Background

- Neoadjuvant therapy for resectable pancreatic cancer is controversial
- Current guidelines support resection followed by adjuvant therapy.
- However, up to 50% of patients fail to receive adjuvant therapy due to:
  - post-operative complications
  - decline in function.
- Benefits of neoadjuvant therapy include:
  - elimination of micrometastases
  - increased R0 resection rates
  - filtering patients with more aggressive tumours away from expensive, high-risk surgery that would ultimately fail.
- Risks of neoadjuvant therapy:
  - losing window of resectability

Methods

- The study was conducted from a National Health Service (UK) perspective
- Discounting of costs and benefits set at 3.5%
- Willingness-to-pay set at £2,500 per quality-adjusted-life-month (QALM) (£30,000 per quality-adjusted-life-year)
- A Markov model with 1-month cycle length set to a maximum follow-up time of 60-cycles was created to estimate incremental lifetime costs and benefits.
- Deterministic and probabilistic sensitivity analysis was undertaken to test model uncertainties including alternative discounting rates.

Aims

- To analyse the cost-effectiveness of neoadjuvant therapy (NAT) versus surgery-first (SF) treatment pathways for resectable pancreatic cancer.
- Primary and secondary outcome measures: Benefits were measured as QALMs with cost-effectiveness presented as incremental costs, incremental effectiveness, cost-effectiveness ratio, incremental cost-effectiveness ratio and incremental net monetary benefit.

Results

NAT gave 21.27 QALMs at a cost of £92,957.30 with a cost-effectiveness ratio of £4,070.31. SF gave 17.59 QALMs at a cost of £98,188.63 and a cost-effectiveness ratio of £5,582.85. SF therefore had an incremental cost of £5,231.33 more than NAT for an incremental effectiveness of 3.68 QALMs and an incremental cost-effectiveness ratio of £1,421.33 making NAT the most cost-effective option.

Conclusion

Based on best available current evidence we found that NAT is cost-effective for the management of resectable pancreatic cancer.

However, as high quality data from emerging RCTs becomes available further cost-effectiveness analysis is required.

There remains the possibility that patients with earliest resectable disease most likely to receive R0 resection and adjuvant therapy may still benefit from upfront surgery approach.

Future Direction

Quality-of-life data for pancreatic cancer is limited and this should be the focus of further research as costs and benefits in cancer care are complex with quality as well as quantity of survival time having great importance. Although neoadjuvant pathway was more cost-effective, this depended on receiving multimodal treatment. This highlights the need moving towards personalised predictive medicine to support shared decision-making in research and practice.