What is claimed is:

1. Use of a population of immune effector cells that express a Chimeric Antigen Receptor (CAR) that binds to CD19 ("CD19 CAR therapy") in combination with a BCL2 inhibitor in the manufacture of a medicament for treating a subject identified as having a lymphoma.

2. The use of claim 1, wherein the subject is identified as having an increased level or increased number of cells positive for a MYC gene or MYC gene product.

3. The use of claim 2, wherein the level or number of cells positive for the MYC gene or MYC gene product is identified by an immunohistochemistry assay.

4. The use of claim 2 or 3, wherein the subject is identified as being MYC positive by detecting greater than 40% of cells in a sample from the subject as positive for expression of the MYC gene or MYC gene product.

5. The use of any of claims 1-4, wherein the lymphoma is identified as a double hit (DH) lymphoma, wherein the DH lymphoma is a MYC positive and BCL2- or BCL6-positive lymphoma.

6. The use of any of claims 1-4, wherein the lymphoma is identified as a triple hit (TH) lymphoma, wherein the TH lymphoma is a MYC positive, BCL2-positive, and BCL6-positive lymphoma.

7. The use of any of claims 5 or 6, wherein the lymphoma is identified as MYC positive, BCL-2 lymphoma or BCL-6 positive by detecting a rearrangement in a sample using a FISH assay.

8. The use of claim 4 or 7, wherein the sample is a tumor biopsy or blood sample.

9. The use of any of claims 1-4, wherein the lymphoma is chosen from a high grade B-cell lymphoma, a diffuse large B-cell lymphoma (DLBCL), or follicular lymphoma (FL).

10. The use of claim 9, wherein the lymphoma is relapsed or refractory.

11. The use of any of claims 1-10, wherein the CD19 CAR therapy and the BCL2 inhibitor are to be administered concurrently.

12. The use of claims 1-10, wherein the BCL2 inhibitor is to be administered prior to the CD19 CAR therapy.

13. The use of claims 1-10, wherein the BCL2 inhibitor is to be administered after the CD19 CAR therapy.

14. The use of claims 1-10, wherein the BCL2 inhibitor is to be administered prior to and after the CD19 CAR therapy.

15. The use of any of claims 1-14, wherein the CD19 CAR therapy comprises a CD19 CAR comprising an anti-CD19 binding domain, a transmembrane domain, and an intracellular signaling domain comprising a stimulatory domain.

16. The use of claim 15, wherein the anti-CD19 binding domain comprises one or more of light chain complementarity determining region 1 (LC CDR1), light chain complementarity determining region 2 (LC CDR2), and light chain complementarity determining region 3 (LC CDR3) of any anti-CD19 light chain binding domain amino acid sequence listed in Tables 2 or 3, and one or more of heavy chain complementarity determining region 1 (HC CDR1), heavy chain complementarity determining region 2 (HC CDR2), and heavy chain complementarity determining region 3 (HC CDR3) of any anti-CD19 heavy chain binding domain amino acid sequence listed in Tables 2 or 3.

17. The use of claim 15 or 16, wherein the anti-CD19 binding domain comprises the amino acid sequence of any of SEQ ID NOs: 1-12 or SEQ ID NO: 59, or a sequence at least 95% identical thereto.

18. The use of claim 15 or 16, wherein the anti-CD19 binding domain comprises the amino acid sequence of SEQ ID NO: 2, or SEQ ID NO:59, or a sequence at least 95% identical thereto.

19. The use of any of claims 15-18, wherein the CD19 CAR comprises an amino acid sequence of any of SEQ ID NOs: 31-42 or SEQ ID NO: 58, or a sequence at least 95% identical thereto.

20. The use of any of claims 15-18, wherein the CD19 CAR comprises a polypeptide having the amino acid sequence of SEQ ID NO:32, or SEQ ID NO: 58, or a sequence at least 95% identical thereto.

21. The use of any of claims 1-20, wherein the BCL2 inhibitor is chosen from venetoclax (ABT-199), navitoclax (ABT-263), ABT-737, BP1002, SPC2996, APG-1252, obatoclax mesylate (GX15-070MS), PNT2258, or oblimersen (G3139), or a combination thereof.

22. The use of claim 21, wherein the BCL2 inhibitor is venetoclax.

23. The use of any of claims 1-22, wherein the use further comprises administering a standard of care for a B-cell lymphoma.

24. The use of claim 23, wherein the standard of care for the B-cell lymphoma is selected from the group consisting of a CD20 inhibitor, a chemotherapeutic agent, and a corticosteroid.