

# Bulletin de la Dialyse à Domicile

## Evolution of peritoneal dialysis in France since 2018 and during the «COVID-19 years». RDPLF data report.

(Evolution de la dialyse péritonéale en France depuis 2018 et durant les « années COVID-19 » Rapport RDPLF)

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### Summary

Almost all (99%) of the patients treated by peritoneal dialysis in France are registered in the RDPLF database. Apart from any statistical analysis aimed at interpreting the figures, this work is a report of the raw data observed in the population of Stage V renal failure patients treated by peritoneal dialysis since the beginning of the COVID-19 epidemic and in the two years preceding it. Since the beginning of the epidemic, these data seem to show a decrease in the incidence of peritoneal dialysis treatment and an increase in transfers to center-based hemodialysis. In addition, there has been a decrease in the number of registrations on the transplant waiting list and a decrease in the number of transplants. While the temporary decrease in transplantation activity may be explained by the disorganization caused by the epidemic in the hospitals, a decrease in the number of indications for home dialysis probably merits further reflection on its causes, especially since this result is in contrast with trends in other countries. This report is intended to encourage more precise studies on the value of home dialysis during the epidemic.

Key words : peritoneal dialysis, transfers, COVID-19, RDPLF, incidence, prevalence, home dialysis transplantation

### Résumé

La quasi-totalité (99 %) des patients traités par dialyse péritonéale en France est enregistrée dans la base de données du RDPLF. En dehors de toute analyse statistique visant à interpréter les chiffres, ce travail est un rapport des données brutes observées dans la population d'insuffisants rénaux Stade V traités par dialyse péritonéale depuis le début de l'épidémie COVID-19 et dans les deux années qui ont précédé. Depuis le début de l'épidémie ces données semblent montrer une diminution de l'incidence des traitements par dialyse péritonéale et une augmentation des transferts en hémodialyse en centre. On observe par ailleurs une diminution des inscriptions sur liste d'attente de transplantation et une diminution du nombre de transplantations. Si la baisse temporaire de l'activité de transplantation peut s'expliquer par la désorganisation qu'a provoquée l'épidémie dans les hôpitaux, une baisse des indications de mise à domicile mérite probablement une réflexion plus approfondie sur ses causes, d'autant plus que ce résultat est en opposition avec les tendances d'autres pays. Ce rapport a pour but d'encourager des études plus précises sur l'intérêt de la dialyse à domicile en période épidémique.

Mots clés : dialyse péritonéale, transferts, COVID-19, RDPLF, incidence, prévalence, transplantation, dialyse à domicile

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### Abbreviations

REIN : Réseau Epidémiologique et Information en Néphrologie (Nephrology Epidemiology and Information Network)

RDPLF : Registre de Dialyse Péritonéale de Langue Française et hémodialyse à domicile (French language Peritoneal Dialysis and home hemodialysis registry)

PD: Peritoneal Dialysis

CAPD : Continuous Ambulatory Peritoneal Dialysis

APD : Automated Peritoneal Dialysis

### INTRODUCTION

The occurrence of the SARS-Cov2 epidemic has had dramatic consequences on the morbidity and mortality of patients with stage-V chronic kidney disease or transplanted patients. In France, the evolution of the rate of contamination and lethality is communicated weekly by the Agence de Biomédecine and the REIN registry [1]. While many teams around the world have recommended prioritizing home dialysis and particularly peritoneal dialysis (PD) [2-4], we thought it was important to investigate the situation in France.

We report the evolution of PD in France since 2018. This is raw data extracted from the RDPLF database, specifically from its main module that represents 99% of patients treated with PD in France. We present this information in the form of tables and graphs, without interpretation, with our aim being to provide the reader with immediately accessible general information that can be used as a support for oral presentations and as a basis for reflection for future work. All tables and figures may be freely used provided that their origin is cited (reference of this article or at least its DOI).

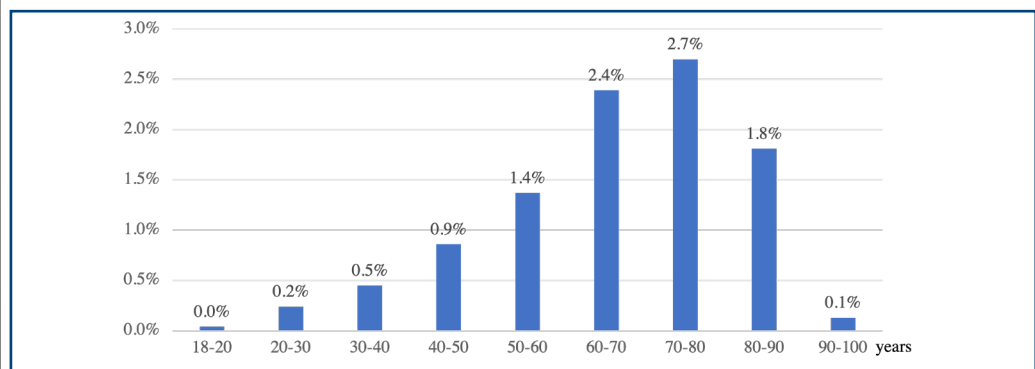
### I - PROFIL DES PATIENTS TRAITÉS PAR DIALYSE PÉRITONÉALE EN FRANCE MÉTROPOLITAINE EN 2021

**Prevalent patients in the year** (tableau I et fig 1)

Sexe ratio : Femmes : 36,4 % Hommes : 63,6 %

↓ Table I. Total number of patients treated at least one day during the year

|         | All patients | CAPD      | APD       |
|---------|--------------|-----------|-----------|
| Numbers | 4110         | 2568      | 1542      |
| Age     | 66,2±16,2    | 70,6±14,2 | 58,9±16,8 |



↑ Figure 1. Age distribution of PD patients treated in 2021

### Diabetes status

44.8% of patients treated with peritoneal dialysis in metropolitan France in 2021 had diabetes. The distribution of patients according to diabetic status and treatment of their diabetes is summarized in *Table II*.

Among diabetic patients on insulin, 98.7% were on subcutaneous insulin and 1.34% on intraperitoneal insulin.

↓ *Table II. Distribution of diabetic status among patients treated with PD in 2021*

| Diabetic status                      | Percentages |
|--------------------------------------|-------------|
| Non-diabetics                        | 65,28%      |
| Diabetics treated with diet          | 4,21%       |
| Orally treated diabetics             | 6,89%       |
| Diabetics on subcutaneous insulin    | 23,31%      |
| Diabetics on intraperitoneal insulin | 0,32%       |

### Autonomy and PD type (CAPD vs APD)

In 2021, 43.7% of patients required assistance to perform their peritoneal dialysis; this assistance is mostly provided by private nurses at home, paid by national health insurance (*tableau III*).

↓ *Tableau III. Répartition des patients selon le niveau d'autonomie*

| Autonomy               | Numbers | Percentages |
|------------------------|---------|-------------|
| Autonomous             | 2314    | 0.56302     |
| Nurse assisted         | 1560    | 0.37956     |
| Family assisted        | 213     | 0.05182     |
| Assisted (unspecified) | 21      | 0.00511     |
| Missing data           | 2       | 0.00049     |

↓ *Table IV. Profile of PD patients according to type of treatment*

|                 | CAPD        | APD         |
|-----------------|-------------|-------------|
| Number/%        | 1748 (61%)  | 1095 (49%)  |
| Age             | 70.7±13,5   | 60.5±15,1   |
| Sex ratio (F/M) | 38.4%/61.6% | 33.6%/66.7% |
| Diabetics       | 40.6%       | 24.7%       |
| Autonomous      | 45.1%       | 81.9%       |
| Nurse assisted  | 50.3%       | 13.35%      |
| Family assisted | 4.6%        | 4.75%       |

CAPD patients are older than those on APD, more often diabetic and 50% require nurse assistance, contrary to APD where the majority (nearly 82%) are autonomous (*Table IV*).

### Répartition des techniques de DP au 31 décembre 2021

On December 31, 2021, 2724 patients were treated by PD in metropolitan France, 1714 (63%) in CAPD and 1010 (37%) in APD.

In CAPD, the age was 70.6 years $\pm$ 13.6, the sex ratio was 38% female and 61.7% male. In APD the age was 60 years $\pm$ 16.2 and the sex ratio was 33.6% women and 66.4% men.

Figure 2 shows the distribution of the PD technique used according to age.

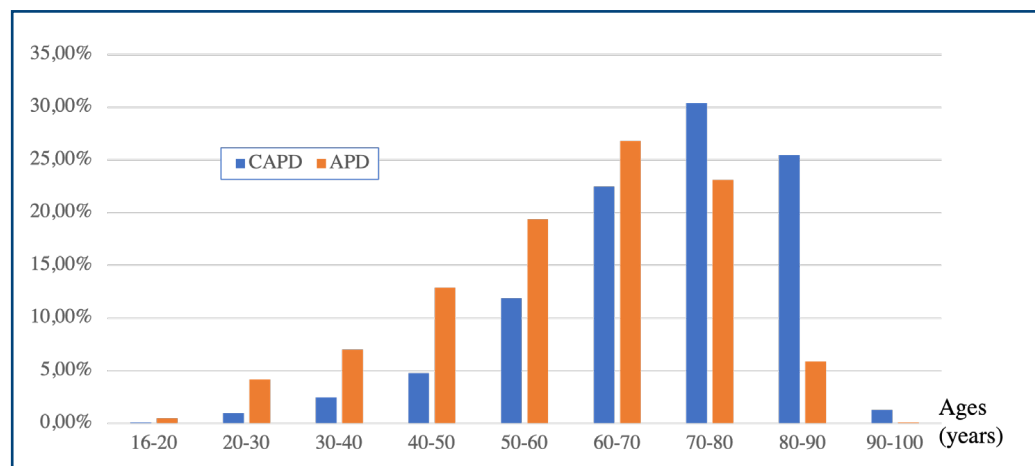


Figure 2. Age distribution of patients treated with CAPD or APD, on December 2021. Percentages in a technique, CAPD or APD, are calculated in relation to the total number in the technique

### Peritoneal infections in 2021

The latest ISPD guidelines recommend that peritonitis recidives should not be counted in the calculation of the peritonitis rate; nevertheless, clinical recurrences are indeed additional stresses for patients and their peritoneal membrane, so we report the results with and without counting recurrences. All calculations were computed using the method recommended by ISPD [5].

- Rate of peritoneal infection (including recidives): 1 episode every 37.8 months or 0.32 episodes per year
- Rate of peritoneal infection (excluding recidives): 1 episode every 40 months or 0.30 episodes per year

The *Table V* summarizes the distribution of organisms cultured in 2021. Multiple germ peritonitis is not detailed but is the subject of an accepted work in the journal *Nephrology Dialysis and Transplantation* (in press) [6].

The percentage of aseptic peritonitis was 15.1%, in line with international recommendations. However, it should be remembered that the rate of culture-negative peritonitis may vary considerably between centers, as we have previously shown [7].

↓ Table V. Distribution of organisms identified in peritonitis occurring in 2021.

| Germes              | Effectifs | Pourcentages |
|---------------------|-----------|--------------|
| Cocci Gram Plus     | 387       | 44,7%        |
| Bacilles Gram moins | 231       | 26,7%        |
| Bacilles Gram plus  | 39        | 4,5%         |
| Cultures négatives  | 131       | 15,1%        |
| Germes multiples    | 62        | 7,2%         |
| Levures             | 10        | 1,2%         |
| Cocci Gram moins    | 5         | 0,6%         |
| Divers              | 1         | 0,1%         |

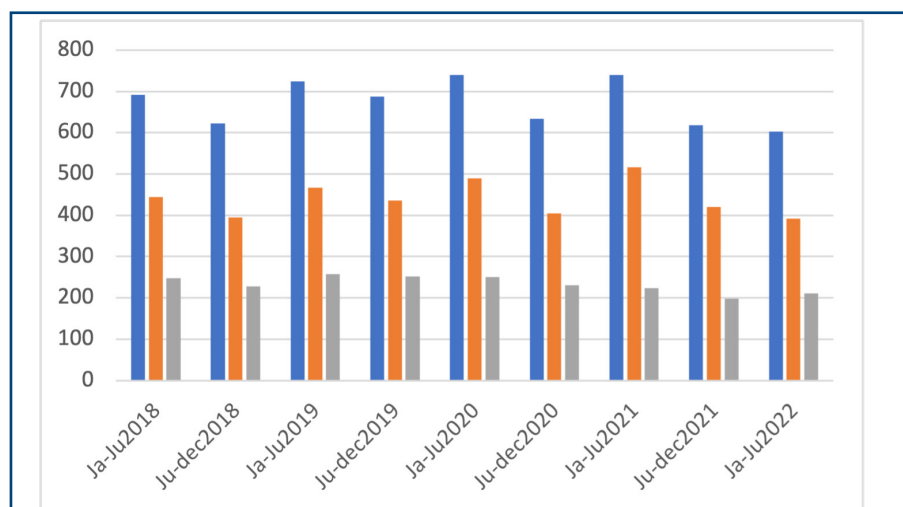
Délais d'attente des patients transplantés en 2021 (tableau VI)

↓ Table VI. 205 patients treated by peritoneal dialysis were transplanted during the year. Their duration of treatment before transplantation varied from less than 1 year to more than 5 years. Slightly less than 50% were transplanted before 2 years of treatment. The percentages are calculated in relation to the total number of transplant recipients.

| Durées traitement avant greffe | Effectifs | Pourcentages |
|--------------------------------|-----------|--------------|
| 0-1 ans                        | 27        | 13,2%        |
| 1-2 ans                        | 73        | 35,6%        |
| 2-3 ans                        | 47        | 22,9%        |
| 3-4 ans                        | 24        | 11,7%        |
| 4-5 ans                        | 14        | 6,8%         |
| 5 ans et plus                  | 20        | 9,8%         |

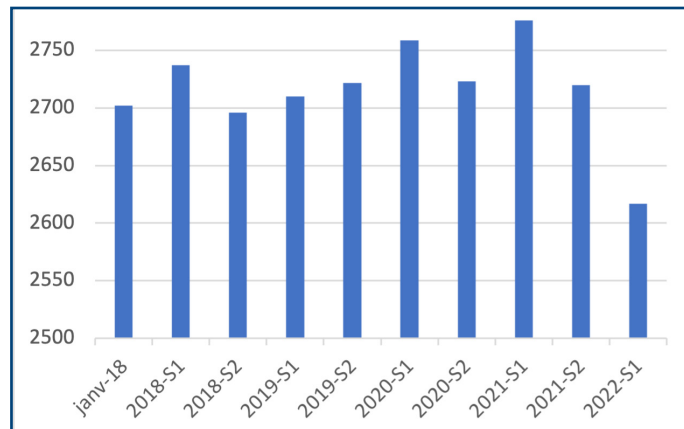
## II- PROFILES AND EVOLUTION OF PATIENTS TREATED WITH PD IN METROPOLITAN FRANCE FROM JANUARY 2018 TO JUNE 2022

We observe a relative stability in the number of new peritoneal dialysis patients until the first half of 2020 and, after a transitory increase at the beginning of 2021, the number of new patients starting PD decreases steadily, especially men until the first half of 2022. (figure 3).



↑ Figure 3. Half-yearly evolution of the incidence of new peritoneal dialysis patients in metropolitan France

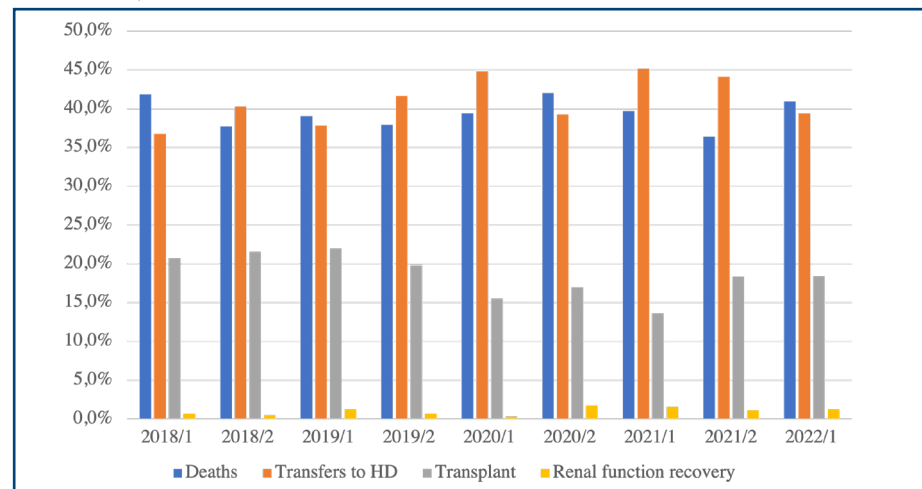
This is reflected by an identical evolution of the number of prevalent patients at the end of each semester (figure 4)



↑ Figure 4. Patients in treatment on the last day of each semester.

#### Evolution of PD dropouts and their reasons

Since the beginning of 2020, the trend observed is an increase in the number of transfers from peritoneal dialysis to hemodialysis in centers, associated with a decrease in transplantation (figure 5 et table VI, VII)



↑ Figure 5. Six-monthly trends in causes of peritoneal dialysis discontinuation. Percentages are calculated in relation to the total number of patients discharged from PD in each period

↓ Table VI. Six-monthly evolution of causes of peritoneal dialysis discontinuation. Percentages are calculated in relation to the total number of patients discharged from PD in each period.

| Semesters               | 2018/1         | 2018/2         | 2019/1         | 2019/2         | 2020/1         | 2020/2         | 2021/1         | 2021/2         | 2022/1         |
|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Deaths                  | 256<br>(41,8%) | 233<br>(37,7%) | 256<br>(39,0%) | 236<br>(37,9%) | 257<br>(39,4%) | 262<br>(42,0%) | 254<br>(39,7%) | 226<br>(36,4%) | 269<br>(40,9%) |
| Transfers to HD         | 225<br>(36,8%) | 249<br>(40,3%) | 248<br>(37,8%) | 259<br>(41,6%) | 292<br>(44,8%) | 245<br>(39,3%) | 289<br>(45,2%) | 274<br>(44,1%) | 259<br>(39,4%) |
| Kidney transplantation  | 127<br>(20,8%) | 133<br>(21,5%) | 144<br>(22,0%) | 123<br>(19,8%) | 101<br>(15,5%) | 106<br>(17,0%) | 87<br>(13,6%)  | 114<br>(18,4%) | 121<br>(18,4%) |
| Renal function recovery | 4<br>(0,7%)    | 3<br>(0,5%)    | 8<br>(1,2%)    | 4<br>(0,6%)    | 2<br>(0,3)     | 11<br>(1,8%)   | 10<br>(1,6%)   | 7<br>(1,1%)    | 8<br>(1,2%)    |

↓ *Table VII: Six-monthly evolution of the causes of transfers from PD to in-center HD. Percentages are calculated in relation to the total number of patients transferred to HD center in each period.*

| Semesters               | 2018/1 | 2018/2 | 2019/1 | 2019/2 | 2020/1 | 2020/2 | 2021/1 | 2021/2 | 2022/1 |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Inadequat dialysis      | 30,4%  | 35,3%  | 27,8%  | 29,7%  | 29,3%  | 29,5%  | 34,4%  | 29,5%  | 37,5%  |
| Peritonitis             | 13,8%  | 10,4%  | 12,1%  | 13,5%  | 13,9%  | 13,1%  | 8,5%   | 14,4%  | 17,4%  |
| Catheter problem        | 12,1%  | 7,2%   | 11,3%  | 11,2%  | 9,9%   | 9,2%   | 6,9%   | 10,5%  | 4,5%   |
| Loss of ultrafiltration | 9,4%   | 11,6%  | 11,7%  | 11,2%  | 9,5%   | 7,6%   | 8,5%   | 8,8%   | 7,6%   |
| Malnutrition            | 0,9%   | 1,2%   | 0,0%   | 1,9%   | 1,0%   | 2,0%   | 0,3%   | 0,7%   | 0,4%   |
| Other                   | 33,5%  | 34,1%  | 37,1%  | 32,4%  | 35,7%  | 34,3%  | 34,8%  | 31,6%  | 30,3%  |
| COVID                   | 0,0%   | 0,0%   | 0,0%   | 0,0%   | 0,7%   | 4,4%   | 6,6%   | 4,6%   | 2,3%   |

#### Evolution of the number of registrations on the transplant waiting list

2018: 372  
 2019: 381  
 2020: 325  
 2021: 310

#### Supposed causes of COVID-19 contamination

Only clinically symptomatic and proven COVID-19 infections were counted. Cases of COVID-19 infections diagnosed with a positive PCR test without clinical signs were not counted.

645 episodes of symptomatic COVID-19 were reported. 95 times, the cause was not recorded; in the remaining 553, COVID-19 patients were asked to indicate what they considered most likely to have caused the contamination. The suspected causes are summarized in the table below. In 34% of the cases, the patient did not know the probable source, but contamination by a family member and during a hospital stay for consultation or hospitalization came in first and second place (*Table VII*).

↓ *Table VII: Distribution of suspected causes of COVID-19 contamination when the item was recorded in the database (this item was not filled in exhaustively and should be interpreted with caution)*

| Source of contamination | Numbers | Percentages |
|-------------------------|---------|-------------|
| Unknown                 | 188     | 34,0%       |
| Family                  | 203     | 36,7%       |
| External Visitor        | 25      | 4,5%        |
| Nursing home            | 38      | 6,9%        |
| Hospitalization         | 83      | 15,0%       |
| Consultation            | 7       | 1,3%        |
| Work                    | 9       | 1,6%        |

#### SYNTHÈSE

These raw results show that, in metropolitan France, there has been no increase in the prescription of PD since the beginning of the SARS-Cov2 epidemic, contrary to what has been reported

or observed in other countries. In addition, there appears to be an increase in the number of transfers from PD to in-center hemodialysis with a high and increasing proportion of transfers for inadequate dialysis. There was also a slight decrease in the number of new registrations on the transplant waiting list.

### **Suggestions for future work**

*Upon request, anonymized exports of the RDPLF database can be made available to teams wishing to study the above figures in more detail or to use them as inspiration for future research. The Home Dialysis Bulletin would, should they wish it, allow them a quick publication if their work is accepted after critical peer review.*

- A national survey would be useful to identify the causes of this decrease in the incidence of PD during the period of theoretical risk of nosocomial contamination, whereas other countries have a different evolution..
- An identical study by region would also be necessary.
- The risk of contamination should also be differentiated according to autonomy and type of assistance.
- the high frequency of transfers due to inadequate dialysis should be analyzed by taking into account the association with the practice of empty peritoneal cavity periods, or the decrease in the number of dialysis exchanges or interruptions during the week.
- we preferred, for this report, in order to be nationally representative, to study only PD patients, as 99% of whom are included in the database. A similar study should be done for patients treated by home hemodialysis. Nevertheless, a preliminary Belgian study at the beginning of the COVID period seemed to also show a decrease in the number of patients starting a home hemodialysis treatment at the same period [8]. Non-medical organizational factors may explain these results. An opposite trend has been recently observed in United States [9]

### **ACKNOWLEDGEMENTS**

We thank all the nurses and nephrologist colleagues who participated in the RDPLF and who have undertaken the enormous work of updating the data in real time

### **STATEMENT OF INTEREST**

The authors declare that they have no conflict of interest in this work. They certify that they have rigorously respected the information recorded by the centers that participated in the RDPLF, without having practiced any selection or alteration of the data.

**Peer review:** This report was reviewed by two members of the editorial board but was not double-blinded read by external reviewers. The purpose of the report was to simply convey the information available in the database prior to any statistical analysis and to give readers the option of undertaking a more detailed study that could be more critically reviewed.

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