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# A Digital Patient-Input Tool that Combines Family Cancer History Screening and Newly Diagnosed Diabetes can be Used to Identify Those Who are at High Risk for Developing Pancreatic Cancer

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## Abstract

The ability to enroll in pancreatic surveillance programs would be made possible by the collection of family history information, which could be a useful tool for identifying individuals who are more likely to develop pancreatic cancer. Weight loss and newly diagnosed diabetes may also be used as an early indicator of pancreatic cancer [1]. Combining family history and the Enriching New-Onset Diabetes for Pancreatic Cancer (ENDPAC) model to identify people who might benefit from pancreatic surveillance is the focus of this study. The ENDPAC model's criteria were combined with questions about family cancer history in a novel questionnaire and digital input tool. The high-risk pancreatic clinic enrolled individuals who met the ENDPAC criteria directly [2]. A genetic counselor was recommended to those who met the criteria for a significant family history of cancer. 453 patients completed the questionnaire. 25.8% (117/453) of those had significant risk factors in their families [3]. Five of the 18 people (15.4%) who had previously undergone genetic testing had a pathogenic variant. Out of 117 people who were identified by the questionnaire as having a significant family history, 34 (29.9%) underwent genetic testing. A pathogenic variant was present in four (11.8 percent) of these patients. Furthermore, through overflow family testing, two kin were found to convey pathogenic variations. From the 453 patients, four (0.9 percent) met the ENDPAC criteria. Two of them had pancreatic cancer, and the other two had signed up for the surveillance program. In conclusion, the ENDPAC model and family history screening can be combined to identify people at high risk for pancreatic cancer and make it easier to refer them to genetic counseling and high-risk clinics [4].

**Keywords:** Family history; Genetic counselling; Genetic testing; Hereditary pancreatic cancer

## Introduction

In 2019, the asymptomatic population-based screening for pancreatic cancer was reiterated by the United States Preventive Task Force. This is because the average lifetime risk is too low, which would almost certainly lead to a lot of false-positive results. However, pancreatic cancer is becoming more common and will soon surpass lung cancer as the leading cause of cancer-related death in the United States. As a result, it's more and more important to find people who could benefit from surveillance and are at high risk for pancreatic cancer [5].

Pancreatic surveillance is recommended because it is estimated that up to 10% of cases of pancreatic cancer occur in people who have a strong family history or are carriers of a germline mutation. According to recent evaluations of surveillance programs, individuals who might benefit from it are likely to be limited to those who have a pathogenic variant in a gene associated with cancer predisposition [6]. While minimizing the potential negative effects of screening, stratification of high-risk individuals would guarantee that surveillance is provided to those who stand to gain the most from it. A straightforward and cost-effective method for identifying individuals at increased risk for pancreatic cancer and other hereditary cancers in general is to record family history of cancer. Darabi and co. demonstrated that genetic counselling and subsequent germline mutation testing identified pathogenic or likely pathogenic variants in 15% of patients with a personal or family history of cancer (n = 8,239) in a community setting [7]. This demonstrates how important genetic counselling and testing are in determining who might benefit from pancreatic surveillance. In the event that a hereditary cancer syndrome is suspected, the National Comprehensive Cancer Network (NCCN) and the American Society of Clinical Oncology (ASCO) both recommend that patients who have been diagnosed with pancreatic cancer undergo risk assessment and genetic testing. Even if the patient's family history is unremarkable, germline genetic testing may still be offered to pancreatic cancer patients or their first-degree relatives [8].

## Methods

### Setting and subjects of the study

The Mayo Clinic Florida Department of Gastroenterology and Hepatology served as the setting for this project. Patients under the age of 18 who attended the outpatient clinic for any gastroenterology (GI) indication between August 2018 and May 2019 comprised the study population.

### Pancreatic malignant growth hazard device poll

The Pancreatic Disease Hazard Device (PCRT) poll is an application (application)- based survey that was made in a joint effort with Info Wellbeing (InputHealth, Ontario, Canada: a company that focuses on health tools for patient input) Questions about changes in weight and fasting blood glucose were part of the PCRT [9].

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All outpatient GI patients received the questionnaire in advance via email. On the off chance that patients had not filled in that frame of mind ahead of time, the survey was presented on a tablet gadget in the sitting area. Patients were taught about the purpose of the questionnaire before they had to fill it out, which was to find people who had a higher than average risk of developing pancreatic cancer or other cancers (as part of hereditary cancer syndromes) [10]. Their gastroenterologist contacted patients with significant risk factors (high-risk) and offered them a referral to a clinical geneticist for additional evaluation.

## Results

Between August 2018 and May 2019, 453 patients who visited the Gastroenterology and Hepatology clinic completed the questionnaire. Since all meeting patients were messaged the poll ahead of time and were offered the survey again on the off chance that the poll was not filled in, we expect the fulfillment rate to be almost 100 %. Females made up just over half of the participants (251; 55.4 percent), with a median age of 65 (IQR 54-72). Six of the 453 patients (1.3 percent) already had a diagnosis of pancreatic cancer, and 88 of the 453 people (19.4 percent) said they had a personal history of one or more cancers. The highest risk score was 13, while the median risk score was one (IQR 0 to 3) [11]. A total of one-fourth (117/453; Significant familial risk factors (risk scores below 3) were found in 25.8% of patients. 18 patients (out of 453) Before completing the questionnaire, 4% had undergone genetic testing. Three of these 18 patients had a gamble score lower than three. All patients with familial risk factors (risk score 3) were informed of the high-risk clinic and offered consultation with a genetic counselor. Demographic data for the low-risk and high-risk groups are summarized. The questionnaire identified individuals at risk for hereditary cancer syndromes in general due to the broad nature of the cancer family history questions that were asked [12]. Thirty-four people who were identified by the questionnaire completed their first round of genetic testing. Four people (four out of 34; 11.4 %) were found to hold onto pathogenic variations. Five (5/18; A pathogenic variant was present in 28 percent of the 18 individuals who had previously undergone genetic testing As a result, out of the 49 patients who underwent genetic testing and had a risk score of less than 3, nine (18.4%) had a pathogenic variant. This includes the patients who had already been identified [13].

## Discussion

Our study found that a simple, low-cost, and non-invasive application-based questionnaire met guidelines for further genetic evaluation and/or referral for pancreatic cancer surveillance in identifying a relevant number of people at elevated risk for hereditary cancer. Our questionnaire revealed that four people had a pathogenic variant, two of which (ATM and APC) are thought to be relevant genes for pancreatic cancer susceptibility. Because of this, the family history questionnaire's final results for this population are relatively low. Two of the additional four patients who met the ENDPAC criteria were later diagnosed with pancreatic cancer. This study confirms that patient-reported family cancer histories are an essential part of assessing cancer risk. This makes it possible to conduct subsequent genomic analyses and possibly enroll in surveillance programs [14].

## Acknowledgement

None

## Conflict of Interest

None

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