Hospital care at home

Supporting independent and healthy lives

Methodologies

Detailed analysis methodology and assumptions

Each area of care uses assumptions from Healthcare at Home Ltd based on its current service provision/business models/ partnership working with PCTs. For three of the areas, an extended case has been provided that extends the net savings analysis to further applicable services.

All assumptions marked "*" have been calculated based on detailed work with NHS BEN on a major project which went live in 2009.

All data is FY 2008/09. Tariffs are without market forces factors.

3.1 Avoiding preventable admissions: long-term conditions (p16)

Baseline model

Calculating the cost of hospital care

- Nine ambulatory care sensitive (ACS) conditions (*see table below*) have been identified as appropriate for this analysis *
- SUS data has been used to analyse the number of emergency admissions per month (patients aged ≥ 19) in the PCT and their tariff cost [*Source: SUS data, analysed by Dr Foster Intelligence*]
- Emergency admission activity has been split into admissions via GP and via A&E [*Source: SUS data, analysed by Dr Foster Intelligence*]

Estimating the cost of home-based healthcare

- Conditions split into three bands according to cost of treating patients with these conditions *
- Healthcare at Home Ltd 'captures' 70% of existing patients identified (both via GP and via A&E) *
- 30% of patients continue to be treated in hospital *
- Standing annual charge covers cost of treating up to a fixed number of patients each month for a year *
- Each patient beyond this is charged a 'per patient' rate. The rate varies according to the banding of their condition *
- The rate is raised for patients admitted via A&E, rather than via GP, due to the higher proportion of out-of-hours work and the severity of cases *

Identifying potential savings

The net saving is calculated using the following formula:

A – [B + C]

A = current tariff cost of treating patients for these conditions in hospital

B = tariff cost of treating those remaining in hospital (i.e. 30%)

C = Healthcare at Home Ltd's costs of treating the other 70% in the home

[*Source: as above, analysed by Dr Foster Intelligence*]

Extended model

- Extend the model above to include the cost of any related A&E visit and related transport (i.e. ambulance) cost *
- Cost of A&E visit which results in an admission (for all conditions) = £100
  [*Source: weighted average of NHS reference costs*]
- 29% of those presenting at A&E for all conditions arrive by ambulance
  [*Source: West Midlands A&E Surveillance Centre, 2003/04*]
- Average cost of ambulance call-out = £115
  [*Source: University Hospital North Staffordshire*]
- Apply A&E visit cost to the patients 'captured' by home-based healthcare service in baseline case, and ambulance cost to 29% of these
  [*Source: as above, analysed by Dr Foster Intelligence*]

Ambulatory care sensitive conditions

ACS condition	ICD-10 code
Chronic obstructive pulmonary disease (COPD)	J20, J41-J44 , J47
Diabetes complications	E100-E108, E110-E118, E120-E128, E130-E138, E140-E148
Dehydration & gastroenteritis	E86, K52
Influenza & pneumonia	J10, J11, J13, J14-J16, J18
Cellulitis	L03, L04, L08, L980
Asthma	J45, J46
Angina	I20, I24
Hypertension	I10, I119
Iron deficiency anaemia	D501, D508, D509

3.2 Returning home: enhanced supported discharge (p20)

Baseline model

Calculating the cost of hospital care

- 14 HRGs (*see table below*) have been identified as appropriate for this analysis ⋆
- SUS data has been used to calculate activity and tariff cost for these HRGs within the PCT (patients aged ≥ 19)
  [*Source: SUS data, analysed by Dr Foster Intelligence*]

Estimating the cost of home-based healthcare

- Patients under these 14 HRGs are split into three groups: ⋆
  1. Transfer to Healthcare at Home Ltd on the enhanced supported discharge day
  2. Length of stay is less than the enhanced supported discharge day, so patients will discharge from hospital as normal
  3. Patients remain in hospital as normal
- Once the second group of patients have left hospital, 70% of the remaining patients will fall into the first group and 30% into the third group ⋆
- Commissioners pay a renegotiated tariff for Group 2's short stay in hospital ⋆
- Commissioners pay a renegotiated tariff for Group 1's stay in hospital up until the supported discharge day, plus the cost of providing home-based healthcare ⋆
- Commissioners pay the current tariff for Group 3's stay in hospital (including excess bed day tariff) ⋆
- The renegotiated tariff is 50% of current tariff ⋆
- Standing annual charge covers cost of treating up to a fixed number of patients each month for a year ⋆
- For each extra patient, there is a 'per patient' charge ⋆

Identifying potential savings

The net saving is calculated using the following formula:

[A – B] - C

A = Annual total tariff (including excess bed day charge) for 14 HRGs

B = hospital tariff cost (renegotiated tariff for Groups 1 & 2, plus current tariff for Group 3)

C = Healthcare at Home Ltd charges

[*Source: as above, analysed by Dr Foster Intelligence*]

Extended model

- 363 HRGs have been identified that are applicable to this area of care *
- Total tariff for activity under these HRGs with a length of stay over two, four and six days identified
  [*Source: SUS data, analysed by Dr Foster Intelligence*]
- Savings identified by reducing these total tariffs by one, three and five days (where applicable), using excess bed day rate for the savings
  [*Source: * and SUS data, analysed by Dr Foster Intelligence*]

Healthcare resource groups

HRG3.5	Description
H30	Infections of bones or joints
H39	Closed upper limb fractures or dislocations >69 or with complications
H40	Closed upper limb fractures or dislocations <70 without complications
H71	Revisional procedures to hips
H80-81	Primary hip replacement un/cemented
H82-83	Extracapsular neck of femur fracture with fixation with or without complications
H84-85	Intracapsular neck of femur fracture with fixation with or without complications
H86-87	Neck of femur fracture with hip replacement with or without complications
H88-89	Other neck of femur fracture with or without complications

[*Source: SUS data*]

3.3 Chemotherapy at home: specialised cancer services (p24)

Baseline model

Calculating the cost of hospital care

- Activity has been defined as number of elective spells
  [*Source: SUS data, analysed by Dr Foster Intelligence*]
- Breast cancer data only has been used for the baseline model (defined as primary diagnosis of ICD-10 code C50 'malignant neoplasm of breast') ⋆
- SUS data has been used to split activity into procurement of chemotherapy drugs and subsequent delivery of drugs
  [*Source: SUS data, analysed by Dr Foster Intelligence*]
- Procurement costs have been split into 10 bands by OPCS4 procedure codes (*see table below*)
  [*Source: SUS data, analysed by Dr Foster Intelligence*]
- Delivery costs have been split into six bands by OPCS4 procedure codes (*see table below*)
  [*Source: SUS data, analysed by Dr Foster Intelligence*]
- Breast cancer can also involve the delivery of Herceptin (trastuzumab). The following assumptions have been used to calculate its use and cost:
  - 20% of patients who have a breast cancer operation require Herceptin
    [*Source: NICE assumption*[1]]
  - Number of breast cancer operations in a year identified using primary procedure OPCS codes (*see table below*)
    [*Source: SUS data, analysed by Dr Foster Intelligence*]
  - Each patient receives on average an initial dose of Herceptin, and then 16 subsequent doses in a year
    [*Source: Healthcare at Home Ltd assumption*]
  - Herceptin procurement cost is £1,914.78 for four vials, presuming a patient weighing 70kg (includes an initial delivery)
    [*Source: British National Formulary*]
  - Subsequent procurement cost is £1,436.09 for three vials, presuming a patient weighing 70kg
    [*Source: British National Formulary*]
- Procurement and delivery costs derived from NHS Reference Costs
  [*Source: NHS Reference Costs, analysed by Dr Foster Intelligence*]

Estimating the cost of home-based healthcare

- Healthcare at Home Ltd does not pay VAT on drug procurement, as these drugs are administered in the home ⋆
- VAT is 17.5%
- Healthcare at Home Ltd has a set charge for delivery of Herceptin and another for other chemotherapy drugs ⋆

FOOTNOTES
[1] Section 2.4 of NICE Technology Appraisal Guidance No.34 – Guidance on the use of trastuzumab for the treatment of advanced breast cancer, March 2002

Identifying potential savings

The net saving is calculated using the following formula:

[A + B] – [C + D]

A = total procurement cost

B = delivery cost for NHS

C = total procurement cost

D = delivery cost for home-based healthcare provider

[*Source: As above, analysed by Dr Foster Intelligence*]

Extended case

- Extend baseline analysis to include all cancers (see table below) *
- Herceptin costs relate only to breast cancer activity (i.e. do not change from above)

Chemotherapy activity for breast cancer

Procurement	OPCS Code	NHS Reference Cost
Band 1 chemotherapy	X70.1	£196
Band 2 chemotherapy	X70.2	£346
Band 3 chemotherapy	X70.3	£771
Band 4 chemotherapy	X70.4	£639
Band 5 chemotherapy	X70.5	£782
Band 6 chemotherapy	X71.1	£980
Band 7 chemotherapy	X71.2	£1,015
Band 8 chemotherapy	X71.3	£1,517
Band 9 chemotherapy	X71.4	£1,985
Band 10 chemotherapy	X71.5	£1,712

Source: NHS Reference Costs 2007/08

Delivery description	OPCS Code	NHS Reference Cost
Deliver complex chemotherapy, including prolonged infusional treatment at first attendance	X72.1	£208
Deliver more complex parenteral chemotherapy at first attendance	X72.2	£117
Deliver simple parenteral chemotherapy at first attendance	X72.3	£153
Deliver subsequent elements of a chemotherapy cycle	X72.4	£154
Other specified delivery of chemotherapy for neoplasm	X72.8	£160
Unspecified delivery of chemotherapy for neoplasm	X72.9	£160

Source: NHS Reference Costs 2007/08

Breast cancer operations

OPCS4 code	Description	OPCS4 code	Description
B72.2	Total mastectomy and excision of both pectoral muscles NEC	B28.2	Partial excision of breast NEC
B27.3	Total mastectomy and excision of pectoralis minor muscle	B28.3	Excision of lesion of breast NEC
B27.4	Total mastectomy NEC	B28.4	Re-excision of breast margins
B27.5	Subcutaneous mastectomy	B28.5	Wire-guided partial excision of breast
B27.6	Skin sparing mastectomy	B28.6	Excision of accessory breast tissue
B27.8	Other specified total excision of breast	B28.7	Wire-guided excision of lesion of breast
B27.9	Unspecified total excision of breast	B28.8	Other specified other excision of breast
B28.1	Quadrantectomy of breast	B28.9	Unspecified other excision of breast

All cancer diagnosis codes

ICD-10 code	Description	ICD-10 code	Description
C00-C14	Lip, oral cavity and pharynx	C64-C68	Urinary tract
C15-C26	Digestive organs	C69-C72	Eye, brain and other parts of central nervous system
C30-C39	Respiratory and intrathoracic organs	C73-C75	Thyroid and other endocrine glands
C40-C41	Bone and articular cartilage	C76-C80	Malignant neoplasms of ill-defined, secondary and unspecific sites
C43-C44	Skin	C81-C96	Malignant neoplasms, stated or presumed to be primary, of lymphoid, haematopoietic and related tissue
C45-C49	Mesothelial and soft tissue	C97	Malignant neoplasms of independent (primary) multiple sites
C50	Breast		
C51-C58	Female genital organs		
C60-C63	Male genital organs		

3.4 Supporting end-of-life healthcare (p28)

Baseline model

Calculating the cost of hospital care

- The PCT has identified that 604 patients a year are eligible for this service ⋆
- The death of these patients in hospital is characterised by HRG D99 (Complex elderly with a respiratory system primary diagnosis) ⋆
- The service will avoid one admission per patient, the 'death admission' (this is a conservative calculation).
- SUS data has been used to calculate average tariff cost of D99 admission within the PCT

[*Source: SUS data, analysed by Dr Foster Intelligence*]

Estimating the cost of home-based healthcare

- There is a flat 'per patient' cost to Healthcare at Home Ltd

[*Source: This assumption has been calculated through detailed work with a primary care trust on a pilot service covering 604 patients (c. 25% of total number of people approaching the end of their lives in any given year), due to launch by the end of 2009*]

Identifying potential savings

- The net saving is calculated using the following formula:

A - B

A = D99 tariff cost for 604 patients

B = Healthcare at Home Ltd cost for 604 patients

[*Source: as above, analysed by Dr Foster Intelligence*]

- National savings methodology:
  - D99 HRG applies to patients over 60 years of age
  - ONS data used to identify percentage of population aged over 60 in PCT
  - Ratio of 604 patients to 60+ PCT population applied to total number of people aged over 60 nationally (gives 'applicable population nationally')
  - SUS data used to calculate average tariff cost of D99 admission nationally
  - Net savings calculated according to the following formula:

A - B

A = D99 tariff cost for 'applicable national population'

B = Healthcare at Home Ltd cost for 'applicable national population'

[*Source: as above, analysed by Dr Foster Intelligence*]

Centralised costs

- Central 24-hour care bureau, housing call centre staff, medics and IT support

[*Source: this assumption has been calculated through detailed work with a primary care trust on a pilot service due to go live by the end of 2009*]

Healthcare at Home

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