HIV prevention – and the tools to do prevention well – continues to be central to international HIV conferences, and this year’s IAS conference was no exception. Despite significant advances in HIV prevention since IAS 2011, including treatment as prevention (TasP) and pre-exposure prophylaxis (PrEP), scientists attending the 7th IAS conference in Malaysia noted that these landmark scientific breakthroughs are yet not translating into reduced HIV incidence among at-risk populations. Concern was expressed about the slow uptake of PrEP by MSM including in the US and Australia, and the slow implementation of harm-reduction and methadone maintenance programs for people who inject drugs in Southeast Asia. A highlight of the conference was the declaration by WHO that Cambodia is on track to reverse its HIV epidemic, and achieve virtual elimination of new HIV infections by 2020, one of the few countries in the world to do so. Important presentations, from a number of settings, defined next steps to make high-impact HIV prevention a reality. A number of sessions from the meeting have links to video and slides available and we have included some of these below.

**HIV testing**

HIV testing is the first step in linking persons to HIV care and prevention. A Monday poster discussion session (MOPDC01, [http://pag.ias2013.org/session.aspx?s=3](http://pag.ias2013.org/session.aspx?s=3)) addressed testing behavior, testing attitude and different testing services from Africa, Asia, Europe, and the US. The session was aptly named “Testing: the first step of the cascade.

A family-centered HIV testing program conducted by AIDSRelief, Kenya as part of the Prevention for Positives Program was presented (Mongare [presented by co-author Odhiambo], abstract MOPDC0101). This program encouraged testing of family members of HIV-infected persons, and compared testing uptake in this strategy to voluntary counseling and testing in terms of identification HIV serodiscordant couples and HIV-infected children through provider-initiated testing. Through chart abstraction, they determined that family centered testing identified 27% of the partners of HIV-positive persons as HIV-negative (thus the couple was HIV serodiscordant) compared to 9.4% through voluntary testing centers. Among children who were tested, family centered testing also identified a much higher prevalence of HIV compared to provider-initiated testing (11.4% vs 4.3%). Family centered testing is a promising strategy in order to increase identification of HIV-infected children and serodiscordant couples, and appears to be more effective than alternative methods of HIV testing. The family testing program supported the HIV-infected individuals to disclose their status, link to care, and reported high (93%) uptake of ART among those who were eligible.

An internet study was conducted about attitudes towards the over-the-counter rapid HIV home test kit among 333 gay male HIV serodiscordant and HIV concordant negative couples in the US who practice unprotected anal sex (abstract MOPDC0103, Mitchell). A home, self-performed HIV test was approved by the US FDA in 2012. More positive attitudes toward the home HIV test were reported by mixed race and non-monogamous couples. Less positive attitudes towards the home HIV test were reported by couples with higher education, longer duration of their relationship, and a primary care provider. Further research will work on the potential factors like price and perceived risk that may have influenced attitudes.

A study of mobile HIV testing in Bangkok (Simaputtanasan, abstract MOPDC0105) found a high uptake (98%) among the 688 persons, an HIV prevalence of 3.5%, and 80% return of HIV positive persons for CD4 testing within 3 weeks. The authors recommended expansion of mobile testing to make HIV testing more accessible.
A study assessed linkage to care following home-based HIV testing in the Sisonke district of KwaZulu-Natal, South Africa (Naik, abstract MOAD0101). Among the 492 HIV+ persons identified, 359 were followed prospectively and 62% were linked to care within 3 months, defined as coming for a CD4 test; the median CD4 count was 341 cells/mm³, indicating that home-based HIV testing identifies HIV+ persons at higher CD4 counts than is common through other voluntary or provider-initiated testing strategies. Barriers to HIV care linkage included younger ages (16-24), disbelief of HIV results, finding time to go for HIV care, believing that ART can make one sick, living with >2 adults, and alcohol use. Believing that the antiretroviral medications would be stocked was associated with a 2-fold greater likelihood of seeking care.

Black MSM in the USA are disproportionately affected by HIV. Increasing HIV testing rates is important if access to HIV prevention and treatment services is to be scaled up. Four HIV testing patterns were described among black MSM (Hussen, abstract MOPDC0102): 1) maintenance testers (those who test as part of routine self-care), 2) risk-based testers (test after sexual activity or after a change in the relationship), 3) convenience testers (are influenced by location and cost of testing), 4) test avoiders (avoid testing for fear of a positive result). The authors recommend multi-pronged testing strategies to reach this at-risk population.

In a session on demand creation (TUAD01, http://pag.ias2013.org/session.aspx?s=29#4), a study aimed at HIV testing of men in highest risk populations in Nigeria was presented (Adebajo, abstract TUAD0104). Three strategies were evaluated: 1) static facility-based clinics with male peer educators and key opinion leaders referring their peers, 2) key opinion leaders referring peers to nearby mobile HIV counseling and testing teams, and 3) key opinion leaders mobilizing their peers and providing HIV counseling and testing. More than 30000 men received HTC, the majority first-time testers, and strategy #3 generated the greatest number of persons testing and had the lowest cost per client tested. Getting testing to men at risk through innovative strategies such as this could substantially increase the numbers of persons knowing their status.

**ART and PrEP: Antiretrovirals for HIV prevention**

Antiretroviral-based HIV prevention strategies – including antiretroviral treatment (ART) to reduce the Infectiousness of HIV infected persons and oral and topical pre-exposure prophylaxis (PrEP) for uninfected persons to prevent HIV acquisition – are powerful approaches for decreasing HIV spread. Just in the last two years have data demonstrated definitively that these strategies work for preventing HIV – and, when taken with high adherence, can work very well. Important unanswered questions for successful delivery of antiretroviral-based HIV prevention include how to target ART and PrEP to realize maximum population benefits, whether HIV infected persons at earlier stages of infection would accept ART to reduce their risk for transmitting HIV and highest-risk HIV negative persons would use PrEP, and whether high adherence could be sustained to achieve high effectiveness.

Just prior to IAS 2013, WHO released its 2013 Consolidated Guidelines on the Use of Antiretroviral Drugs for HIV Treating and Preventing HIV Infection. The guidelines include recommendations on HIV testing and counseling, ART initiation and maintenance, patient monitoring, 2nd and 3rd line ART, management of co-infections and comorbidities and service delivery. The guidelines recommend universal ART initiation for all persons with CD4 counts <500 (plus initiation regardless of CD4 count for populations – such as HIV serodiscordant couples and persons with certain co-infections – for whom additional treatment and prevention benefits would be accrued. A satellite session detailed the evidence supporting the guidelines and discussion about their implementation (SUSA04, http://pag.ias2013.org/session.aspx?s=88).


A large consortium (12 independent mathematical models) assessed the potential impact of expanded ART eligibility, using potential effects in 4 different settings: South Africa, Zambia, India, and Vietnam (Eaton, abstract MOAC0203). The results illustrated the great potential for mathematical models to inform policy and the importance of comparing model effects to increase confidence in
outcomes. The results suggest that expanded ART eligibility (CD4 ≤500 or all HIV+) appears ‘cost-effective’ (less than on GDP) and the costs of initiating ART vs. waiting are small given a patient in care. In generalized epidemics (i.e., South Africa and Zambia), expanded testing and linkage appears ‘cost-effective’ and immediate ART for high-risk populations is highly cost-effective in concentrated epidemics. Although removing ART CD4 eligibility thresholds requires substantial extra resources, the impact of test and treat on TB and HIV incidence is potentially large.

Another mathematical modeling analysis estimated the potential impact of treatment as prevention in Swaziland (Botha [presented by co-author Welte], abstract MOAC0205). The model assessed ART initiation irrespective of CD4 count with three intervention scenarios with different assumptions about the testing-treatment cascade, compared to the current standard. The authors estimated that if the Swaziland HIV prevention and treatment policies remain unchanged, a moderate decline of HIV incidence among 15 to 50 year old adults of 37% would be expected by mid 2023. Under performance targets of 70% testing uptake, 70% treatment initiation, 93% retention, and assuming treatment failure of 7.5%, universal ART initiation could reduce HIV incidence by 86% over ten years. The authors concluded that the findings suggest great potential for ART, initiated at any CD4 count to reduce HIV incidence in Swaziland, especially if initiated with strategies to reduce attrition along the steps of the treatment cascade.

An observational study from Kenya and Uganda (Mujugira, abstract MOAC0202) described how quickly HIV+ members of HIV serodiscordant couples initiated ART after becoming eligible for therapy (i.e., CD4 count <350). Of 4747 HIV+ persons not on ART at baseline, 1998 became eligible during study follow-up and had a subsequent study visit to assess ART initiation. Of these, 71% initiated ART and the cumulative probability of ART initiation was 61% by 6 months and 79% by 12 months. Initiation was lower/slower among those with higher CD4 counts at the time of becoming ART-eligible – 6-month initiation probabilities of 66% for those with CD4 counts <200, 69% for those with counts 200-250, and 55% for those with counts 251-350 (p<0.001). Delay in ART initiation was also associated with less symptomatic WHO stage and alcohol use. Patient-reported barriers to ART initiation included lengthy pre-treatment processing requirements. In this potentially motivated population (with a known HIV uninfected partner), delay in ART initiation was common, stressing continued need to message the treatment and prevention benefits of ART.

Some of these themes were reiterated in a qualitative study from Botswana that assessed the acceptability of early ART initiation in that population (Logan, abstract MOAC0204). Key barriers to early ART included stigma, disclosure/shame, side effects, belief that ART cannot be stopped, and that they cannot take ART with alcohol or traditional medicines. ART facilitators included the desire to improved health and knowing an adherent person who got better. Knowledge of treatment for preventing HIV transmission was limited but, with education, was received as a motivator.

A late breaker abstract (van Griensven [presented by co-author Kroon], abstract WELBC03) presented the results of a study initiating ART in MSM with acute HIV. Between 2009 and 2013 nearly 70,000 persons were screened for acute HIV and 90 cases were discovered. 88 of 90 accepted immediate ART. Blood and seminal plasma viral load decreased substantially on ART and, importantly, reported high-risk sexual behaviors also decreased after starting ART. Together, these results suggest that, if persons with new HIV infection can be found, that immediate initiation of ART may be an important intervention to decrease onward transmission risk.

A late breaker PrEP abstract reported the results of the Bangkok Tenofovir Study, a randomized, placebo-controlled trial of daily PrEP, using tenofovir (TDF) taken daily (Chopanya, abstract WELBC05). Results of this trial were published in The Lancet in the weeks leading up to IAS 2013 and so have been well-reported already. This long-running trial randomized 2413 injection drug users in Bangkok to daily oral TDF of placebo. 50 HIV infections occurred – 17 among those assigned PrEP and 33 among those assigned placebo, translating to a 49% reduction in the risk of HIV acquisition (95% 10-72%, p=0.01). Like in other PrEP trials, efficacy was greater in those with higher adherence to PrEP. PrEP was safe and no cases of resistant HIV were detected in HIV seroconverters. These important results, from the last trial of daily oral TDF-based PrEP (following results of trials in MSM and heterosexuals completed in the last couple of years), complete the picture of TDF-based PrEP for HIV
prevention: when taken, PrEP works, in a variety of populations and risk settings.

A second late breaker, from the iPrEx trial, reported on use of PrEP in that population of MSM in their open label extension (i.e., when all were receiving known efficacious PrEP) (Grant, abstract WELBC02). The open-label continuation of the study enrolled 1526 (65%) of the 2340 participants who remained HIV-negative at the end of the randomized phase. 72% initiated PrEP. Of 1451 who remained seronegative at OLE enrollment, 1038 (72%) elected to receive PrEP at the OLE enrollment visit. Choice to receive PrEP was slightly higher among participants who were older than 30 (74% vs 69%), reported non-condom receptive anal intercourse (74% vs 70%), had not completed secondary education (79% vs 70%), and had drug detected in the randomized phase of the study (75% vs 67%, as available); P< 0.05 for all comparisons. Of those who elected PrEP, 701 (71%) had detectable tenofovir or FTC during the first 12 weeks of follow-up. These results suggest interest in PrEP is higher among people with higher risk for HIV and are encouraging that reasonably high drug detection among those motivated to take PrEP can be achieved.


Data from the Partners PrEP Study – a randomized trial of TDF and emtricitabine (FTC)/TDF PrEP for HIV prevention which demonstrated efficacy of these medications for preventing HIV – were presented related to the safety of PrEP in women who became pregnant during the trial (Mugo [presented by co-author Bukusi], abstract WEAC0101). By protocol design, women who became pregnant discontinued study medication, so these data speak most to PrEP use during conception and the early 1st trimester. Of 1785 HIV uninfected women who participated in the trial (and were randomized to TDF, FTC/TDF, or placebo daily), a total of 288 pregnancies occurred among 267 women, with similar incidence rates across the trial randomization study arms: TDF 11.9 per 100 person-years (p=0.19 vs. placebo), FTC/TDF 8.8 (p=0.40 vs. placebo), placebo 10.0. Pregnancy outcomes – including pregnancy losses, preterm delivery, birth weight, congenital anomalies – did not differ statistically across the study arms. Infants born to women randomized to PrEP versus placebo had similar WHO gestational age-adjusted Z-scores for head circumference, length, and weight throughout the first year of life. These results provide reassurance that PrEP appears to be safe in HIV uninfected, at-risk women who use PrEP during a time when they become pregnant.

An additional abstract from the Partners PrEP Study (Wamuti, abstract WEAC0105) detailed continued high PrEP adherence in that motivated population after the results of the trial were reported in July 2011.

Two studies among MSM showed high interest in medications for HIV prophylaxis. The first, an internet-based survey among 36,000 MSM from Latin America, Spain and Portugal (Mimiaga [presented by co-author Mayer], abstract WEAC0102) found limited PrEP awareness (11%) and use (<1%) but high interest (69%). The second, (Carballo-Diéguez, abstract WEAC0103) reported relatively high (~80%) use of a placebo microbicide gel product with sex, as a feasibility assessment for a future rectal microbicide.

A mathematical modeling study (Hoffman [presented by co-author Landovitz], abstract TUAC0104) estimated that PrEP may not offer considerable additional prevention benefits for safe conception for an HIV serodiscordant couple with an HIV+ male partner and an HIV- female partner. However, this was under an optimal clinical scenario in which the male partner is on ART (with a suppressed viral load), the couple does not have sexually transmitted infections, and unprotected intercourse is limited to the period of ovulation. These data may help clinicians considering how to guide HIV-affected couples about their fertility choices and the role for PrEP in safer conception.


Finally, the potential for increased sexual and injection risk-taking in persons using antiretrovirals for HIV prevention (both ART and PrEP) has been a topic of considerable discussion. Increased risk-taking – done because persons feel themselves at lesser risk of transmitting
or acquiring HIV – could potentially undermine the HIV prevention effectiveness of ART and PrEP, and could result in increased transmission of other infections transmitted sexually or through unsafe injection sharing. In a poster discussion session, a systematic review was presented that assessed sexual behavior of persons using antiretrovirals (Doyle, abstract WEPDB0105). The authors reviewed 60 separate observational studies, involving a totally of more than 30,000 subjects. Sexual risk-taking was lower in those receiving antiretrovirals compared with those not receiving antiretrovirals (OR 0.71, \( p< 0.001 \)) as was the incidence of sexually transmitted infections (OR 0.38, \( p=0.05 \)). Injecting risk behavior was not statistically different (but, importantly, was not more risky) for persons using antiretrovirals compared to those not using antiretrovirals (OR 0.90, \( p=0.6 \)). The authors concluded that despite concerns that antiretroviral use might increase sexual or injecting risk-taking, available evidence suggests sexual risk-taking is actually reduced in people on antiretrovirals. One potential explanation is the ongoing engagement in HIV care / prevention care is reinforcing for both treatment and prevention.

Reinforcing those results, a study from Côte d’Ivoire assessed sexual risk behaviors among 957 HIV-infected adults (only ~45% living in a partnership) with CD4 counts >350 (and thus not eligible for ART under prior WHO guidelines) randomized to either immediate ART or ART deferred until CD4 decline to <350 (Jean, abstract MOAC0201). At 12 months, ~70% reported being sexually active in the prior year (~45% in the prior month) and ~10% reported that their last sex was unprotected and with a partner of HIV uninfected or unknown status – all differences that were not statistically significant (and which reinforce those in the systematic review reported above). However, when factoring in HIV plasma viral load – i.e., essentially unprotected sex with detectable HIV, which is the combination with greatest transmission potential – those assigned to early ART had a substantially lower HIV exposure to their partner (2.7%) compared to those not assigned early ART (10.7%, \( p<0.001 \)). Thus, these results reinforce the potential for ART – through both not increased sexual risk-taking and through substantially lowering HIV levels (the primary mechanism for infectiousness) – to reduce transmission potential.

Reproductive health and HIV

Results of a cluster randomized trial in Nyanza, Kenya of integrating family planning services into HIV care and treatment (Cohen, abstract TUAC0105). The study randomized 12 public HIV clinics to integrating family planning services into HIV care centers and compared these to 6 control clinics where clients were referred to maternal-child health and family planning clinics at the same facility. The authors found increased family planning use associated with integrated family planning and HIV care, without a significant decrease in reported condom use.

Men who have sex with men (MSM)

An oral abstract session was devoted to new data related to HIV prevention in men who have sex with men from a variety of settings (MOAC01, http://pag.ias2013.org/session.aspx?s=6).

India is home to one of the largest MSM populations in the world, and Indian MSM are heavily affected by HIV (prevalence of 7.4% for MSM vs. 0.34% for the general population). In a study of Indian MSM, (Mayer, abstract MOAC0101) gay sexual identity and sexual behavior were not necessarily linked. HIV and STD prevalence were high, and depression and psychological stress were common. HIV-infected MSM were more likely to be older and have gonorrhea. MSM with syphilis, gonorrhea or chlamydia were more likely to go to an MSM hangout at least once a week, and to have ‘assortative’ (similar) partners by employment status. Married MSM were more likely to be employed, but were otherwise similar to unmarried MSM. In order to decrease STD and HIV transmission among Indian MSM, prevention strategies need to better understand diverse sub-cultural identities and address mental health concerns associated with risk taking.

A study from the US reported that recent experience of intimate partner violence (IPV) in the US is associated with reduced self-reported condom negotiation efficacy among gay and bisexual men (Finneran, abstract MOAC0102). Non-physical non-sexual forms of IPV may also impact condom negotiation. Low condom negotiation efficacy may be a pathway through which IPV increases HIV risk.
It was recommended that gay, bisexual and other MSM should be routinely screened for IPV during HIV counseling and testing.

One study, from Peru, highlighted the importance of increasing knowledge of HIV serostatus among MSM in that setting (Vagenas, abstract MOAC0104). This cross-sectional serosurvey of 5148 MSM from Lima and 4 other cities found an HIV prevalence of 8.2%, with 90% unaware of their status. Those unaware of their status were 2.8 fold more likely to report unprotected anal sex and 2.1 fold more likely to report an alcohol use disorder. Strategies to increase HIV testing and implement alcohol interventions were recommended.

A study from Malawi (Baral, abstract MOAC0105) assessed the feasibility of prevention work among MSM in that country, which has had well-publicized legal and community persecution of MSM. A respondent-driven sample was recruited by 10 trained peer educators in Blantyre. Adjusted HIV prevalence was 12%, and 90% of HIV+ men were unaware. 100 men were followed for a year – retention was 99% and HIV incidence was 7%. This study establishes the need and opportunity for ongoing prevention activities in this high incidence population.

**Injection drug users**

An oral abstract session was devoted to new data related to HIV prevention in injection drug users (TUAC02, [http://pag.ias2013.org/session.aspx?s=21](http://pag.ias2013.org/session.aspx?s=21)). In addition, as noted above, the Bangkok Tenofovir Study also reported on PrEP for HIV prevention in persons who inject drugs.

**Female sex workers**

A survey of Indian female sex workers (Medhi, abstract WEPDC0101) reported that 59% were illiterate, 19% used alcohol regularly, while 13% used illicit drugs. Condom use was low: 33% with clients and 10% with regular sex partners. 35% had syphilis, gonorrhea or chlamydia and 10% were HIV-infected. STI treatment is an important part of HIV prevention in subpopulation.

**New interventions**

In a poster discussion about HIV and adolescents (TUPDC01, [http://pag.ias2013.org/session.aspx?s=14](http://pag.ias2013.org/session.aspx?s=14)), an individually randomized trial of lottery incentive scheme to reward those with negative STI tests as a strategy to reduce HIV incidence was presented (Björkman-Nyqvist [presented by co-author de Walque], abstract TUPCD0106). Men and women ages 18-32 in 29 villages and peri-urban villages in 5 districts in Lesotho were enrolled in this individually-randomized trial (n=3426). In the intervention arm, arm lottery tickets were provided (either a high or a lower value lottery) to those with negative rapid tests for syphilis and *Trichomonas vaginalis*. All arms received sexually transmitted infections testing, counseling, and sexually transmitted infections treatment. After 2 years of intervention, HIV incidence was significantly lower (by 25%) among study participants eligible for the lotteries. In subgroup analyses, a higher reduction (33%) was observed among women, and 31% in the group assigned to the higher prize lotteries (1000 Rands), No harms were reported. Thus, the results suggest that short-term incentives to engage in safe sex could lead to a decline in sexually transmitted infections, including HIV, specifically among women; however, further research is needed to examine generalizability of results. This study is consistent with a previous study in Malawi with conditional and non-conditional cash incentives to increase safe sex, school attendance, and reduce sexually transmitted infection and HIV incidence.

**Male circumcision**

The prevention benefit of male circumcision in reducing female-to-male HIV transmission risk was demonstrated in three landmark randomized trials completed in 2006. Implementation of circumcision services has become a clear public health priority.

A Monday poster discussion (MOPDD01, [http://pag.ias2013.org/session.aspx?s=30](http://pag.ias2013.org/session.aspx?s=30)) focused on implementation of voluntary medical male circumcision (VMMC) with presentations on quality of services with rapid scale up in South Africa, acceptability and safety of the Shang Ring for adult VMMC, demand for VMMC in Zambia, loss to follow-up and adverse events and behavior change.
From the Rakai district of Uganda, data on the acceptability of the Shang Ring for VMMC compared to conventional surgery using the dorsal slit procedure were presented (Kigozi, abstract MOPDD0102). Notably, 82% of the 621 men enrolled chose the Shang Ring. The procedure time was faster for the Shang Ring: mean time of 6.1 minutes compared to 17.7 minutes with the dorsal slit surgery, which could promote task shifting and more efficient delivery of VMMC. Moderate post-operative adverse events were infrequent and not significantly different: 1% in the Shang Ring group and 0.8% the dorsal slit group. Complete wound healing by 4 weeks was significantly slower in those who received the Shang Ring (84%) compared to 100% with the dorsal slit (p<0.001). By 4 weeks, 7% in the Shang Ring and 15% in the dorsal slit group resumed sex. Although ring placement or other complications with the Shang Ring are infrequent so far, back-up surgical facilities need to be available. The need to return after 1 week for Shang Ring removal adds to program burden. There is a need to train and certify providers in device placement, and for Shang ring acceptability studies among adolescents.

A late breaker also studied the implementation of the Shang Ring, this time in Kenya and Zambia (Barone, abstract WELBC04). Among 1149 men, 21.3% returning to normal activities on the day of circumcision, with 95% doing so by the third day. 95% of men were satisfied with the appearance of the circumcised penis and 99% would recommend the Shang Ring. Non-physicians performed 97% of procedures and adverse events were very few.

Qualitative work about Zambian men’s decision-making about VMMC was presented (Price, abstract MOPDD0105). Social networks were found to be a primary driver of demand for VMMC and that post-operative pain and the requirement for abstinence were inhibitors, but beliefs about HIV and STI prevention were not associated with uptake of VMMC. Personal networks were cited as sources of information by almost all 40 men, and influenced men’s decision to be circumcised; female partners, friends and family members were the most influential. Four stages of behavior change were summarized: 1) Exposure and belief adjustment, 2) Personalizing benefits and norming pressures, 3) Conquering fears and taking charge of self, and 4) Taking action and seeking VMMC. The presenter recommended to increase effectiveness of demand stimulation for steps 1 and 2, multi-media communications and diversifying messaging that also targets network members, emphasizes MC secondary benefits, and that MC is for every man. To address issues related to conquering fears and taking charge of self (stage 3), use of VMMC-experienced men (“I did it, so can you”) and increased availability of places where men can get their questions about MC answered. For men who are ready to take action (stage 4), advertisement of hours for MC services, use of appointment systems and efficient clinic flow were recommended.

Finally, information on loss to follow-up and adverse events following VMMC in Nyanza province, Kenya was presented (Grund [presented by co-author Swaminathan], abstract MOPDD0104). 58% of VMMC clients failed to return for post-operative follow-up within 12 days and there was a 2.3-fold higher incidence of moderate/severe adverse events among those who failed to returned to the clinic and were tracked: 3.3% one or more moderate/severe adverse events in those who returned within 12 days compared to 7.5% who failed to return but who were tracked. Post-operative counseling should emphasize adherence to recommendations about post-operative follow-up. In addition, strategies such as SMS text reminders and mobile vans need to be evaluated to increase rates of clinic return.

**PMTCT (preventing mother-to-child transmission)**

The debate in the PMTCT field is no longer “when to start”, but “whether to stop.” An oral abstract session (http://pag.ias2013.org/session.aspx?s=15) focused on critical issues for PMTCT, including integration of antenatal care with HIV services, infant outcomes in a community sample in Zimbabwe, and early implementation of Option B+ (ART initiation in pregnancy, with continuation for life, for women with high CD4 counts, who would not otherwise qualify for ART in their country if they were not pregnant; the idea is that pregnant women need ART anyway for PMTCT during birth and breastfeeding and hopefully they will continue for life, protecting partners and future pregnancies).

A cluster-randomized controlled trial of integration of antenatal care with HIV services in Kisumu, Kenya was presented (Turan [presented by co-author Cohen], abstract MOAD0201). The study
evaluated PMTCT service utilization, including rates of receipt of antiretroviral prophylaxis, maternal enrollment in HIV treatment, maternal ART, infant HIV testing uptake, and rates of vertical transmission among 1172 HIV+ pregnant women. Almost all women (>90%) received PMTCT prophylaxis but ART initiation by mothers was 2.4 fold higher in the fully integrated program (46% vs 23% in the non-integrated clinics) and adherence was 4 fold-higher. However, there was no difference in MTCT, maternal health outcomes, or HIV-free survival between study arms, suggesting a need to strengthen systems for adherence and ANC-HIV service integration, particularly as Option B+ is adopted.

An evaluation of Malawi’s pioneering PMTCT Option B+ program was a highly anticipated late breaker presentation (Thenthani WELBD01). Of 28,428 women initiated on B+, 17% were lost to follow-up 6 months after treatment start. Loss to follow-up was higher in central hospitals, and large Ministry of Health sites. Compared with patients initiated on ART because they met ART eligibility criteria, women who started Option B+ were at increased risk of loss to follow up, especially if they started treatment during pregnancy.

Preliminary findings from implementation of PMTCT Option B+ in a rural district in southern Malawi between April 2012 and January 2013 were presented (Coulborn [presented by co-author Chirwa], abstract MOAD0203). Almost half of women initiating ART (52%) did not meet CD4 criteria for ART initiation apart from pregnancy, suggesting good uptake of Option B+. However, loss to follow-up was ~20% at 6 months, and one-third of infants did not undergo HIV PCR testing. The high loss to follow-up and low compliance with national guidelines for PCR testing of infants at 6 weeks were concerning and highlight important programmatic challenges and need for monitoring as Malawi and other countries implement Option B+.

From Zimbabwe, an impact evaluation of Zimbabwe’s accelerated implementation of the 2010 WHO PMTCT guidelines (Option A = short-course PMTCT) was presented (Cowan, abstract MOAD0205). In an analysis of infant outcomes among 9,087 mother-infant pairs surveyed sampled from 157 health facilities, despite high uptake of maternal PMTCT services (94% attended ANC), uptake among infants was lower with 66% of HIV-exposed infants receiving antiretroviral prophylaxis at delivery. There was a strong association between maternal and infant antiretroviral prophylaxis. Overall, 58% of infants were tested, and there was a strong association between antiretroviral prophylaxis and infant HIV testing. Given the high rates of attrition at key stages in the cascade of services for HIV-exposed infants, the infant services included in the PMTCT cascade should continue to be improved and monitored.

A randomized trial in Kenya evaluated home testing during pregnancy as a way to increase the proportion of male partners who are tested and to increase the detection of HIV serodiscordant couples (Osoti, abstract TUAC0103). Home visits were conducted immediately after a woman’s first appointment at the antenatal clinic, in which the counselor accompanied the woman home. In the control group, women were asked to invite their male partners come with them to the next ANC visit. At baseline, 23% of the 300 women who were randomized reported domestic violence in the prior 6 months and 16% were diagnosed with HIV. In the control arm (written invitation), 36% of male partners attended HIV testing at a health facility compared to 85% of male partners being tested in the intervention arm. Thus, providing home visits significantly increased the chances of the partner being tested by 2.4 fold. Of the 21 newly identified HIV infected women, 11 (50%) of their male partners were found to be HIV negative and another 11 HIV-uninfected pregnant women were found to be in a serodiscordant couple through their male partner being tested at home. Importantly, women reported greater satisfaction with their relationship and were no more likely to experience domestic violence.

In a late breaker presentation (Speight [presented by co-author Phiri], abstract WELBC01), data on the first 18 months of implementation of Option B+ in Lilongwe, Malawi were presented. Acceptance of HIV testing was >99%, HIV prevalence was 14%. In the first 1691 pregnant women and 207 lactating women, ART initiation was universal; where ART initiation occurred the same day if HIV+ women were not already on ART. However, retention at 6 months was 70%, with over half of defaulters not returning after the first visit. Of those who did not default, viral suppression was 96% at 6 months. Of the 1034 infants with PCR testing done, 2.2% were positive. The findings are overall very encouraging but highlight an important early default gap for implementing Option B+.