**Title:** Use of midodrine for the prevention of vasopressor initiation in non-ICU patients with known or suspected sepsis

**Authors**: Maggie Thannisch, PharmD, Jenna Smith, PharmD, BCCCP, April Finnigan, PharmD, BCCCP

**Practice** **Site**: Inova Fairfax Medical Campus, Falls Church, VA

**Background**: Current Surviving Sepsis Campaign recommendations include early detection of sepsis followed by fluid resuscitation, antibiotic administration, and finally, intravenous (IV) vasopressors for continued hypotension. The initiation of IV vasopressors often lead to intensive care unit (ICU) admission which can further lead to central line placement and increased ICU and hospital length of stay. There are no current alternatives to IV vasopressors; however, midodrine is an oral vasoactive agent that has recently been studied as a potential alternative. Existing literature has yet to find a clinical benefit using midodrine in the recovery phase of septic shock, but a recent feasibility study suggests the use of midodrine in the first 24 hours of sepsis could be beneficial.

**Objective**: The purpose of this study was to assess the need for IV vasopressors in patients initially treated with midodrine for early signs of sepsis.

**Methods**: A retrospective study was conducted evaluating patients who received midodrine for early signs of sepsis compared to patients who did not. Subjects met inclusion criteria if all the following were met: hospital encounter was billed using a sepsis ICD code; documentation of a hypotensive episode; and current admission to the hospital in a non-ICU location. Patients were excluded if they were receiving midodrine or fludrocortisone prior to admission; undergoing hemodialysis; receiving hospice care; were currently pregnant; or had a diagnosis of hepatorenal syndrome. The primary outcome was the initiation of an IV vasopressor. Secondary outcomes included maximum hourly rate of norepinephrine equivalents (NEE) within the first 24 hours of use; time between the initiation of midodrine and start of vasopressor; need for central line placement or need for a higher level of care; hospital length of stay; and incidence of bradycardia. Demographic data collected included age, weight, sex, administration of fluid bolus, administration of antibiotics, MAP 6 hours before and after hypotensive episode, and rapid response documentation.

**Results**: A total of 140 patients were analyzed, of which 78 received midodrine and 62 did not. The progression to IV vasopressors occurred in 12 patients in the midodrine group compared to 20 patients in the control group. There was a lower maximum hourly rate of NEE (0.1 ± 0.06 vs. 0.6 ± 0.89 mcg/kg/min), more time between hypotensive episode and start of vasopressor (7 ± 7 vs. 3 ± 4 hours), lesser need for higher level of care (14 vs. 60%) and central line placement (6 vs. 24%) in patients who received midodrine compared to those patients who did not. There was no significant difference between hospital length of stay and incidence of bradycardia between groups.

**Conclusion**: Patients who received midodrine had reduced maximum hourly rates of NEE, more time between hypotensive episode and start of vasopressor, and reduced needs for both higher level of care and central line placement.