

DLCO GRADING STATEMENTS

A minimum of 2 efforts should be obtained (but not more than 5).

All accepted DLCO's efforts must be within 2.0.

If testing does not meet the below criteria, most likely additional testing efforts are required.

For tests less than grade A, the average of the IVC/FVC efforts can be used to determine the grade.

Additional comments are welcome if the techs feel they are helpful understanding that patient's results.

DLCO quality is Grade A. (no qualifying statement)

IVC \geq 90% OR only 1 DLCO's is \geq 90% but another effort is \geq 85%. (average the values)

And VA's are \pm 200 ml of best VA, or 5% (if VA > 4.0 L),

And BHT 8.0-12.0 seconds and sample collection \leq 4 seconds.

DLCO quality is Grade A – but alveolar volumes were not reproducible.

All the IVC/FVC efforts are \geq 90% but VA's are not \pm 200 ml of best VA, or 5% (if VA > 4.0 L) [¶]

DLCO quality is Grade A – but only 1 acceptable effort obtained.

Only 1 effort with IVC/FVC \geq 90% obtained, and the other efforts do not meet above criteria.

There should be at least a 3rd effort attempted before this decision is made.

DLCO quality is Grade B.

All IVC/FVC efforts \geq 85% OR average of efforts \geq 85%.

DLCO quality is Grade B – but alveolar volumes were not reproducible.

If VA's are not \pm 200 ml of best VA, or 5% (if VA > 4.0 L) [¶]

BHT 8.0-12.0 seconds and sample collection \leq 4 seconds.

DLCO quality is Grade B – but only 1 acceptable effort obtained.

Only 1 effort with IVC/FVC \geq 85% obtained, and the other efforts do not meet above criteria.

DLCO quality is Grade C.

All IVC/FVC efforts \geq 80% OR average of efforts \geq 80%.

DLCO quality is Grade C – but alveolar volumes were not reproducible.

If VA's are not \pm 200 ml of best VA, or 5% (if VA > 4.0 L) [¶]

BHT 8.0-12.0 seconds and sample collection \leq 5 seconds.

DLCO quality is Grade C – but only 1 acceptable effort obtained.

Only 1 effort with IVC/FVC \geq 80% obtained, and the other efforts do not meet above criteria.

DLCO quality is Grade D. (indicate if only 1 effort accepted)

If all IVC/FVC efforts \leq 80% OR average of efforts \leq 80%.

OR BHT < 8 or > 12 seconds

OR sample collection \leq 5 seconds.

DLCO quality is Grade F and therefore not reported.

Same as Grade D above but sample collection > 5 seconds.

[¶] See table at bottom of page 2 for alveolar Volume (VA) variability allowed when > 4.0 L.

Criteria for acceptability

A VI $\geq 90\%$ of the largest VC in the same test session; alternatively, a VI $\geq 85\%$ of the largest VC in the same test session and VA within 200 mL or 5% (whichever is greater) of the largest VA from other acceptable maneuvers.

85% of test gas VI inhaled in < 4 s.

A stable calculated breath-hold for 10 ± 2 s with no evidence of leaks or Valsalva/Müller maneuvers during this time.

Sample collection completed within 4 s of the start of exhalation.

Criteria for repeatability

At least two acceptable DLCO measurements within 2 mL/min/mmHg of each other.

Quality control grading #

Score	VI/VC	tBH	Sample collection
A	$\geq 90\%$ ¶	8–12 s	≤ 4 s
B	$\geq 85\%$	8–12 s	≤ 4 s
C	$\geq 80\%$	8–12 s	≤ 5 s
D	$\leq 80\%$	< 8 or > 12 s	≤ 5 s
F	$\leq 80\%$	< 8 or > 12 s	> 5 s

1) Only Grade A maneuvers meet all acceptability criteria. The average DLCO from 2 or more grade A maneuvers meeting repeatability criterion should be reported.

a. Below are other reportable Grade A efforts.

- i. ¶: If VI/VC $\geq 85\%$ and VA within 200 mL or 5% (whichever is greater) of the largest VA from another acceptable (Grade A) maneuver.
- ii. If two or more grade A maneuvers that are not repeatable are obtained ($\Delta VA > 200$ ml), then the average DLCO value from the acceptable maneuvers is reported.
 1. Grade A but report as suboptimal – 2 Grade A maneuvers but not repeatable.
- iii. If only 1 grade A maneuver is attained, only that DLCO value should be reported.
 1. Grade A but report as suboptimal – 1 acceptable Grade A maneuver.

2) If no grade A maneuver obtained, grades B to D might still have clinical utility.

- a. The average of such maneuvers should be reported.
- b. Deviations from the acceptability criteria must be noted to caution the interpreter of the test results.

3) Maneuvers of grade F are not useable.

If Alveolar Volumes (VA) are $>$ than 4.00 Liters, the below chart shows the allowable difference (5% change) from the highest Alveolar Volume

| VA (L) / $\Delta 5\%$ (L) |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| 4.00 / 0.200 | 5.00 / 0.250 | 6.00 / 0.300 | 7.00 / 0.350 | 8.00 / 0.400 |
| 4.10 / 0.205 | 5.10 / 0.255 | 6.10 / 0.305 | 7.10 / 0.355 | 8.10 / 0.405 |
| 4.20 / 0.210 | 5.20 / 0.260 | 6.20 / 0.310 | 7.20 / 0.360 | 8.20 / 0.410 |
| 4.30 / 0.215 | 5.30 / 0.265 | 6.30 / 0.315 | 7.30 / 0.365 | 8.30 / 0.415 |
| 4.40 / 0.220 | 5.40 / 0.270 | 6.40 / 0.320 | 7.40 / 0.370 | 8.40 / 0.420 |
| 4.50 / 0.225 | 5.50 / 0.275 | 6.50 / 0.325 | 7.50 / 0.375 | 8.50 / 0.425 |
| 4.60 / 0.230 | 5.60 / 0.280 | 6.60 / 0.330 | 7.60 / 0.380 | 8.60 / 0.430 |
| 4.70 / 0.235 | 5.70 / 0.285 | 6.70 / 0.335 | 7.70 / 0.385 | 8.70 / 0.435 |
| 4.80 / 0.240 | 5.80 / 0.290 | 6.80 / 0.340 | 7.80 / 0.390 | 8.80 / 0.440 |
| 4.90 / 0.245 | 5.90 / 0.295 | 6.90 / 0.345 | 7.90 / 0.395 | 8.90 / 0.445 |