**Supplementary material**

**Title**

**Real world costs of Hodgkin and the main B-Cell Non-Hodgkin lymphomas in France**

**Running title**

**Cost assessment of lymphomas in France**

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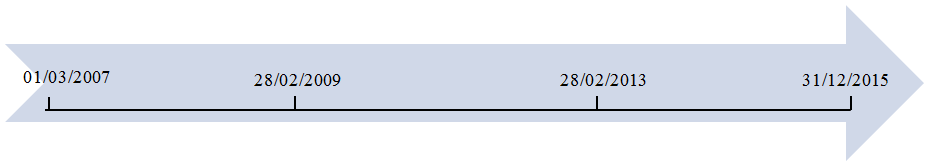
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**Supplementary material**

**Online Resource 1. Timeline of lymphoma incident case and active treatment phase identification**

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**Incident lymphoma case inclusion**

**Prevalent lymphoma case exclusion**

**Available data**

**Active treatment phase identification:**

**From the first lymphoma ICD-10 discriminant code to the latest ICD-10 discriminant code without ICD-10 discriminant codes during the end of treatment period**

|  |  |  |  |
| --- | --- | --- | --- |
| **Utilization** | **Code meaning** | **Code ICD 10** | **Entitled** |
| Study population and  Study period | Lymphoma | C81 | Hodgkin lymphoma |
| Study population and Study period | Lymphoma | C82 | Follicular NHL |
| Study population and Study period | Lymphoma | C83.3 | Diffuse B Cell NHL |
| Study population and Study period | Management | Z511 | Chemotherapy session for tumor |
| Study population and Study period | Management | Z512 | Others chemotherapy |
| Study period | Management | Z510 | Radiotherapy session |
| Study period | Management | Z452 | Adjustment and maintenance of a vascular access device |
| Study period | Management | Z513 | Blood transfusion without diagnosis |
| Study period | Management | Z9480 | Other organ and tissue transplants |
| Study period | Management | D60-64 | Medullary aplasia and other anemias |
| Study period | Management | D70 | Agranulocytosis |
| *ICD: International Classification of Diseases, NHL : Non Hodgkin Lymphoma* | | | |

**Online Resource 2. ICD-10 codes used to identify lymphoma incident case and lymphoma active treatment period**

**Online Resource 3. Unit costs - type and sources**

|  |  |  |
| --- | --- | --- |
| **Consumed resources** | **Unit costs types** | **Unit cost sources** |
| **Hospitalizations** |  |  |
| Inpatient stays | Disease Related Groups | Technical Agency of Hospital information1 |
| Day hospital | Disease Related Groups | Technical Agency of Hospital information1 |
| Additional expensive drug | Common Unit of Dispensation | Ameli (French Health Insurance)2 |
| **General practitioner and specialist visits** | General Classification of Professional Acts | Ameli (French Health Insurance)3 |
| **Medcial acts** |  |  |
| Imaging | Common Classification of Medical Acts | Ameli (French Health Insurance)4 |
| Biology | Classification of acts of Medical Biology | Ameli (French Health Insurance)5 |
| Others | Common Classification of Medical Acts | Ameli (French Health Insurance)4 |
| **Paramedical acts** | General Classification of Professional Acts | Ameli (French Health Insurance)3 |
| **Medication** | Medication Database and Tariffs Information | Ameli (French Health Insurance)6 |
| **Medical equipment** | List of Product and Service | Ameli (French Health Insurance)7 |
| **Transportation** | General Classification of Professional Acts | Ameli (French Health Insurance)3 |
| **Productivity loss** |  |  |
| Daily benefits | Per day cost | Ameli (French Health Insurance)8 |
| Disability pension | Per day cost | Ameli (French Health Insurance)9 |
| 1: <https://www.atih.sante.fr/manuel-des-ghm-version-provisoire-2016> ; 2: <http://www.codage.ext.cnamts.fr/codif/bdm_it/index_tele_ucd.php?p_site=AMELI> ;  3: <https://www.ameli.fr/sites/default/files/Documents/576134/document/ngap_version_du_01.07.2019_cnam.pdf> ;4: <https://www.ameli.fr/accueil-de-la-ccam/telechargement/index.php>;  5: <http://www.codage.ext.cnamts.fr/codif/nabm/telecharge/index_tele.php?p_site=AMELI> ;6 : <http://www.codage.ext.cnamts.fr/codif/bdm_it/index_presentation.php?p_site=AMELI> ;  7: <http://www.codage.ext.cnamts.fr/codif/tips//telecharge/index_tele.php?p_site=AMELI> ; 8: <https://www.ameli.fr/assure/remboursements/indemnites-journalieres/arret-maladie> ;  9: <https://www.ameli.fr/assure/remboursements/pensions-allocations-rentes/invalidite> ; | | |

**Online Resource 4. Baseline comorbidities according to lymphoma subgroups**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Comorbidities (n, (%))** | HL | | | FL | | |  | DLBCL |  |
| Cases | Controls | P | Cases | Controls | P | Cases | Controls | P |
| Myocardial Infarction | 1 (1.8) | 3 (1.3) | 1 | 2 (3.1) | 3 (1.2) | 0.262 | 1 (1) | 6 (1.5) | 1 |
| Congestive Heart Failure | 2 (3.5) | 0 (0) | 0.039 | 0 (0) | 4 (1.6) | 0.587 | 4 (3.9) | 7 (1.7) | 0.243 |
| Periphral Vascular Disease | 0 (0) | 1 (0.4) | 1 | 2 (3.1) | 7 (2.7) | 1 | 2 (1.9) | 12 (2.9) | 0.746 |
| Cerebrovascular Disease | 1 (1.8) | 3 (1.3) | 1 | 1 (1.6) | 2 (0.8) | 0.489 | 3 (2.9) | 7 (1.7) | 0.427 |
| Dementia | 0 (0) | 2 (0.9) | 1 | 1 (1.6) | 2 (0.8) | 0.489 | 0 (0) | 10 (2.4) | 0.224 |
| Chronic Pulmonary Disease | 1 (1.8) | 8 (3.5) | 0.693 | 1 (1.6) | 15 (5.9) | 0.21 | 4 (3.9) | 28 (6.8) | 0.363 |
| Connective Tissue Disease | 2 (3.5) | 1 (0.4) | 0.103 | 0 (0) | 1 (0.4) | 1 | 3 (2.9) | 3 (0.7) | 0.098 |
| Ulcer Disease | 0 (0) | 0 (0) | 1 | 1 (1.6) | 0 (0) | 0.2 | 0 (0) | 0 (0) | 1 |
| Mild Liver Disease | 1 (1.8) | 2 (0.9) | 0.489 | 1 (1.6) | 2 (0.8) | 0.489 | 2 (1.9) | 1 (0.2) | 0.103 |
| Diabetes | 1 (1.8) | 14 (6.1) | 0.318 | 3 (4.7) | 24 (9.4) | 0.316 | 0 (0) | 42 (10.2) | <0.001 |
| Hemiplegia | 0 (0) | 1 (0.4) | 1 | 0 (0) | 1 (0.4) | 1 | 1 (1) | 1 (0.2) | 0.36 |
| Moderate Or Severe Renal Disease | 0 (0) | 1 (0.4) | 1 | 1 (1.6) | 0 (0) | 0.2 | 1 (1) | 5 (1.2) | 1 |
| Diabete With End Organ Damage | 0 (0) | 1 (0.4) | 1 | 0 (0) | 1 (0.4) | 1 | 0 (0) | 3 (0.7) | 1 |
| Any Tumor (except lymphoma) | 5 (8.8) | 12 (5.3) | 0.347 | 16 (25) | 28 (10.9) | 0.007 | 18 (17.5) | 31 (7.5) | 0.004 |
| Moderate Or Severe Liver Disease | 1 (1.8) | 0 (0) | 0.2 | 0 (0) | 1 (0.4) | 1 | 0 (0) | 0 (0) | 1 |
| Metastatic Solid Tumor | 2 (3.5) | 1 (0.4) | 0.103 | 2 (3.1) | 0 (0) | 0.039 | 3 (2.9) | 1 (0.2) | 0.027 |
| HIV.AIDS  *HL : Hodgkin Lymphoma, FL: Follicular Lymphoma, DLBCL: Diffuse Large B Cell Lymphoma, P: P-value* | 1 (1.8) | 0 (0) | 0.2 | 1 (1.6) | 0 (0) | 0.2 | 1 (1) | 0 (0) | 0.2 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | HL | | | FL | | | DLBCL | | |
| Cases  (n=57) | Controls  (n=228) | ∆Cost | Cases  (n=64) | Controls  (n=256) | ∆Cost | Cases  (n=103) | Controls  (n=412) | ∆Cost |
| **Inpatient stays** | 3075  [2325; 4580] | 95  [38; 284] | 2980 | 3188  [2733; 3716] | 73  [46; 122] | 3115 | 5999  [5400; 6849] | 68  [43; 113] | 5931 |
| **Additional medicine:** | 494  [132; 2231] | 64  [14; 249] | 430 | 1701  [1351; 2180] | - | 1701 | 2291  [2005; 2758] | 7  [0; 21] | 2284 |
| Rituximab | 45  [3; 147] | - | 45 | 1511  [1185; 1933] | - | 1511 | 2061  [1771; 2541] | - | 2061 |
| Other medicines\* | 449  [87; 1929] | 64  [14; 250] | 385 | 191  [102; 529] | - | 191 | 230  [137; 377] | 7  [0; 21] | 223 |
| **DRG tarifs :** | 2273  [1813; 3098] | 25  [15; 41] | 2248 | 1379  [1105; 1820] | 54  [32; 96] | 1325 | 3387  [2868; 3987] | 46  [32; 74] | 3341 |
| Diagnosis | 879  [522; 1859] | - | 879 | 364  [239; 572] | - | 364 | 618  [451; 872] | - | 618 |
| Treatment | 1124  [934; 1367] | - | 1124 | 800  [591; 1204] | - | 800 | 2167  [1831; 2651] | - | 2167 |
| Adverse event | 87  [26; 244] | - | 87 | 27  [8; 69] | - | 27 | 159  [92; 312] | - | 159 |
| Other hospitalizations | 184  [105; 301] | 25  [16; 41] | 159 | 188  [105; 376] | 54  [33; 101] | 134 | 443  [255; 856] | 46  [31; 76] | 397 |
| **Productivity loss** | 499  [337; 671] | 35  [22; 61] | 464 | 200  [114; 318] | 64  [36; 124] | 136 | 261  [176; 374] | 32  [18; 58] | 229 |
| Daily allowance | 419  [285; 573] | 19  [10; 37] | 400 | 187  [107; 312] | 9  [3; 24] | 178 | 220  [139; 330] | 8  [3; 21] | 212 |
| **Medical acts** | 188  [140; 280] | 16  [12; 31] | 172 | 118  [96; 148] | 24  [20; 31] | 94 | 181  [152; 238] | 20  [18; 24] | 161 |
| Laboratory tests | 68  [57; 85] | 4  [3; 6] | 64 | 53  [43; 69] | 7  [6; 10] | 46 | 76  [67; 85] | 6  [5; 7] | 70 |
| Imaging Acts | 23  [17; 33] | 3  [2; 4] | 20 | 21  [16; 28] | 7  [5; 9] | 14 | 27  [21; 34] | 6  [5; 8] | 21 |
| Technical Flate rates | 91  [54; 197] | 1  [0; 2] | 90 | 39  [26; 62] | 2  [1; 3] | 37 | 55  [40; 75] | 2  [1; 3] | 53 |
| **Transportation** | 255  [192; 337] | 7  [2; 21] | 248 | 92  [66; 129] | 3  [2; 9] | 89 | 244  [200; 304] | 5  [3; 8] | 239 |
| Ambulance | 22  [10; 44] | 3  [0; 18] | 19 | 14  [7; 27] | 0  [0; 1] | 14 | 81  [57; 118] | 2  [1; 4] | 79 |
| Taxi | 111  [73; 173] | 1  [0; 8] | 110 | 42  [25; 72] | 1  [0; 2] | 41 | 97  [72; 130] | 1  [0; 1] | 96 |
| VSL | 98  [54; 175] | 1  [0; 2] | 97 | 31  [18; 53] | 2  [0; 8] | 29 | 56  [39; 81] | 2  [1; 5] | 54 |
| **Medications (\*\*)** | 592  [449; 812] | 32  [22; 63] | 560 | 427  [302; 613] | 62  [48; 88] | 365 | 908  [803; 1027] | 50  [43; 64] | 858 |
| anti-infectious for systemic use (J) | 45  [25; 131] | 1  [1; 2] | 44 | 39  [20; 109] | 1  [1; 3] | 38 | 42  [29; 72] | 1  [1; 2] | 41 |
| **Antineoplastics and immuno-modulators (L)** | 351  [251; 477] | 3  [0; 9] | 348 | 227  [153; 343] | 11  [2; 33] | 216 | 533  [460; 614] | 6  [2; 21] | 527 |
| **Growth Factors (L03AA)** | 335  [242; 462] | - | 335 | 215  [138; 320] | - | 215 | 524  [446; 603] | - | 524 |
| Filgrastim | 66  [34; 131] | - | 66 | 29  [13; 57] | - | 29 | 83  [59; 115] | - | 83 |
| Lenograstim | 207  [137; 307] | - | 207 | 53  [27; 100] | - | 53 | 216  [166; 272] | - | 216 |
| Pegfilgrastim | 62  [25; 133] | - | 62 | 133  [67; 249] | - | 133 | 225  [159; 316] | - | 225 |
| **Blood and hematopoietic organs (B)** | 77  [41; 166] | 2  [1; 6] | 75 | 83  [47; 145] | 3  [2; 6] | 80 | 222  [168; 337] | 2  [2; 4] | 220 |
| Antithrombotic (B01) | 9  [3; 22] | 2  [1; 5] | 7 | 17  [9; 36] | 3  [2; 6] | 14 | 45  [30; 69] | 2  [2; 3] | 43 |
| Antianemic preparations (B03) | 65  [32; 161] | - | 65 | 64  [29; 114] | 0  [0; 1] | 64 | 159  [110; 263] | - | 159 |
| Blood substitutes and infusion solutions (B05) | 4  [1; 17] | - | 4 | 2  [1; 8] | - | 2 | 18  [7; 49] | - | 18 |
| **Nervous system** | 14  [10; 20] | 5  [3; 10] | 9 | 21  [10; 45] | 9  [6; 13] | 12 | 17  [13; 24] | 8  [6; 13] | 9 |
| **Digestive tracks and metabolism (A)** | 74  [57; 97] | 4  [3; 6] | 70 | 27  [20; 36] | 8  [6; 11] | 19 | 41  [35; 48] | 8  [6; 10] | 33 |
| **Total**  *All cost differences presented are significant (p<0.01). HL: Hodgkin Lymphoma, FL: Follicular Lymphoma, DLBCL: Diffuse Large B Cells Lymphoma, Other expensive drugs \*: All medication not taken into account in DRG as expensive drugs except Rituximab, (\*\*) : related ATC code, - : No consumption found* | 4690  [3845; 5981] | 212  [142; 432] | 4478 | 4101  [3591; 4731] | 281  [212; 395] | 3820 | 7745  [7071; 8518] | 219  [180; 273] | 7526 |

**Online Resource 5. Monthly costs per patient (€, 2018) according to cost drivers and lymphoma subgroups**