Carisoprodol and Meprobamate Drug Monitoring

Indications for Ordering
Optimize drug therapy and monitor patient adherence

Test Description
- Urine
  - Quantitative liquid chromatography/tandem mass spectrometry (LC-MS/MS)
- Serum or plasma
  - Quantitative LC-MS/MS
  - Carisoprodol Urine with Reflex to Quantitation
    - Qualitative enzyme immunoassay/quantitative LC-MS/MS

Tests to Consider
Primary tests
Carisoprodol and Meprobamate, Urine, Quantitative 2012219
  - Preferred test to follow up presumptive results
Carisoprodol and Meprobamate, Serum or Plasma, Quantitative 2011450
  - Optimize drug therapy and monitor patient adherence
Carisoprodol Urine with Reflex to Quantitation 2012278
  - Useful for general screening in contexts of compliance and/or abuse
  - A screen with reflex testing is the preferred method for ruling out carisoprodol and/or meprobamate exposure

Disease Overview

Clinical issues
Carisoprodol (brand name Soma) and its metabolite, meprobamate (brand names Miltown, Equanil, Meprospan), are used as skeletal muscle relaxants
  - Strains, sprains, and other acute muscle injuries

Drug profile
- Cytochrome P450 2C19 isoenzyme converts carisoprodol to meprobamate
- Drug/drug interactions – numerous
- Pharmacological effects are likely due to combination of carisoprodol and its active metabolite, meprobamate
  - Meprobamate is equipotent to carisoprodol
- Skeletal muscle relaxant action may be related to sedative properties
- Patients may become dependent on carisoprodol
  - Discontinuation after long-term use may cause withdrawal symptoms

Test Interpretation

Analytical sensitivity
- Limit of detection – serum/plasma and urine
  - Carisoprodol and meprobamate – 100.0 ng/mL

Results
- Urine
  - Carisoprodol and meprobamate – considered present if concentrations exceed 100.0 ng/mL
- Serum/plasma
  - Carisoprodol
    - Therapeutic range – <8.0 µg/mL
    - Toxic range – ≥8.0 µg/mL
  - Meprobamate
    - Therapeutic range – 5.0-20.0 µg/mL
    - Toxic range – >40.0 µg/mL