FDA Regulation of Point of Care Testing Coagulation Devices

Focused on PT INR POC Testing

Claudia Dollins, PhD RAC
Food and Drug Administration
Center for Devices and Radiological Health
Office of In Vitro Diagnostics and Radiological Health
Overview

• Point of Care testing (POCT) spectrum

• Benefits and challenges of POCT

• Considerations for device validation
Not all POC devices are alike...
POCT Spectrum

- **Wide spectrum of sites:**
  - Coagulation clinics, emergency department, physician’s offices, ambulance, nursing facilities, home

- **Wide spectrum of operators:**
  - Laboratory professionals to lay people or patients

- **Wide spectrum of regulatory claims:**
  - Matrixes, analytical measurement ranges, analyte, etc.
Examples of POC Scenarios

- **Emergency Room:**
  - Performed by nurses and professional laboratory staff

- **Physicians Office:**
  - Performed by nurses, PAs, office staff

- **Home Use:**
  - Performed by patients, lay or other caregivers
Benefits of POC Testing

- Rapid Therapeutic Turnaround Time (TTAT)
  - Reduced time until treatment onset
- Reduce number of physician office visits
  - Cost reduction
  - Increased time in therapeutic range
- Increased access
- Ease of use
- Smaller specimen
Challenges of POC Testing

- Less controlled testing environment
- Pre-analytic variables
- Specimen/reagent/control degradation
- Effect of sample matrixes
- Limited/current operator training
- Patient condition (HCT and PLT count)
- Risk of infection in multiple use settings

PT INR Devices:
- Narrow therapeutic range for warfarin therapy
- Severity of adverse events
<table>
<thead>
<tr>
<th>Challenge</th>
<th>Performance Validation</th>
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<tbody>
<tr>
<td><strong>Increased testing variability:</strong></td>
<td><strong>Repeatability:</strong> Duplicate testing in method comparison study</td>
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<tr>
<td>- Less controlled testing environment</td>
<td><strong>Reproducibility:</strong> Both patient samples and control material for instrument and operator variability</td>
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<td>- Pre-analytic variables</td>
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<td><strong>Specimen/reagent/control degradation</strong></td>
<td><strong>Stability testing:</strong> Specimen, reagent and controls</td>
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<td><strong>Patient condition</strong> (HCT and PLT count)</td>
<td><strong>Interference testing</strong></td>
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<td>Challenge</td>
<td>Performance Validation</td>
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<tr>
<td><strong>Effect of sample matrices</strong></td>
<td><strong>Matrix comparison studies</strong></td>
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<tr>
<td>- Venous whole blood</td>
<td>Evaluation of performance in each matrix</td>
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<td>- Capillary whole blood etc.</td>
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<td><strong>Limited/current operator training</strong></td>
<td><strong>Review of training protocols</strong></td>
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<td><strong>Prescription Home Use/ Single Patient Use</strong>: Ease of use, need to demonstrate that lay user can successfully and reliably operate device and interpret output, training material**</td>
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<td><strong>Performance testing by intended users</strong></td>
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<td><strong>Risk of infection in multiple use settings</strong></td>
<td><strong>Cleaning and disinfection testing</strong> to mitigate risk of transmission of blood-borne pathogens**</td>
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<td>PT/INR Devices</td>
<td>Narrow acceptance criteria to ensure clinically acceptable performance</td>
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<tr>
<td>- Narrow therapeutic range for warfarin therapy</td>
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<td>- Severity of adverse events</td>
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<td>Accuracy: Closeness of agreement between a measurement and plasma-based laboratory reference</td>
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<td>Method comparison: Comparison to a cleared POC device (in addition to laboratory reference)</td>
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Additional Considerations for Performance Validation

- **Intended Use population** (Patients on stable warfarin therapy, not transitioning)
- **Intended User population** (Health care professionals, lay users, etc.)
- **Intended Use setting** (Hospital, home, etc.)
- **Intended Use matrix** (Venous, capillary, etc.)
- AMR
Conclusions

• Point of Care testing (POCT) spectrum

• Benefits and challenges of POCT

• Considerations for device validation
Resources

• Presubmission Guidance:
Thank you for your attention……

Claudia.Dollins@fda.hhs.gov
(301) 796-4807