Overview

Quantifying Presumption Laws

Providing Workers Compensation benefits to public safety officials with cancer through presumption disability laws is expanding.

This session will help pools understand how to quantify the impact of the legislation and recognize the new risks it is assuming to avoid getting burned.

The discussion will reflect case studies prepared for pools facing new presumption laws.
Outline

A. Background
B. Research
C. Evaluation Process
Presumption

- “A legal inference as to the existence or truth of a fact not certainly known that is drawn from the known or proved existence of some other fact.”
- Originated with unique circumstances (e.g., federal black lung statues for miners) in Pennsylvania in 1935.
- Translated to public safety officials (mainly firefighters) for heart and lung maladies not long after.
- Diseases covered as well as the affected employee groups have expanded substantially over the years. Much of the expansion happened as a result of 9/11.

Statues and provisions vary by state. Below are employee groups covered as well as diseases or injuries included in some state guidelines:

<table>
<thead>
<tr>
<th>Groups</th>
<th>Diseases and Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firefighters</td>
<td>Hypertension</td>
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<tr>
<td>Law Enforcement</td>
<td>Heart Disease</td>
</tr>
<tr>
<td>EMTs</td>
<td>Respiratory Disease</td>
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<tr>
<td>DA Investigators</td>
<td>Cancer (all kinds)</td>
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<tr>
<td>Game Wardens</td>
<td>AIDS</td>
</tr>
<tr>
<td>Dept. of Corrections</td>
<td>Hepatitis</td>
</tr>
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<td>Lifeguards</td>
<td>Hernia</td>
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<td>Sewer Employees</td>
<td>Pneumonia</td>
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<td></td>
<td>Tuberculosis</td>
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<td>Infectious Disease</td>
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<td></td>
<td>Staph Infection</td>
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<td>Chemical Exposure</td>
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<td></td>
<td>Meningitis</td>
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<td></td>
<td>Skin Cancer</td>
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<td></td>
<td>Lyme Disease</td>
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<td></td>
<td>Lower Back Impairment</td>
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<td>Blood borne Pathogens</td>
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<td>Hearing Loss</td>
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<td></td>
<td>Smallpox</td>
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<td></td>
<td>Parkinson’s Disease</td>
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</tbody>
</table>
Presumption

- Cancer
- Retroactive Applications
- Law Progression
  - 16 states do not have cancer presumption laws: Arkansas, Delaware, Florida, Georgia, Hawaii, Idaho, Kentucky, Mississippi, Montana, New Jersey, North Carolina, Ohio, South Carolina, Utah, West Virginia, and Wisconsin

Research

- Several hundreds cancer research studies each year in U.S.
  - Approximately one per year specifically focuses on firefighting and its possible risk factor for cancer
- National League of Cities (NLC) completed a comprehensive review of available research in April 2009
  - 17 peer-reviewed research studies
  - “Strengths of association” from a list of criteria
  - No consistent evidence of causality
- NIOSH research study published in October 2013
  - 30,000 career firefighters employed between 1950-2010
  - Chicago, Philadelphia, and San Francisco fire departments
Research

- NIOSH: Cancers of respiratory, digestive, and urinary systems accounted for higher rates of cancer seen in population
  - Higher rates suggest that firefighters are more likely to develop those cancers
  - Correlation vs. Causation
- Firefighters in study had a rate of mesothelioma 2x greater than U.S. population
  - Large, older cities

NIOSH Study

Standardized mortality and incidence ratios in firefighters for select outcomes compared to results from a recent meta-analysis

<table>
<thead>
<tr>
<th>Underlying cause (ICD-10 codes)</th>
<th>Current study results (US population referent)</th>
<th>Meta-analysis of LeMasters et al</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SMR</td>
<td>SIR</td>
</tr>
<tr>
<td>All cancers (C00-C97)</td>
<td>1.14</td>
<td>1.20</td>
</tr>
<tr>
<td>MN oesophagus (C15)</td>
<td>1.39</td>
<td>1.62</td>
</tr>
<tr>
<td>MN stomach (C16)</td>
<td>1.10</td>
<td>1.15</td>
</tr>
<tr>
<td>MN intestine (C17-18)</td>
<td>1.30</td>
<td>1.21</td>
</tr>
<tr>
<td>MN large intestine (C18)</td>
<td>1.31</td>
<td>1.21</td>
</tr>
<tr>
<td>MN small intestine (C17)</td>
<td>1.66</td>
<td>1.15</td>
</tr>
<tr>
<td>MN rectum (C19-C21)</td>
<td>1.45</td>
<td>1.11</td>
</tr>
<tr>
<td>MN lung (C33-C34)</td>
<td>1.10</td>
<td>1.12</td>
</tr>
<tr>
<td>MN breast (C50)</td>
<td>1.39</td>
<td>1.26</td>
</tr>
<tr>
<td>MN prostate (C61)</td>
<td>1.09</td>
<td>1.03</td>
</tr>
<tr>
<td>MN other male genital (C60, C62-C63)</td>
<td>0.47</td>
<td>0.62</td>
</tr>
<tr>
<td>MN testis (C62)</td>
<td>0.73</td>
<td>0.75</td>
</tr>
<tr>
<td>MN kidney (C64-C66)</td>
<td>1.29</td>
<td>1.27</td>
</tr>
<tr>
<td>MN bladder (C67-C68)</td>
<td>0.99</td>
<td>1.12</td>
</tr>
<tr>
<td>MN brain (C41, C70-72)</td>
<td>1.01</td>
<td>1.02</td>
</tr>
<tr>
<td>NHL (C81.9, C96.0, C96.85, C98.0, C82.9, C96.0, C96.85)</td>
<td>1.17</td>
<td>0.99</td>
</tr>
<tr>
<td>Leukaemia (C91.0-C91.3, C91.5-C91.9, C99.0-C99.9)</td>
<td>1.40</td>
<td>0.94</td>
</tr>
<tr>
<td>Multiple myeloma (C92.7, C92.8, C92.9, C93)</td>
<td>0.89</td>
<td>0.72</td>
</tr>
<tr>
<td>Other cancers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mesothelioma (C45)</td>
<td>2.00</td>
<td>2.29</td>
</tr>
<tr>
<td>MN buccal and pharynx (C00-C14)</td>
<td>1.40</td>
<td>1.39</td>
</tr>
</tbody>
</table>

Research

- Many limitations; consistent hurdles as with prior studies
- More research needed

Occupation

- First, though, let’s look at what has changed in the exposure

The role of the firefighter has changed:

- Only 30% of active firefighters are career firefighters
- Number of fires fought today is 10% of the total from 30 years ago
- Higher number of calls than ever before, but only 5% of them are related to fire
- Firefighters have become medical first responders

- Result: The changing role of the firefighter may weaken the applicability of extrapolating historical data and research
Costs

- NLC study did not quantify impact of presumption expansion across all states
- Approach to evaluate laws on a state-by-state basis
- Parameters of provisions:
  - Eligible personnel
  - Cancers covered
  - Age limits
  - Minimum lengths of service
  - Post-employment
  - Physical examination
  - Tobacco use
  - Rebuttal
  - Exposure classification

Key Provisions

Participation

- Career and/or volunteer firefighters
- Police officers
- EMT
- All public safety officials
### Key Provisions

#### Cancer Type
- 200 different types
- 60 different organs
- Can develop from almost any cell

#### Cancer Characteristic
- Incidence rate
- Mortality rate
- Relapse rate
- Age cancer develops
- Length of treatment period
- Initial year treatment costs
- Ongoing treatment costs
- Chemotherapy
- Treatment modality
- Time out of work for treatment

- How do these differ for firefighter and public safety officials

### Key Provisions

#### Treatment
- Benchmark for medical costs
- Health coverage vs. Workers compensation coverage
- State-specific costs
- Treatment protocols
  - Use of chemotherapy
Key Provisions

Retroactive

- Elephant in the room: Could bankrupt the pool
- Significant cost and administrative burden
- Unfunded mandate
- Exposure to loss may not be attainable
- Historical member contributions did not consider this liability
- Assessments

Key Provisions

Retroactive: Statistics

- Who is now insured?
  - Risk characteristics (age, sex, ethnicity)
  - Employment (history, duration, pay, time, capacity)

- Benefit Program
  - State historical average weekly wage
  - State benefit structure

- Retroactive Medical Costs
  - Age and health of patient
  - Impact of technology
  - Changes in healthcare environment

- Retroactive Lost Time Benefits
  - Number of diagnosed
  - Diagnosed while working, prior to retirement
  - Duration of work missed
  - Anomalies in benchmarks
  - Propensity to file claim
Retroactive: Administration

- Once a claim is submitted…
  - Reimbursement of medical costs
  - Actual vs. inflation adjusted expenses
  - CMS may seek restitution under Secondary Payer Act

Retroactive: Liability

- Who pays?
  - Reimbursement of medical costs
  - Firefighters move between departments; public entities move between pools
  - Attachment based on claims made or occurrence?
  - Last injurious exposure rule
  - Manifestation?
  - Work with all pools and insurance carriers in the state?
  - Asbestos: bathtub
    - Litigation of assigning responsibility still remains unsettled 40+ years after problem surfaced
Considerations

- Most laws do not attempt to put a dollar figure on the costs
- Some have funding provisions
  - Assessment sufficient to cover costs
  - Money from general fund
  - Legality of upholding state vs. city
  - Transparency of “charge”
- Presumption costs are not clear-cut
- May have undesirable/unknown impact
  - Financial health of pool
- Accounting treatment
- Costs to members
  - Retroactive and prospective

Solution

- Do the math and become informed
- Educate yourself on purpose, players, and parameters
- Rely on experts to put price tag on potential costs
- Understand your exposure
- Frequency and severity problem
- Sensitivity test assumptions to identify range of potential costs
- What-if scenarios
Quantification Exercise

Exposure to Loss

- Historical exposure periods: group into 5 to 7 year periods
- The basis of the analysis is the number of cumulative insured lives by exposure period
- The population of firefighters considered to be "white males" for population benchmarking
- The number of firefighters provided by pool; cumulated across pool history with X% turnover assumption.
Statistics

Frequency

Severity

Frequency – Industry Data

- The number of cancer diagnoses and mortalities in each exposure period is estimated by an incidence and mortality rate, respectively, applied to the number of insured lives.
  - Based on National Cancer Institute’s Surveillance, Epidemiology, and End Results Program (“SEER”) cancer statistics.

- According to the National Institute for Occupational Safety and Health’s (“NIOSH”) study of 30,000 firefighters from three large cities, firefighters have higher rates of several types of cancers, and of all cancers combined, than the US population as a whole (results issued in October, 2013). As a result of the study, the researchers developed standardized incidence ratios (“SIR”) and standardized mortality ratios (“SMR”) for each cancer type that represent the difference in the rate of cancer incidence and mortality in firefighters in comparison to the US male, Caucasian population. In our analysis, we applied NIOSH’s firefighter adjustment factors to the SEER statistics, consistently for all exposure periods. We note that while several cancer types have higher frequency rates, according to the study, not all cancers do, including three (3) that are included in our analysis.

- The table on the next slide illustrates the SIRs and SMRs derived from the study by cancer type.
  - We note that since Melanoma of the Skin, Pancreas Cancer, and Thyroid Cancer are not listed separately in the October 2013 NIOSH study, the SMRs and SIRs for All Cancers were used.
Frequency Relativities

<table>
<thead>
<tr>
<th>NIOSH Study of Firefighters</th>
<th>Firefighter Adjustment for Cancer Incidence and Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standardized Incidence Ratio</td>
</tr>
<tr>
<td>Prostate Cancer</td>
<td>1.03</td>
</tr>
<tr>
<td>Non-Hodgkin's Lymphoma</td>
<td>0.99</td>
</tr>
<tr>
<td>Multiple Myeloma</td>
<td>0.72</td>
</tr>
<tr>
<td>Testicular Cancer</td>
<td>0.75</td>
</tr>
<tr>
<td>Bladder Cancer</td>
<td>1.12</td>
</tr>
<tr>
<td>Colon and Rectum Cancer</td>
<td>1.11</td>
</tr>
<tr>
<td>Kidney and Renal Pelvis Cancer</td>
<td>1.27</td>
</tr>
<tr>
<td>Leukemia</td>
<td>0.94</td>
</tr>
<tr>
<td>Lung and Bronchus Cancer</td>
<td>1.12</td>
</tr>
<tr>
<td>Melanoma of the Skin</td>
<td>1.09</td>
</tr>
<tr>
<td>Pancreas Cancer</td>
<td>1.09</td>
</tr>
<tr>
<td>Thyroid Cancer</td>
<td>1.09</td>
</tr>
<tr>
<td>Esophageal Cancer</td>
<td>1.62</td>
</tr>
<tr>
<td>Stomach Cancer</td>
<td>1.15</td>
</tr>
<tr>
<td>Brain Cancer</td>
<td>1.02</td>
</tr>
<tr>
<td>All Other Cancers</td>
<td>1.09</td>
</tr>
</tbody>
</table>

October 2013 NIOSH study; Firefighter adjustment to SEER frequency statistics
> 1.0 more prevalent; < 1.0 less prevalent

Severity/Total Costs

- Workers compensation benefits: cost of medical care, indemnity benefits for lost-time of work, and a lump sum payment for death plus survivor(s) benefits
  - Medical treatment: annual cost of being treated for a particular cancer type and the number of years treatment is undergone
  - Indemnity benefits: an estimate of work missed due to treatment and lost time benefits
  - Death (insured) benefit: estimated as $X (detrended for the prior exposure periods) per cancer related death
  - Death (survivor) benefit: estimated Y% are married upon death; assumed to provide annual benefits for Z years (until spouse death/remarried)
Cost of Medical Treatment

- Start with the number of insured lives
- Multiply by incidence rate
  - Surveillance Epidemiology and End Results data from National Cancer Institute
  - Rate applicable to white males
  - Incidence rates vary by cancer type
- Multiply by the relativity of firefighters to the general population
  - From NIOSH Firefighter Study
- Result is number of diagnoses

- Cost per diagnosis = cost per year of treatment multiplied by years of treatment (based on available research)
- Cost of medical treatment = number of diagnoses multiplied by cost per diagnosis

Cost of Indemnity Benefits

- Start with the number of diagnoses
- Multiply by percent diagnosed prior to retirement (varies by cancer type)
  - Surveillance Epidemiology and End Results data from National Cancer Institute
- Multiply by percent working age diagnosed while still employed
  - X% still working of full time, Y% still working of volunteer
- Multiply by percent of work missed due to treatment (varies by cancer type)
- Multiply by annual benefits
  - Based on State Average Weekly Wage
- Result is total cost of indemnity benefits
Cost of Death Benefits

- Start with the number of insured lives
- Multiply by mortality rate
  - Surveillance Epidemiology and End Results data from National Cancer Institute
  - Rate applicable to white males
  - Mortality rates vary by cancer type
- Multiply by the relativity of firefighters to the general population
  - From NIOSH Firefighter Study
- Multiply by X% - deaths presented that are expected to meet presumption requirements
- Result is number of deaths

- Cost of insured death = number of deaths multiplied by "death benefit"
- Cost of survivor(s) benefits = number of deaths multiplied by expected percent married upon death multiplied by number of years until spouse either dies or remarries multiplied by annual benefits
- Cost of total death benefits = cost of insured death plus cost of survivor(s) benefits

Solution

- Financial position of pool is responsibility of management and regulators
  - Be informed and communicate impact of laws
- Accounting treatment
  - Liability vs. contingent reserve
- Retroactive
  - Unfunded mandate
  - Member assessments
  - Funding provisions
- Prospective
  - Impact to member contributions
- Be part of the political process
Conclusion

- Maze of issues
- Research
- Political process
- Negotiate
- Set pricing levels
- Ensure long-term solvency
- Transparency

Thank you

Chris Kogut