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## Introduction

- Persistent hypotension in patients affected by circulatory shock is a common barrier to discharge in the ICU. Even after these patients have been otherwise stabilized, low-level hypotension ensures that they remain in the ICU on IV vasopressors.
- Midodrine, an oral  $\alpha$ 1-agonist, has shown promise as an adjunct therapy to wean patients off IV vasopressors and facilitate earlier discharge from the ICU.
- Although Midodrine has been shown to be effective in weaning patients off IV vasopressors in the ICU, there is very little data regarding its use post-ICU.

## Mechanism of Action

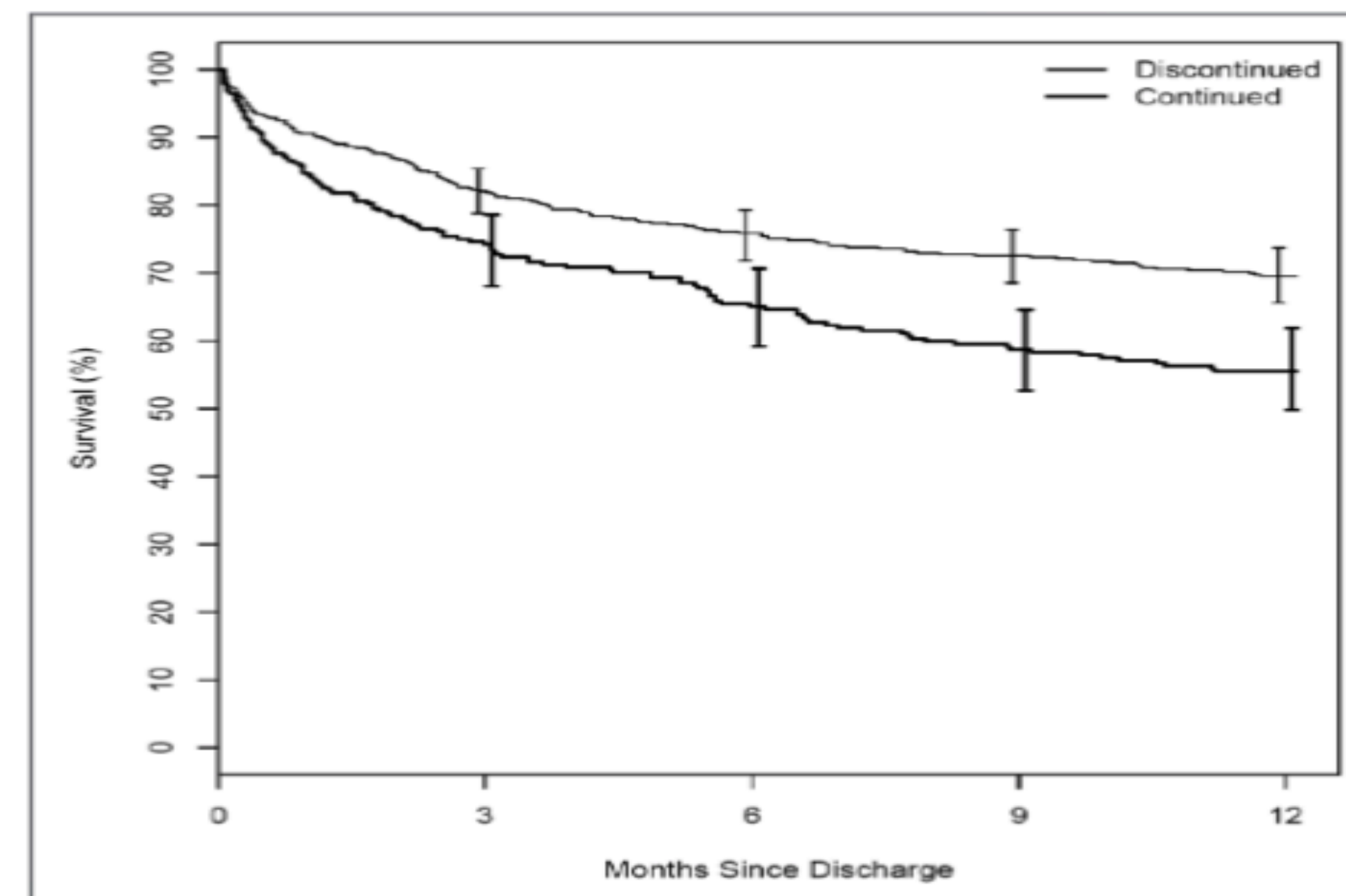
- $\alpha$ 1-agonists, such as Midodrine, bind to  $\alpha$  receptors on vascular smooth muscle and induce smooth muscle contraction and vasoconstriction
- Selective  $\alpha$ 1-agonists have been shown to increase blood pressure and are useful in settings of hypotension or shock

## Study Objectives

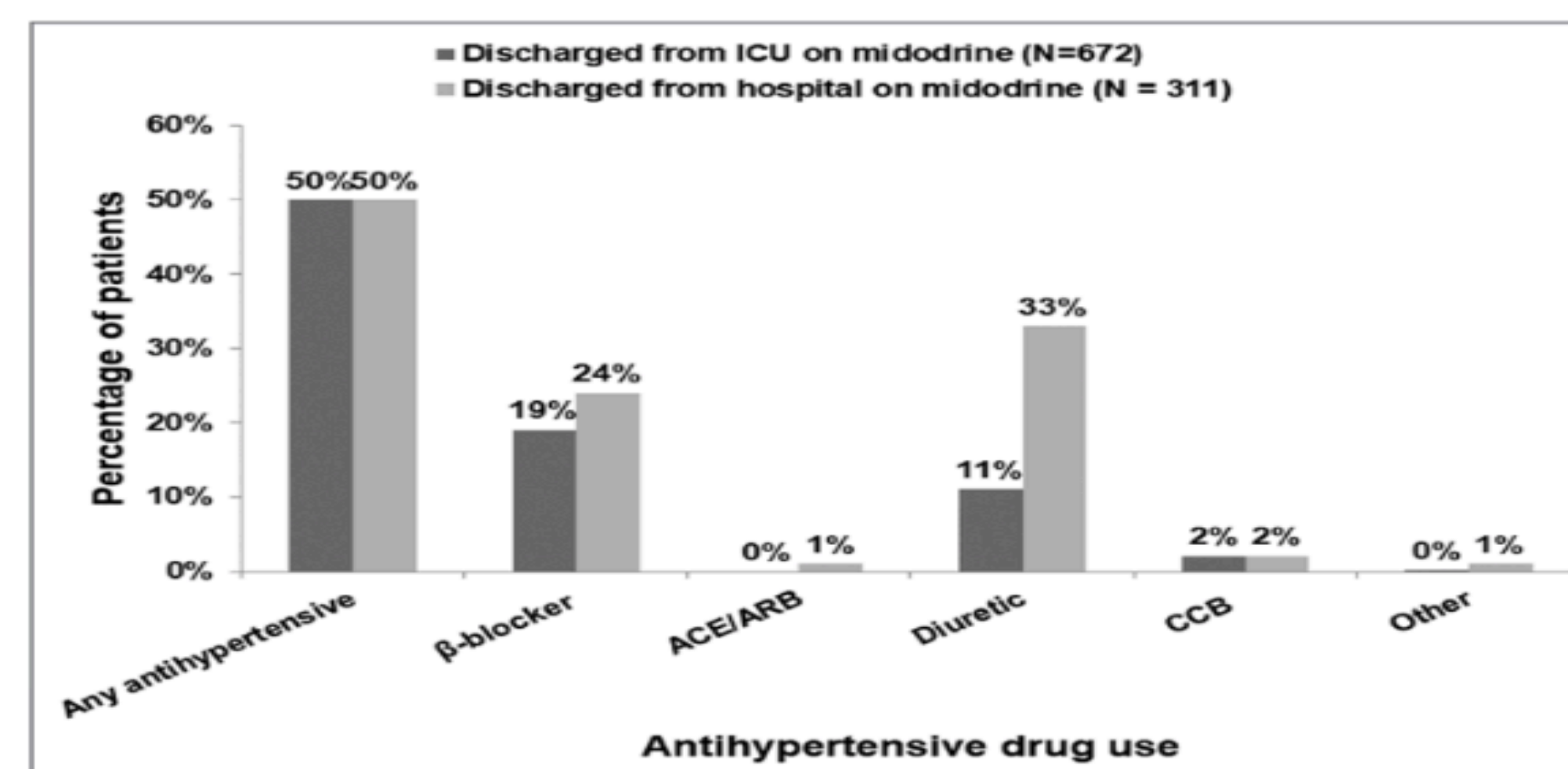
- Midodrine has shown clinical utility as an oral  $\alpha$ 1-agonist able to increase blood pressure and wean patients off IV vasopressors, ultimately facilitating earlier discharge from the ICU.
- However, the effects of Midodrine on patients discharged from the ICU is an area of active research and much is still unknown.
- This study will seek to determine:
  - The indications for continuation of Midodrine upon ICU discharge
  - The methods physicians are currently employing to taper or discontinue Midodrine outside of the ICU
  - The frequency at which patients are being discharged on Midodrine

## Current Research

- A recent study done by Rizvi MS, Nei AM, Gajic O, Mara KC, and Barreto EF at the Mayo Clinic ICU, Rochester published some interesting findings regarding discharge on Midodrine.
  - Despite similar baseline severity of illness scores and comorbidities, discharge from the ICU on Midodrine was associated with a shorter ICU LOS and a decreased risk of in-hospital mortality.
  - Among the patients discharged from the ICU on Midodrine, 50% were concomitantly started on some form of medication to lower blood pressure while still on Midodrine.
  - Midodrine continuation at hospital discharge was associated with an increased risk of mortality in the 1 year after discharge.



**Figure 1.** One-year survival after hospital discharge in those continued on newly initiated oral midodrine at hospital discharge when compared with those in whom midodrine was stopped prior to hospital discharge.



**Figure 2.** Concomitant antihypertensive drug use in patients discharged from the ICU and hospital on oral midodrine. ACE = angiotensin converting enzyme inhibitor, ARB = angiotensin receptor blocker, CCB = calcium channel blocker.

## Methods

- In this retrospective chart review, data from ICU patients with persistent hypotension treated with Midodrine, at the University of New Mexico Hospital, will be analyzed.
- Records will be reviewed to obtain data regarding details of Midodrine treatment and discontinuation
  - Date started and ended
  - Dosing
  - Blood pressure during use
  - Taper schedule
  - Incidence of continuation upon discharge
  - ICU length of stay
  - ICU mortality on Midodrine
  - Adverse events related to Midodrine use
  - Incidence of patients discharged on Midodrine especially if concurrently with anti-hypertensives
- Our study has received IRB approval by the University of New Mexico.

## Future Plans

- Currently, we are in the process of reviewing charts to gather data regarding details of Midodrine treatment in ICU patients at the University of New Mexico.
- Once an adequate amount of data is collected, appropriate statistical analyses will be run.
- Ultimately, the goal is to publish our findings as a guidance to physicians considering discharging a patient on Midodrine. The literature on this topic is sparse, and we hope to assist physicians in making informed decisions regarding the medication.

## References

- Rizvi MS, Nei AM, Gajic O, Mara KC, Barreto EF. Continuation of Newly Initiated Midodrine Therapy After Intensive Care and Hospital Discharge: A Single-Center Retrospective Study. *Crit Care Med.* 2019;47(8):e648-e653. doi:10.1097/CCM.0000000000003814.

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