**Supplemental Table 1.** Society Recommendations for Neuraxial Procedures in the Setting of Thrombocytopenia

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Society Recommendations for Neuraxial Procedures in the Setting of Thrombocytopenia** | | | | | |
| **Society and Year of Publication** | **Neuraxial Procedure Types** | **Indications to Assess Platelet Number Prior to Procedure** | | | **Platelet Count (x106/L) Recommendations** |
| **Anesthesiology Societies** | | | | | |
| **American Society of Regional Anesthesiology and Pain Medicine (ASRA), 2018**[**1**](#_ENREF_1) | Anesthesia | If unfractionated heparin administered > 4 days, check plts prior to NB/CR | | | NA |
| **American Society of Anesthesiologists,**  **2016**[**2**](#_ENREF_2) | Obstetric anesthesia | Decision to check plts should be individualized and based on patient’s history, physical examination, and clinical signs. Routine plts not necessary in healthy parturient. | | | NA |
| **American Society of Regional Anesthesiology and Pain Medicine (ASRA), 2015**[**3**](#_ENREF_3) | Pain procedures | Check plts if glycoprotein IIb/IIIa receptor antagonist (abciximab, eptifibatide, tirofiban) administered | | | NA |
| **German Society for Anesthesiology and Intensive Care,**  **2014**[**4**](#_ENREF_4) | Anesthesia | For unfractionated heparin or LMWH administered for >5 days, check plts prior to NB/CR | | | NA |
| **Association of Anaesthetists of Great Britain and Ireland (AAGBI),**  **2013**[**5**](#_ENREF_5) | Obstetric anesthesia | **DIC:** incompatible with neuraxial anesthesia  **Massive transfusion:** assessment of plt function should occur in patients who have been given plt transfusions prior to NB  **Liver failure**: assessment of coagulopathy including plt number and function  **Uremia**: assessment of plt number and function  **Trauma**: coagulopathy should be assessed  **Sepsis**: coagulopathy should be assessed | | | **Risk assessment for spinal hematoma in obstetric patients:**  **Normal risk**  -Preeclampsia: **>100,000** within 6hrs of NB  -ITP: **>75,000** within 24hrs of NB  -IUFD: COAGS normal within 6hrs of block  **Increased risk**  -Preeclampsia:**75-100,000**  -ITP: **50-75,000**  -IUFD: no clinical tests and no COAGS available  **High risk**  -Preeclampsia:**75-100,000**  (decreasing) and normal COAGS  -ITP: **20-50,000**  **Very high risk**  -Preeclampsia**: <75,000** or abnormal COAGS or HELLP syndrome  -ITP: **<20,000**  -IUFD: abruption or overt sepsis |
| **Sociedade Brasileira de Anestesiologia (SBA), 2013**[**6**](#_ENREF_6) | Anesthesia | If unfractionated heparin administered > 5 days, check plt prior to NB/CR | | | Epidural or spinal blocks, in the absence of risk factors for bleeding, may be performed with plts **>80,000** |
| **Belgium Association for Regional Anaesthesia (BARA),**  **2011**[**7**](#_ENREF_7) | Anesthesia | If unfractionated heparin or LMWH has been administered for 5 days (or greater), check plt prior to NB/CR.  Check plt if glycoprotein IIb/IIIa receptor antagonist (abciximab, eptifibatide, tirofiban) administered | | | NA |
| **European Society of Anesthesiology (ESA), 2010**[**8**](#_ENREF_8) | Anesthesia | If unfractionated heparin administered >5 days, check plts prior to NB/CR.  Check plts if glycoprotein IIb/IIIa receptor antagonist (abciximab, eptifibatide, tirofiban) administered | | | NA |
| **Scandinavian Society of Anesthesiology (SCA), 2010**[**9**](#_ENREF_9) | Anesthesia | For unfractionated heparin given >5 days, check plts prior to NB/CR  **Liver failure**: NB contraindicated in severe hepatic dysfunction with elevated INR or plts **<100,000** | | | Acceptable counts of normally functioning plts depend on type of neuraxial block and indication:  Single shot spinal anesthesia  -Benefit comfort: **>100,000**  -Benefit reduce morbidity: **>50,000**  -Benefit reduce mortality: **>30,000**  Epidural & CSE  -Benefit comfort: **>100,000**  -Benefit reduce morbidity: **>80,000**  -Benefit reduce mortality: **>50,000** |
| **Transfusion Medicine Societies** | | | | | |
| **American Red Cross,**  **2017**[**10**](#_ENREF_10) | Diagnostic LP | | NA | | Prophylactic plt transfusion recommended for plts **<20,000** |
| Anesthesia | | NA | | Prophylactic plt transfusion recommended if plts **<80,000** |
| **AABB (formerly, American Association of Blood Banks), 2015**[**11**](#_ENREF_11) | Diagnostic LP | | NA | | Prophylactic plt transfusion recommended for patients having elective diagnostic LP with plts **<50,000** |
| **The Dutch Institute of Healthcare Improvement (CBO),**  **2011**[**12**](#_ENREF_12) | LP | | NA | | Target value **>20,000** |
| Pediatric LP | | NA | | Plt count **>50,000** in ALL with blasts in peripheral blood  Plts **>10,000** in stable children with ALL without blasts |
| **Italian Society of Transfusion Medicine & Immunohaematology (SIMTI), 2011**[**13**](#_ENREF_13) | Anesthesia and LP | | NA | | Bring plts above **50,000** |
| **German Society of Transfusion Medicine,**  **2009**[**14**](#_ENREF_14) | Anesthesia | | NA | | Plt transfusion prior to epidural if plts **<80,000**; prior to spinal if plts **<50,000** |
| Diagnostic LP | | NA | | Plt transfusion prior to elective LP if plts **<50,000**  For urgent diagnostic procedures plts of **20,000** sufficient unless symptoms of hemorrhage  In patients with severe sepsis for whom LP necessary for diagnosis (e.g. meningococcal sepsis suspected), LP may be performed independent of plts. If plts **<10,000** plt transfusion should be performed |
| **French Safety Agency for Health Products (AFSSaPS),**  **2005**[**15**](#_ENREF_15) | Anesthesia | | NA | | Plts >**50,000** sufficient for spinal anesthesia  Plts >**80,000** sufficient for epidurals  *-Other risk factors must be taken into account, as well as progressive nature of thrombocytopenia* |
| **Hematology and Oncology Societies** | | | | | |
| **American Society of Clinical Oncology,**  **2018**[**16**](#_ENREF_16) | LP | | | NA | Plts of **40,000-50,000** sufficient to perform “major invasive procedures” |
| **British Committee for Standards in Haematology,**  **2017**[**17**](#_ENREF_17) | LP | | | NA | Consider performing LP above the plt threshold of **40,000** |
| Insertion/removal of epidural catheter | | | NA | Consider performing epidural catheter insertion or removal above plt threshold of **80,000** |
| **British Committee for Standards in Haematology,**  **2016**[**18**](#_ENREF_18) | Pediatric LP | | | NA | Threshold for plt transfusion prior to LP is **<40,000**  *It is accepted that prior to LP some clinicians will transfuse plts at higher counts (e.g.* ***50,000****) in unstable children, nonALL patients, or for first LP in newly diagnosed ALL to avoid haemorrhage and CSF contamination with blasts, or at lower counts (****≤20,000****) in stable patients with ALL, depending on clinical situation* |
| **British Society for Haematology,**  **2015**[**19**](#_ENREF_19) | Obstetric anesthesia in Acute Myeloid Leukemia | | | NA | Epidural anesthesia should be avoided in plts **<80,000** |

Plt = platelet; Plts = platelet count; COAGS = coagulation tests; NB= neuraxial block; CR = catheter removal; ITP = idiopathic thrombocytopenia purpura; NSAID = nonsteroidal anti-inflammatory drugs; ASA = aspirin; LMWH = low molecular weight heparin; LP = lumbar puncture; NA = Not discussed in guidelines, IUFD= intrauterine fetal demise; CSE = combined spinal epidural; ALL= acute lymphatic leukemia; LP = lumbar puncture; CSF = cerebrospinal fluid

**Supplemental Table 2**. Practitionersurveys assessing platelet cutoffs for performing neuraxial procedures

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Anesthesiologist Surveys:**  **Willingness to Perform Neuraxial Procedures in Thrombocytopenia in Pregnancy** | | | | | | |
| **Study** | **Number of responders** | **Patient population** | | **Platelet count (106/L)** | **Percentage who *Would Perform* Procedure** | |
| **Beilin**[**21**](#_ENREF_21)(1996) | N= 113 Academic practitioners  N= 94 Private practitioners | *Otherwise healthy* | | 100,000-150,000 | 100% Academic practitioners  100% Private practitioners | |
| 80,000-99,000 | 66% Academic practitioners  55% Private practitioners | |
| 50,000-79,000 | 16% Academic practitioners  9% Private practitioners | |
| <50,000 | 2% Academic practitioners  0% Private practitioners | |
| **Wee**[**22**](#_ENREF_22)  (2002) | N=213 Obstetric anesthesiologists | *Immune Thrombocytopenia* | | >100,000 | 96% Epidural procedure  96% Spinal procedure | |
| 80,000-100,000 | 64% Epidural procedure  74% Spinal procedure | |
| 50,000-79,000 | 22% Epidural procedure  31% Spinal procedure | |
| <50,000 | 4% Epidural procedure  9% Spinal procedure | |
| After correction of platelet count | 76% Epidural procedure  79% Spinal procedure | |
|  | *Preeclampsia* | | >100,000 | 98% Epidural procedure  98% Spinal procedure | |
|  | 80,000-100,000 | 72% Epidural procedure  78% Spinal procedure | |
| N= 224 Obstetric anesthesiologists | 50,000-79,000 | 22% Epidural procedure  30% Spinal procedure | |
|  | <50,000 | 4% Epidural procedure  7% Spinal procedure | |
|  | After correction of platelet count | 72% Epidural procedure  74% Spinal procedure | |
| **Breen**[**23**](#_ENREF_23) (2000) | N= 308 Community anesthesiologists  N= 204 University anesthesiologists | Not specified | | Would place epidural catheter at 50,000 | 14.6% Community anesthesiologists  16.2% University anesthesiologists | |
| *Minimum platelet count you will accept and still provide epidural analgesia*  *Community anesthesiologists: 80,600 +/- 18,800 (n=308)*  *University anesthesiologist: 79,500 +/- 18,000 (n= 204)* | | | | |
| **Staikou**[**24**](#_ENREF_24) (2014) | N= 341 | *Parturient with no signs or history of bleeding* | ***At which platelet count will you NOT consider regional analgesia or anesthesia*** | | | |
| <100,000 | | | 21.4% |
| <80,000 | | | 60.4% |
| <50,000 | | | 89.4% |

**References**

1. Horlocker TT, Vandermeuelen E, Kopp SL, Gogarten W, Leffert LR, Benzon HT. Regional Anesthesia in the Patient Receiving Antithrombotic or Thrombolytic Therapy: American Society of Regional Anesthesia and Pain Medicine Evidence-Based Guidelines (Fourth Edition). *Reg Anesth Pain Med.* 2018;43(3):263-309.

2. Practice Guidelines for Obstetric Anesthesia: An Updated Report by the American Society of Anesthesiologists Task Force on Obstetric Anesthesia and the Society for Obstetric Anesthesia and Perinatology. *Anesthesiology.* 2016;124(2):270-300.

3. Narouze S, Benzon HT, Provenzano D, et al. Interventional Spine and Pain Procedures in Patients on Antiplatelet and Anticoagulant Medications (Second Edition): Guidelines From the American Society of Regional Anesthesia and Pain Medicine, the European Society of Regional Anaesthesia and Pain Therapy, the American Academy of Pain Medicine, the International Neuromodulation Society, the North American Neuromodulation Society, and the World Institute of Pain. *Reg Anesth Pain Med.* 2018;43(3):225.

4. Waurick K, Riess H, Van Aken H, Kessler P, Gogarten W, Volk T. Rückenmarksnahe Regionalanästhesien

und Thrombembolieprophylaxe/antithrombotische Medikation. *Anästh Intensivmed* 2014;55:464-492.

5. Membership of the Working Party: Harrop-Griffiths W, Cook T, et al. Regional anaesthesia and patients with abnormalities of coagulation. *Anaesthesia.* 2013;68(9):966-972.

6. Fonseca NM, Alves RR, Pontes JPJ. Recomendações da SBA para segurança na anestesia regional em uso de anticoagulantes. *Rev Bras Anestesiol.* 2014;64:1-15.

7. Vandermeulen E, Decoster J, Dewandre PY, et al. Central neural blockade in patients with a drug-induced alteration of coagulation. Third edition of the Belgian Association for Regional Anaesthesia (BARA) Guidelines. *Acta Anaesthesiol Belg.* 2011;62(4):175-191.

8. Gogarten W, Vandermeulen E, Van Aken H, Kozek S, Llau JV, Samama CM. Regional anaesthesia and antithrombotic agents: Recommendations of the European Society of Anaesthesiology. *Eur J Anaesthesiol.* 2010;27(12):999-1015.

9. Breivik H, Bang U, Jalonen J, Vigfusson G, Alahuhta S, Lagerkranser M. Nordic guidelines for neuraxial blocks in disturbed haemostasis from the Scandinavian Society of Anaesthesiology and Intensive Care Medicine. *Acta Anaesthesiol Scand.* 2010;54(1):16-41.

10. Fridey JB, Borge D, Brunker P, et al. A Compendium of Transfusion Practice Guidelines, 3rd edition. *American National Red Cross.* 2017:156.

11. Kaufman RM, Djulbegovic B, Gernsheimer T, et al. Platelet Transfusion: A Clinical Practice Guideline From the AABB. *Ann Intern Med.* 2015;162(3):205-213.

12. de Vries R, Haas F. English Translation of the Dutch Blood Transfusion Guideline 2011. *Clin Chem.* 2012;58(8):1266-1267.

13. Liumbruno GM, Bennardello F, Lattanzio A, et al. Recommendations for the transfusion management of patients in the peri-operative period. I. The pre-operative period. *Blood Transfus.* 2011;9(1):19-40.

14. Chapter 2 Platelet Concentrates. *Transfus Med Hemother.* 2009;36(6):372-382.

15. Samama CM, Djoudi R, Lecompte T, Nathan-Denizot N, Schved JF, Group AE. Perioperative platelet transfusion: recommendations of the Agence française de sécurité sanitaire des produits de santé (AFSSaPS) 2003. *Can J Anaesth.* 2005;52(1):30-37.

16. Schiffer CA, Bohlke K, Delaney M, et al. Platelet Transfusion for Patients With Cancer: American Society of Clinical Oncology Clinical Practice Guideline Update. *J Clin Oncol.* 2018;36(3):283-299.

17. Estcourt LJ, Birchall J, Allard S, et al. Guidelines for the use of platelet transfusions. *Br J Haematol.* 2017;176(3):365-394.

18. New HV, Berryman J, Bolton-Maggs PHB, et al. Guidelines on transfusion for fetuses, neonates and older children. *Br J Haematol.* 2016;175(5):784-828.

19. Ali S, Jones GL, Culligan DJ, et al. Guidelines for the diagnosis and management of acute myeloid leukaemia in pregnancy. *Br J Haematol.* 2015;170(4):487-495.

20. Beilin Y, Bodian CA, Haddad EM, Leibowitz AB. Practice patterns of anesthesiologists regarding situations in obstetric anesthesia where clinical management is controversial. *Anesth Analg.* 1996;83(4):735-741.

21. Wee L, Sinha P, Lewis M. Central nerve block and coagulation: a survey of obstetric anaesthetists. *Int J Obstet Anesth.* 2002;11(3):170-175.

22. Breen TW, McNeil T, Dierenfield L. Obstetric anesthesia practice in Canada. *Can J Anaesth.* 2000;47(12):1230-1242.

23. Staikou C, Paraskeva A, Karmaniolou I, Mani A, Chondrogiannis K. Current practice in obstetric anesthesia: a 2012 European survey. *Minerva Anestesiol.* 2014;80(3):347-354.