saline (NS) instillation before suctioning helpful or harmful?

## Search for the Evidence

### Search Strategies

All English-language literature from 1980 to 2013 was searched.

### Databases Used

PubMed, Cochrane Collaboration, MDConsult, BestBETs, PedsCCM

### Critically Analyze the Evidence

**GRADE criteria:** Evidence quality moderate; recommendation strong (Balshem, Helfand, Schunemann, et al, 2011)

- Instillation of NS before endotracheal (ET) tube suctioning has been used for years to loosen and dilute secretion, lubricate the suction catheter, and promote cough. In recent years, the possible adverse effects of this procedure have been explored. Adult studies have found decreased oxygen saturation, increased frequency of nosocomial pneumonia, and increased intracranial pressure after instillation of NS before suctioning (Ackerman, 1993; Ackerman and Gugerty, 1990; Bostick and Wendelgass, 1987; Hagler and Traver, 1994; Kinlock, 1999; O'Neal, Grap, Thompson, et al, 2001; Reynolds, Hoffman, Schlichtig, et al, 1990).

- Two of the first research studies evaluating the effect of NS instillation before suctioning in neonates found no deleterious effects. Shorten, Byrne, and Jones (1991) found no significant differences in oxygenation, heart rate, or blood pressure before or after suctioning in a group of 27 intubated neonates.

- In a second study of nine neonates acting as their own controls, no adverse effects on lung mechanics were found after NS instillation and suctioning (Beeram and Dhanireddy, 1992).

- A study evaluating the effects of NS instillation before suctioning in children found results similar to those in the previously published adult studies. Ridling, Martin, and Bratton (2003) evaluated the effects of NS instillation before suctioning in a group of 24 critically ill children, ages 10 weeks to 14 years old