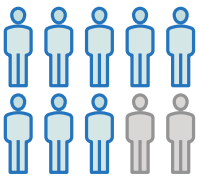
PEDIATRIC IMMUNE THROMBOCYTOPENIA (ITP)

UNDERSTANDING IMMUNE THROMBOCYTOPENIA (ITP)

ETIOLOGY AND DIAGNOSIS

Diagnosis is generally based on the patient's medical history, physical examination, laboratory assessments (complete blood count), and peripheral blood smear examination. However, ITP remains a diagnosis of exclusion as no robust clinical or laboratory parameters are yet available to establish a diagnosis[1,2]



80% of ITP patients are diagnosed with primary ITP[3]

Primary ITP[4]

Defined as platelet counts < 100 x 10^9/L in the absence of other potential causes of thrombocytopenia

Secondary ITP[2-4]

Thrombocytopenia associated with underlying disorders such as HIV, autoimmune diseases, *Helicobacter pylori*, or immune dysregulation

In 60% of pediatric patients, ITP may follow an acute infection (viral or other) within the previous 2 months; other immunogenic events such as allergic reaction, measles mumps rubella (MMR) vaccination, or insect bites have been reported to precede ITP presentation[5,6]

Signs and symptoms[2]

- Petechiae or purpura
- Fatigue
- Persistent bleeding symptoms from cuts/other injuries
- Mucosal bleeding
- Frequent/heavy nose bleeds
- Gastrointestinal hemorrhage

Phases of ITP based on time from diagnosis:[1,2,4,7,8]

Newly diagnosed
≤ 3 months

Persistent*
> 3–12 months
~ 60%–70% may spontaneously resolve within 12 months[2]

Chronic
> 12 months
~ 20%–40% develop persistent or chronic ITP[8]

*Includes patients not meeting spontaneous remission or not maintaining complete response to therapy[4]

Epidemiology

INCIDENCE OF ACUTE ITP[9,†]

1.9–6.4
per 100,000 person-years among children

INCIDENCE PEAK AGE[6]

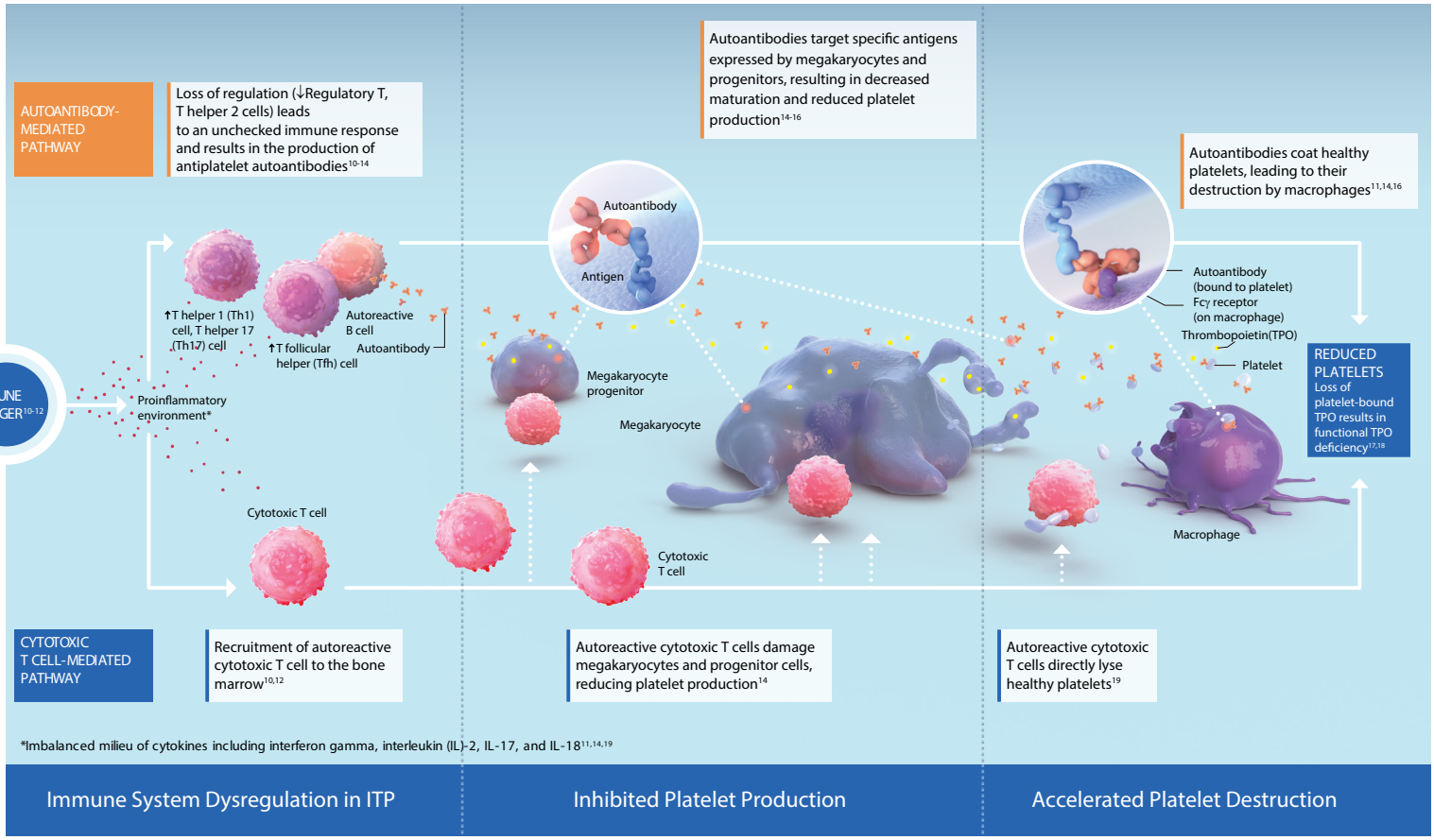
2–6 years

SEX[6]

ITP occurs more frequently in females
(except < 6 years of age, when it occurs more frequently in males)

†Acute ITP in young children is defined as having a very sudden onset and the symptoms usually disappearing in < 6 months

MECHANISM OF DISEASE



PEDIATRIC IMMUNE THROMBOCYTOPENIA (ITP)

CLINICAL BURDEN OF DISEASE

Although ITP in pediatric patients is more likely to be acute and spontaneously resolve, pediatric patients may still struggle with having a high clinical burden of disease which can significantly impact their lives[20]

IMPACT OF ITP

< 1%
DEVELOP INTRACRANIAL HEMORRHAGE FROM A BLEEDING-RELATED EVENT[21]

91%
PATIENTS WITH ITP HAVE REPORTED A BLEEDING-RELATED EVENT[21]

PATIENTS WITH **ITP**

INCREASED USE OF RESCUE MEDICATIONS (CORTICOSTEROIDS OR IMMUNOGLOBULINS)[1,5]

HIGHER COSTS ASSOCIATED WITH INCREASED HOSPITALIZATION (MEAN HOSPITALIZATION COST PER EVENT WAS $5,398 FOR PEDIATRIC ITP VS. $1,964 FOR NON-ITP PEDIATRIC DISCHARGES)[22]

ITP affects both pediatric patients and their caregivers[8,20,23]

- Concern for bleeding (gastrointestinal bleeds, intracranial hemorrhage, hematuria)
- Uncertain clinical course
- Fatigue
- Interruptions to daily routines
- Concern for hospitalization
- Dietary restrictions and/or medication side effects

GUIDELINE RECOMMENDATIONS FOR TREATING ITP

TREATMENT GOALS[1,4]

- Primary Goal:[4]
  - Sustain platelet counts for adequate hemostasis and reduce bleeding risks
- Emergency Goal:[1]
  - Increase platelet count as immediately as possible to minimize or eliminate severe bleeding
  - Continue platelet count maintenance until bleeding has stopped and the risk of rebleeding has resolved

FACTORS FOR ASSESSING TREATMENT[2]

- Disease duration
- Access to care
- Quality-of-life implications
- Patient and provider preferences
- Risk factors for bleeding (eg, comorbidities, medications, and age)

2019 - Updates to recommendations for ITP treatment

	American Society of Hematology (ASH) recommendations[2]	International Consensus Report (ICR) recommendations[1]
Limit first-line steroid use	≤ 7 days of corticosteroid treatment is preferred	1–2 weeks of steroid treatment. When response is achieved, aim to taper and stop by 3 weeks, even if platelet counts drop during tapering • If no response by week 2, taper over 1 week and stop
Second-line treatment updates	TPO-receptor agonist (RA) or anti-cluster of differentiation 20 (CD20) monoclonal antibody (mAb) or splenectomy are the options • TPO-RA preferred over anti-CD20 mAb • TPO-RA or anti-CD20 mAb preferred over splenectomy Decisions should be based on clinical factors and on shared decision-making with the patient	Medical and surgical options are available: • TPO-RA, anti-CD20 mAb, and immunosuppressants • Splenectomy

Guidelines for assessing response and remission

Definitions of response

ASH Guidelines[2]

Durable Response	Early Response	Initial Response
A platelet count ≥ 30 x 10^9/L and at least a 2-fold increase in platelet count from baseline at 6 months	A platelet count ≥ 30 x 10^9/L and at least a 2-fold increase in platelet count from baseline at 1 week	A platelet count ≥ 30 x 10^9/L and at least a 2-fold increase in platelet count from baseline at 1 month

Definition of remission

ASH Guidelines[2]	ICR Guidelines[1]
Platelet count > 100 x 10^9/L at 12 months after ITP diagnosis	Platelet count ≥ 30 x 10^9/L in the absence of any ITP-specific treatment

Learn more about ITP

Scan the QR codes below to directly access each resource

ITP: An Autoimmune Disorder
An overview of ITP, including a poster on the role of TPO and disease pathogenesis

Adult ITP Fact Sheet
A short but comprehensive overview of ITP in adult patients

ITP: Fast Facts
An ITP resource center with podcasts, videos, and brochures

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References

1. Provan D, et al. *Blood Adv.* 2019;3:3780- 3817. **2.** Neunert C, et al. *Blood Adv.* 2019;3:3829-3866. **3.** Cines DB, et al. *Blood.* 2009;113:6511-6521. **4.** Rodeghiero F, et al. *Blood.* 2009;113:2386-2393. **5.** Labarque V, et al. *Eur J Pediatr.* 2014;173:163-172. **6.** Yong M, et al. *Br J Haematol.* 2010;149:855-864. **7.** D'Orazio JA, et al. *J Pediatr Hematol Oncol.* 2013;35:1-13. **8.** Klaassen RJ, et al. *Pediatr Blood Cancer.* 2012;58:395-398. **9.** Terrell DR, et al. *Am J Hematol.* 2010;85:174-180. **10.** Cines DB, et al. *Presse Med.* 2014;43:e49-e59. **11.** Audia S, et al. *Blood.* 2013;122:2477-2486. **12.** Grozovsky R, et al. *Curr Opin Hematol.* 2010;17:585-589. **13.** Shan N-N, et al. *Haematologica.* 2009;94:1603-1607. **14.** Lambert MP, et al. *Blood.* 2017;129:2829- 2835. **15.** Kuter DJ, et al. *Hematol Oncol Clin North Am.* 2009;23:1193-1211. **16.** Cines DB, et al. *N Engl J Med.* 2002;346:995-1008. **17.** Houwerzijl EJ, et al. *Blood.* 2004;103:500-506. **18.** Deutsch VR, et al. *Br J Haematol.* 2006;134:453-466. **19.** Semple JW, et al. *Curr Opin Hematol.* 2010;17:590-595. **20.** Heitink-Polle KM, et al. *Haematologica.* 2014;99:1525-1531. **21.** Kuhne T, et al. *Haematologica.* 2011;96:1831-1837. **22.** Tarantino MD, et al. *Platelets.* 2016;27:472-478. **23.** Giordano P, et al. *Pediatr Hematol Oncol.* 2014;31:534-547.