

## PATIENT CARE GUIDELINES

**TITLE: Protocol for Management of  
Nitritoid Reactions**

**DATE: November 4, 1999  
REVISED: October 30, 2006**

---

### BACKGROUND

Nitritoid reactions (NR) are an uncommon side-effect of chrysotherapy. They have been reported with all therapeutic gold compounds, but most commonly with aurothiomalate (Myochrysine) [1-5]. Unlike other side effects of gold, NR may occur at any time during the treatment course and at any dose. These reactions occur more often at dosages of gold 50 mg IM per week. The reactions are described as usually mild and transient, with symptoms including nausea, facial flushing, dizziness, and hypotension occasionally leading to syncope. Nitritoid reactions have been reported as having an incidence of 4.7% with aurothiomalate [2]. Although NR are ordinarily mild, myocardial infarction, stroke and death have been reported [6,7]. Case reports have suggested a relationship between NR and use of angiotensin-converting enzyme (ACE) inhibitor medication [8,9].

### MANAGEMENT OF NITRITOID REACTIONS

Management consists of identifying patients with possible risk factors, early recognition of symptoms, and implementing interventions that minimize further complications.

#### **Assessment:**

Identify and record possible risk factors associated with nitritoid reactions:

- (a) patients who have demonstrated mucocutaneous reactions in the past
- (b) patients who have experienced a nitritoid reaction in the past
- (c) those with hypertension and history of vascular disease
- (d) those starting or presently on ACE inhibitor therapy (i.e. captopril; enalapril; lisinopril).

#### **Early recognition of symptoms:**

Symptoms can occur within seconds following drug administration to 20-30 minutes after a gold injection. Symptoms can also occur for the first time in patients long established on gold therapy.

Symptoms associated with NR range from nausea, facial flushing, light-headedness, hypotension, syncope, rapid, shallow or absent pulse, chest pain, unobtainable BP, and loss of consciousness.

**Interventions should a nitritoid reaction occur:**

1. Place patient in a recumbent position with legs elevated.
2. Monitor vital signs (BP, pulse, and respiratory rate) throughout reaction.
3. Place a cold cloth to forehead.
4. Reassure patient that symptoms are usually mild and transient.
5. Do not give anything by mouth until episode resolves.
- 6. Should patient not spontaneously regain consciousness, initiate CPR and activate emergency response procedure.**
7. Document episode in red on flow sheet, and inform the rheumatologist of the reaction.

**Interventions for patients who have experienced a nitritoid reaction:**

1. Refer patient to gold clinic rheumatologist for medication review.
2. Review gold record including current physician orders, nursing notes and lab data prior to each injection. Unless otherwise indicated, give the gold at ½ of the previous dosage. **Do not restart gold at more than 25 mg IM once weekly.**
3. Administer gold injection in the recumbent position.
4. Do blood pressure prior to injection, and repeat if patient is symptomatic. Observe for any decrease in blood pressure.
5. Instruct patient to rise slowly from recumbent, to sitting, to erect positions.
6. Observe patient for 20 minutes following each injection for the next 3 injections ensuring the nitritoid reactions are no longer occurring.
7. Observe patients who are on an ACE Inhibitor for 20 minutes **following each dose increase** for the first 3 injections.

**Interventions for patients on gold therapy who are starting an ACE Inhibitor medication:**

1. Recommend all patients not to start on an ACE inhibitor while on gold therapy. Patient should discuss alternative blood pressure medication with the family physician
2. Reduce gold to ½ the original dosage if newly started on the ACE inhibitor. Do not restart gold at more than 25 mg IM once weekly.
3. Give gold in the recumbent position.
4. Instruct patient to rise slowly from recumbent position, to sitting to erect positions.
5. Observe patient for 20 minutes following next 3 gold injections.
6. Advise patient to take ACE Inhibitor at least 4 hours after receiving gold injection.

## **Interventions for patients starting gold and on an ACE Inhibitor medication:**

1. Refer patient to gold clinic rheumatologist for medication review. Recommend patient discuss alternative blood pressure medication with the family physician.
2. Start patient at 10 mg IM once weekly, then on week 2 increase dosage to 15 mg IM once weekly and then on week 3 increase to 25 mg IM once weekly as tolerated.
3. Observe patient for 20 minutes following the first 3 gold injections.
4. Advise patient to take ACE inhibitor at least 4 hours after receiving gold injection.

---

## **REFERENCES**

1. Arthur B, Klinkhoff A, Teufel A: Nitritoid Reactions: Case Reports, Review, and Recommendations for Management. *J. Rheumatology* 2001; 28:10, 2209-12.
2. Ho M & Pullar R: Vasomotor reactions with gold. *J. Rheumatol* 1997; 36: 154-6.
2. Proudman SM, Cleland L: Auranofin-induced vasomotor reaction. *Arthritis Rheum* 1992; 35: 1452-4.
3. Hill C, Pile D, Henderson D, Kirkham B: Neurological side effects in two patients receiving gold injections for rheumatoid arthritis. *Br J Rheumatol* 1995; 34: 989-90.
4. Tilelli JA, Heinrichs MM: Adverse reactions to parenteral gold salts. *Lancet* 1997; 349: 853.
5. Wener MH: Stroke like syndrome after gold sodium thiomalate induced vasomotor reaction. *J Rheumatol* 1986; 23: 227.
6. Gottlieb N, Brown H: Myocardial infarction after a gold-induced nitritoid reaction. *Arthritis Rheum* 1977; 20: 1026-28.
7. Healey LA, Backes MB: Nitritoid reactions and angiotensin-converting enzyme inhibitors. *N Engl J Med* 1989; 321-763.
8. Ching DWT, McClintock AD: Nitritoid reaction in a patient on ACE inhibitor and Myochrysin treatments. *Aust NZ J Med* 1997; 27-343.

---

**Developed by:** A. Barbara Arthur, RN, BSN  
Alvena Teufel, RN  
Alice Klinkhoff, MD, FRCP(C)

**Revised by:** Dr. Alice Klinkhoff  
Jane Prince RN, BScN  
Deb Scarsbrook, RN, BSN

**Unit of Origin:** Mary Pack Arthritis Program, Vancouver Hospital, Vancouver Coastal Health Authority