

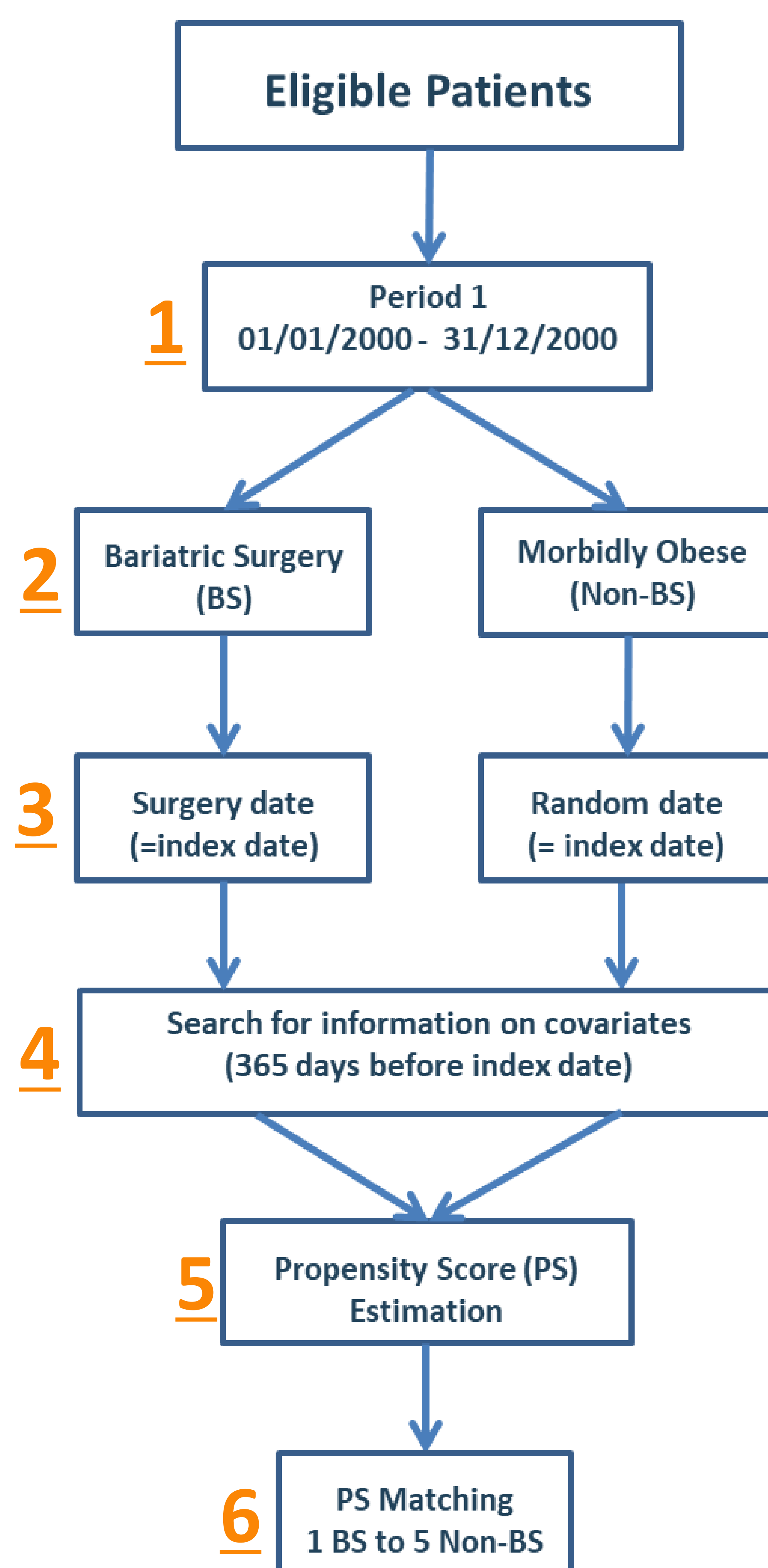
Effect of bariatric surgery on cancer risk: identifying appropriate non-exposed controls for a cohort study

Martina Recalde, MPH^{1,2}, Edward Burn, PhD^{1,3}, Yesika Díaz, BSc¹, Sergio Fernández-Bertolín, BSc¹, Daniel Prieto-Alhambra, MD MSc PhD³, Talita Duarte-Salles, MPH PhD¹

¹Fundació Institut Universitari per a la recerca a l'Atenció Primària de Salut Jordi Gol i Gurina (IDIAPJGol), Barcelona, Spain; ²Universitat Autònoma de Barcelona, Bellaterra, Spain; ³Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford, United Kingdom.

Figure 1.

A randomized matching process.



Background

- We study whether the risk of cancer is reduced after bariatric surgery (BS) using Real-World Data (RWD).
- Target trial emulation using RWD can help produce unbiased estimates of observational analyses.

- **Idea:** use OHDSI tools to implement target trials.
- **Problem:** Non-BS patients (control group) do not have an index date needed for the analysis.
- **Solution:** We describe a protocol to study specific site cancer risk after BS in the OHDSI network. We address the issue of identifying appropriate non-exposed controls.

Methods

- Matched cohort study from 2000 to 2019 using databases mapped to the OMOP-CDM.
- Participants: BS or non-BS patients with a body mass index (BMI) ≥ 35 kg/m² or an obesity diagnosis.
- Main exposure: BS.
- Main outcomes: incident diagnoses of specific site cancers.
- Covariates: sociodemographic characteristics of patients, diagnoses, procedures, measurements and devices.

A randomized matching process to emulate a target trial

- 1: We split the study period in 1-year windows.
 - 2: At each window, we assign patients into the BS and non-BS cohorts.
 - 3: **BS cohort: index date = surgery date.**
Non-BS cohort: index date = random date (in the 1-year window).
 - 4: We identify the covariates from 365 days previous to their index date.
 - 5: We estimate propensity scores (PS).
 - 6: We match 1 BS patient with up to 5 non-BS patients (without replacement) using the PS.
- We fit Cox proportional hazard models to estimate the risk of developing each cancer type.

Final remarks

- It is possible to emulate a target trial even without a clearly defined index date for non-exposed controls.
- Analogous to in a target trial, patients in the non-BS cohort at period X, could still undergo a BS in the future.
- A network study will soon be proposed to the OHDSI Community using this protocol.