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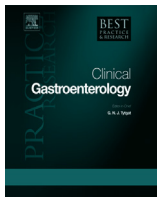

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Treatment of pancreatic cancer: A narrative review of cost-effectiveness studies

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A B S T R A C T

Cancer of the pancreas is the second most frequent digestive cancer in the US, accounting for about 44,000 new cases per year. In Europe, it is the sixth most frequent cancer, accounting for 2.8% of cancers in men and 3.2% in women. With a five-year survival of less than 10%, it is the fifth leading cause of cancer-related death. The majority of cases are diagnosed above the age of 65 and in about 60% of cases at an advanced stage, explaining that little improvement has been observed in survival over the past 30 years. Radical surgery offers the only curative treatment of pancreatic cancer. Alternative or combined therapeutic options in particular consist of adjuvant or neoadjuvant chemotherapy, with or without radiotherapy. Palliative treatment for locally advanced disease may benefit patient's health status and quality of life. Limitations in healthcare resources, burden of treatment, and uncertainty of the net clinical benefit of adjuvant therapy, underline the need to identify the cost-effectiveness of different therapeutic approaches, as well as a need to establish patient groups who benefit most from these treatments. The present paper reviews cost-effectiveness studies published on pancreatic cancer treatment.

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Introduction

With a yearly incidence of around 13 cases per 100,000 persons, cancer of the pancreas is, after colorectal cancer, the second most common digestive cancer in the US, accounting for about 44,000 cases per year. It is also the fourth leading cause of cancer-related death in both genders [1,2].

In Europe, cancer of the pancreas is the sixth most frequent cancer, accounting for 2.8% of cancer in men and 3.2% in women. It is the fifth leading cause of cancer-related death with ~70,000 estimated deaths each year and is predicted to become the fourth cause of cancer death in both sexes in due course in the European Union [3].

Incidence increases with age and the majority of cases are diagnosed above the age of 65. Smoking, obesity and dietary factors such as high consumption of processed meat increase the risk for pancreatic cancer [4].

Whereas there have been notable improvements over the past 40 years in the five-year survival rates for most cancers, cancer of the pancreas has shown little improvement in survival. This is due to a variety of factors including insidious onset of symptoms and frequent presentation at an advanced stage [2,5], aggressive tumour biology, technically challenging surgical management [6], and lack of effective systemic therapies [7]. Thus survival is generally poor even when resectable at diagnosis.

Surgery offers the only chance to cure patients with pancreatic cancer, but post-surgery survival rates are disappointing, often measured in months, after even margin-negative pancreatectomy. It is generally thought that multimodality therapy, including effective adjuvant (or neoadjuvant) therapy for resectable pancreas cancer offers the best hope for meaningful long-term survival [7,8].

Large studies have recently provided consistent support for the effectiveness of chemotherapy as an adjuvant. However, poor quality of life (QOL) resulting from disease- and treatment-related factors may mitigate the perceived benefits associated with any form of treatment.

Practice Guidelines for diagnosis, treatment and follow-up of pancreatic adenocarcinoma have confirmed the primary need to define resectability in pancreatic cancer. If the tumour is deemed not resectable, treatment aims to extend survival and palliate symptoms by optimal control of the primary tumour and metastases [4].

Pancreatic cancer is associated with significant morbidity. In addition, it also puts substantial tangible costs on society at large, the total annual healthcare cost for pancreatic cancer was estimated at 2250 million € in the United States in 2001 (73,300 € per patient) [9].

At a time of budget constraints, the financial costs associated with treating pancreas cancer are significant, particularly with combined therapies. Because of financial constraints and limitations in healthcare resources, the uncertainty of the net clinical benefit of adjuvant and neoadjuvant therapy, and considerable variations in practice patterns, there is a need to identify the cost-effectiveness of different therapeutic approaches, as well as a need to establish priorities among patient groups. We therefore reviewed studies on cost-effectiveness of treatment for pancreatic cancer, as published over the past 15 years.

Review methods

Medline, Embase and PubMed were searched for cost-effectiveness or cost–utility analyses of treatment for pancreatic cancer. Databases were searched using combinations of disease and economic search strings based on both MeSH headings and text words. MeSH terms used included, but were not limited to, 'pancreatic neoplasms', 'pancreatic cancer', 'treatment', 'costs and cost analysis' and 'economic evaluation', 'cost-effectiveness' and 'cost-benefit'. Studies published in English as peer-reviewed journal articles between January 1998 and September 2013 were considered eligible for inclusion in this narrative review.

Results

We retrieved 170 articles, of which 36 [5,9–43] (Table 1) were finally retained to be presented in this review. The three main reasons not to include papers were: no focus on treatment, or on pancreatic cancer, and no English literature.