### Clinical Pathway

**Pediatric Dehydration**

*Updated: June 2010*

| Outcomes/Goals | 1. Rapid identification and treatment of children with dehydration  
2. Effective use of oral rehydration therapy for moderate dehydration.  
3. Team-oriented approach to efficient, timely evaluation and workup.  
4. Decrease hospital admissions. |
<table>
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<tbody>
<tr>
<td><strong>NURSE documentation</strong></td>
<td>Chief complaint. Onset of nausea/vomiting/diarrhea. Document amount (in oz) of po intake, number of episodes of vomiting and/or diarrhea. Documentation should include number of wet diapers in last 12 hours. Physical assessment/documentation: general appearance (sick/not sick) and activity level or LOC, capillary refill time, abnormal skin turgor, absence of moist mucous membranes and/or tears, abnormal respiratory pattern.</td>
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| **INTERVENTIONS** | **Initiate on arrival**  
ESI Triage level II or III (history and presentation dependent)  
Full set of vitals  
Ondansetron ODT or liquid 0.15mg/kg (maximum dose 8mg/dose)  
Initiate ORT for qualifying patients per protocol  
Place topical Lidocaine (LMX) in anticipation of peripheral IV start  
Place on monitor if toxic appearance  
Initiate IV with 20 mg/kg bolus if Toxic or ORT fails after 2nd Ondansetron dose, or vitals/appearance becomes worse  
Oxygen to maintain SaO2 >90% |
| **DIAGNOSTICS** | Bedside CBG for moderate to severe dehydration, or altered mental status  
Urinalysis – if indicated/LIP order  
Stool culture – if indicated/LIP order |
| **PHYSICIAN (LIP)** | **PO Fluids**  
ORT per protocol  
**IV Fluids (if indicated)**  
NS bolus 20 ml/kg x 2. Reassess between boluses for effectiveness  
Consider starting with 10 ml/kg boluses for neonates, frail and/or malnourished infants and reassess in between for effectiveness.  
**Medication**  
**Anti-emetics**  
Ondansetron  
Oral dose 2-4 years of age: 2-4 mgs (0.15mg/kg)  
4-11 years of age: 4 mgs  
>11 years of age: 8 mgs  
IV dose 6 months – 18 years of age: 0.15mg/kg/dose |
| **ADMISSION** | Call primary care physician  
Call peds ward attending  
Prepare family/infant for admission to DNCC, PICU, ward, or ED Obs as appropriate |
| **Goals of Therapy** | Seven Principles of Appropriate Treatment for Children with Diarrhea and Dehydration\(^1\)  
- ORT should be used for rehydration  
- Oral rehydration should be performed rapidly  
- An age-appropriate, unrestricted diet is recommended as soon as dehydration is corrected  
- For breastfed infants, nursing should be continued  
- If formula fed, diluted formula is not recommended and special formula usually is not necessary  
- Additional ORT should be administered for ongoing losses through diarrhea  
- No unnecessary laboratory tests or medications should be administered |
| **Discharge Criteria** | Vomiting resolved with oral rehydration  
Parents instructed on and able to continue further oral rehydration at home as needed  
Vital signs stable / no clinical signs of shock/hypovolemia  
Assessment at or near baseline for LOC  
Encourage regular diet, avoid foods with high sugar content like apple juice |
Clinical Pathway Decision Making Process
Pediatric Dehydration
Updated: June 2010

Immediate Action
1. CBG
2. Initiate ORT in waiting room if anticipated delay per protocol
3. Immediate room placement, monitor, and IV Fluids if shock or Toxic appearance. Assign as ESI level II

History & Physical Exam
Assess for signs of dehydration

- Minimal to no dehydration (<5%)
- Mild to Moderate Dehydration (5-10%)
- Severe Dehydration/Shock or Toxic Appearance (>10%)

Evaluate for use of Ondansetron Begin ORT

Follow ORT protocol and prepare for discharge

Tolerating ORT?

Give Ondansetron Retry ORT

Follow ORT protocol and prepare for discharge

Tolerating ORT?

Initiate IV bolus Proceed to Pathway for workup
## Pediatric Dehydration

### Goals of Clinical Pathway

1. Rapid identification and treatment of children with moderate to severe dehydration
2. Effective use of oral rehydration therapy per protocol for moderate dehydration prior to intravenous therapy.
3. Team-oriented approach to efficient, timely evaluation and workup.
4. Decrease hospital admissions due to care in ED and parental education for at-home care.

<table>
<thead>
<tr>
<th>Data Considerations</th>
<th>Interventions</th>
<th>Rationale</th>
</tr>
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<tbody>
<tr>
<td>Anti-emetics</td>
<td>Ondansetron</td>
<td>Gastroenteritis accounts for more than 1.5 million pediatric outpatient visits and 200,000 hospitalizations annually. Vomiting limits the success of oral rehydration. Physicians are more likely to choose intravenous over oral rehydration when vomiting is a major symptom. Ondansetron (Zofran) is a safe, effective anti-emetic that improves the success of ORT. Children receiving Ondansetron were less likely to vomit, vomited less often, had greater oral intake and were less likely to be treated by intravenous rehydration (Freedman, 2006; Amir, 2007).</td>
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<tr>
<td>Rehydration</td>
<td>Oral Rehydration Therapy (ORT)</td>
<td>Despite the fact that ORT is the preferred method of rehydration (Freedman 2006, Amir, 2007), the full benefits of ORT for acute gastroenteritis have not been realized in developed countries. ORT is widely available, effective, safe and cost-effective, but continues to be underutilized. Indeed, ORT has even been demonstrated to be faster than intravenous therapy (IVT)(^1). Although Intravenous fluids (IVF) are sometimes necessary for severely dehydrated children and the rare child that does not respond to ORT, IVT is often initiated before adequate attempts at oral rehydration have failed. Gastrostomy and nasogastric tubes can be effectively used to administer ORS. Children who have diarrhea and are not dehydrated should receive an age-appropriate diet. Children who require rehydration should be fed age-appropriate diets as soon as they have been rehydrated. Breastfed infants should continue nursing on demand and formula fed infants should continue their usual formula immediately upon rehydration. Foods high in simple sugars (juices, sodas, gelatins) should be avoided as the osmotic load may worsen diarrhea. Special diets, such as the BRAT diet (bananas, applesauce, rice and toast), are too restrictive and provide suboptimal nutrition. Lactose-free formula is usually unnecessary. Dilute formula and milk may prolong symptoms and are not recommended.</td>
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**Table 1. Further Estimating the Degree of Dehydration\(^1\)**

<table>
<thead>
<tr>
<th>Dehydration</th>
<th>Minimal to none</th>
<th>Mild to Moderate</th>
<th>Severe</th>
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<tbody>
<tr>
<td>Weight Loss</td>
<td>&lt;5%</td>
<td>5-10%</td>
<td>&gt;10%</td>
</tr>
<tr>
<td>Mental Status</td>
<td>Well, alert</td>
<td>Normal, fatigued or restless, irritable</td>
<td>Apathetic, lethargic, unconscious</td>
</tr>
<tr>
<td>Thirst</td>
<td>Normal, may refuse</td>
<td>Thirsty, eager to drink</td>
<td>Drinks poorly, unable to drink</td>
</tr>
<tr>
<td>Heart rate</td>
<td>Normal</td>
<td>Normal to increased</td>
<td>Increased</td>
</tr>
<tr>
<td>Quality of pulses</td>
<td>Normal</td>
<td>Normal to decreased</td>
<td>Weak, thready, or impalpable</td>
</tr>
<tr>
<td>Breathing</td>
<td>Normal</td>
<td>Normal; fast</td>
<td>Deep</td>
</tr>
<tr>
<td>Mucous Membranes</td>
<td>Normal</td>
<td>Dry</td>
<td>Parched</td>
</tr>
<tr>
<td>Eyes</td>
<td>Normal</td>
<td>Slightly sunken</td>
<td>Deeply sunken</td>
</tr>
<tr>
<td>Tears</td>
<td>Present</td>
<td>Decreased</td>
<td>Absent</td>
</tr>
<tr>
<td>Skin fold</td>
<td>Instant recoil</td>
<td>Recoil in &lt;2 seconds</td>
<td>Recoil in &gt;2 seconds</td>
</tr>
<tr>
<td>Extremities</td>
<td>Warm</td>
<td>Cool</td>
<td>Cold, mottled, cyanotic</td>
</tr>
<tr>
<td>Urine output</td>
<td>Normal to decreased</td>
<td>Decreased</td>
<td>Minimal</td>
</tr>
</tbody>
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