Creating Visual Context for Hard-to-Evaluate Data

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Evaluability of Risk Information
Imagine Robert

Your 10-year risk of cardiovascular disease is: 11.22%
“Am I at high risk, or not?”
Evaluability of Laboratory Test Results
Can Patients *Use* This?

<table>
<thead>
<tr>
<th>Component</th>
<th>Your Value</th>
<th>Standard Range</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBC Count</td>
<td>5.2</td>
<td>4.0 - 10.0</td>
<td>K/MM3</td>
</tr>
<tr>
<td>Hemoglobin</td>
<td>15.8</td>
<td>13.5 - 17.0</td>
<td>g/dl</td>
</tr>
<tr>
<td>Hematocrit</td>
<td>44.7</td>
<td>40.0 - 50.0</td>
<td>%</td>
</tr>
<tr>
<td>Platelet Count</td>
<td>145</td>
<td>150 - 400</td>
<td>K/MM3</td>
</tr>
<tr>
<td>RBC Count</td>
<td>4.71</td>
<td>4.40 - 5.70</td>
<td>M/MM3</td>
</tr>
<tr>
<td>Mean Corpuscular Volume</td>
<td>94.9</td>
<td>79.0 - 99.0</td>
<td>fl</td>
</tr>
<tr>
<td>Mean Corpuscular Hgb</td>
<td>33.5</td>
<td>27.0 - 32.0</td>
<td>pg</td>
</tr>
<tr>
<td>Mean Corpuscular Hgb Conc.</td>
<td>35.3</td>
<td>32.0 - 35.0</td>
<td>G/DL</td>
</tr>
<tr>
<td>Red Cell Distribution Width</td>
<td>11.7</td>
<td>11.5 - 15.0</td>
<td>%</td>
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<tr>
<td>Mean Platelet Volume</td>
<td>11.1</td>
<td>9.0 - 12.2</td>
<td>fl</td>
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What Is Out of Range?

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“Am I at risk, or not?”
Problem #1: Numbers
Problem #2: Lack of Meaning
So now what?

What can we do to help?
Step 1:
Visual information
Robert’s Risk

Your 10-Year Risk of Cardiovascular Disease

11 out of 100 people like you will develop cardiovascular disease
89 out of 100 people like you will NOT develop cardiovascular disease
Welcome to Clinician.IconArray.com

1 Risk/Benefit
Use one risk/benefit to show the effect one treatment option.
Get Started >>

2 Risks/Benefits
Use two risks/benefits to compare 2 treatment options side-by-side.
Get Started >>

3 Risks/Benefits
Use three risks/benefits to compare multiple treatment options.
Get Started >>
Table vs. Number Line

Table:

<table>
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<tr>
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<th>Your Result</th>
<th>Standard Range</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platelet Count (PLT)</td>
<td>135</td>
<td>150-400</td>
<td>x10^9/L</td>
</tr>
</tbody>
</table>

Simple Line:

Platelet Count (PLT) Test Result

Your Result

135 x 10^9/L

Lines with More Meaning

Near-Normal Results vs. Extreme Results

Step 2: Gist-full information
Fuzzy Trace Theory  
(Brainerd and Reyna, 1995)

Verbatim vs Gist memory

What the heck is “gist”?
Know Your “Commander’s Intent”

Cancer Screening Test Decisions
Colorectal Cancer Screening

... at age 50

... vs. at age 75

(with multiple comorbidities)
Benefits vs. Harms

Image from study materials for “Promoting Veteran-Centered Colorectal Cancer Screening” (I01 HX001278-01); SD Saini, PI.
Gist Processing
Test Results for Diagnosed Patients
Goals for Test Results

Goals for Test Results

Goals for Test Results

Test Results for Monitoring
Harms

Alanine Aminotransferase (ALT):

80 IU/L

Standard Range: 10-40
Showing the Possible Range

Harm Anchors

Many doctors are not concerned until here

Increased Sensitivity with Harm Anchors

“We need to design for the way people ARE, not the way we wish they were”

- Holly O. Witteman
People only process or remember **one** thing
Use **context** to create ONE message based on THEIR needs.
Thank You!

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