 Spirometry Calculator

See also separate article Spirometry.

<table>
<thead>
<tr>
<th>Age</th>
<th>Sex</th>
<th>Calculate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (cm)</td>
<td>Predicted</td>
<td></td>
</tr>
<tr>
<td>FEV1 (L)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FVC (L)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEV1/FVC Ratio</td>
<td></td>
<td></td>
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<tr>
<td>PEFR (L/min)</td>
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</table>

The EMIS predicted peak flow calculation used within its clinical systems is based on a published revision to the original Nunn and Gregg equation in 1973. The revised Nunn and Gregg equation is as below and applies to ages 15-85 years.

**Male**

\[
\text{Loge}(\text{PEF}) = 0.544 \times \log(e(\text{age})) - 0.0151 \times \text{age} - 74.7/(\text{height}) + 5.48
\]

**Female**

\[
\text{Loge}(\text{PEF}) = 0.376 \times \log(e(\text{age})) - 0.0120 \times \text{age} - 58.8/(\text{height}) + 5.63
\]

The paediatric calculation (for ages below 15 years) is taken from Lung Function by J E Coates (Fourth Edition):

\[
\text{PEF} = 455 \times (\text{height}/100)-332
\]

In 2004 the Department of Health initiated a change to PEF meters to align to those that met a new EC standard. The new scale resulted in a conversion being required for PEF recorded using the conventional Wright McKerrow scale to the new European standard.

A conversion equation was developed by Clement Clarke™ that allows conversions of readings from the Wright McKerrow scale to EN 13826 scale.

\[
\text{EU} = 50.356 + (0.4 \times W) + (0.0008814 \times W^2) - (0.0000001116 \times W^3)
\]

It is therefore necessary that when using one of the three equations above for male, female, or paediatric predicted peak flow, the value obtained should be converted to the EU scale. The clinical systems use an array of values to look up old values against the EU value. Alternatively, the above equation can be applied to achieve the same result.

This calculator uses an algorithm derived from healthy adult lifetime non-smokers in Australia. [1]
Measurements made in Spirometry

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Measurement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VC (SVC)</td>
<td>Vital capacity (slow vital capacity)</td>
<td>Maximal amount of air exhaled steadily from full inspiration to maximal expiration (not time-dependent). It should be &gt;80% of predicted, reduced in restrictive disease.</td>
</tr>
<tr>
<td>FVC</td>
<td>Forced vital capacity</td>
<td>Volume of lungs from full inspiration to forced maximal expiration. It is reduced in restrictive disease, and in obstructive disease if air trapping occurs.</td>
</tr>
<tr>
<td>FEV1</td>
<td>Forced expiratory volume in one second</td>
<td>Volume of air expelled in the first second of a forced expiration. Reduced in both obstructive and restrictive disease.</td>
</tr>
<tr>
<td>FEV1% (FER)</td>
<td>Forced expiratory ratio (FEV1/FVC)x100</td>
<td>Percentage of FVC expelled in the first second of a forced expiration. Normal in restrictive disease - reduced in obstructive disease.</td>
</tr>
<tr>
<td>FEF 25-75%</td>
<td>Forced expiratory flow between 25-75%</td>
<td>Average expiratory flow rate at the middle part of forced expiration. It is a more sensitive indication of what is happening in the middle/lower airways, but is not as reproducible as FEV1. Normal in restrictive disease.</td>
</tr>
<tr>
<td>PEFR</td>
<td>Peak expiratory flow rate</td>
<td>Maximum rate of airflow achieved during expiration.</td>
</tr>
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Further reading & references


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