



# Opioid Prescription Pattern And Risk Factors Associated With Opioid Use After Living Donor Hepatectomy in The US

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## Introduction

### Background

Opioids are the cornerstone of acute pain management after living donor hepatectomy. Their misuse poses the danger of chronic abuse [1]. How this affects living liver donors is unknown in the opioid epidemic era.

### Objective

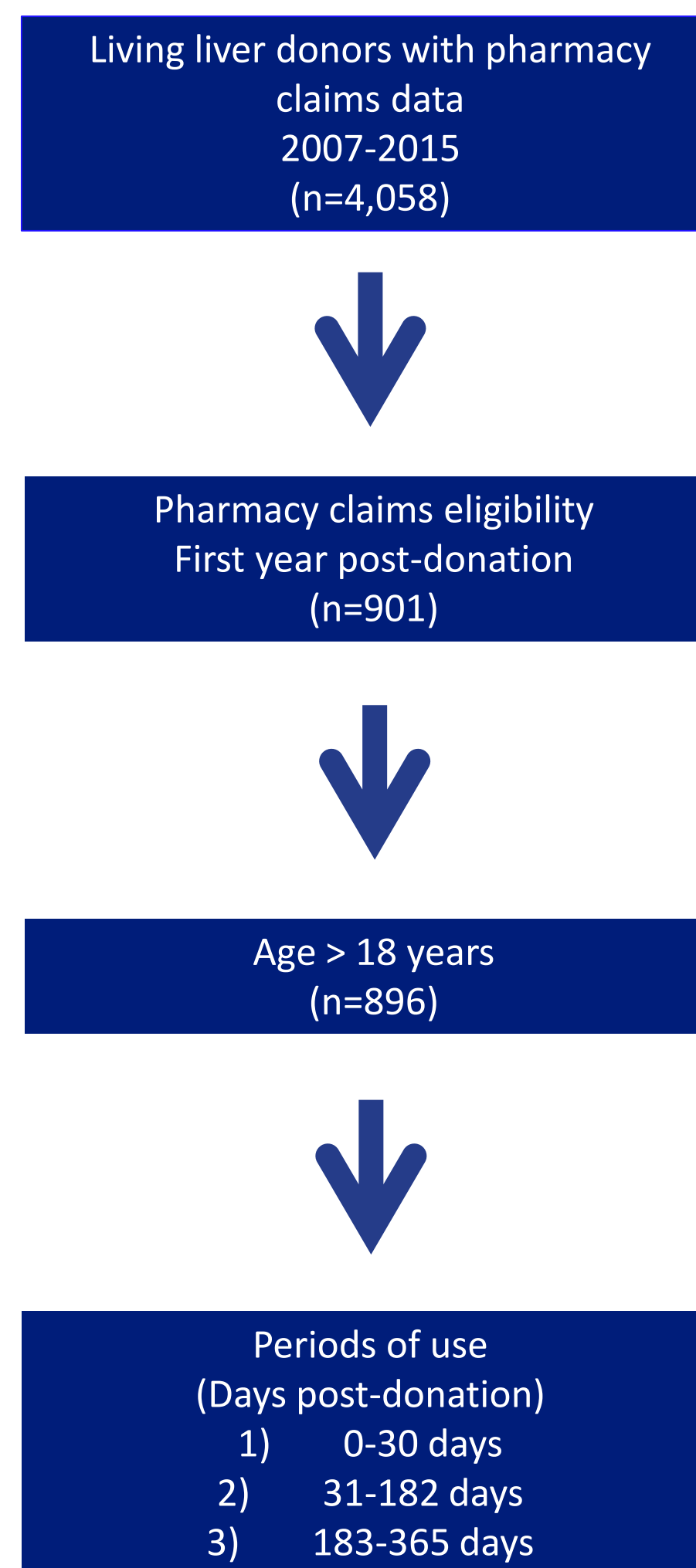
Investigate opioid prescription patterns and risk factors associated with opioid use after living donor hepatectomy in the US.

## Methods

- SRTR/OPTN data were linked to billing claims from a large US pharmaceutical claims data clearinghouse.
- 896 adult living liver donors from 2007-2015 were retrospectively reviewed.
- Associations of opioid use with baseline living liver donor clinical variables were examined with multivariate logistic regression during the first year post-donation between 1) 0-30, 2) 31-182, and 3) 183-365 days.
- Multivariate logistic regression examining associations between opioid use and the following living liver donor variables:

- Age
- Sex
- Race
- BMI
- Education
- Employment
- Insurance
- Donor-recipient relationship
- Smoking
- Year of donation
- Hepatectomy extent
- Complications

Figure 1. Sample construction



## Results

### Opioid use (Figure 2)

- Opioid prescription filling among living liver donors was 40%, 16%, and 13% between 0–30, 31–182, and 183–365 days post-donation.
- The preferred opioid was oxycodone between 0–30 days and shifted to hydrocodone between 183–365 days.

### Multivariate logistic regression examining associations between opioid use and living liver donor variables (Table 1)

- Right lobe, left lobe, or left lateral segment donation did not influence opioid use.
- Re-operation did not influence opioid use.
- Opioid use was increased between 31–182 days in donors who were re-admitted or underwent non-operative interventions.
- Demographic variables associated with increased opioid use beyond 0–30 days included white race, smoking, lower education level, and uninsured status.

## Discussion

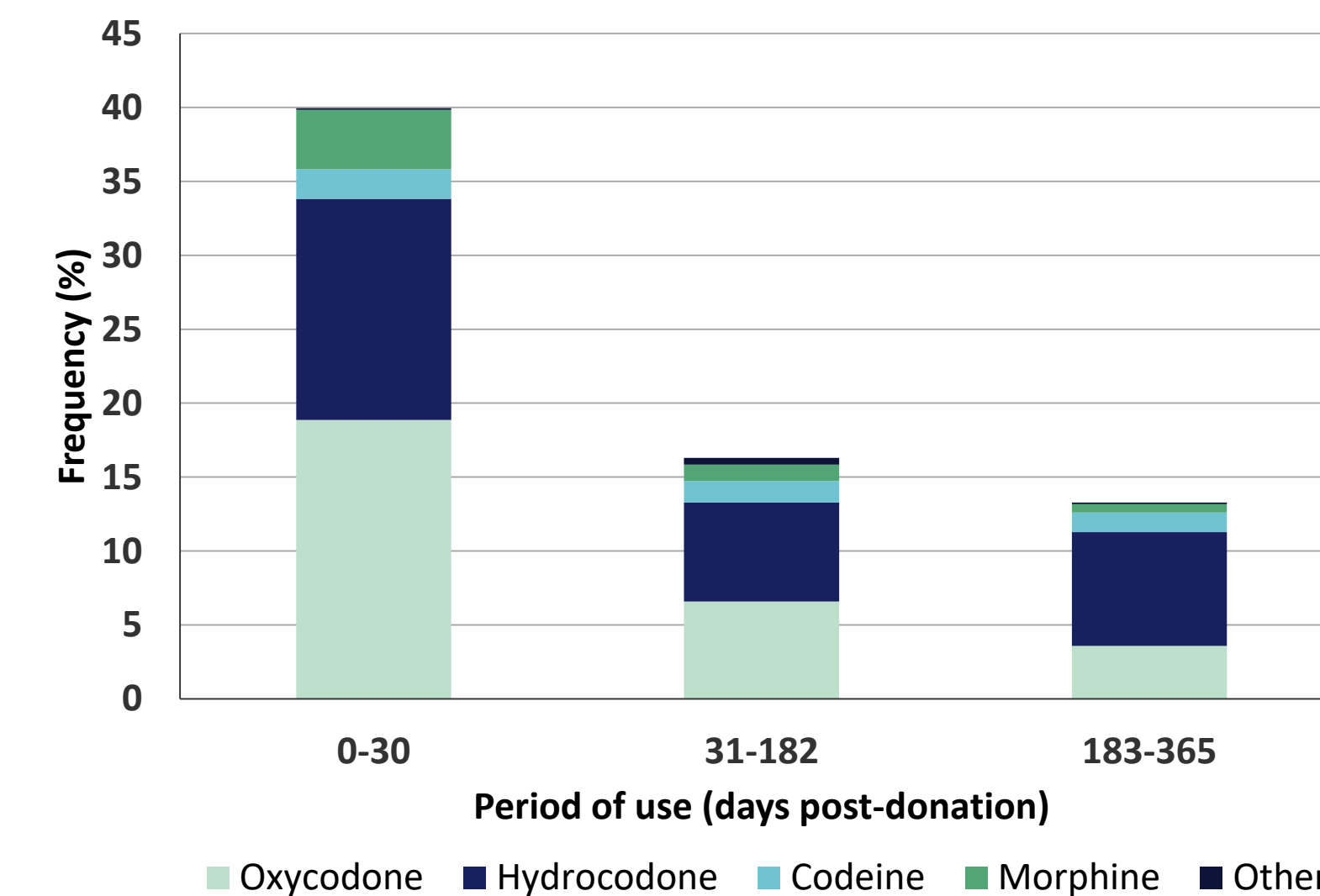
### Compared with other surgeries

- Higher number of living liver donors require opioid prescription beyond the acute pain phase than non-oncologic (6-8%) and oncologic surgery (10.4%) patients. [2]

### Limitations

- Small sample size
- Opioid prescription does not equal use.
- In-hospital perioperative pain regimen unknown (epidural, TAP block, wound catheter).
- Unknown whether donor hepatectomy open or laparoscopic.
- Findings may not be applicable outside the US.

Figure 2. Opioid use in the first year after living donor hepatectomy



## Conclusion

This is a first large dataset study showing that 13-16% of living liver donors require opioids beyond the acute pain phase post-hepatectomy, with a preference shift from oxycodone to hydrocodone. Identified demographic and clinical risk factors could prove useful in developing targeted strategies to minimize opioid use in future living liver donors.

References: [1] Brady et al. Am J Psychiatry 2016; 173:18-26, [2] Lee et al. J Clin Oncol 2017; 35: 4042-4049.

Table 1. Multivariate logistic regression examining associations between opioid use and living liver donor variables

Donor variables	Periods of opioid use after living donor hepatectomy		
	0 – 30 days aOR (95% CI)	31 – 182 days aOR (95% CI)	183 – 365 days aOR (95% CI)
<b>Education level</b>			
College	Reference	Reference	Reference
K-12	1.08 (0.75-1.54)	1.61 (1.00-2.57)*	1.36 (0.81-2.25)
Unknown	1.83 (1.07-3.15)*	1.92 (0.89-3.93)	1.45 (0.63-3.15)
<b>Insurance status</b>			
Insured	Reference	Reference	Reference
Uninsured	1.35 (0.78-2.30)	2.46 (1.26-4.61)*	2.09 (1.01-4.08)*
Unknown	1.98 (1.14-3.46)*	1.14 (0.49-2.41)	1.33 (0.56-2.90)
<b>Smoker</b>			
	1.79 (1.30-2.46)†	1.94 (1.27-2.96)†	1.75 (1.10-2.74)*
<b>Donor hepatectomy extent</b>			
Right	Reference	Reference	Reference
Left	0.78 (0.52-1.16)	0.69 (0.37-1.22)	1.17 (0.64-2.06)
Left lateral	0.88 (0.59-1.31)	0.71 (0.37-1.29)	1.13 (0.60-2.06)
<b>Complications</b>			
None	Reference	Reference	Reference
Re-admission / Re-intervention	1.02 (0.66-1.55)	1.94 (1.13-3.25)*	0.96 (0.49-1.76)
Re-operation	0.79 (0.27-2.08)	0.93 (0.14-3.58)	0.54 (0.03-2.84)

\*: p<0.05, †: p<0.01, aOR: adjusted odds ratio, CI: confidence interval.

