Table 1: Emulation of a dietary intervention target trial using observational data from the NuAge study*1*

| Trial component | Target trial specification | Target trial emulation |
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| **Eligibility criteria** | NuAge inclusion criteria: individuals aged 67-84 y; living in Montreal, Laval or Sherbrooke; not cognitively impaired, free of disabilities in activities of daily living. Exclusion criteria: class II heart failure, chronic obstructive pulmonary disease requiring home oxygen therapy or oral steroids, inflammatory digestive diseases, and cancer treatment in the past 5 years. | Same. Participants will also be required to have complete baseline dietary assessment (at least one 24-hour recall with 500 kcal or more and FFQ) and baseline covariate data |
| **Intervention*2*** | Each individual would be assigned to 1 of the 4 following strategies: 1) control group (habitual diet, i.e., typical North American); 2) adherence to Canada's Food Guide recommendations on healthy food choices; 3) same as 2) but including a 'high-protein' reformulation; 4) same as 3) but including a minimal physical activity component. Each strategy is followed until the end of follow-up. Participants assigned to a lifestyle strategy are expected to maintain their dietary intake or amount of physical activity at or above the prespecified threshold by the corresponding intervention strategy. | Same. We will assume that each dietary assessment period (i.e., within 2 months beginning at each timepoint) accurately reflects the average diet in the interval between follow-ups. |
| **Assignment** | Participants are randomly assigned to a dietary strategy, but are not blinded to their assignment. | We will attempt to emulate randomized assignment by adjusting for dietary intakes before baseline and baseline covariates. |
| **Outcomes** | Physical function and muscle strength, general health indicators, and cognitive health | Same. |
| **Time zero and follow-up** | Starts at baseline and ends at incomplete follow-up, or 3 y after baseline, whichever occurs first. | Same. An incomplete follow-up is defined as missing data for questionnaires (non-response or loss to follow-up) or missing outcome data at the end of follow-up. |
| **Causal contrast*3*** | • Intention-to-treat effect • Per-protocol effect | Observational analog of both contrasts: • Intention-to-treat effect (secondary) • Per-protocol effect (primary) |
| **Statistical analysis** | • Intention-to-treat analysis: apply inverse probability weighting with adjustment for pre- and baseline factors associated with incomplete follow-up to account for study dropouts • Per-protocol analysis: apply the parametric g-formula algorithm to compare post-intervention outcomes between groups receiving each treatment strategy with adjustment for pre- and postbaseline factors associated with adherence to intervention strategies and incomplete follow-up. | Same for both contrasts. Except that the observational analog will require additional adjustment for confounding at baseline and before baseline due to prior diet. |
| *1*FFQ, food-frequency questionnaire; NuAge, Quebec Longitudinal Study on Nutrition and Successful Aging | | |
| *2*See 'Dietary Strategies' for detailed intervention. | | |
| *3*The observational analog of the intention-to-treat contrast corresponds to the baseline values of the intervention, which are both 'assigned' and initiated at the same time. | | |