

Chronic Use of Opioids Preoperatively is Associated With Early Knee Revision After Total Knee Arthroplasty

Alon Ben-Ari, MD, Irene Rozet, MD.

*Department of Anesthesiology and Pain Medicine
University of Washington, Seattle, WA
Veterans Affairs PSHCS
alon.benari@gmail.com*

October 12, 2014

Disclosures.

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Alon Ben-Ari, MD,
Irene Rozet, MD.

- ▶ *Alon Ben-Ari MD Irene Rozet MD.*
- ▶ *Have disclosed NO relevant financial relationships.*

- ▶ **Prescription for Addiction.** *Increase in mortality of young adults and increase in prescription opioid use.* (October 5th 2012 Wall Street Journal)
- ▶ **Methadone and the Politics of Pain.** *Increase in the use of methadone in lieu of oxycontin and its associated mortality.* (April 30th 2012 Seattle Times).
- ▶ **CDC. Vital Signs: Overdoses of Prescription Opioid Pain Relievers. United States, 1999-2008.** *Describing an increase in prescription associated with mortality.* (MMWR 2011; 60: 1-6).

Hypothesis

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- ▶ **Hypothesis:** *Chronic use of opioids prior to Total Knee Arthroplasty (TKA) is associated with post-operative knee revision and manipulation.*
- ▶ **Primary end point:** *odds ratio for first knee revision within a year after after knee arthroplasty in opioid naive VS. chronic opioid patients.*

Materials and Methods-Patients and Settings.

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- ▶ *Institutional IRB approval Seattle VA*
- ▶ *National Data ; Veterans Affairs Health Care System*
- ▶ *VINCI: VA INformatics Computing Infrastructure*
- ▶ *All Total Knee Arthroplasties (TKAs) during 5 year period (2006-2011)*
- ▶ *All Total Knee Revisions (TKR) during 6 year period (2006-2012)*
- ▶ *All Knee Manipulations during 6 year period (2006-2012)*
- ▶ *Patients were matched on patient IDs and operated side*

Materials and Methods-Data extraction.

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- ▶ *Pharmacy record for any opioid prescription for cohort patients starting one year prior TKA between the years 2007-2012.*
- ▶ *Number of pills*
- ▶ *Number of opioid types*
- ▶ *Prescription duration*
- ▶ *Commercial name of opioid*
- ▶ *Prescriptions were text-mined to abstract opioid name, dose and converted to Morphine Equivalents Dose (MED).*

Materials and Methods-Co-morbidities.

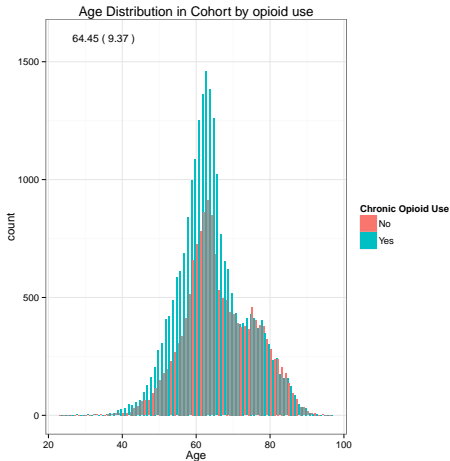
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- ▶ *Co-morbidities were assigned to patients according to ICD-9 codes.*
- ▶ *Obstructive Sleep Apnea (OSA)*
- ▶ *Chronic Obstructive Pulmonary Disease (COPD)*
- ▶ *Diabetes Mellitus*
- ▶ *Congestive Heart Failure (CHF)*
- ▶ *Chronic Renal Failure*
- ▶ *Smoking*
- ▶ *Post Traumatic Stress Disorder (PTSD)*

Results.

- ▶ **39,133** TKA patients, age 64.45 ± 9.37 years.
- ▶ $M=0.94$.
- ▶ **1949** patients (**4.98%**) with at least one revision.
- ▶ **1181** patients (**3.01%**) with at least one manipulation.



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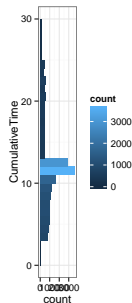
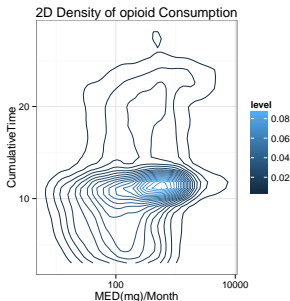
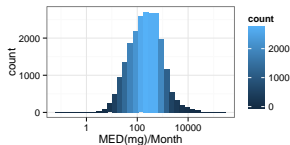
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Results: MED and Time of Opioid Prescription

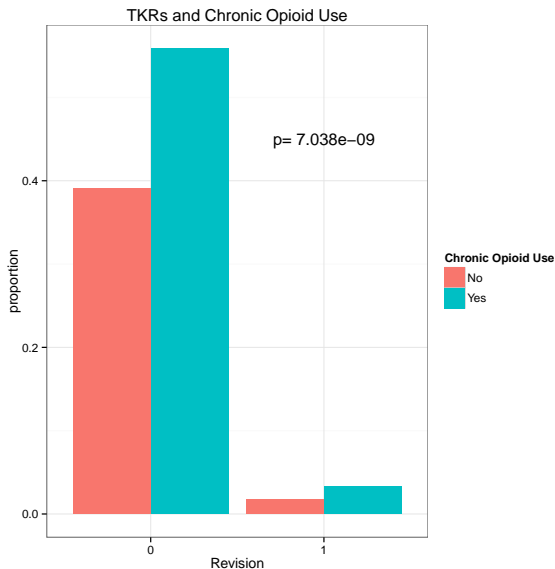
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- ▶ **165,816**
prescriptions
were text
mined for
type of
opioids and
dosage.



Results: An Association Between Chronic Opioids and First TKRs, χ^2 -test.



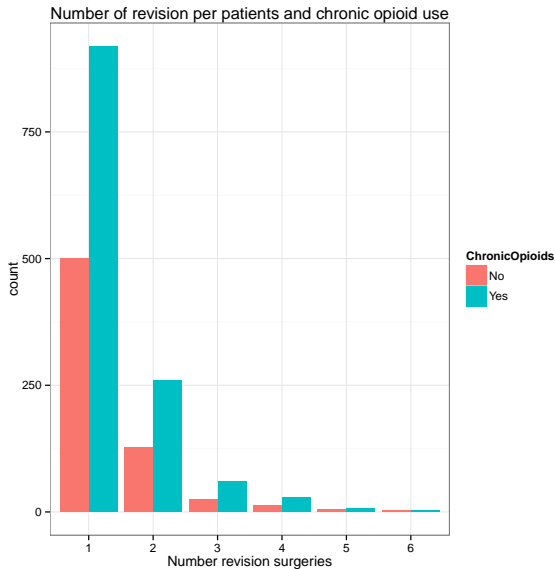
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Results: Incidence of Re-Operations After Primary TKA.

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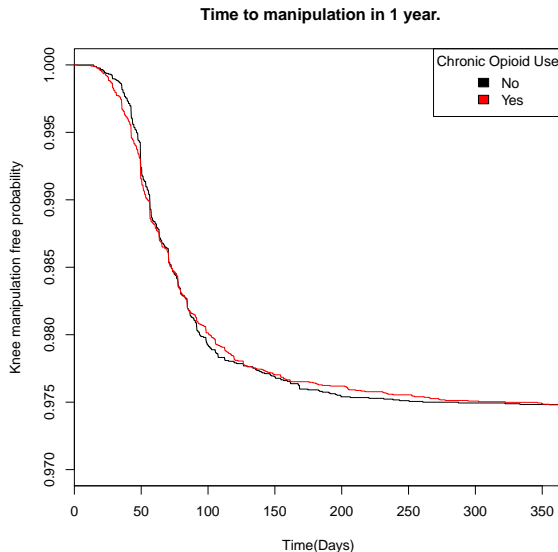
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Results: Time to Event; Manipulation Within One Year of TKA

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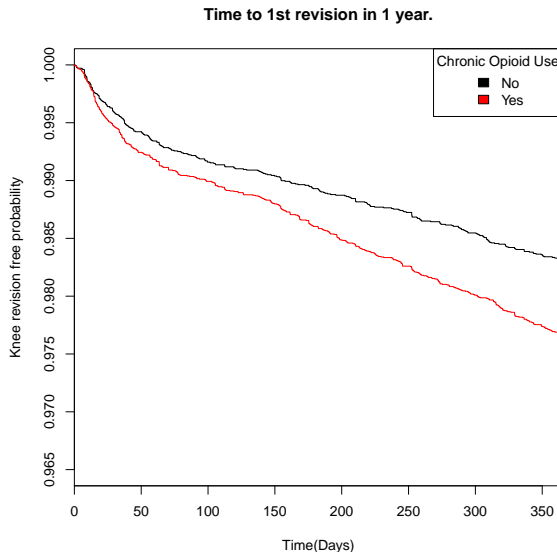
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Results: Time to Event; First Revision Within One year of TKA, 36% Above Base-Hazard

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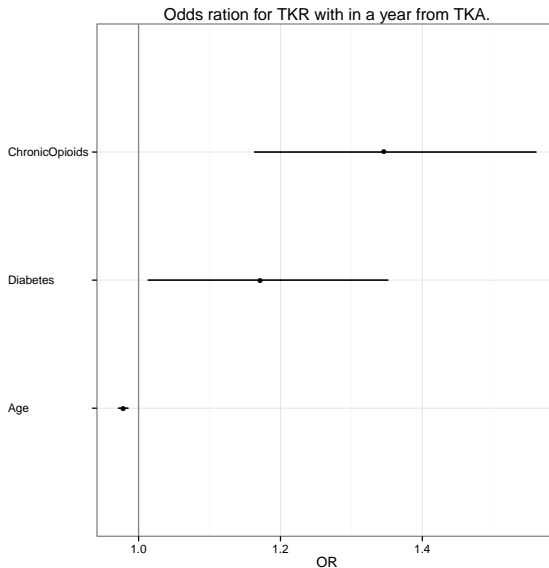
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Results: Logistic Regression Fitting, Odds Ratio for TKR

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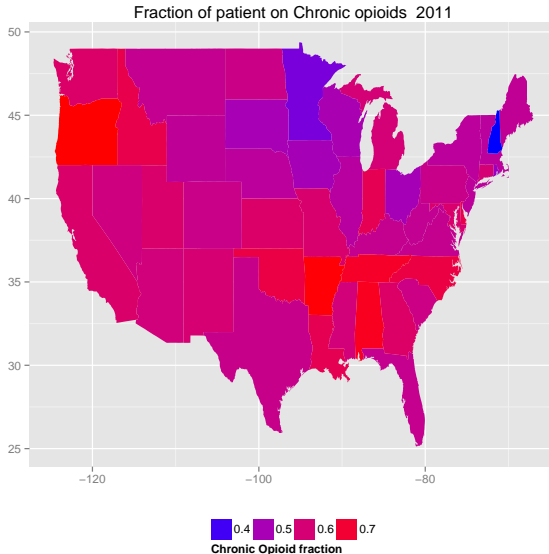
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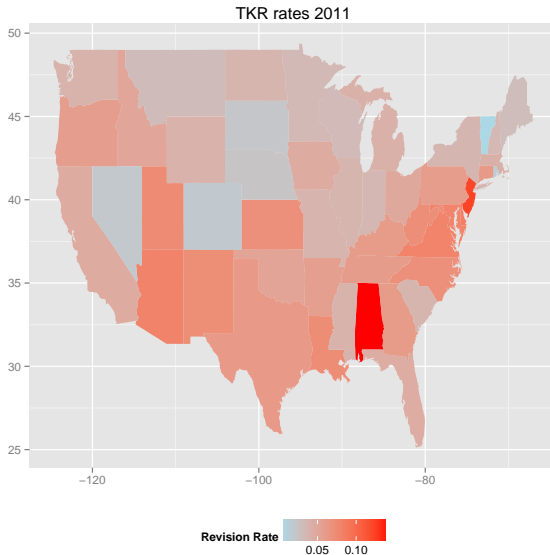
Results: Distribution of Chronic Opioid Users Before TKA, VA National Map

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Results: Total Knee Revision 2011, VA National Map



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Conclusions.

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- ▶ *Preoperative chronic use of opioids is a risk factor for early Total Knee Revision after Total Knee Arthroplasty.*
- ▶ *Preoperative chronic use of opioids is associated with a 32% increase risk for graft failure within a year after Total Knee Arthroplasty.*

Source Code.

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- ▶ *Full open source code is available on
<https://github.com/alon-benari/Clinical-Analysis/tree/TotalKneeReplacementOutcomes>*