Guidelines for use of Digoxin (Lanoxin®)

Recommended Neonatal Dose, Route, and Interval
Loading or digitalizing dose:

<table>
<thead>
<tr>
<th>PMA (Weeks)</th>
<th>IV (mcg/kg)</th>
<th>PO (mcg/kg)</th>
<th>Divide into 3 doses over 24 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 29</td>
<td>15</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>30 to 36</td>
<td>20</td>
<td>25</td>
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<tr>
<td>37 to 48</td>
<td>30</td>
<td>40</td>
<td></td>
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<tr>
<td>≥ 49</td>
<td>40</td>
<td>50</td>
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Generally given in the following manner:
1. One-half the loading dose given immediately IV or PO
2. One-fourth the loading dose given 8 to 12 hours later IV or PO
3. The remaining one-fourth loading dose given after an additional 8 to 12 hours IV or PO
4. Administer IV slow push over 5 to 10 minutes
5. Obtain ECG 6 hours after digitalizing dose to assess for toxicity

Maintenance dose: should be started 12 hours after the loading dose is completed

<table>
<thead>
<tr>
<th>PMA (Weeks)</th>
<th>IV (mcg/kg)</th>
<th>PO (mcg/kg)</th>
<th>Interval (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 29</td>
<td>4</td>
<td>5</td>
<td>24</td>
</tr>
<tr>
<td>30 to 36</td>
<td>5</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>37 to 48</td>
<td>4</td>
<td>5</td>
<td>12</td>
</tr>
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<td>≥ 49</td>
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<td>12</td>
</tr>
</tbody>
</table>

Titrated based on clinical response

Chief Indications
1. Heart failure caused by diminished myocardial contractility
2. Supraventricular tachycardia, atrial flutter, atrial fibrillation

Possible Adverse Reactions
1. Atrial or ventricular arrhythmias are common and may be an early indication of overdosage
2. Feeding intolerance, vomiting, diarrhea
3. Hypokalemia is associated with chronic Digoxin toxicity
4. Bradycardia due to depression of A-V conduction
5. Diuresis from improved cardiac output
6. Lethargy or seizures with toxicity

Contraindications & Precautions
1. CAUTION use with pre-existing hypokalemia may lead to adverse reactions
2. **CAUTION** use with Indomethacin - may inhibit excretion of Digoxin
3. **CAUTION** use with Insulin administration - intracellular K depletion may be reduced
4. **CAUTION** use in prematurity, hypoxia, hepatic disease, renal disease, or impaired renal function, hypothyroidism, severe cardiac decompensation, and in surgery - may predispose to Digoxin toxicity
5. Contraindicated in patients with ventricular dysrhythmias

**Nursing Implications**

1. Digoxin preparations must be stored in tightly covered, light resistant containers at room temp.
2. **FOLLOW CLOSELY** (especially in patients receiving diuretics or amphotericin) for decreased serum potassium (K), magnesium (Mg), or thyroxine (T4) along with increased calcium (Ca) will increase digoxin toxicity at a given level. Initial hyperkalemia results from release of intracellular K and indicates serious acute toxicity.
3. Follow HR and rhythm closely
4. Take apical-radial pulse before giving Digoxin; determine whether bradycardia exists individualized to patient; if so, notify H.O., check last level result and hold medication
5. Monitor for dysrhythmias; respiratory congestion; peripheral edema
6. Monitor daily weights and perform accurate I & O
7. Order must be taken off by two RNs
8. Obtain periodic EKGs to assess both desired effects and signs of toxicity

**Special Considerations and Calculations**

1. Gestational age and renal function must be taken into consideration when determining dosage, as well as route of administration.
2. Therapeutic serum concentrations – 1ng/ml. Serum sampling is best done at steady state, which is 6 hours post dose to just before the next scheduled dose following 5 - 8 days of continuous dosing.
3. IM injection should be discouraged, as absorption is only 80% compared to IV; local irritation, muscle damage, and necrosis may also occur
4. ECG & Lead II strips must be read prior to Digitalizing doses; *Cardiology must be consulted prior to beginning therapy.
5. Electrolytes and total fluids must be stabilized prior to Digitalization
6. IV Digoxin can be diluted in D5W or NS; Solution compatibility: D5W, D10W, NS
7. Monitor renal function and urine output
8. Indomethacin and spironalactone decrease digoxin clearance. Metoclopramide (Reglan) decreases digoxin absorption
9. Treatment for Digoxin Toxicity:
   - Discontinue the drug
   - Determine serum digoxin level
   - Obtain continuous ECG monitoring and treat arrhythmias as indicated by Cardiologist determine electrolytes, particularly serum K, Mg, and Ca, and treat any abnormalities
   - Give charcoal and cathartic
   - Treatment of life-threatening digoxin toxicity: **Digibind® (digoxin immune Fab)** IV over 30 minutes through 0.22 micron filter: Dose (# of vials) is calculated by multiplying weight in
kg by the serum digoxin concentration then divide the resulted number by 100. Each vial contains 38 mg (enough to bind 0.5mg Digoxin).

References:
1. Neofax 2010

Reviewed/Revised: 4/2011 by
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