



Modifying 17OHP screening cutoffs for improved detection of 21OHD deficiency

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BACKGROUND

- Congenital adrenal hyperplasia is a group of autosomal recessive disorders with most cases associated with 21 hydroxylase deficiency (21OHD)
- Newborn screening for 21OHD is a two-tiered approach; first-tier immunoassay for quantification of 17-hydroxyprogesterone (17OHP) followed by second-tier mass spectrometry steroid profile analysis
- Data varies regarding which co-variates to use for establishing 17OHP cutoff levels when screening for 21OHD

METHODS

Objective:

To improve screening specificity for 21OHD by modifying 17OHP cutoff levels based on both collection time and birth weight.

Design:

- Retrospective assessment of de-identified screening results from newborns collected from January-December 2019
- Mean/median values from data used to delineate sub-categories within co-variates of collection time (CT) and birth weight (BW)
- 95th and 99th percentiles calculated based on 17OHP levels for CT and BW
- Percentiles used as cutoffs and applied to a cohort of confirmed cases

RESULTS

Birth Weight with Collection Time Stratification

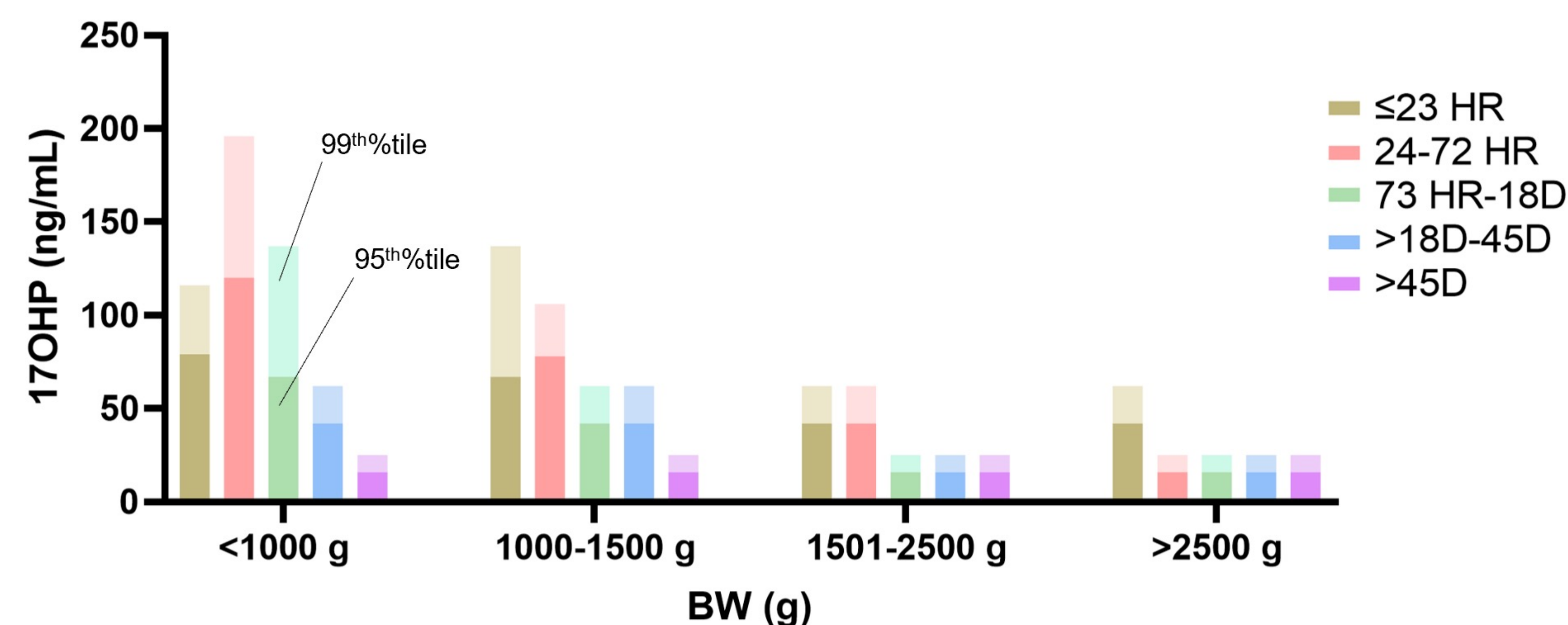


Figure 1. 17OHP levels are affected by a combination of collection time and birth weight

Confirmed Cases 24-72 HR

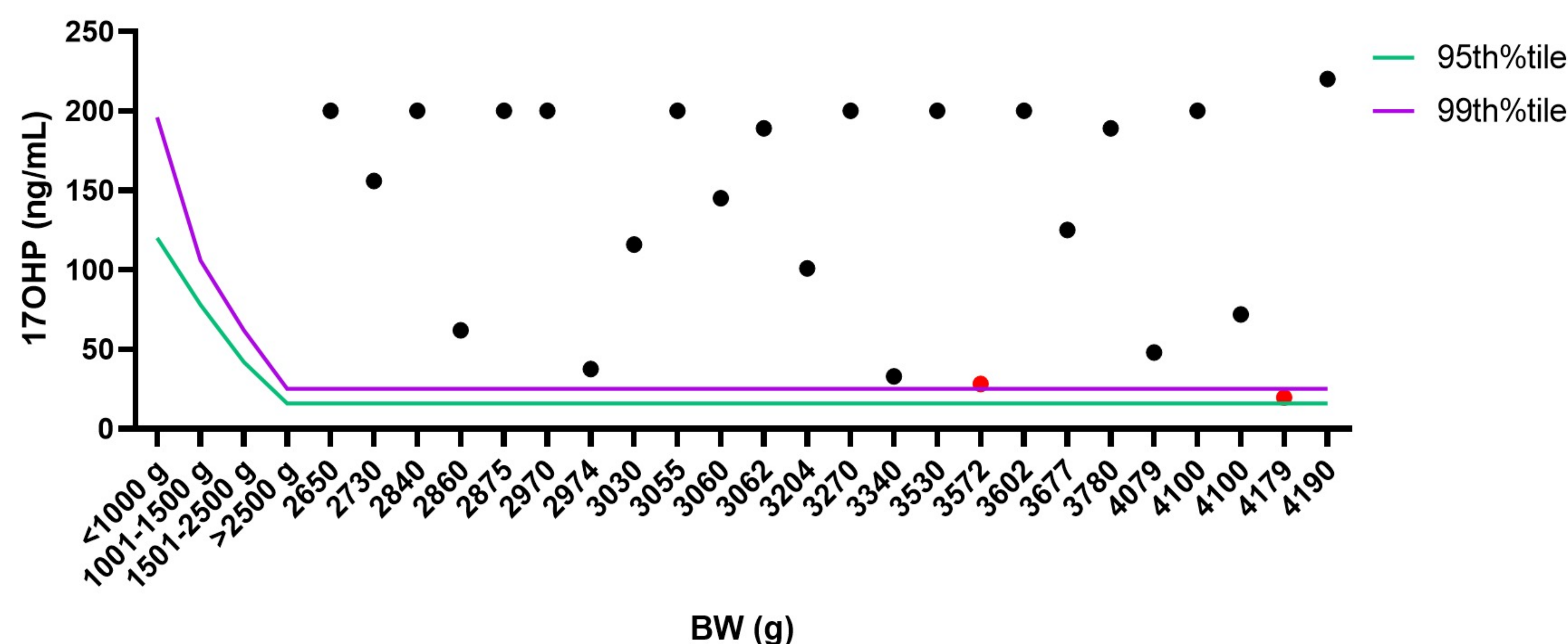


Figure 2. Application of modified 95th and 99th percentile 17OHP cutoffs to confirmed cases

CONCLUSIONS

- Both BW and CT are found to impact 17OHP levels
- Application of modified first-tier 17OHP cutoffs as the 99th percentile based on CT and BW correctly identified all confirmed cases
- Utilization of the 95th percentile identified two additional, previously missed cases of 21OHD

NEXT STEPS

- Determine number of samples referred for second-tier testing based on proposed cutoff levels
- Compare false positive rates based on current and proposed 17OHP cutoff levels
- Evaluate the impact of other co-variates such as gestational age on 17OHP levels

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