Using Multiples of the Median (MoM) for Normalization of TREC Results Meets the Need for Standardized SCID Reporting

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Distribution by TREC Copy #
Distribution by TREC Copy # (log scale)
Distribution by TREC Cq
Distribution by TREC Cq (Reverse Order)
TREC Copy # (log scale)
TREC Cq (reverse order)
What is Public Health Medical Screening?

Screening is the **systematic** application of a test or inquiry, to identify individuals at sufficient risk of a specific disorder to benefit from further investigation or direct preventive action, among persons who have not sought medical attention on account of symptoms of that disorder.

*J Med Screen* 1994 1:1
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*J Med Screen 1994 1:1*

- Screening is to assess risk.
- Screening differs from diagnostic testing in that, there is no intention to make a diagnosis of a medical disorder.
Odds of Being Affected given a Specific Result


Measurements of AFP can be affected by laboratory technique, resulting in difficulty comparing absolute results between laboratories; therefore, Multiples of the Median (MoM) was used as a method to normalize data from participating laboratories so that individual test results could be compared.

35 years later it is the established standard for reporting maternal serum screening results.
The MEDIAN is the MIDDLE value when the values are arranged in order; therefore the median is not influenced by outlying values.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11  [6 is the median]
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 5000  [6 is still the median]

Patient MoM = Patient result / Population Median

Multiples of the Median are more convenient to use than percentiles; they are easier to derive and more stable.

Each laboratory must establish its own reference data, and determine the median value for its population.
Distribution by MoM TREC Copy # (log scale)
Distribution by **MoM TREC Cq** (Reverse order)
IA: Line at 10% of Population Median
MA: Line at 10% of Population Median
WI: Line at 10% of Population Median
3 States by TREC Copy #
3 States by TREC Cq
3 States by MoM TREC Cq

IA: 31 (0.7%)   WI: 27 (0.6%)   MA: 21 (0.5%)
Conclusions

• Individual TREC results expressed as Multiples of the TREC Cq Median (TREC Cq MoM) can be used as the screening variable for SCID screening.

• Multiples of the Median (MoM) can be used as a method to normalize TREC assay data from different laboratories so that individual test results can be compared.

• Multiples of the Median (MoM) may be a method to normalize test results for other NBS assays so that individual test results from different laboratories can be compared.
**Acknowledgements**

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<th>Wisconsin</th>
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