



Sweat Conductivity

Conductivity measurement is an approved method for cystic fibrosis (CF) screening. Due to the presence of other non-chloride ions that contribute to the conductivity measurement, mean sweat conductivity test results are approximately 15-20 mmol/L higher than the quantitative sweat chloride measurement. The CF Foundation recommends that a conductivity value greater than or equal to 50 mmol/L be further tested by quantitative sweat chloride for diagnosis. The sweat conductivity result is an unacceptable diagnostic test for patients with a positive CF newborn screen result.

The 2023 Sweat Analysis (SW-B) Survey for specimen SW-06 had approximately 80 participants performing sweat conductivity measurements. The coefficient of variation for this measurement typically ranges from 3-5%. Along with peer group measurement results, sweat conductivity interpretations are requested. Past interpretation results suggest that the lack of consensus on interpretive results is due to different conductivity cutoffs used for determining the need for a quantitative sweat chloride test.

A supplemental question was included in the SW-B Survey asking, "At what sweat conductivity concentration are patients referred to diagnostic testing?" Of the 39 respondents, the following cutoffs were provided:

Cutoff	Number participants
≥ 50 mmol/L	20
≥ 60 mmol/L	14
≥ 75 mmol/L	1
Other (70 & 73 mmol/L)	2
Not provided	2

The mean conductivity result for SW-06 is 55.2 mmol/L. With the various cutoff concentrations for referring to diagnostic testing, this data explains why there is non-consensus in the interpretation at 55 mmol/L. Good laboratory practice recommends that laboratory procedures document with a reference or supporting evidence the reasons for a specific cutoff used in interpreting conductivity measurement for CF screening ¹.

References

1. Clinical and Laboratory Standards Institute (CLSI). *Sweat Testing: Specimen Collection and Quantitative Chloride Analysis*. 4th ed. CLSI guideline C34. Clinical and Laboratory Standards Institute, Wayne, PA, 2019.

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