Early Nutrition and Aggressive Fluid Resuscitation are Associated with Improved Outcomes in Pancreatitis

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• I have no financial relationships to disclose.

Background
• In the past Acute Pancreatitis (AP) was thought to be an uncommon problem in pediatrics
• In the last two decades, an increased incidence of AP has been observed in the pediatric population

Lopes et al, J Pediatr 2002
• Despite the increased incidence in pediatrics, management remains suboptimal since there are no guidelines on management of AP in pediatrics.

**Enteral nutrition**

Adult literature shows that early (within 24-72 hours) EN results in more favorable outcomes:

- Mortality rate
- Multi-organ failure
- Length of stay (LOS)

Adult studies support early aggressive fluid resuscitation

Received > 1/3 of administered 72 hour IVF volume within 24 hours
Outcomes: SIRS, organ failure, ICU, LOS, death


- We aimed to study management approaches to AP at our institution
- Designed a survey that looked at management elements to uncomplicated AP

Pancreas 2014. In press
Survey on Management of AP

Presented a healthy 12 year M with a first attack of AP and asked providers on the next best steps in management.

Survey on Management of AP

Questions:
- Intravenous Fluid management
- Nutrition management
- Pain
- Imaging
- Recurrent attacks

Surveyed 84 MDs GI physicians, non-GI (Emergency and Hospital Medicine).

Responses rate was 80%
Survey on Management of AP

- Management was quite variable from service to service

- Management was variable amongst providers from the same service - Gastroenterology
• Standardization of care is needed

• Standardizing care has led to improved patient outcomes in different medical conditions, and elimination of practice variability would facilitate comparative effectiveness studies

• We developed an intervention in late 2013 in response to our survey results.

• The intervention was based on a well-defined protocol for patients with mild AP
• Centered on aggressive IVF resuscitation on admission
• Early EN in the first 48 hours.

• To allow system delivery that is timely and easy to install.

• Implemented the order set (OS) into our electronic medical record.
Explosion of new discoveries, it is widely anticipated that advances will be translated into much more effective medical care and better health outcomes for patients.
• Order set was used on acute pancreatitis admissions from January 2014 until now
• We have about 65% use rate.

Aim
Determine whether recommendations in the Order Set were associated with improved outcomes

<table>
<thead>
<tr>
<th>Management groups</th>
<th>Early PO within 48 hours</th>
<th>Day 1 IVF volume</th>
<th>Number of Encounters</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Early PO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td></td>
<td>96 (48%)</td>
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<tr>
<td></td>
<td>Low</td>
<td></td>
<td>55 (27%)</td>
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<tr>
<td></td>
<td>NPO</td>
<td></td>
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<tr>
<td></td>
<td>High</td>
<td></td>
<td>30 (15%)</td>
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</tr>
<tr>
<td></td>
<td>Low</td>
<td></td>
<td>20 (10%)</td>
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</table>
Shorter LOS in early nutrition group

Rate of severe AP

ICU admission rate

* p<0.05
Early enteral nutrition/ early aggressive fluid resuscitation were associated with improved outcomes of pancreatitis.

Future prospective randomized studies are needed to validate the effects of nutrition and fluid management in pancreatitis.
# Acknowledgements

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<thead>
<tr>
<th>Flora Szabo</th>
<th>Jorge Bezerra</th>
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<tbody>
<tr>
<td>Joseph Palermo</td>
<td>Mitchel Cohen</td>
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<td>Tom Lin</td>
<td>Debora Jenkins</td>
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<td>Jaimie Nathan</td>
<td>Christie Heinzman</td>
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<td>Kim Jackson</td>
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<td>Angie Turner</td>
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