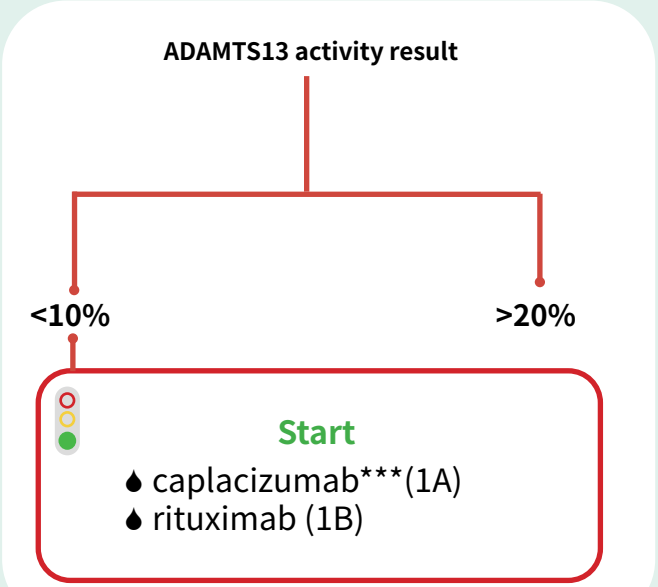
BSH

Br J Haematol. 2023;203:546

Treat TTP as a medical emergency (1A)

While waiting for results of ADAMTS13:

- Start *daily* TPE* and corticosteroids** *without* waiting for the results of ADAMTS13 testing (1A)



Provide thromboprophylaxis once platelet counts are ⩾50 × 10 /L

Platelet transfusion should be avoided (1B)

* TPE should be initiated within four to eight hours and continued daily (1-1.5 x volume replacement). Stop TPE when sustained PLT >150 × 10 9/L. for additional guidance see AFSA guideline on the use of therapeutic apheresis. J Clin Apher 2023;38:77

**Prednisone equivalent of 1 mg/kg/day

***IV dose of caplacizumab 10 mg is given pre-TPE. A once daily 10 mg sc is continued up to 30 days following completion of TPE

Treatment (1st acute event)

Overview

1 Suspect TTP

SUSPECT DIAGNOSIS of immune TTP (iTTP) in adults with:

- Microangiopathic hemolytic anemia (MAHA)
- Thrombocytopenia
- New focal neurological findings
- Prior history of TTP

2 Order blood ADAMTS13 levels

3 Calculate PLASMIC score

PLASMIC

(one point each):

- Platelet count
- Hemolysis
- Creatinine
- Active cancer
- Transplant recipient
- INR
- MCV

Plasmic score	Risk Group
0-4	Low
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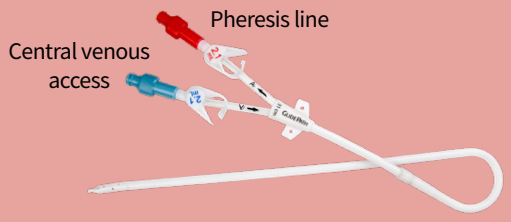

4 If high risk, treat as TTP, pending ADMATS13 levels

- Daily **TPE** and **corticosteroids**
- Consider administration of **caplacizumab**
- before ADAMTS13 results (ISTH)
- **Avoid platelet transfusion** if possible

5 If ADMATS13 level is < 10%

- Continue daily **TPE** and **corticosteroids**
- Stop TPE once platelets consistently > 150 x 10 /L
- Start **caplacizumab (BSH)**
- Consider **rituximab**
- **Avoid platelet transfusion** if possible
- **Thromboprophylaxis** when platelet count > 50 x 10 /L

3 PRONGED THERAPEUTIC APPROACH

- **Remove** autoantibodies against ADAMTS13 (TPE)
- **Inhibit** production of autoantibodies against ADAMTS13 (steroids, rituximab)
- **Inhibit** platelet binding to von Willbrand factor