**Supplementary Table 1. Systemic therapy at each relapse**

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| --- | --- | --- | --- |
|  | **First relapse****(n=35)** | **Second relapse****(n=24)** | **Third relapse and beyond****(n=15)** |
| **BTK inhibitors** | 3 | 5 | 7 |
|  Single agent | 3 | 4 | 4 |
|  With other agents† | 0 | 1 | 3 |
| **Bortezomib** | 6 | 2 | 3 |
|  Single agent | 1 | 0 | 2 |
|  With other agents‡ | 5 | 2 | 1 |
| **Lenalidomide** | 1 | 2 | 2 |
|  Single agent | 1 | 1 | 1 |
|  With Rituximab | 0 | 1 | 1 |
| **Chemotherapy** | 19 | 12 | 13 |
|  Rituximab-Bendamustine  | 9 | 3 | 1 |
|  Other regimen | 10\* | 9# | 12^ |
| **Nil systemic therapy** | 6 | 3 | 3 |
|  Supportive care alone/unknown | 3 | 2 | 1 |
|  Others ‡‡ | 3 | 1 | 2 |
| *† Ibrutinib + temsirolimus (n=1),* *Ibrutinib + rituximab (n=2),* *ibrutinib + venetoclax (n=1)**‡ Velcade + rituximab (n=3),* *Velcade + rituximab + others (n=2),**Velcade + rituximab + lenalidomide (n=1),**Velcade + rituximab + bendamustine (n=2),**‡‡ Surgical resection (n=2)**RT alone (n=4)* | *\** *CHOP-like (n=4)**Gemcitabine-containing (n=1)**Ara-C containing (n=2)**Others (n=3)* | *# CHOP-like (n=3)**Ara-C containing (n=2)**Others (n=4)* | *^ CHOP-like (n=1)**Gemcitabine-containing (n=3)**Ara-C containing (n=5)**Others (n=3)* |