Title: Night Eating Among Night Shift Workers: Results from the SHIFT Study

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Learning Outcome (Objective): To compare the timing, frequency and distribution of calories between night shift workers and day workers on work and non-work days.

Abstract Text (Methods, Results, Conclusion): The present analysis includes the first 21 night shift workers (NSW) and 21 sex- and age-matched day shift workers (DSW) at the time of analysis in the ongoing Boston-based Shift work, Heredity, Insulin, and Food Time (SHIFT) Study (NCT02997319), a large, multicenter, observational study. For up to two weeks, participants were asked to record sleep and food intake (noting food/beverage type, quantity, and timing), and wear an accelerometer wrist device, which records light and activity. The food records were analyzed using NDSR software to compute average macronutrient and micronutrient intake for each time-stamped eating occasion. Objective sleep and wake times on work and non-work days were determined from the accelerometer wrist device and sleep logs. The timing of eating occasions coinciding with wake hours were confirmed. Average caloric intake, and percent calories from carbohydrate, protein, and fat, was determined separately for work days, and non-work days. All analyses were conducted in R statistical software.

NSW and DSW (n = 42) recruited from Massachusetts General Hospital and Brigham and Women’s Hospital in Boston, MA were predominantly female (95%, P = 1.00) with a mean age of 34.14 and 34.10 years, respectively (P = 0.98), and a comparable BMI (25.94 kg/m2 and 25.83 kg/m2, respectively, p = 0.54). Total energy intake and macronutrient composition were similar between NSW and DSW (P >0.05). On work

days, compared to DSW, NSW consumed meals later in the day, most notably dinner, the most energy dense meal (DSW, 7:13pm vs. NSW, 11:12pm). The last eating episode occurred later on in the day on work days (DSW, 8:36pm vs. NSW, 3:23am). On non-work days, food intake times for all meals were similar.

In the present analysis, we show shifts towards late intake among NSW on work days, which may mediate the relationship between NSW and cardiometabolic diseases. When completed, the ongoing SHIFT Study will be able to delineate the influence of different night shift schedules on mistimed food intake exposure.