

The Dangers of Hydralazine and Clonidine in the ED

IV Hydralazine

- Hydralazine is a potent vasodilator. Onset of action: upwards of 20 minutes, peak effects last for 60 minutes, duration of action is **unpredictable** and can persist for upwards of 8 hours. (Powers DR, et al. J Emerg Med 1998;16:191-6.)
- Bad adverse effects
 - Stimulation of sympathetic nervous system, leading to exacerbation of oxygen consumption in a myocardium as well as an increase in heart rate.
 - Associated with increasing ICP. (Rhoney DH, et al. Crit Care Clin 2006; 22:221-43.) (Skinhoj E, et al. Acta Med Scand Suppl 1983; 678:83-7.)
 - Latent period of 5-15 minutes followed by progressive and often precipitous BP drop. (Schroeder HA. J Clin Invest 1951;30:672-3.) (Shepherd AM, et al. Clin Pharmacol Ther 1980;28:804-11.)
 - Severe hypotension and complications associated with birth. (Obstet Gynecol 2011; 118:1465-8.) (Magee LA, et al. BMJ 2003; 327:955-60.)
 - Profound hypotension in critically ill. (Kane-Gill SL, et al. Crit Care Med 2014;42:2197-203.)
- Inappropriate use (Campbell P, et al. J Am Soc Hypertens 2011; 5:473-7.)
 - Only 2% of all patients had documented evidence of hypertensive crisis.
 - Over 80% of all doses were associated with a reduction in systolic BP < 25%.
 - Of the 16 patients who experienced an adverse effect, most were related to hypotension, with six experiencing a decrease in systolic BP > 65 mmHg.

Clonidine

- The problem with clonidine is less about its safety in the ED and more related to its potential for abuse, misuse, and adverse effects in the outpatient setting.
 - High street value
 - Not recommended for BP by JNC-8 Guidelines (James PA, et al. JAMA 2014;311:507-20.)
 - Abrupt discontinuation leads to rebound hypertension (Lowenstein J. Ann Intern Med 1980;92:74-7.)
 - Patch doesn't reach peak effect for 2-3 days.
 - > 5,000 overdoses in 2014 with 1,518 moderate and 143 major severity outcomes (Mowry JB, et al. Clin Toxicol 2015;10:962-1147.)
 - Emergency hospitalizations for unsupervised prescription medication ingestions by young children - 7.4% due to clonidine (Lovegrove MC, et al. Pediatrics 2014;134:e1009-16.)