CYANOACRYLATE GLUE IN NEONATAL PERIPHERAL VENOUS ACCESS.

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Over thirty years clinical experience in neonatal nursing

Holding a masterd in Advanced Nursing Practice.

Worked in the Netherlands and more recently in the Middle East (Qatar).

Published several research articles related to improvement of neonatal vascular access.
DISCLOSURE

• Nothing to declare.

No off-label product use will be discussed.
THE 5 RIGHTS FOR NEONATAL VASCULAR ACCESS

1. The **right** DEVICE
2. for the **right** VEIN
3. with the **right** THERAPY
4. for the **right** DURATION
5. by the **right** CLINICIAN (TEAM)
1. CENTRAL

1. MIDLINE OR EXTENDED DWELL

2. PERIPHERAL INTRA-VENOUS
FOR THE RIGHT VEIN

- Healthy.
- Vein path should be straight.
- Length long enough for catheter.
- Diameter in ratio for the diameter of catheter (45%*).

Vein visualization is highly recommended by all international IV standards.
Infusion Fluids:
• Flowrate.
• pH 5-9.
• Osmolatity 600 osmoll/L (900 osmoll/L).
• Vesicant solutions like vasopressors.
• Known irritant solution like most antimicrobials.
• For short- or long-term requirements.
### For the Right Duration*

<table>
<thead>
<tr>
<th>Type</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peripheral IV Catheters</td>
<td>$\leq 2$ days</td>
</tr>
<tr>
<td>Extended Dwell Catheters</td>
<td>$&gt; 2$ days and $\leq 5$ days</td>
</tr>
<tr>
<td>Central Venous Catheters</td>
<td>$&gt; 5$ days</td>
</tr>
<tr>
<td>Umbilical Catheters</td>
<td>$\leq 5$ days</td>
</tr>
<tr>
<td>Port</td>
<td>long term access or if clinical conditions require</td>
</tr>
</tbody>
</table>

*Hamad hospital policy based on international guidelines.*
INTRAVENOUS VASCULAR ACCESS DEVICE SELECTION CRITERIA

For non-emergent use
Selection based on:
• Intended insertion technique.
• Patient weight.
• Blood vessel size.
• Flow rates.
• Single or double lumen.

ED-PIVC=extended dwell peripheral IV catheter, PICC=peripherally inserted central catheter, PIVC peripheral intravenous catheter, PN=parenteral nutrition, UVC=umbilical catheter
5 BY THE RIGHT CLINICIAN (TEAM)

• Educated & Trained.
• Skilled.
• Competent (legal practice).
• Data collection.
• Preferably dedicated vascular access team.
MOST FREQUENT USE DEVICE

PERIPHERAL IV DEVICE (PIVC)
COMPLICATION RATES IN OBSERVATIONAL RESEARCH


CONTRADICTION

High complication rates

Few innovations
innovation

creativity
inspiration
vision
technology
challenge
idea
analysis
values
mission

business
solution
process
tactic
research
success
synergy
development
project
strategy
growth
target
skill
planning
corporate
WHAT IS CYANOCRYLATE (CA) GLUE?

• Cyanoacrylate is a strong fast-acting adhesive developed for medical use.
• Cyanoacrylate rapidly polymerizes in the presence of water to form long, strong chains.
• Effective in a few seconds.

• It can be used for all types of intravenous catheters.
WHAT DOES CA GLUE DO?

• Creates a strong seal, which:
  • reduces catheter movement, migration, and dislodgement,
  • keeps the dressing cleaner and dry, and potentially reducing unnecessary dressing changes,
  • provides hemostasis.

• Has antimicrobial characteristics against microorganisms usually associated with bloodstream infections (CRBSI).

• The used glue potentially mitigates the spread of microorganisms by immobilizing the skin flora at the insertion site and preventing extraluminal entry of microbes.
Insertion technique:

- Select the best vein.
Insertion technique:

• Select the best vein.
• Perform skin antisepsis.
Insertion technique:

• Select the best vein.
• Perform skin antisepsis.
• Peripheral catheter successfully inserted.
Insertion technique:

• Select the best vein.
• Perform skin antisepsis.
• Peripheral catheter successfully inserted.
• Apply barrier solution.
Insertion technique:

• Select the best vein.
• Perform skin antisepsis.
• Peripheral catheter successfully inserted.
• Apply barrier solution.
• Apply 1-2 dr cyanoacrylate glue.
Insertion technique:

• Select the best vein.
• Perform skin antisepsis.
• Peripheral catheter successfully inserted.
• Apply barrier solution.
• Apply 1-2 dr cyanoacrylate glue.
• Anchor the catheter hub.
Insertion technique:

- Select the best vein.
- Perform skin antisepsis.
- Peripheral catheter successfully inserted.
- Apply barrier solution.
- Apply 1-2 dr cyanoacrylate glue.
- Anchor the catheter hub.
- Secure transparent dressing.
Insertion technique:

• Select the best vein.
• Perform skin antisepsis.
• Peripheral catheter successfully inserted.
• Apply barrier solution.
• Apply 1-2 dr cyanoacrylate glue.
• Anchor the catheter hub.
• Secure transparent dressing.
• Attach ivWatch sensor.
• Splint only if needed.
LET'S ZOOM INTO RESEARCH
112 bed University Hospital
Level III-IV NICU
Average daily census: 100 babies

Annually 4000+ admissions
- 400 Umbilical catheters
- 600 Neonatal PICC catheters
- 10,000 Peripheral IV catheters
Octyl-butyl-cyanoacrylate glue for securement of peripheral intravenous catheters: A retrospective, observational study in the neonatal population

Matheus FPT van Rens¹, Timothy R Spencer², Kevin Hugill³, Airene LV Francia¹, Fredericus HJ van Loon⁴,⁵ and Mohammad AA Bayoumi¹
OUR RESEARCH RESULTS

- 12 month observational study
- 8,330 Peripheral Intra Venous Catheters (PIVC) in NICU

No MARS

77% PHLEBITIS

20% DWELL TIME

25% PREMATURE REMOVAL
### OUR RESEARCH

**Table 2.** Intravenous access data for cohort groups.

<table>
<thead>
<tr>
<th>Reason of removal</th>
<th>Non-CG group ( n = 4457 ) (%)</th>
<th>CG group ( n = 3873 ) (%)</th>
<th>( p )-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective</td>
<td>1655 (37)</td>
<td>1919 (49)</td>
<td>(&lt;0.001)</td>
</tr>
<tr>
<td>Accidental</td>
<td>130 (3)</td>
<td>105 (3)</td>
<td></td>
</tr>
<tr>
<td>Leaking</td>
<td>445 (10)</td>
<td>386 (10)</td>
<td></td>
</tr>
<tr>
<td>Occlusion</td>
<td>219 (5)</td>
<td>160 (4)</td>
<td></td>
</tr>
<tr>
<td>Phlebitis</td>
<td>594 (13)</td>
<td>123 (3)</td>
<td></td>
</tr>
<tr>
<td>Infiltration/extravasation</td>
<td>1365 (31)</td>
<td>1121 (29)</td>
<td></td>
</tr>
<tr>
<td>Lost to follow-up</td>
<td>49 (1)</td>
<td>59 (2)</td>
<td></td>
</tr>
<tr>
<td><strong>Dwell time</strong></td>
<td><strong>31.0 ± 24.3</strong></td>
<td><strong>37.1 ± 31.1</strong></td>
<td>(&lt;0.001)</td>
</tr>
</tbody>
</table>
CONCLUSION

• Securement with tissue adhesive is a safe and effective method for short-term vascular access among the neonatal population.

• The risk for the development of a PIVC related complication leading to premature removal of the device increased significantly if no glue for catheter securement was used.

• No published international literature available, this study is the first of its kind in a neonatal population.
REMOVAL OF CATHETER AND GLUE

• Mostly a gentle rolling manipulation in a horizontal direction is enough.
• ONLY if required use a silicone based adhesive remover.

• It is not necessary to remove all the glue. Only sufficient to enable to remove the device (any remainder will naturally separate in time).

• Note: apply only 1 or 2 drops of glue, otherwise it makes removal more difficult.
2021 Infusion Therapy Standards of Care: Standard 38 – Vascular Access Securement (Gorski et al., 2021, pp. S108-S111)
REFERENCES


REFERENCES (CONTINUATION)


• van Rens M, Hugill K, Gaffari MAK, et al Outcomes of establishing a neonatal peripheral vascular access team, *Archives of Disease in Childhood - Fetal and Neonatal Edition*. Published Online First: 07 October 2021. https://doi.org/10.1136/archdischild-2021-327642

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