ARTICLE:
Country: USA
Funding Sources: None reported

PURPOSE:
- Research Question(s): What drug therapy is most effective in the termination of stable, monomorphic ventricular tachycardia
- Hypothesis: None proposed

DESIGN:
- Study Design: Systematic review

- Outcomes: Primary outcome = Successful pharmacologic termination of VT. Secondary outcome = Rate of adverse effects of medications (bradycardia, hypotension, VT, neuro symptoms, and death

METHODS:
- Research Setting: Online screening of databases (EMBASE, MEDLINE, and Cochrane Controlled Trials Registry from 1965-2013
- Subjects:
  - Study population: Adults (age ≥ 18) with stable monomorphic VT.
- Data Collection: Extracted from articles. Elements included:
  1. Patient characteristics (age, gender, method of diagnosis, etiology of VT),
  2. Trial inclusion/exclusion criteria
  3. Intervention (drug and dose)
  4. Efficacy of VT termination and any adverse effects
• **Inclusion / Exclusion criteria:** Inclusion: Studies comparing parenteral drug therapy in the termination of monomorphic VT (stable) Exclusion = Studies that measured suppressive effects on electrophysiologic inducibility of VT rather than termination of VT. Also, the effects of oral drugs on VT frequency were excluded.

* Note each study analyzed also had it’s own unique set of inclusion and exclusion criteria

**DATA ANALYSIS:**
- Relative Risk and Number needed to treat (RevMan5 stats software)

**RESULTS:**

- **Literature Review:** Search for headings (“tachcardia”, “ventricular”, and “anti-arrhythmia”) yielded a total of 574 studies (none from Cochrane database). 547 of these lacked relevance to aim of this study after review of title and abstract. Of the 27 remaining studies, 5 met inclusion criteria. (Many excluded because look at suppressing electrophysiologic induction of VT, some unstable VT). 3 prospective and 2 retrospective studies

- **Brief answers to research questions:** Primary outcome: In the 4 studies comparing an anti-arrhythmic to lidocaine, lidocaine was worse at termination than compared to procainamide, sotalol, and ajmaline. In the retrospective trial between procainamide and amiodarone there was no significant difference in success rate. Secondary Outcomes: 4 deaths in the 5 studies. Pooled data by drug shows hypotension occurred at a rate of 5% with lidocaine, 6% sotalol, 3% procainamide, and 7% with amiodarone. Neurologic symptoms associated with lidocaine 16% of the time

- **Limitations:** Limited number of prospective RCTs to analyze. Various anti-arrhythmics tested. Of the studies chosen, very small sample size. Poor randomization. Of the retrospective studies, plenty of bias in the form of selection and likely confounding. Missing/incomplete data. Meta-analysis unable to be performed on primary outcome.

**IMPLICATIONS FOR PRACTICE:**
- **Applicable to this clinical practice:** Yes. Outside of the EP lab, EM physicians are the docs most frequently encountering patients in VT. It is important to learn what pharmaceuticals are more effective and have the least potential to harm in order to best care for our patients.
- **Feasibility:** Yes, the hospital has a supply of the common anti-arrhythmics. We are able to administer certain drugs faster because we have them at hand (code drugs (lidocaine/amiodarone)). We can get others such as procainamide through pharmacy. Though question still remains which one is most effective in VT.