Glove and Gown Use When Administering Antineoplastic Drugs by Pregnant and Non-Pregnant Nurses

Christina Lawson, PhD
Epidemiology Team Leader
Division of Field Studies and Engineering

August 2019
Antineoplastic Drugs

*Treatment expanded*: Oncology, dermatology, neurology, rheumatology, operating rooms
Antineoplastic Drugs as Carcinogens and Teratogens

Reproductive Epi Studies: Studies of patients versus studies of healthcare workers
Increased Risk: Administration of antineoplastic drugs by pregnant nurses associated with congenital anomalies and miscarriages

Conclusions of NTP Monograph:

• Moderate Level of Risk
  • Miscarriage
  • Genetic Toxicity

• Detectible Levels
  • Workers’ blood and urine
  • Work environment

• Exposure may be decreasing
  • PPE
  • Safe handling guidelines
Literature: Study Limitations

*Data Gap*: We need to know the risks for current exposure scenarios
Objectives

- Assess glove and gown use among
  - nonpregnant female nurses who had administered antineoplastic drugs within the past month
  - pregnant nurses who had administered such drugs during the first 20 weeks of pregnancy
Participants

- U.S. and Canadian nurses and nursing students
- Born January 1, 1965+; ages 18-46 at enrollment
- Open recruitment 2010+
- Registered nurses (RNs), licensed practical/vocational nurses (LPNs/LVNLS) and nursing students
- Web-based surveys
Data Collection

Ever/Never administered; frequency and duration
Gloves and gowns: how often in past month worn (always, sometimes, never)
Antineoplastic Drug Administration

39,124 non-pregnant nurses
33.7 mean age
36% ever administered
27% administered in past month
24% 3+ times per week
Antineoplastic Drug Administration

39,124 non-pregnant nurses
33.7 mean age
36% ever administered
27% administered in past month
24% 3+ times per week

4,269 pregnant nurses
29.5 mean age
7% administered in first 20 weeks of pregnancy (n=315)
Glove use by pregnancy status

Non-pregnant:
- Always: 80%
- Sometimes: 7%
- Never: 12%

Pregnant:
- Always: 86%
- Sometimes: 2%
- Never: 9%
Gown use by pregnancy status

- **Non-pregnant**
  - Always: 41%
  - Sometimes: 14%
  - Never: 42%

- **Pregnant**
  - Always: 52%
  - Sometimes: 7%
  - Never: 38%
Glove use by type of administration, among 1,492 non-pregnant nurses

<table>
<thead>
<tr>
<th>Type of Administration</th>
<th>Always</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infusion only</td>
<td>89%</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>Crushed pills</td>
<td>54%</td>
<td>8%</td>
<td>32%</td>
</tr>
<tr>
<td>Intact pills</td>
<td>66%</td>
<td>9%</td>
<td>20%</td>
</tr>
<tr>
<td>Combination infusions and pills</td>
<td>89%</td>
<td>5%</td>
<td>5%</td>
</tr>
</tbody>
</table>
Gown use by type of administration, among 1,492 non-pregnant nurses

<table>
<thead>
<tr>
<th>Method</th>
<th>Always</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infusion only</td>
<td>56%</td>
<td>30%</td>
<td>12%</td>
</tr>
<tr>
<td>Crushed pills</td>
<td>72%</td>
<td>13%</td>
<td>7%</td>
</tr>
<tr>
<td>Intact pills</td>
<td>66%</td>
<td>15%</td>
<td>6%</td>
</tr>
<tr>
<td>Combination infusions and pills</td>
<td>57%</td>
<td>16%</td>
<td>25%</td>
</tr>
</tbody>
</table>
Summary

- Many nurses did not wear gloves and gowns
- Glove and gown use was higher among pregnant than non-pregnant nurses
- Glove use was markedly higher when administering infusion compared to pills
Limitations

- Lacking information on:
  - Double Gloves, Training, Barriers for use
  - Nursing specialties not collected
  - Facility type
Discussion

- Fetal development during first 20 weeks
- All nurses in our study were of reproductive age
- Many antineoplastic drugs are carcinogenic
Discussion

Reasons

- Priorities
- Awareness
- Training
- Availability of PPE
- Time concerns
Acknowledgements

NIOSH

- Candice Johnson
- Carissa Rocheleau
- Thomas Connor
- James Boiano

Harvard

- Feiby Nassan
- Jorge Chavarro
- Janet Rich-Edwards

Thank you!

For more information, contact CDC
1-800-CDC-INFO (232-4636)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.