An Approach for a Rapid HIV Antibody Home-Use Oral Fluid Test

OraSure Technologies, Inc.

Meeting of the Blood Products Advisory Committee
03 November, 2005
Agenda

• Intended Use Statement
• Product Demonstration
• OTC Oral Fluid Home-Use Test Kit Configuration
  – Internal Control
  – Interpretation
  – Clinical Performance
• Proposed Studies
• Labeling/Packaging Concept
• Conclusion
Intended Use Statement

The Rapid HIV Antibody Home-Use Oral Test is a single-use, qualitative test system to detect antibodies to HIV-1 and HIV-2 in oral fluid. The Rapid HIV Antibody Home-Use Oral Fluid Test is intended to enable testing for individuals.
Product Demonstration
Specimen Collection

- Place the flat pad above the teeth against the outer gum.
  - Gently swab completely around the outer gums, one time around, using the flat pad.
- The product works by collecting antibodies from the gum.
- Insert Flat Pad of device into the bottom of Developer Vial.
- Start timing test.
- Fluid will travel up result window.
- Read results after 20 minutes but not more than 40 minutes.
Rapid HIV Antibody Home-Use Oral Fluid Test Kit Configuration

• Pre-test information and risk assessment pamphlet
• Pictorial-based collection, testing, and interpretation sheet
• Important post-test support information
• Single-Use Device (individually packaged)
• Developer vial (individually packaged)
• Test stand (built into package)
• No hazardous components

No significant risk to user from test kit contents
An Approach for a Rapid HIV Antibody Home-Use Oral Fluid Test

Internal Control

• Indication that a sample has been collected
• Indication conjugate was active
• Indication that the test is working properly
Interpretation

• **Negative**: Single line appears in the C (control) triangle
  – A negative result indicates the absence of HIV antibodies in their sample.

• **Preliminary Positive**: Two lines appear
  – One at the C (control) triangle and the other at the T (test) triangle
  – May indicate the presence of HIV antibodies in their sample.
• Clinical performance of our product using oral fluid has been demonstrated in clinical studies conducted to support product approval (PMA BP010047)

• Proven ease of use through CLIA waiver
  – Granted on January 31, 2003
    • HIV-1 – fingerstick whole blood
  – Granted on September 30, 2003
    • HIV-1 – venipuncture whole blood
  – Granted on June 25, 2004
    • HIV-1 and HIV-2 – whole blood (fingerstick/venipuncture) and oral fluid
Rapid HIV Antibody Oral Fluid Test Clinical Populations

**Negative Population**
- Subjects known to be low risk, negative for HIV

**Positive Population**
- Subjects included patients at various clinical stages of HIV infection, including AIDS patients

**High Risk Population**
- Subjects included those with unknown HIV status who were at risk for infection
Rapid HIV Antibody Oral Fluid Test Performance Summary

(PMA BP010047)

Sensitivity  \[ \frac{834}{840} = 99.3\% \]
\[ (95\% \text{ C.I.} = 98.4\% - 99.7\%) \]

Specificity  \[ \frac{3674}{3682} = 99.8\% \]
\[ (95\% \text{ C.I.} = 99.6\% - 99.9\%) \]

*All sample collections were done by individuals being tested*
Rapid HIV Antibody Oral Fluid Test
CLIA Waiver Studies-
Demographics of Study Population

### Gender and Age Summary

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<thead>
<tr>
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<th>Male</th>
<th>Female</th>
<th>Age Categories</th>
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### Demographic Summary

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<td>1.96%</td>
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## Rapid HIV Antibody Oral Fluid Test

### CLIA Waiver Studies - Demographics of Study Population

#### Educational Demographic Summary

<table>
<thead>
<tr>
<th>Site</th>
<th>Grades 11-12</th>
<th>GED</th>
<th>Some College</th>
<th>2-Year Degree</th>
<th>4-Year Degree</th>
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% of Total | 12% | 4% | 36% | 8% | 38% | 14% | 5% |

Note: Some of the subjects checked more than one box; therefore total responses are greater than 102.

#### Professional Experience Summary

<table>
<thead>
<tr>
<th>Site</th>
<th>Medical Lab Diagnostic Testing</th>
<th>Used Rapid Test(s)</th>
<th>Seen OraQuick Device in Use</th>
<th>Used OraQuick Device</th>
<th>Certified HIV Counselor/Tester</th>
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</thead>
<tbody>
<tr>
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</table>

% of Total | 1% | 99% | 8% | 92% | 1% | 99% | 1% | 99% | 25% | 75% |
An Approach for a Rapid HIV Antibody Home-Use Oral Fluid Test

Rapid HIV Antibody Oral Fluid Test
CLIA Waiver Studies – Results

- The Untrained user study validated device safety and efficacy
- The User study validated the accuracy of device interpretation by untrained users

<table>
<thead>
<tr>
<th>Untrained Users Rate of Correct Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative Sample</td>
</tr>
<tr>
<td>98.5% (197/200)</td>
</tr>
<tr>
<td>95% C.I. (95.7%-99.7%)</td>
</tr>
</tbody>
</table>
An Approach for a Rapid HIV Antibody Home-Use Oral Fluid Test

Rapid HIV Antibody Oral Fluid Test
CLIA Waiver Interferent Study

CLIA Waiver Interferent Study conducted with both positive and negative population with no effect on device performance

Interferents
• Tooth brushing
• Alcoholic beverages
• Tobacco products
• Mouthwash
• Drugs of abuse

Procedural
• Temperature variation 2-40°C
• Movement of device during operation
  – Shaking
  – Rocking
• Device on uneven surface

All Results Concordant with True Serological Status
Proposed Validation Studies

- Untrained user study to validate device safety and efficacy
- User study to validate the accuracy of interpretation by untrained users
- User study to validate ability of labeling and printed materials to ensure counseling and linkage to care
- Post-market non-clinical study to evaluate counseling and linkage to care
Proposed Untrained User Study to Validate Device Safety and Efficacy

Study Objective
• Validate that the OTC HIV Oral Fluid Home-Use test can be carried out effectively by the expected untrained user population
  – Verify efficacy of sample collection
  – Verify accuracy of result interpretation
User Study to Validate the Efficacy of Sample Collection by Untrained Users

- Study population will reflect demographics of expected users
- Untrained users will collect oral fluid specimens after reading product labeling
- Devices will be interpreted for presence of control line (valid test result)
- Acceptance criteria (proportion of test devices with valid test results) will be developed prior to the study in order to assure verification of efficacy of sample collection in untrained users
- Size of user study population will be sufficient to provide statistical verification of result
User Study to Validate the Accuracy of Interpretation by Untrained Users

- Study population will reflect demographics of expected users
- Untrained users will interpret test results after reading product labeling
- Untrained users will interpret results generated using a panel of positive and negative test specimens
- Each test result will be interpreted by untrained and trained user
- Acceptance criteria (concordance with interpretation by trained user) will be developed prior to the study to assure verification of accuracy of test interpretation in untrained users
- Size of user study population will be sufficient to provide statistical verification of result
Validate Ability of Labeling and Printed Materials to Ensure Counseling and Linkage to Care

• Study population will reflect demographics of expected users
• Size of user study population will be sufficient to provide statistical verification of result
• Study will focus on ability of user to understand:
  – Options available for pre/post counseling and linkages to care
  – Key messaging such as “Window Period” for HIV, Risk Factors and potential for False Positive/Negative Results
### OTC HIV Home-Use Oral Fluid Test Interpretation of Results

- Proposed approach to bilingual (Spanish/English) instructions on how to interpret the results

<table>
<thead>
<tr>
<th><strong>Negative Result</strong></th>
<th><strong>Positive Result</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Explain Risk Factor&lt;br&gt; • Describe Potential for False Negative (Window of Detection)&lt;br&gt; • Recommend Retest in 3 Months Based on Risk Factor Self Assessment</td>
<td>• Use term “preliminary” positive (reflex to “seek counseling”)&lt;br&gt; • Referral to Care by Providing Access to 24X7 Post-test Counseling&lt;br&gt; • Explain Potential for False Positive and the need for confirmatory testing and counseling</td>
</tr>
</tbody>
</table>
Educate with Packaging

• Counseling and linkages to care
  – Pre-testing counseling information in packaging with additional support by phone, web-site with linkage to local public health services and community-based organizations
  – Post-testing counseling through phone, web-site, local public health services and community-based organizations
  – Access to multilingual counselors

• Manufacturer 1-800-number for assistance
Proposed Post Market Non-Clinical Studies

• Post Marketing Studies
  – Anonymous
  – Collect demographics - age, sex, race, and risk behavior factors
  – Provide counseling options used during their decision and testing process
  – Evaluate effectiveness of counseling and linkage to care

• Website
  – Potential to collect survey data that will capture the same information as above
Conceptual Package Design

• Preliminary packaging criteria
  – Promote methodical step-by-step procedure
  – Enable multiple visual options to communicate
  – Minimize “missed steps” or “race through” procedure sequencing
Conceptual Package Design*

*Patent Pending
Conclusion

• The performance of the **Rapid HIV Antibody Oral Fluid Test** has clinical performance that is appropriate and effective for OTC use

• Product packaging & labeling will direct the user through the correct test sequence
  – Package design will ensure user engages with product labeling prior to accessing the device
  – Correct use, including counseling and linkages to care, will be reinforced by repetitive instructions for use and pictorial/graphical representations

• Studies will be conducted to demonstrate that lay users are able to understand the instructions for use and use the device effectively

• Pre and post test instructions will direct the user to appropriate counseling and linkages to care

• Post-market surveillance will monitor effectiveness
Thank You