

## Retrospective Study Assessing Rate of False Positive Endoscopic Retrograde Cholangiopancreatography Performed for Choledocholithiasis and Associated Complications

Kelly Thomas BE  
USF MCOM- LVHN Campus

Travis Magdaleno DO

Shashin Shah MD  
Lehigh Valley Health Network, Shashin.Shah@lvhn.org

Jennifer E. Macfarlan MPH  
Lehigh Valley Health Network, jennifer\_e.macfarlan@lvhn.org

Hope Kincaid MPH, CPH  
Lehigh Valley Health Network, Hope.Kincaid@lvhn.org

Follow this and additional works at: <https://scholarlyworks.lvhn.org/select-program>



Part of the [Medical Education Commons](#)

## Let us know how access to this document benefits you

---

### Published In/Presented At

Thomas, K. Magdaleno, T. Shah, S. Macfarlan, J. Kincaid, H. (2018, March). *Retrospective Study Assessing Rate of False Positive Endoscopic Retrograde Cholangiopancreatography Performed for Choledocholithiasis and Associated Complications*. Poster Presented at: 2018 SELECT Capstone Posters and Presentations Day. Kasych Family Pavilion, Lehigh Valley Health Network, Allentown, PA.

This Poster is brought to you for free and open access by LVHN Scholarly Works. It has been accepted for inclusion in LVHN Scholarly Works by an authorized administrator. For more information, please contact [LibraryServices@lvhn.org](mailto:LibraryServices@lvhn.org).

# Retrospective Study Assessing Rate of False Positive Endoscopic Retrograde Cholangiopancreatography Performed for Choledocholithiasis and Associated Complications

Kelly Thomas BE, Travis Magdaleno DO, Shashin Shah MD, Hiral Shah MD, Jennifer Macfarlan MPH and Hope Kincaid MPH CPH

Lehigh Valley Health Network, Allentown, Pennsylvania

## Background

- Choledocholithiasis (CDL) refers to the presence of gallstones within the common bile duct (CBD).
- CDL is diagnosed and treated by endoscopic retrograde cholangiopancreatography (ERCP).
- ERCP is an invasive procedure that cannulates and retrieves gallstones in the CBD.
- 5-10% of patients who undergo ERCP develop post-ERCP pancreatitis.
- With minimal risks, EUS can be used to pre-screen patients for CDL.
- Pre-screening may decrease unnecessary ERCPs and thus decrease post-ERCP pancreatitis.

## Problem Statement

A retrospective study has yet to be performed at LVHN to determine the rate of false positive ERCPs and their associated complications and thus no data exists to analyze if additional pre-screening prior to an ERCP would be beneficial in patients suspected of CDL.

## Methods

Collect Patient Charts

Enter Data into RedCap Database

Retrospective Chart Review

Analyze data

**Inclusion Criteria:**

- Age > 18
- Negative ERCP for CDL

**Exclusion Criteria:**

- ERCP performed not for CDL
- Positive ERCP for CDL

- Demographics
- Pre-ERCP labs/imaging
- CDL risk based on Table 1

- Determine if post-ERCP pancreatitis developed
- Record lipase level, symptoms and imaging of post-ERCP pancreatitis

- Incidence of negative ERCP for CDL
- Incidence of post-ERCP pancreatitis for entire sample
- Incidence of post-ERCP pancreatitis based on CDL risk

Table 1: Risk Criteria Classification		
CBD Dilated>6 mm	Total Bilirubin>1.5 mg/dl	
	<b>Positive</b>	<b>Negative</b>
<b>Positive</b>	High	Intermediate
<b>Negative</b>	Intermediate	Low

## Results

Figure 1: Study Flowchart of Chart Review

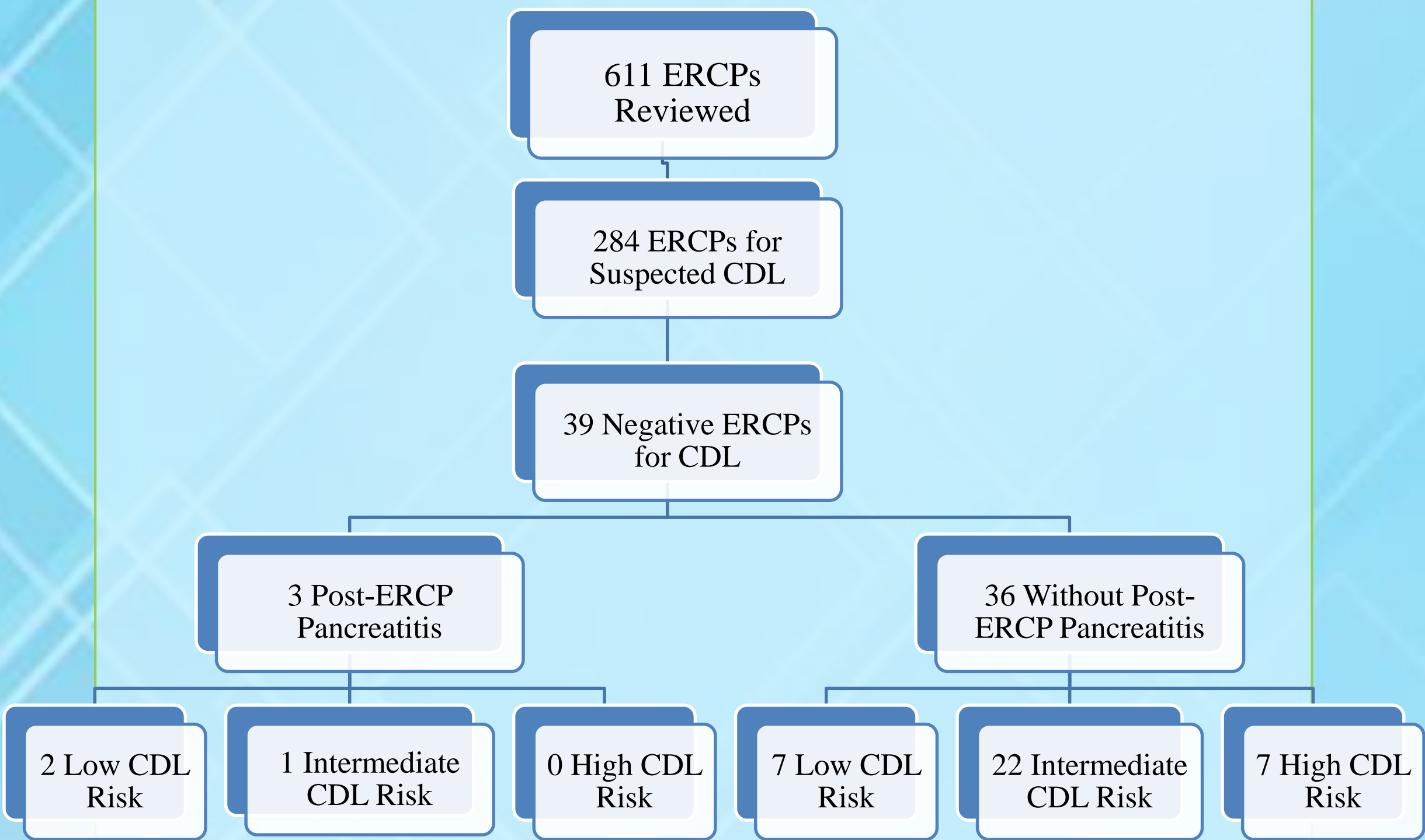


Figure 2: Incidence of Post-ERCP Pancreatitis

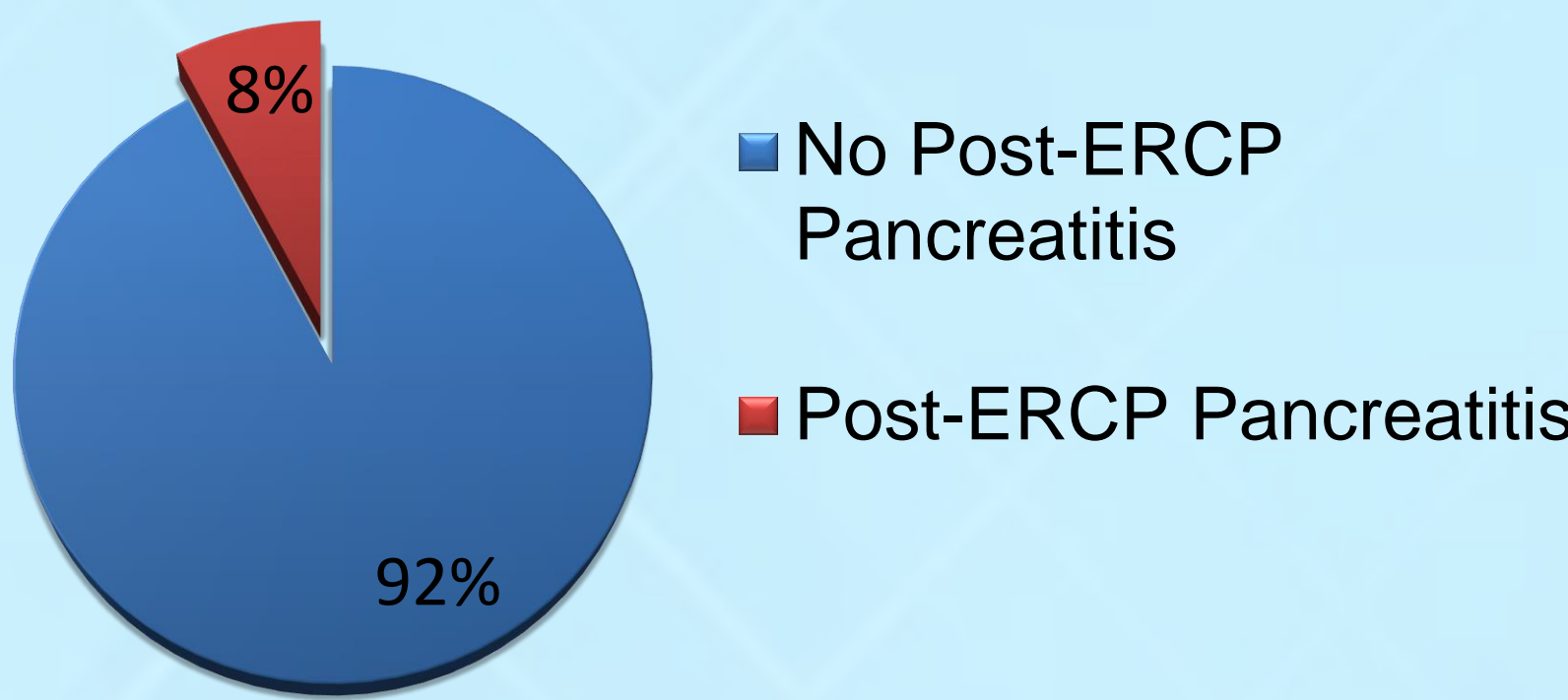


Figure 3: Number of Patients in Each CDL Risk Category

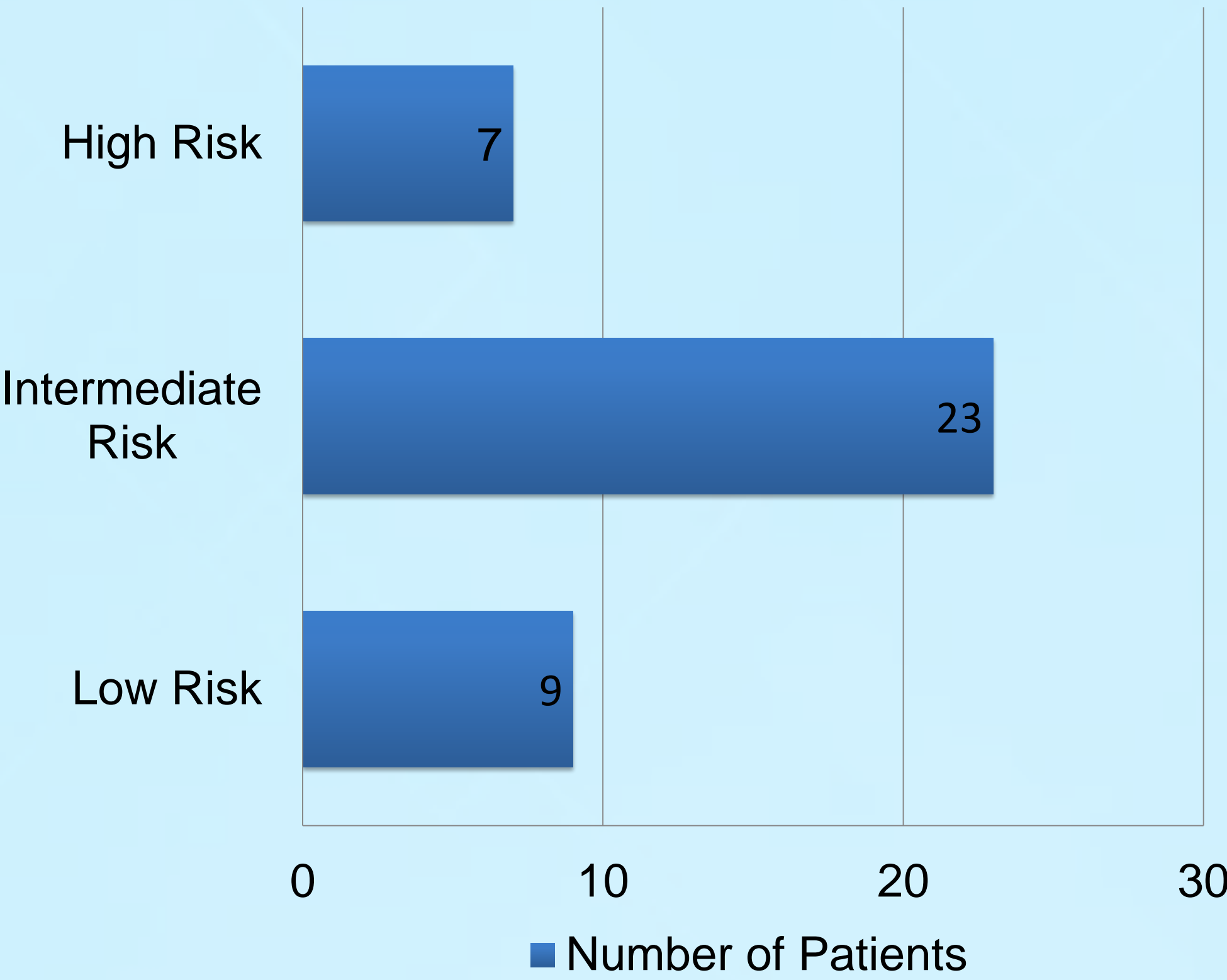


Table 2: Sub-Analysis of Patients Who Developed Post-ERCP Pancreatitis

Patient Age	Pre-ERCP Data			Post-ERCP Data				
	CDL Risk	CBD Dilation on US	Imaging	Lipase Level (U/L)	Epigastric Pain	Nausea	Vomiting	Imaging Confirming Pancreatitis
69	Low	No	MRCP, IOC	1071	Yes	Yes	Yes	Not Performed
27	Intermediate	Yes	EUS	22746	Yes	No	No	Not Performed
62	Low	No	IOC	8911	No	Yes	No	Not Performed

## Discussion

- 39 patients (14%) had negative ERCPs, in which 3 patients (7.7%), who were low/intermediate CDL risk, developed post-ERCP pancreatitis.
- Length of stay (LOS) prolonged in 2 of the 3 patients (67%) who developed pancreatitis when compared to the mean LOS of 5.3 days of all patients with negative ERCPs (power 0.2).
- Extended LOS on average for post-ERCP complications is ~\$6,000 for additional 2-3 days of hospitalization.
- No high risk patients developed post-ERCP pancreatitis.
- No significant difference (p>0.5) in patient characteristics or test results between patients who developed pancreatitis and those who did not.

### Project Limitations:

- Small sample size, resulting in low power.
- 26 patient charts excluded due to ERCP being cancelled after EUS pre-screening ruled out CDL.

## Conclusions

- Pre-screening with EUS for patients with low and intermediate CDL risk would provide cost-effective benefit by avoiding unnecessary ERCPs that may cause costly complications.
- Why EUS?**
  - High sensitivity (93-97%) & specificity (89-94%)
  - Ability to be performed immediately prior to ERCP, limiting time for gallstone to pass between screening and ERCP
  - Cost of EUS with ERCP comparable to cost of ERCP alone
- More data needed to determine if pre-screening would be beneficial for patients at high risk of CDL.

### REFERENCES

1. Everhart JE, Khare M, Hill M, Maurer KR. Prevalence and ethnic differences in gallbladder disease in the United States. *Gastroenterology*. 1999;117(3):632.

2. Everhart JE, Ruhl CE. Burden of digestive diseases in the United States I: Overall and upper gastrointestinal diseases. *Gastroenterology* 2009; 136:376-86.

3. Peery AF et al. Burden of Gastrointestinal Disease in the United States: 2012 Update. *Gastroenterology*. 2012 Nov; 143(5): 1179-1187.

4. Adler D et al. Quality indicators for ERCP. *American Society for Gastrointestinal Endoscopy and American College of Gastroenterology*. 2015 Jan; 81(1):54-66.

5. Türkvan A, Erden A, Türkoğlu MA, Yener Ö. Congenital Variants and Anomalies of the Pancreas and Pancreatic Duct: Imaging by Magnetic Resonance Cholangiopancreatography and Multidetector Computed Tomography. *Korean Journal of Radiology*. 2013;14(6):905-913.

6. Testoni PA. Why the incidence of post-ERCP pancreatitis varies considerably? Factors affecting the diagnosis and the incidence of this complication. *JOP*. 2002 Nov;3(6):195-201.

7. Luthra AK. A Prospective Blinded Study Evaluating the Role of Endoscopic Ultrasound before Endoscopic Retrograde Cholangiopancreatography in the Setting of "Positive" Intraoperative Cholangiogram during Cholecystectomy. *Am Surg*. 2016 Apr;82(4):343-7.

8. Gottschalk U, Gottschalk E, Dietrich CF. Symptomatic choledocholithiasis during pregnancy – the role of ultrasound, ERCP and EUS. *Gastroenterol*. 2011 Apr;49(4):452-60.

9. Vadlamudi R et al. Identifying patients most likely to have a common bile duct stone after a positive intraoperative cholangiogram. *Gastroenterol Hepatol (N Y)*. 2014 Apr;10(4):240-4.

10. Vadlamudi R et al. Identifying patients most likely to have a common bile duct stone after a positive intraoperative cholangiogram. *Gastroenterol Hepatol (N Y)*. 2014 Apr;10(4):240-4.

11. Scheiman JM et al. Can endoscopic ultrasound or magnetic resonance cholangiopancreatography replace ERCP in patients with suspected biliary disease? A prospective trial and cost analysis. *AM J Gastroenterol*. 2001 Oct;96(10):2900-4.

12. Buscarini E et al. EUS for suspected choledocholithiasis: Do benefits outweigh costs? A prospective, controlled study. 2003 April;47(4):510-518.

© 2018 Lehigh Valley Health Network