Pancreatic Cancer UK

Promoting Innovative Practice

Fast-track surgery for pancreatic cancer reduces time to treatment, complications and increases the number of patients undergoing successful surgery[1]

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At a glance

Background: Surgery to remove pancreatic cancer offers patients the only realistic opportunity for potential cure and long-term survival. Therefore, when patients are diagnosed early enough to receive complete excision of the tumour, it is important to receive surgery early, before the tumour increases in size and cannot be removed anymore. Furthermore, many patients develop jaundice. This is typically treated before surgery by placing a stent in the bile duct. However, early surgery can avoid the need for a biliary stent which would reduce complications and improve patient experience.

Implemented fast-track pathway: This showcase presents a care pathway led by Mr Keith Roberts, Consultant Hepatobiliary and Pancreatic Surgeon. The team in University Hospitals Birmingham (UHB) NHS Trust developed a pathway to provide early surgery without the delays associated with preoperative biliary stenting. A pathway dedicated Cancer Nurse Specialist was appointed to coordinate primary and tertiary multi-disciplinary teams as well as to support patients throughout the pathway.

Outcomes: In the fast-track pathway, the time to surgery was reduced from 65 to 16 days. Significantly more patients underwent potentially curative surgery in the fast-track group (97% vs 75%). Moreover, the implementing pathway had a cost benefit of £3,200 per patient.

Conclusions:

- Early surgery avoiding biliary stenting is possible within the NHS
- By reducing the time to surgery, more patients undergo potentially curative resection
- Avoiding interventions such as stenting will have a cost benefit for the NHS
- A pathway dedicated Cancer Nurse Specialist is critical for the pathway implementation
- Development of strategies to support more widespread practice of this pathway is underway
- Assessment of long-term impact of the pathway on increasing surgery rates and survival are underway.

Quick Facts

A study conducted by the Cancer Survival Group led by Professor Michel Coleman in the London School of Hygiene and Tropical Medicine (LSHTM) showed that:

- Five-year survival for patients with PDAC in the period 2010-2013 was 3.2% for England
- Patients who received surgery had 17.5% five-year survival as opposed to 1.7% for patients who were not resected (unpublished data).

Background

Over 90% of pancreatic cancer cases are ductal adenocarcinomas (PDAC). Complete operative resection offers patients the only realistic opportunity for potential cure and long-term survival. Of those diagnosed with PDAC, only 15–20% are considered candidates for curative resection and national data shows that less than 10% currently undergo surgery. Each case of pancreatic cancer should be reviewed by a specialist multi-disciplinary team (MDT) in dedicated Hepato-Pancreatic Biliary (HPB) units[2]. If the cancer is considered resectable then surgery takes place within the specialist HPB unit.

Emerging evidence has demonstrated that an increase in waiting times from referral to diagnosis and from diagnosis to surgery can reduce the chance of tumour resectability because of tumour growth or metastasis. For example, it has been shown that an imaging-to-resection interval over 22 days is associated with increased frequency of unresectability[3], emphasising the importance of fast referral for surgery.

Case for change

When patients with pancreatic cancer present with jaundice due to obstruction of the bile duct[4], they undergo a process of investigations on the biliary tract that usually involves ultrasound followed by CT imaging. At this point, patients may undergo endoscopic stenting of their bile duct (ERCP) in secondary care, even if their tumour can be removed. This procedure is invasive, and is associated with clinical complications, especially cholangitis and pancreatitis, that may delay surgery or preclude resection[5].

For example, studies have associated biliary stenting with serious morbidities as opposed to patients who had direct surgery (73.5% vs 39%)[5,6]. These complications may require hospital admission and intravenous antibiotics, which not only delay the possibility of curative surgery but also increase clinical costs.

Overall, when a patient presents with jaundice, the primary district MDT teams will discuss and refer the patient for initial investigations such as CT scan followed by biliary stenting to relieve immediate symptoms. The patient will then be referred to the specialist HPB unit for suspected pancreatic cancer and consideration of surgery. This pathway (from CT scan to eventual surgery) takes between 6 weeks and 2 months. The NICE guidelines on pancreatic cancer recommend patients with bile duct obstruction who are diagnosed with potentially resectable disease should receive surgery without biliary stenting.

The team led by Mr Keith Roberts, Consultant Hepatobiliary and Pancreatic Surgeon, and the team in University Hospitals Birmingham (UHB) NHS Trust implemented a pathway to reduce time between initial CT scan and curative surgery and to avoid biliary stentin[1]. A dedicated pathway Cancer Nurse Specialist (CNS) appointment was essential for development of the pathway.

Aim

The aim of the present study was to introduce a fast-track pathway to take patients to surgery without the delays associated with stenting. With this pathway, the team aimed to:

- reduce time to treatment from the time of initial CT scan to curative surgery
- avoid the need for biliary drainage/stenting
- reduce healthcare costs by avoiding unnecessary interventions, treatment of associated complications and readmissions to hospital
- improve patient experience and survival outcomes.

Funding

Development of the pathway required the appointment of a dedicated pathway CNS for one year. The pathway also required costs associated with the University of Birmingham Health Services Management Team (project management, assessment of the pathway, travel costs to local district hospitals for meetings and workshops, structured interviews with clinicians, data compilation, and production of a report). The project was financially supported by Pancreatic Cancer UK (Clinical Pioneers Award) and by University Hospitals Birmingham charities (£50,000 each; £100,000 in total).

Timeline

- Design of the pilot pathway
- Writing up and submission of the proposal
- Meetings at local hospitals with referral teams and implementation of the pathway for selected patients.

February 2015 – June 2015

- Upscale of the service with the aim of applying the pathway potentially to all patients with jaundice. The study group comprised a cohort of patients with potentially curable PDAC over a twelve-month period
- Initial experiences were discussed to standardise the pathway and overcome challenges
- Consolidation of the pathway and monitoring of challenges to its continued practice
- An audit to review cases that were performed with a stent took place to understand where further improvements could be made
- Measurement of pathway outcomes (resection success and financial outcomes).

August 2015 – July 2016

The model of care practice

A fast-track pathway that aims to treat patients presented with jaundice with resectable cancer without stenting within 16 days (Figure 1).

1	The service takes referral of patients with pancreatic disease from nine NHS Trusts (fourteen hospitals)
2	Referral teams are asked to consider referral of patients with jaundice with suspicion of pancreatic malignancy to the specialist MDT to undergo the fast-track pathway
3	The patient presents with jaundice in the referral unit. If the clinicians suspect pancreatic cancer on the basis of the presentation and initial CT scan they are referred directly to the fast-track surgery pathway (no stenting)
4	The patient is referred to the specialist HPB unit and within 24 hours an opinion on diagnosis and suitability for surgery is given; this also includes assessment whether other tests are needed to confirm a diagnosis
5	At this point all key clinical events are planned – specialist review, MDT discussion and surgery date (possibly with endoscopic ultrasound and liver MRI if needed)
6	Patients are started on Creon and Vitamin K at the referral unit; the local CNS talks to the patient to explain the likely diagnosis and pathway
7	At this point, and if suitable for surgery, the patient has a pre-screening and anaesthetic review at the same clinic appointment
8	A CNS counsels and consents the patient on the same day

The model of care practice (continued)

9	The patient is given a date for surgery the following week and a bed is booked in the intensive therapy unit (ITU) (within 7 days)
10	Once the patient has been operated on, the next fast-track patient in line will be admitted
11	Overall, the pathway from CT scan to operation is **16 days**

Overview of the fast-track pathway

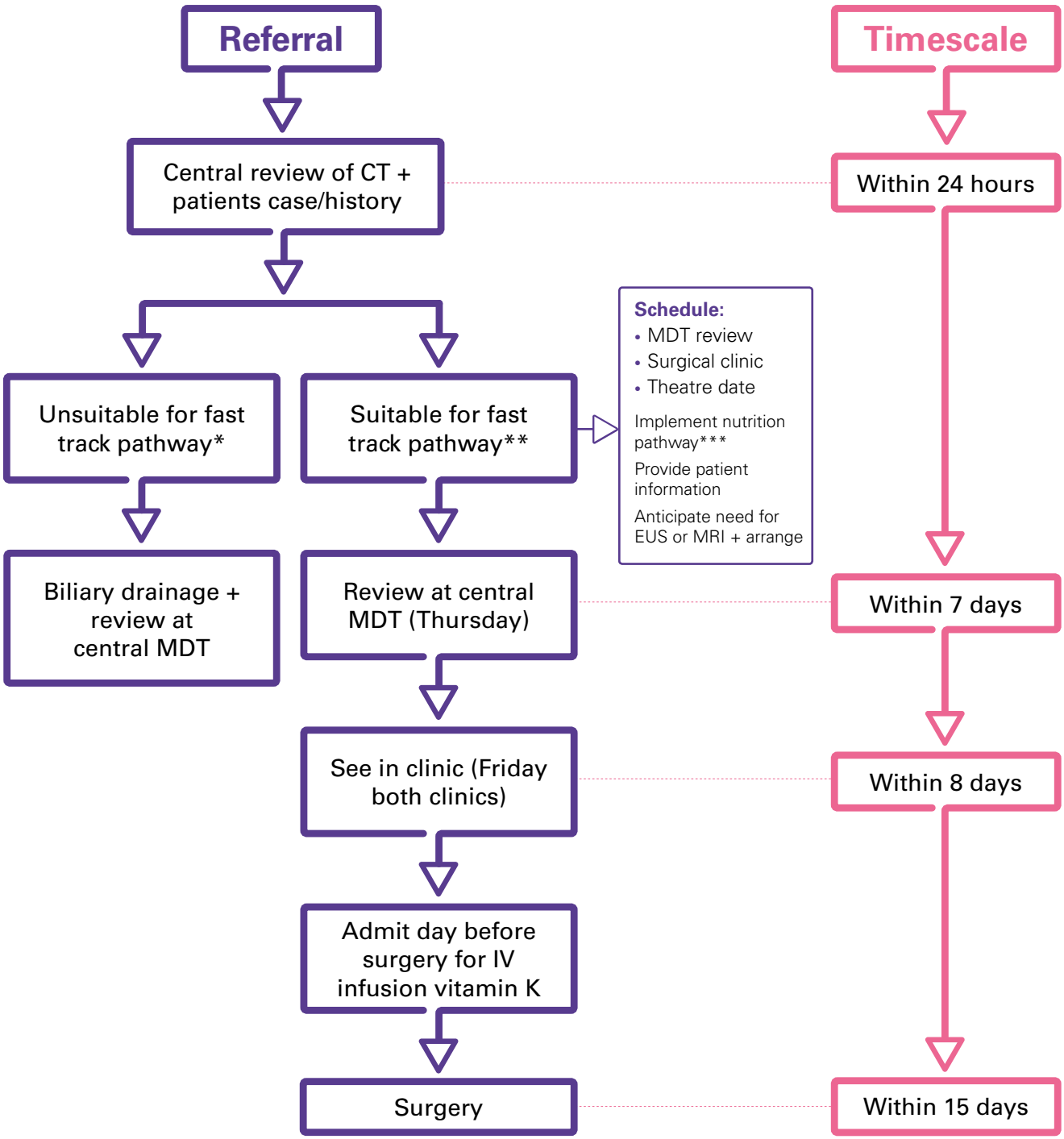

Figure 1: Schematic summary showing the timescale of fast-track pathway. Implemented fast-track pathway to achieve surgery within 16 days from presentation with jaundice to surgery, if pancreatic cancer is diagnosed.

** Criteria for consideration for fast-track pathway included bilirubin levels <450µm/L, good fitness and absence of comorbidity such as renal dysfunction that cannot be corrected with short period of fluid replacement therapy and biliary sepsis.

*** Nutrition pathway includes Creon, Vitamin K and iron balance.

Outcomes

Summary of patient cohort

From a cohort of 145 patients, 93 patients with jaundice were potentially eligible for surgery without stenting and comprised the study group. 61 patients had to undergo stenting before surgery (non fast-track group) and 32 were eligible for surgery without stenting (fast-track group). 58 of the 61 patients who underwent biliary drainage had been stented prior to referral. Just three patients who were considered for fast-track surgery required a biliary stent (due to high bilirubin levels).

Number of average days from initial CT scan to surgery

As demonstrated in Figure 2, patients on the fast-track pathway underwent surgery within 16 days on average as opposed to 65 days for patients who underwent stenting (last two column bars in Figure 2). It is worth noting that the average time period from CT scan to referral to specialist MDT team was 16 days for the non fast-track as opposed to 2 days for the fast-track group of patients, highlighting delays associated with biliary stenting (first two column bars in Figure 2).

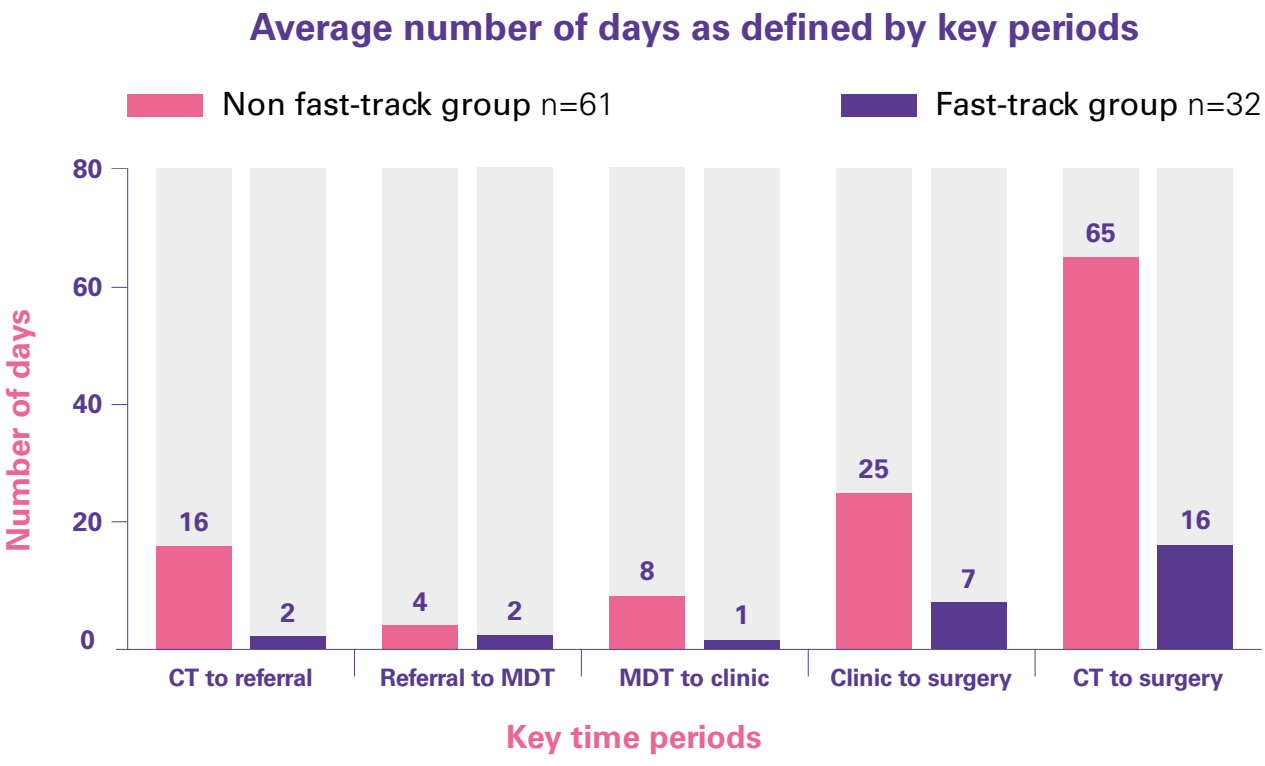

Figure 2: Pathway from initial CT scan to surgery as defined by key periods. Data demonstrates average number of days for each key period between the non fast-track (biliary stenting) and fast-track surgery group of patients.

Surgery outcomes

- 31 out of 32 fast-track surgery patients as opposed to 46 out of 61 non fast-track patients underwent surgery. This translates to resection of 97% versus 75% patients between the fast-track and the non fast-track surgery pathway, respectively (almost a fifth more patients were resected when assigned to fast-track surgery)
- Rates of unresectable cancers were decreased by at least a third when patients had to wait up to 20 days for surgery (Figure 3).

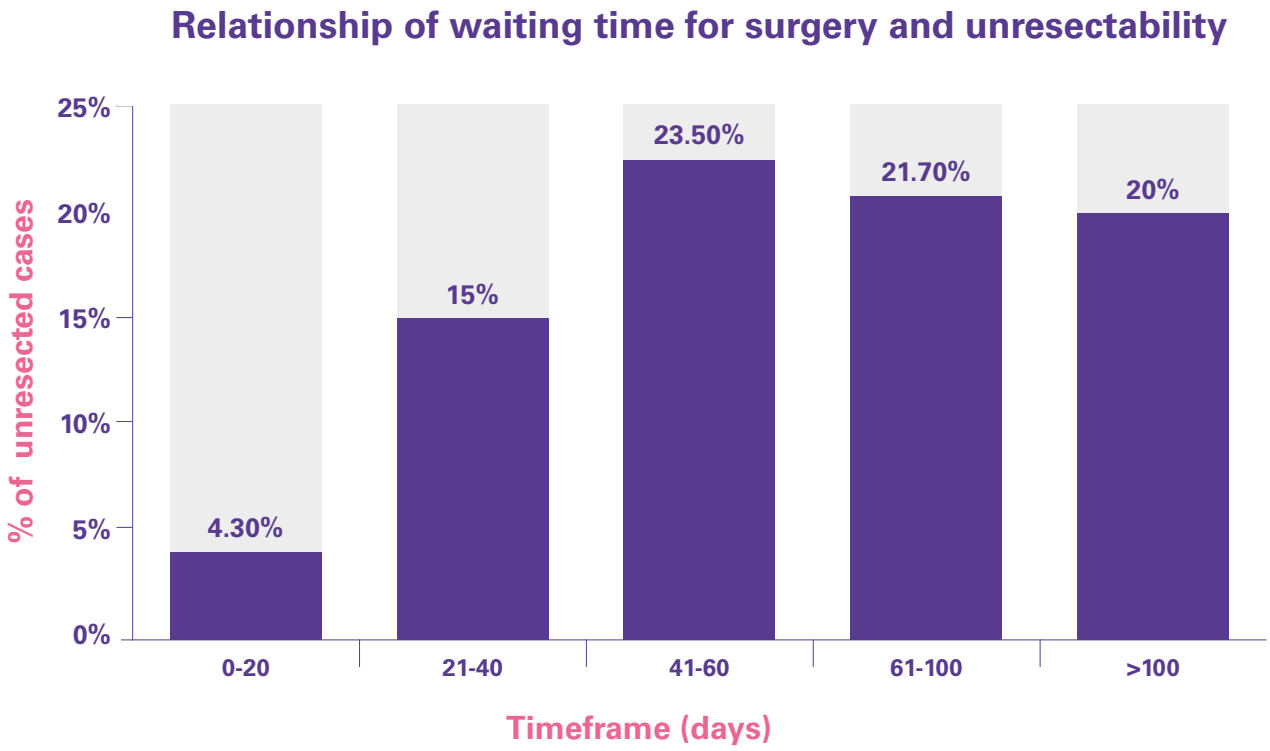

Figure 3: Waiting time for surgery associated with unresetcable rates. Data demonstrates how waiting time for surgery affects potential curative resection of the tumour.

Financial outcomes

There is a clear benefit in healthcare costs between the non fast-track surgery and fast-track surgery patients, as the total cost is £3,200 less for the fast-track surgery per patient (Figure 4). This difference is attributable to lower pre-operative costs (due to avoidance of stenting and related complications/readmissions) of fast-track surgery. In the current study, 31 patients were treated with the fast-track surgery pathway within a year, saving around £100,000.

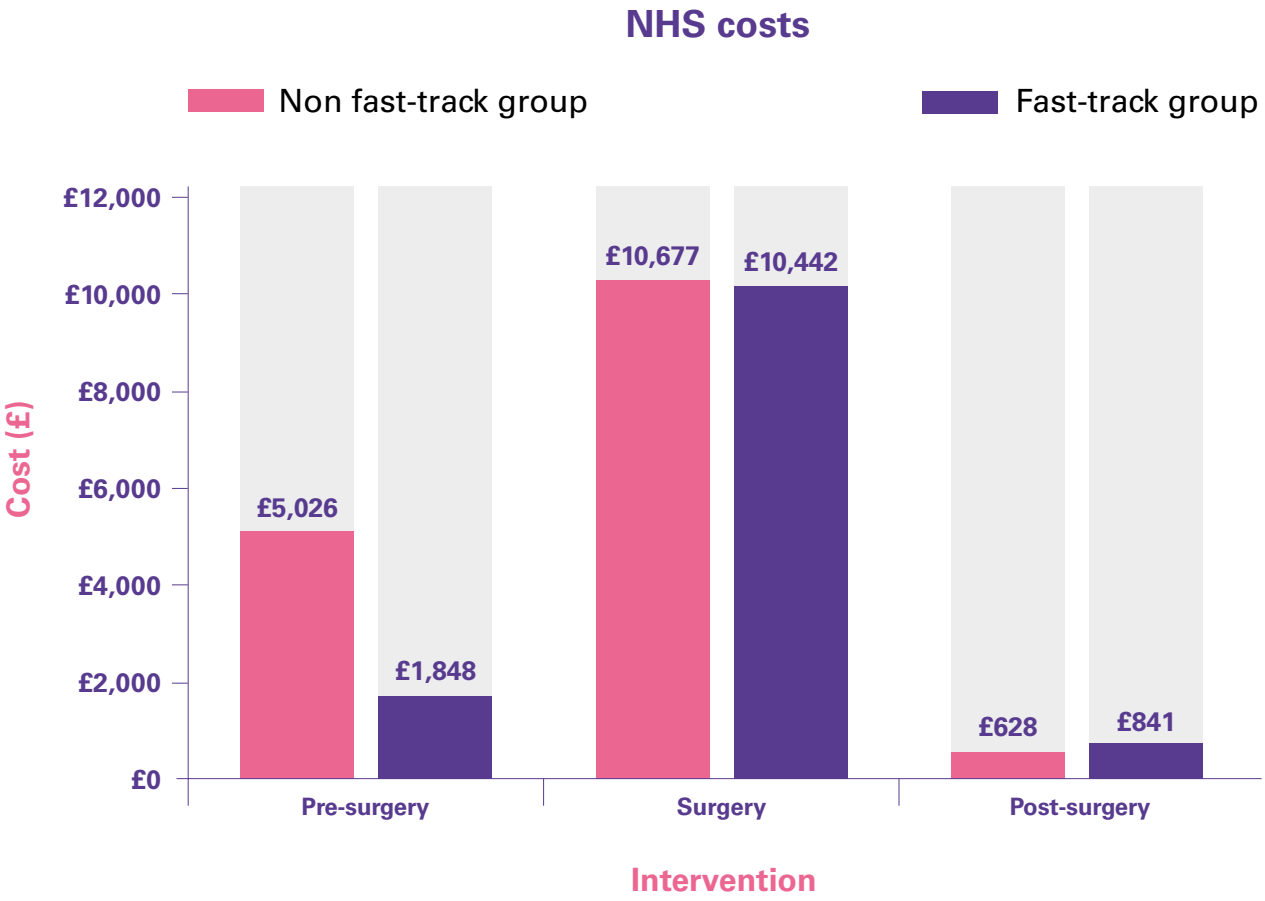

Figure 4: Costs associated with pancreatic cancer surgery. Data demonstrates costs of pancreatic cancer in non fast-track and fast-track surgery.

Key aspects in achieving the above pathway

Collaboration of the Health Services Management Centre with the UHB

i) Collaboration with the Health Services Management team was key to increasing engagement of referral teams with the pathway and increasing the number of the patients referred. It also enhanced understanding and addressed challenges of the pathway for its continued use.

Communication of referral teams with specialist MDT for referral to the fast-track surgery

i) The development of more open and trusting relationships between the referral teams and the specialist HPB unit was critical to the success of the pathway. This was initiated by the Health Services Management team and was largely coordinated by the pathway dedicated specialist CNS.

ii) The pathway dedicated specialist CNS was actively involved in the referral process and this was considered to be key in establishing a close relationship with the patient during referral, diagnosis and treatment in order to better manage emotional impact.

Communication with the patients eligible for fast-track surgery in a short time window

i) A challenge of the pathway was to meet patient expectations and maintain their wellbeing in a very short time window between CT scan, referral and surgery. Effective communication, emotional support, information and nutritional management starts from the relevant referral unit and is extended to the specialist MDT. The dedicated pathway specialist CNS managed communication between patients and the referral and specialist MDT teams.

Operational capacity in the UHB

i) The unit has a theatre planning team which meets every Tuesday morning to plan theatre lists for the fortnight ahead. Two spaces are left each week for fast-track patients and if these are not used, the dedicated theatre capacity will be used for other patients that are either cancelled for elective (non-urgent) surgery, or for time critical cancers/other semi-emergency work. There is enough volume of activity at UHB to ensure that theatres are used in full.

ii) The use of an ITU bed by a fast-track patient is no different from the use of an ITU bed for a non fast-track patient, or any other patient who would take a theatre slot that has been held for a potential fast-track patient.

Further challenges to be addressed by UHB

- A 'uniform access point' is to be developed by which referrals can be checked by the UHB team daily to accelerate the process even further
- The savings that can be achieved by the fast-track service are realised mainly at the referral units, rather than UHB. There is a tariff for surgery performed as an emergency and a separate tariff for performing an elective procedure; the UHB team has been trying to negotiate a mid-range or 'urgent' tariff for the fast-track pathway
- To understand the difference between local commissioning of admission for jaundice and stenting, and specialised commissioning of HPB surgery.

Conclusions and recommendations

Early surgery without stenting is possible within the NHS and increases the likelihood of successful surgery. By reducing the time to surgery, it appears that more patients undergo potentially curative surgery and this may improve long-term survival for pancreatic cancer which is currently very low. It is also associated with cost savings for the NHS.

The fast-track pathway has been welcomed by a range of clinicians, including surgeons, gastroenterologists and radiologists, from both the referral units and receiving unit at UHB. Its benefits are clearly apparent to the patient and the organisation. Its introduction, despite the infrastructural and management changes, has not negatively impacted individual clinical practice and workload. A success factor has been the experience and expertise of the team at UHB. They have been able to manage patients' needs and concerns within shorter space of time, which means that the unit may be able to accept more patients for fast-track surgery than less experienced units would be able to do.

It should be possible to expand the pathway locally and to spread it nationally, providing the knowledge of its existence is widened and practical issues stated above are addressed.

It is critically important to have funding for a dedicated CNS or pathway co-ordinator to provide psychological, emotional and practical support, and to act as a contact and liaison point between referral units. This is even more of a priority for fast-track patients, particularly if they have not been given a diagnosis or an indication of their clinical condition from their local clinicians. Some of the savings made through implementing the fast-track pathway could be used to employ a CNS.

Future directions

1. Mr Keith Roberts and the team in UHB are working on key aspects that aim to assess the pathway, implement improvements and encourage adoption across England. They are:

    - Measuring the impact of the fast-track surgery in survival and whether this pathway improves patient outcomes of pancreatic cancer. The team is following up the patients who comprised the study group to measure one-year and two-year survival for the first year patients (results expected in September 2018)

    - Assessing standards of care in the fast-track pathway and implementing improvements. It is key to evaluate the initial experiences of the patients throughout the whole pathway and better understand practical, psychological and emotional needs. To address this, the team prepared questionnaires that were posted in July 2017 and responses are expected to be received and analysed in June 2018

    - Awaiting a response from local commissioners to their proposal for the pathway to be adopted in UHB with NHS England funding.

2. Mr Keith Roberts and the team in UHB are also working on maximising the number of patients who undergo the fast-track pathway. This involves:

    - Increasing awareness of the pathway among NHS care services within the area of Birmingham and across England. This includes familiarisation of the pathway among administrative and clinical staff, e.g. gastroenterologists, endoscopy nurses and endoscopy clerical teams involved in booking patients onto endoscopy lists. They are also working with GPs, to arrange for fast-track pathway to be an option on referral forms, especially when clinicians might consider biliary stenting before referral to the specialist MDT team

    - Increasing awareness of the pathway among commissioners within Clinical Commissioning Groups (CCGs) and encouraging them to promote the fast-track pathway to their constituent providers

    - Liaising with the West Midlands Cancer Alliance to champion the fast-track pathway as a national innovative practice. This is part of its role to lead the local delivery of the Independent Cancer Taskforce's ambitions for improving services, care and outcomes for people with cancer

- Working with the Health Service Management Centre to develop an application to the Health Foundation for funding to introduce the pathway to other hospitals in England.

Acknowledgements

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This report will be reviewed in January 2019.

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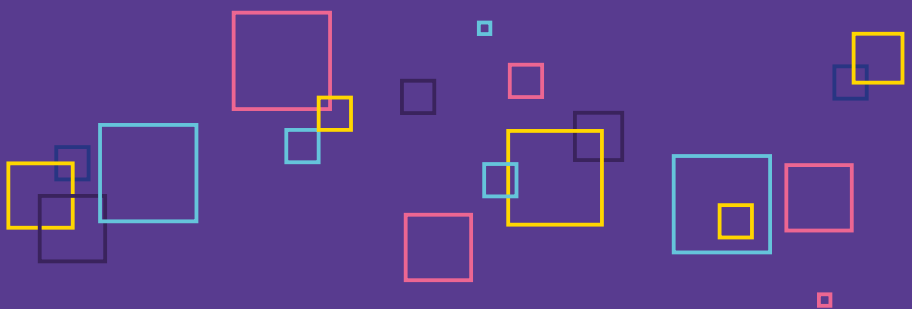

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