

Value-Based Healthcare: A Perfect Care Approach for Managing Acute Pancreatitis Patients

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Trust. Methodist.

Agenda

- Background
 - Value-Based Healthcare
 - Standardized Order Set
- Research Hypothesis
- Methodology
- Results
- Next Steps
- Pancreatitis Program

What is Value-Based Healthcare?

- Health outcomes achieved per dollar spent
- Providers are adopting value-based healthcare models
- Encourage providers to improve the overall patient care and experience, while reducing costs



Porter ME, Teisberg EO. Redefining health care: creating value-based competition on results. Boston: Harvard Business Press; 2006.

<https://global.agfahealthcare.com/us/enterprise-imaging/value-based-healthcare/>

Standardized Order Sets can help achieve *Value*

- **Evidence-based care protocols**
- 96% of hospitals have implemented CPOE (ASHP survey, 2016); use & compliance of disease specific order set remains a challenge
- Order sets have shown to improve outcomes, adherence to evidence-based guidelines, reduction in human error and cost
 - sepsis order set
 - pneumonia order set
- **Unwarranted care variation**

Acute Pancreatitis (AP)

- AP is one of the most common GI diseases leading to ED visits and inpatient hospitalization
- Hospital direct-costs of treating these patients have reached more than \$2 billion annually (Kothari, 2019)
- Per guideline, the **diagnosis of AP** is established by the presence of **2 of the 3** following criteria
 - abdominal pain consistent with AP
 - serum amylase and/or lipase > 3X ULN
 - characteristic findings on CT imaging
- CT Scan **NOT** necessary and is discouraged unless needed to clarify diagnosis
 - >50% patients could have been clinically diagnosed without imaging
 - avg CT scan costs \$4500

Methodist Acute Pancreatitis Protocol ED Order Set (MAPP)

Goal:

- 1.) Early identification and immediate triage of all patients with abdominal pain presenting to the ED that potentially could be diagnosed with acute pancreatitis
- 2.) Early aggressive IV fluid resuscitation
- 3.) Appropriate imaging

Acute Pancreatitis Patient Flow Map

GOALS:

1. Early diagnosis
2. Early aggressive IV fluid resuscitation
3. Early enteral nutrition
4. Prevention of more serious complications
5. Minimize unnecessary CT imaging
6. Appropriate use of early ERCP

Immediate Triage by ED RN

ED

Admission Criteria by Hospitalist:

Admit to Med/Surg Unit:

- Meets HAPS
- Inability to maintain oral hydration
- Severe pain, not controlled with oral medication or oral medication not tolerated
- Negative SIRS

Admission

Med/Surg Unit : Admit to Hospitalist

CONTINUE w Admission MAPP ORDER SET

1. **Physician & Nursing:**
 - IV Fluids per MAPP
 - Pain Management per Pancreatitis Pain Management Order Set
 - Clear liquid diet, then advance to low fat as tolerated if no Ileus, or N/V, pain resolved, and normal bowel sounds;
 - NPO if endoscopic procedure planned within 12 hours
 - Strict I & O's
2. **Respiratory:** Check O2 saturation q shift if admitted to Med/Surg Unit & **initiate Incentive Spirometry**
3. **Laboratory:** CMP, CBC, Triglycerides, CRP, Amylase, Lipase

Inpatient

Pancreatitis Education using Patient Navigator:

1. **Topics include:** Plan of care, personal goals, pain, nutrition, hospital stay, activity plan, incision, tubes, stents, drains, life style changes, discharge criteria
2. **Prepare for Procedures:** ERCP, EUS, Cholecystectomy, Surgery

Diagnostic Procedures

1. **Radiology:** CT, US, MRCP
2. **GI Physicians:** EUS, ERCP

Diagnostic & Treatment

Discharge Planning/Teaching:

1. **Patient Navigator:** Disease specific discharge teaching using Pancreatitis Home Self-Management Guide
2. **Nursing:** Continue discharge teaching until day of discharge
3. **Nurse Manager, SW, RN, Pharmacist:** weekly Interdisciplinary Plan of Care meeting (IPOC)

Discharge & Follow Up

ED Physician: Exam & Evaluation
 Labs: CBC, CMP, Amylase, Lipase
Imaging: Abdominal Ultrasound

Diagnosis of Acute Pancreatitis determined if Presence of 2 of the 3 following criteria:

1. Symptoms (severe mid epigastric abdominal pain, radiating to back, N/V
2. Serum Amylase/or Lipase >3 times upper limits of normal labs
3. Characteristic findings on abdominal imaging

If Dx determined to be Acute Pancreatitis:

1. **ED Initiate ED MAPP Order Set:**
 - Early aggressive IV Fluid Resuscitation
 - Pain management
2. **Call Hospitalist for Admission**

Admit to ICU:

- Hemodynamic Instability
- Hypoxemia
- Acute renal failure
- + SIRS
- Marshall Score >=2

4. **Radiology:** Consider CT if failure to improve after 72 hours
5. **GI Physicians:** **GI Consult & ERCP within 24 Hrs. if biliary obstruction/cholangitis**
6. **Dietitian:** Nutrition Consult
7. **Patient Navigator Consult**

ICU

- Admit - **Hospitalist**
- And/or **Consult Intensivist**
- Consult **Biliary Surgeon**
- As above plus ABG then continuous pulse oximetry
- NG/NJ nasoenteric feeding if ileus or intolerant to oral feeding, and/or organ failure

Determine Etiology & Treatment

Biliary Obstruction Cholangitis	Antibiotics (only if cholangitis)
Gallstones	Surgery consult Cholecystectomy
Alcohol induced	Medical Mgt. Detoxification
Neoplasm	Consult Oncology Consult Surgeon Endoscopic evaluation
Hypertriglyceridemia	Medical Mgt. Consult Endocrine Nutrition consult
Idiopathic (See separate pathway)	Endoscopic evaluation
ERCP w/in 24 hrs	

General Aftercare:

1. **Patient Navigator:** 7 day discharge f/u call -- 2 week office visit appt, as needed.
2. **Dietitian**— make appt. for Outpatient Nutrition Counseling Clinic, as needed
3. **Smoking Cessation Group, as needed**

Referral to Alcohol Rehab Program

Assist with f/u appt. to Oncologist and Surgeon

Assist with f/u appt. to Endocrinologist

Assist with further outpatient procedure appts &/or genetic counseling referral

ED MAPP order set

Labs

Labs

<input checked="" type="checkbox"/> CBC w/ Auto Differential	STAT, For 1 Occurrences
<input checked="" type="checkbox"/> Comprehensive Metabolic Panel (CMP)	STAT, For 1 Occurrences
<input checked="" type="checkbox"/> Bilirubin, Direct	STAT, For 1 Occurrences, Order this test for patients >14 days old.
	Order Neonatal Direct Bilirubin for newborns <15 days old.
<input checked="" type="checkbox"/> Lipase	STAT, For 1 Occurrences
<input checked="" type="checkbox"/> Amylase	STAT, For 1 Occurrences
<input checked="" type="checkbox"/> Triglycerides	STAT, For 1 Occurrences

Imaging

Imaging

<input type="checkbox"/> Ultrasound Gallbladder	STAT, Once For 1 Date for auto-scheduling: Time for auto-scheduling: Is the patient pregnant? When was the patient's LMP? Duration of symptoms:
<input checked="" type="checkbox"/> X-ray Chest 2 View	STAT, Once For 1 Date for auto-scheduling: Time for auto-scheduling:

IV Fluids

IV Fluid Boluses and Infusions

<input checked="" type="checkbox"/> Insert and Maintain IV	"And" Linked Panel
<input checked="" type="checkbox"/> Insert peripheral IV	Once For 1 Occurrences
<input checked="" type="checkbox"/> Saline lock IV	Once For 1 Occurrences, Doctor: NS will be used for flushing unless otherwise ordered.
	IV site restrictions:
<input checked="" type="checkbox"/> sodium chloride 0.9 % flush	3 mL, IV Flush, As needed, line care
<input type="checkbox"/> lactated ringers bolus	20 mL/kg, IV Bolus, Once, For 1 Doses In absence of CHF and/or ESRD & no evidence of volume depletion (MAP<7) first 24-48 hours

Diet

<input checked="" type="checkbox"/> NPO Diet	Diet effective now, Starting S NPO except:
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Research Hypothesis

- To compare and assess ‘clinically significant outcome indicators’ and hospital-based charges for AP patients in 2014 and 2018
- We hypothesize that patients will have better outcomes and decrease hospital-based charges after implementation of MAPP order set

Methodology

- Retrospective data for AP cases was analyzed in 2014 and 2018
- Patients were included in the analysis if they met diagnostic criteria for AP
- Epic EHR, Premier Quality Advisor, and financial systems were utilized to abstract data
- Fischer's exact test, Chi-square test & Kruskal-Wallis test were used to investigate differences

Perfect Care Index Metrics

Clinically significant outcome indicators

Clinical quality & safety

- In-hospital mortality = **NO**
- 30-day readmission = **NO**
- LOS better than expected = **YES**
- Complications: organ failure, fluid collection, sepsis = **NO**

Processes of care

- CT ordered in ED = **NO**
- LR administered in ED = **YES**
- ERCP performed within 24 hours of diagnosis for patients with cholangitis = **YES**

Overall patient care experience [from 2019 onwards]

- Summarize your experience (poor, fair, good, excellent) = **GOOD OR EXCELLENT**

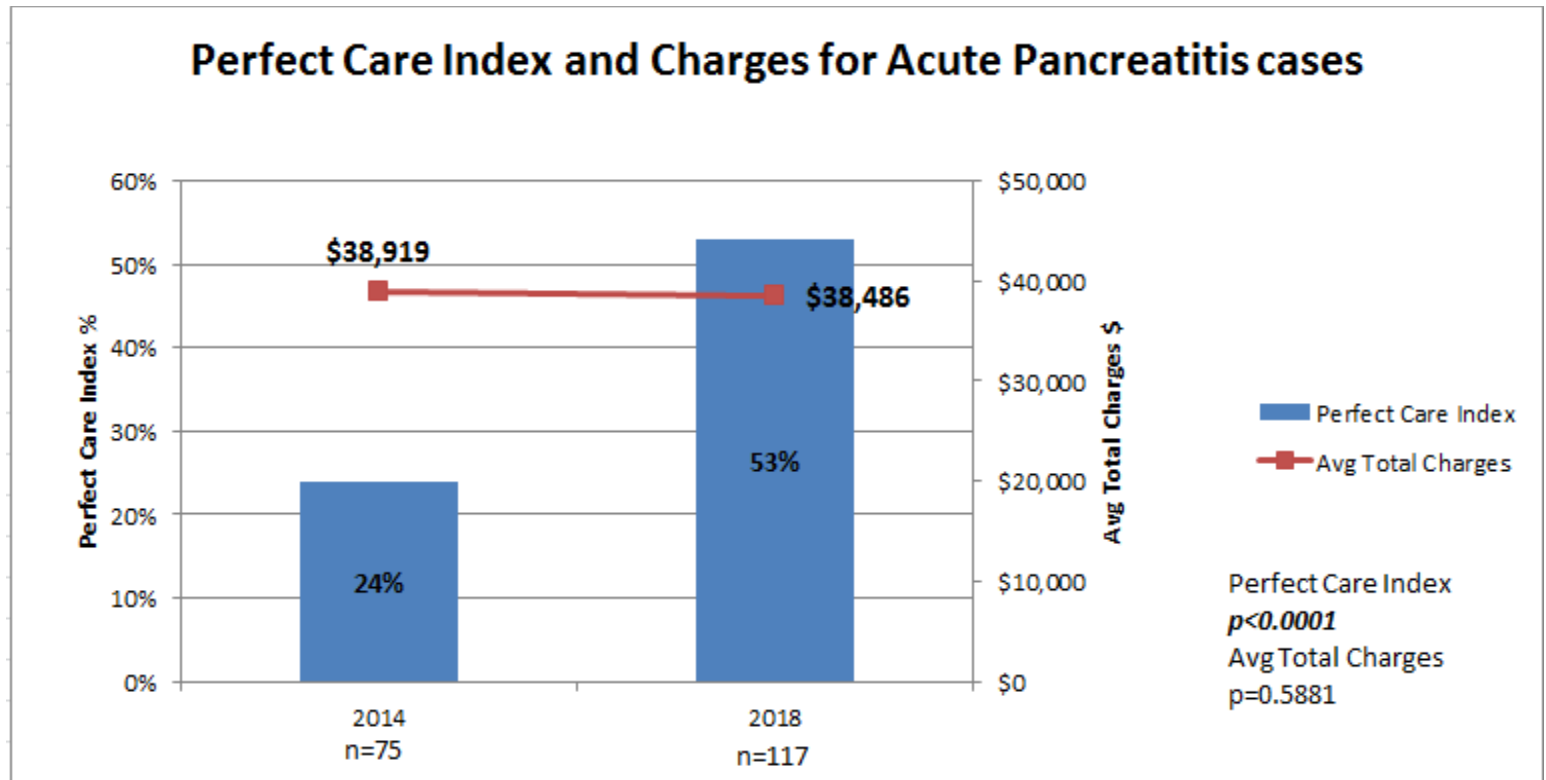
Charges: Charges to deliver outcomes

- Measured around patient and by condition
- Actual resources used and evaluated by department

Results

	2014 N=75	2018 N=117	p-value
DEMOGRAPHIC VARIABLES			
Age, mean \pm SD	46.5 \pm 18.4	49.3 \pm 16.3	0.2717 ^c
Female, n (%)	44 (58.7)	65 (55.6)	0.6712 ^b
Race, n (%)			
Black or African American	22 (29.3)	49 (41.9)	0.1218 ^b
White	30 (40.0)	32 (27.3)	
Other	23 (30.7)	36 (30.8)	
Ethnicity, n (%)			
Hispanic or Latino/a, or Spanish origin	38 (50.7)	46 (39.3)	0.1974 ^a
Not Hispanic, Latino/a, or Spanish origin	37 (49.3)	69 (59.0)	
Unknown	0 (0.0)	2 (1.7)	
Acute Pancreatitis Etiology, n (%)			
Alcohol	9 (12.0%)	36 (30.8%)	0.0090 ^a
Biliary	28 (37.3%)	43 (36.7%)	
Hypertriglyceridemia	8 (10.7%)	5 (4.3%)	
Unexplained	30 (40.0%)	33 (28.2%)	
Related Procedures, n (%)			
Cholecystectomy/ERCP/Other	31 (41.3)	40 (34.2)	0.3170 ^b

Results



Results

	2014 N=75	2018 N=117	p-value
VARIABLES			
Perfect care metrics, n (%)			
Mortality	3 (4.0%)	0 (0.0%)	0.0581 ^a
Length of stay ≤ expected	30 (40.0%)	39 (33.3%)	0.3476 ^b
30-day readmission	2 (2.7%)	2 (1.7%)	0.6444 ^a
Complications	7 (9.3%)	3 (2.6%)	0.0498^a
CT ordered in ED	15 (20%)	11 (9.4%)	0.0363^b
LR administered in ED	29 (38.7%)	107 (91.4%)	<.0001^a
ERCP w/i 24 h. for cholangitis	2/2 (100%)	0/0 (0%)	0.1513 ^a
All perfect care metrics met, n (%)	18 (24.0%)	62 (53.0%)	<.0001^a
Average hospital-based charges*, mean ± SD			
Room and Board	5639.0 ± 5329.7	4914.3 ± 3181.6	0.7462 ^c
ICU/CCU	732.2 ± 3081.7	680.9 ± 2819.2	0.0193^c
GI Endoscopy	1314.7 ± 3084.0	1543.0 ± 3544.9	0.1161 ^c
Operating room	6731.5 ± 8798.7	7213.4 ± 11152.8	0.0008^c
Emergency room	3457.4 ± 1125.3	3387.0 ± 1528.9	0.3984 ^c
Laboratory	9049.5 ± 4750.4	10717.0 ± 4724.9	0.0025^c
Radiology/Imaging	8599.6 ± 6579.6	7822.5 ± 7288.1	0.2347 ^c
Pharmacy	2195.6 ± 1755.6	2305.9 ± 1847.4	0.5136 ^c
Physical therapy/respiratory therapy	1322.8 ± 3692.1	1445.1 ± 4866.3	0.1462 ^c
Average total charges*, mean ± SD	38919.4 ± 18209.8	38485.7 ± 22239.5	0.5881^c

Next Steps

- Based on the success of MAPP in improving various facets of patient care, MAPP ED and inpatient order sets went live at 2 MHS campuses recently
- Physicians, nurses and staff were educated about the order sets
- Baseline data will be collected and shared with other campuses

Pancreatitis Program Timeline and Accomplishments

2015

- Start of program , hired pancreatic nurse navigator and dietitian
- Developed clinical pathways and MAPP order set

2016

- 1st in nation to receive Disease Specific Certification (DSC) from The Joint Commission (TJC)
- Implemented pain management order set

2017

- MHS went live with Epic
- Received funds from American College of Gastroenterology (ACG) to develop Acute Pancreatitis Quality Indicators (APQI)

2018

- Developed APQI endorsed by ACG and manuscript published
- Re-accredited by TJC without any findings

2019

- Developed and implemented Perfect Care Index metrics
- Rolled out MAPP order sets to 2 MHS campuses



Questions?

