Pharma engagement in antiretrovirals for prevention

James F Rooney, MD
VP, Medical Affairs
Gilead Sciences

Fenway meeting
Boston, Oct 2013
Agenda

♦ Truvada for PrEP
  – Indication
  – REMS
  – Ongoing studies
  – Limitations

♦ Other drugs in development for HIV prevention
  – Oral
  – Long-acting
  – Topical

♦ Current data on PrEP utilization
PrEP Indication

• Truvada is indicated in combination with safer sex practices for pre-exposure prophylaxis to reduce the risk of sexually acquired HIV-1 infection in adults at high risk

• This indication is based on clinical trials in MSM at high risk for HIV-1 infection and in heterosexual serodiscordant couples
Factors to Help Identify Individuals at High Risk

- Has a partner known to be HIV-1 infected, or
- Engages in sexual activity within a high prevalence area or social network and one or more of the following:
  - Inconsistent or no condom use
  - Diagnosis of sexually transmitted infections
  - Exchange of sex for commodities (such as money, food, shelter, or drugs)
  - Use of illicit drugs or alcohol dependence
  - Incarceration
  - Partner(s) of unknown HIV-1 status with any of the factors listed above
When Prescribing Truvada for a PrEP Indication, Healthcare Providers must:

- Prescribe Truvada as part of a comprehensive prevention strategy
- Counsel individuals to strictly adhere to a daily dosing schedule
- **Confirm a negative HIV-1 test** immediately prior to initiating PrEP
  - If clinical signs or symptoms consistent with acute viral infection are present and recent (<1 month) exposures are suspected,
    - Delay starting PrEP for at least one month and reconfirm HIV-1 status or
    - Use a test approved by the FDA as an aid in the diagnosis of HIV-1 infection, including acute or primary HIV-1 infection
- While using Truvada for PrEP, HIV-1 screening tests should be repeated at least every 3 months
  - If symptoms consistent with acute HIV-1 infection develop following a potential exposure event, PrEP should be discontinued until negative infection status is confirmed using a test approved by the FDA as an aid in the diagnosis of HIV-1, including acute or primary HIV-1 infection

Adapted from Truvada® US Prescribing Information, Gilead Sciences, Inc. July 2012
What is a REMS?

• Risk Evaluation and Mitigation Strategy
• FDA program to manage a known or potential risk associated with a drug
  – Designed to ensure the benefits of a drug outweigh its risks

• Goals of REMS for Truvada for PrEP is to educate prescribers and individuals about
  – The importance of adherence
  – The importance of regular monitoring of HIV-1 serostatus
  – Truvada for PrEP must be part of a comprehensive prevention strategy
REMS Materials
Available at www.truvadapreprems.com

- Dear Healthcare Provider Letter
- Training Guide for Healthcare Providers
- Important Safety Information for Healthcare Providers
- Safety Information Fact Sheet
- Agreement Form
- Checklist for Prescribers
- Medication Guide
- Important Safety Information for Uninfected Individuals
- Full Prescribing Information
Additional Non-REMS Measures

• Free HIV & HBV testing for qualified individuals
• Free condoms
• Subsidized HIV-1 viral resistance testing to individuals who seroconvert
• Opt-in reminder service regarding regular testing for HIV and other STDs
• Support for community education activities on PrEP
• Support for demonstration projects
• Truvada Medication Assistance Program for PrEP for uninfected individuals who lack insurance coverage
How will PrEP be made available in clinical practice?

- Drugs will be the same as for HIV treatment (Truvada (FTC/TDF), Viread (TDF), and generic versions)
- Guidance could be normative, regulatory (by labeling), or both. Process may vary by country.
  - CDC has issued guidance for PrEP for high risk MSM, serodiscordant couples, and IDUs in the US based upon the iPrEx, Partners PrEP, CDC Bangkok TDF and other studies
  - Guidelines being drafted by other groups (UK, France, South Africa, WHO, etc.)
  - Regulatory filings planned for developing world
- Access to medication remains to be determined at the local level (same sites as for HIV treatment or other venues??) but Gilead Access Program will support both treatment and prevention. PEPFAR, Global Fund, WHO interested but decisions regarding the use of PrEP not yet established
Gilead Access Program

- Registration for TDF and FTC/TDF for HIV treatment in over 100 countries globally including all of Africa
- Partnership with distributors to make branded Truvada and Viread available locally
- Partnership with over a dozen generic manufacturers in India and Africa to make generic versions of TDF and FTC in combination with other products. Able to brand and price flexibly. Has driven the price of TDF from $1.35 per day to $0.14 per day over 5 years. Current lowest price of TVD is $0.20 per day.
- Over 4 million patients in the developing world are now on a TDF containing regimen; more than 95% on generic drug
Support for ongoing research

- Ongoing Phase 3 studies
  - IPERGAY study
- Phase 3 study extensions and rollovers
  - Partners PrEP
  - iPrEx OLE
  - TDF2
  - CDC Bangkok IDU study
- Demonstration projects
  - CDC demonstration project in US
  - San Francisco/Miami/Washington DC demonstration project
  - PROUD study in London
Support for ongoing research

♦ Phase 1 and 2 studies of alternative dosing strategies and regimens and populations
  – Intermittent dosing
    • HPTN 066, 067 (ADAPT)
  – Alternative regimens
    • HPTN 069 (maraviroc +/- TDF or FTC)
  – Alternative populations
    • Adolescent studies in young MSM ages 16-22 (ATN)

♦ PrEPception??!!

♦ Support for microbicide gel research; vaginal, rectal, new formulations and patient populations, safety and efficacy trials

♦ New drugs; new prodrug of tenofovir GS 7340 (TAF); new prevention specific ARVs?
Ongoing and Planned Phase 3/4 Research, Including Demonstration Projects

- Phase 3 studies are continuing to evaluate PrEP in various demographic groups
- Gilead is committed to post-marketing demonstration studies in the U.S. and globally
- Collaborators: ANRS, CDC, FHI, MRC, NIAID (DAIDS), NICHD (ATN), SFDPH, U. Washington, and Gilead Sciences

<table>
<thead>
<tr>
<th>Population</th>
<th>Studies</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSM</td>
<td>17</td>
<td>14,100</td>
</tr>
<tr>
<td>Heterosexual Men &amp; Women Serodiscordant Couples</td>
<td>8</td>
<td>10,201</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>25</strong></td>
<td><strong>24,301</strong></td>
</tr>
</tbody>
</table>

ANRS = French National Agency for AIDS Research; CDC = Centers for Disease Control and Prevention; FHI = Family Health International; MRC = Medical Research Council (UK); NIAID = National Institute of Allergy and Infectious Diseases; DAIDS = Division of AIDS; NICHD = National Institute of Child Health and Human Development; SFDPH = San Francisco Department of Public Health
## Phase 3/4 Research and Demonstration Projects in MSM

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Duration</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ongoing Phase 3 Studies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPERGAY</td>
<td>1900</td>
<td>24 months</td>
<td>France, Canada</td>
</tr>
<tr>
<td><strong>Demonstration Projects and Open-Label Extensions (planned and ongoing)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iPrEx OLE</td>
<td>1770</td>
<td>72 weeks</td>
<td>Americas, Thailand, S. Africa</td>
</tr>
<tr>
<td>DAIDS PrEP MSM Demo</td>
<td>500</td>
<td>12 months</td>
<td>U.S.</td>
</tr>
<tr>
<td>CDC PrEP Demo</td>
<td>600</td>
<td>12 months</td>
<td>U.S.</td>
</tr>
<tr>
<td>PROUD</td>
<td>5000</td>
<td>12 months on tx, 12 month follow-up</td>
<td>U.K.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(500 as pilot)</td>
<td></td>
</tr>
<tr>
<td>Project PrEPare 110</td>
<td>200</td>
<td>48 weeks</td>
<td>U.S.</td>
</tr>
<tr>
<td>SFDPH EPIC PrEP</td>
<td>300</td>
<td>12 months</td>
<td>U.S.</td>
</tr>
<tr>
<td>ALERT</td>
<td>400</td>
<td>12 months+</td>
<td>U.S.</td>
</tr>
<tr>
<td>Los Angeles PATH</td>
<td>300</td>
<td>48 weeks</td>
<td>U.S.</td>
</tr>
<tr>
<td>Seattle PrEP</td>
<td>300</td>
<td>48 weeks</td>
<td>U.S.</td>
</tr>
<tr>
<td>NYC PrEP</td>
<td>200</td>
<td>12 months</td>
<td>U.S.</td>
</tr>
<tr>
<td>Brazilian PrEP</td>
<td>400</td>
<td>12 months</td>
<td>Brazil</td>
</tr>
<tr>
<td>Rio PrEP</td>
<td>65</td>
<td>12 months</td>
<td>Brazil</td>
</tr>
<tr>
<td>HPTN 073</td>
<td>225</td>
<td>12 months</td>
<td>U.S.</td>
</tr>
<tr>
<td>HPTN 069**</td>
<td>400</td>
<td>48 weeks</td>
<td>U.S.</td>
</tr>
<tr>
<td>HPTN 067**</td>
<td>540</td>
<td>34 weeks</td>
<td>U.S., Thailand, S. Africa</td>
</tr>
<tr>
<td>HVTN 505</td>
<td>1000</td>
<td>5 years</td>
<td>U.S.</td>
</tr>
<tr>
<td><strong>TOTAL:</strong> 17</td>
<td></td>
<td><strong>14,100</strong></td>
<td></td>
</tr>
</tbody>
</table>

*CDC PrEP Demo includes both MSM and heterosexual men and women (1200 participants total)

**Includes both MSM and heterosexual women (estimated 50% MSM, 50% heterosexual women)
# Phase 3/4 Research and Demonstration Projects in Heterosexual Women and Men

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Duration</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ongoing Phase 3 Studies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partners PrEP (discordant couples)</td>
<td>4758</td>
<td>12 month extension</td>
<td>Kenya, Uganda</td>
</tr>
<tr>
<td>CDC Bangkok TDF (IVDU)</td>
<td>2413</td>
<td>Endpoint driven</td>
<td>Thailand</td>
</tr>
<tr>
<td><strong>Demonstration Projects and Open-Label Extensions (planned and ongoing)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CDC PrEP Demo* (men and women)</td>
<td>600</td>
<td>12 months</td>
<td>U.S.</td>
</tr>
<tr>
<td>HPTN 069**</td>
<td>200</td>
<td>48 weeks</td>
<td>U.S.</td>
</tr>
<tr>
<td>HPTN 067**</td>
<td>~180</td>
<td>34 weeks</td>
<td>U.S., Thailand, S. Africa</td>
</tr>
<tr>
<td>TDF2 Open-Label Extension (men and women)</td>
<td>900</td>
<td>12 months</td>
<td>Botswana</td>
</tr>
<tr>
<td>CHAMPS (men and women)</td>
<td>150</td>
<td>12 months</td>
<td>South Africa</td>
</tr>
<tr>
<td>UW Partners PrEP Demo (discordant couples)</td>
<td>1000</td>
<td>24 months</td>
<td>Kenya, Uganda</td>
</tr>
<tr>
<td><strong>TOTAL: 8</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>10,201+</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*CDC PrEP Demo includes both MSM and heterosexual men and women (1200 participants total)
**Includes both MSM and heterosexual women (estimated 50% MSM, 50% heterosexual women)
*Excluding rollover participants
Challenges to Implementation of PrEP in the US

- Initial uptake of PrEP in the US has been slow but is increasing
- Limited provider experience. Small number of patients enrolled in clinical trials in US (only 3 US sites and < 1000 subjects out of ~10,000 in pivotal studies).
- New strategy with no clear template for administration (many practical questions re implementation) and no PrEP “protocol” in place. Many (most?) LGBT centers in the US do not yet have an active PrEP program in place.
- Separation of HIV prevention and treatment services in the US
Challenges to Implementation of PrEP in the US

- Reimbursement for drug and services not clear
- Low level of awareness amongst subjects and providers
- Eligible subjects not clearly defined
- Good news: many of the above issues can be addressed with additional experience/data
New Drugs in Development for HIV Prevention: Selected studies

- **Oral**
  - Maraviroc
    - HPTN 069: maraviroc +/- TDF or FTC

- **Long acting**
  - Rilpivirine-LA: long acting NNRTI
  - GSK744: long acting integrase inhibitor
  - 40 HIV neg volunteers treated with monthly injections of rilpivirine-LA and GSK744 maintained high levels of drug

- **Vaginal gels or rings**
  - TFV gel: CAPRISA 004 study, first effective microbicide
  - TFV or TDF ring: effective in animal models
  - Dipivirine ring: large clinical trial (ASPIRE) ongoing
First study of repeat dose co-administration of GSK1265744 and TMC278 long-acting parenteral nanosuspensions: pharmacokinetics, safety, and tolerability in healthy adults

W. Spreen\textsuperscript{1}, P. Williams\textsuperscript{2}, D. Margolis\textsuperscript{1}, S. Ford\textsuperscript{1}, H. Crauwels\textsuperscript{2}, Y. Lou\textsuperscript{1}, E. Gould\textsuperscript{1}, M. Stevens\textsuperscript{2}, S. Piscitelli\textsuperscript{1}

\textsuperscript{1}GlaxoSmithKline, Infectious Diseases Research & Development, Research Triangle Park, United States, \textsuperscript{2}Janssen Infectious Diseases BVBA, Beerse, Belgium
GSK1265744 and TMC278 (rilpivirine)

- GSK744 is an HIV integrase strand transfer inhibitor and analogue of dolutegravir (DTG)
- GSK744 and DTG share similar preclinical profiles; GSK744 is well-suited for formulation as a long-acting nanosuspension for injection
- GSK744 dosed orally at 5 and 30 mg/day demonstrated $>2.2 \log_{10}$ copies/mL reduction in plasma HIV RNA in 10-day monotherapy trial; now in phase 2b development
- TMC278 LA is an investigational long-acting nanosuspension for injection of rilpivirine, a marketed NNRTI for oral use (Janssen)
- Possible applications for HIV treatment and PrEP
  - HIV treatment: need for combination LA-ARV agents; focus of ongoing clinical collaboration
  - PrEP: under evaluation as monotherapy

Spreen, et al. 19th IAC Jul 2012. Abstract TUPE040
Study Design

- Two-center, phase 1, randomized, open-label, repeat-dose study in healthy adults
- GSK744 200 mg/mL given as IM (gluteal) or SC (abdominal) injection; TMC278 given as IM (gluteal) injection
- Subjects followed 52 weeks after last injection (ongoing)

Cohort 1
N= 10

Cohort 2
N= 10

Cohort 3
N= 10

Cohort 4
N= 10

= split injection loading dose (2x 2mL)
GSK744 LAP q 4 Week or q 12 Week Regimens Achieve Plasma Concentrations >4 x PA-IC90 in Healthy Adults

Mean GSK744 plasma concentration-time profiles

- 800mg IM LD, 200mg SC q4w x 3
- 800mg IM LD, 200mg IM q4w x 3
- 800mg IM LD, 400mg IM q4w x 3
- 800mg IM quarterly x 2
- 4* PA-IC90 (0.664μg/mL)

GSK744 5mg/day po Ctau = 0.6 ug/mL

↑ = q 28 day injection
↑ = q 84 day injection

7th IAS Conference on HIV Pathogenesis, Treatment and Prevention; June 30-July 3, 2013; Kuala Lumpur, Malaysia
Rilpivirine Plasma Concentrations Following TMC278 LA Injections are Comparable to Oral 25mg/day in HIV-infected Subjects

Mean RPV plasma concentration-time profiles

- RPV 1200mg IM/900mg IM (+GSK1265744 200mg IM)
- RPV 1200mg IM/600mg IM (+GSK1265744 400mg IM)
- RPV Mean C0 observed in Phase III Studies of 25mg QD (80ng/mL)

↑ = q 28 day injection

7th IAS Conference on HIV Pathogenesis, Treatment and Prevention; June 30-July 3, 2013; Kuala Lumpur, Malaysia
Summary and Next Steps

- GSK744 LAP and TMC278 LA formulations were generally safe and well tolerated
  - Mild-moderate injection site reactions occurred in a majority of study participants; the overall tolerability profile supports evaluation in longer-term clinical studies
- GSK744 LAP pharmacokinetics indicate q 4 weekly or less frequent injections will maintain plasma drug levels well above 4x PA-IC90
- TMC278 LA pharmacokinetics suggest q 4 weekly injections give plasma levels comparable to approved oral dose of rilpivirine 25mg/daily
- These results, along with an ongoing study of GSK744 + rilpivirine as an oral two-drug maintenance regimen in HIV-infected patients, will enable a similar study using the two-drug, long-acting injectable regimen
The study is a prospective three year observational study to describe drug utilization among uninfected individuals who initiate TVD for PrEP. All subjects who started therapy after Jan 1 2011 were included in the study.

The study used an electronic source of nationally representative de-identified patient level data, with drug information from dispensed retail prescriptions for approximately 55% of all US pharmacies.

An algorithm was developed to identify the use of TVD for the PrEP indication which excluded use for HIV treatment, post-exposure prophylaxis and off-label chronic Hepatitis B treatment.

**Results**

1,774 individuals received Truvada for PrEP between 2011 and March 2013

Median age 37 years old

48 % women

1674 unique prescribers

\[ ^a \text{multivariate logistic model} \quad ^b \text{p < 0.01} \]

Mera et al. ICAAC 2013. Denver, CO. Poster H663a
Assessment of Truvada for PrEP Utilization in the US

- Geographically **prescribers** of TVD for PrEP are located in 49 states and distributed across approximately 700 cities
- Only 37% also prescribed Truvada for HIV treatment
- Overall 6 specialties initiated 75.6% of PrEP prescriptions
  - Family Practice 16%
  - Internal Medicine 15%
  - Emergency Medicine 14%
  - Infectious Diseases 12%
  - Nurse Practitioners 9%
  - Physician Assistants 8%
- When compared to HIV positive patients, **uninfected individuals receiving TVD for PrEP** were:
  - 1.4 times more likely to be from the South (95% CI 1.3 – 1.6)<sup>b</sup>
  - 1.8 times more likely to be female (95% CI 1.7 – 2.0)<sup>b</sup>
  - 1.4 times more likely to be younger than 25 years old (95% CI 1.2 – 1.6)<sup>b</sup>
  - 3.8 times more likely to be treated by a non-ID physician (95% CI 3.3 – 4.2)<sup>b</sup>

<sup>a</sup> multivariate logistic model  <sup>b</sup> p < 0.01

Mera et al. ICAAC 2013. Denver, CO. Poster H663a
Conclusions

- Truvada has been approved for a pre-exposure prophylaxis indication in the US

- A REMS program is in place to ensure the safe and appropriate use of PrEP
  - Educate healthcare providers and uninfected individuals
  - REMS materials are available at www.truvadapreprems.com

- Ongoing demonstration projects will yield important information on the use of TVD for PrEP when given in an open label fashion
Conclusions

♦ Gilead is committed to supporting a comprehensive prevention program via education but is not actively promoting the indication

♦ TVD for PrEP is now being implemented in the US. Initial uptake has been slow but should improve with additional experience in the field and data from ongoing demonstration projects.
  – Similar to a product launch but is a “new strategy” launch
  – Will take 5-10 years to realize the potential of the strategy

♦ Phase 3b/4 studies are ongoing evaluating TVD, TDF, various dosing strategies, and other ARV combinations for prevention of HIV infection

♦ Other ARVs and formulations are being actively explored
Acknowledgements

♦ GSK
  – William Spreen
♦ Janssen
  – Peter Williams
♦ Gilead
  – Keith Rawlings
  – Staci Bush
  – Robertino Mera
  – David Piontkowsky
GSK744 and TMC278 Nanosuspensions

- Drug nanocrystal suspended in liquid = nanosuspension
- Nanomilled to increase surface area and drug dissolution rate
- Allows ~100% drug loading vs. matrix approaches for lower inj. volumes

**GSK744 200mg/mL**

<table>
<thead>
<tr>
<th>Component</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSK1265744A (d50 ~200 nm)</td>
<td>Active</td>
</tr>
<tr>
<td>Mannitol</td>
<td>Tonicity agent</td>
</tr>
<tr>
<td>Surfactant System</td>
<td>Wetting/Stabilizer</td>
</tr>
<tr>
<td>Water for Injection</td>
<td>Solvent</td>
</tr>
</tbody>
</table>

**TMC278 300mg/mL**

<table>
<thead>
<tr>
<th>Component</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMC278 (d50 ~200 nm)</td>
<td>Active</td>
</tr>
<tr>
<td>Glucose</td>
<td>Tonicity agent</td>
</tr>
<tr>
<td>Surfactant System</td>
<td>Wetting/Stabilizer</td>
</tr>
<tr>
<td>Water for Injection</td>
<td>Solvent</td>
</tr>
</tbody>
</table>

Objectives/Key Eligibility Criteria

ClinicalTrials.gov Identifier: NCT01593046

Objectives

• Investigate safety, tolerability, and PK of GSK744 long-acting parenteral (LAP) following repeat IM or SC doses in healthy adults
• Investigate safety, tolerability, and PK of TMC278 LA IM doses when given in combination with GSK744LAP IM doses in healthy adults

Key Eligibility Criteria

• Males or females, 18-64 years, BMI 18.5-31kg/m²
• Females of childbearing potential required to use approved contraception method
• Not eligible if engaged in behaviors giving high risk of HIV infection
# Baseline Characteristics and Subject Disposition

## Baseline Characteristics

<table>
<thead>
<tr>
<th>Baseline Characteristics</th>
<th>Overall (N=47)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, yrs mean (SD)</td>
<td>39.5 (13.9)</td>
</tr>
<tr>
<td>Female/Male, n</td>
<td>17/30</td>
</tr>
<tr>
<td>Race, n Black/White/Other</td>
<td>10/35/2</td>
</tr>
<tr>
<td>BMI, Kg/m² (SD)</td>
<td>26.1 (2.9)</td>
</tr>
</tbody>
</table>

## Subject Disposition

<table>
<thead>
<tr>
<th>Subject Disposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. dosed 744 oral lead-In</td>
</tr>
<tr>
<td>No. dosed LAP injection</td>
</tr>
<tr>
<td>Withdrew oral lead-in</td>
</tr>
<tr>
<td>Withdrawn from LAP inj.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cohort 1 744 SC q 28 days</th>
<th>Cohort 2 744 + 278 IM q 28 days</th>
<th>Cohort 3 744 + 278 IM q 28 days</th>
<th>Cohort 4 744 IM q 84 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. dosed LAP injection</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>No. withdrew consent or AE during inj. dosing phase</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
Systemic Safety Results: GSK744 Oral and LAP was Generally Safe and Well-tolerated Alone and With TMC278 LA Co-administration

- All adverse events were mild or moderate
- No drug-related SAEs or clinically significant trends in laboratory abnormalities, ECGs or vital signs

<table>
<thead>
<tr>
<th>Non-Injection Site Adverse Event (AE) (reported &gt;1 subject)</th>
<th>GSK744 (ORAL) (N=47)</th>
<th>GSK744 +/- TMC278 (IM) (N=40)</th>
<th>GSK744 (SC) (N=10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject with Any Drug-related AE, n (%)</td>
<td>Mild</td>
<td>Mod.</td>
<td>Mild</td>
</tr>
<tr>
<td>Subject with Any Drug-related AE, n (%)</td>
<td>7(15)</td>
<td>1(2)</td>
<td>5(13)</td>
</tr>
<tr>
<td>Headache</td>
<td>4(9)</td>
<td>1(2)</td>
<td>1(3)</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>1(2)</td>
<td>0</td>
<td>1(3)</td>
</tr>
</tbody>
</table>
# Injection Site Safety Results: Local Injection Site Reactions (ISRs) Are Common but Generally Well-tolerated and Self-limited

<table>
<thead>
<tr>
<th></th>
<th>GSK744 (IM)</th>
<th>GSK744 (SC)</th>
<th>TMC278 (IM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. subjects w/ injections</td>
<td>N=40</td>
<td>N=10</td>
<td>N=19</td>
</tr>
<tr>
<td>Max no. inj. per subject/actual total per group</td>
<td>5 / 156</td>
<td>3 / 30</td>
<td>3 / 57</td>
</tr>
<tr>
<td>No. subjects reporting any ISR on study</td>
<td>32 (80%)</td>
<td>10 (100%)</td>
<td>18 (95%)</td>
</tr>
</tbody>
</table>

## ISR: n (%) or mean (range)

<table>
<thead>
<tr>
<th>ISR Events, n (% of total events)</th>
<th>GSK744 (IM)</th>
<th>GSK744 (SC)</th>
<th>TMC278 (IM)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mild</td>
<td>mod</td>
<td>Duration (days)</td>
</tr>
<tr>
<td>Any</td>
<td>116 (81)</td>
<td>28 (19)</td>
<td>--</td>
</tr>
<tr>
<td>Pain</td>
<td>76 (53)</td>
<td>28 (19)</td>
<td>5 (1-32)</td>
</tr>
<tr>
<td>Erythema</td>
<td>11 (8)</td>
<td>0 (1-31)</td>
<td>9 (1-31)</td>
</tr>
<tr>
<td>Nodule</td>
<td>6 (4)</td>
<td>0 (5-71)</td>
<td>31 (5-71)</td>
</tr>
</tbody>
</table>
GSK744 LAP q 4 Week or q 12 Week Regimens Achieve Plasma Concentrations >4 x PA-IC90 in Healthy Adults

Mean GSK744 plasma concentration-time profiles

- 800mg IM LD, 200mg SC q4w x 3
- 800mg IM LD, 200mg IM q4w x 3
- 800mg IM LD, 400mg IM q4w x 3
- 800mg IM quarterly x 2
- 4* PA-IC90 (0.664 μg/mL)

GSK744 5mg/day po Cτau = 0.6 μg/mL

↑ = q 28 day injection

↑ = q 84 day injection

7th IAS Conference on HIV Pathogenesis, Treatment and Prevention; June 30-July 3, 2013; Kuala Lumpur, Malaysia
Rilpivirine Plasma Concentrations Following TMC278 LA Injections are Comparable to Oral 25mg/day in HIV-infected Subjects

Mean RPV plasma concentration-time profiles

Mean (SD) RPV plasma concentration (ng/mL)

Time (Weeks)

RPV 1200 mg IM/900 mg IM (+GSK1265744 200 mg IM)
RPV 1200 mg IM/600 mg IM (+GSK1265744 400 mg IM)
RPV Mean C0 observed in Phase III Studies of 25 mg QD (80 ng/mL)

↑ = q 28 day injection

= q 28 day injection
Summary and Next Steps

- GSK744 LAP and TMC278 LA formulations were generally safe and well tolerated
  - Mild-moderate injection site reactions occurred in a majority of study participants; the overall tolerability profile supports evaluation in longer-term clinical studies
- GSK744 LAP pharmacokinetics indicate q 4 weekly or less frequent injections will maintain plasma drug levels well above 4x PA-IC90
- TMC278 LA pharmacokinetics suggest q 4 weekly injections give plasma levels comparable to approved oral dose of rilpivirine 25mg/daily
- These results, along with an ongoing study of GSK744 + rilpivirine as an oral two-drug maintenance regimen in HIV-infected patients, will enable a similar study using the two-drug, long-acting injectable regimen
Acknowledgments

ALL STUDY PARTICIPANTS

Covance CRU, Inc., Daytona Beach, FL
• Investigators: David C. Subich MD and H. Frank Farmer, Jr. MD

Quintiles, Overland Park, KS
• Investigator: Philip T. Leese, MD

ViiV Healthcare
• Alex Rinehart
• John Pottage
• James Goodrich (in memoriam)

GlaxoSmithKline
• GSK744 Project Team
• Andrew Spaltenstein
• Zhi Hong

Janssen Infectious Diseases
• TMC278 Project Team