

## Background:

The National Pancreas Foundation introduced **Animated Pancreas Patient (APP)** – **An Animated Patient's Guide to Pancreatic Diseases** as there are limited reliable educational visual resources specific to patient needs and interests in pancreatic diseases. The medical quality of information available on the internet varies greatly and may not always be reliable or of an evidence-based nature.<sup>1</sup>

Pancreatic cancer accounts for substantial morbidity, mortality and cost.

- With an estimated 53,670 new diagnoses and 43,090 deaths in 2017, pancreatic cancer is the fourth leading cause of cancer mortality in the United States.<sup>2</sup>
- The age-adjusted US pancreatic cancer incidence rate is 10.9 for women and 14.1 for men per 100,000 population.<sup>2</sup>
- Pancreatic cancer is the second most common cancer and leading cause of mortality among all cancers of the digestive system.<sup>3</sup>
- The Pancreatic Cancer Action Network estimates that by 2020 pancreatic cancer might surpass breast and colorectal cancer to become the second leading cause of cancer-related death in the United States.<sup>4</sup>
- Five-year survival in pancreatic cancer remains dismal (4-7%) and has barely improved in the past several decades despite recent advances in imaging techniques. Efforts are being made in early diagnosis, treatment and prevention of pancreatic cancer, however, despite advances patient education is limited.

We measured the impact of the APP program as a patient education resource based on visual formats of learning, to help address barriers in health literacy and patient gaps in understanding, in order to reduce challenges and facilitate informed decisions and partnerships between patients and their healthcare providers.

## Methods:

Using visual formats of learning for patient education related to pancreatic cancer (animations, expert videos, slide shows), we monitored website (WS) and YouTube (YT) audience metrics and data from September 2013 to October 2017 (49 months).

- We calculated total views for the APP program in the United States and globally, as well as the top views among the pancreatic cancer animations and expert videos featured on the WS and YT platforms.
- Our methods include patient surveys to measure the impact of the educational content on users, in accordance with Moore's outcomes criteria.<sup>5</sup>
- We monitored usage data from the APP website and the APP YouTube channel.
- We identified user's geolocation data through their devices' IP addresses.
- A prominent section of the APP website homepage prompted users to provide feedback by taking part in a short survey. This survey asked 8 questions to gather information on user identity (patient, family/caregiver, healthcare provider, other), impact of the provided content on future actions and commitment to change, and evaluation of the quality of the educational material. The survey does not require answers to all questions.

## Results:

- 274,906 views were viewed by over 100 countries on the APP WS and 1,200,346 views in over 100 countries on YT during the study period.
- 54.6% self-identified as patients, 16.9% as family/caregivers, 13.9% as healthcare providers, and 14.6% as other.

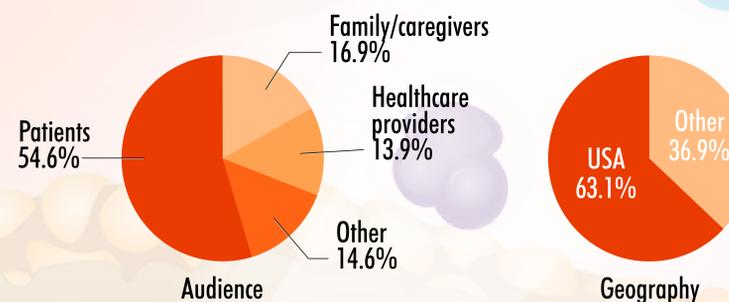
## Results (Continued):

- 63.1% of viewership was from the US.
- The animations "Pancreatic Cancer: Treatment and Outcomes", "Pancreatic Cancer: Signs, Symptoms and Risk Factors", "Pancreatic Cancer: Pathophysiology, Diagnosis and Staging", and "Understanding Clinical Trials" had 3,862; 4,927; 2,597; and 831 views respectively on the WS and 12,024; 9,839; 6,166; and 7,508 views respectively on YT.
- The top expert videos "What are the different stages of pancreatic cancer?", "What are the symptoms of pancreatic cancer?", "What should I expect following surgery to remove a malignant pancreatic cancer tumor?", "What is "palliative treatment" for pancreatic cancer?" and "How can I reduce my risk for developing pancreatic cancer?" had 323; 862; 178; 254; and 656 views respectively on the WS and 5,159; 3,808; 1,541; 739; and 131 views respectively on YT.

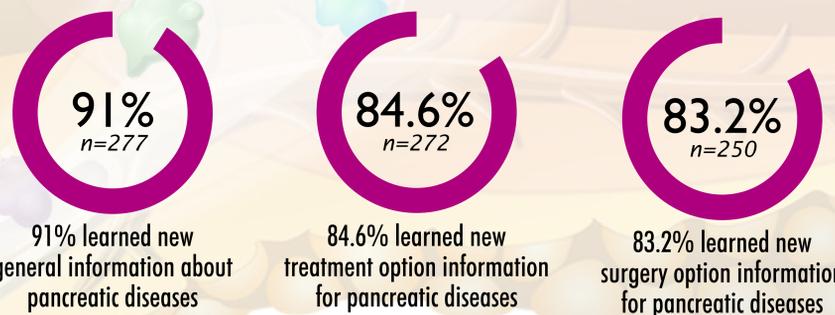
## Audience Reach and Demographics:

1,475,252 total APP views

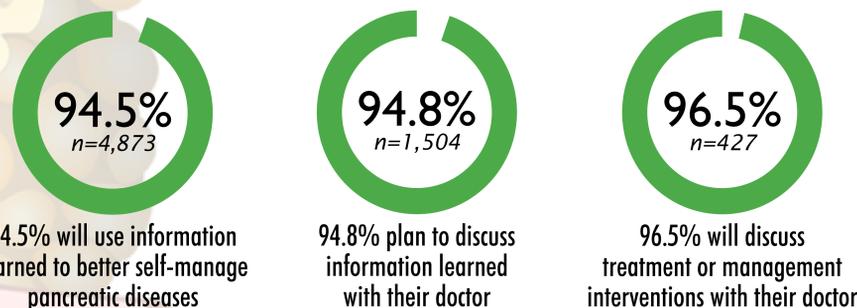
547,693 total APP visitors



## Patients Who Learned New Information on Pancreatic Diseases:



## Patients Who Reported Commitment to Change:



## Top 4 Most Popular Pancreatic Cancer Animations

| Animation Title                                           | Views  |
|-----------------------------------------------------------|--------|
| Pancreatic Cancer: Treatment and Outcomes                 | 15,886 |
| Pancreatic Cancer: Signs, Symptoms and Risk Factors       | 14,766 |
| Pancreatic Cancer: Pathophysiology, Diagnosis and Staging | 8,763  |
| Understanding Clinical Trials                             | 8,339  |

## Top 5 Most Popular Pancreatic Cancer Videos

| Video Title                                                                           | Views |
|---------------------------------------------------------------------------------------|-------|
| What are the different stages of pancreatic cancer?                                   | 5,482 |
| What are the symptoms of pancreatic cancer?                                           | 4,670 |
| What should I expect following surgery to remove a malignant pancreatic cancer tumor? | 1,719 |
| What is "palliative treatment" for pancreatic cancer?                                 | 993   |
| How can I reduce my risk for developing pancreatic cancer?                            | 787   |

## Conclusion:

- The findings from the Animated Pancreas Patient experience align with the literature on the effectiveness of visual formats and video in patient education.
- Our findings are supported by recent data<sup>6</sup> that animated visual information with audio narration is effective in communicating complex health messages to older adults with low health literacy.
- Education related to pancreatic cancer, based on audio-visual formats of learning has vast potential to provide effective learning for patients, families, and caregivers.
- Continued efforts should be made to provide patient resources that address patient learning barriers, particularly those related to health literacy which educate and inform patients, in order to attain best possible health outcomes in pancreatic cancer.

1. Fahy E, Hardikar R, Fox A, Mackay S. Quality of patient health information on the Internet: Reviewing a complete and evolving landscape. *Australas Med J*. 2014;7:24-28.
2. Siegel RL, Miller KD, Jemal A. Cancer Statistics, 2017. *CA Cancer J Clin*. 2017;67:7-30.
3. Peery AF, Crockett SD, Barritt AS, et al. Burden of Gastrointestinal, Liver, and Pancreatic Diseases in the United States. *Gastroenterology*. 2015;149:1731-1741.e1733.
4. PanCan.org. Pancreatic Cancer Action Network Pancreatic Cancer Facts 2016. 2016; <https://www.pancan.org/wp-content/uploads/2016/02/2016-GAA-PC-Facts.pdf>. Accessed 10/11/17, 2017.
5. Moore DE, Jr., Green JS, Gallis HA. Achieving desired results and improved outcomes: integrating planning and assessment throughout learning activities. *J Contin Educ Health Prof*. 2009;29:1-15.
6. Meppelink CS, van Weert JC, Haven CJ, et al. The effectiveness of health animations in audiences with different health literacy levels: an experimental study. *J Med Internet Res*. 2015;17:e11.

