# PERC Rule for Pulmonary Embolism

## INPUTS

|  |  |
| --- | --- |
| Age ≥50 | **Options:**   * No (0) * Yes (1) |
| HR ≥100 | **Options:**   * No (0) * Yes (1) |
| O₂ sat on room air <95% | **Options:**   * No (0) * Yes (1) |
| Unilateral leg swelling | **Options:**   * No (0) * Yes (1) |
| Hemoptysis | **Options:**   * No (0) * Yes (1) |
| Recent surgery or trauma  *Surgery or trauma ≤4 weeks ago requiring treatment with general anesthesia* | **Options:**   * No (0) * Yes (1) |
| Prior PE or DVT | **Options:**   * No (0) * Yes (1) |
| Hormone use  *Oral contraceptives, hormone replacement or estrogenic hormones use in males or female patients* | **Options:**   * No (0) * Yes (1) |

## FORMULA

If any of the following is/are present, PE cannot be ruled out:

* Age ≥50.
* HR ≥100.
* O₂ sat on room air <95%.
* Unilateral leg swelling.
* Hemoptysis.
* Recent trauma or surgery.
* Prior PE or DVT.
* Hormone use (oral contraceptives, hormone replacement or estrogenic hormones use in males or female patients).

## FACTS & FIGURES

If any criteria are positive, the PERC rule is not satisfied and cannot be used to rule out PE in this patient.

## EVIDENCE APPRAISAL

The [original article from 2004](https://www.ncbi.nlm.nih.gov/pubmed/15304025) was a prospective study with a derivation section and a validation section.

* 3148 patients from 10 sites were included in the derivation.
* 21 potential variables were included for analysis, with the 8 final variables selected from these.
* 1427 low-risk and 382 very low-risk patients from 2 sites were included in the validation section.
* In low-risk patients there was a sensitivity of 96% and specificity of 27%.
* In very low-risk patients there was a sensitivity of 100% and specificity of 15%.
* The false negative rate at 90 days in low-risk patients was 1.4% which is below the 1.8% testing threshold.

[A second multicenter validation](https://www.ncbi.nlm.nih.gov/pubmed/18318689) was done in 2008. This expanded upon the initial validation study and defined low pretest probability as <15%

* 8138 patients from 13 sites were included in the study. Some of these sites were included in the initial paper.
* Clinical gestalt for a pretest probability of <15%, 15-40% or >40% was collected from the providers.
* 20% of the cohort was deemed low risk (<15%)
* For patients who were PERC negative and pre-test probability was <15% the false negative rate at 45 days was 1.0% with a sensitivity of 97.4% and specificity of 21.9%.