Objectives of this Presentation

• To describe epidemiology the global response to HIV in both populations: children and adolescents
• To describe main recommendations on clinical and programmatic management
Age categories

- Children: 0-9 years old
- Young adolescents: 10-14 years old
- Older adolescents: 15-19 years old
- Young adults: 20-14 years old
CHILDREN
HIV epidemiology CHILDREN <15yo

UNAIDS 2015
• Children estimated to be living with HIV: 1.8 million
• New infections: 150,000
• Deaths: 110,000

UNICEF stocktaking report
• ART coverage amongst children <15yo: 50%
• 70% reduction in AIDS-related deaths among children 0-4yo since 2000, globally
Clinical considerations

• Doses of medications must be constantly adjusted to the child’s weight
• Child-friendly communication ways
• Diagnostic in children <18 months requires detection of viral DNA with HIV DNA PCR
• Clinically stable client ART delivery is suitable for children who are at least 2 yo.
• If a child is clinically stable, the need for weight-based dosage adjustment should not restrict a child’s entry into ART delivery models with less frequent clinical visits.
• Age-appropriate disclosure of the children’s HIV status to the child strongly supports sustained adherence.
WHO current recommendation on when to start ART:

- Treat ALL = all children regardless of age diagnosed with HIV infection to start ART as soon as possible.
Paediatric HIV research agenda

• Testing
  – Optimal placement and timing of novel diagnostic tools for POC
  – Linkage to care and timely initiation of ART
  – Community-based approaches
  – Testing strategies (including testing at birth)

• Treatment
  – Optimal dosing and novel drug delivery models
  – Adherence
  – Prevention and clinical management
  – Short and long-term outcomes
Paediatric HIV research agenda

• Service delivery
  – Strategies to improve uptake and retention in care
  – DSD
  – Psychosocial support
  – Improve support to parents, caregivers and HC providers to facilitate disclosure
  – Reduce stigma and discrimination
ADOLESCENTS
• Definition: 10-19 yo
• Adolescents HIV infection rates are projected to raise just because the total population of 10-24 will raise.
• HIV remains GLOBAL issue when it comes to prevention amongst adolescents:
  – 32% HIV infections 15-19yo occurred outside sub-Saharan Africa
  – Every 2 minutes a 15-19yo is newly infected with HIV
• GIRLS are particularly vulnerable
  – 75% of new infections in 15-19yo are among girls
  – Only 26% of girls have comprehensive HIV knowledge
  – 13% of adolescents girls have been tested for HIV and received their result in last 12 months.
New infections among adolescents (aged 15–19) have declined at a much slower pace than new infections among children (aged 0–14).

New HIV infections among children (aged 0–14) and adolescents (aged 15–19), global, 2000–2015

Paediatric HIV Infections

Adolescent HIV Infections

Source: UNAIDS 2016 estimates.
• HTC at schools may yield more effective adolescent uptake of testing.
• There is need to find out of clinic ways to reach this population.
Access to ART

• 2015: Only 20%!!!! Coverage
• Ados living with HIV have the highest rates of treatment failure and lowest rate of adherence to ART
• ADOS girls and young women continue to be disproportionately affected
• ADOS KP are at risk in every context
Clinical and management considerations

• Peer support is very important
• Non-judgmental attitude
• Important to take into account not only medical but psychosocial needs of this age group ➔ key to ensure adherence
• Align family planning consultations with ART/OI consultations
• Refills of ART outside of clinical consultations, can be done by peers
• School calendar in mind!! To plan ART refill visits
Response: Integrated services

• HIV interventions: PMTCT< ART, condom, harm reductions, VMMC, behavioural change interventions and PrEP
• Health, educations and protection services.
• Strengthened social services.
Global actors

- Unicef – UNAIDS: ALL in platform for ADOS
- IAS: differentiated care – framework for specific populations
2016 super-fast track – target by 2020

Box 1

Super Fast Track to End AIDS for children, adolescents, young women and expectant mothers

**START FREE**

By preventing new infections among children during pregnancy, birth and throughout the breastfeeding period.

- Newly infected children reduced to <40,000 by 2018 and to 20,000 by 2020
- Reach and sustain 95% of pregnant women living with HIV with lifelong HIV treatment by 2018

**AIDS FREE**

By providing HIV treatment, care and support to children and adolescents living with HIV.

- 1.6 million children <15 living with HIV on treatment by 2018:
  - 1.4 million by 2020
- Reduce number of new HIV infections among adolescents and young women to <100,000 by 2020

**FIGURE 1** All In strategic framework

**Vision:** ZERO New Infections; ZERO Deaths; ZERO Discrimination

**ALL IN Strategic Framework**
End the AIDS Epidemic among Adolescents (ages 10-19) by 2030

**Priority Population (10-14) and (15-19)**
- Adolescents Living with HIV
  - Adolescents who acquire HIV during adolescence
  - Adolescents with vertically-acquired HIV (diagnosed and undiagnosed)

- At Risk Adolescent Population Groups
  - Adolescent girls (particularly in Sub-Saharan Africa)
  - Adolescent key population groups i.e. adolescents who inject drugs; gay, bisexual and transgender adolescents; and adolescents who sell sex

**Programmes**
- HIV Testing, treatment and Care
- Combination HIV Prevention
- Social and programmatic enablers

**Targets to 2020**
- 90% reduction in new HIV infections among adolescents at risk of infection by 75%
- Zero stigma and discrimination (by 2030 - 2020 impact target in development)

*PACKAGE appropriate mix of proven programmes for each defined adolescent population group based on epidemiological context*
Research priorities ADOS

• Testing – strategies and interventions
  – To improve access to and uptake of HIV testing services
  – Linkage to care
  – Safety, acceptability, feasibility and effectiveness of ST

• Treatment
  – Adherence
  – Novel drug delivery systems
  – Prevention and clinical management of Ois – TB
  – Optimal sequencing of ART in ados
  – Short and long-term outcomes
Research priorities ADOS

• Service delivery
  – Improve retention in care
  – Improve SRH outcomes in HIV adolescents
  – Support pregnant ados living with HIV and improve maternal and child health outcomes
  – DSD
  – Psychosocial support strategies
Youth clubs
Khayelitsha, South Africa
Join the youth club

Site C
Youth centre
021 387 1200
Open
Monday to Friday:
08h00 – 16h30

MEDECINS SANS FRONTIERES
How to join

Am I ready for ARVs?
Yes you are.
Your CD4 count was
320
Ask for your viral load results the next time you see the nurse or doctor.

So what's next?
Site C Youth centre is here for you!
Now that you know your status and your CD4 count, we will provide you with support to start taking ARV treatment.

Do I need ARVs?
Not yet, your CD4 is
490
but you will need ARV’s in the future.

And remember, we at Site C Youth centre are part of your support system, no judgement.
**What is a Youth Club?**

- Your very own platform where your voice can be heard
- A safe space to talk about the issues that affect you, share ideas, get support and give support
- A quick way to access the medication and treatment you need

**Benefits of Joining a Youth Club**

- Quick, supported access to medication and care without the hassle of waiting in queues at the main clinic
- Meeting people who understand you
- Access to your very own Mxit chat room where you can chat with other youth club members about anything and everything. A youth club counsellor will be available to join these chats to offer expert advice when needed

**Who can join a Youth Club?**

If you are HIV positive, between 14 and 25 years old and are serious about taking charge of your own health then you are welcome!

**How to Join a Youth Club**

Speak to your nurse or any of the counsellors for more info about joining a club

If you like what you hear, sign up!
How to make a Youth Club

Mix:
1 part HIV + youth not yet eligible for ART
1 part HIV + youth newly initiated on ART
1 part HIV + youth stable on ART
Separate school-goers from school-leavers
Add a handful of engaging & informative topics
Set in a judgment-free, youth-friendly zone
Best served with a sense of humour & spiced with energy
But seriously now

• One-stop shop
• Club PN
• Non-eligible youth – cotri & Vit B co
• Newly initiated – clinical check-up, receive ART
• Stable youth – ART
• All:
  – Blood & clinical visits
  – Family planning
  – General health care
MXIT chat room

- For youth club participants only
- Password protected
- Facilitated 1hr daily by youth counsellor
- Cheap – less than 2c per message
Youth radio reporters

- Partnership with Children's Radio Foundation
- Youth trained & mentored to use radio tools & techniques
- They in turn train & mentor future radio clubs
- Platform for youth advocacy
- Create radio programmes for in-house clinic radio booth & local station
Youth care to Adult care

Youth Clubs
• Stable >25s
• Gradual process
• Timely warning & what to expect
• Moved as a group to form own adult adherence club
• Adult club facilitator invited to youth club sessions
• Youth club facilitator co-facilitates first 3 adult club meetings
• Farewell party
Peads and adolescents technical update
CROI 2017
Infants, children and adolescents: What’s new?

Thank you to Lynne Mofenson for sharing her slides!
HIV TESTING
• Cluster randomized trial in 16 clinics in 2 provinces Mozambique enrolled Sept 2015-Mar 2016; all tests performed by nurses using whole blood from infants age 4-6 weeks:
  – Intervention (POC): 8 clinics implemented Alere a HIV-1/2 Detect system
  – Control (SOC): 8 clinics collected DBS for testing at reference lab (Roche), results returned electronically

• Primary endpoints:
  – % HIV+ infants starting ART within 2 mos sample
  – % HIV+ infants retained in care at 3 mos FU
• POC reduced infant LTFU across the cascade of care and enabled earlier and increased ART initiation.

• Need ensure deployment POC with other investments in health systems (supply chain, quality assurance, data systeme, human resources).
TREATMENT
Treatment of Acute Infection in Neonates
Kuhn L et al.  CROI 2017, Seattle, WA.  Abs.27

• Birth testing program put in place at one center S Africa; 111 infections identified and 75 enrolled in study early ART.

Early ART group:
- 57% male, 42% female
- Mean BW 3015 gm
- Change NVP to LPVr median 27 d
- Pre-ART VL wide range (med ~20,000)
Early ART (<48 hr initiation) group:

- Variablility in ART response; >1/3 attained/sustained undetectable RNA.
- 3 became undetectable and DNA PCR negative.
- 3 deaths (43, 61, 89 d/o); all ♂ & RNA >100,000; BW 2405, 2950, 3710g.

**Viral Response with Early ART**

**Patterns RNA in Infants Who Became PCR-**
Early vs Delayed ART in HIV-Infected Infants with Severe Malnutrition

- To compare nutritional, immune & viral responses to ART at 48 weeks in HIV-infected severely malnourished children (<-3 Z-score) started on ART immediately (<14 d after admission) or delayed until their severe malnutrition is resolved (and >14 d after admission).

- Although differences in CD4, viral suppression and anthropometric response at 48 weeks was not significant, the rates of change in CD4, viral load, WAZ and HAZ scores occurred earlier and favored the delayed arm (red circle).
Predictors of Switch to 2\textsuperscript{nd} Line in Children Globally

- Global analysis of switch to 2\textsuperscript{nd} line ART: data on 93,351 children (22\% S Africa, Botswana, 71\% rest SSA) starting ART Oct 2005-Oct 2012
- 2/3 of children were <5 years at start of ART; median CD4 at start 15\% (10-22)/297 (148-507).

1\textsuperscript{st} line ART differences:
- NNRTI >90\% in SSA, S America/Caribbean, Asia
- <60\% in Southern Africa, Europe, N America
Predictors of Switch to 2\textsuperscript{nd} Line in Children Globally

- Median FU/child was 27 months (IQR 9.52), before switch 1\% known to have died, 20\% LTFU and 20\% transferred out.
- 3,883 switched to 2\textsuperscript{nd} line, rate 14.6/1,000 PY (CI 14.1-15.1).
- Median time to switch 25 mo (IQR 20.57), median age 8.6 yr (IQR 5.5,11.5); 85\% switch from NNRTI to PI ART.
- By 3 years ART, 3.1\% (3.0-3.2) cumulative switch; wide variation.

Factors associated with more rapid time to switch:
- Male sex
- Older age
- Earlier CY ART started
- NNRTI 1\textsuperscript{st} line
- Any VL monitoring
- Upper/upper-middle income country
• Standard LPV/r is 4:1 ratio; when given with rifampin get 90% decrease in LPV levels.
• Doubling LPV/r dose does not work in children
• Super-boosting – increasing the dose of rtv to obtain a 1:1 LPV/r ratio counteracts the rifampin effect in children but small studies.
• Enrolled 96 HIV+ children 3-15 kg on or about to start LPV/r-based ART with TB requiring rifampin.

- Non-inferiority super-boost to standard:
- %<Cmin <1 mg/L
  - Super-boosting 7.6% (0.4-16.2%)
  - Standard 8.8% (0.6-19.8%)
- 82% RNA <400
- No LPV resistance
Enrolled 10 HIV+ children age 2-<6 years in PK study of DTG granules for suspension.

- Excellent week 4 virologic response.
- DTG granules-in-suspension at dose ~0.8 mg/kg once daily achieved the target AUC24h.
- C24h was below target but above the pharmaodynamic threshold reported in adults of ED90=~0.3 mg/mL
- Virologically potent and well tolerated – no grade 3 or 4 AE attributed to study drugs.
• Phase 2 single-arm, open-label, switch study in 23 HIV-infected children 6-12 years suppressed on current ART.

• Renal safety profile of E/C/F/TAF was consistent with adults: Improvement in markers of proteinuria; No cases of proximal renal tubulopathy.

• E/C/F/TAF had minimal impact on BMD.

• At week 24, VL <50 in 100% of children.

• Supports use as once daily INSTI-based ART in children.
SERVICE DELIVERY
in Adolescents and Adults, Kenya, Uganda, Tanzania

- Retrospective cohort analysis LTFU from 33 clinics, data from 2000-2014.
- Pt enrolling as:
  - young adolescents (10-14 yr, N=3,801; 58%♀)
  - older adolescents (15-19 yr, N=6,767; 85%♀)
  - adults (>20 yr, N=205,337; 67%♀)

LTFU from Enrollment

LTFU After Start ART

Older adolescents 15-19 yr highest LTFU
in Adolescents and Adults, Kenya, Uganda, Tanzania

- Older adolescents have a higher risk of LTFU vs younger adolescents and adults.
- Correlates for LTFU are mainly patient related, with pregnancy at enrolment and advanced HIV disease associated with ↑ LTFU.
- LTFU risk ↑ among recently enrolled participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Young Adolescents</th>
<th>Older Adolescents</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender and pregnancy status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Non-pregnant females</td>
<td>1.46 (1.09-1.95)</td>
<td>1.36 (1.23-1.49)</td>
<td>0.90 (0.94-1.04)</td>
</tr>
<tr>
<td>Pregnant females</td>
<td>1.78 (0.86-3.68)</td>
<td>1.56 (1.39-1.76)</td>
<td>1.18 (1.12-1.24)</td>
</tr>
<tr>
<td>Female, unknown pregnancy status</td>
<td>1.31 (1.04-1.72)</td>
<td>1.28 (1.10-1.48)</td>
<td>0.86 (0.80-0.92)</td>
</tr>
<tr>
<td>CD4 cell/μl at ART start</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;100</td>
<td>1.21 (0.67-2.16)</td>
<td>0.86 (0.66-1.14)</td>
<td>1.05 (0.95-1.17)</td>
</tr>
<tr>
<td>100-199</td>
<td>1.02 (0.76-1.37)</td>
<td>0.78 (0.52-1.16)</td>
<td>0.91 (0.81-1.02)</td>
</tr>
<tr>
<td>200-349</td>
<td>1.04 (0.84-1.30)</td>
<td>0.98 (0.76-1.37)</td>
<td>0.88 (0.78-0.99)</td>
</tr>
<tr>
<td>2350</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>WHO stage at ART start</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I - II</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>II - III</td>
<td>1.31 (1.12-1.53)</td>
<td>1.22 (1.09-1.37)</td>
<td>1.26 (1.23-1.29)</td>
</tr>
<tr>
<td>Year of ART initiation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000 - 2004</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>2005 - 2009</td>
<td>1.96 (1.26-3.03)</td>
<td>1.53 (1.03-2.27)</td>
<td>1.26 (1.00-1.59)</td>
</tr>
<tr>
<td>2010 - 2012</td>
<td>3.22 (2.44-4.25)</td>
<td>2.15 (1.61-2.87)</td>
<td>1.98 (1.66-2.36)</td>
</tr>
<tr>
<td>2012 - 2014</td>
<td>4.72 (3.25-6.87)</td>
<td>2.49 (1.84-3.36)</td>
<td>2.36 (1.84-3.04)</td>
</tr>
<tr>
<td>Type of health facility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Secondary</td>
<td>0.82 (0.69-0.96)</td>
<td>1.14 (0.93-1.40)</td>
<td>0.83 (0.59-1.17)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>0.91 (0.60-1.36)</td>
<td>0.67 (0.42-1.06)</td>
<td>0.59 (0.39-0.91)</td>
</tr>
<tr>
<td>Food rations</td>
<td>0.98 (0.46-2.11)</td>
<td>1.11 (0.72-1.72)</td>
<td>0.59 (0.40-0.86)</td>
</tr>
<tr>
<td>Adolescents &amp; adults separate clinics</td>
<td>1.13 (0.65-1.94)</td>
<td>1.20 (0.83-1.74)</td>
<td>1.09 (0.82-1.43)</td>
</tr>
<tr>
<td>Support groups for HIV positives</td>
<td>1.27 (0.44-3.65)</td>
<td>1.66 (1.64-4.39)</td>
<td>1.69 (1.43-6.59)</td>
</tr>
<tr>
<td>Group counseling</td>
<td>1.56 (1.10-2.19)</td>
<td>1.81 (0.58-1.14)</td>
<td>0.82 (0.59-1.14)</td>
</tr>
<tr>
<td>Peer educator program</td>
<td>0.83 (0.74-0.93)</td>
<td>1.22 (1.05-1.40)</td>
<td>1.02 (0.89-1.16)</td>
</tr>
<tr>
<td>Outreach program</td>
<td>1.02 (0.62-1.68)</td>
<td>0.59 (0.34-0.99)</td>
<td>1.36 (0.79-2.34)</td>
</tr>
</tbody>
</table>
Novel Community Cohort Model
Improve Care of HIV-Infected Adolescents in Haiti

To evaluate community cohort care as a model for HIV service delivery to improve assessment for and initiation of ART, retention, and viral suppression among adolescents at the GHESKIO Adolescent HIV Clinic in Port-au-Prince.

<table>
<thead>
<tr>
<th>Historical Care in Adolescent Clinic</th>
<th>Community Cohort Care</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient</strong></td>
<td></td>
</tr>
<tr>
<td>INDIVIDUAL: Monthly individual clinic session at the Adolescent HIV Clinic</td>
<td>COHORT: Monthly cohort session with 5-8 peers in a community room</td>
</tr>
<tr>
<td><strong>Setting</strong></td>
<td></td>
</tr>
<tr>
<td>ADOLESCENT HIV CLINIC: All services including counseling, clinical, laboratory and pharmacy are provided at the Adolescent HIV Clinic at GHESKIO</td>
<td>COMMUNITY: All services including counseling, clinical, laboratory and pharmacy are provided in a group setting in the community</td>
</tr>
<tr>
<td><strong>HIV Services</strong></td>
<td></td>
</tr>
<tr>
<td>SEQUENTIAL: Each patient rotates to counselor, clinician, laboratory staff, and pharmacist individually and sequentially</td>
<td>INTEGRATED: Each patient receives all services in the cohort group session with one nurse</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number</th>
<th>N=710</th>
<th>N=50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age</td>
<td>18 yr (IQR 16-19)</td>
<td>18 (IQR 15-19)</td>
</tr>
<tr>
<td>% female</td>
<td>568 (80%)</td>
<td>38 (76%)</td>
</tr>
<tr>
<td>Median CD4</td>
<td>414 (IQR 238-604)</td>
<td>537 (IQR 339-805)</td>
</tr>
</tbody>
</table>
Community cohort care for HIV-infected adolescents in Haiti significantly improved retention by an absolute difference of 20% and decreased time to ART initiation.

VL suppression remains poor indicating a need for increased efforts to improve adherence to ART among adolescents.
ADDITIONAL SLIDES
11 infants with confirmed birth PCR +, stored DBS; plasma collected q 3 mos; ART start median 3 days; median baseline RNA 4.0 log c/mL; 7 detectable HIV DNA at baseline, 5 included in kinetics study.

**Rapid RNA Decline; 2 Phase DNA Decline**

- Rapid early HIV RNA to undetectable within 3-6 mos
- 1st phase DNA decay (1st 2 wks ART) faster than adult early ART (Ananworanich, 2016).
- 2nd phase decay faster than infants started on ART ~2 mos (Uprety 2015)
Safety of 6-Week Triple ARV Prophylaxis in High-Risk HIV-Exposed Infants

- Prospective cohort HIV-exposed infants in 4 clinical sites in Thailand.
- Neonates with high risk of HIV transmission (mother has HIV RNA >50 copies/mL prior to delivery or received ART <12 wks) received AZT/3TC twice daily plus NVP 4 mg/kg once daily for 6 wks (N=63).
- Control group with standard risk received 4 wk AZT (N=31).

6-wk of AZT/3TC/NVP in high-risk HIV-exposed infants appears to be safe, with high NVP concentrations being rapidly achieved/maintained during the first 4 wks of life.
Weekends off EFV-ART in HIV+ Youth – Long Term FU

- **PENTA BREATHER trial**: randomized to EFV-ART 5 d/wk vs continuous 7 d/wk; FU extended to 144 wk.

  - 199 Young people (19yr) enrolled into study
    - On ART regimens containing 2 NRTIs + EFV (standard dose)
    - VL <50 c/mL for at least 12 months
    - No previous virological failure
    - CD4 cell counts ≥350 cells/mm³

  - 97 extended 95 ≥144 wk FU
  - 97 extended 92 ≥144 wk FU

- 97% consented
- Median FU 3.6 yr
- 70% SCT stayed on strategy
- 30% SCT resumed CT (60% for rebound VL >50); 10/14 resuming CT re-suppressed on EFV ART
- 3 (3%) in SCT switched to 2nd line vs 6 (6%) in CT (p=0.5)
- Rebound in 16 SCT, 16 CT
- Resistance test 7 SCT, 8 CT:
  - 4 SCT, 7 CT had mutation
  - All had NNRTI
  - 6 NRTI (2 SCT, 4 CT)

- Short-cycle therapy can be used effectively & safely, in higher resource setting with VL q3-4 months
ATV and DRV with COBI in Youth 12-18 Years  
McFarland E et al.  CROI 2017, Seattle, WA. Poster 425

• Phase 2 single-arm, open-label, switch study in 22 HIV-infected children 12-18 years suppressed on current ART.

- ATV exposures were modestly higher in youth vs adults, but still within the safe and efficacious range of exposures in other studies.
  - Median ATV Ctau (1020 ng/mL) was 68-fold above half-maximal inhibitory concentration (IC50; 15 ng/mL)
- DRV exposures in adolescents were similar to those observed in adults, except for slightly lower Ctau 2
  - Median DRV Ctau (494 ng/mL) was 9-fold above IC50 (55 ng/mL)
ATV and DRV with COBI in Youth 12-18 Years
McFarland E et al. CROI 2017, Seattle, WA. Poster 425

- Small decline in eGFR was observed as expected with use of COBI, which inhibits tubular secretion of creatinine

- High rates of virologic suppression were maintained (95.5% RNA <50 at week 12).
- COBI was well tolerated, with no AE discontinuations.
- ATV and DRV exposures were higher or similar to those in adults, except for lower DRV Ctau; however, all were within safe and efficacious range.
- Support use of COBI 150 mg as a pharmaco-enhancer of ATV or DRV in youth.