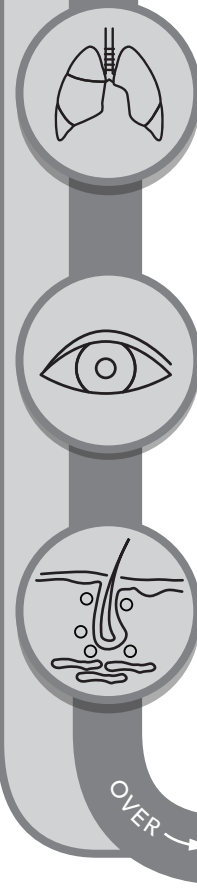
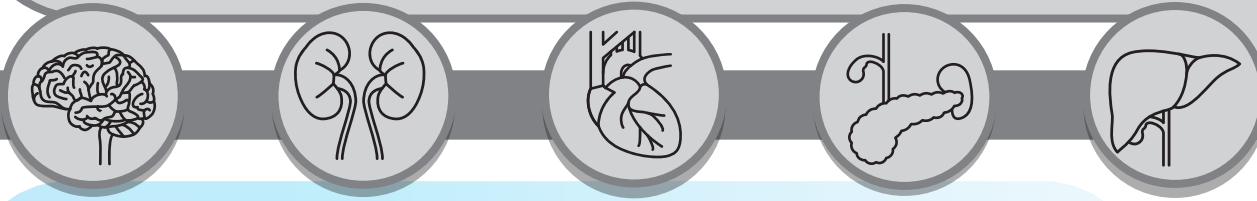
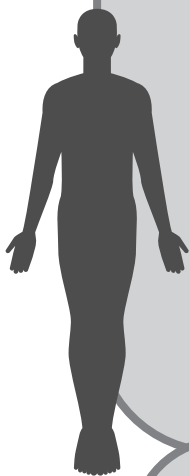


# Thrombotic Microangiopathy (TMA)

TMA is a group of disorders characterized by thrombocytopenia, microangiopathic hemolytic anemia, and organ dysfunction, which can affect the brain, kidneys, heart, pancreas, liver, lungs, eyes, and skin



## Patients may present with the following signs and symptoms

### Thrombocytopenia<sup>1-3</sup>

- Purpura
- Petechiae
- Prolonged bleeding
- Bleeding from gums or nose
- Blood in urine or stool, or bleeding from rectum
- Abnormal vaginal bleeding
- Headaches
- Easy bruising, retinal hemorrhage, and hemoptysis

### Microangiopathic hemolytic anemia<sup>4</sup>

- Fatigue
- Dyspnea
- Dark urine
- Back pain
- Jaundice
- Paleness
- Resting tachycardia with flow murmur

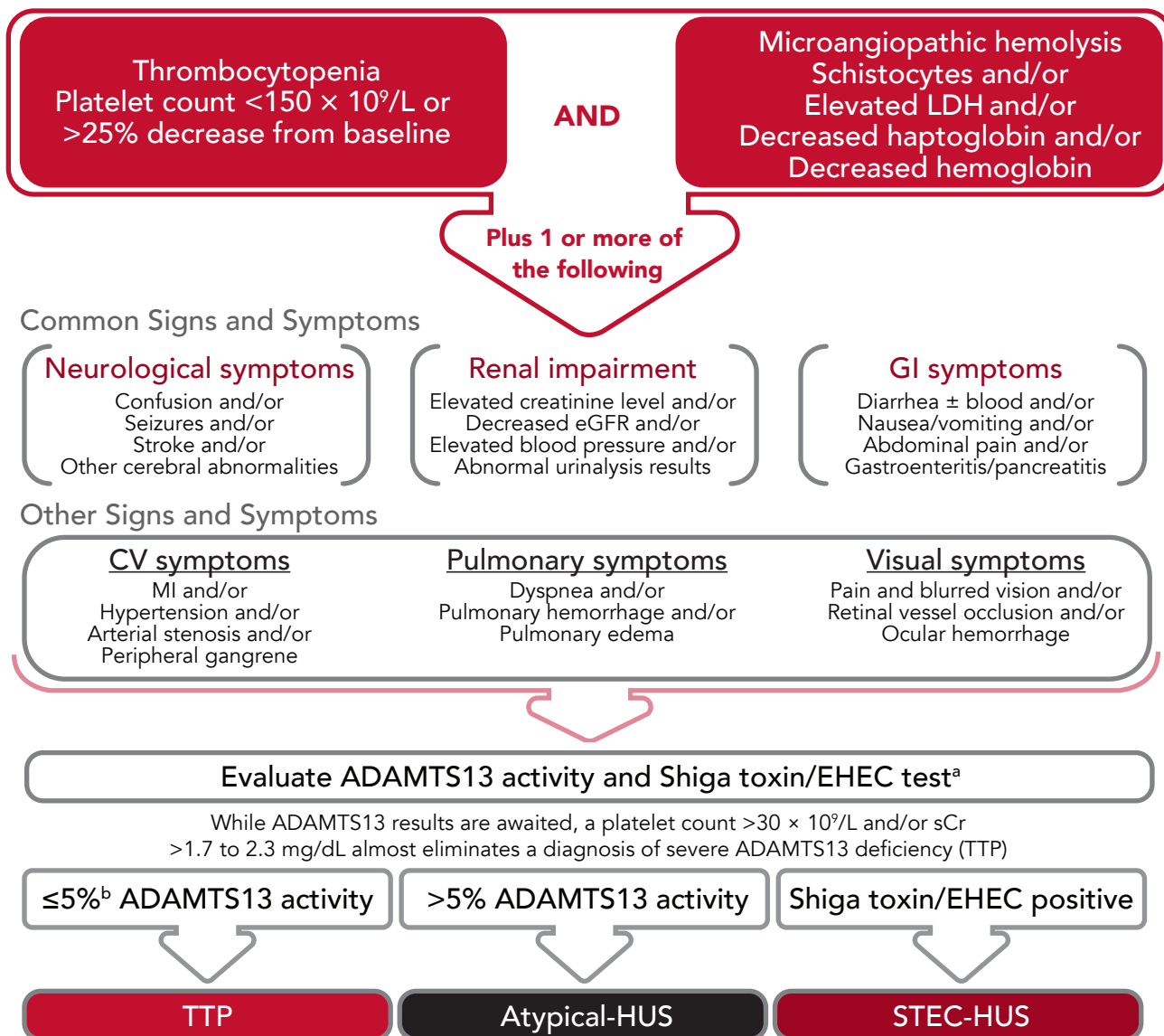
### Organ injury/AKI<sup>3,5</sup>

- Acute kidney injury
  - Listlessness
  - Confusion
  - Fatigue
  - Anorexia
  - Nausea
  - Vomiting
  - Proteinuria
  - Weight gain
- Edema
- Oliguria/Anuria
- Uremic encephalopathy
  - Decline in mental status, asterixis, neurologic symptoms
- Anemia
- Uremic platelet dysfunction
- Microhematuria

## Patients may also present with other signs and symptoms<sup>3,4,6-8</sup>

- CNS symptoms: Weakness, transient focal neurologic abnormalities, confusion, headache, paresis, aphasia, dysarthria, visual problems, encephalopathy, seizures, altered consciousness, coma
- Cardiac symptoms: Chest pain, heart failure, hypotension, hypertension, myocardial infarction
- GI symptoms: Severe abdominal pain, diarrhea, pancreatitis, vomiting
- Pulmonary symptoms: Dyspnea, pulmonary hemorrhage, pulmonary edema

# TMA requires rapid differential diagnosis<sup>9-12</sup>



TMA can also manifest in the presence of clinical conditions such as the following

- Pregnancy-postpartum
- Malignant/severe hypertension
- Solid organ transplantation
- Autoimmune disease (eg, SLE, scleroderma)
- Hematopoietic stem cell transplantation

<sup>a</sup>Shiga toxin/EHEC test is warranted with history/presence of GI symptoms. <sup>b</sup>Range found in published literature is  $<5\%$ - $10\%$ .

## ABBREVIATIONS

ADAMTS13, a disintegrin and metalloproteinase with a thrombospondin type 1 motif member 13; AKI, acute kidney injury; CNS, central nervous system; CV, cardiovascular; EHEC, enterohemorrhagic Escherichia coli; eGFR, estimated glomerular filtration rate; GI, gastrointestinal; HUS, hemolytic uremic syndrome; LDH, lactate dehydrogenase; MI, myocardial infarction; sCr, serum creatinine; STEC, Shiga toxin-producing Escherichia coli; TMA, thrombotic microangiopathy; TTP, thrombotic thrombocytopenic purpura.

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