

### Background and Aim

- Pancreatic diseases account for substantial morbidity, mortality and cost.
- The cost for pancreatitis in U.S.: direct \$2.55; indirect \$1.89; and total \$3.73 (billion).<sup>1</sup>
- Several reports have established the increasing burden of pancreatic diseases. However data on internet-based patient education is limited.<sup>2</sup>
- The Institute of Medicine reports 90 million Americans are health illiterate.
- Often patient education on the internet is poorly understood by patients, lacking in credibility, and not consistent with current medical evidence.
- Providing credible, informative resources for patient education to overcome the barriers to health literacy, impart disease understanding, and facilitate sharing in patient decision-making has been shown to improve outcomes.
- However, there are limited reliable, visual resources to educate patients, specific to patient needs and interests in pancreatic diseases.
- **The aim of this study is to evaluate *Animated Pancreas Patient (APP)* as an effective patient education resource** based on visual formats of learning, to help address patient gaps, address educational needs, clarify areas of interest and potentially reduce health literacy barriers in order to inform patients for improved decisions, disease understanding and health outcomes in pancreatic diseases.

### Methods

#### Study Design and Participation:

- Using visual formats for patient education (animations, videos, slide shows) we monitored *Animated Pancreas Patient* website and YouTube audience data from September 2013 to mid-March 2016 for NPF's APP.
- *Animated Pancreas Patient* website [www.AnimatedPancreasPatient.com](http://www.AnimatedPancreasPatient.com) hosted the comprehensive content of the educational entity, with accompanying YouTube channel hosting.

#### Methodology and Statistical Analysis:

- We evaluated the audience reach, demographics and other metrics on patients who reported learning new information and learner commitment to change.
- Number of visits, pages viewed per visit, and average visit duration on the APP website and YouTube channel in the U.S. and in other countries were evaluated as well.
- We calculated the metrics for top views, top views within media type (Animation, Expert Video, Patient Video, and Slide Show) and top retention videos on the website and YouTube channel.
- SAS v. 9.2 was used for analysis (SAS Institute, Cary, NC).

### Results

Table 1: NPF APP Website and YouTube Channel Metrics

Website	United States	Other countries (n=167)	Overall (n=168)
Website page views	102,235	51,230	153,465
Website visits	29,159	17,298	46,457
Average duration (minutes)	5.68	4.35	5.18
YouTube	United States	Other countries (n=215)	Overall (n=216)
YouTube video views	215,852	315,321	531,173
Estimated minutes watched	602,241	789,530	1,391,771
Average duration (minutes)	2.79	2.46	2.62

1. Ruhl, CE, Sayer B, Byrd-Holt, DD and Brown, DM. Costs of Digestive Diseases. In: Everhart JE, editor. The burden of digestive diseases in the United States. US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. Washington, DC: US Government Printing Office, 2008; NIH Publication No. 09-6443 pp. 147. 2. Peery et al. Burden of Gastrointestinal, Liver and Pancreatic Diseases in the United States. *Gastroenterology*. 2015 Dec;149(7):1731-1741.e3.

### Results (continued)

Figure 1: NPF APP Audience Reach



Figure 2: NPF APP Audience Demographics

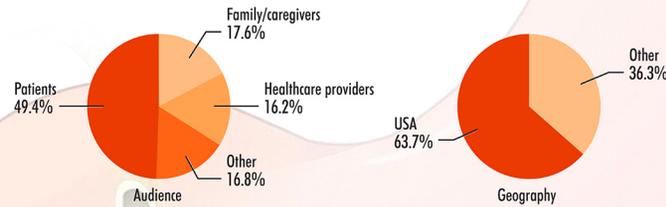


Figure 3: Outcomes – Participants Who Reported Learning New Information on Pancreas Diseases

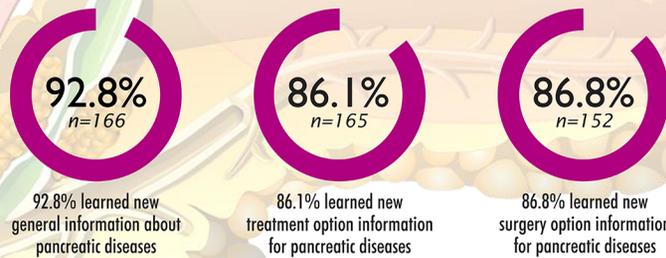


Figure 4: Outcomes – Patients Who Reported Commitment to Change



### Results (continued)

Table 2: NPF APP Most Popular Topics – Animations and Video

Title & Module	Media type	# of YouTube views	# of Website views
<b>The Role &amp; Anatomy of the Pancreas</b> (Module: Understanding Non-Malignant Pancreatic Diseases)	Animation	165,829	5,846
<b>Chronic Pancreatitis</b> (Module: Understanding Non-Malignant Pancreatic Diseases)	Animation	134,086	4,745
<b>Acute Pancreatitis</b> (Module: Understanding Non-Malignant Pancreatic Diseases)	Animation	84,160	12,623
<b>Understanding ERCP</b> (Module: Endoscopic Procedures)	Animation	33,018	4,421
<b>Chronic Pancreatitis - What foods &amp; beverages should I avoid?</b> (Module: Understanding Non-Malignant Pancreatic Diseases)	Expert video	17,305	845

Table 3: NPF APP Top 5 Video Retentions

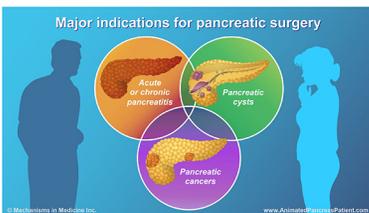
Title & Module	Media type	Duration (minutes)	# of views	Time spent	Retention
<b>After an episode of acute pancreatitis, what changes did you make to your diet?</b> (Module: Management of Non-Malignant Pancreatic Diseases)	Patient video	1	1245	0.83	83%
<b>What are some of the consequences of acute pancreatitis?</b> (Module: Understanding Non-Malignant Pancreatic Diseases)	Expert video	1.88	218	1.52	81%
<b>What is the pancreas and what does it do?</b> (Module: Understanding Non-Malignant Pancreatic Diseases)	Expert video	0.88	377	0.7	80%
<b>What is the link between alcohol and acute pancreatitis?</b> (Module: Understanding Non-Malignant Pancreatic Diseases)	Expert video	1.85	2310	1.47	79%
<b>What was the recovery process following your acute pancreatitis attack?</b> (Module: Management of Non-Malignant Pancreatic Diseases)	Patient video	1.38	302	1.07	78%

### Study Highlights

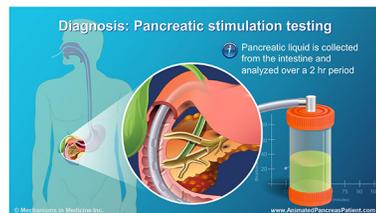
- Overall 238,882 visitors from 216 countries visited the YouTube channel, and 35,913 visitors from 168 countries visited the APP website during the study period.
- The top 5 topics were: *The Role and Anatomy of the Pancreas*; *Chronic Pancreatitis*; *Acute Pancreatitis*; *Understanding ERCP*; and *Chronic Pancreatitis - "What foods and beverages should I avoid?"*
- The videos within the modules *Understanding of Non-malignant Pancreatic Diseases* and *Management of Non-malignant Pancreatic Diseases* had the highest retention (83% to 78%).
- Patients reported adoption of learning and commitment to change in 3 ways: 94.3% indicated they will use the information to better self-manage their pancreatic disease; 96.8% reported they plan to discuss information learned with their doctor; and 92.2% indicated they will discuss treatment or management interventions with their doctor.

### Conclusions

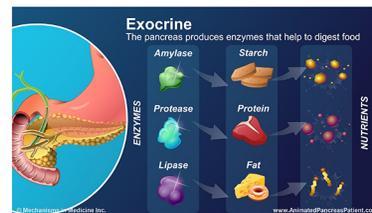
- Pancreas education in visual formats has vast potential to provide education for patients, caregivers, and health care professionals.
  - The NPF's APP demonstrated wide reach and effectiveness among patients as validated by website and YouTube metrics.
  - The NPF's APP has had a significant impact on patients with pancreatic diseases using highly visual learning formats for pancreatic disease education.
  - Continued efforts should be made to provide patient resources that address literacy issues and focusing on patient education which responds to needs of patients for better quality of life and health outcomes in pancreatic diseases is vital.
  - Our educational content on APP continues to be augmented in response to evolving evidence and new areas of patient information.
- Future directions:**
- We have also launched a Spanish language resource, [www.PancreasAnimado.com](http://www.PancreasAnimado.com) in recognition of global educational needs in languages other than English.
  - We are launching a new module on *Understanding Clinical Trials* in pancreatic cancer.



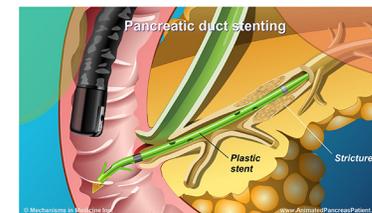
Animation: Understanding Pancreatic Surgery: Benefits, Risks, and Relevant Anatomy



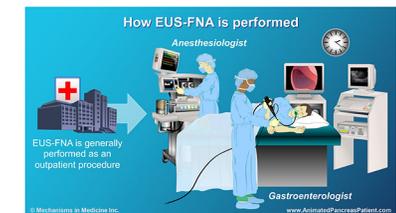
Animation: Chronic Pancreatitis



Animation: Exocrine Pancreatic Insufficiency



Animation: Understanding Endoscopic Retrograde Cholangiopancreatography (ERCP)



Animation: Understanding Endoscopic Ultrasound-Guided Fine-Needle Aspiration (EUS-FNA)