**Supplemental Table 1. CTCAE definition and staging of peripheral neuropathy and brentuximab vedotin dose modification guidance**

| CTCAE[a] Grade | Grade 1 | Grade 2 | Grade 3 | Grade 4 |
|---|---|---|---|---|
| Peripheral neuropathy (motor or sensory) | Asymptomatic; clinical or diagnostic observations only | Moderate symptoms; limiting instrumental ADL[b] | Severe symptoms; limiting self care ADL[c] | Life-threatening consequences; urgent intervention indicated |
| Suggested brentuximab vedotin dose modification | Continue at same dose level | Reduce dose to 0.9 mg/kg and resume treatment; if already at 0.9 mg/kg, continue dosing at that level | Withhold brentuximab vedotin until toxicity is ≤Grade 2, then reduce dose to 0.9 mg/kg and resume treatment. If already at 0.9 mg/kg, consult with sponsor (AVD may be continued or held concurrently at physician's discretion) | Discontinue brentuximab vedotin |

[a] Grading is based on the National Cancer Institute Common Terminology Criteria for Adverse Events (NCI-CTCAE), version 4.03.
[b] Instrumental ADL refer to preparing meals, shopping for groceries or clothes, using the telephone, managing money, etc.
[c] Self care ADL refer to bathing, dressing and undressing, feeding self, using the toilet, taking medications, and not bedridden.
Abbreviation: ADL, Activities for daily living; AVD doxorubicin, vinblastine, dacarbazine

**Supplemental Table 2. Details of brentuximab vedotin dose modifications for hematologic or non-hematologic toxicities (excluding neuropathy)**

| Toxicity | ≤Grade 2 | ≥Grade 3 |
|---|---|---|
| Non-hematologic (excluding neuropathy) | Continue at same dose level | Hold A+AVD dosing until toxicity has resolved to ≤Grade 2 or has returned to baseline[a] |
| Hematologic | Continue at same dose level | For neutropenia, manage with growth factors (G-CSF or GM-CSF) per institutional guidelines.<br>For thrombocytopenia, consider platelet transfusion and/or proceed according to institutional guidelines.<br>For anemia, manage per institutional guidelines |

[a] Patients who develop clinically insignificant Grade 3 or 4 electrolyte laboratory abnormalities may continue study treatment without interruption.

Abbreviations: A+AVD, brentuximab vedotin plus doxorubicin, vinblastine, dacarbazine; G-CSF, granulocyte colony-stimulating factor; GM-CSF, granulocyte-macrophage colony-stimulating factor.

**Supplemental Table 3. Adverse events in the A+AVD arm by use of G-PP**

| | A+AVD (*N*=662) | |
|---|---|---|
| | G-PP (*N*=83) | No G-PP (*N*=579) |
| Adverse events[a] (any grade occurring in ≥20% of patients in either arm) by preferred term | 75 (90) | 578 (100) |
| Constipation | 39 (47) | 240 (41) |
| Nausea | 38 (46) | 310 (54) |
| Neutropenia | 25 (30) | 357 (62) |
| Fatigue | 25 (30) | 186 (32) |
| Diarrhea | 24 (29) | 157 (27) |
| Vomiting | 22 (27) | 194 (34) |
| Bone pain | 21 (25) | 105 (18) |
| Peripheral sensory neuropathy | 20 (24) | 169 (29) |
| Abdominal pain | 20 (24) | 122 (21) |
| Pyrexia | 19 (23) | 160 (28) |
| Alopecia | 18 (22) | 155 (27) |
| Weight decreased | 18 (22) | 130 (22) |
| Neuropathy, peripheral | 16 (19) | 158 (27) |
| Anaemia | 15 (18) | 125 (22) |
| Stomatitis | 11 (13) | 127 (22) |
| Febrile neutropenia | 9 (11) | 119 (21) |
| Patients with at least one hospitalization visit, n (%) | 24 (29) | 218 (38) |

[a] Adverse events are coded using the MedDRA dictionary Version 19.0

**Supplemental Table 4. Dose Exposure and Modifications for Patients in the A+AVD Arm**

| | A+AVD (*N*=662) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | G-PP (*N*=83) | | | | No G-PP (*N*=579) | | | |
| | Brentuximab vedotin | Doxorubicin | Vinblastine | Dacarbazine | Brentuximab vedotin | Doxorubicin | Vinblastine | Dacarbazine |
| Median relative dose intensity[a], (%) | 93.7 (8.3, 116.2) | 96.6 (7.7, 105.8) | 94.4 (7.7, 112.0) | 95.9 (7.7, 107.6) | 89.0 (8.1, 118.9) | 94.1 (4.1, 110.0) | 91.58 (8.2, 108.3) | 94.3 (8.2, 110.6) |
| Dose delayed, n (%) | 29 (35) | 31 (37) | 29 (35) | 31 (37) | 286 (49) | 292 (50) | 290 (50) | 286 (49) |
| Dose reduced, n (%) | 17 (20) | 0 | 4 (5) | 0 | 153 (26) | 25 (4) | 54 (9) | 29 (5) |
| Dose discontinued permanently, n (%) | 8 (10) | 4 (5) | 6 (7) | 4 (5) | 63 (11) | 34 (6) | 46 (8) | 34 (6) |

[a] Relative dose intensity (RDI) is defined in this table as: [(total dose received / max (24 weeks, duration of treatment)) / (total dose intended / 24 weeks)] x 100