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Supplemental Material

Prenatal and Postnatal Household Air Pollution Exposure and Infant Growth Trajectories: Evidence from a Rural Ghanaian Pregnancy Cohort

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Figure S1. Directed Acyclic Graph illustrating implied conditional dependencies amongst study variables. The green circle with black inset triangle represents the exposure of interest (prenatal and postnatal household air pollution exposure). The blue circle with the vertical line represents the outcome of interest (infant growth). Green lines represent unbiased causal pathways. Black lines represent neither unbiasing causal pathways nor potentially biased paths. White circles represent adjusted variables in the minimally-sufficient adjustment set (infant sex, race/ethnicity, wealth index, maternal age). Sensitivity models additionally adjust for gestational age at delivery, birth weight, breastfeeding duration or maternal body mass index. DAGgity v3.0 available at http://www.dagitty.net/.

Figure S2. This figure demonstrates a representative plot of a maternal prenatal 72-hour personal carbon monoxide (CO) exposure in parts per million (ppm) over time. The Lascar EL-CO-USB Data Logger was worn in the participant's breathing zone and measured CO levels every 10 seconds which were then averaged into 1-minute averages. Reported cooking periods correspond with elevated CO exposures; outside of these cooking episodes the CO exposures were near zero. The first 48-hours were used in analyses and for this session the 48-hour average CO exposure was 1.62ppm (range 0-79.3ppm).

Figure S3. Post intervention exposure by study arm for (A) 48-hr maternal CO measurements, (B) 48-hr children CO measurements, and (C) 48-hr maternal PM2.5. Violin plots display mirrored density along the variable range. Boxplots depict the median – extended by a notch for clarity – with lower and upper hinges corresponding with the 25th and 75th percentile. Whiskers extend 1.5 times the interquartile range from the hinge. Outliers beyond the whiskers are depicted as points. Diamonds represent distribution means. In plots A, B, and D the WHO guideline for CO exposure is drawn in a dotted line and in plot C the WHO guidelines for PM2.5 exposure are drawn in a dotted line (interim guideline: 35) and a solid line (guideline: 10). The y-axis is log-transformed to improve readability because of the clustering of exposure levels at lower values.

Figure S4. This figure shows associations between interquartile change in prenatal and postnatal average carbon monoxide (CO) exposure and head circumference (HC), length-for-age z-score (LAZ), length and lowest length-for-age z-score (stunted). Here we show a linear relationship between quartile of CO exposure and LAZ (P_{trend} =0.01), length (P_{trend} =0.01), and stunted (P_{trend} <0.01). We note that while postnatal CO exposure is associated with smaller head circumference trajectory in the primary analyses, we do not see a linear trend in these analyses by interquartile change in CO exposure.