Geneva score

The **Geneva score** is a [clinical prediction rule](#) used in determining the pre-test probability of [pulmonary embolism](#) (PE) based on a patient's risk factors and clinical findings.[1] It has been shown to be as accurate as the [Wells Score,](#) and is less reliant on the experience of the doctor applying the rule.[2] The Geneva score has been revised and simplified from its original version. The simplified Geneva score is the newest version and predicted to have the same diagnostic utility as the original Geneva score.

Original Geneva Score

The original Geneva score is calculated using ٧ risk factors and clinical variables

Variable	Score
Age	
٦٠–٧٩ years	١
٨٠+ years	٢
Previous venous thromboembolism	
Previous DVT or PE	٢
Previous surgery	
Recent surgery within ٤ weeks	٣
Heart rate	
Heart rate >١٠٠ beats per minute	١
PaCO₂ (partial pressure of CO₂ in arterial blood)	
<٣٥mmHg	٢

٣٥-٣٩mmHg	١
PaO₂ (partial pressure of O₂ in arterial blood)	
<٤٩mmHg	٤
٤٩-٥٩mmHg	٣
٦٠-٧١mmHg	٢
٧٢-٨٢mmHg	١
Chest X-ray findings	
Band atelectasis	١
Elevation of hemidiaphragm	١

The score obtained relates to the probability of the patient having had a pulmonary embolism (the lower the score, the lower the probability):

- <٥ points indicates a low probability of PE
- ٥ - ٨ points indicates a moderate probability of PE
- >٨ points indicates a high probability of PE

Revised Geneva Score

More recently, the **revised Geneva score** has been introduced.[٤] This simplifies the scoring process, and has also been shown to be as effective as the Wells score.[٥]

The revised score uses ٨ parameters, but does not include figures which require an arterial blood gas sample to be performed:

Variable	**Score**

Age ٦٥ years or over	١
Previous DVT or PE	٣
Surgery or fracture within ١ month	٢
Active malignant condition	٢
Unilateral lower limb pain	٣
Hemoptysis	٢
Heart rate ٧٥ to ٩٤ beats per minute	٣
Heart rate ٩٥ or more beats per minute	٥
Pain on deep palpation of lower limb and unilateral edema	٤

The score obtained relates to probability of PE:

- ٠ - ٣ points indicates low probability (٨٪)
- ٤ - ١٠ points indicates intermediate probability (٢٩٪)
- ١١ points or more indicates high probability (٧٤٪)

The probabilities derived from the scoring systems can be used to determine the need for, and nature of, further investigations such as D-dimer, ventilation/perfusion scanning and CT pulmonary angiography to confirm or refute the diagnosis of PE.

Simplified Geneva Score

A newer revision referred to as the simplified revised Geneva score has been prospectively studied and reported in the Archives of Internal Medicine on October ٢٧ of ٢٠٠٨. The simplified scoring system replaced the weighted scores for each parameter with a ١-point score for each parameter present to reduce the likelihood of error when the score is used in a clinical setting. The report noted that the simplified Geneva score does not lead to a decrease in diagnostic utility in evaluating patients for a PE when compared to previous Geneva scores.[٣]

The simplified Geneva score:

Variable	**Score**
Age >٦٥	١
Previous DVT or PE	١
Surgery or fracture within ١ month	١
Active malignancy	١
Unilateral lower limb pain	١
Hemoptysis	١
Pain on deep vein palpation of lower limb and unilateral edema	١
Heart rate ٧٥ to ٩٤ bpm	١
Heart rate greater than ٩٤ bpm	٢

Patients with a score of ٢ or less are considered unlikely to have a current PE. Authors suggest that the likelihood of patients having a PE with a simplified Geneva score less than ٢ and a normal D-Dimer is percent.

References:

^ *Wicki J, Perneger TV, Junod AF, Bounameaux H, Perrier A (January ٢٠٠١).* *"Assessing clinical probability of pulmonary embolism in the emergency ward: a simple score"*. *Archives of Internal Medicine. ١٦١ (١): ٩٢– ٧. doi: ١٠,١٠٠١/archinte.١٦١,١,٩٢. PMC ١٤٩٥٧٣٢. PMID ١١١٤٦٧٠٢.*

١. **^** *Iles S, Hodges AM, Darley JR, et al. (March ٢٠٠٣). "Clinical experience and pre-test probability scores in the diagnosis of pulmonary embolism". QJM. ٩٦ (٣): ٢١١– ٥. doi: ١٠,١٠٩٣/qjmed/hcg٠٢٧. PMID ١٢٦١٥٩٨٥.*

٢. ^ Jump up to:*ᵃ ᵇ Klok FA, Mos IC, Nijkeuter M, et al. (October ٢٠٠٨). "Simplification of the revised Geneva score for assessing clinical probability of pulmonary embolism" (PDF). Archives of*

Internal Medicine. ١٦٨ (١٩): ٢١٣١–
٦. *doi*: <u>١٠٫١٠٠١/archinte.١٦٨٫١٩٫٢١٣١</u>. *PMID* <u>١٨٩٠٠٦٤٢</u>.

٣. **^** *Le Gal G, Righini M, Roy PM, et al. (February ٢٠٠٦). "Prediction of pulmonary embolism in the emergency department: the revised Geneva score". Annals of Internal Medicine.* ١٤٤ (٣): ١٦٥–
٧١. *doi*: <u>١٠٫٧٣٢٦/٠٠٠٣-٤٨١٩-١٤٤-٣-٢٠٠٦٠٢٠٧٠-</u>
<u>٠٠٠٠٤</u>. *PMID* <u>١٦٤٦١٩٦٠</u>.

٤. **^** *Righini M, Le Gal G, Aujesky D, et al. (April ٢٠٠٨). "Diagnosis of pulmonary embolism by multidetector CT alone or combined with venous ultrasonography of the leg: a randomised non-inferiority trial". Lancet.* ٣٧١ (٩٦٢١): ١٣٤٣–٥٢. *doi*: <u>١٠٫١٠١٦/S٠١٤٠-</u>
<u>٦٧٣٦(٠٨) ٦٠٥٩٤-٢</u>. *PMID* <u>١٨٤٢٤٣٢٤</u>.

٥. **^** <u>*"Geneva Scoring for Pulmonary Embolism Simplified Further. Physician's First Watch October ٢٩, ٢٠٠٨"*</u>. *Retrieved* ١/٢٥/٢٠٠٩.
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