Maximizing the Impact of Temperature Monitoring Studies

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Temperature monitoring studies (TMS) are a powerful tool for improving vaccine safety and efficacy. A TMS involves:

1. Packing data loggers into vaccine shipments, which monitor storage conditions throughout each level of the cold chain.
2. Analysing results to show the degree of temperature risk, and where vaccines major excursions occur.

This evidence can build substantial political will for adopting targeted solutions to reducing temperature risk in the cold chain.

Introduction

Definition of a Successful TMS

<table>
<thead>
<tr>
<th>Identify the type(s) of risk in the cold chain...</th>
<th>and the highest risk levels</th>
<th>...to drive changes that prevent future exposures.</th>
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</thead>
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Three Lessons-Learned in Protocol Design

1. Increase the sample size to better detect risk in transit and mid-level stores.
2. Include a sufficient number of sites at each level of the cold chain.
3. Plan for delays! Some logger shipments can take up to 3 months.

Minimum 4 Sites Per Level

Target Solutions at the Exposures Detected in the TMS

<table>
<thead>
<tr>
<th>Location</th>
<th>Solutions</th>
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<tbody>
<tr>
<td>CVS</td>
<td>• Adopt the use of cool water packs, instead of ice packs.</td>
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<tr>
<td>RVS</td>
<td>• Improve temperature monitoring and control (TMC), using an optimal TM device (see CHAI poster).</td>
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<tr>
<td>DVS</td>
<td>• Procure non-freeze and long holdover CCE.</td>
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<tr>
<td>HF</td>
<td>• Improve 30-DTR (e.g. FridgeTag) use, focusing on detecting exposure events and linking to maintenance processes.</td>
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<td>• Replace aging CCE with non-freeze and/or SDD fridges.</td>
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</table>

Three Most Actionable TMS Results

1. Determining if FREEZE or HEAT EXPOSURE is posing the greatest risk to vaccines.
2. Identifying which LEVELS see the most dangerous exposures.
3. Isolating the FRACTION OF SITES at EACH LEVEL that have dangerous exposures.

Two Tips for Study Execution

A detailed and country-specific shipment tracking form will make data collection and analysis easier.

Involve EPI and partners from Day One to increase buy-in to results & political will to make changes.

CHAI has example protocols and forms that can help with these elements and are available on request.

Acknowledgments

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