



**CENTER FOR
VALUE BASED
MEDICINE®**

**Pain & Suffering
Index®
Descriptor**

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Executive Summary

- The *Pain & Suffering Index*[®] is a ground-breaking new tool that uses established healthcare research methods to numerically quantify the “pain and suffering” resulting from personal injury.
- The *Pain & Suffering Index*[®] utilizes quality of life data that have been employed to decide public policy and set healthcare standards for over 100 million people.
- The *Pain & Suffering Index* takes into account all injury parameters (emotional distress, loss of life’s pleasures, loss of personal esteem, etc.) encompassed by “pain and suffering”.
- The *Pain & Suffering Index* converts a heretofore nebulous and highly subjective concept into one that is numerically quantifiable and highly reproducible using well-established scientific methods.
- The *Pain & Suffering Index* is based upon the statistical analysis of pooled scores from individuals with a health state similar to that of an injured claimant, but outside the courtroom environs.
- The *Pain & Suffering Index* will: 1) readily identify frivolous, personal injury torts 2) decrease the number of frivolous, personal injury torts, 3) markedly decrease the variance of non-economic tort settlements, 4) facilitate the earlier settlement of personal injury tort cases, 5) and decrease the proportion of personal injury tort cases progressing to jury trial.

Background

Tillinghast-Towers Perrin¹ estimated tort costs in the United States in 2001 to be \$205.4 billion, or 2.04% of the Gross Domestic Product (GDP). On a per capita basis, this amounted to \$721 per citizen, as compared to \$12 per citizen in 1950 (\$87 when adjusted for inflation). It is estimated that tort costs in 2002 increased to \$223.9 billion, a 9% rise from 2001.¹

Over the past 50 years, tort costs have increased more than 100-fold, while the population has doubled and overall economic growth (as measured by the GDP) has grown by a factor of 34.¹ The President's Council of Economic Advisors² noted the intermediate estimate of the cost of excessive tort to be equivalent to a 2% national tax on consumption, a 3% tax on wages, or a 5% tax on capital income.

Tillinghast-Towers Perrin¹ has divided liability insurance into three variants. There is that underwritten by: 1) liability insurance companies, 2) self-insurers, and 3) medical malpractice insurers. In 2001, the liability insurance companies accounted for \$146.3 billion (71%) of total costs, the self-insured component accounted for \$36.6 billion (18%), and the medical malpractice component accounted for \$21 billion (11%).

An analysis of the breakdown of tort costs from liability insurance company data in 2001 reveals a distribution as shown¹:

<i>Awards, non-economic loss*</i>	24%
<i>Awards, economic loss</i>	22%
<i>Insurer administration</i>	21%
<i>Claimants' attorney fees</i>	19%
<i>Defense costs</i>	14%

(* While some punitive damages are included in the non-economic awards studied, they comprise a minor component.)

With 2002 total tort costs of \$224 billion, the estimated amount attributable to “pain and suffering” was \$53.7 billion. Tort costs continued to rise at 9% per year from 2003 through 2005.¹ Thus, by 2005, the annual expenditure for “pain and suffering” was \$69.5 billion, or nearly \$250 for every person living in the United States.

Because tort costs have risen, and are predicted to rise, faster than general inflation, there has been political pressure at the federal and state levels to place a cap on awards for “pain and suffering”, particularly in medical malpractice cases. Nonetheless, there are claimants who have valid claims and incur “pain and suffering”.

To date, there has been no way to objectively measure the highly subjective “pain and suffering” component of personal injury to decrease the great variance in non-economic awards.¹ The *Pain & Suffering Index*, however, is a ground-breaking new tool that uses established healthcare research methods³⁻¹⁶ to numerically quantify the “pain and suffering” resulting from personal injury with the intent of bringing stability to an unstable arena.



The Methodology

Integral to the *Pain & Suffering Index* is the established tool of *time tradeoff utility analysis*. Originated as an adjunct to game theory in the 1940's, utility analysis was applied to healthcare beginning in the 1960's. Utility analysis objectively measures the quality of life associated with a health state.³⁻⁶

By convention, utility scores range from 1.0 (perfect health) to 0.0 (death).³⁻⁵ The closer the score is to 1.0, the better the quality of life associated with a health state, while the closer the score is to 0.0, the poorer the quality of life associated with a health state. As examples, the average person with mild high blood pressure has a utility score of 0.99,⁷ while the average person who has sustained a severe stroke has a utility score of 0.34.⁸

Briefly, a time tradeoff utility score is calculated by subtracting from 1.0 the proportion of hypothetical remaining time of life the average person with a given health state is willing to forfeit to be permanently returned to a normal health state.³⁻⁹ As an example, a diabetic person with a projected 20-year life expectancy who is willing to trade 4 of those 20 theoretical remaining years to be rid of diabetes has a utility score of **0.80** ($1.0 - 4/20$). Employing time tradeoff utility analysis, the quality of life associated with virtually all health states can be compared, no matter how disparate the medical specialties or organ systems involved.⁶⁻¹⁰

Utility scores associated with a given health state appear to be innate to human nature. Research in the peer-reviewed literature has demonstrated that they are unaffected by gender, ethnicity, level of education, income bracket, medical comorbidities or age.³⁻¹⁷ Of critical importance is the fact that utility scores are highly reproducible over both short and long-term time intervals.¹²⁻¹³

Using utility analysis, the quantitative decrease in quality of life after a personal injury can be readily ascertained. For example, a previously healthy person who sustains a severe lower back injury and resultant osteoarthritis experiences a decrease in utility score from 1.0 prior to the injury to 0.77 after the injury, a loss of 0.23 utility units.

The diminution in quality of life can be multiplied by the years spent in the poorer health state to ascertain the amount of life's value lost. The unit of life's value lost is the quality-adjusted life-year (QALY). Thus, if the above person with a back injury has it for 10 years, the number of QALYs lost is 2.3 (0.23 utility units x 10 years). It should be noted that health states following injuries typically change with time. Therefore, the quality of life and the number of QALYs lost change during transition health states as a person recovers from an injury.

The total number of QALYs lost, or the sum of life's value lost, from a personal injury is the measure of "pain and suffering" associated with that injury. The *Quality of Life Index*SM is the sum of life's value lost expressed as a percentage of the total value of life remaining. It is calculated by dividing the total number of QALYs lost from an injury by the total number of QALYs remaining (life expectancy in years x 1.0) in a uninjured person's life.⁴⁻⁶

The utility score database for the *Quality of Life Index*SM consists of over 30,000 values obtained from patients with various health states. Included are primary data supplemented by a comprehensive review of the global, peer-reviewed literature to include utilities obtained on patient cohorts using a similar time tradeoff methodology of utility analysis.

Of critical importance is the fact that the utility database is derived from actual people who have experienced the same health state as the claimant on a firsthand basis, rather than from surrogate respondents such as healthcare providers, administrators and/or the general community.^{3,7,16} Thus, it is exceedingly unlikely from the statistical point of view that an injured person has a different degree of "pain and suffering" than the database individuals with the same injury surveyed outside the courtroom environs.

Case Studies

Two theoretical case studies are presented to illustrate use of the *Pain & Suffering Index*. While not undertaken here for the sake of simplicity, it should be noted that discounting is undertaken using accepted economic standards.^{3,6}

Case 1

A 55-year-old woman was seen by an ophthalmologist with a history of progressive decrease in vision in each eye over six months. She was unable to drive and had great difficulty reading. Her best-corrected visual acuity in each eye was decreased to 20/100 due to cataracts.

The patient was advised to have cataract surgery and subsequently underwent an uncomplicated cataract extraction with intraocular lens implantation in the right eye, followed by the same procedure in the left eye one month later. At three months after surgery, the uncorrected distance visual acuity in each eye was 20/400. With spectacle correction of -5.00 sphere in each eye, the patient achieved a visual acuity of 20/20 in both eyes.

Despite good vision with spectacle correction, the patient was extremely unhappy that it was necessary for her to wear glasses to see at distance and conduct her daily activities. A tort action was initiated against the ophthalmologist. She stated her condition caused substantial “pain and suffering” due to loss of personal esteem and emotional distress from having to permanently wear glasses. She believed she had been promised “good distance vision without glasses” prior to the cataract surgery.

The lawsuit resulted in a jury trial and an eventual award of \$2,000,000 against the ophthalmologist, with \$500,000 awarded for economic damages and \$1,500,000 awarded for “pain and suffering”. The insurance company for the defendant is seeking objective information to assess whether the award is justified.

Analysis of Case 1 Utilizing the *Pain & Suffering Index*

The relevant question in this case is, “What is the objective diminution in life’s value for the average person forced to wear glasses for distance?”

A patient with no ocular disease and normal 20/20 distance vision in each eye without glasses has a utility score of 1.0. Data gathered from patients with 20/20 distance vision in both eyes, but who have to wear distance spectacle correction, reveal the following utility value parameters associated with this condition:

Mean utility score = 0.997, Standard Dev. = 0.009, 95% Confidence Int. (0.995-0.999)

It can be concluded with great confidence that the claimant, based upon the personal values of individuals affected by the same condition, has experienced a diminution in quality of life of 0.003 utility points (1.000 – 0.997). Over her 25 year life expectancy¹⁸, she will therefore lose 0.075 QALYs of the remaining 25 QALYs in her life, or 0.3% (0.0075/25.0). This amounts to a diminution of three tenths of one percent of her remaining life's value.

Pain and Suffering Index = 0.3%

Final assessment

The *Pain & Suffering Index* indicates that the claimant in this case has lost a total of *three tenths of one percent (0.3%)* of her remaining life's value according to the scores of the average person who has experienced the same health state. Because of the all-encompassing features of utility analysis, this value takes into account “pain and suffering”, including, but not limited to, “emotional distress”, “loss of life's pleasures” and “loss of self-esteem”.

Calculation of the monetary value of a human life is difficult and not within the scope of the *Pain & Suffering Index*. Nevertheless, data from the U.S. Department of Transportation¹⁹ suggest the average person is willing to pay \$3,180,000 in public funds to prevent a fatality, while FDA (Food & Drug Administration) data indicate that society is willing to pay \$5 million to avoid a “statistical death”.²⁰ If a party were to use \$3.18 million as the monetary value of a human life, a loss of 0.3% of value in this case would equate to an award of \$9,540. A loss of 0.3% of value with \$5 million as the monetary value of a human life would equate to a \$15,000 award.

Depending upon the dollar amount a society or jury attributes to the value of a human life, (independent of economic status, economic damages and punitive damages), the award for “pain and suffering” in this case would be as follows:

<u>Life's Value</u>	x	<u>PSDI</u>	=	<u>Award</u>
\$3,180,000*		0.03%		\$9,540
\$5,000,000**		0.03%		15,000
\$500,000,000		0.03%		\$1,500,000 (current award)

(QALY = quality-adjusted life-year, PSDI = *Pain & Suffering Index*, * = Department of Transportation, ** = Food & Drug Administration)

Pain & Suffering Index data support the insurer's belief that the award given for “pain and suffering” is decidedly unreasonable and unsubstantiated. An appeal is undertaken.

Case 2

A 50-year-old woman with no serious medical problems is involved in an automobile accident in which she fractures her hip. She is hospitalized for one month, and during the admission she requires a total hip replacement. She undergoes rehabilitation therapy for an additional 5 months, during which time she is limited in the ability to perform usual self-care, vocational and avocational activities (American College of Rheumatology Classification Class IV²¹). After this time, she is able to carry on vocational activity with mild effort, but is still limited in avocational activities (American College of Rheumatology Classification Class II²¹).

The patient pursues a lawsuit and receives a settlement offer for economic damages and \$325,000 for “pain and suffering”. She asks her attorney whether to settle the case out of court or pursue a jury trial.

Analysis of Case 2 Utilizing the *Pain & Suffering Index*

The relevant question in this case is, “What is the objective diminution in life’s value for the average person who has endured the same health states as the claimant?” The degree of pain and suffering is calculated by measuring her utility scores and subsequent loss of quality of life during different transition periods after her injury (as shown below). The utility score changes can be used to calculate the total number of quality-adjusted life years lost over the remainder of her life. Prior to the accident, the patient experienced no problems with her hip. Therefore, her pre-injury, hip-related utility score was 1.0.

	<u>Utility score</u>	<u>(1.0 – utility score)</u>	x	<u>Time (yrs)</u>	=	<u>QALYs lost</u>
Hospitalization	0.09	.91	x	.083 (1 mos.)		.075
Rehabilitation	0.54	.46	x	.416 (5 mos.)		.191
Remainder of life	0.94	.06	x	31.5 years		<u>1.890</u>
Total QALYs lost =						<u>2.156</u>

(QALY = quality-adjusted life-year)

The woman in this case has a mean life expectancy of 32.0 years.¹⁸ Thus, her total quality of life (life’s value) prior to the accident and subsequent hip injury, was 32.0 QALYs (32.0 year life expectancy x utility value of 1.0).

Having lost 2.186 QALYs as a result of the injury, subsequent convalescence and long-term diminution in quality of life, she has lost a total of 6.7% (2.156/32.0) of her remaining life's value.

Pain & Suffering Index = 6.7%

Final assessment

The *Pain & Suffering Index* indicates the patient in this case has lost a total of 6.7% of her remaining life's value, according to the values of the average person who has experienced the same health state. Because of the all-encompassing features of utility analysis, this value takes into account "pain and suffering", including, but not limited to, "emotional distress", "loss of life's pleasures" and "loss of self-esteem".

Calculation of the monetary value of a human life is difficult and not within the scope of the *Pain & Suffering Index*. Nevertheless, data from the U.S. Department of Transportation¹⁹ suggest the average person is willing to pay \$3,180,000 in public funds to prevent a fatality, while FDA (Food & Drug Administration) data indicate that society is willing to pay \$5 million to avoid a "statistical death".²⁰ If a party were to use \$3.18 million as the monetary value of a human life, a loss of 6.7% of value in this case would equate to \$213,060. A loss of 6.7% of value with \$5 million as the monetary value of a human life would equate to a \$335,000 award.

Depending upon the dollar amount a society or jury attributes to the value of a human life, (independent of economic status, economic damages and punitive damages), the award for "pain and suffering" in this case would be as follows:

<u>Life's Value</u>	x	<u>PSDI</u>	=	<u>Award</u>
\$1,000,000		6.7%		\$67,000
\$3,180,000*		6.7%		\$213,060
\$5,000,000**		6.7%		\$335,000

(QALY = quality-adjusted life-year, PSDI = *Pain & Suffering Index*,
 * = Department of Transportation, ** = Food & Drug Administration)

The *Pain & Suffering Index* data provide the claimant with objective information to facilitate her decision. She realizes that accepting the offer is preferable to taking the case to trial.

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