| **Study nameAuthor, Year** | **Treatment groups** | **Clinical outcomes\*** | **Adverse events** |
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| *START*Lundgren, 201585 | A. Immediate ART: CD4 >500 cells/mm3 (n=2,326)B. Deferred ART: CD4 <350 cells/mm3 (n=2,359) | A vs. BPrimary outcome (serious AIDs or non–AIDS-related event or death): 1.8% (42/2,326) vs. 4.1% (96/2,359); HR, 0.43 (95% CI, 0.30 to 0.62); RR, 0.44 (95% CI, 0.31 to 0.63)All-cause mortality: 0.5% (12/2,326) vs. 0.9% (21/2,359); HR, 0.58 (95% CI, 0.28 to 1.17); RR, 0.58 (95% CI, 0.21 to 1.18)Serious AIDS-related event: 0.6% (14/2,326) vs. 2.1% (50/2,359); HR, 0.28 (95% CI, 0.15 to 0.50); RR, 0.28 (95% CI, 0.16 to 0.51)Tuberculosis: 0.3% (6/2,326) vs. 0.8% (20/2,359); HR, 0.29 (95% CI, 0.12 to 0.73); RR, 0.30 (95% CI, 0.12 to 0.76)Grade 4 bacterial infection: 0.6% (14/2,326) vs. 1.5% (36/2,359); HR, 0.38 (95% CI, RR, 0.39 (95% CI, 0.21 to 0.73)Grade 4 viral infection: 0.5% (12/2,326) vs. 0.6% (15/2,359); HR, 0.81 (95% CI, 0.38 to 1.72); RR, 0.81 (95% CI, 0.38 to 1.73)Grade 4 unspecified infection: 2.8% (64/2,326) vs. 2.8% (65/2,359); HR, 0.99 (95% CI, 0.70 to 1.40); RR, 1.00 (95% CI, 0.71 to 1.40)Malignant lymphoma: 0.1% (3/2,326) vs. 0.4% (10/2,359); RR, 0.30 (95% CI, 0.08 to 1.10)Cancer not related to AIDS: 0.4% (9/2,326) vs. 0.8% (18/2,359); RR, 0.51 (95% CI, 0.23 to 1.13)No evidence of interaction (p>0.05) for any subgroup analysis including: age, sex, race/ethnicity, geographic region, baseline CD4 count, baseline HIV RNA, smoking status, or Framingham 10-year CHD risk | A vs. BCVD: 0.5% (12/2,326) vs. 0.6% (14/2,359); RR, 0.87 (95% CI, 0.40 to 1.88)Suicidal or self-injurious behavior: 1.2% (27/2,326) vs. 1.0% (24/2,359); RR, 1.20 (95% CI, 0.71 to 2.05)End-stage renal disease: <0.01% (1/2,326) vs. 0% (0/2,359); RR, 3.04 (95% CI, 0.47 to 19) |
| *START*O'Connor, 201794 | Same as Lundgren, 2015 | A vs. BSerious bacterial infection (grade 4 event or infection requiring unscheduled hospitalization or death): 1.5% (34/2,326) vs. 3.6% (86/2,359); HR, 0.39 (95% CI, 0.26 to 0.57); RR, 0.40 (95% CI, 0.27 to 0.59) | Same as Lundgren, 2015 |
| *HPTN 052*Grinsztejn, 201490 | A. Immediate ART: CD4 ≥350 to <550 cells/mm3 (n=886)B. Delayed ART: CD4 ≤250 cells/mm3 (n=877) | A vs. BPrimary event (any death, new-onset WHO clinical stage 4 HIV-1 disease, tuberculosis, severe bacterial infection, serious CV or vascular event, serious liver disease, end-stage renal disease, new-onset DM, non–AIDS-defining malignant disease): 6.4% (57/886) vs 8.8% (77/875); HR, 0.73 (95% CI, 0.52 to 1.03); RR, 0.73 (95% CI, 0.53 to 1.02); no difference according to geographical region, sex, baseline CD4 countAll-cause mortality: 1.2% (11/886) vs 1.7% (15/875); HR, 0.73 (95% CI, 0.34 to 1.59); RR, 0.72 (95% CI, 0.33 to 1.57)Mortality due to AIDS-related event: 0.1% (1/886) vs 0.5% (4/875); RR, 0.25 (95% CI, 0.03 to 2.20)Any AIDS-related event: 4.5% (40/886) vs 7.0% (61/875); HR, 0.64 (95% CI, 0.43 to 0.96); RR, 0.65 (95% CI, 0.4 to 0.95)Serious bacterial infection: 2.3% (20/886) vs 1.5% (13/875); RR, 1.52 (95% CI, 0.76 to 3.04)Tuberculosis: 1.9% (17/886) vs 3.9% (34/875); HR 0.49 (95% CI, 0.28 to 0.89); RR, 0.49 (95% CI, 0.28 to 0.88) | A vs. BSerious CVD or vascular disease: 0.3% (3/886) vs. 0.1% (1/875); RR, 2.96 (95% CI, 0.31 to 28)New-onset DM: 0.5% (4/886) vs. 0.6% (5/875); RR, 0.79 (95% CI, 0.21 to 2.93)Serious liver disease: 0.2% (2/886) vs. 0% (0/875); RR, 4.94 (95% CI, 0.24 to 103)End-stage renal disease: 0% (0/886) vs. 0% (0/875) |
| *HPTN 052*Cohen 201693 | Same as Grinsztejn, 2014; HIV uninfected partner:A. Immediate ART (n=901)B. Delayed ART (n=888) | A vs. BAny HIV transmission: 2.1% (19/901) vs 6.6% (59/888); HR, 0.31 (95% CI, 0.19 to 0.53); RR, 0.32 (95% CI, 0.19 to 0.53)Linked HIV transmission: 0.3% (3/901) vs 4.8% (43/888); HR, 0.07 (95% CI, 0.02 to 0.22); RR, 0.07 (95% CI, 0.02 to 0.22) | NR |
| *TEMPRANO ANRS 12136 Study*TEMPRANO ANRS Study Group, 201586 | A. Early ART: immediate ART initiation upon study enrollment (n=1,033)B. Delayed ART: ART initiation according to criteria described below (n=1,023):1. From March 1, 2008 to November 30, 2009, the criteria for ART initiation were: 1 CD4 count <200 cells/mm3 or WHO clinical stage 4; or 1 CD4 count 200 to 350 cells/mm3 and WHO clinical stage 2 or 32. From December 1, 2009 to July 31, 2013, the criteria for ART initiation were: 2 consecutive CD4 counts <350 cells/mm3 regardless of WHO clinical stage; or WHO clinical stage 3 or 43. From August 1, 2013 to study cessation, 2 consecutive CD4 counts <350 cells/mm3, regardless of WHO clinical stage; or WHO clinical stage 3 or 4; or ART may be proposed to persons who have not yet reached the WHO criteria, if their partner is known to be HIV seronegative | A vs. BPatients with baseline CD4 ≥500 cells/mm3: Primary endpoint: 5.3% (23/436) vs. 9.2% (38/413); aHR, 0.56 (95% CI, 0.33 to 0.94); RR, 0.57 (95% CI, 0.35 to 0.95)All-cause mortality: 1.1% (5/436) vs. 1.5% (6/413); RR, 0.79 (95% CI, 0.24 to 2.57)Death or progression to AIDS: 4.4% (19/436) vs. 7.3% (30/413); aHR, 0.59 (95% CI, 0.33 to 1.06); RR, 0.60 (95% CI, 0.34 to 1.05)Progression to AIDS: 3.2% (14/436) vs 5.8% (24/413); aHR, 0.55 (95% CI, 0.28 to 1.06); RR, 0.55 (95% CI, 0.29 to 1.05)Tuberculosis: 2.8% (12/436) vs. 5.1% (21/413); aHR, 0.54 (95% CI, 0.26 to 1.09); RR, 0.54 (95% CI, 0.27 to 1.09)Invasive bacterial disease: 1.1% (5/436) vs. 1.9% (8/413); aHR, 0.61 (95% CI, 0.20 to 1.88); RR, 0.59 (95% CI, 0.20 to 1.80)Patients with baseline CD4 <500 cells/mm3:Primary endpoint: 6.9% (41/597) vs. 12.0% (73/610); aHR, 0.56 (95% CI, 0.38 to 0.83); RR, 0.57 (95% CI, 0.40 to 0.83)Death or progression to AIDS: 5.2% (31/597) vs. 8.9% (54/610); aHR, 0.58 (95% CI, 0.37 to 0.90); RR, 0.59 (95% CI, 0.38 to 0.90)Progression to AIDS: 3.2% (19/597) vs. 6.7% (41/610); aHR, 0.47 (95% CI, 0.27 to 0.81); RR, 0.47 (95% CI, 0.28 to 0.81)Tuberculosis: 2.7% (16/597) vs. 5.6% (34/610); aHR, 0.48 (95% CI, 0.27 to 0.87); RR, 0.48 (95% CI, 0.27 to 0.86)Invasive bacterial disease: 1.5% (9/597) vs. 4.6% (28/610); aHR, 0.33 (95% CI, 0.15 to 0.69); RR, 0.33 (95% CI, 0.16 to 0.69)All patients: Primary endpoint (all-cause mortality, AIDS-defining disease, non–AIDS-defining cancer, or non–AIDS-defining invasive bacterial disease): 6.2% (64/1,033) vs. 10.9% (111/1,023); aHR, 0.56 (95% CI, 0.41 to 0.76); RR, 0.57 (95% CI, 0.43 to 0.77)All-cause mortality: 2.0% (21/1,033) vs. 2.5% (26/1,023); aHR, 0.80 (95% CI, 0.45 to 1.40); RR, 0.79 (95% CI, 0.24 to 2.57)Death or progression to AIDS: 4.8% (50/1,033) vs. 8.2% (84/1,023); aHR, 0.58 (95% CI, 0.41 to 0.83); RR, 0.59 (95% CI, 0.42 to 0.83)Progression to AIDS: 3.2% (33/1,033) vs. 6.4% (65/1,023); aHR, 0.50 (95% CI, 0.33 to 0.76); RR, 0.50 (95% CI, 0.33 to 0.76)Tuberculosis: 2.7% (28/1,033) vs. 5.4% (55/1,023); aHR, 0.50 (95% CI, 0.32 to 0.79); RR, 0.50 (95% CI, 0.32 to 0.79)Invasive bacterial disease: 1.4% (14/1,033) vs. 1.5% (36/2,332); aHR, 0.39 (95% CI, 0.21 to 0.71); RR, 0.39 (95% CI, 0.21 to 0.71) | A vs. BPatients with CD4 ≥500 cells/mm3 at baseline:Any Grade 3 or 4 adverseevent: 6.2% (27/436) vs. 7.3% (30/413); RR, 0.85 (95% CI, 0.52 to 1.41)Patients with CD4 <500 cells/mm3 at baseline:Any Grade 3 or 4 adverseevent: 7.2% (43/597) vs. 7.2% (44/610); RR, 1.00 (95% CI, 0.67 to 1.50)All patients:Any Grade 3 or 4 adverse event: 6.8% (70/1,033) vs. 7.2% (74/1,023); RR, 0.94 (95% CI, 0.68 to 1.28)Grade 3 or 4 cardiovascular event: 0.3% (3/1,033) vs. 0.6% (6/1,023); RR, 0.99 (95% CI, 0.20 to 4.90)Grade 3 or 4 renal event: 0.1% (1/1,033) vs. 1.2% (12/1,023); RR, 0.08 (95% CI, 0.01 to 0.63)Grade 3 or 4 hepatic event: 1.0% (10/1,033) vs. 1.5% (15/1,023); RR, 0.66 (95% CI, 0.30 to 1.46) |

\*RRs were calculated based on available data.

**Abbreviations:** aHR=adjusted hazard ratio; ANRS=Agence Nationale de Recherche sur le SIDA; ART=antiretroviral therapy; CD4=cluster of differentiation 4; CHD=coronary heart disease; CI=confidence interval; CVD=cardiovascular disease; DM=diabetes mellitus; HR=hazard ratio; HTPN=HIV Prevention Trials Network; NR=not reported; RNA=ribonucleic acid; RR=risk ratio; START=Strategic Timing of Antiretroviral Treatment; WHO=World Health Organization.