Tracking Work-Related Burns in Michigan

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Background

- Work-related traumatic injuries are reportable
- Surveillance of work-related burns to:
  - Identify industries, occupations, demographics
  - Understand magnitude and extent
  - Intervene and prevent similar injuries
- 2009 – First year of compiling occupational burns data
Background

- Nationally, BLS reported 24,730 burns in 2009. This corresponds to a rate of 2.3 per 10,000 workers.

- BLS reported 450 cases for MI for 2009. This corresponds to a rate of 1.5 per 10,000 workers.
Background

- **MDCH**
  - Promulgated reporting rule

- **MSU Occupational & Environmental Medicine**
  - Receives reports
  - Confirms work-related burn diagnoses
  - Summarizes information learned from surveillance
  - Develops prevention strategies
  - Case referral to MIOSHA

- **MIOSHA**
  - Work place enforcement investigations of referred cases
Work-Related Burn Reporting Sources

- Hospitals/Emergency Departments (ED)
  - ICD-9 940.0-.9 – 949.0-5 (Burns)
  - ICD-9 E890.0-.9 – E899 (Accidents Caused by Fire)
- Workers’ Compensation Agency (WC)
- Poison Control Center (PCC)
- Michigan Fatality Assessment and Control Evaluation (MIFACE)
Summary Statistics, Michigan 2009

- 1,461 individuals sustained work-related burns
- Types of medical encounters:
  - ED visits – 1,104 (75.6%)
  - Outpatient visits – 80 (5.5%)
  - Hospitalizations – 64 (4.4%)
  - Unknown – 213 (14.5%)
- 2 fatalities
2009 Michigan Reports – By Source

HOSPITALS/EDs (1,248)

MIFACE (2)

WC (306)

BLS

PCC (106)

n= 1,461 individuals
Workers’ Compensation Data, Michigan 2009

- 25,091 MI WC claims for work-related injuries and illnesses with 7 consecutive days away from work

- 306 (1.2%) cases identified as work-related burn
306 WC Claims – A Closer Look.....

- 262 Thermal and 18 Chemical Burns
  - 132 did not match hospital/ED or PCC records
  - 148 matched hospital/ED records
- 25 matched hospital/ED records by name, date of birth and date of injury and had injury description as something other than “Burn”
- 1 matched PCC’s record
  - Description of Injury: Skin Infection
25 WC “Other Injury” Descriptions

- 6 “Unclassified”
- 5 “Electric Shock”
- 5 “Multiple Injuries”
- 2 “Fracture”
- 2 “Inflam-Joints”
- 1 “Crush/Contusion”
- 1 “Cut/Laceration”
- 1 “Strains/Sprains”
- 1 “Abrasion/Scratch”
- 1 “Toxic Mat.”
Worker Demographics, Michigan 2009

- Males: 885 (60.6%)
- Average Age: 35; Age range: 16-72

*Race available only for 51% of all individuals.
Burn Type, Michigan 2009

- Burn type specified: 1,402 (96%) individuals
Part of Body Injured, Michigan 2009

- Burn-related primary diagnosis: 1,445 (98.9%) individuals

<table>
<thead>
<tr>
<th>Body Part</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wrist(s) and Hand(s)</td>
<td>34.2%</td>
</tr>
<tr>
<td>Upper Limb</td>
<td>20.6%</td>
</tr>
<tr>
<td>Head, Face, Neck</td>
<td>13.4%</td>
</tr>
<tr>
<td>Lower Limb</td>
<td>11.6%</td>
</tr>
<tr>
<td>Eye</td>
<td>10.7%</td>
</tr>
<tr>
<td>Trunk</td>
<td>3.8%</td>
</tr>
<tr>
<td>Multiple, Specified Sites</td>
<td>2.2%</td>
</tr>
<tr>
<td>Unspecified</td>
<td>1.5%</td>
</tr>
<tr>
<td>Classified According to Extent</td>
<td>1.5%</td>
</tr>
<tr>
<td>Internal Organs</td>
<td>0.5%</td>
</tr>
</tbody>
</table>
Severity of Burn

- First Degree – involves only epidermis (outermost layer).
- Second Degree – involves epidermis and some portion of dermis (second layer).
- Third Degree – involves all of epidermis and dermis. Permanently destroys tissue.
- Fourth Degree – extends through epidermis, dermis, subcutaneous tissue and into muscle and bone.

Image Source Page:
http://burn-victim-help-center.com/docs/typsofburns.cfm
Severity of Burn, Michigan 2009

- Degree of burn specified: 1,024 (70.1%) individuals
Industry of Burn, Michigan 2009

Sufficient information for industry classification: 1014 (69.5%) individuals

<table>
<thead>
<tr>
<th>Industry Classification (NAICS)</th>
<th>Number</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
<td>Accomodation and Food Services (72)</td>
<td>345</td>
<td>34</td>
</tr>
<tr>
<td>Health Care and Social Assistance (62)</td>
<td>168</td>
<td>16.6</td>
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<tr>
<td>Primary Metal Manufacturing (33)</td>
<td>72</td>
<td>7.1</td>
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<tr>
<td>Public Administration (92)</td>
<td>65</td>
<td>6.4</td>
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<tr>
<td>Retail Trade (44)</td>
<td>55</td>
<td>5.4</td>
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<tr>
<td>Construction (23)</td>
<td>40</td>
<td>3.9</td>
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<tr>
<td>Educational Services (61)</td>
<td>40</td>
<td>3.9</td>
</tr>
<tr>
<td>Wholesale Trade (42)</td>
<td>38</td>
<td>3.7</td>
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<tr>
<td>Wood Products/ Paper/ Petroleum and Coal Products Manufacturing (32)</td>
<td>37</td>
<td>3.6</td>
</tr>
<tr>
<td>Food, Beverage, Textile Manufacturing (31)</td>
<td>35</td>
<td>3.5</td>
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<tr>
<td>Other Services (except Public Administration) (81)</td>
<td>24</td>
<td>2.4</td>
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<tr>
<td>Arts, Entertainment, and Recreation (71)</td>
<td>23</td>
<td>2.3</td>
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<tr>
<td>Admin and Support and Waste Mgt and Remediation Svcs (56)</td>
<td>21</td>
<td>2.1</td>
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<tr>
<td>Sporting Goods, Hobby, Book, and Music Stores (45)</td>
<td>15</td>
<td>1.5</td>
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<tr>
<td>Professional, Scientific, and Technical Services (54)</td>
<td>11</td>
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<tr>
<td>Real Estate and Rental and Leasing (53)</td>
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<td>Transportation and Warehousing (48)</td>
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<tr>
<td>Agriculture, Forestry, Fishing and Hunting (11)</td>
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<td>Utilities (22)</td>
<td>4</td>
<td>0.4</td>
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<tr>
<td>Information (51)</td>
<td>2</td>
<td>0.2</td>
</tr>
<tr>
<td>Mining, Quarrying, and Oli and Gas Extraction (21)</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,014</strong></td>
<td></td>
</tr>
</tbody>
</table>


MIOSHA Enforcement Inspections

- MIOSHA referral criteria:
  - 2009 Hospitalization OR
  - Individuals who had 2nd or 3rd degree burns within past 6 months
  - All NAICS codes
Burn Injury Narrative Examples, Michigan 2009

- A female in her thirties sustained 3rd degree burns with hot glue after her hand was caught by a roller press.
- A male in his thirties working in a fast food restaurant slipped and his hand came down onto the grill surface (350°F); he sustained 2nd degree burns.
- A male in his twenties suffered an electrocution injury to his posterior trunk, upper extremities, and lower extremities while cutting trees; 12% TBSA 2nd and 3rd degree burns. He was standing by his truck when the energy from one of the electrical wires was transferred to the truck and the current was conducted through his body to ground.
- A male in his thirties was operating a molding die press when his hand was trapped in it; he sustained severe crush injury and burns.
- A female in her twenties caught her upper extremity under an iron press during dry cleaning; 4% TBSA 2nd and 3rd degree burns to hand and upper limb.
- A male in his fifties was blowing out a pipeline that contained oil substances/mineral spirits with a high pressure oxygen system, and there was an explosion; he sustained 25% TBSA 2nd and 3rd degree burns.
MIOSHA Enforcement Inspections, 2009

- 6 Enforcement Inspections (non-fatal)

Examples:

- Dry Cleaning
  
  **Violation:** Two hand controls not guarded against accidental activation of a shirt steam press.

- All Other Specialty Trade Contractors
  
  **Violation:** Employer failed to train and prohibit an employee from pressurizing a metallic vessel with an unregulated 200 cubic ft compressed gas cylinder, producing pressure in excess of 2000 pounds per square inch gauge (PSIG), which was not intended to be operated in excess of 15 PSIG.

[MIOSHA Inspections\812320.MOD](MIOSHA%20Inspections\812320.MOD)

[MIOSHA Inspections\238990.MOD](MIOSHA%20Inspections\238990.MOD)
Burn *Fatality* Narratives, Michigan 2009

- A male in his sixties was piloting a Beech A36TC when it was destroyed following impact with the ground and a subsequent fire (80%-90% TBSA).
- A male in his twenties (maintenance journeyman apprentice) was electrocuted after contacting 40,000-volt energized electrical lines. Performing substation maintenance to remove and repair electrical cables (30%-50% TBSA).
Work-Related Burn Summary, Michigan 2009

- WC: 306
- BLS: 450
- MI Surveillance: 1,461

Ratio:
- BLS to WC: 4.77X
- MI Surveillance to BLS: 3.25X
BLS Undercount – Possible Explanations

- Includes only one or more days away from work
- Self employed – only 11
- Farms – only 5
- Employer reporting
- Statistical Sampling/extrapolation
- Coding/miscoding
WC Undercount – Possible Explanations

- Includes only 7 consecutive days away from work
- Self employed – only 11
- Coding/miscoding
- Handled unofficially through company
Summary

- Lessons learned, future directions:
  - Working on quarterly hospital reporting
  - More timely work place interventions
  - More work place interventions
  - Educational materials
  - For Hospitals/EDs the reporting age will be lowered to 14 years.
THANK YOU
Questions?

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