

SUMMARY

[0012] Provided herein is a method of treating an HIV infection in a subject comprising administering to the subject an antibody-drug conjugate, wherein the antibody-drug conjugate comprises an anti-CD30 antibody or an antigen-binding portion thereof conjugated to a monomethyl auristatin. Also provided herein is a method of treating an HIV infection in a subject consisting essentially of administering to the subject an antibody-drug conjugate, wherein the antibody-drug conjugate comprises an anti-CD30 antibody or an antigen-binding portion thereof conjugated to a monomethyl auristatin. Also provided herein is a method of treating an HIV infection in a subject consisting of administering to the subject an antibody-drug conjugate, wherein the antibody-drug conjugate comprises an anti-CD30 antibody or an antigen-binding portion thereof conjugated to a monomethyl auristatin. In one aspect, the present disclosure provides a use of an antibody-drug conjugate in the manufacture of a medicament for treating human immunodeficiency virus HIV infection, wherein the antibody-drug conjugate comprises an anti-CD30 antibody or an antigen-binding portion thereof conjugated to a monomethyl auristatin, and treating HIV infection comprises increasing a CD4⁺ T-cell lymphocyte count in a subject infected with HIV. In some examples, the HIV infection is an HIV-1 infection. In some examples, the subject does not have a hematologic cancer at the time of administration of the antibody-drug conjugate. In some examples, the subject has not had a hematologic cancer for at least 12 months prior to the administration of the antibody-drug conjugate. In some examples, the subject has not had a hematologic cancer for at least 24 months prior to the administration of the antibody-drug conjugate. In some examples, the hematologic cancer is selected from the group consisting of classical Hodgkin Lymphoma, non-Hodgkin Lymphoma, cutaneous T-cell lymphoma (CTCL), and anaplastic large cell lymphoma (ALCL). In some examples, the hematologic cancer is classical Hodgkin Lymphoma. In some of any of the examples herein, the classical Hodgkin Lymphoma is a stage IIA with bulky disease, stage IIB, stage III or stage IV classical Hodgkin Lymphoma. In some examples, the anaplastic large cell lymphoma (ALCL) is a systemic anaplastic large cell lymphoma (sALCL). In some examples, the anaplastic large cell lymphoma (ALCL) is a primary cutaneous anaplastic large cell lymphoma (pcALCL). In some examples, the cutaneous T-cell lymphoma (CTCL) is a mycosis fungoides (MF). In some examples, the mycosis fungoides (MF) is a CD30-positive mycosis fungoides (MF). In some examples, the

anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region and a light chain variable region, wherein the heavy chain variable region comprises:

- (i) a CDR-H1 comprising the amino acid sequence of SEQ ID NO: 1;
- (ii) a CDR-H2 comprising the amino acid sequence of SEQ ID NO: 2; and

(iii) a CDR-H3 comprising the amino acid sequence of SEQ ID NO: 3; and wherein the light chain variable region comprises:

- (i) a CDR-L1 comprising the amino acid sequence of SEQ ID NO: 4;
- (ii) a CDR-L2 comprising the amino acid sequence of SEQ ID NO: 5; and
- (iii) a CDR-L3 comprising the amino acid sequence of SEQ ID NO: 6. In some examples, the anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region comprising an amino acid sequence at least 85% identical to the amino acid sequence of SEQ ID NO: 7 and a light chain variable region comprising an amino acid sequence at least 85% identical to the amino acid sequence of SEQ ID NO: 8. In some examples, the anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region comprising an amino acid sequence at least 90% identical to the amino acid sequence of SEQ ID NO: 7 and a light chain variable region comprising an amino acid sequence at least 90% identical to the amino acid sequence of SEQ ID NO: 8. In some examples, the anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region comprising an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 7 and a light chain variable region comprising an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 8. In some examples, the anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 7 and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 8. In some examples, the anti-CD30 antibody is AC10. In some examples, the anti-CD30 antibody is cAC10. In some examples, the antibody-drug conjugate further comprises a linker between the anti-CD30 antibody or antigen-binding portion thereof and the monomethyl auristatin. In some examples, the linker is a cleavable peptide linker. In some examples, the monomethyl auristatin is monomethyl auristatin E (MMAE). In some examples, the monomethyl auristatin is monomethyl auristatin F (MMAF). In some examples, the antibody-drug conjugate is brentuximab vedotin. In some examples, the antibody-drug conjugate is administered at a dose ranging from of about 0.1 mg/kg to about 1.3 mg/kg of the subject's body weight. In some examples, the antibody-drug conjugate is administered at a dose ranging from about 0.3 mg/kg to about 0.9 mg/kg of the subject's body weight. In some examples, the antibody-drug conjugate is administered at a dose of about 0.3 mg/kg of the subject's body weight. In some examples, the antibody-drug conjugate is administered at a

dose of about 0.6 mg/kg of the subject's body weight. In some examples, the antibody-drug conjugate is administered at a dose of about 0.9 mg/kg of the subject's body weight. In some examples, the antibody-drug conjugate is administered once about every 3 weeks. In some examples, the antibody-drug conjugate is administered once every 3 weeks. In some examples, the antibody-drug conjugate is administered for 6 3-week treatment cycles. In some examples, the antibody-drug conjugate is administered to the subject by intravenous infusion. In some examples, the intravenous infusion is about a 30 minute infusion. In some examples, the subject has a CD4 lymphocyte count of < 200 cells/mm³ prior to administration of the antibody-drug conjugate. In some examples, the subject has plasma HIV RNA ≥ 1000 copies/mL prior to administration of the antibody-drug conjugate. In some examples, the subject has had plasma HIV RNA ≥ 200 copies/mL in a 3-month period prior to administration of the antibody-drug conjugate. In some examples, the subject has a life expectancy of greater than 9 months prior to administration of the antibody-drug conjugate. In some examples, the subject has an absolute neutrophil count ≥ 750 /mm³. In some examples, the subject is male and has hemoglobin ≥ 10.5 gm/dL. In some examples, the subject is female and has hemoglobin ≥ 9.5 gm/dL. In some examples, the subject has serum alanine transaminase (SGPT/ALT) < 2.5 x upper limit of normal (ULN). In some examples, the subject has serum aspartate transaminase (SGOT/AST) < 2.5 x ULN. In some examples, the subject has bilirubin (total) < 2.5 x ULN. In some examples, the subject has creatinine < 1.5 x ULN. In some examples, the subject has received antiretroviral therapy (ART) for at least 24 weeks prior to administration of the antibody-drug conjugate. In some examples, the subject has received ART for at least 12 months prior to administration of the antibody-drug conjugate. In some examples, the subject has received ART for at least 24 months prior to administration of the antibody-drug conjugate. In some examples, the antibody-drug conjugate is administered in combination with ART. In some examples, the ART is a nucleoside reverse transcriptase inhibitor, non-nucleoside reverse transcriptase inhibitor, protease inhibitor, fusion inhibitor, CCR5 antagonist, integrase inhibitor, post-attachment inhibitor, or pharmacokinetic enhancer. In some examples, the ART comprises two or more of a nucleoside reverse transcriptase inhibitor, non-nucleoside reverse transcriptase inhibitor, protease inhibitor, fusion inhibitor, CCR5 antagonist, integrase inhibitor, post-attachment inhibitor, and pharmacokinetic enhancer. In some examples, the ART comprises three or more of a

nucleoside reverse transcriptase inhibitor, non-nucleoside reverse transcriptase inhibitor, protease inhibitor, fusion inhibitor, CCR5 antagonist, integrase inhibitor, post-attachment inhibitor, and pharmacokinetic enhancer. In some examples, the ART comprises four or more of a nucleoside reverse transcriptase inhibitor, non-nucleoside reverse transcriptase inhibitor, protease inhibitor, fusion inhibitor, CCR5 antagonist, integrase inhibitor, post-attachment inhibitor, and pharmacokinetic enhancer. In some examples, the ART comprises one or more of abacavir, emtricitabine, lamivudine, tenofovir disoproxil fumarate, zidovudine, doravirine, efavirenz, etravirine, nevirapine, rilpivirine, atazanavir, darunavir, fosamprenavir, ritonavir, saquinavir, tipranavir, enfuvirtide, maraviroc, dolutegravir, raltegravir, ibalizumab, and cobicistat. In some examples, administering the antibody-drug conjugate results in a decrease in HIV viral load in the subject relative to the viral load prior to administration of the antibody-drug conjugate. In some examples, HIV viral load is assessed by measuring CD4⁺ T-cell-associated HIV DNA. In some examples, HIV viral load is assessed by measuring CD4⁺ T-cell-associated HIV RNA. In some examples, the subject exhibits a viral load of less than or equal to 50 copies of HIV virus particles per mL of blood plasma (< 50 c/mL) after at least 24 weeks, at least 48 weeks, or at least 96 weeks after administration of the antibody-drug conjugate. In some examples, administering the antibody-drug conjugate results in elimination of the HIV infection in the subject. In some examples, administering the antibody-drug conjugate results in a decrease in the number of Treg cells relative to the number prior to the administration of the antibody-drug conjugate. In some examples, the Treg cells are CD4⁺. In some examples, the Treg cells are CD30⁺. In some examples, administering the antibody-drug conjugate results in a decrease in the number of memory T cells relative to the number prior to the administration of the antibody-drug conjugate. In some examples, the memory T cells are CD4⁺. In some examples, the memory T cells are CD30⁺. In some examples, administering the antibody-drug conjugate results in an increase in the number of CD4⁺ T cells relative to the number prior to the administration of the antibody-drug conjugate. In some examples, the subject is a human.

[0013] Also provided herein is a kit comprising (a) a dosage ranging from about 0.1 mg to about 500 mg of an of an antibody-drug conjugate that binds to CD30, wherein the antibody-drug conjugate comprises an anti-CD30 antibody or an antigen-binding fragment thereof conjugated to a monomethyl auristatin or a functional analog thereof or a functional derivative

thereof; and (b) instructions for using the antibody drug conjugate according any of the examples herein.

[0014] Also provided herein is the use of an antibody-drug conjugate that binds to CD30 for the manufacture of a medicament for use in any of the examples herein.

[0015] Also provided herein is an antibody-drug conjugate that binds to CD30 for use in any of the examples herein.

[0016] Also provided herein is a method of increasing CD4⁺ T-cell lymphocyte count in a subject infected with human immunodeficiency virus (HIV) comprising administering to the subject an antibody-drug conjugate, wherein the antibody-drug conjugate comprises an anti-CD30 antibody or an antigen-binding portion thereof conjugated to a monomethyl auristatin. Also provided herein is a method of increasing CD4⁺ T-cell lymphocyte count in a subject infected with human immunodeficiency virus (HIV) consisting essentially of administering to the subject an antibody-drug conjugate, wherein the antibody-drug conjugate comprises an anti-CD30 antibody or an antigen-binding portion thereof conjugated to a monomethyl auristatin. Also provided herein is a method of increasing CD4⁺ T-cell lymphocyte count in a subject infected with human immunodeficiency virus (HIV) consisting of administering to the subject an antibody-drug conjugate, wherein the antibody-drug conjugate comprises an anti-CD30 antibody or an antigen-binding portion thereof conjugated to a monomethyl auristatin. In some examples, the HIV infection is an HIV-1 infection. In some examples, the subject has a CD4⁺ T-cell lymphocyte count of < 200 cells/ μ L prior to administration of the antibody-drug conjugate. In some examples, the subject has a CD4⁺ T-cell lymphocyte count of >50 cells/ μ L prior to administration of the antibody-drug conjugate. In some examples, the subject has had a plasma HIV viral load $\leq$ 50 copies/mL for at least 6 months prior to administration of the antibody-drug conjugate. In some examples, the subject has had a plasma HIV viral load $\leq$ 50 copies/mL for at least 12 months prior to administration of the antibody-drug conjugate. In some examples, the subject has had a plasma HIV viral load $\leq$ 50 copies/mL for at least 24 months prior to administration of the antibody-drug conjugate. In some examples, the subject does not have a hematologic cancer at the time of administration of the antibody-drug conjugate. In some examples, the subject has not had a hematologic cancer for at least 12 months prior to the administration of the antibody-drug conjugate. In some

examples, the subject has not had a hematologic cancer for at least 24 months prior to the administration of the antibody-drug conjugate. In some examples, the hematologic cancer is selected from the group consisting of classical Hodgkin Lymphoma, non-Hodgkin Lymphoma, cutaneous T-cell lymphoma (CTCL), and anaplastic large cell lymphoma (ALCL). In some examples, the hematologic cancer is classical Hodgkin Lymphoma. In some examples, the classical Hodgkin Lymphoma is a stage IIA with bulky disease, stage IIB, stage III or stage IV classical Hodgkin Lymphoma. In some examples, the anaplastic large cell lymphoma (ALCL) is a systemic anaplastic large cell lymphoma (sALCL). In some examples, the anaplastic large cell lymphoma (ALCL) is a primary cutaneous anaplastic large cell lymphoma (pcALCL). In some examples, the cutaneous T-cell lymphoma (CTCL) is a mycosis fungoides (MF). In some examples, the mycosis fungoides (MF) is a CD30-positive mycosis fungoides (MF). In some examples, the anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region and a light chain variable region, wherein the heavy chain variable region comprises:

- (i) a CDR-H1 comprising the amino acid sequence of SEQ ID NO: 1;
- (ii) a CDR-H2 comprising the amino acid sequence of SEQ ID NO: 2; and
- (iii) a CDR-H3 comprising the amino acid sequence of SEQ ID NO: 3; and

wherein the light chain variable region comprises:

- (i) a CDR-L1 comprising the amino acid sequence of SEQ ID NO: 4;
- (ii) a CDR-L2 comprising the amino acid sequence of SEQ ID NO: 5; and
- (iii) a CDR-L3 comprising the amino acid sequence of SEQ ID NO: 6. In some

examples, the anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region comprising an amino acid sequence at least 85% identical to the amino acid sequence of SEQ ID NO: 7 and a light chain variable region comprising an amino acid sequence at least 85% identical to the amino acid sequence of SEQ ID NO: 8. In some examples, the anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region comprising an amino acid sequence at least 90% identical to the amino acid sequence of SEQ ID NO: 7 and a light chain variable region comprising an amino acid sequence at least 90% identical to the amino acid sequence of SEQ ID NO: 8. In some examples, the anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region comprising an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 7 and a light chain

variable region comprising an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 8. In some examples, the anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 7 and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 8. In some examples, the anti-CD30 antibody is AC10. In some examples, the anti-CD30 antibody is cAC10. In some examples, the antibody-drug conjugate further comprises a linker between the anti-CD30 antibody or antigen-binding portion thereof and the monomethyl auristatin. In some examples, the linker is a cleavable peptide linker. In some examples, the cleavable peptide linker has a formula: -MC-vc-PAB-. In some examples, the monomethyl auristatin is monomethyl auristatin E (MMAE). In some examples, the monomethyl auristatin is monomethyl auristatin F (MMAF). In some examples, the antibody-drug conjugate is brentuximab vedotin. In some examples, the antibody-drug conjugate is administered at a dose ranging from of about 1.2 mg/kg of the subject's body weight. In some examples, the antibody-drug conjugate is administered at a dose ranging from of 1.2 mg/kg of the subject's body weight. In some examples, the antibody-drug conjugate is administered at a dose of about 0.9 mg/kg of the subject's body weight. In some examples, the antibody-drug conjugate is administered at a dose of 0.9 mg/kg of the subject's body weight. In some examples, the antibody-drug conjugate is administered once about every 2 weeks. In some examples, the antibody-drug conjugate is administered once every 2 weeks. In some examples, the antibody-drug conjugate is administered for four 2-week treatment cycles. In some examples, the antibody-drug conjugate is administered to the subject by intravenous infusion. In some examples, the intravenous infusion is about a 30 minute infusion. In some examples, the subject has a life expectancy of greater than 9 months prior to administration of the antibody-drug conjugate. In some examples, the subject has received antiretroviral therapy (ART) for at least 24 weeks prior to administration of the antibody-drug conjugate. In some examples, the subject has received ART for at least 12 months prior to administration of the antibody-drug conjugate. In some examples, the subject has received ART for at least 24 months prior to administration of the antibody-drug conjugate. In some examples, the antibody-drug conjugate is administered in combination with ART. In some examples, the ART is a nucleoside reverse transcriptase inhibitor, non-nucleoside reverse transcriptase inhibitor, protease inhibitor, fusion inhibitor, CCR5 antagonist, integrase

inhibitor, post-attachment inhibitor, or pharmacokinetic enhancer. In some examples, the ART comprises two or more of a nucleoside reverse transcriptase inhibitor, non-nucleoside reverse transcriptase inhibitor, protease inhibitor, fusion inhibitor, CCR5 antagonist, integrase inhibitor, post-attachment inhibitor, and pharmacokinetic enhancer. In some examples, the ART comprises three or more of a nucleoside reverse transcriptase inhibitor, non-nucleoside reverse transcriptase inhibitor, protease inhibitor, fusion inhibitor, CCR5 antagonist, integrase inhibitor, post-attachment inhibitor, and pharmacokinetic enhancer. In some examples, the ART comprises four or more of a nucleoside reverse transcriptase inhibitor, non-nucleoside reverse transcriptase inhibitor, protease inhibitor, fusion inhibitor, CCR5 antagonist, integrase inhibitor, post-attachment inhibitor, and pharmacokinetic enhancer. In some examples, the ART comprises one or more of abacavir, emtricitabine, lamivudine, tenofovir disoproxil fumarate, zidovudine, doravirine, efavirenz, etravirine, nevirapine, rilpivirine, atazanavir, darunavir, fosamprenavir, ritonavir, saquinavir, tipranavir, enfuvirtide, maraviroc, dolutegravir, raltegravir, ibalizumab, and cobicistat. In some examples, the ART does not comprise a strong CYP3A4 inhibitor. In some examples, the ART does not comprise a strong P-gp inhibitor. In some examples, administering the antibody-drug conjugate results an increase in the CD4⁺ T-cell lymphocyte count in the subject to above 200 cells/ μ L. In some examples, administering the antibody-drug conjugate results in an increase in the CD4⁺ T-cell lymphocyte count by at least 50 cells/ μ L relative to the CD4⁺ T-cell lymphocyte count prior to administration. In some examples, administering the antibody-drug conjugate results an increase in the CD8⁺ T-cell lymphocyte count in the subject relative to the CD8⁺ T-cell lymphocyte count prior to administration. In some examples, administering the antibody-drug conjugate results in a decrease in the number of Treg cells relative to the number prior to the administration of the antibody-drug conjugate. In some examples, the Treg cells are CD4⁺. In some examples, the Treg cells are CD30⁺. In some examples, administering the antibody-drug conjugate results in a decrease in the number of memory T cells relative to the number prior to the administration of the antibody-drug conjugate. In some examples, the memory T cells are CD4⁺. In some examples, the memory T cells are CD30⁺. In some examples, the subject has not been administered the antibody-drug conjugate prior to the administration to increase CD4⁺ T-cell lymphocyte count in the subject. In some examples, the subject is a human.

[0017] Also provided herein is a kit comprising (a) a dosage ranging from about 0.1 mg to about 500 mg of an of an antibody-drug conjugate that binds to CD30, wherein the antibody-drug conjugate comprises an anti-CD30 antibody or an antigen-binding fragment thereof conjugated to a monomethyl auristatin or a functional analog thereof or a functional derivative thereof; and (b) instructions for using the antibody drug conjugate according to any of the examples herein.

[0018] Also provided herein is the use of an antibody-drug conjugate that binds to CD30 for the manufacture of a medicament for use in any of the examples herein.

[0019] Also provided herein is an antibody-drug conjugate that binds to CD30 for use in any of the examples herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] FIG. 1A-1B are graphs showing the effect of various concentrations of brentuximab vedotin (BV) on the total number of viable cells in various T cell populations (FIG. 1A) or the number of CD30⁺ viable cells in various T cell populations (FIG. 1B). The various T cell populations are displayed as Treg (●), naïve CD4 (◆), memory CD4 (▲), naïve CD8 (▼), and memory CD8 (■). Data are represented as viable cell counts relative to untreated control.

[0021] FIG. 2A-2B are graphs showing CD30 and CD30L expression in various T cell populations over time as monitored by flow cytometry. FIG. 2A shows a representative flow cytometry plot over a 3-day activation time-course. FIG. 2B shows the percent of each T cell population that are CD30⁺ over time. The various T cell populations are displayed as Treg (●), naïve CD4 (◆), memory CD4 (▲), naïve CD8 (▼), and memory CD8 (■).

[0022] FIG. 3A-3B are graphs showing rhodamine 123 efflux over time in various T cell populations as measured by flow cytometry. FIG. 3A shows rhodamine efflux at 37°C in Treg, naïve CD4 (CD4 TN), memory CD4 (CD4 TMEM), naïve CD8 (CD8 TM), and memory CD8 (CD8 TMEM) T cells. FIG. 3B shows rhodamine efflux over a 3-hour time course in various T cell populations. The various T cell populations are displayed as Treg (●), naïve CD4 (◆), memory CD4 (▲), naïve CD8 (▼), and memory CD8 (■).

[0023] FIG. 4 is a graph showing the effects of treating various T cell populations with a titration of free monomethyl auristatin E (MMAE) over the course of 4 days. The various T cell

CLAIMS

What is claimed is:

1. Use of an antibody-drug conjugate in the manufacture of a medicament for treating human immunodeficiency virus HIV infection, wherein the antibody-drug conjugate comprises an anti-CD30 antibody or an antigen-binding portion thereof conjugated to a monomethyl auristatin, and treating HIV infection comprises increasing a CD4⁺ T-cell lymphocyte count in a subject infected with HIV.
2. The use of claim 1, wherein the HIV infection is an HIV-1 infection.
3. The use of claim 1 or claim 2, wherein
 - a) the subject has a CD4⁺ T-cell lymphocyte count of < 200 cells/ μ L prior to administration of the antibody-drug conjugate; or
 - b) the subject has a CD4⁺ T-cell lymphocyte count of >50 cells/ μ L prior to administration of the antibody-drug conjugate.
4. The use of any one of claims 1-3, wherein
 - a) the subject has had a plasma HIV viral load $\leq$ 50 copies/mL for at least 6 months prior to administration of the antibody-drug conjugate; or
 - b) the subject has had a plasma HIV viral load $\leq$ 50 copies/mL for at least 12 months prior to administration of the antibody-drug conjugate; or
 - c) the subject has had a plasma HIV viral load $\leq$ 50 copies/mL for at least 24 months prior to administration of the antibody-drug conjugate.
5. The use of any one of claims 1-4, wherein the subject does not have a hematologic cancer at the time of administration of the antibody-drug conjugate.
6. The use of claim 5, wherein
 - a) the subject has not had a hematologic cancer for at least 12 months prior to the administration of the antibody-drug conjugate; or

b) the subject has not had a hematologic cancer for at least 24 months prior to the administration of the antibody-drug conjugate.

7. The use of claim 5 or claim 6, wherein the hematologic cancer is selected from the group consisting of classical Hodgkin Lymphoma, non-Hodgkin Lymphoma, cutaneous T-cell lymphoma (CTCL), and anaplastic large cell lymphoma (ALCL).

8. The use of any one of claims 1-7, wherein the anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region and a light chain variable region, wherein the heavy chain variable region comprises:

- (i) a CDR-H1 comprising the amino acid sequence of SEQ ID NO: 1;
- (ii) a CDR-H2 comprising the amino acid sequence of SEQ ID NO: 2; and
- (iii) a CDR-H3 comprising the amino acid sequence of SEQ ID NO: 3; and

wherein the light chain variable region comprises:

- (i) a CDR-L1 comprising the amino acid sequence of SEQ ID NO: 4;
- (ii) a CDR-L2 comprising the amino acid sequence of SEQ ID NO: 5; and
- (iii) a CDR-L3 comprising the amino acid sequence of SEQ ID NO: 6.

9. The use of any one of claims 1-8, wherein

a) the anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region comprising an amino acid sequence at least 85% identical to the amino acid sequence of SEQ ID NO: 7 and a light chain variable region comprising an amino acid sequence at least 85% identical to the amino acid sequence of SEQ ID NO: 8; or

b) the anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region comprising an amino acid sequence at least 90% identical to the amino acid sequence of SEQ ID NO: 7 and a light chain variable region comprising an amino acid sequence at least 90% identical to the amino acid sequence of SEQ ID NO: 8; or

c) the anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region comprising an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 7 and a light chain variable region comprising an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 8; or

d) the anti-CD30 antibody of the antibody-drug conjugate comprises a heavy chain variable region

comprising the amino acid sequence of SEQ ID NO: 7 and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 8.

10. The use of any one of claims 1-8, wherein the anti-CD30 antibody is cAC10.

11. The use of any one of claims 1-10, wherein the monomethyl auristatin is monomethyl auristatin E (MMAE).

12. The use of any one of claims 1-11, wherein the antibody-drug conjugate is brentuximab vedotin.

13. The use of any one of claims 1-12, wherein

a) the subject has received antiretroviral therapy (ART) for at least 24 weeks prior to administration of the antibody-drug conjugate; or

b) the subject has received ART for at least 12 months prior to administration of the antibody-drug conjugate; or

c) the subject has received ART for at least 24 months prior to administration of the antibody-drug conjugate.

14. The use of any one of claims 1-13, wherein the antibody-drug conjugate is to be administered in combination with ART.

15. The use of claim 13 or claim 14, wherein the ART is a nucleoside reverse transcriptase inhibitor, non-nucleoside reverse transcriptase inhibitor, protease inhibitor, fusion inhibitor, CCR5 antagonist, integrase inhibitor, post-attachment inhibitor, or pharmacokinetic enhancer.

16. The use of claim 15, wherein

a) the ART comprises two or more of a nucleoside reverse transcriptase inhibitor, non-nucleoside reverse transcriptase inhibitor, protease inhibitor, fusion inhibitor, CCR5 antagonist, integrase inhibitor, post-attachment inhibitor, and pharmacokinetic enhancer; or

b) the ART comprises three or more of a nucleoside reverse transcriptase inhibitor, non-nucleoside reverse transcriptase inhibitor, protease inhibitor, fusion inhibitor, CCR5 antagonist, integrase inhibitor, post-attachment inhibitor, and pharmacokinetic enhancer; or

c) the ART comprises four or more of a nucleoside reverse transcriptase inhibitor, non-nucleoside

reverse transcriptase inhibitor, protease inhibitor, fusion inhibitor, CCR5 antagonist, integrase inhibitor, post-attachment inhibitor, and pharmacokinetic enhancer.

17. The use of claim 13, wherein the ART comprises one or more of abacavir, emtricitabine, lamivudine, tenofovir disoproxil fumarate, zidovudine, doravirine, efavirenz, etravirine, nevirapine, rilpivirine, atazanavir, darunavir, fosamprenavir, ritonavir, saquinavir, tipranavir, enfuvirtide, maraviroc, dolutegravir, raltegravir, ibalizumab, and cobicistat.

18. The use of claim 14, wherein the ART comprises one or more of abacavir, emtricitabine, lamivudine, tenofovir disoproxil fumarate, zidovudine, doravirine, efavirenz, etravirine, nevirapine, rilpivirine, atazanavir, darunavir, fosamprenavir, ritonavir, saquinavir, tipranavir, enfuvirtide, maraviroc, dolutegravir, raltegravir, ibalizumab, and cobicistat.

19. The use of any one of claims 1-18, wherein administration of the antibody-drug conjugate results in an increase in the CD4⁺ T-cell lymphocyte count in the subject to above 200 cells/ μ L.

20. The use of any one of claims 1-19, wherein administration of the antibody-drug conjugate results in an increase in the CD4⁺ T-cell lymphocyte count by at least 50 cells/ μ L relative to the CD4⁺ T-cell lymphocyte count prior to administration.