

Making informed economic choices about future funding of bed days in a Hospice specialist palliative care unit.

Abstract

Charitably funded hospices are often seen as the local providers of specialist palliative care beds. These are very costly to run, and the increased acuity and dependency of the patients referred means workforce demands are higher and resources stretched. Hospices need to make informed decisions about the allocation of funds to bed days in comparison to funding other valued hospice resources in the community.

Method

This economic assessment assesses the direct and indirect costs of an 18 bedded Inpatient Unit which is currently not able to sustain high level of occupancy due to resources, particularly nursing hours. It then calculates the cost of the same Inpatient Unit with a reduced number of beds, but with specific increased resources to enable a higher level of occupancy.

Findings

The findings of this economic assessment demonstrate that a reduction in beds with an increase in some staffing hours, allows for a more productive unit with higher levels of occupancy, increased bed days and a reduced cost per bed day.

Conclusion

This economic assessment is the result of a learning and development opportunity that has enabled the author to understand more about economic assessment in the healthcare environment. This learning and the associated case study will be a meaningful contribution to the decisions to be made in the hospice five year strategy. It has also enabled wider dialogue and understanding to occur between the Patient Care Directorate and Finance teams.

Making informed economic choices about future funding of bed days in a Hospice specialist palliative care unit.

Background

This case study aims to calculate the current cost of a bed day within a Hospice Inpatient Unit (IPU) and then estimate costs if bed days were increased by running at higher occupancy. Currently the IPU has 18 beds and runs at an average occupancy rate of 73%, resulting in the delivery of 4796 bed days. The increased acuity and dependency of the patients admitted mean current staffing levels, particularly nursing staff, are not robust enough to run at full capacity. To support a higher level of occupancy, staffing levels and other costs will need to increase.

A potential way forward to increase bed days in a cost effective way is to actually decrease bed numbers from 18 to 15, but maximise on occupancy. Whilst this appears counter intuitive it would mean that extra money could be spent on increased nursing staff; the professional group struggling to meet current demand with minimal need to expand staffing levels in other clinical teams. If the aim was to maximise occupancy on 18 beds all current clinical teams would need to expand to meet the potential increase of 1774 bed days (27% increase), and this would result in significant cost increases.

As a charitable organisation there are always finite resources and the challenge facing the hospice as it plans its next 5 year strategy is how much to increase funding in one part of the service in the knowledge that this will potentially restrict the ability to expand other services. Therefore this costing of bed days for their economic viability will directly contribute to the wider strategic thinking and future planning of the organisation.

Introduction

St Peter's Hospice is the only adult hospice in the Greater Bristol area (population approximately 900,000) caring for people with life limiting illnesses. The hospice offers both inpatient, outpatient and community services. Services include a community team of Clinical Nurse Specialists, a Hospice at Home service, Day Services, a 24 hour Advice line and the Inpatient Unit. All of these services are supported by a specialist multidisciplinary team that includes social workers, therapists, spiritual support and other allied health care professionals. Patients can access any one or more of these services depending on their need.

Hospices in the UK are often charitably funded, and have a reputation for delivering high quality care. The hospice movement is based on a model of 'holistic care' embracing the patient and their family, so allied health care professionals such as art therapists and occupational therapists are as important as the physical care offered. Hospices also champion the use of volunteers to support services, this may for example involve supporting mealtimes in the IPU, or volunteering as a driver to pick up a frail family member who has no transport to enable visiting.

Current Funding

The total cost of the hospice patient services in 2014/15 was £6.8 million. 21% of the service costs were funded by the 4 CCG's that cover wider Bristol, with 79% directly funded by the charity itself. This is achieved by the commercial team's efforts in fundraising and the 47 hospice charity shops that raise over 5 million pounds annually. The IPU as a specialised service cost £3,583 418 in 2014/15: over 50% of the total hospice budget.

The Inpatient Unit

Currently the IPU is an 18 bedded unit (6 single rooms and 6 twin rooms), with average occupancy levels running at 73% (13.14 beds) over the last 3 years. The average number of patients admitted per year is 378 (3 year average).

73% is average occupancy but within this there are peaks of between 80-90% but these peaks of occupancy are not sustainable with current staffing levels and budget. When currently operating at high levels of occupancy there is a heavy reliance on bank staff which reduces consistency of care and at times impacts on the skill mix needed in a specialist unit. Due to the nature of bank staff there are periods when availability is reduced, for example over school holidays, also a time when contracted staff are taking leave.

Total costs of the IPU were £3,583 418 in 2014/15. Nursing salary costs (including bank staff) were £1,676,334 of this total amount, just under 50% of the total IPU budget.

Acuity and dependency

The increased acuity and dependency of patients being admitted has meant that each patient requires more care, particularly nursing care, and there are frequent occasions when admissions have to be restricted due to pressure of workload.

The acuity and dependency of the IPU service was measured using an adapted acuity workforce model planning method in November 2014 (Roberts and Hurst 2012). The IPU was benchmarked against 46 other hospices and hospital palliative care wards. It was found to have higher dependency than average with 95% patients meeting the higher dependency levels of 3 and 4. The workload index is a standardised indicator calculated using ward occupancy, dependency/acuity mix and face-to-face time that staff spend with patients.

Table 1. Acuity Workforce Dependency Scores

Dependency Level of patients in the IPU at time of 4 week study.	Level 1 Independent	Level 2 Low-medium dependency	Level 3 Medium-high dependency	Level 4 Fully dependent	Workload Index
All 47 hospices	2	14	47	37	20.8
St Peter's Hospice	0	5	41	54	23.7

The index is interpreted like a thermometer; i.e., high values indicate 'hotter' (higher workload) wards. (Roberts, D 2014). The acuity workforce planning method is a snapshot intensive study taken over a 4 week period, the period of the Bristol study demonstrated lower than average occupancy (68 % rather than average of 73%) due to a period of high turnover and high death rate (average length of stay over this period was 7.8 days rather than 12.6), so normal occupancy would demonstrate a higher workload index than shown in Table 1.

Roberts and Hurst's (2013) paper demonstrated hospices were more expensive to run in relation to nursing staff costs than hospital palliative care wards, but delivered a high quality of care, had patients with greater acuity and dependency levels and carried a heavier workload.

Ongoing findings from Roberts' collation of data also show that city hospices tend on average to be more acute than rural hospices.

Patients are admitted from the community and local trusts, at the request of their GP/Clinician and are admitted for symptom control of acute and complex symptoms, including end of life care. The unit is a short stay unit; the average length of stay is 12.6 days (last 3 year average).

Virtually all patients would require admission to acute hospital beds if not admitted to the IPU, 17% of admissions in 2014/15 were transfers from acute hospital wards, but actual requests for transfer were higher. Patients the hospice were unable to transfer frequently stay in hospital until their death (St Peter's Hospice unmet need data).

Acuity and dependency has been steadily growing across all hospice services over the last few years, but this has been accentuated locally due to the closure of an 8 bedded NHS Macmillan Unit in 2014; resulting in a reduction of specialist palliative care beds in the city of 31%. This closure was due to the main hospital closing (the unit had sat in the grounds of the hospital) as a new modern hospital opened on a different site, however there were no plans made to replace the specialist palliative care beds lost in the closure..

Benefits of hospice beds.

The uniqueness of hospice philosophy and funding mean there are many Quality, Innovation, Productivity and Prevention (QIPP) benefits for patients, carers and stakeholders in relation to Inpatient provision.

Stakeholders other than the patients and their families include GP's and other Primary Care Healthcare Professionals, Clinical Commissioning Groups, Social Services, Acute Trusts, external training providers and staff employed by St Peter's Hospice.

Table 2. Inpatient Unit outcomes in relation to QIPP

Quality Benefits	<ul style="list-style-type: none"> • Patients receive care by a team who are specialised in palliative care • Patients die in their preferred place of care • Families can receive support pre and post bereavement • Staff gain specialist skills in palliative care • Staff work in a well-resourced and physically attractive environment • Deceased patients remain in the hospice and accessible to families until transferred to undertakers. Death certificate and belongings given to them by a member of staff they know. • External Health Care Professionals and students have placements to develop knowledge in palliative care to support training and take back to their own working environments. • Primary and secondary care- access to specialist beds for their patients.
Innovation Benefits	<ul style="list-style-type: none"> • Volunteer workforce support both housekeeping and nursing teams by serving meals, drinks, supporting ward reception etc.... • Wheelchair adapted car- allows the IPU to take patients for diagnostic tests at hospital, beneficial to both patient as more timely and personalised transport, but also avoids use of ambulance transport.
Productivity Benefits	<ul style="list-style-type: none"> • Primary care- admission of patients from the community allows the time taken for a very complex patient to be used for other care. Hospice will manage all after death processes if patient dies in the IPU. These community patients would be admitted to acute care if no hospice bed available. • Secondary care- transfer of patients to IPU, allows a bed to be used for another patient. Patients tend to be very highly dependent and have a higher length of stay than average acute hospital bed. • Clinical Commissioning Groups- CCG's only pay 21% of hospice costs the rest is funded by the hospice charity. • Social services- patients admitted from the community often have large packages of social care. Admission to the IPU allows carer hours to be utilised elsewhere.
Prevention Benefits	<ul style="list-style-type: none"> • Patient- prevents admission to hospital. • Hospital- prevents admission to hospital. • Families- pre and post bereavement support likely to reduce visits to GP's. • Engaging with volunteer opportunities allows for social engagement post bereavement for family members.

Current costings per bed day

The key costs of a current per bed day are shown in Table 3. The figures demonstrate the current costs based on 73% occupancy of 18 beds.

The costing includes both direct care costs and indirect costs. Breakdown of wider management costs such as HR and finance are based on overall headcount of all staff employed in the organisation and the proportion charged to IPU in relation to their staff numbers.

Table 3. Cost of a current IPU bed day based on 18 beds at 73% occupancy (costings from St Peter's Hospice Finance Team)

Clinical Staff costs	Cost per bed day
Nursing (including reception, administration staff and 24 hour advice line)	£350
Medical and pharmacy	£83
Volunteer resources and volunteer transport costs	£15
Head of Department (Senior Manager costs and Proportion of Director costs)	£22
Occupational Therapist/ Physio/ Comp Therapy	£16
Psychosocial Team: social workers, therapists, spiritual care	£29
Total Clinical Staff costs	£515
Facilities services and supplies	
Clinical supplies and equipment including medication	£22
Accommodation costs; buildings, maintenance, security, repairs, fittings, clinical waste etc...	£104
Catering and housekeeping	£44
Total facilities services and supplies	£170
Support services	
Education, HR, Finance, IT services	£62
Total cost per bed day	£747
This calculation is based on 73% occupancy of 18 beds =4796 days	

Monetising 100% occupancy of 15 beds.

The next section of this Economic Assessment will monetise the extra costs that would be needed if the IPU is to increase its bed days. For the purpose of this Economic Assessment the author has based this on a consideration of reducing beds to 15 beds, but aiming for 100% occupancy. This model is based on:

- Observations of when the majority of the current multi-disciplinary team (other than nursing staff) in the IPU appear to be at their optimum working level; this appears to be when there are approximately 15 patients in beds. If occupancy was consistently higher than this, other professional groups such as the physio and occupational therapists would need to increase staff hours to the IPU.

- Discussion with Dr Dai Roberts who adapted Keith Hurst's' Safer Care Nursing Tool for hospices; his informal opinion based on his extensive observations was that 15 beds seemed the optimal number to achieve a productive unit
- Knowledge of current nursing stressors and where skill mix would have to increase if occupancy exceeded a certain level, e.g. the number of Registered Nurses would need to increase from 3 to 4 per night to meet patient acuity and complexity if the IPU consistently ran at higher occupancy than 15 occupied beds.
- Current challenges of the IPU being overcrowded when 18 patients are in beds with family members frequently staying, and considering the challenge of potentially fitting single rooms into the current IPU footprint when the unit is refurbished.

Aiming for 15 beds with 100% occupancy would lead to an increase of 679 bed days (12.4% increase) resulting in a total of 5475 bed days per year. This would equate to an extra 54 patients being admitted per year (based on current average stay of 12.6 days) an overall 14.3 % increase in patients admitted.

Whilst 100% occupancy is not achievable for any ward, it is important to note that hospice IPUs' have an unseen workload of after death care of deceased patients and their families. Part of the philosophical approach of hospices is to extend the person centred care to the family after death. The nursing team who have been involved in the patient's care when they were alive will support the family in 'viewing' their deceased loved one, give them the death certificate, handing the deceased patient to the funeral directors etc.... This frequently occurs the day after the actual death.

This additional workload is not captured in occupancy levels as the deceased patient is now in another part of the building, and a new admission is often being admitted into the recently vacated room. The IPU has an average of 6 deaths a week meaning that at times if the care of the deceased patient and their family was counted in occupancy, the unit could be functioning at over 100%. This after death service needs to be monitored in relation to workload, especially if as anticipated the number of deaths increases with the increased number of admissions and bed days.

To examine the cost implications of running 15 beds at 100% occupancy, an estimation needs to be made of the additional costs this will incur (Table 4). Costs of running 15 beds at 100% occupancy are based on adding any additional costs to existing costs and then dividing this total by the new total number of bed days. A more detailed examination of these costs is available in Appendix 1.

Table 4. Calculations to cost a bed day in a hospice depending on bed days/occupancy levels

	Current cost	Cost increase-future model	Current model at 4796 bed days	Future model at 5475 bed days
Nursing costs (including admin and receptionists)				
Staffing increase is based on 679 extra bed days as calculated in Appendix A= £205,058 Suggested model of increase in staffing is set out below: 4 WTE Band 5 RN's £25,047=£100,188 +20% add on= £120,226 3 WTE Band 3 HCA's £17,972=£53,960 +20% add on =£64,482 1 WTE Band 2 HCA 16,210 + 20% add on= £19,450 Total =£204,158 (+- £900 of estimated increase)	£1,676,334	£205,058	£350	£344
Medical and pharmacy costs				
Doctors currently have capacity to meet extra bed days. Pharmacy hours need to be increased by 5 hours a week.	£397,148	£5,311	£83	£73.50
Volunteer Resources				
	£73,888	£0.00	£15	£13.50
Heads of Department				
	£106,214	£0.00	£22	£19.40
Therapy Team				
	£78,506	£0.00	£16	£14.35
PSS Team				
Social work team stretched. Cost increase 1 WTE Band 6 + 20% add on costs= £38,400	£138,540	£38,400	£29	£32.30
Total clinical staff costs		£248,769	£515	£497.05
Clinical Supplies				
Costs for supplies and medicines would increase directly with bed days.	£106,214	£14,938	£22	£22
Accommodation costs				
Assuming current footprint of building remains the same size.	£498,774	£0.00	£104	£91

Catering and housekeeping				
Housekeeping workload would remain similar even if we increased bed days as much of current workload is due to bed moves due to challenges of shared rooms.	£212,248	£0.00	£44	£38.80
Support services				
Costings based on organisational headcount- anticipated staff increase = 8 nursing staff Band 5 and 2/3 = 2.8% increase.	£295,552	£8,275	£62	£55.5
2014/15 costs		£271,982		
2015/16costs (+ 2.5% Bank of England inflation rate)		£278,782		
Total cost of bed day 2014/15 costs			£747	£704.35
Bed day costs at 2015/16 costs (+ 2.5% Bank of England inflation rate)			£766	£722
Total cost of IPU 2014/15 costs			£3,583 418	£3,855 400
Total cost of IPU 2015/16 costs (+2.5%)			£3,673 003	£3,951 785

Cost differences in the 2 models.

The cost of meeting the proposed increased bed days would be £271,982 extra per year (£205,058 in nursing costs) which is a 7% increase in current total costs of the IPU.

The current cost of £9,480 per average admission (based on 378 admissions a year), would decrease to £8,924, resulting in a reduction of costs of £556 per admission (based on 432 admissions a year). This would result in a cost reduction of £42.65 per bed day (6% decrease).

This would result in an increase of bed days by 679 (12% increase) despite an overall reduction of 3 beds, from 18 to 15 (16.6% reduction). Whilst there is anecdotal evidence to suggest that nurse staffing levels need to increase as hospital wards change from open wards to single rooms, the IPU if refurbished would increase from 12 rooms (6 currently shared) to 15 which is not a significant increase.

Summarised cost and admission benefits of the proposed new model		
Total extra spend	£271,982	7% increase
Cost saving per average admission	£556	
Cost saving per bed day	£42.65	
Increase in bed days	679	12% increase
Increase in admissions per year	54	14.3% increase

The new model would also show additional QIPP benefits from the current model- see Table 5

Table 5. Additional QIPP Benefits of new model

Quality benefits	<ul style="list-style-type: none"> • Increased number of nurses skilled in specialist palliative care in Bristol. • More patient will achieve their preferred place of death. • Less reliance on bank staff, and therefore increased continuity of staffing and quality of care.
Innovation benefits	<ul style="list-style-type: none"> • Supports future refurbishment plans- more cost effective to go to all single rooms and aim for 100% occupancy. Currently the lack of single rooms means blocking a bed in a double room due to infection control issues, confused patients, etc... • Opportunity to implement this change at time of refurbishment. • IPU Clinical team have a clear focus on what they are planning for in relation to recruitment and training over the next 12-24 months, enables planning and creative approaches to recruitment/ education to be initiated, e.g. training our own HCA's using the new Cavendish Certificate training.
Productivity benefits	<ul style="list-style-type: none"> • Maximises best use of all resources. Level of occupancy increase reduces need for extra costs across all services- focussed on nursing team costs. • More patients have opportunity to be admitted. • Best use of charitable money if maximising resources. • Realistic recruitment aims- currently nurse recruitment is very competitive, and it would be difficult to maintain recruitment levels if considerable numbers of new nurses were needed. • Senior Management team have a clear idea of costs for budget planning and what further decisions and funding is needed in relation to expansion in other services.
Prevention benefits	<ul style="list-style-type: none"> • Reduced stress on nursing team, as currently being unable to manage extra admissions causes its own stress and internal team tensions. • Refurbishment will not lead to a significantly larger building and therefore future accommodation and maintenance costs will not increase exponentially.

Conclusion

Charitable organisations such as Hospices are constantly seeking to get best value for money whilst not compromising the quality of care.

The current strategy review is encouraging close scrutiny of where future charitable funding should be allocated, particularly at a time when the local CCG's are unlikely to increase their funding to the hospice due to their own financial constraints. Whilst the IPU is a highly valued service by patients and professional colleagues in primary and secondary care, it is a very specialised and expensive service, currently costing just under 50% of the entire hospice patient care budget. There is obviously the need to ensure funding is available to support the

majority of patients who have care needs that can be supported in their home environment.

This economic assessment has compared the implications and costs of reducing bed numbers whilst increasing occupancy, and theoretically has demonstrated this could deliver increased bed days at a lower cost. This approach has been used as current stressors and reduced productivity are related to nursing capacity and has focussed on increasing nursing numbers to meet increased bed days and higher occupancy by 12%.

Attempting to get the current 18 bedded unit running to capacity would be an increase of 27% in bed days and would lead to most multi- disciplinary teams needing to increase staffing numbers and therefore overall costs significantly.

Secondary to this economic assessment is the forthcoming IPU refurbishment, and the risks of overall accommodation costs escalating due to the aim of single room development, which would result in a larger extension on the current building. The model of increasing capacity of 18 beds would also result in the need to accommodate larger numbers of staff which would add to the demands of extra space being available.

This model, in order not to be perceived adversely by supporters and fundraisers of the hospice would need to stress that despite a reduction in bed numbers there would an increase in bed days meaning the service is more cost effective. The alternative is the IPU could become so expensive to resource that it would be at the cost of expanding other valued hospice services, e.g. Hospice at Home, equally valued by patients and primary care colleagues in enabling patients to die in their own home.

References:

Roberts, D., Hurst, K. (2013) Evaluating palliative care ward staffing using bed occupancy, patient dependency, staff activity, service quality and cost data. Palliative Medicine Vol 27 (2) pp 123-130

Roberts, D. (2014) Acuity Workforce Planning for Hospices. The Bristol Report.

*This case study was completed by **Chris Benson** Director of Patient Care, St Peter's Hospice, Bristol in **October 2015**.*

Chris successfully completed a collaborative learning programme designed to empower nurses to understand, generate and use economic evidence to continuously transform care. The programme was delivered by the Royal College of Nursing and the Office for Public Management, funded by the Burdett Trust for Nursing and endorsed by the Institute of Leadership and Management.

You can contact Chris by email chris.benson@stpetershospice.org

Appendix 1. Calculations to cost a bed day in a hospice depending on bed days/occupancy.

	Cost increase	Current model- 4796 days	Future model- 5475 days
Nursing costs (including admin and receptionists)			
IPU nursing costs for 2014/15 were £1,676 334. £166,000 can be deducted for advice line and £60,000 for admin as neither need to increase in relation to bed occupancy= baseline cost of £1,450 334 £1,450 334 ÷ 4796 bed days=£302 per bed day in additional nursing costs. Cost increase is 679 bed days at £302 = £205,058 extra costs* Total costs would therefore be £1, 676 334 + £205,058 =£1,881,392. £1,881,392 ÷ 5475 bed days = New cost= £344 per bed day	£205 058	£350	£344
Medical and pharmacy costs			
Doctors currently have capacity to meet extra bed days. Pharmacy hours are stretched so to be increased by 5 hours a week. Band 7 pharmacist at £19.64 hr= £98.20 a week + on costs at 20%= £102.13 per week x 52= £5,311 per annum Current costs=397,148 + £5,311= £402,459. £402, 459 ÷ 5475 bed days = £73.51 per bed day.	£5,311	£83	£73.50
Volunteer Resources			
Current cost =£73,888. There should be no extra demand in resources so the cost would be £73,888 ÷5475 bed days =£13.49	£0.00	£15	£13.50
Heads of Department			
Current cost= £106,214. No increase in IPU resources needed. Cost of bed day £106,214 ÷5475=£19.40	£0.00	£22	£19.40
Therapy Team			
Current cost= £78,506. No increase in resources needed. Cost of bed day £78 506 ÷5475 bed days=£14.35	£0.00	£16	£14.35
PSS Team			
Social work team very stretched. Cost increase 1 WTE at Band 6 with 20% add on costs= £38,400 Current costs =£138,540 + £38,400= £176,940. £176,940 ÷ 5475 bed days= £32.30	£38,400	£29	£32.30
Total clinical staff costs	£248,769	£515	£497.05

Clinical Supplies			
Current cost=£106,214. Costs for supplies and medicines would increase directly with bed days. 679 extra bed days x £22= £14,938 £106,214 + £14,938 = Costs + £22 per bed day.	£14,938	£22	£22
Accommodation costs			
Assuming current footprint of building remains the same size. Current cost £498,744 ÷5475 bed days = £91	£0.00	£104	£91
Catering and housekeeping			
Most of current cost is staff costs rather than supplies. Housekeeping workload would alter if we reduced to 15 single rooms as much workload currently due to bed moves due to challenges of shared rooms. £212, 248 ÷5475 = £38.80	£0.00	£44	£38.80
Support services			
Current costings are based on organisational head count- anticipated staff increase = 8 nursing staff Band 5 and Band 2/3 = 2.8% increase in head count across organisation (Total number of employees = 320). Current allocation of cost to IPU = £295,552 x 2.8% increase= £303,827 £303,827 ÷ 5475= £55.5	£8,275	£62	£55.5
	£271,982		
Total cost of bed day 2014/15 costs		£747	£704.35
Bed day costs at 2015/16 costs (+ 2.5% Bank of England inflation rate)		£766	£722
Total cost of IPU 2014/15 costs		£3,583418	£3,855400
Total cost of IPU 2015/16 costs (+2.5%)		£3,673003	£3951785
<p>*Anticipated staffing increase 4 x Band 5 RN's at £25,047=£100,188 +20% add on= £120,226 3 x Band 3 HCA's at £17,972=£53,960 +20% add on =£64,482 1 x Band 2 HCA at 16,210 + 20% add on= £19,450 Total =£204,158 (+- £900 of increase)</p>			