Addressing the inherent challenges of the French National Claims Database through algorithms to identify patients with Diffuse Large B-cell Lymphoma and their chemotherapy treatments.

C07

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Context and objective

- Diffuse large B-cell lymphoma (DLBCL) is the most common and aggressive form of non-Hodgkin lymphoma (NHL).
- The French National Claims Database (SNDS), which links comprehensive claims data, hospital discharge summaries, and the national death registry, for the whole French population, is a valuable resource for pharmacoepidemiology studies.
- However, its claims-based nature, primarily for reimbursement, makes accurate identification of ICD-10-coded DLBCL patients and specific chemotherapy regimens challenging. In the SNDS hospital data, only expensive treatments and chemotherapy sessions are identifiable.
- The objective is to **develop and validate** two **algorithms** to reliably **identify 1. DLBCL diagnoses** and **2. the chemotherapy-based regimens** used to treat these patients, based on SNDS data.

Methods

- ***Algorithm 1:*** DLBCL cases were identified in the SNDS using an expert-driven algorithm based on the **NHL ICD-10 code:** patients with at least one C83.3 ICD-10 code (DLBCL) reported as a principal (PD), related (RD), or associated (AD) diagnosis during hospitalization and presenting no codes in PD/RD/AD that could compromise the reliability of the DLBCL diagnosis[1] (C82, 83.0, C83.1, C83.5- C83.7, C85.0). Patient diagnosed with a **new case of DLBCL from 2013 to 2021** were included (5-year history without any NHL ICD-10 codes)
- ***Algorithm 2:*** The algorithm for identifying 1st line chemotherapy regimens was therefore based on **frequency of rituximab injections, hospitalizations, and chemotherapy sessions**. Only patients with DLBCL diagnoses between **2018 and 2021** were considered to better reflect current treatment.

Results : Algorithm 1 to identify DLBCL patients

- Between 2013 and 2021, 51,542 patients with at least one hospitalization coded C83.3 were identified.
- During follow-up, a NHL code other than C83.3 was observed for 56% of patients, casting doubt on the *de novo* DLBCL diagnosis (Figure 1).
- Using Algorithm 1 defined in the Methods section, 36,452 cases of incident DLBCL between 2013 and 2021 (Figure 2) were included. Newly diagnoses between 2018 and 2021 included 17,587 patients.
- SNDS patients' characteristics (age, gender and OS) are comparable to FRANCIM data (Table 1).

Figure 1: Frequency of lymphome diagnostic codes among patient pathway

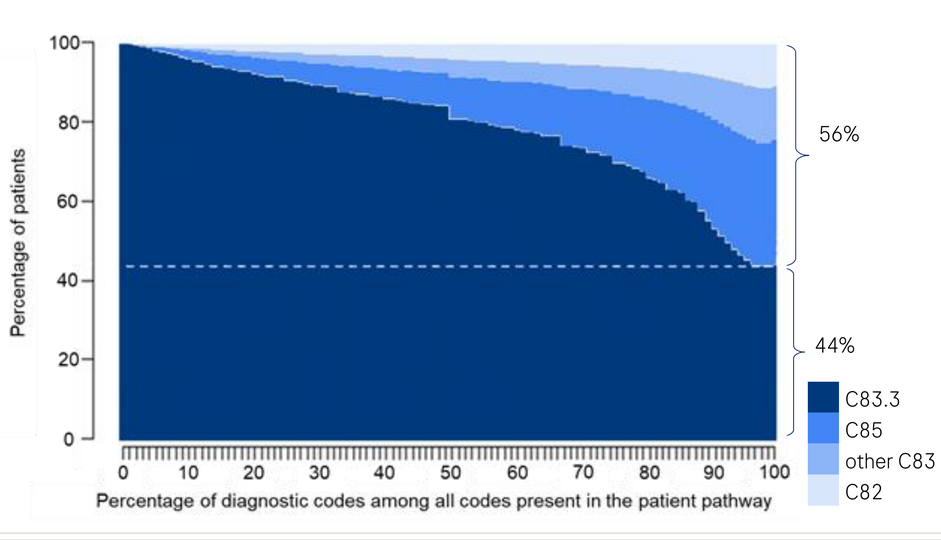
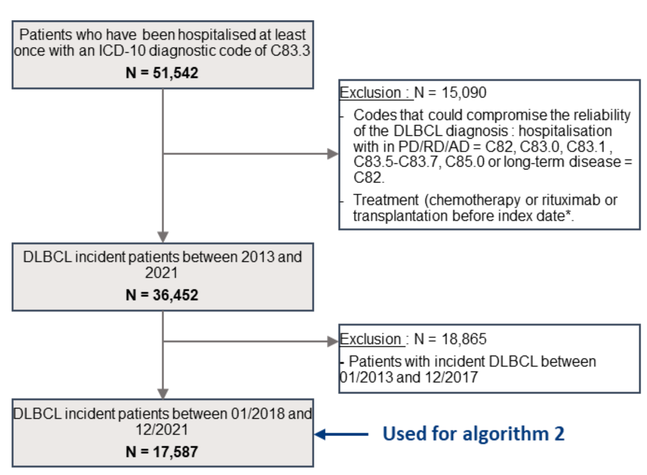


Figure 2: Flowchart



*index date: date of first hospitalisation with diagnostic code of C83.3

Table 1: Comparison of patients included in the SNDS with FRANCIM* data

	SNDS N=36,452	FRANCIM* N=5,071
Incidence		
2015	3,768	4,809
2018	4,176	5,071
Age		
Mean	68,2	67,3
Median	71	70
Gender, male (%)	55,7%	54,8%
OS		
1 year	74.8% [74,4%-75,3%]	71% [70% - 72%]
5 years	56,2% [55,6%-56,8%]	51% [50% - 52%]

**FRANCIM: the French network of cancer registries, dedicated to the observation and monitoring of cancers, tracking their incidence, mortality and survival rates after diagnosis or treatment. It covers 25% of the French Population.*

Results : Algorithm 2 to identify first-line chemotherapy-based regimens

- Within two months post-diagnosis:
  - no chemotherapy nor rituximab were identified[2] for 25.3% of patients (n=4,450). Among them, 629 (14.1%) received hospital-based palliative care.
  - 70.2% (n=12,342) received rituximab-based therapies (R-Chemo). Among them, 497 (4%) received R-ACVBP[3], 10,040 (81.3%) R-CHOP[4] (included 10.8% R-CHOP-14 vs 72.4% R-CHOP-21).
  - 4.5% (n=795) received chemotherapy only (Figure 3).
- Patients receiving "R-ACVBP/R-CHOP-14" were younger than "R-CHOP-21" (49.6/54.1 vs 68.8 years). Conversely, patients receiving palliative care were older (81.2 years).
- Raw Overall Survival (OS)[5]:
  - 1-year Overall survival (OS) rate is 13.1% for patients receiving palliative care, 74.9% for "Chemo", and 87.6% for "R-Chemo", including 91.2% for "R-ACVBP", 90,7% for "R-CHOP-14" and 86.9% for "R-CHOP-21".
  - 2- and 3- year OS rates were 85.2% and 81.2% for "R-ACVBP", 80.8% and 76.4% for "R-CHOP-14" and 74.3% and 67.0% for "R-CHOP-21". In summary, the OS rates for the "R-Chemo " group were 75.7% and 69.0%, respectively.

Figure 3: Treatment management as 1st line

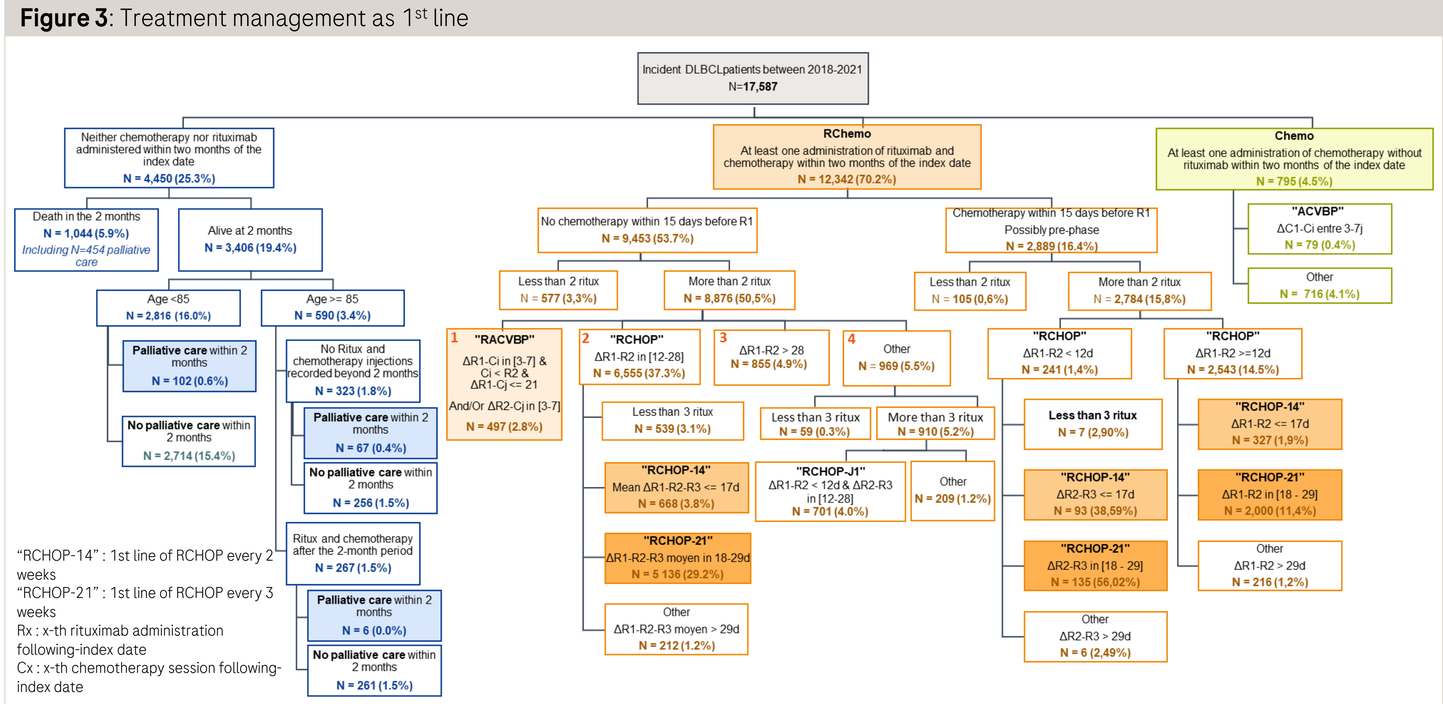
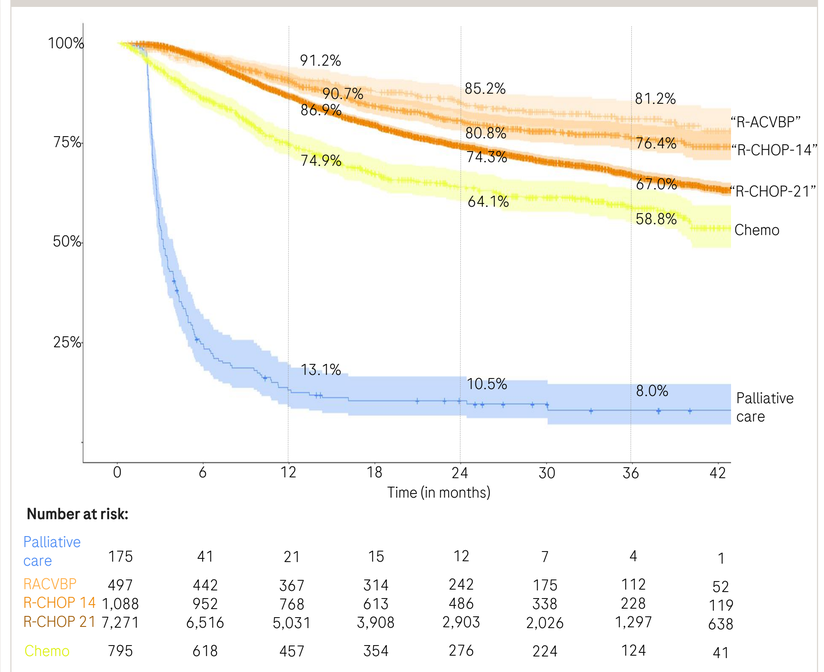


Figure 4: Raw overall survival according to treatment management as 1st line



[2] 1st line treatment from clinical trial are not identifiable in the SNDS
[3] Proportion of R-ACVBP regimens may be underestimated due to missing chemotherapy administration dates in the SNDS
[4] R-CHOP: may include similar frequency administration protocols such as R-COEP, R-COP, R-CVP, etc. (corresponding to less than 3% of 1st line R-chemo regimens in REALYSA cohort)
[5] Slight overestimation of OS for R-chemo-based therapies due to the need for at least few rituximab administrations for identifying corresponding regimens

[1] NHL CIM-10 codes :

C82: Follicular lymphoma
C83.0: Small cell B-cell lymphoma
C83.1: Mantle cell lymphoma
C83.3: Diffuse large B-cell lymphoma
C83.5: Lymphoblastic (diffuse) lymphoma
C83.7: Burkitt lymphoma
C85: Other and unspecified types of non-Hodgkin lymphoma

Conclusion

This is the first robust proof of concept for leveraging claims data (SNDS) to accurately identify patients with DLBCL and precisely describe their 1st line chemotherapy-based regimens. This work validates the utility of algorithmic approaches for conducting pharmacoepidemiologic studies with claims data in oncology. The arrival of highly identifiable innovative treatments in the SNDS is expected to further enhance the precision and scale of this research.