Appendix B: A summary of the estimates of the decision model and an overview of the counts, duration, and length of stay of the included interventions in our hospital.

|  |  |  |
| --- | --- | --- |
| A | B | C |

Figure 1, slopes of the individual evaluated procedures. The three panels show three different type of descends in QALYs due to delay: panel A shows procedures that have a linear slope; panel B shows the diseases that have a slope that steepens (more negative) over time; panel C shows procedures that have a slope that flattens (less negative) over time. x-axis: the time of delay in week until the patient get surgery. The vertical dashed lines indicate the evaluated scenarios. y-axis: QALYs generated by the procedure for each scenario of delay – the mean QALYs this procedure is generating at all scenarios. This subtraction is done to rescale the lines of all procedure to a similar y-axis range for plotting with the purpose to compare the trends in QALYs losses due to surgery delay.

Table 1, the output of the decision model for all investigated diseases. The estimates and 95% confidence intervals are shown.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | QALY, delay = 2 weeks | QALY, delay = 12 weeks | QALY, delay = 22 weeks | QALY, delay = 32 weeks | QALY, delay = 42 weeks | QALY, delay = 52 weeks | No surgery | QALY loss per month |
| AAA, surgical repair | 11.56 (10.38 - 12.52) | 11.29 (10.14 - 12.20) | 11.04 (9.92 - 11.90) | 10.78 (9.70 - 11.61) | 10.56 (9.49 - 11.34) | 10.33 (9.28 - 11.08) | 5.62 (4.66 - 6.81) | -0.11 (-0.13 - -0.09) |
| Pacemaker implantation | 11.04 (9.67 - 12.32) | 10.76 (9.26 - 12.05) | 10.51 (8.96 - 11.80) | 10.29 (8.62 - 11.63) | 10.05 (8.34 - 11.47) | 9.84 (7.98 - 11.31) | 4.81 (2.60 - 7.36) | -0.11 (-0.22 - -0.04) |
| Cholangeoca., resection | 4.67 (3.89 - 5.39) | 4.41 (3.61 - 5.21) | 4.18 (3.35 - 5.05) | 3.96 (3.12 - 4.91) | 3.77 (2.92 - 4.78) | 3.60 (2.75 - 4.65) | 2.20 (1.70 - 3.20) | -0.09 (-0.12 - -0.06) |
| ESRD, transplant | 15.58 (14.22 - 16.63) | 15.35 (14.06 - 16.42) | 15.13 (13.92 - 16.21) | 14.93 (13.76 - 15.99) | 14.74 (13.58 - 15.79) | 14.54 (13.40 - 15.61) | 5.25 (3.53 - 6.91) | -0.09 (-0.12 - -0.06) |
| NSCLC, lobectomy | 9.38 (8.04 - 11.12) | 9.08 (7.67 - 10.89) | 8.92 (7.46 - 10.72) | 8.76 (7.29 - 10.56) | 8.61 (7.14 - 10.41) | 8.46 (6.99 - 10.27) | 5.44 (4.22 - 7.11) | -0.08 (-0.10 - -0.06) |
| Liver metastasis colonca, resection | 2.43 (1.81 - 3.49) | 2.17 (1.48 - 3.34) | 1.95 (1.23 - 3.20) | 1.77 (1.04 - 3.07) | 1.62 (0.89 - 2.97) | 1.53 (0.78 - 2.87) | 1.09 (0.61 - 1.99) | -0.08 (-0.10 - -0.05) |
| ESLD, transplant | 10.05 (9.15 - 10.96) | 9.87 (8.97 - 10.74) | 9.69 (8.80 - 10.54) | 9.51 (8.65 - 10.34) | 9.34 (8.50 - 10.14) | 9.16 (8.36 - 9.95) | 2.76 (2.28 - 3.24) | -0.08 (-0.09 - -0.07) |
| ESHF, LVAD | 1.45 (1.15 - 2.05) | 1.16 (0.90 - 1.60) | 0.96 (0.72 - 1.32) | 0.81 (0.59 - 1.11) | 0.69 (0.49 - 0.94) | 0.59 (0.43 - 0.81) | 0.33 (0.25 - 0.42) | -0.07 (-0.11 - -0.05) |
| Mild larynx ca., resection | 4.27 (2.02 - 11.15) | 4.01 (1.68 - 11.06) | 3.78 (1.43 - 10.98) | 3.66 (1.24 - 10.89) | 3.51 (1.20 - 10.82) | 3.44 (1.17 - 10.76) | 2.77 (1.05 - 8.36) | -0.07 (-0.10 - -0.04) |
| AAA, EVAR | 9.03 (8.54 - 9.46) | 8.88 (8.43 - 9.30) | 8.75 (8.31 - 9.14) | 8.62 (8.19 - 9.00) | 8.49 (8.07 - 8.87) | 8.37 (7.96 - 8.74) | 5.89 (5.48 - 6.41) | -0.06 (-0.07 - -0.05) |
| ASD, repair | 22.02 (21.06 - 22.77) | 21.86 (20.85 - 22.62) | 21.72 (20.67 - 22.50) | 21.57 (20.49 - 22.42) | 21.42 (20.31 - 22.35) | 21.34 (20.13 - 22.27) | 12.48 (7.31 - 17.06) | -0.06 (-0.14 - -0.02) |
| Pancreasca., Whipple | 2.08 (1.56 - 2.56) | 1.83 (1.29 - 2.36) | 1.62 (1.12 - 2.21) | 1.51 (1.04 - 2.12) | 1.46 (1.00 - 2.07) | 1.42 (0.97 - 2.03) | 1.22 (0.86 - 1.76) | -0.05 (-0.07 - -0.03) |
| Instable AP, CABG | 18.38 (17.54 - 19.23) | 18.27 (17.42 - 19.12) | 18.14 (17.30 - 19.01) | 18.03 (17.19 - 18.91) | 17.94 (17.07 - 18.82) | 17.84 (16.96 - 18.73) | 13.30 (11.63 - 14.90) | -0.05 (-0.07 - -0.03) |
| Instable AP, PCI | 14.42 (13.13 - 15.64) | 14.32 (13.04 - 15.50) | 14.21 (12.94 - 15.36) | 14.10 (12.84 - 15.21) | 13.97 (12.74 - 15.06) | 13.87 (12.63 - 14.95) | 10.11 (8.51 - 12.24) | -0.04 (-0.06 - -0.02) |
| HCC, resection | 5.67 (4.69 - 7.54) | 5.55 (4.54 - 7.49) | 5.43 (4.39 - 7.43) | 5.32 (4.26 - 7.37) | 5.24 (4.15 - 7.31) | 5.20 (4.10 - 7.28) | 4.44 (3.50 - 6.12) | -0.04 (-0.05 - -0.02) |
| Colonca., HIPEC | 2.25 (1.78 - 2.63) | 2.14 (1.67 - 2.48) | 2.04 (1.59 - 2.35) | 1.96 (1.51 - 2.26) | 1.87 (1.45 - 2.17) | 1.80 (1.39 - 2.11) | 1.09 (0.88 - 1.45) | -0.04 (-0.06 - -0.02) |
| Ovarium ca., resection and HIPEC | 4.26 (4.14 - 4.36) | 4.10 (3.99 - 4.21) | 4.02 (3.91 - 4.12) | 3.98 (3.86 - 4.07) | 3.94 (3.80 - 4.03) | 3.89 (3.75 - 3.99) | 3.15 (2.91 - 3.44) | -0.03 (-0.04 - -0.03) |
| Oral ca., resection | 9.45 (5.14 - 14.36) | 9.34 (4.93 - 14.37) | 9.28 (4.78 - 14.32) | 9.22 (4.73 - 14.27) | 9.17 (4.68 - 14.22) | 9.12 (4.63 - 14.17) | 7.12 (3.68 - 11.01) | -0.03 (-0.04 - -0.02) |
| High-risk endometrium ca, resection | 8.81 (8.09 - 9.68) | 8.69 (7.96 - 9.59) | 8.60 (7.87 - 9.52) | 8.55 (7.82 - 9.47) | 8.50 (7.77 - 9.42) | 8.45 (7.73 - 9.37) | 6.88 (6.33 - 7.60) | -0.03 (-0.03 - -0.03) |
| UUT Ca., nefroureterectomy | 6.08 (4.66 - 7.57) | 5.96 (4.56 - 7.44) | 5.88 (4.50 - 7.35) | 5.83 (4.46 - 7.28) | 5.78 (4.41 - 7.23) | 5.73 (4.38 - 7.17) | 4.95 (3.77 - 6.20) | -0.03 (-0.04 - -0.02) |
| Mammaca., resection | 17.89 (16.09 - 19.05) | 17.81 (15.98 - 18.98) | 17.73 (15.88 - 18.92) | 17.69 (15.83 - 18.87) | 17.64 (15.77 - 18.81) | 17.60 (15.73 - 18.76) | 13.86 (12.40 - 15.38) | -0.03 (-0.04 - -0.02) |
| High-grade glioma, resection | 1.48 (1.41 - 1.55) | 1.41 (1.34 - 1.47) | 1.34 (1.28 - 1.40) | 1.28 (1.23 - 1.34) | 1.23 (1.19 - 1.28) | 1.19 (1.15 - 1.24) | 0.94 (0.90 - 0.97) | -0.03 (-0.03 - -0.02) |
| Carotid endarteriectomy | 15.05 (14.39 - 15.80) | 14.99 (14.35 - 15.74) | 14.94 (14.32 - 15.68) | 14.88 (13.53 - 15.63) | 14.80 (12.44 - 15.53) | 14.61 (12.37 - 15.44) | 12.11 (11.39 - 12.80) | -0.02 (-0.24 - -0.02) |
| Empyema, VATS | 22.63 (21.80 - 23.50) | 22.58 (21.75 - 23.44) | 22.52 (21.70 - 23.38) | 22.46 (21.65 - 23.32) | 22.40 (21.60 - 23.26) | 22.34 (21.56 - 23.20) | 15.44 (14.77 - 16.23) | -0.02 (-0.03 - -0.02) |
| Cerical ca., resection | 5.04 (4.07 - 6.15) | 4.93 (3.97 - 6.07) | 4.88 (3.92 - 6.02) | 4.83 (3.86 - 5.97) | 4.78 (3.82 - 5.92) | 4.74 (3.77 - 5.88) | 3.79 (2.81 - 4.57) | -0.02 (-0.03 - -0.02) |
| Low-grade glioma, resection | 7.81 (7.14 - 8.31) | 7.76 (7.10 - 8.27) | 7.71 (7.05 - 8.23) | 7.66 (7.01 - 8.19) | 7.61 (6.96 - 8.15) | 7.56 (6.92 - 8.11) | 5.66 (4.93 - 6.40) | -0.02 (-0.03 - -0.01) |
| Low-risk endometrium ca, resection | 13.61 (12.67 - 14.38) | 13.51 (12.56 - 14.29) | 13.47 (12.52 - 14.26) | 13.44 (12.49 - 14.22) | 13.41 (12.45 - 14.19) | 13.38 (12.42 - 14.16) | 11.68 (10.75 - 12.54) | -0.02 (-0.03 - -0.02) |
| PAD, bypass surgery | 8.15 (7.56 - 8.81) | 8.11 (7.52 - 8.75) | 8.06 (7.49 - 8.69) | 8.01 (7.46 - 8.64) | 7.96 (7.43 - 8.58) | 7.91 (7.40 - 8.53) | 6.44 (5.86 - 6.96) | -0.02 (-0.03 - -0.01) |
| Mammaca., mastectomy | 16.08 (14.59 - 17.18) | 16.02 (14.52 - 17.11) | 15.96 (14.47 - 17.04) | 15.93 (14.44 - 17.00) | 15.89 (14.42 - 16.96) | 15.87 (14.40 - 16.92) | 13.91 (12.29 - 15.34) | -0.02 (-0.03 - -0.01) |
| COPD, bullectomy | 7.89 (7.24 - 8.54) | 7.85 (7.21 - 8.49) | 7.81 (7.18 - 8.45) | 7.78 (7.15 - 8.41) | 7.74 (7.11 - 8.37) | 7.71 (7.08 - 8.33) | 6.08 (5.43 - 6.57) | -0.02 (-0.02 - -0.01) |
| Pleurodesis for pneumothorax | 21.40 (21.15 - 21.65) | 21.36 (21.12 - 21.62) | 21.33 (21.09 - 21.58) | 21.29 (21.05 - 21.54) | 21.26 (21.01 - 21.50) | 21.22 (20.98 - 21.47) | 16.38 (14.93 - 17.72) | -0.02 (-0.02 - -0.01) |
| Mild salivary gland ca., resection | 15.28 (12.60 - 16.89) | 15.24 (12.52 - 16.87) | 15.20 (12.44 - 16.85) | 15.15 (12.36 - 16.82) | 15.12 (12.34 - 16.81) | 15.11 (12.33 - 16.81) | 14.51 (11.78 - 16.29) | -0.01 (-0.03 - -0.01) |
| Thyroid ca., resection | 23.81 (22.49 - 24.94) | 23.78 (22.44 - 24.92) | 23.74 (22.40 - 24.90) | 23.72 (22.35 - 24.88) | 23.70 (22.32 - 24.86) | 23.68 (22.30 - 24.84) | 21.19 (19.70 - 22.74) | -0.01 (-0.02 - -0.01) |
| ESRD, shunt | 8.55 (7.83 - 9.30) | 8.53 (7.81 - 9.28) | 8.51 (7.80 - 9.25) | 8.49 (7.78 - 9.22) | 8.48 (7.77 - 9.19) | 8.46 (7.75 - 9.17) | 7.09 (6.54 - 7.71) | -0.01 (-0.01 - -0.00) |

Table 2, capacity requirements of the studied interventions in our hospital, in descending order of urgency.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Number since 6-2017 | Duration of the procedure, min (median [IQR]) | Length of ICU stay, days (median [IQR]) | Length of non-ICU stay, days (median [IQR]) |
| AAA, surgical repair | 138 | 246 (166 - 305) | 0 (0 - 0.6) | 3.8 (2.2 - 7.1) |
| Pacemaker implantation | 273 | 115 (82 - 154) | 0 (0 - 0) | 1.4 (1.1 - 2.1) |
| Cholangioca., resection | 413 | 268 (103 - 443) | 0 (0 - 0) | 7.15 (1 - 13.9) |
| NSCLC, lobectomy | 133 | 245 (213 - 294) | 0 (0 - 0) | 5.1 (3.9 - 8) |
| Liver metastasis colonca, resection | 355 | 230 (155 - 336) | 0 (0 - 0) | 6.2 (4.3 - 9.1) |
| Mild larynx ca., resection | 103 | 70 (38 - 109) | 0 (0 - 0) | 0.9 (0.2 - 1.3) |
| ESRD, transplant | 346 | 291 (244 - 341) | 0 (0 - 0) | 11 (7.5 - 12.3) |
| ESLD, transplant | 81 | 875 (797 - 957) | 0.9 (0 - 2.3) | 9.5 (2 - 18.7) |
| Pancreasca., Whipple | 413 | 268 (103 - 443) | 0 (0 - 0) | 7.15 (1 - 13.9) |
| AAA, EVAR | 138 | 246 (166 - 305) | 0 (0 - 0.6) | 3.8 (2.2 - 7.1) |
| ASD, repair | 164 | 74 (56 - 132) | 0 (0 - 0) | 1.3 (0.6 - 1.95) |
| Instable AP, CABG | 336 | 279 (244 - 314) | 0.6 (0.3 - 0.9) | 4.8 (3.8 - 6.3) |
| HCC, resection | 355 | 230 (155 - 336) | 0 (0 - 0) | 6.2 (4.3 - 9.1) |
| Colonca., HIPEC | 283 | 271 (75 - 405) | 0 (0 - 0) | 8.2 (0.4 - 12.1) |
| High-risk endometrium ca, resection | 83 | 244 (183 - 331) | 0 (0 - 0) | 5.2 (2.8 - 6.9) |
| UUT Ca., nefroureterectomy | 148 | 229 (188 - 268) | 0 (0 - 0) | 3.8 (2.6 - 6) |
| Oral ca., resection | 103 | 70 (38 - 109) | 0 (0 - 0) | 0.9 (0.2 - 1.3) |
| Mammaca., resection | 383 | 99 (71 - 148) | 0 (0 - 0) | 1.2 (0.4 - 2.1) |
| High-grade glioma, resection | 329 | 228 (182 - 274) | 0 (0 - 0) | 4.1 (3.1 - 5.2) |
| Low-risk endometrium ca, resection | 83 | 244 (183 - 331) | 0 (0 - 0) | 5.2 (2.8 - 6.9) |
| Empyema, VATS | 55 | 174 (120 - 219) | 0 (0 - 0) | 4.1 (3.1 - 6.2) |
| Low-grade glioma, resection | 329 | 228 (182 - 274) | 0 (0 - 0) | 4.1 (3.1 - 5.2) |
| Mammaca., mastectomy | 383 | 99 (71 - 148) | 0 (0 - 0) | 1.2 (0.4 - 2.1) |
| PAD, bypass surgery | 43 | 218 (163 - 269) | 0 (0 - 0) | 3.9 (2.9 - 5.1) |
| Mild salivary gland ca., resection | 100 | 108 (79 - 175) | 0 (0 - 0) | 1.2 (1 - 3.1) |
| COPD, bullectomy | 55 | 174 (120 - 219) | 0 (0 - 0) | 4.1 (3.1 - 6.2) |
| Pleurodesis for pneumothorax | 55 | 174 (120 - 219) | 0 (0 - 0) | 4.1 (3.1 - 6.2) |
| ESRD, shunt | 190 | 72 (56 - 100) | 0 (0 - 0) | 1.1 (0.3 - 1.7) |
| AAA, surgical repair | 138 | 246 (166 - 305) | 0 (0 - 0.6) | 3.8 (2.2 - 7.1) |

*Abbreviations: AAA: aneurysm of the abdominal aorta; ASD: atrial septum defect; AP: angina pectoris; CABG: coronary artery bypass graft; ESHF: end-stage heart failure; ESLD: end-stage liver disease; ESRD: end-stage renal disease (kidney transplantation); EVAR: endovascular aortic repair; ca.: carcinoma; HCC: hepatocellular carcinoma; HIPEC: hyperthermic intraperitoneal chemotherapy; NSCLC: non-small cell lung carcinoma; UUT: upper urinary track; VATS: video assisted thoracoscopic surgery; PAD: peripheral arterial disease; PCI: percutaneous coronary intervention.*

*Table 3, test-retest results of three procedures, comprising of eight health states.*

|  |  |  |  |
| --- | --- | --- | --- |
| Health state | Utility, day 1 (SE) | Utility, day 2 (SE) | Mean difference (95% CI) |
| COPD, bullectomy - preoperative | 0.38 (0.02) | 0.49 (0.02) | 0.11 (0.06 - 0.16) |
| COPD, bullectomy - postperative | 0.43 (0.03) | 0.57 (0.02) | 0.14 (0.08 - 0.20) |
| Mild Endometrium ca., resection – preoperative | 0.78 (0.03) | 0.83 (0.02) | 0.05 (-0.01 - 0.11) |
| Mild Endometrium ca., resection – postoperative | 0.94 (0.03) | 0.96 (0.01) | 0.02 (-0.03 - 0.07) |
| Mild Endometrium ca., resection – preoperative | 0.69 (0.03) | 0.71 (0.00) | 0.02 (-0.03 - 0.07) |
| Mild Endometrium ca., resection – postoperative | 0.84 (0.03) | 0.90 (0.01) | 0.06 (0.01 - 0.11) |
| Pneumothorax, pleurodesis - preoperative | 0.75 (0.04) | 0.89 (0.01) | 0.14 (0.07 - 0.21) |
| Pneumothorax, pleurodesis - postoperative | 0.98 (0.00) | 0.98 (0.01) | 0.00 (-0.02 - 0.02) |



Figure , Bland-Altman plot showing the QoL scored in two sessions.