



Dollars and Sense. Is there a better way to determine private surgical fees in New Zealand?

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Abstract

In New Zealand, private insurers reimburse surgeons on a fee-for-service basis. Ideally, the level of reimbursements should reflect competitive market prices. Due to concerns such a market does not exist, other countries have adopted Relative Value Scales (RVS) to estimate a fair reimbursement level for different procedures. No such scale exists in New Zealand for surgeons, but it does for anaesthetists. This study compares reimbursements to surgeons and anaesthetists from private insurers using data from 3186 procedures performed between 1996 and 2002. We calculate an implicit hourly rate of reimbursement and compare the level of reimbursement between procedures and the variance of reimbursements within procedures for surgeons and anaesthetists. The results suggest that there are significantly greater deviations in average reimbursements between procedures for surgeons than for anaesthetists. Furthermore, the variability of reimbursements is greater for reimbursements to surgeons within specific procedures. While the results do not necessarily imply that surgical reimbursements are inconsistent with underlying market rates, the results are consistent with the hypothesis that anaesthetist's fees show greater stability because of the existence of a RVS. We conclude by discussing what would be required to implement a RVS for surgical fees in New Zealand.

Surgeons operating in the private sector are paid on a fee-for-service basis by insurance companies (the largest funders of private services). Privately funded surgical services constitute a major source of income for practicing surgeons.

Reimbursement is determined as follows: First, the patient is provided with an estimate of the cost of the procedure by the surgeon. This estimate is submitted to the individual's insurance company for approval. The estimate includes reimbursement to the surgeon, the anaesthetist, and the hospital (for the associated theatre costs) as well as any sundry expenses. The insurance company then determines the price it is willing to pay based on a procedure fee schedule. Once the insurance company has provided approval, the procedure is undertaken. On completion, and usually after the patient has been discharged, the surgeon submits an invoice to the patient who then forwards this, along with invoices from the anaesthetist and the hospital, to the insurance company. Typically any difference between the surgical fee and the approved price is paid out of the pocket of the patient. Some more comprehensive policies (e.g. Southern Cross UltraCare) reimburse the entire submitted fee.

The challenge facing insurance companies in New Zealand is the same challenge facing funders in all countries with fee-for-service reimbursement: What is the appropriate fee to pay for different procedures? Purchasers would like reimbursements to reflect a fair market price for the services. However, because there is often no well-functioning, competitive market for specialist healthcare services,

purchasers have no externally determined benchmark to ascertain whether the level of fees is appropriate.

Other countries have addressed this problem by adopting an explicit and transparent system for determining appropriate fees. For instance, in the United States in the late 1980s, Hsiao and colleagues lead a process aimed at identifying the surgeon and specialist inputs required for approximately 7000 procedures.¹⁻³

The reimbursement levels were determined by considering the total work required for the procedure (time, mental effort, clinical judgment, technical skill, and physical effort under stress), the relative practice costs, the opportunity cost (lost income due to time in training), and the cost of malpractice insurance. As such, it attempted to emulate the prices that would exist in a well-functioning, competitive market. The resulting relative value scale (RVS) recommended specific reimbursement levels to surgeons for each procedure and is still used to set reimbursement under the Medicare program.

A similar approach has been undertaken by anaesthetists in New Zealand (NZSA, 2004). The New Zealand Society of Anaesthetists (NZSA) considered factors such as characteristics of the procedure (e.g. anatomical site at which the procedure is performed and position of the patient), the time typically required for the procedure, and any unique patient or procedure characteristics. The scale is only a guide and anaesthetists are not compelled to use it. However, there is anecdotal evidence that the variability of anaesthetic fees has been reduced since its introduction, possibly due to the insurance companies adopting the NZSA guidelines when setting reimbursement levels.

An RVS does not exist for surgical reimbursements in New Zealand. Instead, each insurer in New Zealand determines its own schedule. Again, anecdotal evidence suggests that prices are heavily influenced by the fee schedule published by Southern Cross, the largest private insurer. This details the minimum and maximum reimbursement fee for each of 915 procedures (at the ICD 10 level; Southern Cross, 2002), with new procedures added through a submission process.

To date, no study has examined whether the level of surgical reimbursements is reflective of the inputs and training required for each procedure. There is reason to suspect the reimbursements do not reflect an underlying market. In a previous study, we compared surgical reimbursement levels across specialities in order to determine whether there was parity in the reimbursements.⁴ Using data from Medilink (NZ) on insurance reimbursements to specialists between 1996 and 2002, our results suggested that the level of reimbursement between the surgical specialities was remarkably consistent when calculated as an hourly rate. The one exception was in Ophthalmology where the reimbursements were approximately 50% higher than the other specialities. Recent court cases involving Southland Ophthalmologists concluded that attempts to restrict entry of Ophthalmologists amounted to anti-competitive behaviour.⁵ Both of these findings suggest surgeons may have the ability to influence fees and market conditions.

Identifying whether reimbursements for procedures in New Zealand are consistent with an underlying market would require an extensive examination of the factors considered by Hsiao and colleagues in their original study. Such an undertaking is beyond the scope of this paper. Instead, the purpose of this paper is to delineate

inconsistencies that might exist in surgical reimbursements in New Zealand, and to promote discussion around whether a better approach might be considered. It is not the purpose of this paper to determine whether the current levels of reimbursements to surgeons or anaesthetists are appropriate.

In this study we compare the (implicit) average level of reimbursements per hour of operating time and the variance in reimbursements for surgical and anaesthetist services using the data from Medilink (NZ). We then compare reimbursements to surgeons and anaesthetists, focusing upon the relative variability both across and within procedures. These comparisons illustrate that surgical fees are significantly more variable than anaesthetist fees (where a relative value scale exists). We conclude with a discussion about whether the differences in average hourly rates are justified on the basis of different levels of skills or other inputs.

Methods

Data—Our investigation utilised a database provided by Medilink NZ containing information on 8294 privately financed surgical procedures between 1996 and 2002 in New Zealand. Medilink NZ is a private company that processes insurance claims for insurance companies, 11 of which are represented in this database. The dataset does not include data from the largest insurer, Southern Cross Ltd, as it processes its own claims.

The dataset contains information on various aspects of each case reimbursed by the participating insurance company, including:

- *Reimbursement to surgeon*: The amount paid to the surgeon for each claim.
- *Reimbursement to anaesthetist*: The amount paid to an anaesthetist for each claim.
- *Procedure*: The ICD 10 code for procedures carried out.
- *Theatre cost*: The amount paid to the hospital for operating theatre time.
- *Location*: City/town where the procedure took place.
- *Year*: The year in which the claim was filed.

In order to control for differences in the time required for each procedure, an hourly rate of reimbursement to surgeons and anaesthetists was calculated. Information was available on the rate charged per 15 minutes of theatre time for 23 of the hospitals in which procedures were performed. These 23 hospitals were associated with 3847 claims, 46% of the total number of claims (3847/8294). The time required for each of these 3847 cases was calculated by dividing the total theatre cost by the rate per 15 minutes of theatre time associated with that hospital. Additional minutes for costs falling between the two time blocks were determined pro rata.

As all these hospitals have a 30-minute minimum charge, procedures that cost the minimum charge (n=661) were not included in the sub-sample, as the actual time of the procedure could not be calculated. For the remaining 3186 cases, the hourly rate was calculated by dividing the total fee paid to the surgeon or anaesthetist by this time estimate.

The procedures codes used to identify the surgical speciality followed the Southern Cross categorisation⁶ of General Surgery, Otolaryngology, Urology, Gynaecology, Ophthalmology, Orthopaedics, Peripheral Vascular Surgery, Oral & Maxillofacial, and Cardiac Surgery.

The location where the procedure was performed was categorised according to whether the surgery took place in a rural or major metropolitan centre (Auckland, Hamilton, Wellington, Christchurch, and Dunedin).

All prices were converted to \$NZ 2002 values using the Statistics New Zealand Labour Cost Index for Private Sector Professionals for surgeon and anaesthetist fees and the Consumer Price Index for Health Care items for other costs.⁷ Procedure code 3953 and 3955 (Ophthalmology) includes the price of an intraocular lens. For these cases, a conservative amount of \$250 was subtracted, representing the approximate cost of an individual lens (with no volume discount, which some practices may receive).

Analytic methods—The analysis consisted of two types of comparisons. First, we examine the average hourly rates of reimbursement to surgeons and anaesthetists for each of the 30 most commonly

performed procedures. Specifically, we examine whether (for a given procedure) the average surgical reimbursements show greater deviation than the average anaesthetist reimbursement. This provides evidence on whether surgeons are reimbursed more for some procedures than for others, and whether the reimbursement of anaesthetists shows a similar pattern.

The second type of analysis focuses upon the variability in reimbursements within a procedure. For each of the 30 most common procedures, we present the ratio of the variance of average hourly rates of reimbursement between surgeons and anaesthetists. Being a measure of the dispersion, the variance indicates how much consistency there is in the fees that are paid for a given procedure. Low variance indicates that all cases are reimbursed at essentially the same rate, while a high variance indicates that some cases are reimbursed at much higher rates than other cases of the same procedure. Comparing the ratio of the variances for each procedure fees between anaesthetists and surgeons provides an indication of whether there is significantly more variability in the reimbursements to anaesthetist (where a RVS exists) or surgeons (where no RVS exists).

Results

Descriptive—Table 1 shows the descriptive results for the sample. For the 3186 patients for whom an average hourly rate could be calculated, 33% were General Surgery, followed by Gynaecology (19%), Orthopaedic (18%) and ENT (17%). Auckland was the most common location for the procedures to be performed (28%), followed by Christchurch (24%), and Wellington (12%). The bulk of the remaining procedures were performed in rural locations (26%). The average reimbursement per hour was \$1,116 for surgeons and \$372 for anaesthetists. Table 2 shows the differences in average reimbursements across locations.

In all, there were 388 unique procedure codes in the dataset. The most commonly performed procedure was tonsillectomy (Procedure Code 1710), with 114 cases in the sample (4%). The mean number of cases per procedure code was 8.2, with a median number of only 2. The small number of cases makes comparisons between anaesthetists and surgeons unreliable. Thus, the subsequent analysis was restricted to those procedures where the number of cases was greater than 30. The 30 procedures are listed in Table 3.

The descriptive statistics for the 1644 observations (for the 30 procedures with $n > 30$) are shown in the 2nd column of Table 1. There are no notable differences between these 1644 observations and the full dataset, including the average hourly reimbursements being similar (\$1,167 compared with \$1,116 for surgeons, \$279 compared with \$372 for anaesthetists).

Differences in surgical reimbursement levels between procedures—Figure 1 and Table 3 show the average hourly reimbursement to surgeons and anaesthetists for each of the 30 most common procedures. For surgeons, the average level of reimbursements per hour ranged from a high of \$2,080 per hour for a cataract with intraocular lens implant (procedure code 3955) to a low of \$722 per hour for a colonoscopy with removal of one or more polyps (procedure code 710). The average surgical reimbursement for these 30 procedures was \$1,167 per hour.

Table 1. Descriptive statistics

Variable	Value	Full sample		Top 30 procedures	
		n	%	n	%
Total	<i>All</i>	3186	100.00%	1644	100.00%
Specialties	<i>General Surgery</i>	1036	32.52%	557	33.88%
	<i>Otolaryngology</i>	557	17.48%	420	25.55%
	<i>Urology</i>	210	6.59%	50	3.04%
	<i>Gynaecology</i>	610	19.15%	294	17.88%
	<i>Ophthalmology</i>	94	2.95%	47	2.86%
	<i>Orthopaedic</i>	572	17.95%	245	14.90%
	<i>Peripheral Vascular</i>	11	0.35%	0	0.00%
	<i>Oral and Maxillofacial</i>	70	2.20%	31	1.89%
Locations	<i>Auckland</i>	877	27.53%	430	26.16%
	<i>Christchurch</i>	772	24.23%	408	24.82%
	<i>Dunedin</i>	120	3.77%	64	3.89%
	<i>Hamilton</i>	212	6.65%	113	6.87%
	<i>Wellington</i>	369	11.58%	184	11.19%
	<i>Rural Locations</i>	836	26.24%	445	27.07%
Gender	<i>Male</i>	1310	41.12%	680	41.36%
	<i>Female</i>	1876	58.88%	964	58.64%
Year	<i>1997</i>	4	0.13%	2	0.12%
	<i>1998</i>	190	5.96%	96	5.84%
	<i>1999</i>	504	15.82%	271	16.48%
	<i>2000</i>	1354	42.50%	675	41.06%
	<i>2001</i>	871	27.34%	460	27.98%
	<i>2002</i>	263	8.25%	140	8.52%
Procedures	Number of Codes	388 Unique Codes		30 Unique Codes	
		Mean	SD	Mean	SD
Costs	<i>Surgical</i>	\$1,379.22	1043.63	\$1,328.05	838.00
	<i>Anaesthetist</i>	\$450.98	272.37	\$421.28	199.65
	<i>Sundry</i>	\$889.38	1177.80	\$823.82	819.99
	<i>Theatre</i>	\$1,005.60	483.75	\$947.67	388.89
Procedure Time	<i>Hours</i>	1.35	1.03	1.23	0.84
Cost Per Hour	<i>Surgical</i>	\$1,116.14	639.87	\$1,167.40	552.06
	<i>Anaesthetist</i>	\$372.41	125.38	\$379.30	119.31

Table 2. Comparisons by locations

Procedure code	Count	Mean surgical cost/hour	SD	Mean anaes cost/hour	SD
Auckland	877	\$1,200.96	749.27	\$393.43	133.87
Christchurch	772	\$1,208.22	728.07	\$369.84	110.15
Dunedin	120	\$1,339.92	612.82	\$430.15	126.41
Hamilton	212	\$1,117.76	557.22	\$373.60	126.91
Other	836	\$965.80	454.27	\$353.46	128.40
Wellington	369	\$988.85	458.37	\$347.71	112.79
Total:	3186	\$1,116.14	639.87	\$372.41	125.38

Table 3 also shows the deviation in average reimbursements for each procedure from the average in the entire sample. The results suggest that in 25 of the 30 procedures, surgical reimbursements deviated by a greater percentage from the average than anaesthetists reimbursements.

Table 3. Average surgical and anaesthetist reimbursement per hour: procedures with 30 or more cases

Procedure Code	Procedure Description	Specialty	Count	Mean Surgical Cost / Hour (SD) (i)	% Above or Below Average (ii)	Mean Anaes. Cost / Hour (SD)	% Above or Below Average (iii)	Ratio: Surg/Anaes. Var. (iv)
130	Breast - excision of simple lesion	General Surgery	31	\$833.31 (277.49)	-25.34%	\$359.92 (126.45)	-5.3%	4.8
180	Breast - Modified radical mastectomy or Extended simple mastectomy or Wedge resection/partial mastectomy with axillary dissection/biopsy - unilateral	General Surgery	35	\$1,179.40 (358.48)	5.67%	\$299.57 (77.77)	-21.2%	21.0
250	Cyst, tumour or scar, involving deeper structure and not otherwise covered	General Surgery	35	\$788.90 (311.42)	-29.31%	\$395.81 (119.51)	4.2%	7.7
260	Tumour, benign or malignant requiring wide excision	General Surgery	46	\$958.16 (582.24)	-14.15%	\$385.20 (141.79)	1.4%	16.9
270	Tumour, benign or malignant requiring wide excision with skin graft	General Surgery	36	\$922.03 (635.38)	-17.39%	\$313.16 (84.68)	-17.6%	56.3
380	Hernia - Femoral, Inguinal, Ventral Lumbar - unilateral	General Surgery	56	\$1,079.49 (353.14)	-3.28%	\$376.10 (109.37)	-1.0%	10.4
385	Hernia - Femoral, Inguinal, Ventral Lumbar - Laparoscopic	General Surgery	35	\$1,301.00 (531.48)	16.57%	\$397.86 (164.73)	4.7%	10.4
450	Haemorrhoids - excision of, including sigmoidoscopy	General Surgery	38	\$1,208.44 (371.67)	8.28%	\$413.92 (103.37)	8.9%	12.9
710	Colonoscopy - with removal of one or more polyps	General Surgery	43	\$722.97 (261.79)	-35.22%	\$277.88 (88.41)	-26.9%	8.8

Table 3 continued

Procedure Code	Procedure Description	Specialty	Count	Mean Surgical Cost / Hour (SD) (i)	% Above or Below Average (ii)	Mean Anaes. Cost / Hour (SD)	% Above or Below Average (iii)	Ratio: Surg/Anaes. Var. (iv)
880	Veins - Varicose: Trendelenburg, strip and local excision and operation for perforators - unilateral	General Surgery	44	\$951.70 (415.50)	-14.73%	\$325.50 (117.39)	-14.3%	12.5
890	Veins - Varicose: Trendelenburg, strip and local excision, and operation for perforators - bilateral	General Surgery	35	\$1,015.62 (395.23)	-9.00%	\$310.27 (111.04)	-18.4%	12.7
1042	Cholecystectomy – laparoscopic	General Surgery	85	\$1,763.45 (871.28)	58.01%	\$407.03 (164.25)	7.1%	28.1
1162	Hiatus Hernia - Laparoscopic Nissen repair	General Surgery	38	\$1,394.72 (560.08)	24.97%	\$368.88 (124.28)	-2.9%	20.3
1700	Tonsillectomy with or without adenoidectomy - adult	ENT	81	\$856.08 (219.63)	-23.30%	\$442.87 (115.09)	16.5%	3.6
1710	Tonsillectomy with or without adenoidectomy - child	ENT	114	\$895.86 (216.54)	-19.73%	\$403.23 (92.05)	6.1%	5.5
1720	T's A's - child + bilateral grommet insertion	ENT	46	\$849.99 (210.24)	-23.84%	\$342.90 (95.55)	-9.8%	4.8
1740	Adenoidectomy + bilateral grommet insertion	ENT	31	\$838.36 (139.33)	-24.88%	\$367.12 (77.34)	-3.4%	3.2
1970	Endoscopic Sinus surgery unilateral	ENT	73	\$1,476.25 (394.53)	32.3%	\$375.98 (107.92)	-1.1%	13.4
2330	Nasal septoplasty with cautery or diathermy turbinates, with or without outfracture	ENT	75	\$1,384.23 (474.37)	24.0%	\$395.96 (99.17)	4.2%	22.9

Table 3 (continued)

Procedure Code	Procedure Description	Specialty	Count	Mean Surgical Cost / Hour (SD) (i)	% Above or Below Average (ii)	Mean Anaes. Cost / Hour (SD)	% Above or Below Average (iii)	Ratio: Surg/Anaes. Var. (iv)
2810	Prostatectomy - transurethral - major	Urology	50	\$1,662.18 (765.46)	48.9%	\$422.76 (152.88)	11.3%	25.1
3440	Laparoscopy	Gynaecology	56	\$1,016.56 (468.66)	-8.9%	\$400.85 (134.71)	5.5%	12.1
3540	Hysteroscopy, with endometrial biopsy (D/C)	Gynaecology	76	\$1,031.62 (294.60)	-7.6%	\$398.59 (102.37)	4.9%	8.3
3570	Hysterectomy - total, with or without B S O	Gynaecology	70	\$987.97 (492.04)	-11.5%	\$348.01 (105.24)	-8.4%	21.9
3614	Hysterectomy, vaginal, laparoscopic	Gynaecology	49	\$1,244.02 (381.32)	11.5%	\$294.68 (66.55)	-22.5%	32.8
3635	laparoscopic endometrial resection	Gynaecology	43	\$1,322.55 (625.23)	18.5%	\$369.37 (102.13)	-2.8%	37.5
3955	Cataract with intraocular lens implant	Ophthalmology	47	\$2,080.56 (805.71)	86.4%	\$415.05 (163.21)	9.2%	24.4
5170	Total replacement - Hip	Orthopaedics	98	\$1,240.02 (401.54)	11.1%	\$381.09 (98.85)	0.3%	17.2
5290	Arthroscopy plus meniscectomy (arthrotomy or arthroscopic)	Orthopaedics	91	\$1,215.34 (354.41)	8.9%	\$385.30 (102.31)	1.4%	12.0
5370	Total knee replacement	Orthopaedics	56	\$1,242.70 (390.01)	11.4%	\$388.83 (115.90)	2.3%	11.3
9015	Extraction of Wisdom Teeth	Oral and Maxillofacial	31	\$994.99 (390.75)	-10.8%	\$361.67 (126.06)	-4.8%	9.6
		Total:	1644	\$1,167.40 (552.06)	21.5% (v)	\$379.30 (119.31)	8.3% (v)	21.4

(i) SD – Standard deviations shown in parentheses; (ii) Percentage that average surgical fee for procedure is above or below average for all procedures (\$1116); (iii) Percentage that average anaesthetist fee for procedure is above or below average for all procedures (\$380); (iv) Variance is the square of the standard deviation; (v) Average absolute values of percentages above or below mean

For instance, surgical reimbursements for cataract with intraocular lens implant (procedure code 3955) were 86% above the average level of reimbursements (\$1116), whereas anaesthetist's reimbursements for the same procedure were only 9% above the average (\$379). As shown in the bottom of Table 3, the average absolute deviation was 21.5% for surgical fees, but only 8.3% for anaesthetist's fees.

As shown in Table 4, for only one of the 30 procedures was the average surgical reimbursement within 5% of the average for all procedures, compared with 47% (14 of the 30 procedures) for anaesthetist's fees. Additionally, over 36% (11) of surgical reimbursements were greater than 20% above the average, compared with only 10% (3) of anaesthetist reimbursements.

Table 4. Average absolute deviation of average fees for top 30 procedures: number in each range

% Above or below the average reimbursement level	Surgical reimbursements	Anaesthetists' reimbursements
0 to 5%	1	14
5 to 10%	6	7
10 to 20%	11	5
20 to 50%	9	3
Above 50%	2	0

Comparing surgeon and anaesthetist fees—As the above discussion illustrates, there was significant variation in the hourly rate of surgical reimbursement rates between procedures. This suggests that average reimbursements were less likely to differ significantly across procedures for anaesthetists than for surgical reimbursements. However, the analysis does not indicate how consistent reimbursements were within individual procedures.

To provide some perspective on the magnitude of variation in surgical reimbursement rates compared with anaesthetic reimbursements, 95% confidence levels were calculated for each procedure. As shown in Figure 1, the 95% confidence intervals are much tighter for the anaesthetic reimbursements than the surgical reimbursement for a given procedure. As an indication of the relative variability, Table 3 shows the ratio of the variance of surgical and anaesthetic fees. In general, a ratio of the variances of the two fees of 4 to 1 or greater is taken as an indication of differences in variability.

Table 3 shows that variability is greater for surgical reimbursements in all 30 procedures. The greatest difference in variability was seen in a benign or malignant tumour requiring wide excision (procedure 260) with a variance ratio of 56.3. As shown in Table 5, only two of the 30 procedures (codes 1700 and 1740) had variance ratios under 4, with one-third of the sample showing variance ratios greater than 20.

Figure 1. Average fees and 95% confidence intervals

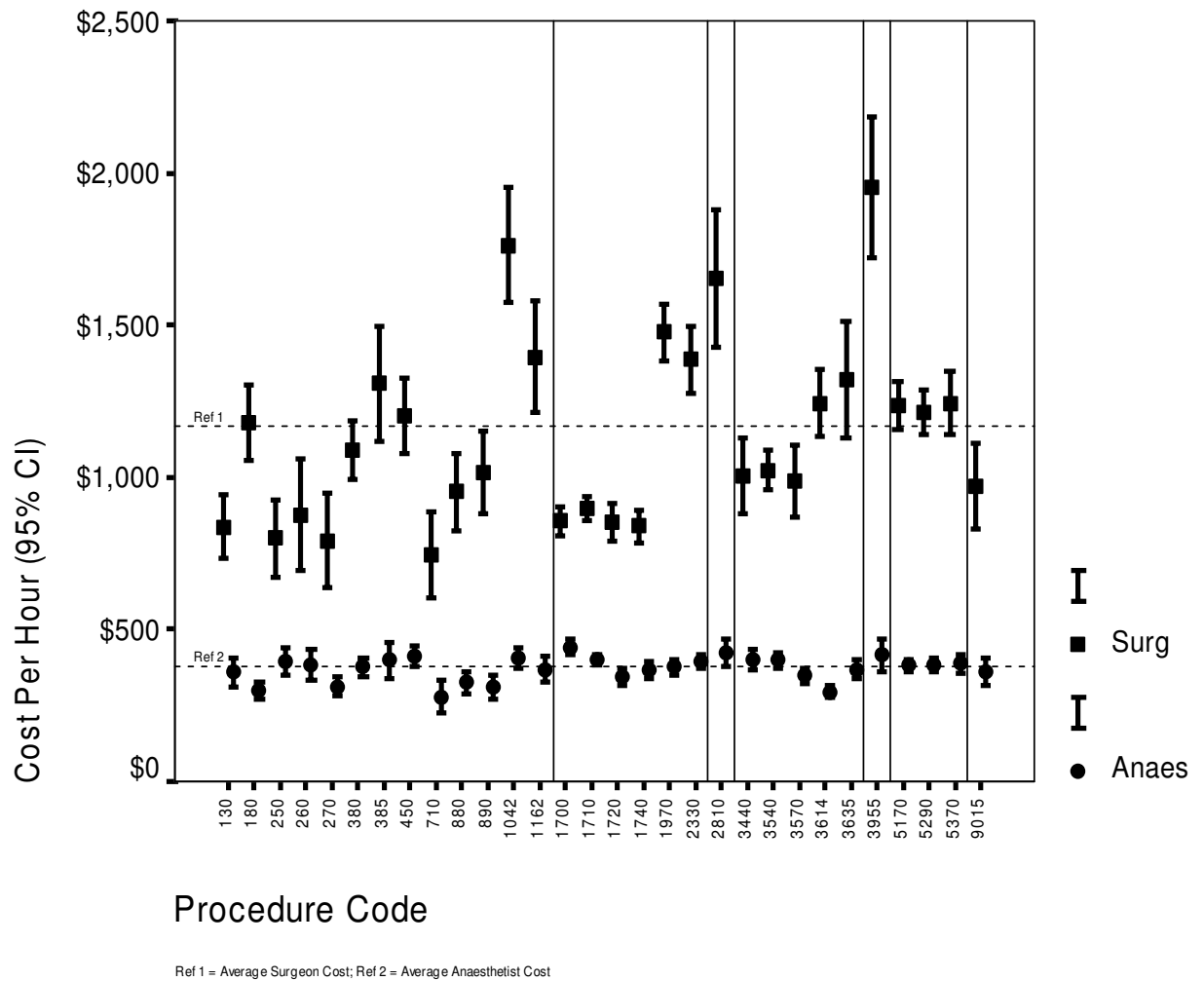


Table 5. Variance ratios (variance of surgical/variance of anaesthetists) for top 30 procedures: number in each range

Range	Variance ratios
0 to 4	2
4 to 10	7
10 to 15	9
15 to 20	2
over 20	10

Discussion

Purchasers of surgical services face the challenge of identifying the appropriate levels of reimbursement. The evidence presented in this paper on surgical reimbursements in New Zealand highlights some apparent inconsistencies. When compared on an hourly

rate, there are sizeable differences in average rates of reimbursement between procedures. In addition, comparing surgical reimbursements with anaesthetist reimbursements illustrates not only a higher range in the average hourly payments but significantly greater variability within specific procedures. This evidence is consistent with the proposition that anaesthetist's fees are more reflective of what a properly functioning market would produce, while surgical reimbursements are less so. This suggestion comes with a number of caveats.

First, the above analyses are based on only a sub-sample of all insurance claims. Claims from Southern Cross were not included, nor were claims from hospitals where theatre costs were unavailable. The exclusion of Southern Cross data from the analysis does not mean that the present data set is skewed or subject to bias, as the current data represents claims made to several smaller insurers in New Zealand. Rather, the question that cannot be addressed is whether the disparities that exist in this data also exist in Southern Cross reimbursements. Given the anecdotal evidence suggesting that smaller insurance companies base their reimbursements on the Southern Cross fee schedule, there is reason to suspect that it would.

Second, the analysis focused on only those procedures with more than 30 cases. Although there is no *a priori* reason to assume that the resulting sample was not representative of the entire population of insurance claims (e.g. no systematic biases are likely to have resulted), it does suggest that the results should be viewed as suggestive only.

Third, no conclusions should be drawn regarding whether or not the level of reimbursement is appropriate or excessive. The hourly rates are based on the time required for the surgery (e.g. theatre time used). In practice, there are three phases to treatment: a pre-procedure (consultative) phase, the procedure, and a post-procedure (convalescent) phase. The fee paid to specialists is intended to cover the latter two phases, so it is misleading to interpret the reported hourly rate as the rate they are paid for each hour spent actually performing the operation. Rather, the reported hourly rate merely indicates the *relative* payment between procedures.

Comparisons between anaesthetists and surgeons hourly reimbursement rates or commenting upon the level of reimbursements (e.g. too high) are not appropriate. Even though the hourly rate presented here might seem substantial, it is possible that reimbursement levels might actually be too low to compensate for the time required for the reimbursement of the three phases of care.

Fourth, even if we accept that there are significant differences in surgical reimbursements between procedures or greater variation than anaesthetists, this does not necessarily imply that the fees are not consistent with those that would emerge from a competitive market. Fees in a competitive market will differ according to the characteristics of the surgeon (e.g., expertise, level of training, demand for services), the procedure (e.g., complexity of case) and the location (e.g. cost of living in Auckland compared with Dunedin). Although the analysis did attempt to account for a critical factor (time for procedure), it did not incorporate these other characteristics. Thus, it is possible, although unlikely, that the outcome from a RVS approach would be to conclude that current fees are already consistent with an underlying market. The size of the variations between procedures, the level of variability in payments for a

given procedure, and comparisons with anaesthetists fees must, at the very least, provide scepticism that the current system is working well.

The results provide support for the development of a RVS for surgical fees for New Zealand. Although the Hsaio et al's RVS is not without its critics⁸⁻¹⁰ and there are other systems (e.g. McGraw Hill System¹¹), there is no disputing the principle that payments should reflect underlying fundamentals, as opposed to other factors, such as political power, cartel related price fixing or historic reasons. Fortunately, developing an RVS system in New Zealand would not be as complicated as in the US for a number of reasons.¹²

For instance, some of the characteristics that had to be considered in the US, such as the cost of malpractice insurance or regional disparities, will not be as important in New Zealand. But most importantly, RVS are now fairly well established in many countries around the world. By learning from their experiences and using their guides as a starting point, New Zealand would not need to go through the extensive process that has been required elsewhere.

What would be the likely impact of implementing a RVS in New Zealand?

Experience in the US indicates that a RVS is likely to change the established system of payments.^{13,14} For instance, the introduction of the RVS in the US resulted in changes in payments to various specialities, including increasing payments to some specialities (e.g. family surgeons by 36%) while reducing payments to others (e.g., ophthalmologists by 18%).¹⁵ These changes can have flow-on effects, such as inducing surgeons who have fees lowered to increase the volume of procedures to compensate for reduced income.¹⁶⁻¹⁹ But the impacts will vary across specialties and will depend upon the particular aspects of the healthcare market.

The findings of this study are presented to generate an informed discussion about the best way to determine reimbursement in the private sector. The public health sector is increasingly reliant on an efficient private sector for elective procedures. This data and the experience from other countries suggests that a relative value system should be carefully considered as it might be a more sensible way to determine private surgical fees in New Zealand.

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