Final Business case for the development of an Advanced Liver disease MDT

Title:	**Development of an Advanced Liver Disease MDT**			
Date:	**February 2023**			
Purpose	**Assurance or reassurance**	**Approval** ✓	**Ratification**	**Information**
Issue to be addressed:	• Ongoing increased demand for hepatology services due to the well documented rise in metabolic, alcoholic, and viral liver disease with consequent impact on inpatient and outpatient services • Lack of palliative care support for advanced chronic liver disease patients results in multiple non-elective admissions and prolonged stays in ICU during last year of life and often results in death in the hospital setting regardless of patient preference. • Poor patient experience due to multiple avoidable non-elective admissions and ICU stays • Expansion of current hepatology nursing team required to provide an ambulatory ascitic drain service to prevent avoidable non-elective admissions in this patient cohort			
Response to the issue:	• Establish a multi-disciplinary team to address the above issues, providing hepatology and palliative care oversight for these patients. • Delivery of palliative care clinics and MDT oversight will save up to an estimated 1209 bed days per year and result in savings to providers of up to £367,712 and savings to the ICS of £142,926 dependent upon the service model initiated reducing financial and bed pressures on the trust and the system. • An established ambulatory ascitic drain clinic and MDT oversight will also improve patient experience and quality of life for patients at end-of-life by reducing non-elective bed days by an average of 6.3 days per patient.			
Implications:	Improved management of patient care for advanced liver disease patients, avoiding governance and legal issues.			
Risks: (Top 3) of carrying out the change / or not:	• Ongoing avoidable non-elective admissions and ICU stays in this cohort of patients • Poor patient experience due to avoidable non-elective stays during last year of life • Demand for liver services is increasing and to deliver good quality patient care the service will need to expand			
Summary: Conclusion and/or recommendation	Approval to establish a hepatology MDT to meet the required demand and provide a safe, high-quality service inclusive of palliative care support for advanced liver disease patients in the last year of life.			

General Information	
Service Development	Development of an Advanced Liver Disease MDT
Specialty	Hepatology
Additional Budget Requested	

Executive Summary

What we are proposing to do:

Establish a multi-disciplinary team and expand the ascitic drain service to provide a safe, high-quality service for advanced liver disease patients. Components of the MDT have been determined by an expert panel commissioned by NHS England. Outlined below are the additional posts proposed (WTE are variable based on the options available, see Appendix 2 for more detail):

- Band 6/7 Hepatology Nurse
- Band 6/7 Palliative Care Community Nurse
- Band 7 Alcohol Care Nurse
- Band 7 Dietician
- Band 5 Ward Nurse
- Band 3 MDT Co-ordinator
- Hepatology Consultant
- Palliative Medicine Consultant

Why do we need to do it:

There is ongoing increased demand for hepatology services due to the well documented rise in metabolic, alcoholic, and viral liver disease with consequent impact on inpatient and outpatient services.

The new posts will allow the service to transform the way we deliver care for advanced liver disease patients, enabling us to improve their quality of life and reduce non-elective admissions, ICU admissions and non-elective LOS in this cohort by providing palliative care support and oversight by an MDT.

What are the key benefits:

- A palliative care approach or involvement of specialist palliative care services improves quality of life, decreases number of admissions to ICU, reduces non-elective bed days and therefore also reduces cost burden.
- Oversight by an MDT will ensure patients last year of life are identified and enables support to be provided by relevant teams such as palliative care community team. This will ensure patients are supported and where necessary this can ensure they spend less time in their last year of life in emergency hospital admissions.
- Recruitment of a hepatology ACP will support the establishment or expansion of an ambulatory ascitic drain service to perform up to 104 ascitic drains annually, further increasing quality of life in this subset of patients and preventing avoidable admissions.

1. STRATEGIC CASE:

1.1 Case for change

i) Strategic alignment

There are increasing pressures on inpatient beds due to exceptional numbers of emergency department visits resulting in non-elective admissions across many specialties. There is a need to transform the way elective services are ran to avoid non-elective admissions in patients with high requirements for healthcare, such as those with advanced liver disease. Particularly, as these patients are often in their last year of life, meaning the requirement to avoid emergency admissions is a priority for improving patient experience and quality of life.

ii) Evidence/rationale for change (See Appendix 1 for supporting evidence)

AT UHS, there were 168 patients who were admitted either electively or non-electively from 1st Jan 2021 to 31st Jan 2022 with a primary or secondary diagnosis relating to advanced liver disease who have subsequently died. The OPCS diagnosis codes used to identify these patients are as follows:

- I85 Oesophageal varices
- I85.0 Oesophageal varices with bleeding
- I98 Oesophageal varices in disease classified elsewhere
- I85.9 Oesophageal varices without bleeding
- I98.2 Oesophageal varices in diseases classified elsewhere without bleeding
- I98.3 Oesophageal varices in diseases classified elsewhere with bleeding
- K70.3 Alcoholic cirrhosis of the liver
- K72.9 Hepatic failure, unspecified
- K74.6 Other and unspecified cirrhosis of the liver
- K76.6 Portal hypertension
- K76.7 Hepatorenal syndrome

Using 2021 and 2022 admissions data, 16% of patients had palliative care support (27 of 168 patients). These patients were seen by palliative care at UHS in a pilot study. The average cost of non-elective admissions in these patients results in reduced costs of £3,830.34 per patient. There is also an estimated saving of 6.3 non-elective bed days per patient.

	Palliative care	**No palliative care**
Average number of non-elective admissions	3.1	2.9
Average non-elective bed days	19.4	25.7
Average cost of non-elective admissions	£ 14,728.16	£ 18,558.50
Lowest non-elective admissions cost	£ 0.00	£ 0.00
Highest non-elective cost	£ 37,387.53	£ 86,825.43

If the provision of palliative care was increased in this cohort of patients there would be an estimated cost saving per patient as below:

Number of patients under palliative care	Estimated cost savings	Estimated bed day savings
24 patients	£91,928.16	151.2
48 patients	£183,856.32	302.4
96 patients	£367,712.64	604.8
192 patients	£735,425.28	1209.6

Increasing oversight of this cohort of patients by an MDT including specialist palliative care and dietetics colleagues will ensure patients in their last year of life are identified and supported through this period to prioritise quality of life and avoid emergency admissions to ICU which can have a negative impact on patient experience.

3.2 Top 3 Objectives (SMART)	• Improved patient experience • Increased access to palliative care • Reduced non-elective admissions
3.2 Top 3 Outcome Measures (key success factors/KPIs)	• Reduction in non-elective admissions • Reduction in length of stay • Increased patient experience

2. Economic Case

2.1 Options Appraisal

Option	Advantages	Disadvantages
1. Business as usual (BAU)	• No investment required	• Poor patient experience • Avoidable non-elective admissions and ICU stays
2. Monthly MDT and clinic model	• Capacity in clinics for 24 patients per year • Capacity for 104 elective ascitic drains per year • Increase in activity resulting in income of £143,896 • Savings of 151 bed days • Reduction in non-elective admission cost of £91,928 • Overall estimated surplus of income of £137,579.16	• Investment required for annual staff costs of £98,245 • Increase in capacity in clinics required to offer support to more eligible patients in cohort
3. Twice monthly MDT and clinic model	• Capacity in clinics for 48 patients per year • Capacity for 104 elective ascitic drains per year • Increase in activity resulting in income of £151,864 • Savings of 302 bed days	• Investment required for annual staff costs of £109,495 • Increase in capacity in clinics required to offer

	• Reduction in non-elective admission cost of £183,856 • Overall estimated surplus of income of £226,225.32	support to more eligible patients in cohort
4. Weekly MDT and clinic model	• Capacity in clinics for 96 patients per year • Capacity for 104 elective ascitic drains per year • Increase in activity resulting in income of £167,800 • Savings of 604 bed days • Reduction in non-elective admission cost of £367,712 • Overall estimated surplus of income of £392,466.64	• Investment required for annual staff costs of £143,046 • Increase in capacity in clinics required to offer support to more eligible patients in cohort
5. Twice weekly MDT and clinic model	• Capacity in clinics for 192 patients per year • Capacity for 104 elective ascitic drains per year • Increase in activity resulting in income of £199,672 • Savings of 1209 bed days • Reduction in non-elective admission cost of £735,425.28 • Overall estimated surplus of income of £710,311.28	• Investment required for annual staff costs of £224,786 • Increase in capacity in clinics will be required if demand continues to increase

2.2 Preferred option	***Option 5 (twice weekly model) is preferred*** because: • This model results in an overall cost saving of £710,311.28 across the ICS, although the funding models are discussed below. • Capacity for 192 patients per year enables all eligible patients to have access to palliative care support and review in an MDT whilst ensuring available capacity for any growth in patient numbers

3. Detail of Proposal

3.1 Proposal/New Service Model

Establish a multi-disciplinary team and expand the ascitic drain service to provide a safe, high-quality service for advanced liver disease patients including provision of specialist palliative care. The new posts will allow the service to transform the way we deliver care for advanced liver disease patients, enabling us to improve their quality of life and reduce non-elective admissions, ICU admissions and non-elective LOS in this cohort by providing palliative care support and oversight by an MDT.

3.2 Workforce Plan *(see appendix 2)*	Outlined below are the additional posts proposed (WTE are variable based on the options available, see Appendix 2 for more detail): • Band 6/7 Hepatology Nurse • Band 6/7 Palliative Care Community Nurse • Band 7 Alcohol Care Nurse • Band 7 Dietician • Band 5 Ward Nurse • Band 3 MDT Co-ordinator • Hepatology Consultant • Palliative Medicine Consultant

3.3 Support Services Requirement	• Support services required are included in workforce plan
3.4 Estate / Capacity Requirement and Impact	• Designated space for clinics and ascitic drain service • Office space for new staff
3.5 Equipment Requirement	• No extra clinical equipment required • £1500 per WTE non-pay requirement for year 1 to purchase IT equipment for new staff
3.6 IT Impact	• No new software required
3.7 Non financial risks	• Ability to recruit into specialist posts

4. Financial Case

4.1 Core assumptions/ rationale

- Financial models based on models incorporating band 7 hepatology nurse and palliative care community nurse.
- Model assumes nursing cover 52 weeks of the year and consultant cover for 42 weeks.
- Finances based on 2022/23 data for staff costs and PbR tariff

4.2 Impact on WTE

- Dependent upon the model, there will be an increase of 1.6-3.0 WTE

4.3 Any other cost mitigations

- Income as a result of new activity will offset expenditure on staff expenses

4.4 Impact on activity

	Option 1: Monthly model	Option 2: Twice monthly model	Option 3: weekly model	Option 4: Twice weekly model
New outpatient attendances	24	48	96	192
Follow-up outpatient attendances	24	48	96	192
Elective ascitic drains	104	104	104	104
Non-elective bed day savings	151.2	302.4	604.8	1209.6

4.5 Proposal scenarios – indicative income

	Option 1: Monthly model	Option 2: Twice monthly model	Option 3: weekly model	Option 4: Twice weekly model
Staff costs	£98,245	£109,495	£143,046	£224,786
Income from new activity	£143,896	£151,864	£167,800	£199,672
Non-elective admission savings (PbR)	£91,928.16	£183,856.32	£367,712.64	£735,425.28

Using this data, there are multiple commissioning models that can be agreed between the provider and the ICS to find a financially viable solution for each party.

An option could be for an agreement whereby the ICS funds the income from the new activity to the provider, and the staff costs associated with the model are paid for by the provider. The ICS would therefore retain savings for non-elective admission reductions in this cohort.

	Option 1: Monthly model	**Option 2: Twice monthly model**	**Option 3: weekly model**	**Option 4: Twice weekly model**
Staff costs (Provider)	£98,245	£109,495	£143,046	£224,786
Income for new activity (ICS)	£143,896	£151,864	£167,800	£199,672
Non-elective admission savings (PbR)	£91,928.16	£183,856.32	£367,712.64	£735,425.28
Overall cost to ICS (expense/saving)	£51,967.84	+£31,992.32	+£199,912.64	+£535,753.28
Overall cost to Provider (expense/saving)	+£45,651.00	+£42,369.00	+£24,754.00	£25,114.00

Another option could be for the ICS to fund the costs for the new staffing model but not pay for the new activity. In this model, the provider and the commissioners could agree a split of the savings accumulated as a result of reduced non-elective admissions in this cohort of patients.

	Option 1: Monthly model	**Option 2: Twice monthly model**	**Option 3: weekly model**	**Option 4: Twice weekly model**
Staff costs (ICS)	£98,245	£109,495	£143,046	£224,786
Income for new activity	£0	£0	£0	£0

	Non-elective admission savings (PbR)	£91,928.16	£183,856.32	£367,712.64	£735,425.28
	50% non-elective admission savings	£45,964.08	£91,928.16	£183,856.32	£367,712.64
	Overall cost to ICS (expense/saving)	£52,280.92	£17,566.84	+£40,810.32	+£142,926.64
	Overall cost to Provider (expense/saving)	+£45,964.08	+£91,928.16	+£183,856.32	+£367,712.64

Using the above funding models, option 3 (weekly clinic model) would be the most financially beneficial model for both the provider and the ICS regardless of which funding model is utilised. Both option 3 and option 4 would be financially beneficial for both the provider and ICS if staff costs were funded by the ICS and savings on reduced non-elective admissions were split between both parties.

4.6 Impact on productivity

- Increasing access to specialist palliative care in this cohort of patients reduces non-elective admissions and LOS
- Increased productivity by ensuring the patient is seen in the right place at the right time, reducing the requirement for overnight non-elective admissions and ICU stays
- Ensures engagement with patients who are often vulnerable and have high safeguarding requirements

4.7 Financial risks and mitigations

Financial risk of spending:

- Recurrent funding required for substantive posts

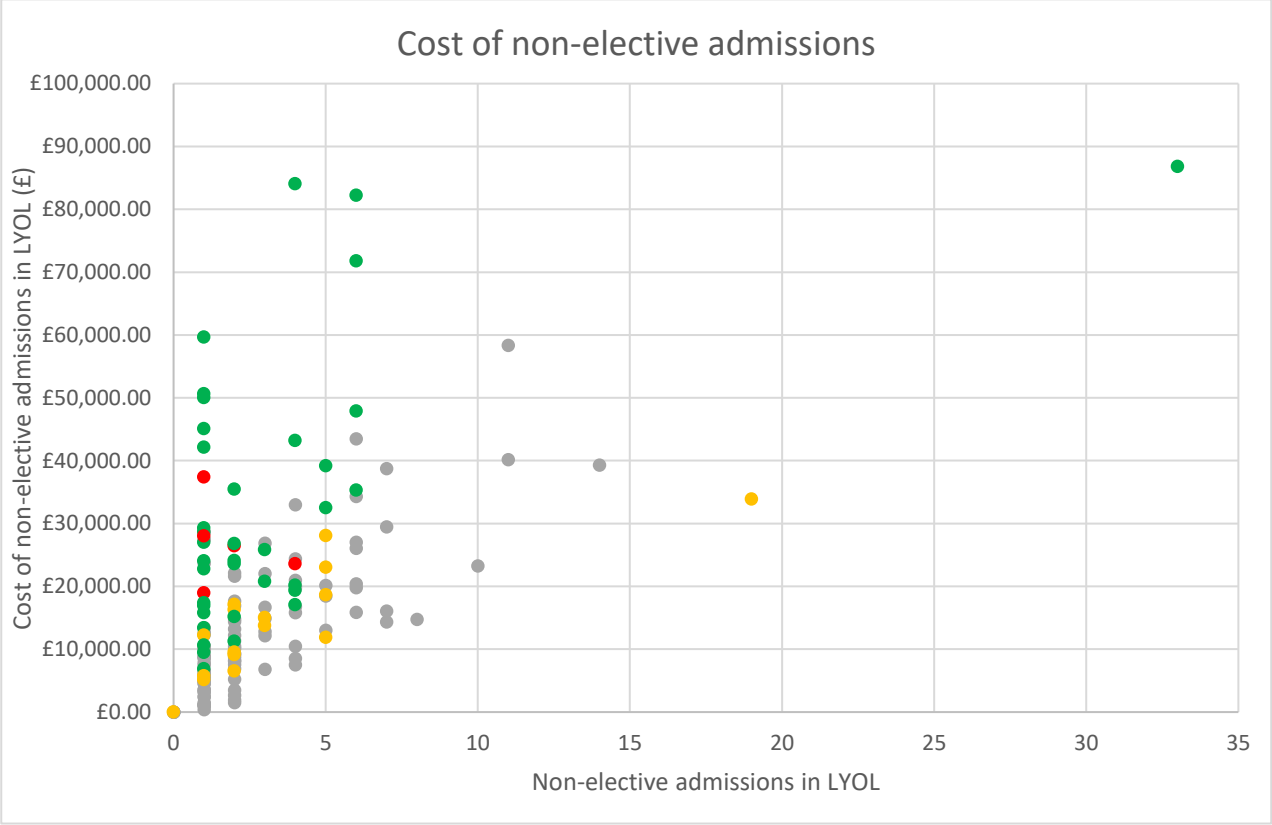
Financial risk of not spending:

- Poor patient experience associated with lack of MDT oversight and palliative care support, could result in litigation
- Increased costs associated with non-elective admissions and increased LOS.

Appendices	Supporting Information
Appendix 1	Evidence for Case
Appendix 2	Workforce Plan
Appendix 3	Financial Plan

Appendix 1 - Evidence for Case

Cost of non-elective admissions versus number of non-elective admissions in last year of life (LYOL):



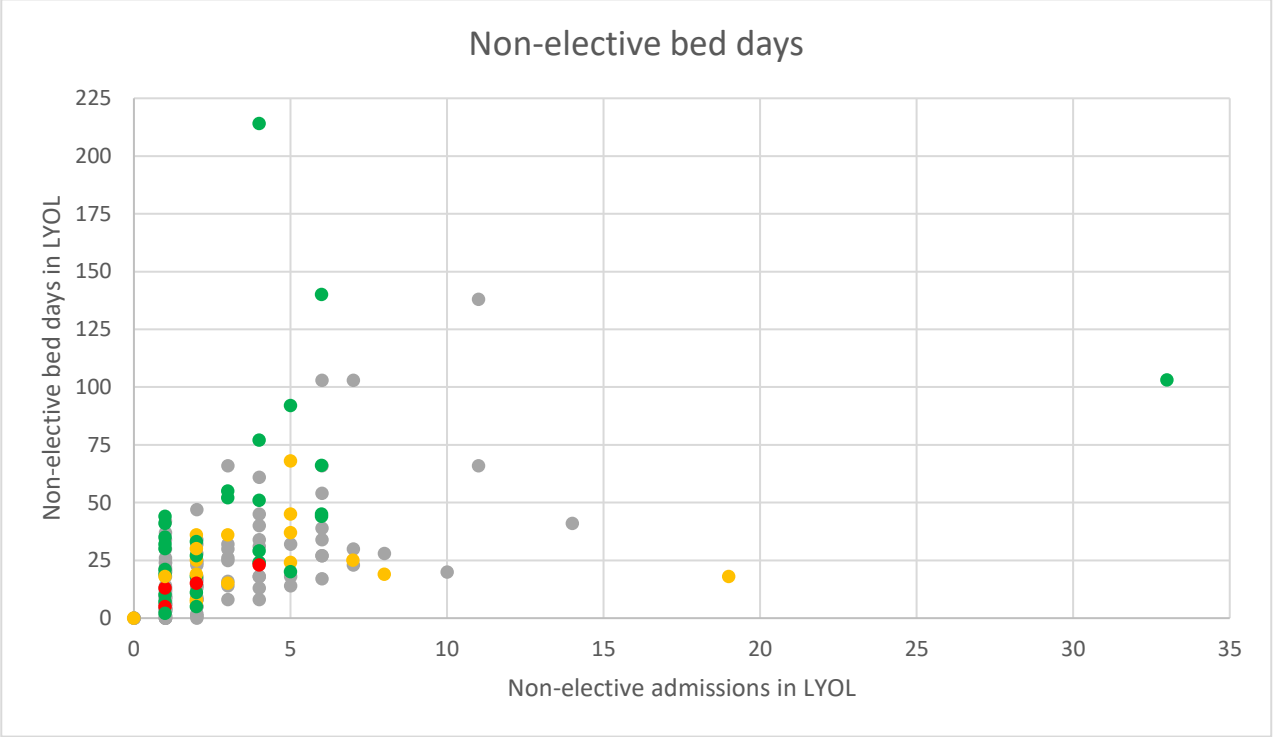
KEY:

- ICU stay
- SpecialistPalliative Care oversight
- Both ICU & Specialist palliative care
- Patients with no ICU and no Specialist palliative care

The above data shows:

- The majority of patients with ICU stays were the most high-cost patients, regardless of number of non-elective admissions
- There are few patients who had ICU admissions with specialist palliative care oversight
- The majority of patients with higher number of non-elective admissions in last year of life did not have specialist palliative care oversight

Non elective bed days in last year of life:



KEY:

- ICU stay
- Specialist palliative Care oversight
- Both ICU & Specialist palliative care
- Patients with no ICU and no Specialist palliative care

The above data shows:

- The patients with longest length of stay for non-elective admissions tended to be those with ICU admissions

- Palliative care patients tended to have reduced non-elective bed days compared to non- specialist palliative care patients

Appendix 2 – Workforce Plan

i. Summary table (request by band and WTE):

Monthly

Ascitic drain service, ward input and Hepatology hot line		
1.0 WTE Hepatology Nurse Band 6 or 7	52770	65364
Palliative care community nurse - 1 day per week		
0.2 WTE Palliative Care Nurse Band 6 or 7	10554	13073
MDT (1hr per month/ 0.0625 PA)		
Band 6/7 Hepatology Nurse	Included	
Band 6/7 Palliative Care Community Nurse	Included	
0.0067 WTE Band 7 Alcohol Care Nurse	438	
0.0067 WTE Band 7 Dietician	438	
0.0067 WTE Band 5 Ward Nurse	326	
0.2 WTE Band 3 MDT Co-ordinator	6627	
Hepatology Consultant	851	
Palliative medicine Consultant	851	
Clinic (4hrs once per month/1 PA once per month)		
0.027 WTE Dietician B7	1765	
Hep Nurse B6/7	Included	
Palliative Care Nurse 6/7	Included	
Hepatology Consultant	3,375	
Palliative Medicine Consultant	3,375	
Palliative Care Ward Support (1PA per week)		
Palliative Medicine Consultant	13,500	
Palliative Care Clinic (once per month/ 0.25 PA per week)		
Palliative Medicine Consultant	3375	
Total cost of service	**Band 6 model**	**Band 7 Model**
	98,245	**113,358**

Twice monthly

Ascitic drain service, ward input and Hepatology hot line		
1.0 WTE Hepatology Nurse Band 6 or 7	52770	65364
Palliative care community nurse - 1 day per week		
0.2 WTE Palliative Care Nurse Band 6 or 7	10554	13073
MDT (2hr per month/ 0.125 PA)		
Band 6/7 Hepatology Nurse	Included	
Band 6/7 Palliative Care Community Nurse	Included	
0.013 WTE Band 7 Alcohol Care Nurse	849	
0.013 WTE Band 7 Dietician	849	
0.013 WTE Band 5 Ward Nurse	631	
0.2 WTE Band 3 MDT Co-ordinator	6627	
Hepatology Consultant	1688	
Palliative Medicine Consultant	1688	
Clinic (4hrs twice per month/1 PA twice per month)		
0.053 WTE Dietician B7	3464	
Hep Nurse B6/7	Included	
Palliative Care Nurse 6/7	Included	
Hepatology Consultant	6,750	
Palliative Medicine Consultant	6,750	
Palliative Care Ward Support (1PA per week)		
Palliative Medicine Consultant	13,500	
Palliative Care Clinic (once per month/ 0.25 PA per week)		
Palliative Medicine Consultant	3375	
Total cost of service	**Band 6 model**	**Band 7 Model**
	109,495	**124,608**

Weekly

Ascitic drain service, ward input and Hepatology hot line

1.0 WTE Hepatology Nurse Band 6 or 7	52770	65364
Palliative care community nurse - 2 days per week		
0.4 WTE Palliative Care Nurse Band 6 or 7	21108	26145
MDT (1hr per week/ 0.25 PA)		
Band 6/7 Hepatology Nurse	Included	
Band 6/7 Palliative Care Community Nurse	Included	
0.03 WTE Band 7 Alcohol Care Nurse	1961	
0.03 WTE Band 7 Dietician	1961	
0.03 WTE Band 5 Ward Nurse	1458	
0.2 WTE Band 3 MDT Co-ordinator	6627	
Hepatology Consultant	3375	
Palliative Medicine Consultant	3375	
Clinic (4hrs weekly/1PA per week)		
0.1 WTE Dietician B7	6536	
Hep Nurse B6/7	Included	
Palliative Care Nurse 6/7	Included	
Hepatology Consultant	13,500	
Palliative Medicine Consultant	13,500	
Palliative Care Ward Support (1PA per week)		
Palliative Medicine Consultant	13,500	
Palliative Care Clinic (once per month/ 0.25 PA per week)		
Palliative Medicine Consultant	3375	
Total cost of service	**Band 6 model**	**Band 7 Model**
	143,046	**160,677**

Twice weekly

Ascitic drain service, ward input and Hepatology hot line		
1.0 WTE Hepatology Nurse Band 6 or 7	52770	65364
Palliative care community nurse - 2 days per week		
0.6 WTE Palliative Care Nurse Band 6 or 7	£31,662	39,218
MDT (2hrs per week)		
Band 6/7 Hepatology Nurse	Included	
Band 6/7 Palliative Care Community Nurse	Included	
0.053 WTE Band 7 Alcohol Care Nurse	3464	
0.053 WTE Band 7 Dietician	3464	
0.053 WTE Band 5 Ward Nurse	2575	
0.4 WTE Band 3 MDT Co-ordinator	13253	
Hepatology Consultant	6750	
Palliative Medicine Consultant	6750	
Clinic (8hrs weekly/2PA per week)		
0.2 WTE Dietician B7	13073	
Hep Nurse B6/7	Included	
Palliative Care Nurse 6/7	Included	
Hepatology Consultant	27,000	
Palliative Medicine Consultant	27,000	
Palliative Care Ward Support (1PA per week)		
Palliative Medicine Consultant	13,500	
Palliative Care Clinic (once per month/ 0.25 PA per week)		
Palliative Medicine Consultant	3375	
Total cost of service	**Band 6 model**	**Band 7 Model**
	204,636	**224,786**

Total WTE:

Staff member	Band	Model 1 WTE	Model 2 WTE	Model 3 WTE	Model 4 WTE
Hepatology Nurse	6/7	1	1	1	1
Palliative Care Community Nurse	6/7	0.2	0.2	0.4	0.6
Alcohol Care Nurse	7	0.0067	0.013	0.03	0.053
Dietician	7	0.0337	0.066	0.13	0.253
Ward Nurse	5	0.0067	0.013	0.03	0.053
MDT Co-ordinator	3	0.2	0.2	0.2	0.4
Hepatology Consultant		0.03125	0.0625	0.125	0.25
Palliative Care Consultant		0.15625	0.1875	0.25	0.375
	Total	**1.6346**	**1.742**	**2.165**	**2.984**

Appendix 3 - Financial Plan

	Option 1: Monthly model	**Option 2: Twice monthly model**	**Option 3: weekly model**	**Option 4: Twice weekly model**
Staff costs	£98,245	£109,495	£143,046	£224,786
Income from new activity	£143,896	£151,864	£167,800	£199,672
Non-elective admission savings (PbR)	£91,928.16	£183,856.32	£367,712.64	£735,425.28
Surplus/deficit	**£137,579.16**	**£226,225.32**	**£392,466.64**	**£710,311.28**