

Promoting Innovative Practice

Fast-track surgery for pancreatic cancer reduces time to treatment, complications and increases the number of people undergoing successful surgery¹

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At a glance

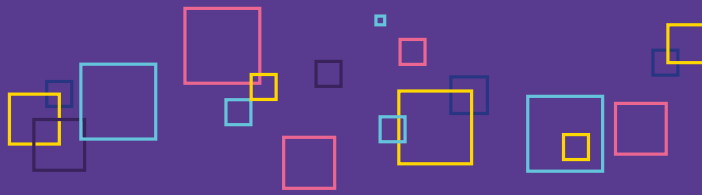
Background: Surgery to remove pancreatic cancer offers patients the only realistic opportunity for potential cure and long-term survival. Therefore, when patients are diagnosed early enough to receive surgery, it is important to receive it quickly, before the tumour increases in size and surgery is no longer an option. Furthermore, many people develop jaundice. This is typically treated before surgery by inserting a stent to open to bile duct and thus relieve the jaundice. However, early surgery can avoid the need for stenting which reduces complications and improves patient care experience.

Implemented fast-track surgery: This showcase presents a model of faster surgery led by Mr Keith Roberts, Consultant Pancreatic, Hepatobiliary and Liver Transplant Surgeon. The team in University Hospitals Birmingham (UHB) NHS Trust developed a model to provide early surgery without the delays associated with stenting. A pathway dedicated Clinical Nurse Specialist was appointed to coordinate multi-disciplinary teams between different NHS Services as well as to support individuals with pancreatic cancer who are treated with this model of surgery.

Outcomes: In the model of fast-track surgery, the time from diagnosis to surgery was reduced from 65 to 16 days. An additional 20% people underwent potentially curative surgery in the fasttrack group. Moreover, the implementing pathway had a cost benefit of £3,200 per individual having fast-track surgery.

Conclusions:

- Early surgery avoiding endoscopic stenting is possible within the NHS
- By reducing the time to surgery, more individuals undergo potentially curative surgery
- Avoiding interventions such as stenting will have a cost saving benefit for the NHS
- A Clinical Nurse Specialist to act as pancreatic cancer pathway navigator is critical for the pathway implementation.



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 the most common type of pancreatic cancer, pancreatic ductal adenocarcinoma (PDAC) in the period 2010-2013 was 3.2% for England
- People with pancreatic cancer who had surgery had 17.5% five-year survival as opposed to 1.7% for those who did not have surgery (unpublished data).

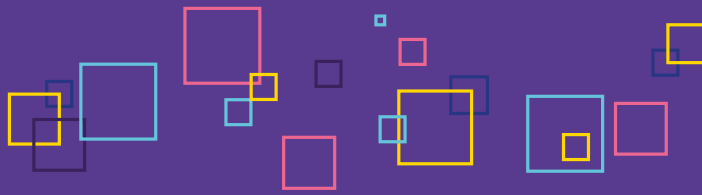
Background

Over 90% of pancreatic cancer cases are pancreatic ductal adenocarcinomas (PDAC). Surgery to remove the tumour offers patients the only realistic opportunity for potential cure and long-term survival. Of those diagnosed with pancreatic cancer, only 15–20% are considered candidates for surgery yet less than 10% currently undergo surgery. Each case of pancreatic cancer should be reviewed by a specialist multi-disciplinary team (MDT) in specialist Hepato-Pancreatic Biliary (HPB) centres². If surgery is an option then it takes place within the specialist HPB centre.

International and UK studies have shown that the longer someone waits to receive surgery from the time of diagnosis, the smaller the chances of actually having surgery^{1,3} due to the fast progression of the disease.

Case for change

Pancreatic cancer can cause jaundice by blocking the bile duct. The bile duct is the tube that carries bile from the liver to the duodenum (first part of the small intestines). When people with pancreatic cancer present with jaundice⁴, they are referred for further investigation that usually involve ultrasound followed by CT scan imaging. At this point, patients may undergo endoscopic stenting that involves inserting of a small hollow tube into a blocked bile duct to open it up and relieve jaundice. The procedure is called endoscopic retrograde cholangio-pancreatography (ERCP). In secondary care, even if their tumour can be removed. This procedure is invasive, and is associated with clinical complications, especially cholangitis (inflammation of the bile duct) and pancreatitis (inflammation of the pancreas), which may delay surgery or even preclude it⁵.



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

When someone presents with jaundice, they will be referred for a CT scan and endoscopic stenting to treat jaundice. The patient will then be referred to the specialist HPB centre for consideration of surgery. All this may take between 6 weeks and 2 months. The NICE guidelines on pancreatic cancer recommend that individuals with jaundice who can have potentially curative surgery should be offered surgery rather than having treatment for jaundice first⁷.

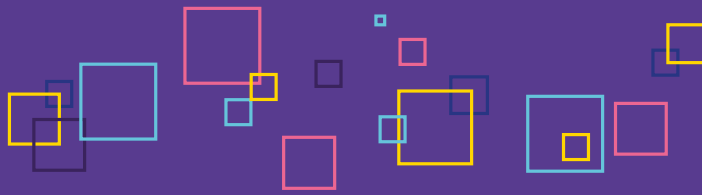
The team led by Mr Keith Roberts, Consultant Pancreatic, Hepatobiliary and Liver Transplant Surgeon, and the team in University Hospitals Birmingham (UHB) NHS Trust implemented a fast-track surgery pathway that reduced time between initial CT scan and potentially curative surgery to 16 days without the need for endoscopic stenting¹. A dedicated pathway Cancer Nurse Specialist (CNS) appointment was essential for successful implementation of the pathway. This allowed 20% more individuals to have potentially curative surgery and a cost-saving benefit of over £3,200 per individual who had fast-track surgery.

Nationwide Benefits

We believe that the fast-track surgery pathway can be rolled out across the 29 specialist HPB centres across the UK, allowing people diagnosed with early stage pancreatic cancer in all nations to have the chance for potentially curative surgery.

Our forecast analysis shows that rolling out the fast-track pathway across the UK will increase the number of people able to have surgery. Over 1000 people with pancreatic cancer presenting with jaundice will be able to have fast-track surgery annually, representing 11.7% of overall people affected with the disease in the UK, that is higher than the current 9.8% surgery rate.

Successful implementation of the pathway requires appointment of a pancreatic cancer pathway CNS to act as a patient navigator. This is possible with re-investment of the money saved from endoscopic stenting. Overall, we estimate that by rolling out the model of fast-track surgery with the appointment of a specialist CNS in each one of the 29 HPB centres across the UK will have a cost-saving benefit of £2.3 million per year.



This money can be invested for the development of other resources and infrastructure that accelerate treatment such as optimal time pilots and one-stop clinics for pancreatic cancer.

Our Policy Calls and Recommendations

- 1.** We ask for the appointment of pancreatic cancer pathway patient navigators to enable successful implementation of the fast-track surgery.
- 2.** We are calling on the governments and the NHS across the UK to allocate funding for and to implement fast-track surgery for people diagnosed with pancreatic cancer, as recommended by the NICE Guidelines for Pancreatic Cancer (published Feb 2018).
- 3.** We want to see pilots of accelerated treatment pathways for pancreatic cancer, with the ambition of treating people diagnosed within 20 days from diagnosis, by 2024.

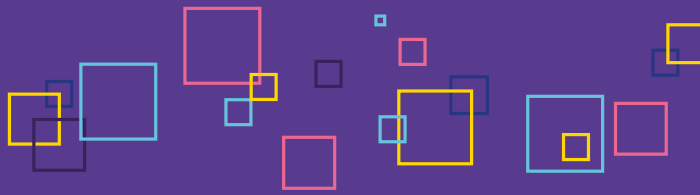
The case study in the University Hospitals Birmingham

The team in Birmingham carried out a pilot study was to develop a fast-track pathway where individuals can have surgery faster. The aim of the fast-track surgery pathway was to:

- reduce time to treatment from the time of initial CT scan to surgery
- avoid the need for endoscopic stenting
- reduce healthcare costs by avoiding endoscopic stenting, and associated complications and hospital readmissions
- improve patient care 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 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

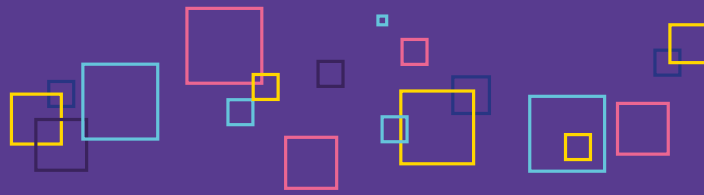
- Design of the pilot pathway
- Writing up and submission of the proposal
- Meetings at local hospitals with referral teams and implementation of the pathway for selected patients.

February 2015 –
June 2015



- Upscale of the service with the aim of applying the pathway potentially to individuals with jaundice and are eligible to have fast-track surgery. The study group comprised a cohort of patients with potentially curable pancreatic cancer 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 endoscopic stenting 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 model of fast-track surgery that aims to treat people with pancreatic cancer jaundice with surgery within 16 days (Figure 1).

- 1

The service takes referral of individuals affected with pancreatic cancer from nine NHS Trusts (fourteen hospitals)
- 2

Referral teams are asked to consider referral of those with jaundice with suspicion of pancreatic cancer to the specialist MDT to undergo fast-track surgery
- 3

Individual 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

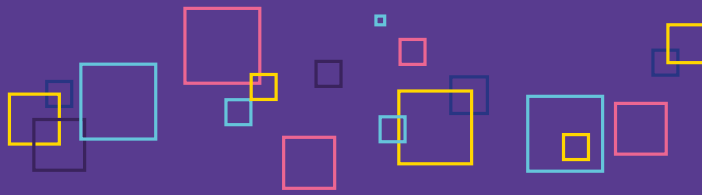
The individual is referred to the specialist HPB centre and within 24 hours an opinion on diagnosis and suitability for surgery is given; this also includes assessment whether other tests are needed to have more accurate diagnosis
- 5

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

Individuals are started on Creon and Vitamin K at the referral hospital; the local CNS talks to the patient to explain the likely diagnosis and pathway
- 7

At this point, and if suitable for surgery, the individual has a pre-screening and anaesthetic review at the same clinic appointment
- 8

A CNS counsels and consents the individual on the same day



The model of care practice (continued)

9

The individual 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 individual has been operated on, the next fast-track individual in line will be admitted

11

Overall, the pathway from CT scan to surgery is **16 days**

Overview of the fast-track surgery pathway

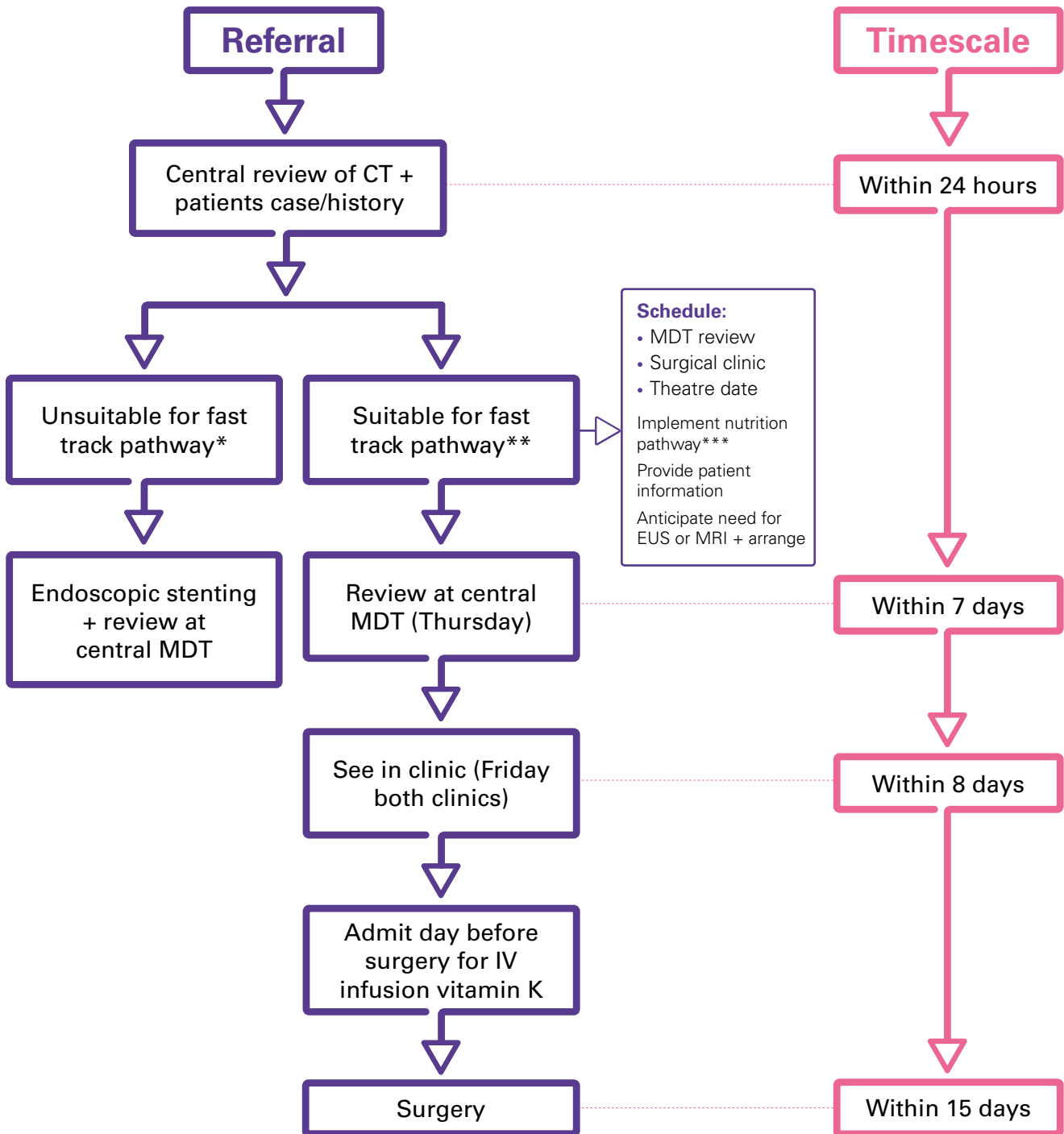
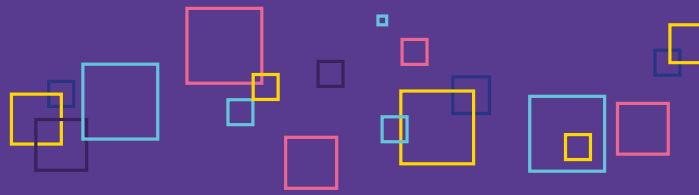


Figure 1: Schematic summary showing the timescale of fast-track surgery pathway. Implemented fast-track surgery pathway to achieve surgery within 16 days from presentation with jaundice to surgery, if pancreatic cancer is diagnosed.

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

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



Outcomes

Summary of patient cohort

From a cohort of 145 patients, 93 individuals with jaundice were potentially eligible for surgery without stenting and comprised the study group. Of those, 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 people who had endoscopic stenting had it prior to referral. Just three individuals who were considered for fast-track surgery required endoscopic stenting (due to high bilirubin levels).

Number of average days from initial CT scan to surgery

As demonstrated in Figure 2, individuals on the fast-track pathway underwent surgery within 16 days on average as opposed to 65 days for those 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 stenting (first two column bars in Figure 2).

Average number of days as defined by key periods

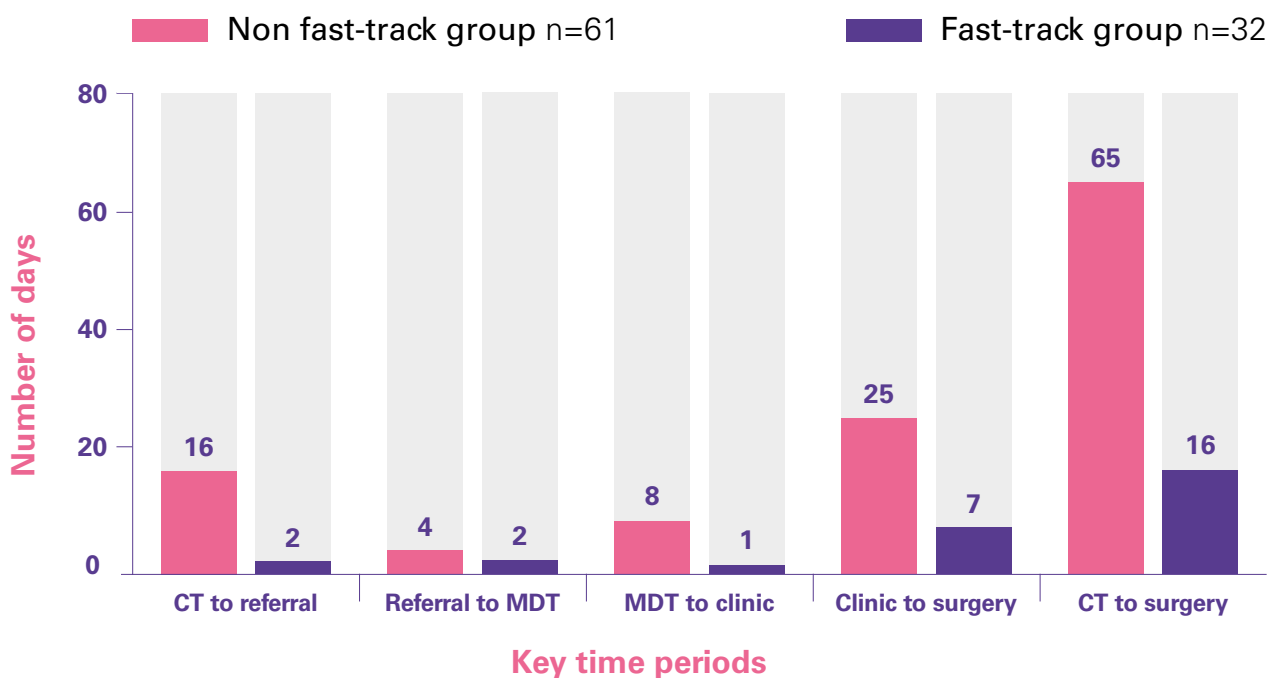


Figure 2: Pathway from initial CT scan to surgery as defined by key periods. Data demonstrates average number of days for each key period between the non fast-track (stenting) and fast-track surgery group.

Surgery outcomes

- 31 out of 32 individuals who had fast-track surgery as opposed to 46 out of 61 individuals who comprised the non fast-track group underwent potentially curative surgery. This translates to surgery of 97% of the fast-track group versus 75% of the non fast-track group. Almost a fifth more were resected when assigned to fast-track surgery.
- Rates of cases where surgery was no longer an option were decreased by at least a third when the individuals affected had to wait less than 20 days for surgery (Figure 3).

Relationship of waiting time and cases where surgery was not an option anymore

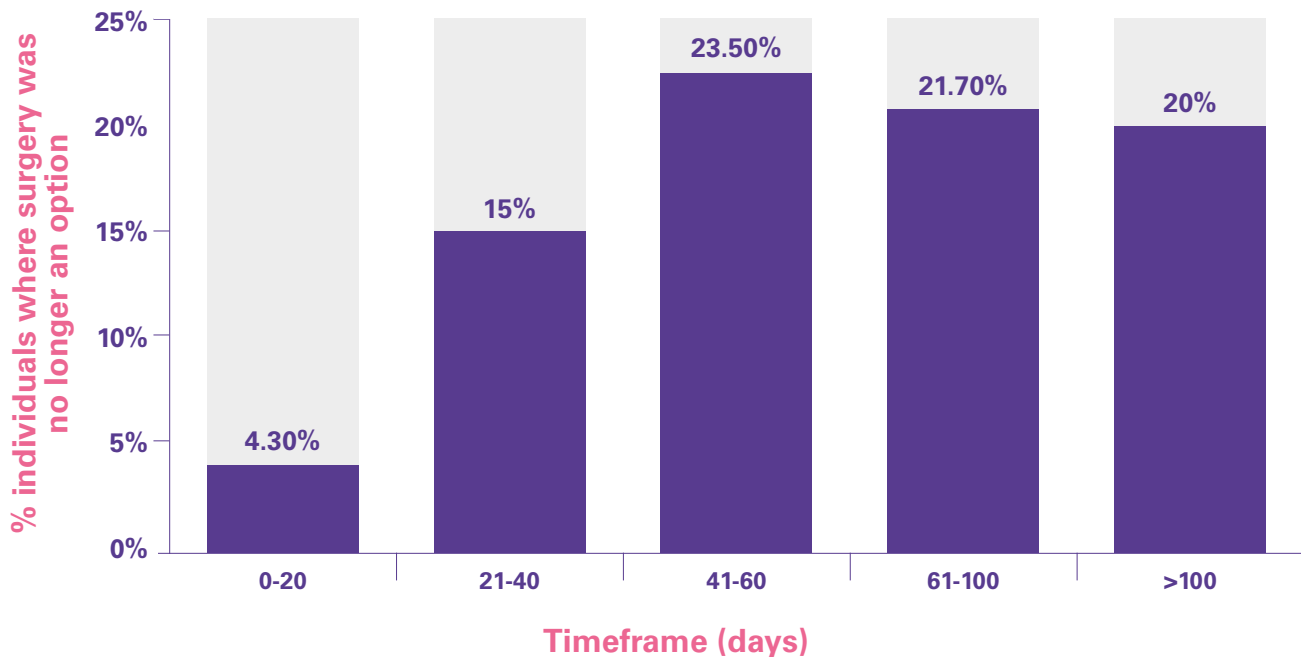


Figure 3: Waiting time from initial CT scan and % of cases where surgery was not an option anymore. Data demonstrates how waiting time affects chances of surgery taking place.

Financial outcomes

There is a clear benefit in healthcare costs between the non fast-track surgery and fast-track surgery pathway, as the total cost is £3,200 less for the fast-track surgery per individual (Figure 4). This difference is attributable to lower pre-surgery costs (due to avoidance of stenting and related health complications and 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.

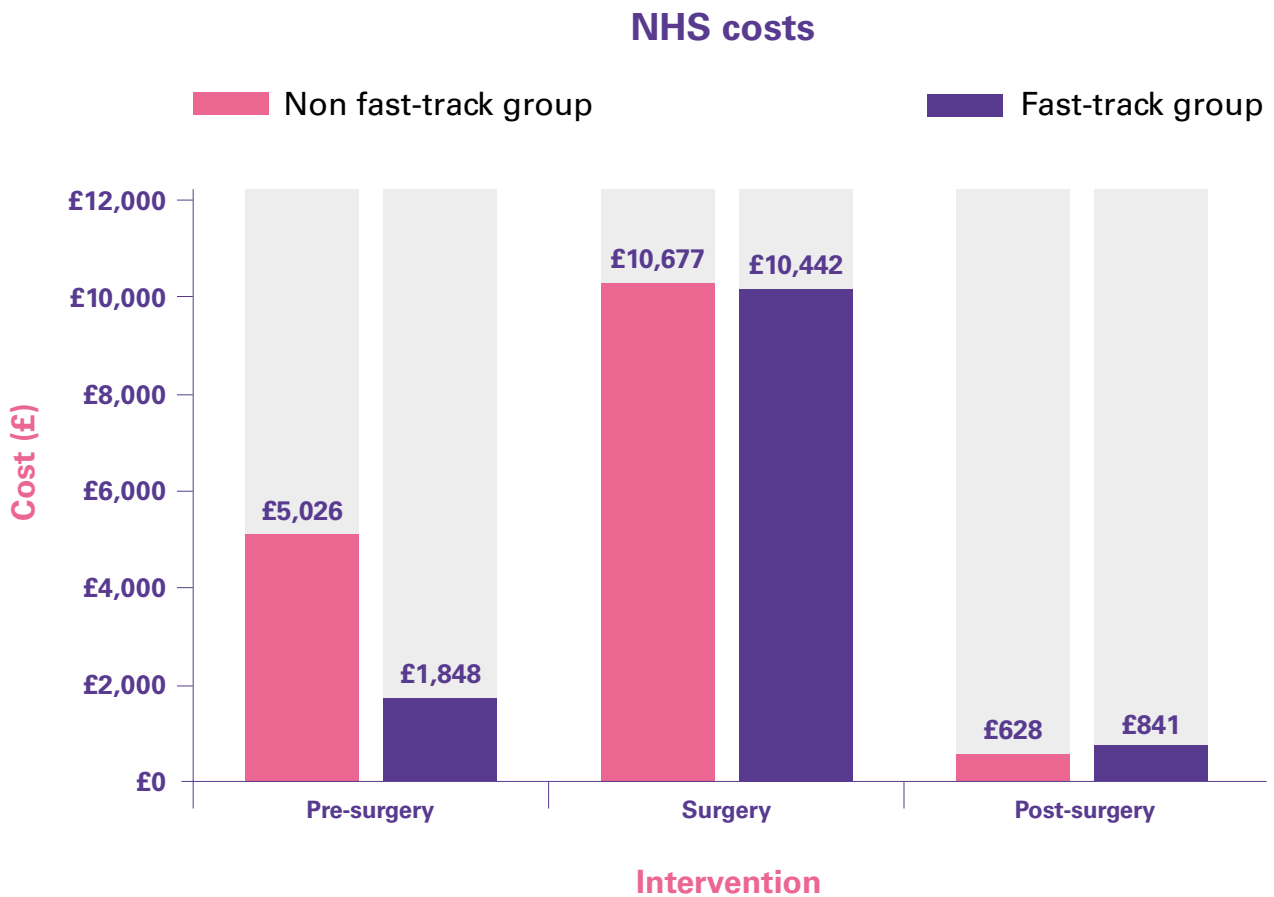
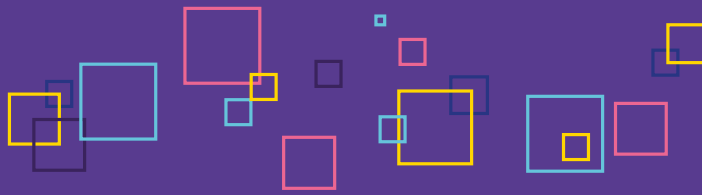


Figure 4: Costs associated with pancreatic cancer surgery. Data demonstrates costs of pancreatic cancer in non fast-track and fast-track surgery.



Key aspects in achieving the above pathway

Collaboration with the University of Birmingham Health Services Management team

- i) Collaboration with the University of Birmingham Health Services Management team was key to increasing engagement of referral teams with the pathway and increasing the number of the individuals 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

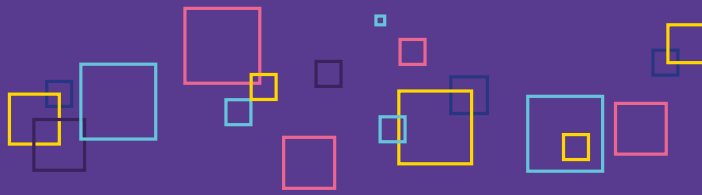
- i) The development of more open and trusting relationships between the referral teams and the specialist HPB unit was critical to the success of the pathway. This was initiated by the Health Services Management team and was largely coordinated by the pathway dedicated specialist CNS.
- ii) The pathway 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 individuals eligible for fast-track surgery in a short timeframe

- i) A challenge of the pathway was to meet patient expectations and maintain their wellbeing in a very short timeframe 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 surgery individuals 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 for some who has fast-track surgery is no different from the use of an ITU bed for someone with no fast-track surgery, or any other patient who would take a theatre slot that has been held for potential fast-track surgery.



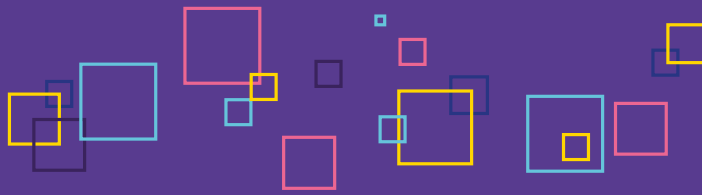
Conclusions

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 individuals can have potentially curative surgery and this can 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 a 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.

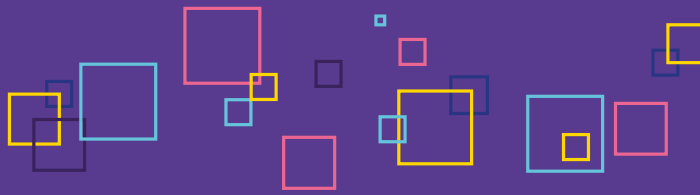
It should be possible to expand the pathway locally and to spread it nationally, providing the knowledge of its existence is widened and practical issues stated above are addressed.

It is critically important to have funding for a dedicated CNS to act as pancreatic cancer pathway patient navigator to provide psychological, emotional and practical support to the patient, and to act as a contact and liaison point between referral hospitals and specialised teams. This is even more of a priority for fast-track surgery individuals, 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 surgery pathway could be used to employ a CNS.



Our policy calls and recommendations

1. We are calling on the governments and the NHS across the UK to allocate **funding** for and to **implement fast-track surgery** for people diagnosed with pancreatic cancer, as recommended by the NICE Guidelines for Pancreatic Cancer (published Feb 2018).
2. We ask for the **appointment** of 'pancreatic cancer pathway' patient navigators to enable successful implementation of the fast-track surgery.
3. We want to see **pilots of accelerated treatment pathways** for pancreatic cancer, with the ambition of treating people with the disease within **20 days from diagnosis**, by 2024.



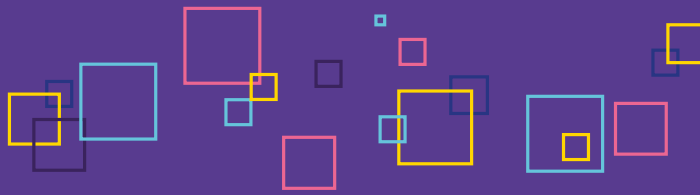
Future directions

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 early 2019)
- Assessing standards of care in the fast-track pathway and implementing improvements. It is key to evaluate the initial experiences of the those who had fast-track surgery 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 early 2019.

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 surgery 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
- Working with the Health Service Management team in the University of Birmingham to develop an application to the Health Foundation for funding to introduce the pathway to other hospitals in England.



Acknowledgements

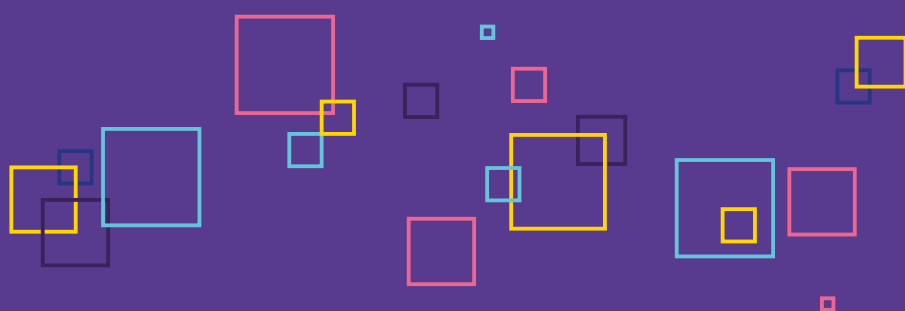
Pancreatic Cancer UK would like to thank Mr Keith Roberts, Surgeon Consultant and Mrs Yvonne Steele, pathway dedicated CNS in University Birmingham Hospitals NHS Trust for their support in the development of this report.

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This case study contains up-to-date information as per November 2018. It will be reviewed in March 2020.

Pancreatic Cancer UK



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