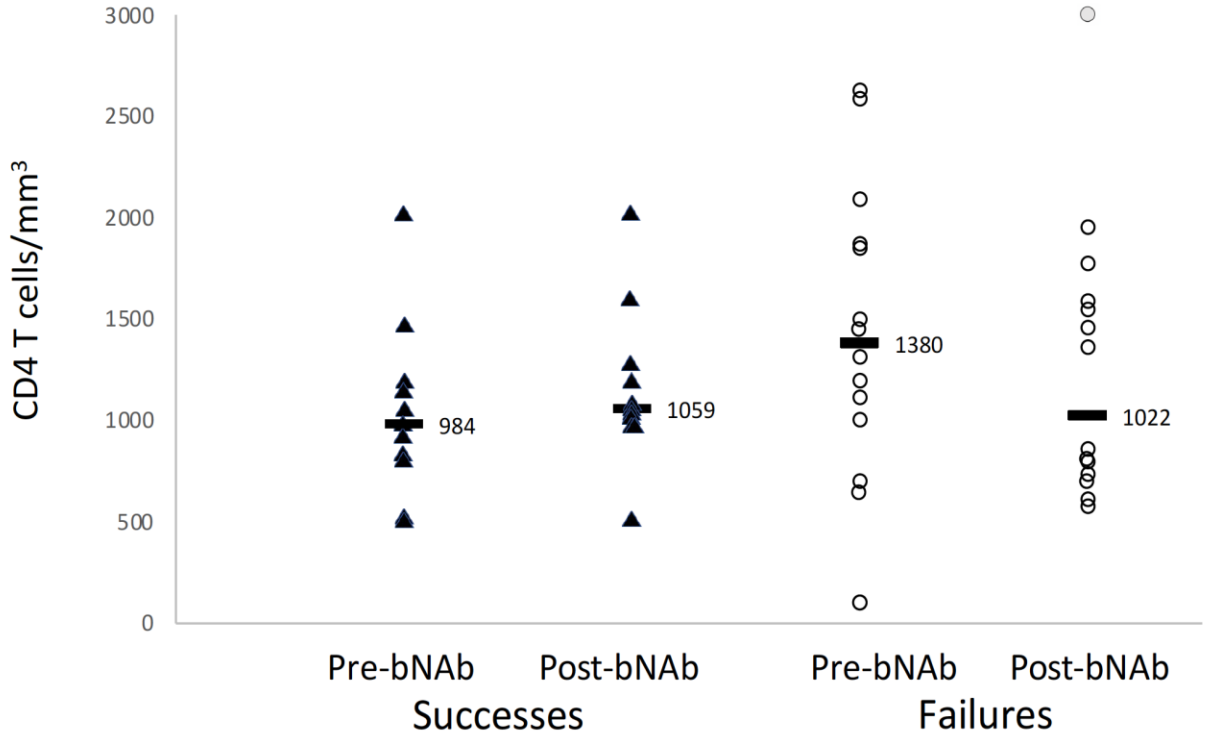

Fig. S1. CD4 T cell counts pre- and post-bNAb treatment among successes and failures. Numbered bars indicate median CD4 T cell count for each group (successes or failures) and time point (pre- or post- bNAb receipt). Children who failed had a higher median CD4 T cell count at the start of the bNAb-only step. After failure occurred and viral suppression was re-established, CD4 T cell counts in those who failed were similar to post-intervention CD4 count values in the successes. The CD4 T count represented by the gray circle among post-bNAb failures is higher than the y-axis scale (7495 cells/mm^3).

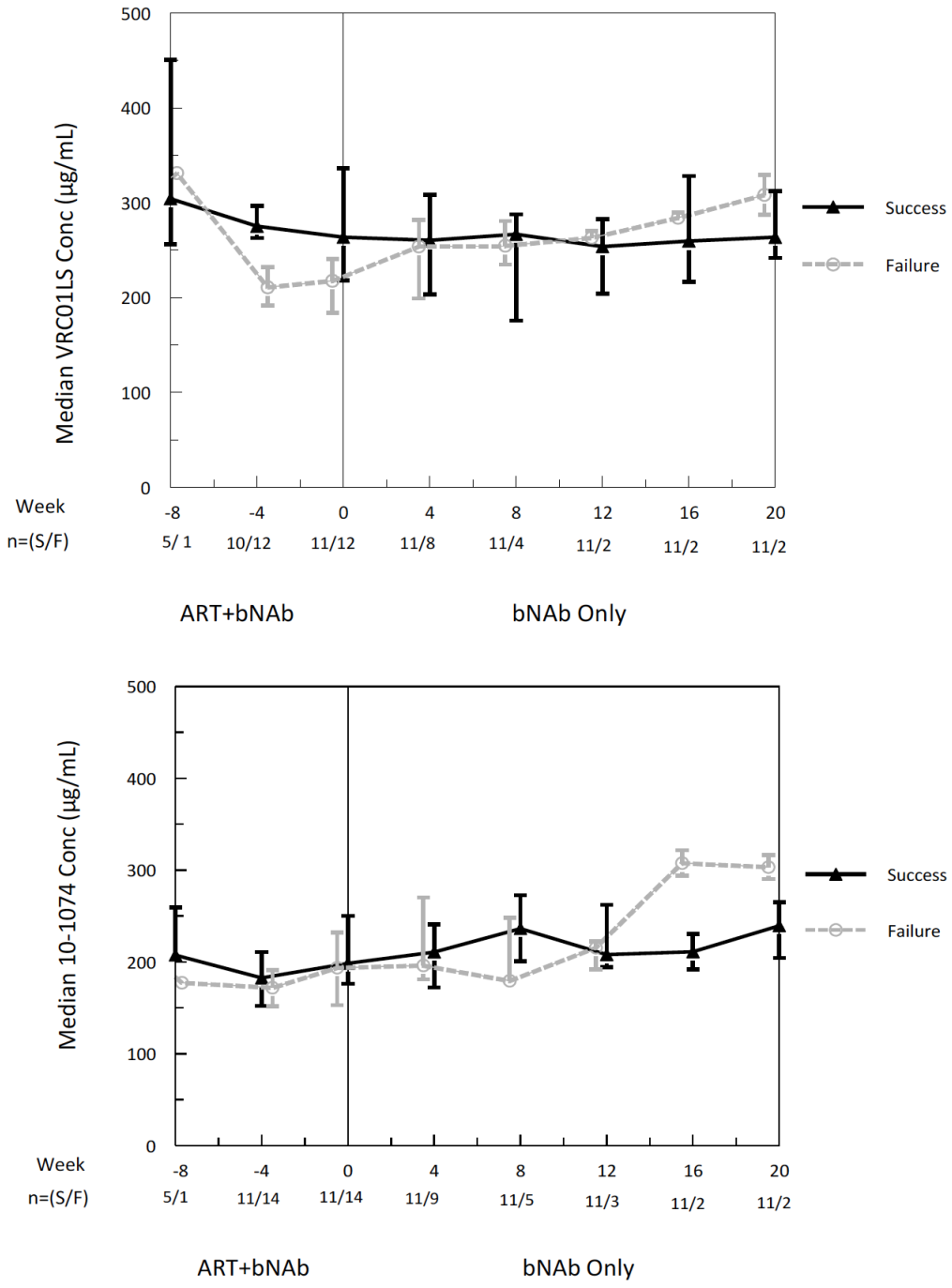

Fig. S2. Median trough concentrations of VRC01LS and 10-1074, showing the overlap period with antiretroviral therapy (ART) and the broadly neutralizing antibody (bNAb)-only step. Trough VRC01LS and 10-1074 concentrations during ART/bNAb overlap and in the bNAb-only step are shown. Bars indicate interquartile range (IQR). The immediate 8 weeks prior to the bNAb-only step are included for the six children with longer (32 weeks) ART/bNAb overlap. Conc, concentration; S, success; F, failure.

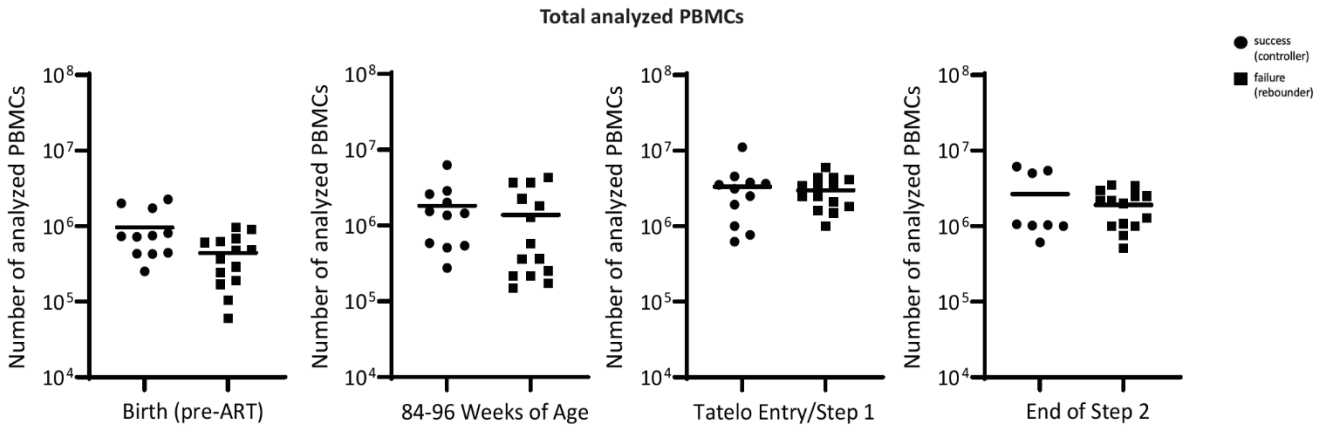

Fig. S3. Similar numbers of PBMCs were analyzed for successes and failures at birth, 84 to 96 weeks, Tatelo entry, and end of bNAbs. Differences in the number of analyzed cells at each timepoint were unlikely to account for differences in the detection of intact proviruses.

	Total (N=28) Adverse Event Grade			
Adverse Events	**1**	**2**	**3***	**Total**
Overall	**11 (39%)**	**14 (50%)**	**3 (11%)**	**28 (100%)**
Infusion reaction	0	0	0	0
Clinical events	**22 (%)**	**4 (14%)**	**1 (4%)**	**27 (96%)**
Upper respiratory tract diagnoses and associated signs and symptoms	22	2	0	24
COVID-19 (confirmed)	3	0	0	3
Pneumonia or bronchiolitis	0	0	1	1
Headache	2	0	0	2
Fever	7	1	0	8
Gastrointestinal diagnoses and associated signs and symptoms	9	1	0	10
Fungal skin rash	6	1	0	7
Rash, dermatitis or eczema	8	0	0	8
Other[+]	12	0	1	13
Laboratory Investigations	**10 (36%)**	**12 (43%)**	**2 (7%)**	**24 (86%)**
Neutropenia	7	7	1	15
Anemia	11	3	0	14
Hyponatremia	6	1	0	7
Low glucose	6	2	0	8
High glucose	5	0	0	5
Elevated creatinine	2	1	0	3
Elevated AST or ALT	3	0	0	3
Hyperkalemia	0	0	1	1
Blood bicarbonate decreased	2	0	0	2
Carbon dioxide decreased	0	2	0	2

Table S1. Summary of adverse events from ART + bNAb step entry through 30 days after last study visit. The number (%) of 28 participants reporting each graded adverse event is shown. The highest adverse event grade of each type experienced by a participant is shown. Among the 28 children receiving at least one dose of bNAbs, all 28 (100%; exact 95% CI: 87.7%, 100%) experienced at least one adverse event at any time during follow-up (including any reported during the 30 days after the end of the ART re-start step). Three experienced a grade 3 adverse event (10.7%; exact 95% CI: 2.3, 28.2%). COVID-19, coronavirus disease 2019; AST, aspartate aminotransferase; ALT, alanine aminotransferase. *Three children experienced a total of five Grade 3 events. One child had two neutrophil count decreases, one child had hyperkalemia, and one child had pneumonia and associated respiratory distress. [+]Lymph node pain and lymphadenopathy associated with a skin wound; ear pain and ear swelling with mastoiditis; eye discharge and conjunctivitis; dysphagia; lip swelling with allergy to arthropod bite; bacterial skin infection and pustular rash; mouth ulceration; oral fungal infection; animal bite; thermal burn; decreased appetite; acquired phimosis; penile pain; dyspnea; epistaxis; rales, respiratory distress, tachycardia, and wheezing associated with diagnosis of pneumonia; night sweats; skin ulcer.

Adverse Events	Total (N=28) Adverse Event Grade 1	2	3*	Total
Overall	**10 (36%)**	**8 (29%)**	**1 (4%)**	**19 (68%)**
Clinical events	**4 (14%)**	**0 (0%)**	**0 (0%)**	**4 (14%)**
Upper respiratory tract diagnoses and associated signs and symptoms	2	0	0	2
Gastrointestinal diagnoses and associated signs and symptoms	2	0	0	2
Laboratory Investigations	**9 (32%)**	**8 (29%)**	**1 (4%)**	**18 (64%)**
Neutropenia	5	4	1	10
Anemia	8	2	0	10
Hyponatremia	2	1	0	3
Low glucose	4	1	0	5
High glucose	2	0	0	2
Elevated creatinine	0	1	0	1
Elevated ALT	2	0	0	2

Table S2. Summary of adverse events considered related to bNAb treatment. The number (%) of 28 participants reporting each graded adverse event considered related to bNAb administration is shown. The highest adverse event grade of each type experienced by participant is shown. Nineteen children experienced an adverse event designated as related to study treatment (67.9%; exact 95% CI: 47.7, 84.1%) at any time during follow-up (including any reported during the 30 days after the last study visit). One child experienced a grade 3 adverse event (neutropenia) designated as related to study treatment (3.6%; exact 95% CI: 0.1, 18.4%). No grade 4 or 5 events were reported.

Data file S1. Raw, individual-level data for experiments where n<20/group.