# Adversary Bleeding Events in Patients with Severe Thrombocytopenia Undergoing Endoscopy: A Systematic Review and Meta-Analysis

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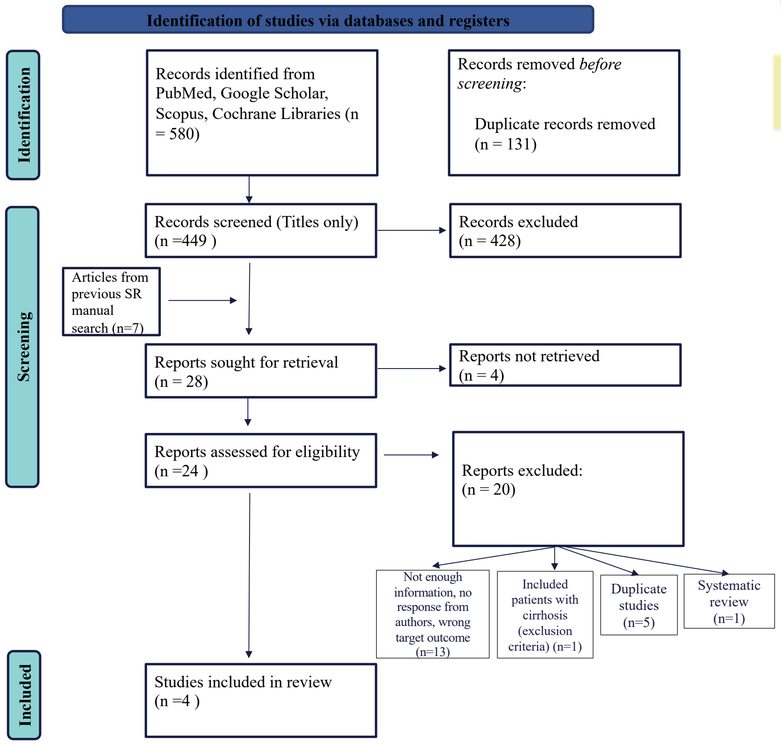
## Background

- International guidelines do not strongly support a specific platelet count necessary to safely perform gastrointestinal endoscopy, yet many institutions adhere to a pre-procedure goal of greater than 50,000/uL (1,2).

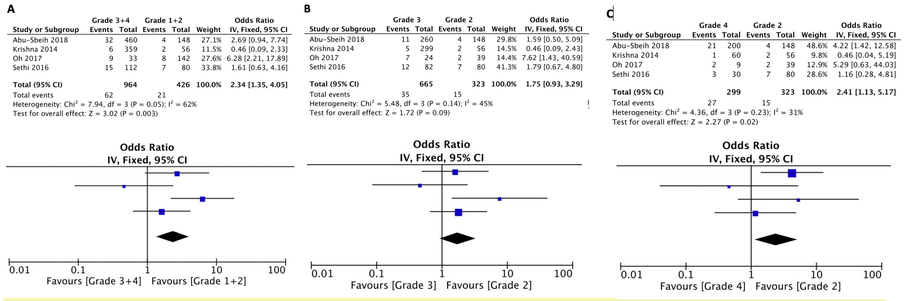
- This systematic review and meta-analysis asks what is the bleeding risk in endoscopy for patients with severe thrombocytopenia, categorized by Common Terminology Criteria for Adverse Events?

| CTCAE Grade | Platelet count |
|---|---|
| 1 | >75,000/mL |
| 2 | 50-75,000/mL |
| 3 | 25-50,000/mL |
| 4 | <25,000/mL |

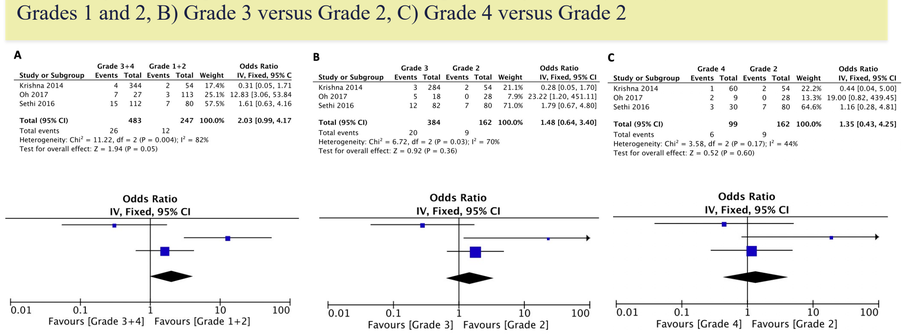
## Methods




## Results




Meta-analyses for all post-procedure bleeding, organized by comparison: A) Grades 3 and 4 versus Grades 1 and 2, B) Grade 3 versus Grade 2, C) Grade 4 versus Grade 2




Meta-analyses for post-procedure, post-biopsy bleeding, organized by comparison: A) Grades 3 and 4 versus Grades 1 and 2, B) Grade 3 versus Grade 2, C) Grade 4 versus Grade 2

| Author (Year) | Type | Patient population | Mean age | % Male | Bleeding outcome measured | NIH Quality Assessment Tool Rating |
|---|---|---|---|---|---|---|
| Oh et al. (2017)[19] | Full text, retrospective cohort | 108 patients with ITP or aplastic anemia | 52.7 | 74% | Early bleeding (within 24 hours), late bleeding (>24 hours) | 10 (good) |
| Krishna et al. (2014)[20] | Full text, retrospective cohort | 395 patients with heme and solid tumor malignancies | 55 | 57% | Immediate intraprocedural and delayed (not defined) | 11 (good) |
| Sethi et al. (2016)[21] | Abstract, retrospective cohort | 192 patients with HSCT and GVHD | n/a | n/a | Bleeding intraprocedural and delayed (<72 hours after biopsy) | 10 (good) |
| Abu-Sbeih et al. (2018)[12,22] | Abstract and full text, retrospective cohort | 466 patients with malignancy | n/a | n/a | Clinical signs of bleeding within 1 week post-procedure | 10 (good) |

## Results/Discussion

- Overall prevalence **of all post-procedure bleeding** was **83/1390 (6%)** and **38/730 (5.2%) for post-biopsy bleeding.** Grade 3 and 4 (<50,000/μL) had higher odds of post-procedure bleeding compared to Grades 1 and 2 (>50,000/μL) (OR 2.34, 1.35-4.05). **There was no difference between Grade 3 (25-50,000/μL) and Grade 2 (50-75,000/μL) (OR 1.75, 0.93-3.29).** There was also **no difference among severity of thrombocytopenia and bleeding risk when post-biopsy data was isolated.**

- Most low-risk endoscopic procedures are likely safe in the severely thrombocytopenic patient, when considering bleed risk. **Statistically significant bleeds only occur with counts less than 25,000/μL. Diagnostic endoscopy without intervention is likely safe at all platelet counts.**

## Next steps/future goals

- Future studies to better elucidate risk of bleeding for specific procedures and associated platelet counts
- Better understand what marker is most significant in determining highest bleed risk
- Include specific patient populations such as cirrhosis

## Acknowledgements and/ or References

1. Ben-Menachem T, Decker GA, Early DS, et al. Adverse events of upper GI endoscopy. *Gastrointestinal endoscopy*. 2012;76(4):707-718.
2. Schiffer CA, Bohlke K, Delaney M, et al. Platelet transfusion for patients with cancer: American Society of Clinical Oncology clinical practice guideline update. *Journal of Clinical Oncology*. 2018;36(3):283-299.

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