

CALCULATION OUTLINE

1. Measure FVC in each tracing from baseline to plateau. Subtract baseline if other than zero.
2. Select largest FVC from the three acceptable tracings. Record on data sheet.
3. Measure FEV₁ in each curve.
4. Select largest FEV₁ from the three tracings. (Usually found on the same curve as the largest FVC). Record on data sheet.
5. Determine BTPS correction factor from table using ambient temperature.
6. Multiply (OBS=Observed) values by BTPS correction factor to obtain BTPS corrected values and likewise for the FEV₁.
7. For FEV₁/FVC%, divide:

FEV_{1(OBS)} by the FVC_(OBS) = FEV₁/FVC%_(OBS), then multiply by 100 to convert to a percentage

(Note: No BTPS Correction Required)

8. Determine predicted normals of the FVC, FEV₁ and FEV₁/FVC% from the NHANES III Reference Value Chart equations or look-up tables using sex, height and age. In non-Caucasians, FEV₁ predicted and FVC predicted must be multiplied 0.88 ethnic correction factor.
9. Determine % of predicted as shown:

$FVC_{OBS} / FVC_{PRED} = FVC\% \text{ predicted normal}$

$FEV_{1\ OBS} / FEV_{1\ PRED} = FEV_1\ \% \text{ predicted normal}$

$FEV_1/FVC\%_{OBS} \text{ divided by } FEV_1/FVC\%_{PRED} = FEV_1/FVC\% \text{ predicted normal}$

10. Summary:

$FVC_{ATPS} \times BTPS \text{ correction factor} = FVC_{OBS} (BTPS)$

$FEV_{1\ ATPS} \times BTPS \text{ correction factor} = FEV_{1\ OBS} (BTPS)$

$FEV_{1\ OBS} / FVC_{OBS} \times 100 = FEV_1/FVC\%_{OBS}(BTPS)$

$FVC_{OBS} / FVC_{PRED} = FVC\% \text{ predicted normal}$

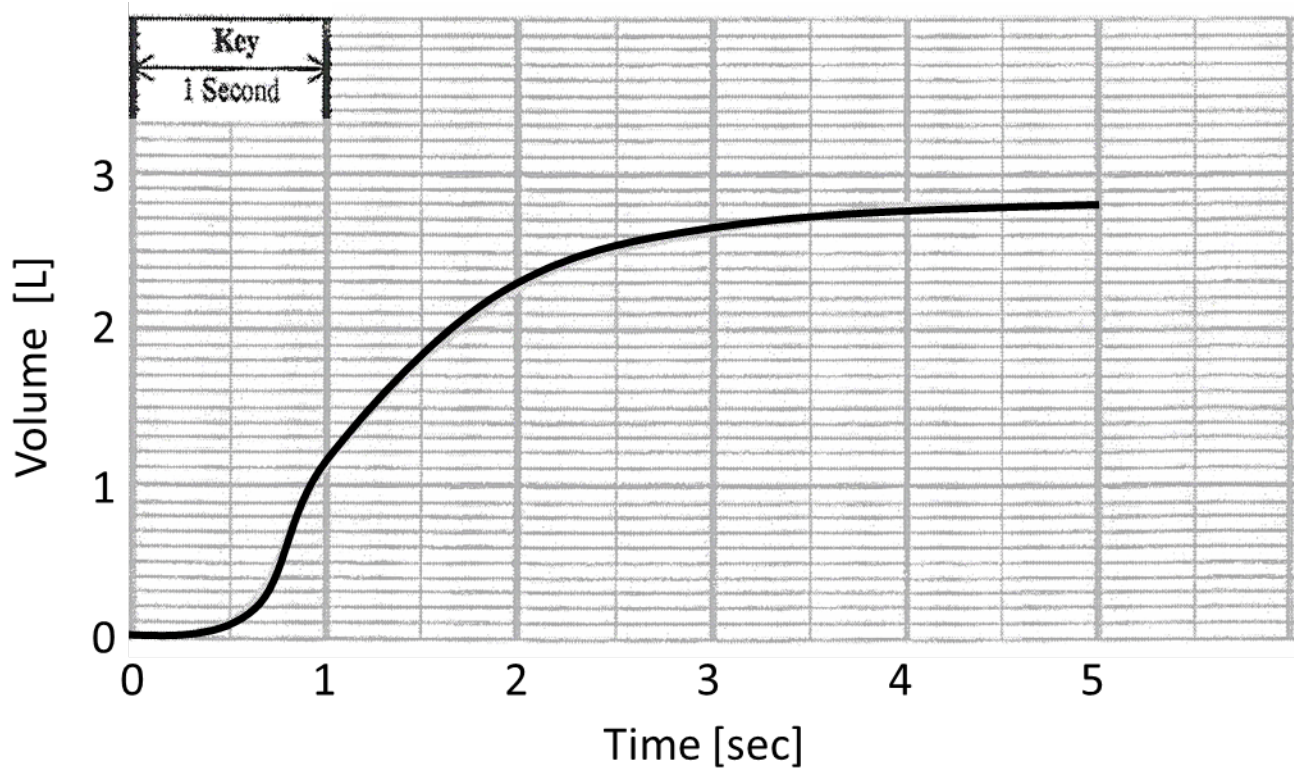
$FEV_{1\ OBS} / FEV_{1\ PRED} = FEV_1\ \% \text{ predicted normal}$

$FEV_1/FVC\%_{OBS} \text{ divided by } FEV_1/FVC\%_{PRED} = FEV_1/FVC\% \text{ predicted normal}$

Note: If measures of flow rate are made i.e. FEV_{25-75%}, values must be corrected to BTPS.

MANUAL CALCULATION EXERCISE

Example: Forty yr. old female with “mild” asthma. She is Caucasian, height 62”, ambient temp. 25°C, and we are testing under 3000 feet.



Work Table

PARAMETER	ATPS	BTPS Correction Factor	BTPS True Value	VALUE		RACE ADJUSTED VALUE	%PRED.
				PREDICTED	LLN		
FEV ₁ L		X =		÷			= %
FVC L		X =		÷			= %
FEV ₁ /FVC %			%	÷ %	%	%	%

ATPH – Ambient Temperature Pressure Humidity

BTPS – Body Temperature Pressure Saturation with Water Vapor