DRAFT 4/09/10

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Briefing Paper for Montana Employment Relations Department

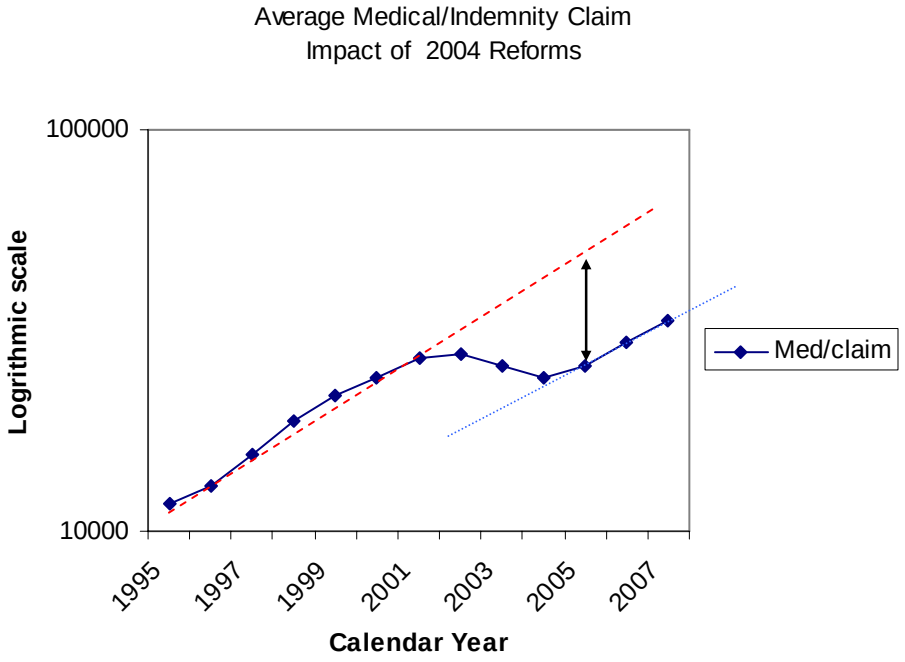
## Estimated Impact of Utilization and Treatment Guidelines on Employers' Cost

**Summary:**

This memorandum estimates a probable range for the impact of adoption of utilization & treatment guidelines by Montana. The following table gives the low, medium and high estimate of the total dollar impact and the estimate of the percentage change on that portion of medical costs that would be affected by utilization guidelines.

| Range | Total affected dollars | Impact of utilization guidelines | Total savings |
|---|---|---|---|
| Low | $290 million | 29.7% | $86.4 million |
| Middle | $290 million | 42.8% | $124.1 million |
| High | $290 million | 54.9% | $150.5 million |

We also evaluated the impact of a similar legislative reform in California and found the impact was approximately 45%, or right at the mid-range of our estimate for Montana. The chart below shows the impact in California.



**Outline of estimation steps:**
The estimation involves the following steps. We start with total incurred medical (100%) which is estimated at $290 million for 2010. Then we examine the portion of this total that is likely to be affected by the impact of the legislation concerning the use of guidelines. The steps are:

1. Estimate the fraction of the total incurred medical that can be attributed to the differential between workers' compensation and group health.

2. Estimate the fraction of this differential that can be attributed to over-utilization.

3. Estimate the fraction of the over-utilization that is likely to be controlled by application of utilization guidelines under normal conditions.

4. Estimate the strength of the legislation, especially as it concerns the application of the utilization guidelines by the courts.

5. Evaluate how the estimates compare to actual application of guidelines in practice.

Starting with 100% of medical costs, each step can be seen as a fraction of the remaining medical costs. For example, if the differential (step 1) is 50% of incurred medical and the fraction of this that is attributed to over-utilization (step 2) is 50%, then 25% of medical costs remain at the start of step 3.

The use of this approach will allow alternative estimations of one or more steps to be clearly stated and final estimates to be comparable. This should allow for more transparent and clear discussions between participants.

**Step 1: The differential between workers' compensation and group health**
The evidence for higher medical costs in workers' compensation relative to group health is consistently strong. All of the studies reviewed indicate a substantial positive differential for workers' compensation medical care. The studies find that workers compensation pays 33%-300% more than group health to treat the same conditions. The estimate of the differential depends on a number of factors including, jurisdiction studied, timing of the study, type of injury or illness, and the particular analytic method used.

The first of these studies was conducted by Zaidman (1990) on data covering Minnesota claims occurring in 1987-89. Zaidman found that for the same condition, workers' compensation paid, on average, 104% more than group health fee-for-service. A weakness of Zaidman's approach was that the comparison was limited by the data to comparing charged amounts rather than paid amounts. The paid to charge amounts in workers' compensation that were available to the author were quite close to 1. Group health generally reimburses at a substantial discount to charged amounts. This led a later study of the same data (Johnson, et. al., 1993), which found similar results, to conclude that the problem "is likely to be worse than what we have described."

Subsequent to Zaidman, the economists Baker and Krueger (1993, 1995) re-examined the Minnesota data and made a more sophisticated analysis of the differences. Their results found a range of estimates of the positive differential for workers' compensation costs of 64%, 87%, and 300%. The latter they felt was likely the result of the preferred, but possibly unstable, re-exponentiation of the natural logarithms used in the analysis. They felt that the highest estimate was implausible.

Durbin, Corro, and Helvacian (1996) analyzed workers' compensation data from four states (Florida, Illinois, Oregon, and Pennsylvania) and from a number of group health insurers covering the same states. In addition, they were able to focus on paid data rather than charge data. After controlling for available differences, they find the positive differential paid by workers' compensation to be 101%-122%. Unadjusted data found the number of service dates was 216% higher and the duration was 397% longer while the cost was 168% higher.

Johnson, Baldwin, and Burton (1996) examined data from the California workers' compensation system and compared the results to those obtained by Zaidman and Baker and Krueger for Minnesota. They found a wide range for the estimated differential depending on the type of injury and analytic approach. Average payments in California workers' compensation ranged from 1.7 times group health for fractures to 4.2 times group health for back pain. After adjusting for available covariates, the range of estimates across different injury/illness categories ranged from 33% to 400%. The authors also found that for each major category, the differential in California was substantially higher than in Minnesota.

*Discussion*

The majority of these estimates are centered on a range around a 100% differential between workers' compensation and group health. In other words, workers' compensation is twice as costly when treating the same conditions. The endpoints of the studies are that workers compensation pays a differential of 50% to 300%, or about half-again as much to four times as much.

There are several considerations that suggest that these differential estimates are likely to be conservative, especially for Montana.

- First, all the studies compared workers' compensation to fee-for-service (FFS) group health plans. FFS plans are the most expensive and utilization-intensive type of group health plan. Managed care plans, especially those using capitated payment within health maintenance organizations, are substantially less costly. This arises for two reasons: (1) because of the nature of the sorting, consumers of greater amounts of health care will tend to choose FFS plans; and (2) FFS plans reduce the incentive for physicians to control utilization of services.
- The comparisons were all made based on data from the 1980's and 1990's. Subsequent to this period, there has been an explosion of growth in workers' compensation healthcare costs that has been substantially more rapid than non-occupational medical costs.
- Each study followed claims for a limited period of time. For example, Zaidman followed claims for 15 months. However, workers' compensation medical care is characterized by a distribution of costs and services that is skewed towards long periods after injury. In California, only 30% of medical costs on claims are

paid during the calendar year in which the claims occur and the subsequent calendar year. Consequently, following claims only for a limited period during initial treatment very likely biases the estimates of the differential, making them too conservative.

- Montana's statute and case law give a presumption to the decisions of the primary treating physician. The issue of presumption was evaluated in California where as specific court decision established presumption. The impact of presumption was a large and abrupt increase in medical utilization and cost (Neuhauser, 2001a). If anything, Montana's long experience with primary treating presumption has likely built in a substantially higher level of utilization than observed in the average state that does no have treatment guidelines.

Given (1) the wide range of estimates, (2) the fact that comparisons were to fee-for-service rather than managed care/capitated group health, (3) that Montana is an outlier among states in cost, especially medical costs, (4) the exceptional growth in occupational health costs relative to non-occupational medical costs since the time period of the studies and, (5) the short observation periods for these studies that miss the long duration character of workers' compensation, an initial estimate for the differential between Montana workers' compensation and group health of 150% seems appropriate as a baseline estimate with a range from 100% to 200%. Then the central estimate gives the differential portion of occupational medical costs as 60% of current medical treatment costs. The range is 50% to 66%.

**Step 2: What creates the differential, utilization or price?**

The early studies of the differential (Zaidman, 1990; Baker and Krueger 1995) attributed the differential to pricing differences. Later studies (Durbin, et. al, 1996; Johnson, et. al., 1996) attributed the majority of the effect to utilization and found little or no price discrimination. Several possible factors exist to explain this inconsistency. First, the late 1980's and early 1990's, the workers' compensation system saw the introduction of more stringent and extensive price controls in the form of fee schedules covering ever-wider ranges of services.

Second, the earlier studies focused on a single state, Minnesota, and later studies focused on different states, Florida, Pennsylvania, Oregon, Illinois, and California. It is possible that the characteristics of the Minnesota system led to greater utilization control, less price control, or a different set of compensation rules and environment. According to Johnson et. al. (1996) the Minnesota fee schedule covered a much smaller portion of procedures than the current Montana schedules.

Third, the Minnesota study followed claims until 15 months after injury. It is not clear from the Durbin and Johnson studies how long claims were followed after injury. Longer follow-up would have resulted in a greater emphasis on utilization.

Durbin et. Al., attributed the full differential to a utilization effect and found no evidence of price discrimination. Johnson, et. al., attributed 90% of the differential to utilization and the remainder to higher pricing.

Finally, Montana's fee schedules are generally aimed at setting prices about 10% above the level of private insurance. If successful in setting this relationship, Montana's differential is about 9% driven by price and 91% driven by utilization.

Then, using the midpoint estimate for the differential (Step 1) of 60%, 91% of that differential is for excess utilization in workers' compensation, or 54.6% (range of 45.5% - 60.1%)

**Step 3: What is the potential for utilization guidelines to reduce over-utilization?**
Utilization guidelines and use of these guidelines to limit inappropriate treatment are not the only mechanisms used by group health to control utilization. There are a number of other processes, such as risk-sharing between insurers and providers, cost sharing between insurers and patients (co-pays and deductibles), and ex-ante contracting between insurers and enrollees (e.g., agreements to limit experimental therapies or adherence to a formulary for pharmaceuticals).[1] Consequently, it is unlikely that adopting and enforcing utilization guidelines will eliminate 100% of the difference between workers' compensation and group health.

A number of studies addressing the impact of utilization guidelines were reviewed to get an estimate of the impact of guidelines. Several issues should be considered in evaluating the estimates in the studies. First, most studies deal with the impact of guidelines as advisory, not mandatory. Generally, guidelines are used to inform physicians about the best approach to treatment. This report will highlight several studies that more closely approximate the impact of guidelines given legal presumption.

Second, studies rarely evaluated the impact of guidelines on reducing over-utilization. Rather, they evaluate the impact of guidelines on utilization without estimating what portion of all utilization is over-utilization.

Third, most of the studies were done in a fee-for-service environment and before the wholesale adoption of managed care options. Consequently, they more closely approximate the current workers' compensation environment.

Finally, an important component of guidelines is often overlooked when focusing on cost, that is, the impact on the quality of health care and patient outcomes. Important savings can accrue to both patients and payors because better treatment leads to shorter duration for temporary disability (TD), improved recovery, and less permanent disability (PD).

Grillo and Lomas (1994) studied the compliance with advisory guidelines meant to improve treatment practice and found very high compliance (50-60%), even in the absence of more specific incentives or enforcement. This suggests that the adoption and dissemination of

[1] A short review of cost-control strategies can be found in Neuhauser, Frank. "Doctors and courts: Do legal decisions affect medical treatment practice?" Report to the Commission on Health and Safety and Workers' Compensation, San Francisco, 2001.

treatment guidelines specifically for occupational injuries will have a beneficial effect on utilization and treatment regardless of the level of enforcement lent to them by the courts.

Grimshaw and Russell (1993) did a systematic meta-analysis of studies evaluating the impact of treatment guidelines. Of 59 studies, all but 4 found significant impacts from the adoption and/or dissemination of treatment guidelines in the group health setting. Results varied widely because the guidelines covered a wide range of clinical conditions, treatments, and diagnostic tests. Of the studies, 9 dealt specifically with the impact of guidelines on utilization. Findings revealed that use of head X-rays declined 27% and 51% in two separate studies, hematology requests fell by 20%, albumin use for hypovolaemia declined 40%, radiological exams declined 28% against a control group decline of 2%, preoperative chest X-rays were reduced by 8-16% in one study and 80% in another, and certain contra-indicated cardiac enzyme tests were virtually eliminated.

Grimshaw and Russell also report on 11 studies evaluating patient outcomes and find significant improvements in 9 of the 11, including 58% fewer patients requiring ventilation when admitted through emergency for respiratory problems and 33% fewer early complications in patients admitted to study hospitals. The other studies generally dealt with preventive care and patient compliance rates with long-term treatment and smoking cessation programs.

There are several studies that more closely resemble the current issue. Brook et. al., (1976) report on the impact of the establishment of Medicare guidelines restricting the use of antibiotic injections for respiratory infections and tied reimbursement decisions by Medicare to following the guidelines. In this case, injections fell by 60% while similar treatments were unchanged.

Even more appropriate for this discussion, Elam, et. al., (1997) evaluated specifically the introduction of workers' compensation practice guidelines on lumbar-spinal fusion. Washington's Department of Labor and Industry introduced guidelines in 1988 for elective lumbar fusion. Evaluating the rate of lumbar fusion over the period 1987-1992, the authors found a decline of 33% in fusion rates, while non-fusion rates remained constant. Prior to the introduction of guidelines, the rate of fusion operations as a fraction of all lumbar surgeries was higher among the workers' compensation inpatient population than for a similar non-occupational inpatient population. After the introduction of guidelines, the rate declined below that for the non-occupational treatment population. This is particularly important because (1) spinal fusions are very expensive operations, (2) when compared to non-fusion surgery, lumbar fusion is associated with higher rates of complications and longer hospital stays, and (3) Washington state data indicated that 2/3 of fusion surgery patients were totally disabled two years after surgery. Current and future costs were reduced, and injured worker outcomes were likely improved by the introduction of the lumbar-fusion guidelines.

The impact of guidelines is sometimes measured by evaluating the percent of cases that are rejected when submitted for approval. However, this misses probably the most important impact of the adoption and enforcement of treatment protocols, the deterrence from even requesting inappropriate treatment. In 1999, Washington state evaluated the cost

effectiveness of utilization review (UR) on MRIs. They estimated that the rejection rate was so low (2%) that the UR cost twice as much as was saved on MRI costs. A decision was made to discontinue UR on MRIs. The following two charts show the responsiveness of utilization to relaxation of review. There is a clear inflection point in the trend on the number of MRIs that is coincidental with the elimination of UR. The frequency showed an initial jump and also a significant change in trend for both spinal and lower-extremity MRIs. The initial change is equivalent to between 19.4% (spine) and 25.5% (lower extremity) with additional utilization increases due to more rapid growth in subsequent years. The impact on upper-extremity MRIs was less clear. This is probably the strongest evidence of the impact of utilization review and echoes the findings of the CHSWC study on the PTP (Neuhauser, 2001).

**Chart 2**

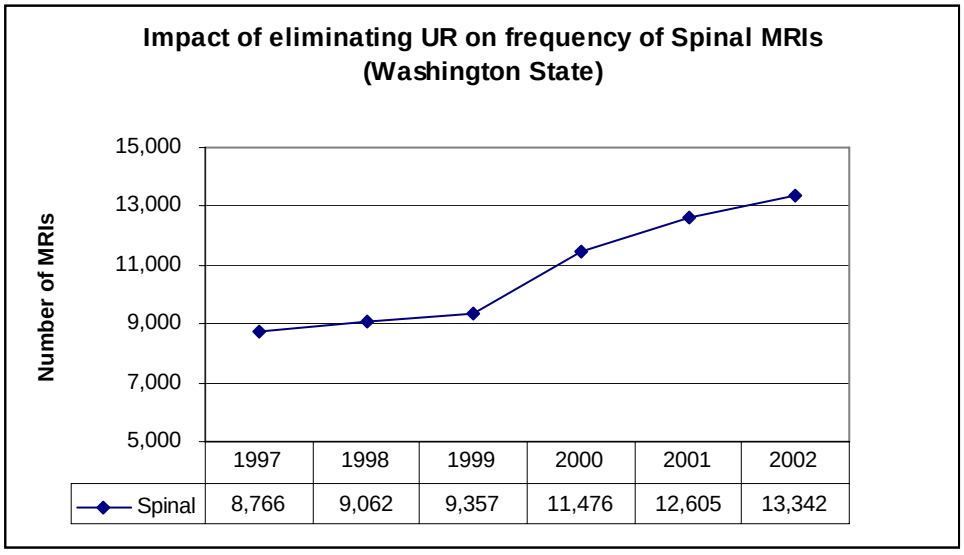
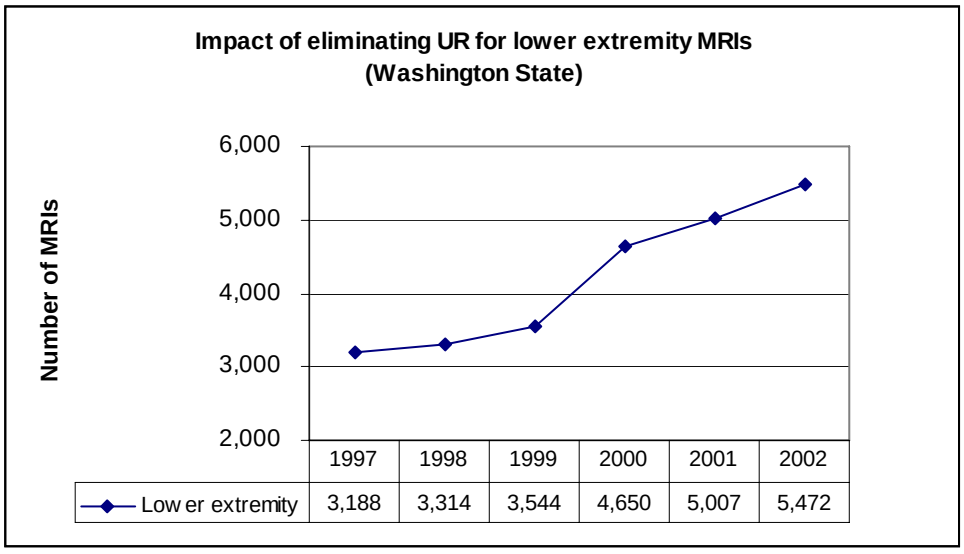



**Chart 3**



*Discussion*

The wide range of estimates, the diverse nature of the guidelines, and the measurement of impact against overall treatment rates make it difficult to estimate the impact on over-utilization within workers' compensation. Specifically, we would like to estimate the portion of the differential represented by over-utilization, estimated above, that will be reduced by the introduction of guidelines.

Using the three most appropriate studies (the results for the other studies are comparable), we have potential reductions of 60%, 33%, and 16%-20%. The later estimates, for the relaxation of UR, would be conservative in that they retain the educational and advisory effect of guidelines while removing only the obvious enforcement effect. A central estimate around 35-40% would be consistent with these studies.

This estimate would then have to be considered against the estimated portion of treatment that is over-utilization. We estimate a range of 37.0% to 59.4% for Montana's over-utilization. This suggests potential reductions in over-utilization of 65%-90% with a midpoint estimate of 78.6%. If we widen the lower bound to 50% to be more conservative while retaining the midpoint and upper bound, we get the following estimate of the impact after step 3. The midpoint estimate is 42.8% (54.5% * 78.6%) and a range of 29.7% to 54.9%,

**Step 4: Estimating the strength of the legislation**

The language implementing Utilization and Treatment guidelines can be written in many ways. Statutory language, regulatory implementation, and judicial interpretation all impact the degree to which U&T guidelines control over-utilization. Once the legislation is written and the language is clear, legal analysis should be done by the Employment Relations Department on the strength of the guidelines in the judicial arena. ERD should consider at least the following issues:

- Are the guidelines presumptive?
- With which party does the burden of proof lie?
- What is required to meet this burden?

To the extent that the guidelines are expected to be applied less rigorously by legislation and the courts than guidelines are applied in group health and when applied in other workers' compensation systems, the estimates of reduction in over-utilization made above should be reduced.

**Final Estimate**

Starting with an estimated $209 million for total incurred medical for 2010, we can apply the fractions of medical treatment (over-utilization) that will re reduced by treatment guidelines.

Applying our low-medium-high estimates of the impact of utilization guidelines that were calculated at step 3, we get the following estimates:

| Range | Total affected | Impact of utilization | Total savings |
|---|---|---|---|

| | **dollars** | **guidelines** | |
|---|---|---|---|
| Low | $290 million | 29.7% | $86.4 million |
| Middle | $290 million | 42.8% | $124.1 million |
| High | $290 million | 54.9% | $150.5 million |

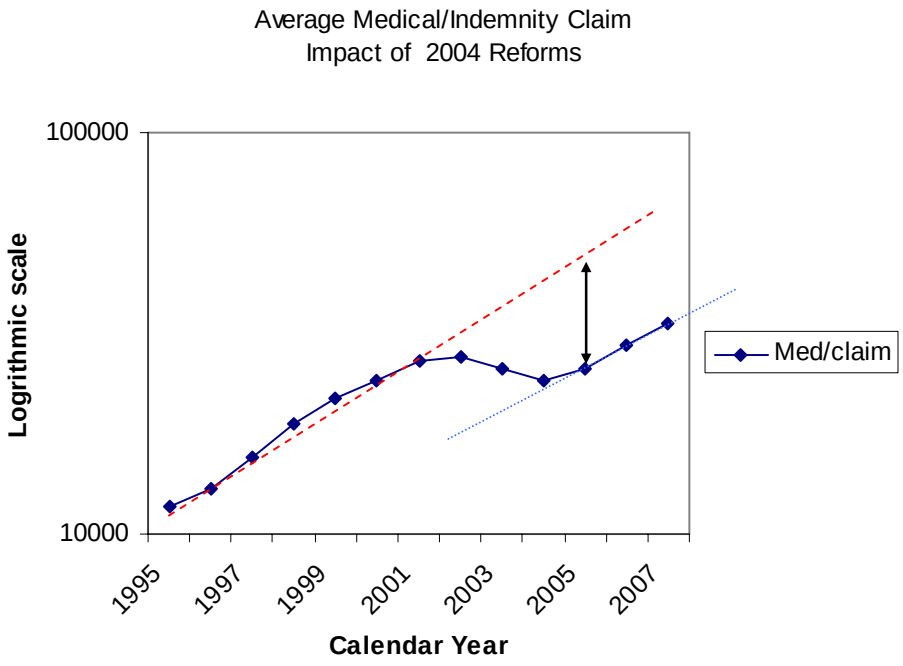
**How do these numbers compare to the impact of past implementation of treatment guidelines?**

An obvious question: are the large impact estimated above consistent with the implementation of broad treatment guidelines in practice? The literature on the impact of guidelines has focused almost exclusively on the introduction of specific guidelines (MRI and spinal surgery, for example). These effects were large, but do they translate to more general adoption? For information o this, we can turn to the experience of California which introduced broad guidelines (ACOEM) for workers' compensation in 2004.

In many ways, Montana is in the same position in 2010 as California was in 2003. California had the highest workers' compensation costs among all states, medical expenses were the dominant loss costs, and medical costs had been growing rapidly. Medical utilization was substantially above comparable states.

WCRI recently reported that as a result of significant changes in utilization due to the 2004 reforms, California had gone from being the highest medical cost state to among the lower cost states among the 15 states studied. Utilization of non-hospital services had gone from 33% above the average to 9% below average.

This can be seen even more dramatically in the chart below that I computed from data Published by the Workers' Compensation Insurance Rating Bureau of California (WCIRB) from the 3rd quarter of 2009.




The y-axis is a logarithmic scale which scale is presented in log which makes the slope of the lines constant for percentage changes in the medical cost per claim. We plot lines that project the trend in medical costs assuming no reforms in 2004 and compare that to costs that are observed as a result of the reforms. What is clear; 1) there was an obvious and substantial break in the cost trend as a result of the reforms. 2) The impact of the reforms

was a substantial drop in the level of medical payments per indemnity claim. 3) There may also have been a decrease in the trend line as well, the slope of the trend line is shallower after the reforms than before. The impact of the reforms was to reduce the average medical cost per indemnity claim by about 45% below what it would have been absent the reforms. Notice that that estimate is nearly dead-on the middle estimate we made above.

The reader should note that while the reforms were implemented n 2004, the impact of the reforms was felt retrospectively. Because most of treatment on 2002, and 2003 claims was delivered after the reforms, these claims experienced substantial savings even before the maximum effect was felt on 2004+ claims.

The reforms of 2003 and 2004 included some other provisions impacting medical costs, including a fee schedule for out-patient surgery and control of pricing for physician dispensed drugs, but the major change was the adoption of U&T guidelines and limitations on the presumption of the primary treating physician.

**Caveats**

With any effort like this there are a number of caveats. First, a number of estimates are made based on research on similar but not identical systems, for example, other states' workers' compensation systems. Montana's system may react differently when subject to changes because all effects are the result of the interaction of a whole range of laws, regulations, and custom.

Second, when estimates are based on more distantly related systems, in type and/or time, then estimates should be subject to more scrutiny. The potential for estimates to be too high or too low increases. For example, group health may be more or less responsive to introduction of treatment guidelines and the over-utilization in group health, prior to the treatment guideline introduction, may have been higher or lower than experienced in today's workers' compensation system.

Third, the impact of the guidelines could be heavily affected by the administrative, judicial, and regulatory processes. Any of those three areas could lead to delays, more or less conservative guidelines, or more or less strict judicial interpretation.

However, it is still important to make the best possible estimate that we can to assist the parties and stakeholders in anticipating the impact of the legislation. The above estimate reflects the best estimate that I can currently make. Any recommendations for improvement will be gladly accepted and incorporated into the estimation process.

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