

The Association Between Attaining Prescribed Hemodialysis Target Weight and Patient Outcomes

Steven M. Brunelli, MD, MSCE

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Authors/Disclosures

- **Steven M. Brunelli, DaVita Clinical Research[®],
Minneapolis, MN**
- **David Van Wyck, DaVita HealthCare Partners Inc.,
Denver, CO,**
- **Irina Goykhman, DaVita HealthCare Partners Inc.,
Denver, CO**
- **Mahesh Krishnan, DaVita Clinical Research,
Minneapolis, MN**
- **Allen Nissenson, DaVita HealthCare Partners Inc.,
Denver, CO**

Definitions (for this presentation)

- **Dry weight: weight at which patient is extracellularly euvolemic**
- **Target weight: weight ordered as the goal for dialysis treatment**
- **“Missed target weight”: treatments where post-dialysis weight 1+ kg *above* target weight**

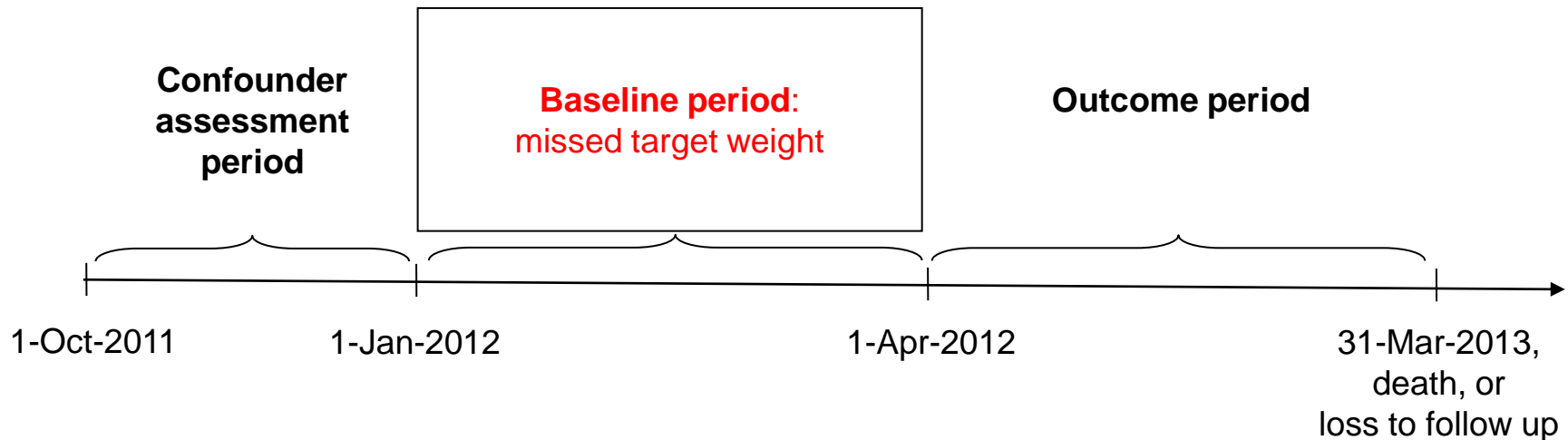
Introduction

- **Extracellular euvoolemia is an important but elusive therapeutic goal for hemodialysis patients**
- **Two categories of issues that interfere with attainment:**
 1. **Misspecification of target weight (ie, \neq dry weight)**
 2. ***Failure to achieve target weight***
- **This study was designed to examine possible implications of #2**

Objectives

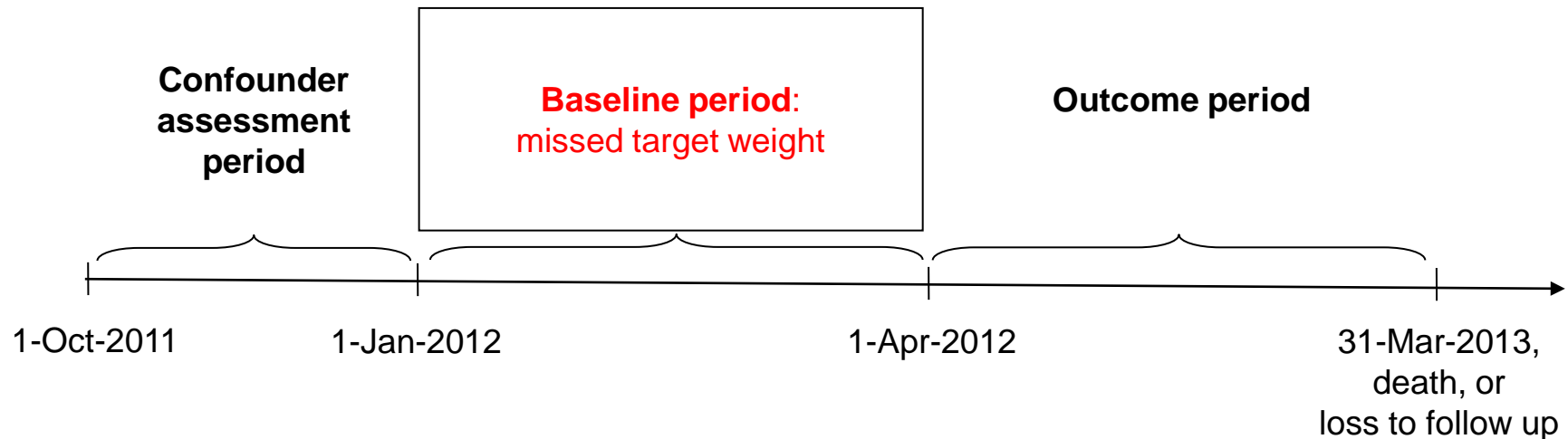
- 1. To estimate at the patient-level the associations of missed target weight with: a) all-cause mortality and b) missed treatment rate**
- 2. To explore at the facility-level the association of missed target weight with missed treatment rate**

Methods: Patients



- **Retrospective analysis of all adult patients who received in-center hemodialysis at a DaVita facility from 1-Jan-2012 until at least 1-Apr-2012.**

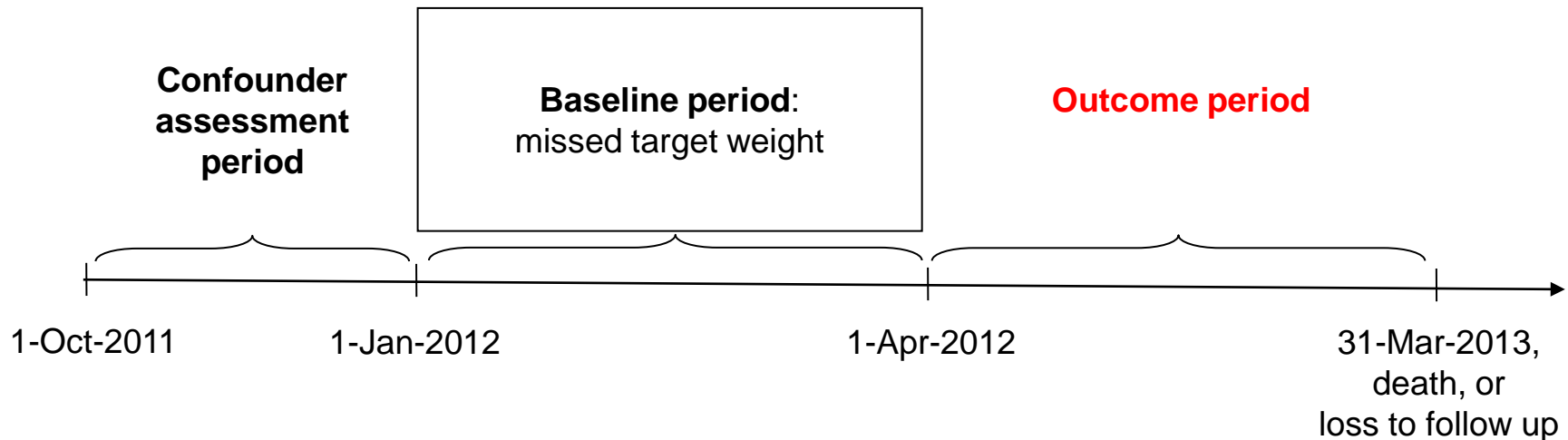
Methods: Exposure



Example: Patient A

- had 36 treatments during baseline period
- missed target weight in 9 of these
 - 25% (=9/36) treatments affected

Methods: Outcomes



- **Death (any cause)**
- **Missed treatment rate: # missed treatments/unit time**

Results

% Baseline Treatments with Missed Target Weight	N (% population)
0%	16,298 (15.3%)
1-20%	45,142 (42.3%)
21-40%	21,572 (20.2%)
>40%	23,658 (22.2%)
Total	106,670

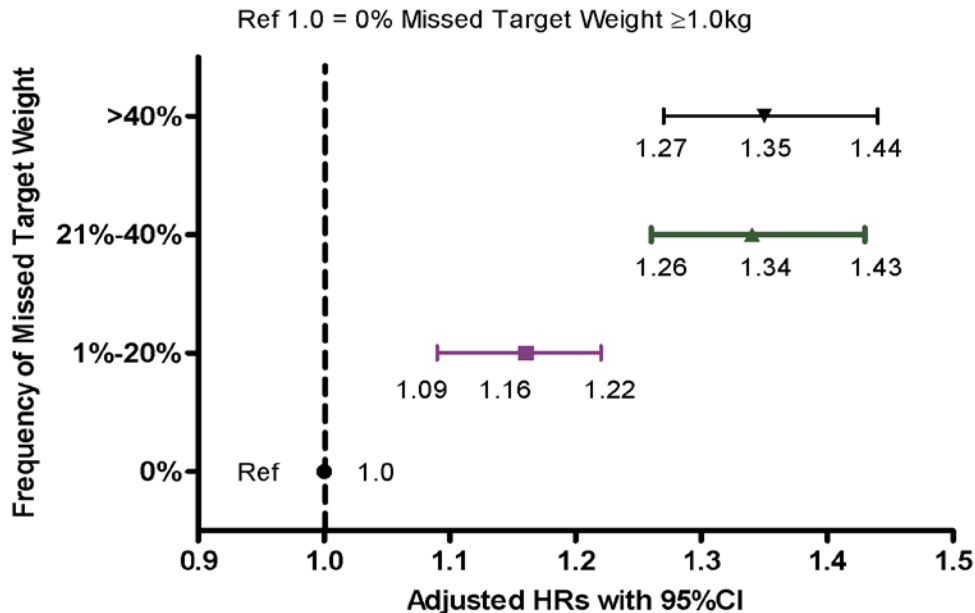
- **Follow up (overall):**
 - **93,971 patient-years at-risk**
 - **12,854 deaths (13.7 deaths/100 patient-years)**
 - **1,284,943 missed treatments (13.7 missed treatments per patient per year)**

Results: Patient-Level Mortality

There was a potent, incremental and independent association between missed target weight and subsequent all-cause mortality.

Proportion of baseline treatments with missed target weight

	0%	1-20%	21-40%	>40%
Crude death rate (Deaths/100 pt-yr)	10.5	12.8	15.6	15.9



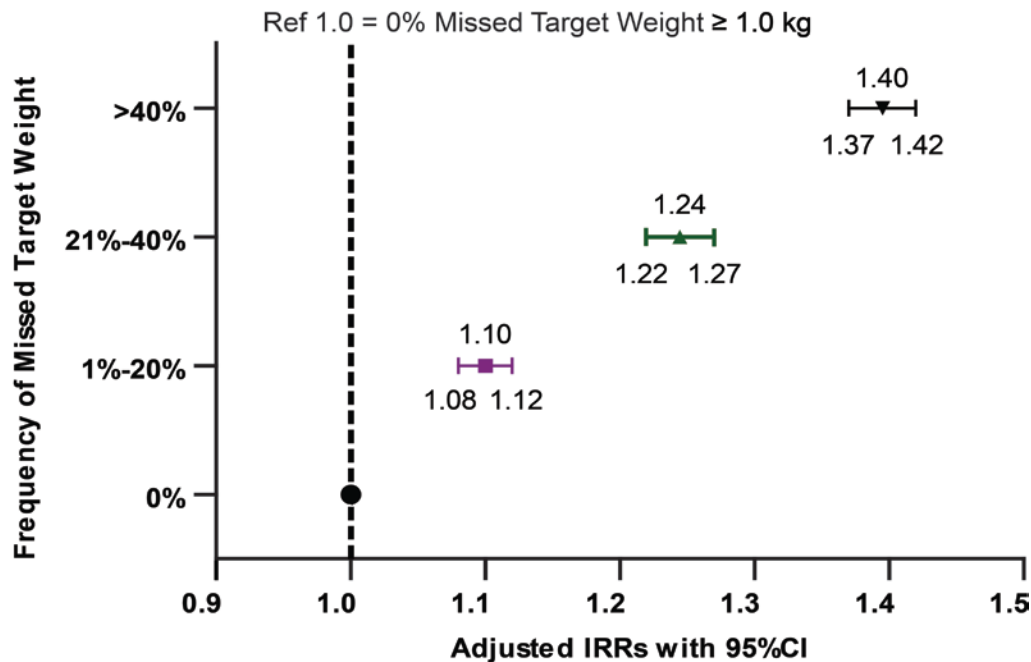
Adjusted for baseline age, sex, race, etiology ESRD, diabetes, heart failure, coronary artery disease, Charlson Comorbidity Index, albumin, Kt/V, phosphorus, hemoglobin, ESA dose, post-dialysis weight, interdialytic weight gain, pre-dialysis systolic BP, hospitalization status for October 2011, hospitalization status November 2011, and hospitalization status December 2011.

Results: Patient-Level Missed Treatments

There was a potent, incremental and independent association between missed target weight and subsequent missed treatment rate.

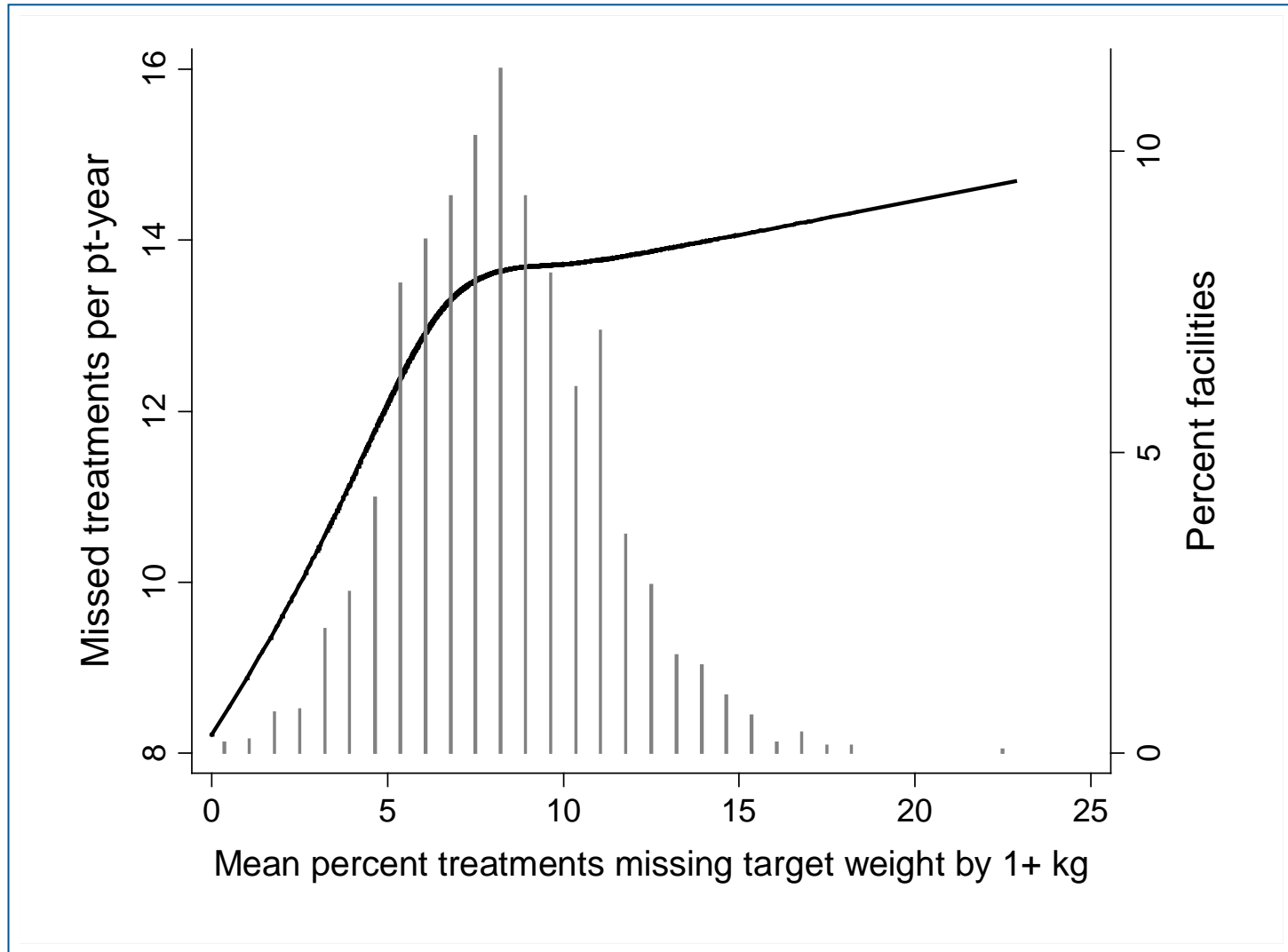
Proportion of baseline treatments with missed target weight

	0%	1-20%	21-40%	>40%
Crude rate (Missed tx/ pt-yr)	10.7	12.2	14.6	17.1



Adjusted for baseline age, sex, race, etiology ESRD, diabetes, heart failure, coronary artery disease, Charlson Comorbidity Index, albumin, Kt/V, phosphorus, hemoglobin, ESA dose, post-dialysis weight, interdialytic weight gain, pre-dialysis systolic BP, hospitalization status for October 2011, hospitalization status November 2011, and hospitalization status December 2011.

Results: Facility-Level Missed Treatments



Conclusion

- **Missed treatment weight is a marker of increased risk of subsequent death and missed treatment rate.**

Potential Mechanisms

- 1. Missing target weight causes poor clinical outcomes.**
- 2. Misspecification of target weight causes poor clinical outcomes and also predisposes to failure to attain target weight.**
- 3. Dialytic factors (eg, rapid ultrafiltration) cause poor clinical outcomes and also predispose to failure to attain target weight.**
- 4. High interdialytic weight gain causes poor clinical outcomes and also predisposes to failure to attain target weight.**
- 5. Some combination of these.**

Clinical Responses

- **Specify target weight correctly and update frequently.**
- **Take steps to minimize interdialytic weight gain.**
- **Prescribe treatments that enable consistent attainment of target weight.**
- **Until further data become available, choice and prioritization among these are at the discretion of the treating nephrologist and be tailored to individual patients and circumstances.**

Questions and Answers