



SNDS, the French nationwide claims database: A powerful tool for Pharmacoecology and Pharmacoepidemiology

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Abstract

Objectives: The use of medico-administrative database is now essential for pharmacoecology and pharmacoepidemiology. Recently, the French law expanded the access to the Nationwide Claims database of 66.6 millions people.

Methods: Describe the SNDS French National claims database.

Results: The French healthcare system offers universal coverage. The SNDS database links claims with hospital-discharge summaries (PMSI) and the national death registry, using pseudonymisation of the unique national identifier. It now covers 99 % of the French population, over 66 million persons, from birth or immigration to death or emigration, making it one of the world's largest continuous homogeneous claims database. The database includes demographic data, date and cause of death, Long Term Disease (LTD) registration for full reimbursement (mainly for chronic and costly disease), outpatient reimbursed healthcare encounters such as physician or paramedical visits (e.g. nursing, physiotherapy), medicines prescribed, medical devices, lab tests, but not medical indication, or lab test results) with costs; all private and public hospitalisations with primary, linked and associated ICD10 diagnoses, procedures, duration, and cost coding system (Diagnostic Related Group), as well as most very expensive drugs. The power of the database is correlatively great, and its representativeness is guaranteed. The French law regulates the SNDS access with a well-defined process through INDS, the national Institute of health. EGB (Echantillon Généraliste de Bénéficiaires) is the 1/97th random permanent representative sample of SNDS. It is easier to access, but its power is less (780 000 subjects) that could be enough for population description, drug pattern or disease burden of common problems, while SNDS is more for rare diseases or outcomes.

Conclusions: The development and availability of SNDS brings another international major actor to Pharmacoecology and pharmacoepidemiology, providing a nationwide resource with tremendous power.

Background

- Population claims databases usually have the advantage of large sizes and exhaustivity of data, but may suffer from uncertain representativeness when the presence in the database depends on factors such as employer, social status or age
- Universal medical coverage as in Canada and in Nordic Countries avoids these limits, but often represents small populations, despite the quality of their data
- The combination of small individual bases, as in CNODES, SENTINEL, or EU-ADR can avoid some of these limitations, but inhomogeneity of data coding or structure requires specific recoding, or the use of common data models
- In this context, the emergence of a single large countrywide persistent database is welcome

Objectives

- To describe the French nationwide healthcare data system (**SNDS**), linking several databases: outpatient claims (**SNIIRAM**), public and private hospital discharge summaries (**PMSI**), death and medical causes of death (**CépiDC**) and disability (**CNSA**)

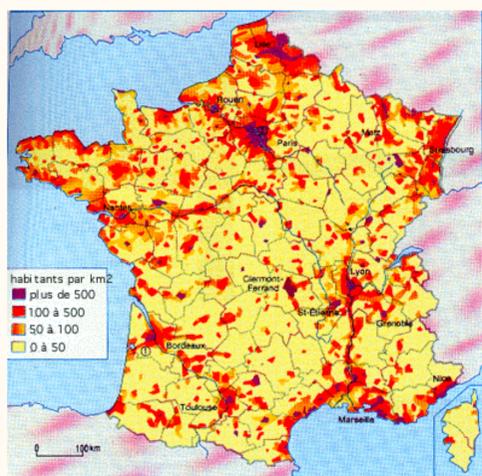
Declaration of interest

- None

Results

France key demographics

- **66.6 Million inhabitants**
- **219 834 Physicians**
 - 102 140 General Practitioners
 - 117 694 Specialists
 - 67 039 Medical
 - 25 802 Surgical
 - 14 831 Psychiatrists
 - 6 796 Cardiologists
 - 4 076 Dermatologists
 - 3 570 GE/Hep
 - 2 598 Rheumatologists
 - 2 289 Neurologists
 - ...



➤ French healthcare system

- Universal, mandatory coverage (called Social Security, paid on salaries and other gains) complemented by mutual funds or private insurance companies
- The healthcare system covers, to various degrees, most medical expenses, with patient copay except for diseases with 100% coverage (see below)
- 3 main programs, 19 smaller ones
- General practitioners and most specialists are in private practice. Secondary care is by private clinics or local hospitals, and tertiary care by public university hospitals and regional cancer centers
- Freedom of choice of a referent physician, access to specialist through referent physician, freedom of prescription, and free access to hospital

➤ French nationwide healthcare data system (SNDS)

- Contains continuous data on about **99% of the 66.6 million persons** of the French population from birth (or immigration) to death (or emigration), even if a subject changes occupation or retires
- Making it one of the world's largest homogeneous claims database
- Merges several databases using unique pseudonymised patient numbers (Figure 1)

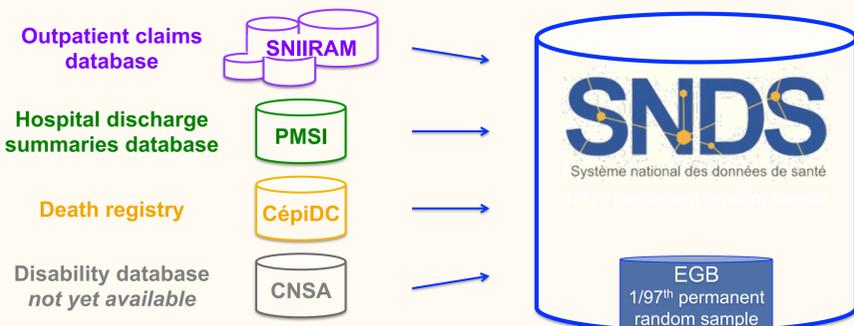


Figure 1: Constitution of the French nationwide healthcare data system (SNDS)

➤ The outpatient claims database (SNIIRAM)

- Includes gender, date of birth, localization of residence, indicator of low income
- Includes Long Term Disease (LTD) registration with start and end dates (costly chronic diseases, with ICD-10 codes). It is requested by the patient's practitioner and medically validated by the health insurance system. Once registered, patients receive full reimbursement for expenditures related to the LTD
- Contains outpatient reimbursed healthcare expenditures: physician or paramedical visits (e.g. nursing, physiotherapy), drugs prescribed and reimbursed, medical devices, lab tests, imaging (but not medical indication or results) with prescriber and professional caregiver information (specialty, private/public practice), code, dates of prescription and completion, total and reimbursed costs
- Data are regularly uploaded with a lag time of 6 months to have 98% of information uploaded

➤ Hospital discharge summaries database (PMSI)

- Includes ICD-10 codes for primary diagnosis, associated diagnosis, and linked diagnosis for ICD-10 Z-codes (e.g. chemotherapy), for all private and public medical, obstetric and surgery hospitalizations, with the date and duration of hospitalization, medical procedures, and cost coding system (Diagnostic Related Group), as well as most very expensive drugs. The hospital discharge summary includes the medical unit summaries
- Data from psychiatry, and rehabilitation centers are also available but not yet in EGB
- PMSI data are available yearly in the SNDS, during the third trimester of current year for the data of previous year (during the first trimester of following year in the EGB)

➤ National death registry (CépiDC)

- It provides date of death and causes of death, starting to be included (at this time: years 2013 – 2015)

➤ SNDS access - <https://www.snds.gov.fr/SNDS/Accueil>

- A new process was adopted by Parliament in 2016, with the creation of a single gatekeeper, INDS (National Institute of Healthcare Data)
- Access to SNDS data is authorized only for research with public health interest
- Access to SNDS itself is subject to approval from national data protection agency (CNIL) after advice from a committee on healthcare data research (CEREES)
- The linkage of individual patients to their claims data is now possible after authorization by a committee for protection of persons involved in biomedical research (CPP) and CNIL, and of course patient consent
- Data access can be requested by any legitimate entity, public or private, as long as the study objectives are in the interest of public health, and means are provided to ensure confidentiality, integrity, and traceability of data and its usage, and the information is not used for drug promotion-
- Pharmaceutical companies can access SNDS via accredited public or private research organizations or directly if they can ensure they cannot use the data to promote their drugs
- Considering the complexity of the data and the steep learning curve, it is expected that most accesses will be through specialized entities

➤ Study in Pharmacoepidemiology using SNDS database: example presented at ISPOR Europe 2018 - Barcelona

- P. Blin et al. Effectiveness and safety of standard and reduced dose of dabigatran versus rivaroxaban in non-valvular atrial fibrillation: a cohort study in the SNDS French nationwide claims database. Oral communication on Wednesday, Nov 14: 13:45 - 14:45, BREAKOUT SESSION 10, P16: Database studies, room 116. Oral communications

➤ Study in Pharmacoepidemiology using SNDS database: some examples presented at previous ISPOR meetings

- P. Blin et al. Benefit-risk and medical cost of rivaroxaban 20mg versus vitamin K antagonists from a French nationwide cohort of 220,000 patients with non-valvular atrial fibrillation. ISPOR Europe 2017 – Glasgow
- P. Blin et al. Direct oral anticoagulants versus Low-molecular-weight heparins for venous thromboembolism prevention following total hip replacement: Benefit-risk and medical cost from a French nationwide cohort study of more than 100,000 patients. ISPOR Europe 2017 – Glasgow
- P. Blin et al. Outcomes, healthcare resource use and cost in patients with stable myocardial infarction: the Horus cohort study in the EGB French claims and hospital database. ISPOR US 2016 – Washington
- Benefit-risk of VKA for valvular atrial fibrillation before DOAC: a cohort study in a French claims and hospital database. ISPOR Europe 2015 – Milano
- Use of the French claims and hospital database to estimate the prevalence and incidence of Parkinson's disease in France. ISPOR Europe 2013 – Dublin

Conclusion

The development and availability of SNDS brings another major actor to pharmacoepidemiology, providing a nationwide resource with tremendous power

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