



SOCIETY OF ACTUARIES

Article from:

# Health Section News

February 1998 – No. 34

# Adjusting the 1985 NAIC Cancer Claim Cost Tables for Inflation

by Peter G. Hendee

The 1985 NAIC Cancer Claim Cost Tables (cancer tables) are a collection of morbidity tables. They contain the annual claim costs per person by attained age for each of several benefits typically found in 1970s- era cancer insurance policies. The cancer tables refer to these benefits collectively as the "standard plan."

The standard plan provides hospital indemnity benefits (payment of a fixed amount for each day of hospitalization due to cancer) and reimbursement of certain cancer treatment expenses. There are limitations on the reimbursement payable. For example, radiation therapy and chemotherapy expenses have a lifetime limit of \$1,000.

Cancer policies marketed since the 1970s typically have higher benefit limits than the standard plan. The newer policies with higher benefit limits typically experience higher claims. The cancer tables include formulas for calculating what multiple of the standard plan claim costs should be used for policies with higher limits.

The cancer table formulas for adjusting claim costs for changes in benefit limits are based on benefit costs during the experience period underlying the table. The cancer table formulas appear to anticipate that provider charges for services and supplies may vary with the benefit limits, but they are not intended to reflect changes over time in provider charge levels or in medical practice patterns.

If provider charge levels increase and policy benefit limits are increased by the same percentage, then claim costs experience should also be expected to increase by that percentage, provided medical practice patterns do not change. For example, if surgeons' fees have increased to five times their level during the cancer tables' experience period, and the frequency of various operations does not change, then a surgical schedule which is five times the standard plan's schedule should have five times the standard plan's surgery claim costs. The formula in the cancer tables produces a multiple of only four, a 20% understatement. This is because the formula was not designed to reflect increases in provider charge levels over time.

One method for reflecting inflation in the cancer table formulas is to increase certain constants in the formulas in proportion to changes in provider charge levels. Exhibit 1 on page 4 illustrates this type of adjustment. The formula constants which have been indexed are underlined.

The original cancer table formulas for which inflation adjustments are appropriate are shown in Exhibit 2 on page 5. These formulas are for the following benefits: surgical, anesthesia, radiotherapy and chemotherapy, and blood and plasma. The adjusted formulas, with provision for increases in provider charge levels, follow the original formulas. When benefit limits are increased by the same percentage as provider charge levels have increased, the adjusted formulas indicate that claim costs should also be increased by this same percentage.

*continued on page 4, column 1*

by W. Keith Sloan

Many actuaries who now use the 1985 NAIC Cancer Claim Cost Tables have been kept in the dark about their background. The tables required a great deal of time to produce and the accompanying paper has taken even longer. Peter Hendee is right in that the plan maximum adjustment mechanism is no longer, probably, valid. A short reference to their history seems to me to be in order.

## The "Standard Plan"

The primary reason for choosing "standard plan" was that a table based on those benefits had already been produced and published (TSA XXX, pages 49-55). Because the table was not actually based on cancer insurance experience, it was not accepted for its stated purpose, which was to provide a badly needed valuation basis. In fact, the "standard plan" was obsolete at the time work on the 1985 NAIC Cancer Claim Cost Tables began, though there was a great deal of insurance in force on it and similar plans.

The plan maximum adjustment Hendee discusses in his article was needed for two purposes. First, we needed a means of converting the data we had to a common basis to produce coherent results as we worked on the tables. Second, users of the NAIC tables needed a way of developing appropriate factors for the particular plan being valued. (Two members of the committee sent in listings of variations of benefits plans then in use. One showed 17 plans in that company and the other 14 plans in several companies.)

## An Alternative Adjustment Method

Quite early in the study, the committee considered a more accurate method for adjusting for plan maximums. This method used a technique shown in Bartelson's *Health Insurance* text published by the Society of Actuaries in 1968 (pages 143-44). This method, as it was applied to the 1979 cancer experience of a major contributing company, is demonstrated in the example in Table 1 on page 6.

Unfortunately, few actuaries had access to spreadsheet programs at that time, and the linear approximations finally developed are much simpler to use. However, with spreadsheets, the original methods suggested for surgical and anesthesia schedules may be better. As a matter of fact, I have had occasion to use them and found them satisfactory.

The purpose of Table 1 was to show that the ratio of average maximums between plans can be quite different from the ratio of maximum maximums. It is easy to see that the ratio of each Plan B average maximum to each Plan A average maximum (1.9 and 2.7, respectively) is not equal to the ratio of each Plan B maximum maximum to each Plan A maximum maximum (2.4 and 4.3, respectively). It is also noticeable that the relative frequencies are not the same for the two benefits. (These relative frequencies should be either validated or updated to reflect changing practice patterns.)

*continued on page 6, column 1*

**Sloan***continued from page 3***Additional Considerations**

Mr. Hendee also mentions that if provider charges increase and policy benefit limits are increased by the same *percentage* (emphasis added), then claims cost experience should also be expected to increase by that percentage, provided practice patterns do not change. A comparison of the various RVS values will show that increases are seldom across the board. In a personal example, I have noticed that a \$50 benefit for skin cancer removal in the past three years more than paid the fee. I am certain that cannot be said for the more extensive procedures.

I am concerned much more about adjustments for the radiation-chemotherapy benefit. Sadly, the only solution I have to this is that a new study of that benefit (at least) be undertaken. Chemotherapy was far from a common treatment during the exposure period, and the real "standard plan" did not contemplate its use at all. There was also a fad about the time the table was published of recognizing that chemotherapy was not used much by making that benefit unlimited. Many of the companies

that did so have had to impose substantial rate increases, some offering reduced schedules instead. This problem could easily produce cumulative antiselection.

Also, note that for waiting periods of at least 30 days, the committee found no measurable selection or antiselection. I once made a study of waiting periods in cancer insurance (now lost) that showed that the optimum waiting period is 30 days.

If a group of sufficiently brave souls can be found to volunteer to update the table, they might also look into the question of reduced hospital stays. That could include the "drive-by mastectomies," which are being condemned in the media.

Mr. Hendee is to be commended for bringing this problem to the attention of the Health Section.

*Keith Sloan is a retired actuary living in Tennessee. He served as co-chairman of the committee that developed the 1985 NAIC Cancer Claim Cost Tables.*

**TABLE 1**  
Comparison of Plan Maximums

Body Site	Surgical Schedule			Anesthesia Schedule		
	Frequency	Maximum		Frequency	Maximum	
		Plan A	Plan B		Plan A	Plan B
Buccal Cavity and Pharynx	1.93%	200	200	2.51%	70	100
Digestive System	14.90	500	1,000	19.18	70	250
Respiratory System	9.27	400	800	11.46	70	200
Bones and Joints	0.54	300	500	0.78	70	125
Skin	31.31	50	75	7.56	70	50
Breast	9.48	300	600	14.39	70	150
Female Genital	8.77	400	600	14.59	70	150
Male Genital	5.74	400	700	8.47	70	175
Urinary System	8.84	400	1,000	11.22	70	250
Brain	0.75	500	1,200	1.25	70	300
Endocrine System	0.66	300	400	1.12	70	100
Lymphomas	2.87	400	500	2.88	70	125
Leukemia	1.13	400	400	0.26	70	100
Other Hematatic	0.58	400	400	0.30	70	100
<b>Total/Average</b>	96.77	288	546	93.49	67	181
Ratio of Plan B Average Maximum to Plan A Average Maximum	1.9			2.7		
Ratio of Plan B Maximum Maximum to Plan A Maximum Maximum	2.4			4.3		