#

# Supplementary material

# Spillover effects of financial incentives for providers onto non-targeted patients: Daycase surgery in English hospitals

Table A1. List of procedures targeted by Best Practice Tariff scheme

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|  |
| **Speciality** | **Procedure** | **Volume of patients in 2009/10** | **Daycase rate in 2009/10 (%)** | **Year of intro** | **Tariff calculation rate (%)** | **Ordinary elective tariff (£)** | **Additional tariff for daycase (£)** | **Relative difference (%)** |
| General surgery | Laparoscopic cholecystectomy | 46,229 | 38 | 2010 | 60 | 1,369 | 325 | 23.7 |
| Repair of inguinal hernia | 58,570 | 66 | 2011 | 95 | 824 | 300 | 36.4 |
| Repair of recurrent inguinal hernia | 4,746 | 53 | 2011 | 70 | 824 | 300 | 36.4 |
| Repair of femoral hernia | 1,499 | 64 | 2011 | 90 | 824 | 300 | 36.4 |
| Repair of umbilical hernia | 15,337 | 67 | 2011 | 85 | 824 | 300 | 36.4 |
| Gynaecology | Operations to manage female incontinence | 14,115 | 31 | 2011 | 80 | 695 | 300 | 43.2 |
| Orthopaedic | Therapeutic arthroscopy of shoulder | 27,370 | 56 | 2011 | - | 2,053 | 200 | 9.7 |
| Bunion operations | 14,468 | 54 | 2011 | - | 1,079 | 200 | 18.5 |
| Dupuytren's fasciectomy | 9,092 | 77 | 2011 | - | 2,097 | 200 | 9.5 |
| Urology | Endoscopic resection of prostate (TUR) | 21,755 | 2 | 2011 | 15 | 1,713 | 150 | 8.8 |
| Resection of prostate by laser | 2,929 | 16 | 2011 | 30 | 1,563 | 300 | 19.2 |
| Prostate destruction by other means | 977 | 9 | 2012 | 30 | 1,642 | 200 | 12.2 |
| Breast | Simple mastectomy | 6,669 | 6 | 2011 | 15 | 2,085 | 300 | 14.4 |
| Sentinel lymph node biopsy | 3,169 | 51 | 2011 | 80 | 1,076 | 300 | 27.9 |
| Axillary sample | 1,738 | 33 | 2012 | 80 | 902 | 300 | 33.3 |
| Excision of breast | 16,594 | 71 | 2012 | 75 | 847 | 300 | 35.4 |
| Re-excision of breast | 2,753 | 64 | 2012 | 75 | 847 | 300 | 35.4 |
| Axillary clearance | 3,868 | 13 | 2012 | 40 | 1,757 | 300 | 17.1 |
| ENT | Tonsillectomy | 16,061 | 40 | 2012 | 70 | 736 | 300 | 40.8 |
| Septoplasty of nose | 18,982 | 50 | 2012 | 60 | 983 | 200 | 20.3 |
| Tympanoplasty | 4,914 | 43 | 2013 | 50 | 1,826 | 300 | 16.4 |
| Ossiculoplasty | 549 | 36 | 2013 | 50 | 1,826 | 300 | 16.4 |
| Stapedectomy | 978 | 30 | 2013 | 50 | 1,826 | 300 | 16.4 |
| Modified radical mastoidectomy | 1,114 | 19 | 2013 | 50 | 1,826 | 300 | 16.4 |
| *Tariff calculation rate* is the target daycase rate set by the Department of Health in the year that each procedure became incentivised by the scheme |
| *Ordinary elective tariff* is the tariff paid to hospitals for patients that were admitted overnight in the year that the procedure was targeted |
| *Additional tariff for daycase* is the monetary difference between the daycase tariff and ordinary elective tariff in the year that the procedure was targeted |
| *Relative difference* is the percentage difference between the daycase tariff and ordinary elective tariff in the year after the procedure became targeted (for patients without a complication or comorbidity) |

Table A2. List of non-targeted procedures recommended for treatment as a daycase

|  |  |
| --- | --- |
| **Speciality** | **Non-targeted procedure** |
| General surgery | Laparoscopic repair of hiatus hernia with anti-reflux procedure |
| Laparoscopic gastric banding |
| Repair of rectal mucosal prolapse |
| Excision / destruction of lesion of anus |
| Haemorrhoidectomy |
| Circular stapling haemorrhoidectomy |
| Laying open of anal fistula |
| Excision / treatment of anal fissure |
| Lateral sphincterotomy of anus |
| Pilonidal sinus surgery |
| Diagnostic laparoscopy |
| Laparoscopic repair of incisional hernia |
| Repair of other abdominal hernia \* |
| Excision biopsy of lymph node for diagnosis \* |
| Gynaecology | Myomectomy |
| Laparoscopic oophorectomy and salpingectomy \* |
| Therapeutic laparoscopic procedures |
| Cone biopsy of cervix uteri |
| Posterior colporrhaphy \* |
| Anterior colporrhaphy \* |
| Anterior and posterior colporrhaphy |
| Repair of enterocele \* |
| Orthopaedic | Excision of ganglion |
| Lengthening / shortening of tendon(s) |
| Exploration of sheath of tendon |
| Removal of internal fixation from bone / joint |
| Excision of lesion of peripheral nerve |
| Carpal tunnel release |
| Neurolysis and transposition of peripheral nerve |
| Examination / manipulation of joint under anaesthetic |
| Interpositional silastic arthroplasty of MCP / PIP joint |
| Arthroscopy of knee |
| Autograft anterior cruciate ligament reconstruction \* |
| Posterior excision of lumbar disc prolapse |
| Urology | Ureteroscopic extraction of calculus of ureter \* |
| Endoscopic insertion of prosthesis into ureter \* |
| Endoscopic retrograde pyelography |
| Other endoscopic procedures on ureter |
| Cystostomy and insertion of suprapubic tube into bladder |
| Endoscopic resection / destruction of lesion of bladder \* |
| Endoscopic extraction of calculus of bladder \* |
| Endoscopic incision of outlet of male bladder |
| Operations on urethral orifice |
| Orchidectomy |
| Excision of lesion of testis |
| Correction of hydrocele |
| Excision of epididymal lesion |
| Operation(s) on varicocele |
| Excision of lesion of penis |
| Frenuloplasty of penis |
| Operations on foreskin circumcision |
| Optical urethrotomy \* |
| Laparoscopic nephrectomy |
| Laparoscopic pyeloplasty |
| Breast | Microdochotomy + other operations on duct of breast |
| Operations on nipple |
| ENT | Excision pre-auricular abnormality |
| Excision/biopsy of lesion of pinna |
| Pinnaplasty |
| Myringotomy |
| Removal of ventilation device |
| Rhinoplasty |
| Submucous resection of nasal septum |
| Operations of turbinates of nose |
| Polypectomy of internal nose \* |
| Intranasal antrostomy |
| Intranasal ethmoidectomy |
| Adenoid surgery |
| Therapeutic endoscopic operations on pharynx |
| Diagnostic endoscopic examination of pharynx / larynx |
| Laser surgery to vocal cord |
| Vascular | Transluminal operations on iliac and femoral artery \* |
| Biopsy of artery |
| Creation of arteriovenous fistula for dialysis \* |
| Varicose vein surgery |
| Head and neck | Excision of lesion of lip |
| Excision / destruction of lesion of mouth |
| Excision of submandibular or sublingual gland |
| Surgical removal of teeth |
| Exposure of buried teeth |
| Enucleation of cyst of jaw |
| Apicectomy |
| Biopsy / sampling of cervical lymph nodes \* |
| Operations on branchial cyst |
| Hemithyroidectomy, lobectomy, partial thyroidectomy |
| Excision of lesion of parathyroids \* |
| Ophthalmology | Correction of ptosis |
| Dacryocystorhinostomy \* |
| Correction of squint |
| Surgical trabeculectomy |
| Extraction of cataract |
| Vitrectomy |
| \* Indicates procedures that later became targeted under the BPT daycase tariff in 2017 |

Table A3. Representativeness of the non-targeted patients included the final estimation sample

|  |  |
| --- | --- |
|  | All non-targeted patients |
|  |
|   | Population sample | Estimation sample |
| Observations |  |  |
| No. of admissions | 10,478,334 | 8,505,754 |
| % of full sample | - | 81.2 |
| No. of hospital trusts | 204 | 127 |
| Daycase rate |  |   |
| Daycase rate (%) | 78.1 | 77.2 |
| Recommended rate in 2016 (%) | 94.0 | 93.6 |
| Patient characteristics |  |   |
| Male (%) | 44.7 | 44.9 |
| Age (Years) | 59.2 | 59.5 |
| Coexisting conditions (No. per patient) | 0.7 | 0.7 |
| Admitted from home (%) | 99.8 | 99.7 |
| Drive time (mins) | 35.9 | 24.4 |
| Income deprivation score in 2010 | 21.4 | 21.6 |
| Hospital characteristics |  |   |
| Foundation trust | 53.6 | 61.6 |
| Trust type |  |   |
|  Acute - Small | 9.1 | 8.6 |
|  Acute - Medium | 24.1 | 27.9 |
|  Acute - Large | 36.3 | 40.9 |
|  Specialist | 3.0 | 0.4 |
|  Teaching | 18.2 | 22.2 |
|  Independent | 9.1 | 0 |
|  Other | 0.3 | 0 |
| *Estimation sample* includes all patients admitted for a single non-targeted patient at a hospital trust that performed at least one non-targeted procedure from an incentivised and non-incentivised speciality in every month and at least one targeted procedure in every month. |
| *Population sample* includes all patients admitted for a single non-targeted procedure at any hospital trust |
| Descriptive statistics are for the whole study period from April 2007 to March 2016 |

Table A4. Spillover effect of the BPT incentives in response to the announcement of the scheme (sensitivity test)

|  |  |
| --- | --- |
|  | Non-targeted patients |
|   | Incentivised speciality | Non-incentivised speciality |
| 2009/10 (Q3-4) | 0.11 | 0.11 |
|  | (0.22) | (0.18) |
| 2010/11 (Q1-2) | 0.80\* | 0.09 |
|  | (0.32) | (0.19) |
| 2010/11 (Q3-4) | 1.43\*\*\* | 0.07 |
|  | (0.43) | (0.26) |
| 2011/12 (Q1-2) | 1.82\*\*\* | 0.03 |
|  | (0.49) | (0.32) |
| 2011/12 (Q3-4) | 1.93\*\* | -0.04 |
|  | (0.63) | (0.38) |
| 2012/13 (Q1-2) | 1.81\*\* | -0.18 |
|  | (0.66) | (0.38) |
| 2012/13 (Q3-4) | 1.95\*\* | -0.25 |
|  | (0.74) | (0.43) |
| 2013/14 (Q1-2) | 1.86\* | -0.69 |
|  | (0.79) | (0.52) |
| 2013/14 (Q3-4) | 1.34 | -1.03\* |
|  | (0.87) | (0.49) |
| 2014/15 (Q1-2) | 1.41 | -0.96 |
|  | (0.87) | (0.51) |
| 2014/15 (Q3-4) | 1.47 | -0.77 |
|  | (0.95) | (0.52) |
| 2015/16 (Q1-2) | 1.17 | -0.87 |
|  | (0.98) | (0.52) |
| 2015/16 (Q3-4) | 1.39 | -0.83 |
|  | (1.02) | (0.53) |
| Providers (N) | 127 | 127 |
| Procedures | 71 | 21 |
| Patients | 4,480,463 | 4,025,291 |
| Estimates are the average marginal effect of the BPT incentives on the probability that a non-targeted patient was treated as a daycase at the midpoint of each 6-month interval from the announcement of the scheme in October 2009 to the end of the study period, measured in percentage points. |
| Parentheses include cluster robust standard errors at the hospital trust level. |
| \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001 |

Table A5. Spillover effect of the BPT incentives on the probability that a non-targeted patient was treated as a daycase, estimated using a linear probability model (sensitivity test)

|  |  |
| --- | --- |
|  | Non-targeted patients |
|   | Incentivised speciality | Non-incentivised speciality |
| 2010/11 | 0.95\*\* | -0.14 |
|  | (0.31) | (0.19) |
| 2011/12 | 1.60\*\* | -0.46 |
|  | (0.51) | (0.33) |
| 2012/13 | 1.40\* | -1.05\* |
|  | (0.67) | (0.43) |
| 2013/14 | 0.93 | -2.04\*\*\* |
|  | (0.81) | (0.55) |
| 2014/15 | 0.58 | -2.47\*\*\* |
|  | (0.92) | (0.62) |
| 2015/16 | 0.20 | -2.92\*\*\* |
|  | (1.05) | (0.70) |
| Providers (N) | 127 | 127 |
| Procedures | 71 | 21 |
| Patients | 4,480,463 | 4,025,291 |
| Estimates are the average marginal effect of the BPT incentives on the probability that a non-targeted patient was treated as a daycase at the midpoint of each year, in percentage points |
| Parentheses include cluster robust standard errors at the hospital trust level. |
| \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001 |