

COMPARISON OF AIMS65 GLASGOW-BLATCHFORD AND ROCKALL SCORES FOR RISK STRATIFICATION
AMONG PATIENTS DIAGNOSE WITH ACUTE NON-VARICEAL UPPER GASTROINTESTINAL BLEEDING AT THE
EAST AVENUE MEDICAL CENTER

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ABSTRACT

Significance: Early risk assessment is crucial for effective timing of endoscopy and determination of the need for other measures to be taken, for which scoring systems should be utilized. AIMS65 score has the advantage over the existing risk scores due to its simplicity, ease in recall and lack of subjectivity calculation.

Methods: This is a prospective cross-sectional study conducted from January to June 2017 involving patients admitted at East Avenue Medical Center due to suspected acute non-variceal upper gastrointestinal bleeding. The primary and secondary objectives of this study is to compare the ability of AIMS65 with Glasgow-Blatchford scoring and Rockall scoring used as an early risk assessment tool in accurately identifying patients with upper gastrointestinal bleeding.

Results: There were 86 patients included in this study who were admitted due to upper gastrointestinal bleeding. AIMS65 is more accurate in detecting the need for clinical intervention. Though with a low sensitivity at 66.7%, it has a significantly higher specificity (79.52%) and accuracy (73.09%). AIMS65 appears to be superior to both Glasgow-Blatchford and Rockall scores in predicting risk for re-bleeding among patients with non-variceal upper gastrointestinal bleeding, having a sensitivity of 100%, specificity of 78.82% and accuracy of 89.41%. In contrast, Glasgow-Blatchford score is a better predictor for blood transfusion requirements with an accuracy of 83.33%.

Conclusion: AIMS65 is a better predictor for endoscopic intervention and re-bleeding compared to the Glasgow-Blatchford and Rockall Risk Scores. Glasgow-Blatchford score is a better predictor for blood transfusion.

Keywords: Cross-section, *AIMS65*, *Glasgow-Blatchford score*, *Rockall score*, *gastrointestinal bleeding*

Background and significance of the study

Upper gastrointestinal (GI) bleeding remains one of the most important causes of hospitalization and mortality worldwide. Epidemiologic study shows that the incidence of upper GI bleeding in the general population is approximately 1 case per 1000 person-years^{1,2}, and the reported case fatality rate is 5-14%^{2,3}. A major cause of acute GI bleeding is peptic ulcer disease (PUD)⁴, and in the Philippines, PUD prevalence was noted to be at 18.8% on 2012.

Early upper endoscopy (within 24 hours of presentation) is recommended in most patients with upper gastrointestinal bleeding⁵, but this approach is often controversial because it uses substantial resources. Furthermore, not all patient with upper GI bleeding require emergency intervention^{5,7}. Determining the severity of upper GI bleeding is important for optimizing care, allocating resources efficiently, and ascertaining the disposition of the patient. Several investigators have developed decision rules and predictive models that permit identification of patients who are at low risk for recurrent or life threatening hemorrhage⁸. Such patients may be suitable for early hospital discharge or even outpatient care. The recently published International Consensus Recommendations on the management of patients with non-variceal upper GI bleeding recommend "early risk stratification", by using validated prognostic scales⁹. Several prognostic indices are available, including the Rockall score (RS)¹⁰, which incorporate both clinical, laboratory parameters like age, presence of shock, comorbidities and endoscopic parameters including diagnosis and stigma of bleeding, and the Glasgow-Blatchford score (GBS)¹¹ which take into account only clinical (hemoglobin, blood urea nitrogen, systolic blood pressure, pulse and the presence of melena, syncope, hepatic disease, or cardiac failure) but no endoscopic parameters. However, it has not been adopted in routine clinical practice, because of their difficult day to day application and limitations: it is weighted and assigns points to elements in the patient's medical history, some of which lack a clear definition¹².

Recently, AIMS65 score for acute upper gastrointestinal bleeding has been developed and validated to predict mortality¹³. It is base on laboratory which include albumin levels, international normalized ratio (prothrombin time), altered mental status, systolic blood pressure, and age > 65 years and does not need endoscopic data. It is also simple to remember with simple non-weighted issues. However, the role and utility of this for peptic ulcer bleeding has not yet been clarified since this scoring system was based on analysis of data from a mixed patient population, with acute upper GI bleeding that included both variceal and non-variceal UGIB. Therefore, this study aimed to evaluate and compare the applicability of the AIMS65 score in predicting outcomes of peptic ulcer bleeding.

Research Question

What is the competence of the AIMS65 score (albumin, international normalized ratio (INR), mental status, systolic blood pressure, age >65 years) compared to Glasgow-Blatchford score and Rockall score when used as an early risk assessment tool to identify low and high-risk patients requiring clinical intervention?

OBJECTIVES

Primary objective:

To compare the ability of AIMS65 scoring with Glasgow-Blatchford scoring and Rockall scoring used as an early risk assessment tool in accurately identifying patients with upper gastrointestinal bleeding and stratifying patients into low or high risk who will be requiring urgent clinical intervention

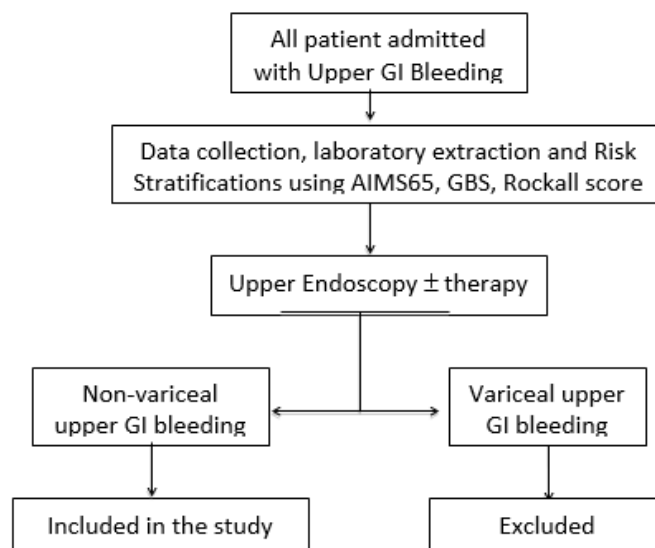
Secondary objective:

To compare AIMS65 scoring system with Glasgow-Blatchford and Rockall scoring system in predicting in-patient mortality, re-bleeding rate, length of stay, transfusion requirement and need for surgery

Operational Definition/Definition of terms:

1. Upper GI bleeding: bleeding from a source proximal to the ligament of Treitz and can be categorized as either variceal or non-variceal.
2. Endoscopy: a nonsurgical procedure used to examine a persons digestive tract.
3. Therapeutic endoscopy: a medical term for endoscopic procedure during which treatment is carried out via the endoscope.
4. Risk Assessment: a systematic process of evaluating the potential risk that may be involved in a projected activity or undertaking
5. Variceal bleeding: Hemorrhage from dilated or variceal veins, usually understood to mean esophageal varices secondary to end stage liver failure.

Consort Diagram



METHODOLOGY

Study Design and Setting

This is a prospective cross-sectional study conducted at the East Avenue Medical Center from January to June 2017

Study Population

This study included adult patients who admitted at East Avenue Medical Center-Emergency room presenting with upper GI Bleeding (hematemesis, melena, hematochezia) from January to June 2017

Inclusion criteria

All adult patients 18 years old and above presenting with acute non-variceal upper gastrointestinal bleeding

Exclusion criteria

Patients who receive any treatment at another institution for UGIB, re-bleeding episode from prior UGIB, incomplete data for score calculation or outcome determination, bleeding source from lower GI tract, variceal bleeding and patients with no written form of informed consent for research was excluded in this study

Exposure of interest

Patient who will be diagnose with non-variceal upper GI bleeding through endoscopy will be the exposure of interest of this study.

Sample size determination

A minimum of 88 subjects are required for this study based on a level of significance of 5%, a prevalence of 19.3%¹⁴ sensitivity and specificity of 0.987 and 0.137 respectively, with a marginal error of 8%.

Recruitment and Sampling

All adult patients admitted at East Avenue Medical Center due to suspected non-variceal upper GI bleeding was included in this study fulfilling the inclusion criteria. A medical resident assigned in the emergency collected the following data into structured forms which included the age, sex, comorbidity status (cardiovascular, hepatic, renal, chronic inflammatory, hematologic disease, Ischemic hearth disease, heart failure, diabetes mellitus, and malignant neoplasm), medications (e.g. Aspirin, NSAID, Steroid), Vices (Alcohol, Smoking), previous GI bleeding or surgery, coffee-ground or bloody vomitus, blood in stool or melena, presence of syncope, Vital signs (e.g. heart rate, respiratory rate, blood pressure), mental status, hemoglobin, blood urea nitrogen, international normalized ratio of prothrombin time, and albumin. All suspected non-variceal upper GI bleeding was referred to gastrointestinal fellow for co-management. The time of EGD, treatments, and disposition of the patient was recorded by the attending physical before discharge. All relevant clinical events relating to the composite clinical outcomes was also recorded during hospitalization. Information on the length of hospital stay, re-bleeding, blood transfusion requirements on wards, later endoscopic and surgical interventions, and mortality was obtained from hospital database.

Administration of AIMS65, Glasgow-Blatchford and Rockall score

For the determination of the AIM65 score, the following parameter was taken during admission: Age, PT with INR, Systolic blood pressure and altered mental status before endoscopy treatment. (See Table 6). For the determination of Glasgow-Blatchford score, the following parameter will be taken during admission: BUN, hemoglobin, systolic blood pressure, pulse, symptoms such as melena, syncope, hepatic disease and cardiac failure. (See Table 7). For the determination of Rockall score, the following parameter will be taken during administration: Age, Blood pressure, Major comorbidities (e.g. Heart failure, ischemic heart disease, renal failure, hepatic failure or disseminated cancer), Diagnosis post endoscopy 9e.g Mallory-Weiss tear, Malignancy, non-malignant causes of Upper GI bleeding) and Forrest classification during endoscopy. (See Table 8)

Data Analysis

Descriptive statistics was used to summarize the clinical characteristics of the patients. Frequency and proportion was used for nominal variables, median and range for ordinal variables, and mean and SD for interval/ratio variables.

Diagnostic accuracy test was used to determine the sensitivity, specificity, predictive value of the re-bleeding, intervention and blood transfusion requirements using the risk assessment of AIM65, Glasgow-Blatchford score and Rockall score.

All valid data were included in the analysis. Missing variables were neither replaced nor estimated. Null hypothesis was rejected at 0.05 α -level of significance. STATA 12.0 was used for data analysis.

Ethical consideration:

The protocol was approved by the Technical Review Board of the East Avenue Medical Center. All data was collected at the Gastroenterology and Pathology section of East Avenue medical Center. No potential conflicts of interest have been identified. The principal investigators and co-investigators report no disclosures.

RESULTS

Patient Characteristics

There were 86 patients included in this study who were admitted at East Avenue Medical Center due to upper gastrointestinal bleeding from January to June 2017, who were able to meet our inclusion and exclusion criteria. Average age of the population was 57 years old, predominantly males at 62%. The mean BMI of 23kgs/m² which is still normal by WHO standards, is already classified as overweight under the Asian criteria. More than half had hypertension (55.81%) while some had renal failure (13.9%), diabetes (11.63%), heart failure (11.63%), ischemic heart disease (9.3%) and malignant neoplasm (2.33%). No one with hepatic disease was included in this study. Among the medications that could incite a peptic ulcer bleed, Non-steroidal Anti-Inflammatory drugs were used by the majority (65.12%). Aspirin use was at 23% while steroids were taken by 9%, while less than half of the population were smokers (41%). See Table 1.

Table 1. Demographic and clinical profile of patients with non-variceal acute upper gastrointestinal bleeding, East Avenue Medical Center 2017 (n=86)

	Frequency (%); Mean ± SD
Age (years)	57.59 ± 14.75
BMI (kg/m ²)	23.14 ± 3.81
Sex	
Male	54 (62.79)
Female	32 (37.21)
Comorbidities*	
HPN	48 (55.81)
Renal failure	12 (13.95)
Diabetes	10 (11.63)
Heart failure	10 (11.63)
Ischemic heart disease	8 (9.3)
Malignant neoplasm	2 (2.33)
Hepatic disease	0
Medications*	
NSAID	56 (65.12)
Aspirin	20 (23.26)
Steroids	8 (9.3)
Smoking	36 (41.86)

* - Multiple responses

Clinical, Laboratory and Endoscopic Findings

Ninety seven percent of our study population came in with melena while more than half also presented with hematemesis (51.16%). Majority (97%) were awake with only 2 patients noted to be drowsy upon arrival at the emergency room—None of had syncope. Ten patients initially were in shock with systolic blood pressures ranging from 70 to 200 mmHg with mean heart rate of 98 bpm. In terms of laboratory parameters, average values of hemoglobin level was at 6.94 g/dl, blood urea nitrogen at 34.94mg/dl, prothrombin time at 12.5 seconds, INR of 1.11 and albumin at 3.1 g/dl were noted. Most patients had clean base ulcers on endoscopy (88.37%) while pigment spot was detected in 7 patients and adherent clot in 2. Only one had a non-bleeding visible vessel. No one presented with active bleeding nor oozing on EGD. See Table 2.

Table 2. Symptoms on admission, laboratory profile and endoscopic findings of patients with non-variceal acute upper gastrointestinal bleeding, East Avenue Medical Center 2017 (n = 86)

	Frequency (%); Mean \pm SD; Median (Range)
Symptoms on admission*	
Melena	84 (97.67)
Hematemesis	44 (51.16)
Hematochezia	0
Mental status	
Awake	84 (97.67)
Drowsy	2 (2.33)
Stupor	0
Coma	0
Shock	10 (11.63)
Syncope	0
Laboratory profile	
Heart rate	97.99 \pm 14.10
SBP	110 (70 to 200)
Hemoglobin	6.94 \pm 1.98
Blood urea nitrogen	34.24 (7 to 145.1)
Prothrombin time	12.5 (10.5 to 35.3)
INR	1.11 (0.92 to 3.11)
Albumin	3.1 (1.7 to 3.9)
Endoscopic findings (forrest classification)	
Clean base ulcer	76 (88.37)
Pigment spot	7 (8.14)
Adherent clot	2 (2.33)
Non-bleeding visible vessels	1 (1.16)
Active bleeding	0
Oozing	0

* - Multiple responses

Clinical Outcomes

Of the total study population, only 3.49% required endoscopic intervention, one with the use of clips and 2 with epinephrine injection. One patient had re-bleeding. No mortality or need for any surgical intervention was observed throughout the study. Mean hospital stay was 5 days with 93% having been transfused with packed RBC. Comparing the 3 risk scoring systems, only AIMS65 had a mean low risk score while Glasgow-Blatchford and Rockall had an average of high risk among the patients with a score of 12 and 4 respectively. See Table 3.

Table 3. Clinical outcomes of patients with non-variceal acute upper gastrointestinal bleeding, (n=86)

	Frequency (%); Median (Range)
Length of hospital stay (days)	5 (3 to 14)
Required transfusion	80 (93.02)
Required intervention	3 (3.49)
Clip	1 (33.3)
Epinephrine	2 (66.7)
Presentation of re bleeding	1 (1.16)
Status	
Alive	86 (100)
Expired	0
AIM65 score	1 (0 to 4)
Glasgow-Blatchford score	12 (4 to 16)
Rockall score	4 (1 to 8)

Comparison between AIMS65, Glasgow-Blatchford and Rockall Score

Based on our statistical analyses, AIMS65 is more accurate in detecting the need for clinical intervention. Though with a low sensitivity at 66.7%, it has a significantly higher specificity (79.52%) and accuracy (73.09%). AIMS65 also appears to be superior to both Glasgow-Blatchford and Rockall scores in predicting risk for re-bleeding among patients with non-variceal upper gastrointestinal bleeding, having a sensitivity of 100%, specificity of 78.82% and accuracy of 89.41%. In contrast, Glasgow-Blatchford score is a better predictor for blood transfusion requirements with an accuracy of 83.33%. See Tables 4-6.

Table 4. Diagnostic accuracy on the need for clinical intervention

	Sensitivity (95% CI)	Specificity (95% CI)	PPV (95% CI)	NPV (95% CI)	Accuracy
AIMS65 score	66.7% (9.43%, 99.16%)	79.52% (69.2%, 87.6%)	10.53% (4.5%, 22.5%)	98.51% (93.0%, 99.7%)	73.09%
GBS	100% (29.2%, 100%)	4.82% (1.3%, 11.9%)	3.66% (3.5%, 3.8%)	100%	52.41%
Rockall score	100% (29.2%, 100%)	19.3% (11.4%, 29.4%)	4.29% (3.9%, 4.7%)	100%	59.64%

GBS, Glasgow-Blatchford score; PPV, positive predictive value; NPV, negative predicted value.

Table 5. Diagnostic accuracy on the need for transfusion

	Sensitivity (95% CI)	Specificity (95% CI)	PPV (95% CI)	NPV (95% CI)	Accuracy
AIMS65 score	23.75% (15.0%, 34.6%)	100% (54.07%, 100%)	100%	8.96% (8.0%, 10.0%)	56.43%
GBS	100% (95.5%, 100%)	66.67% (22.3%, 95.7%)	97.56% (92.8%, 99.2%)	100%	83.33%
Rockall score	85.0% (75.3%, 92.0%)	66.67% (22.3%, 95.7%)	97.14% (91.6%, 99.1%)	25.0% (13.4%, 41.9%)	75.83%

GBS, Glasgow-Blatchford score; PPV, positive predictive value; NPV, negative predicted value.

Table 6. Diagnostic accuracy on the presentation for Re-bleeding

	Sensitivity (95% CI)	Specificity (95% CI)	PPV (95% CI)	NPV (95% CI)	Accuracy
AIMS65 score	100% (2.5%, 100%)	78.82% (68.6%, 86.9%)	5.26% (3.6%, 7.7%)	100%	89.41%
GBS	100% (2.5%, 100%)	4.71% (1.3%, 11.61%)	1.22% (1.2%, 1.3%)	100%	52.35%
Rockall score	100% (2.5%, 100%)	18.82% (11.2%, 28.8%)	1.43% (1.3%, 1.6%)	100%	59.41%

GBS, Glasgow-Blatchford score; PPV, positive predictive value; NPV, negative predicted value.

DISCUSSION

The 2010 International consensus on the management of patients with non-variceal upper gastrointestinal bleeding stresses the importance of promptly utilizing validated prognostic scales for assessing patients into low or high risk for mortality and re-bleeding in order to provide timely appropriate intervention⁵. Furthermore, the European Society of Gastrointestinal Endoscopy Guidelines 2015 cites the Glasgow-Blatchford Score as an ideal tool in pre-endoscopically assessing the risk of patients whereby those with very low risks would neither need to be admitted nor receive early endoscopy¹⁶. A similar recommendation was also published by the Asia Pacific Working Group Consensus in promoting the Glasgow-Blatchford Score in assessing Asians with non-variceal upper gastrointestinal bleeding who would need endoscopic intervention¹⁷.

Several risk scoring systems have already been established for assessing patients with upper gastrointestinal bleeding. Among the widely-used ones is the Rockall Risk Score, developed in 1995 which predicts a concomitant increase in risk of death and re-bleeding as the risk score rises². This combines clinical as well as endoscopic parameters. Another risk scoring system is the Glasgow-Blatchford Score which integrates clinical and laboratory factors to assess the risk of patients with upper gastrointestinal bleeding in terms of need for surgical or endoscopic intervention, re-bleeding, need for blood transfusion and in-hospital mortality¹¹.

AIMS65 which emerged in 2011 was developed from an extensive database, 187 hospitals in the United States, both teaching & non-teaching as well as Community and Referral centers¹³. Multiple studies have demonstrated that AIMS65 is a mortality prognostic scale for patients with both variceal and non-variceal upper gastrointestinal hemorrhage, even for cancer and elderly patients with UGIB^{18, 19, 20, 21, 22, 23, 24, 25, 26}. Aside from in-hospital mortality, AIMS65 was also able to demonstrate predictive capacity in terms of 30 and 90-day mortality²¹ and after 6 months of the initial bleed²⁰. In addition, Nakamura et al presented that among Japanese patients with both upper and lower acute gastrointestinal bleeding, a high AIMS65 score denotes a poor overall survival²⁵. High risk for mortality was consistently shown at AIMS65 score of 2 or more^{22, 27}. However, a study by Seung et al modified the AIMS65 score and added hemoglobin level and heart rate among the parameters. This retrospective study showed that the modified AIMS65 was better in predicting low and high risk patients with upper gastrointestinal bleeding than the traditional AIMS65²⁸.

Our study showed that AIMS65 was a better predictor for endoscopic intervention and re-bleeding compared to the Glasgow-Blatchford and Rockall Risk Scores. This is in contrast to the results of Yaka et al which presented GBS as superior to AIMS65 in terms of need for intervention, and in identifying high risk patients¹⁴. Though according to the study by Hyett et al, GBS and AIMS65 are equal predictors for this clinical outcome²⁶. As for re-bleeding, both researches by Martinez-Cara et al and Zhao et al presented that GBS had a higher predictive value than AIMS65^{19, 20}. For the transfusion requirement, our results were similar with several other papers that showed Glasgow-Blatchford to be better than both AIMS65 and Rockall Risk Scores.

Partly due to the relatively small sample size in our study, we cannot yet conclude at this point, that AIMS65 is the ideal risk screening tool for patients with acute upper gastrointestinal bleeding. Though it is a promising risk scoring system due to its simplicity and non-requirement of endoscopy, more studies are needed to prove that it is superior to the more complex and well-established risk scoring systems.

For further research regarding risk scoring systems for upper gastrointestinal bleeding, we recommend a larger study population in multiple centers.

CONCLUSION: AIMS65 is a better predictor for endoscopic intervention and re-bleeding compared to the Glasgow-Blatchford and Rockall Risk Scores. Glasgow-Blatchford score is a better predictor for blood transfusion.

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Appendix

DUMMY TABLES

Table 1. Demographic and clinical profile of patients with non-variceal acute upper gastrointestinal bleeding, East Avenue Medical Center 2016 (n=___)

	Frequency (%); Mean \pm SD; Median (Range)
Age	
Sex	
Male	
Female	
Comorbidities	
Hepatic disease	
Renal failure	
Chronic inflammatory	
Hematologic disease	
Heart failure	
Diabetes mellitus	
Malignant neoplasm	
Medications	
With previous GI bleeding/surgery	
Presentation of coffee-ground/bloody vomitus	
Presentation of bloody in stool/melena	
Syncope	
Blood pressure	
Pulse	
Mental status	
Awake/Confuse/Obstunded/Coma	
LABORATORY profile	
Hemoglobin	
Blood urea nitrogen	

	Frequency (%); Mean ± SD; Median (Range)
Prothrombin time	
Albumin	

Table 2. Comparison of demographic and outcome profile of high risk patients with non-variceal acute upper gastrointestinal bleeding, East Avenue Medical Center 2016 (n=___)

	AIM65 (n=___)	GB (n=___)	Rockall (n=___)	p-value
	Frequency (%); Mean ± SD; Median (Range)			
Age				
Sex (male)				
Required intervention				
Clip				
Epinephrine				
Presentation of re bleeding				
Length of hospital stay (days)				
Required transfusion				
Mortality				

Table 3. Diagnostic accuracy on the need for intervention on AIM 65

	With intervention	Without intervention	Total
	Frequency (%)		
Model 1 positive			
Model 1 negative			
Total			
Sensitivity		Positive LR	
Specificity		Negative LR	
PPV		Accuracy	
NPV			

PPV, positive predictive value; NPV, negative predicted value; LR, likelihood ratio.

Table 4. Diagnostic accuracy on the need for intervention on Glasgow-Blatchford

	With intervention	Without intervention	Total
	Frequency (%)		
Model 2 positive			
Model 2 negative			
Total			
Sensitivity		Positive LR	
Specificity		Negative LR	
PPV		Accuracy	
NPV			

PPV, positive predictive value; NPV, negative predicted value; LR, likelihood ratio.

Table 5. Diagnostic accuracy on the need for intervention on Rockall score

	With intervention	Without intervention	Total
	Frequency (%)		
Model 3 positive			
Model 3 negative			
Total			
Sensitivity		Positive LR	
Specificity		Negative LR	
PPV		Accuracy	
NPV			

PPV, positive predictive value; NPV, negative predicted value; LR, likelihood ratio.

Table 6. AIMS-65 Score

Parameter	Risk Factor	Score
Albumin	<3 g/dL	1
INR	>1.5	1
Mental Status	GCS <14, Disorientation, lethargy, stupor or coma	1
Systolic Blood Pressure	<90 mmHg	1
Age (yr)	>65	1

Table 7. Glasgow-Blatchford Score

Risk Marker	Score
Blood Urea	
• <18.2 mg/dl	0
• ≥18.2 and <22.4 mg/dL	2
• ≥22.4 and <28 mg/dL	3
• ≥28 and <70 mg/dl	4
• ≥70 mg/dL	6
Hemoglobin	
Male	
• ≥13 g/dL	0
• ≥12 and <13 g/dL	1
• ≥10 and <12 g/dL	3
Female	
• ≥12 g/dL	0
• ≥10 and <12 g/dL	1
Male and Female <10 g/dL	6
Systolic blood pressure	
• ≥110 mmHg	0
• 100 to 109 mmHg	1
• 90 to 99 mmHg	2

• <90 mmHg	3
Other Markers	
• Heart rate ≥ 100	1
• Melena at presentation	1
• Syncope at presentation	2
• Hepatic disease present	2
• Cardiac failure at presentation	2

Table 8. Rockall score

Risk Marker	Score
Age	
• <60 years old	0
• 60-79 years old	1
• ≥ 80 years old	2
Hemodynamic Shock	
• None with systolic BP ≥ 100 mmHg and pulse < 100 /min	0
• Tachycardic with pulse ≥ 100 /min but systolic BP ≥ 100	1
• Hypotension with systolic BP < 100	2
Major comorbidities	
• None	0
• Cardiac failure, ischemic heart disease or similar comorbidities	2
• Renal failure, hepatic failure or disseminated cancer	3
Diagnosis	
• Mallory-weiss tear, but no major lesion and no stigmata of recent bleed	0
• Other nonmalignant gastrointestinal diagnosis	1
• Upper gastrointestinal tract malignancy	2
Recent Hemorrhage	
• None (or dark area only)	0
• Blood found in upper gastrointestinal tract (clot adherence, spurting or visible vessels)	2