Effects of an Intervention to Reduce Vasovagal Reaction in Young Whole Blood Donors on Needle Related Injury and Incomplete Collection

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INTRODUCTION
Effect of Interventions Intended to Reduce Vasovagal Reaction Rate on 17-22 y/o WB donors

- Vasovagal Reaction Rates: 24% reduction
- Needle Related Injuries: Unknown
- Incomplete Collections: Unknown
Needle Related Injuries

- Hematoma
- Arterial Puncture
- Other incidents (non-hematoma, non-infiltration, non-arterial puncture)

Definitions:

- **Hematoma**
- **Arterial Puncture**
- **Other incidents** (non-hematoma, non-infiltration, non-arterial puncture)
Definitions:

**Incomplete Collections**

- Donations <450 mL
- Collection stopped due to various reasons (i.e. slow blood flow, reactions, etc.)
Retrospective observational cohort study design

17-22 y/o, WB donations
24 months
N= 213,031

Methods
17-22 y/o, WB donations
24 months
N= 213,031

Interventions Intended to Reduce Vasovagal Reaction Rate
1) donor selection based on a limit on the maximum percent (15%) of estimated blood volume young donors could donate,
2) encouraging applied muscle tension during donation, and
3) providing 500 mL of water before donation.
Rate of NRI and incomplete collections among allogeneic WB donations

<table>
<thead>
<tr>
<th>Incident</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hematomas</td>
<td>0.37</td>
<td>0.36</td>
</tr>
<tr>
<td>Arterial punctures</td>
<td>0.05</td>
<td>0.03</td>
</tr>
<tr>
<td>Other Incidents*</td>
<td>1.52</td>
<td>1.33</td>
</tr>
<tr>
<td>TOTAL Incidents</td>
<td>1.95</td>
<td>1.74</td>
</tr>
</tbody>
</table>

- Hematomas: 0.37 vs. 0.36 (p < 0.001)
- Arterial punctures: 0.05 vs. 0.03
- Other Incidents*: 1.52 vs. 1.33
- TOTAL Incidents: 1.95 vs. 1.74

Incomplete Collection:
- Pre-Intervention: 48.82%
- Post-Intervention: 45.35%

7% reduction in incompleteness post-intervention.
CONCLUSION
Effect of Interventions Intended to Reduce Vasovagal Reaction Rate on 17-22 y/o WB donors

Vasovagal Reaction Rates: 24% decrease
Needle Related Injuries: Not significant
Incomplete Collections: 7% decrease
Predictors of Fainting across the Time Course of Blood Donation

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• Donor and donation characteristics associated with vasovagal adverse reactions have been identified.
• Whole blood donation encompasses several stages during which donors experience different psychological and hemodynamic challenges.
Methods: Time Course

PERIOD 1
Registration Medical health screening

PERIOD 2
Venipuncture to 4 minutes after end of phlebotomy

PERIOD 3
Starts > 4 minutes after end of phlebotomy: 2 sub-groups based on location of fainting:
- 3A, on-site
- 3B, off-site

4 min. after End of Phlebotomy

Multivariable logistic regression analysis to identify factors associated with fainting
Fainting Rates Across Time Course of Blood Donation
(2007 Data)
Overall Fainting Rates
Across Time Course of Blood Donation

Rate/1000 Donations

Period 1  |  Period 2  |  Period 3A  |  Period 3B
--- | --- | --- | ---
0.04  | 1.06  | 1.37  | 0.22

Donation Periods
By Period:
Summary of Adjusted Odds Ratios Across Time Course of Blood
By Donor and Donation Characteristic:
Summary of Adjusted Odds Ratios Across Time Course of Blood
Conclusions

- Variability in factors associated with fainting across defined periods of the donation process suggest differing underlying mechanisms.
- Before venipuncture challenges seem psychological; after, physiological factors including hemodynamic compensation play increased roles.
Conclusions

- Blood Volume, gender and age are most associated with LOC/injury (Period 3)
- Interventions for the factors most associated with injury during different time periods can be designed.