

Dronabinol use in France between 2004 and 2017

S. Lejczak, H. Rousselot, P. Di Patrizio, Marc Debouverie

► **To cite this version:**

S. Lejczak, H. Rousselot, P. Di Patrizio, Marc Debouverie. Dronabinol use in France between 2004 and 2017. *Revue Neurologique*, Elsevier Masson, 2019, 175 (5), pp.298-304. 10.1016/j.neurol.2018.07.011 . hal-02140005

HAL Id: hal-02140005

<https://hal.univ-lorraine.fr/hal-02140005>

Submitted on 22 Oct 2021

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers. L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Dronabinol use in France between 2004 and 2017

Sarah Lejczak^{a,b}, Hubert Rousselot^b, Paolo Di Patrizio^c, Marc Debouverie^{a,d}

^a Department of Neurology, Nancy university hospital, (CHRU) - Hôpital Central, 29 Avenue du Maréchal de Lattre de Tassigny CO n°34, 54035 NANCY CEDEX FRANCE

^b SSSPO (Service Interdisciplinaire de Soins de Support aux Patients en Oncologie), Institute of Oncology of Lorraine « Alexis Vautrin », 6 avenue de Bourgogne 54519 Vandoeuvre les Nancy Cedex

^c Department of General Practice at the University of Lorraine, 9 avenue de la Forêt de Haye BP 20199 54505 Vandoeuvre les Nancy Cedex

^d Université de Lorraine, EA 4360 Apemac, F-54000 Nancy, France.

Corresponding author: s.lejczak@chru-nancy.fr. Department of Neurology, CHRU de Nancy, Hôpital Central, 29 Avenue du Maréchal de Lattre de Tassigny CO n°34, 54035 NANCY CEDEX France.
Phone: 33 (0)3 83 85 22 56

Keywords: dronabinol – France – refractory pain – Multiple Sclerosis – Central neuropathic pain

Mot clés: dronabinol – France – douleur réfractaire – Sclérose en Plaques – douleur neuropathique centrale

Running title: Dronabinol use in France between 2004 and 2017

Résumé :

Objectifs : Analyser les résultats d'une enquête sur les prescripteurs et leurs patients traités par le dronabinol, un pur extrait de Delta-9-tetrahydrocannabinol, prescriptible en France depuis 2004.

Etude : enquête nationale sous forme de questionnaire, envoyée aux 43 centres prescripteurs de dronabinol répartis sur 17 régions métropolitaines entre juin et juillet 2017.

Principales mesures : analyse des prescripteurs ainsi que de leur lieu d'exercice (hôpital, clinique ou cabinet privé), leur spécialité et le profil de leurs patients. Les différentes maladies ou symptômes pour lesquels le dronabinol était utilisé ainsi que ses actions positives ou effets secondaires sont reportés.

Résultats : 26 réponses répartis sur 12 régions furent comptabilisées. Cela représente un total de 191 patients sur les 377 indexés depuis le 1er janvier 2006. 46 % des prescripteurs travaillent seuls. Le sex-ratio des patients est proche de 1. La moitié de ces patients souffraient de Sclérose En Plaques, 36.6 % d'une douleur neuropathique centrale d'étiologie autre,

8 % de douleurs neuropathiques périphériques, 2.9 % de maladie de Parkinson, et environ 1 % d'autres pathologies. La durée moyenne du traitement variait de 1 mois à 6 ans avec une posologie de 2.5 mg à 30 mg par jour (en une ou plusieurs prises).

59 % des patients ont déclaré avoir une réduction de leur douleur comprise entre 30 et 50 %.

Conclusion : cette enquête fait un premier état des lieux factuel sur le dronabinol en France, qui nécessiterait d'autres études afin d'être d'avantage utilisé dans de bonnes conditions. La place exacte de ce traitement mériterait d'être mieux définie.

Abstract

Objectives: To investigate prescription practices for dronabinol, a pure extract of delta-9-tetrahydrocannabinol, prescribed for refractory chronic pain in France since 2004.

Design: A descriptive study based on answers to a questionnaire sent to dronabinol prescribers throughout metropolitan France between June and July 2017.

Main outcomes measures: We assessed the type of prescribers including place of work (hospital, clinic or private practice) and their specialty. We also collected information about the patient profiles, diseases or symptoms initiating dronabinol prescription, its efficacy and side effects.

Results: We received completed questionnaires from 26 prescribers in 17 different areas throughout 12 regions. This represented a total of 191 patients of the 377 indexed since 1st January 2006: the sex ratio was 1:1, with an average age of 51 years for men and of 45 for women. The reason for dronabinol prescription was: multiple sclerosis (49.7%); central neuropathic pain from other causes (36.6%); peripheral neuropathic pain (8%); Parkinson's disease (2.9%); and other causes (around 1%). The duration of dronabinol treatment ranged from 1 month to 6 years and the dose from 2.5 mg to 30 mg per day (in one or several intakes). 59% of the patients declared experiencing a 30 to 50% reduction in pain.

Conclusion: This first investigation into dronabinol in France underlines the need to further investigate prescription practices and efficacy so as to define conditions of good use and the place of dronabinol in pain management.

1. Introduction

The cannabaceae family includes three varieties of cannabis – ruderalis, sativa and indica – which have been used for their textile and medicinal properties for 5000 years. *Cannabis sativa* (*C. sativa*) was used as early as 2737 BC for medicinal purposes in Asia. It then spread around the world through informal conditions until 1843 [1] when Sir William Brooke O’Shaughnessy published a paper about its potential therapeutic uses in the *Provincial Medical Journal* [2]. There followed a century of abuse due to its psychotropic effects and by 1961 185 countries considered *C. sativa* as an illicit drug. In parallel, several research teams worked on the medicinal properties of cannabis and the Food and Drugs Administration (FDA) approved a pure extract of Δ -9-tetrahydrocannabinol as a drug (dronabinol) in 1985 [3]. Dronabinol was first sold by Unimed Pharmaceuticals in the USA under the brand name Marinol® to reduce nausea and vomiting for cancer patients undergoing chemotherapy or for patients with the human immunodeficiency virus (HIV).

Since 1997, dronabinol has been used for several indications: to stimulate appetite for patients with HIV [4]; to reduce pain or spasticity especially in multiple sclerosis (MS) in the USA, Canada and other countries; and it is being tested for use in depression, Tourette’s syndrome, sleeping disorders, psychoses, anxiety or glaucoma. The latest GRADE (Grading of Recommendations Assessment, Development and Evaluation) international consensus for neuropathic pain treatment, stated that cannabinoids should not be used in first line [5] but should rather remain as an alternative second- or third-line treatment.

Today, three cannabinoid-based medicines, containing either natural or synthetic extracts, are available in different countries for various indications: two oral forms, nabilone and dronabinol, which have been on the market since 1982 and 1985, respectively; and one nasal spray, nabiximols, which was released in 2010.

The prescription of cannabinoid-based medicine falls under various regulations depending on the country. In North America, any medical doctor can prescribe cannabinoids after filling in a simple online form [6]. The Canadian health authorities have written an extensive document for doctors about prescription formalities, knowledge and information for patients about cannabinoid treatments [7]. In Europe, legislation is different for the 28 countries. The latest report of the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) which was published in 2017 [8], states that no European country officially allows the smoking of medical cannabis but 18 (Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, United Kingdom) have authorized dronabinol and/or nabiximols.

Cannabinoid-based medicines have been authorized in France since the publication of a decree in the Official French Journal in June 2013. However, although nabiximols received marketing authorization in January 2014 to reduce spasticity for patients with MS, it is still not available in 2018.

French legislation against drugs is one of the strictest in the world although, paradoxically, cannabis use in France is among the highest and several tons of cannabis are seized every year. On the other hand, no information is available about the medical use of cannabis and very little is known about official medication containing cannabis extracts [6].

Dronabinol has been prescribed in France since 2004 under a specific status known as Named Temporary Use Authorization (*Autorisation Temporaire d'Utilisation Nominative*: ATUn). This allows a named patient to receive the drug which is imported directly from the US and delivered in a hospital pharmacy. This option is available as a last-line treatment for refractory central neuropathic pain and can only be prescribed at a Pain Treatment and Study Center (CETD). There is no official information about dronabinol from the national health agency (*Haute Autorité de Santé* (HAS)) and doctors must do their own research to find specific documentation.

The National Agency for Medicines and Health Products Safety (*Agence Nationale de Sécurité du Médicament*: ANSM) approved the use of dronabinol based on three publications: two reporting clinical trials about neuropathic pain and the conclusion of the last international recommendations based on GRADE classification for neuropathic pain treatment. The first trial, published in 2014, demonstrated a significant reduction in central pain in 24 patients with MS who were treated by 10 mg of dronabinol for 3 weeks [9]. The difference between treatments in pain reduction from baseline was around 21%.

The other clinical trial was conducted in 2009 by BIONORICA [10] and included 124 patients with chronic central neuropathic pain and fibromyalgia treated with 7.5 mg of dronabinol for 7 months. No significant results were obtained and 25 % of patients presented side effects.

The purpose of this survey was to investigate dronabinol prescriptions in France since 2004 and to describe the prescriber and the patient profiles.

2. Materials and methods

2.1. Documentation

Documentation was obtained from the ANSM, which has indexed patients treated with dronabinol since its approval in France on 1st January 2006. This document comprises the latest national assessment and reports on 207 patients treated between 1st January 2014 and 31st December 2016. Each line refers to one patient and gives the prescribing area, the hospital pharmacy and the town. The ANSM also wrote a short letter stating that 377 patients had been treated since the beginning of the ATUn, i.e., between 1st January 2006 and 31st December 2016. During the last assessment, only 207 (54.9%) were still under treatment. To date, the ANSM has not shared any further information. They concluded that most prescribers report between 20 and 40 % of pain relief for their patients, improvement in spasticity and quality of life, and only a few side effects (sleepiness, nausea and vomiting) with a good safety profile.

Results of an unpublished investigation of dronabinol by the French pain society (*Société Française d'Évaluation et de Traitement de la Douleur* (SFETD)), from November 2015 were also obtained. This was the first survey about dronabinol knowledge and its use among SFETD members (1031 medical doctors and 13 pharmacists). They obtained answers from 113 (11 %), 25 of whom (22%) reported using dronabinol for 91 patients. This represents only 2.4 % of pain practitioners in France.

The first part of our study was an investigation to find who the prescribers were, their personal data, and to group them in the different French regions.

2.2 Questionnaire design

We designed a prescriber questionnaire consisting of three sections: the first section was about the prescriber him/herself (location in France, knowledge of medical cannabis and time of first prescription), the second about the patient as evaluated by the physician (diagnosis, symptoms, characteristics, previous pain medication and dronabinol side effects), and the third about the personal opinions of the dronabinol prescribers (their attitude about cannabinoid-based medicines and prescribing intentions). See Annex 1 for the translated version of the questionnaire.

2.2 Sample selection

The questionnaire was first emailed to the heads of 43 dronabinol prescribing centers (based on the ANSM records) in 41 towns (2 towns had 2 centers) in 17 regions of metropolitan France (77.3% of a total of 22 regions) between June and July 2017. It was sent a further two more times before closing the survey.

Every center was called to know prescriber identities. For the two private prescribers, hospital pharmacies were called. The prescribers were neurologists, anesthesiologists or general practitioners working in CETDs. In some centers, some prescribers worked alone but most had several prescribers (exact number is unknown). Five regions (Aquitaine, Lower Normandy (*Basse Normandie*), Limousin, Nord-Pas-de-Calais, Centre-Val-de-Loire) did not prescribe dronabinol in their CETDs. The ANSM did not share any information about the overseas regions (French Guiana, Guadeloupe, Martinique, Mayotte, Réunion), so we hypothesized that there were no dronabinol prescribers in those regions at all.

All the patients included were treated with dronabinol in France. Their characteristics were analyzed through questioning their prescriber.

2.3. Ethics

Only one investigator of this survey knew the name of the different prescribers. The survey was online, made by Redcap software on a secured server, managed by the Cancer Center of Lorraine, *Institut de Cancérologie de Lorraine*, and answers were anonymous.

2.4. Statistical analysis

The statistical analysis was performed in August 2017 using Excel software. This was a data collection aggregate.

3. Results

Twenty-six questionnaires were obtained from 17 of the 43 centers (39.5%), representing 34 towns (Figure 1) in 12 regions.

Six prescribers (23%) did not fill in the questionnaire correctly and the data was discarded. Among them, one was waiting to receive dronabinol from the USA.

3.1. Prescriber demographics

We were unable to identify which center responded if there were more than one prescriber responding from different centers in the same town or from different towns in a same region. (Tables 1 and 2)

Five of the 17 regions (29.4%) are not represented in our survey as no centers answered (Upper Normandy, Auvergne, Brittany, Pays de la Loire, Picardy). These five non-responding regions represented seven centers and 21 out of the 207 patients (10.1%) treated with dronabinol between January 2014 and December 2016 (data from the ANSM).

3.2. Prescribers' characteristics

Twelve of the prescribers (46%) worked alone in their area. Eighteen prescribers (69%) were members of the SFETD and 11 (42%) of them had participated in the SFETD survey in November 2015. Eleven (42%) knew about dronabinol through their own research on scientific publications, and nearly half (n=12, 46%) had found information in specific journals.

Only one physician had started prescribing dronabinol before 2010, ten (40%) started between 2010 and 2014, and 14 (56%) after 2014.

Eighteen prescribers (69%) had a specific qualification in chronic pain treatment and six (23%) did not. (Table 3)

In terms of the prescribers' attitude, all 24 (96%) who answered this part of the survey, wanted other cannabinoid-based drugs to be available in France. Twenty-three (92%) stated they would continue their prescription of dronabinol, 18 (72%) would like to increase their prescriptions and only four (16%) wanted to decrease prescriptions (Table, 4, 5 and 6).

3.3. Patient characteristics

Of the 377 patients indexed by the ANSM since 2004, 191 (50.6%) were included in our survey. Among these, only 90 (47.1%) were still under dronabinol treatment in 2017.

Among the 12 regions that responded to our survey, the ANSM data recorded 186 patients between January 2014 and December 2016. Our survey captured data from 90 of these (48.4%) from the prescribers themselves.

Some data were missing. For example, in the Provence-Alpes-Côte-d'Azur region there were six centers in six different towns treating 33 patients (Tables 1 and 2). However, only one prescriber returned a completed questionnaire and had only prescribed dronabinol for one patient. Therefore, 32 patients were missing from the five other centers according to the ANSM data. This explains the differences between the theoretical number of patients and our data.

Three regions (Lorraine, Poitou-Charentes and Alsace) provided information about their whole patient cohort as the number reported in our survey was the same as in the ANSM report. One patient in Burgundy stopped treatment between 2004 and 2017 out of a total of 13 patients and three prescribers.

Half of the patients (50.3%) in our survey were male and the average age was 51 years for males, and 45 for females.

The main reported diagnosis was MS (n=87, 49.7%), followed by central neuropathic pain from other causes (stroke) (n=64, 36.6%), peripheral neuropathic pain (diabetes, genetic disease) (n=14.8%), Parkinson's disease (n=5, 2.9%), member amputation (n=2, 1.1%), neuralgia (n=2, 1.1%) and cancer (n=1, 0.6%).

Central neuropathic pain was the main patient symptom (n=170, 81.7%), then spasticity (n=20, 9.6%) and peripheral neuropathic pain (n=16, 7.7 %). Two patients suffered from different symptoms but no further details were provided. (Table 3)

The duration of dronabinol intake ranged from 1 month to 6 years at a dose of 2.5 mg to 30 mg per day for the 191 patients included in our survey. The mean duration or dose for each patient is unknown. Initial prescription doses ranged from 2.5 mg once a day to 2.5 mg three times per day.

Before being treated with dronabinol, most of the patients had tried antiepileptic medication (gabapentine, pregabalin, clonazepam, carbamazepine) (n=140, 73.3%) or a tricyclic antidepressant (amitriptyline, clomipramine) (n=137, 71.7%). Twenty-eight (14.7 %) had also been treated with ketamine. (Table 4)

One prescriber, managing three patients, did not respond to the pain relief part of the questionnaire. Out of the remaining 188 for whom we had pain relief data, 111 (59%) reported improvement in pain relief between 30 and 50%, 41 (22%) more than 50%, and 36 (19%) less than 30%. Improvement in pain relief was evaluated by the physicians either clinically or with a specific scale. The time between treatment initiation and experiencing pain relief was unknown.

Information about side effects was obtained for 148 patients by 23 of the 25 prescribers. Eight prescribers (34.8%) reported nausea, dry mouth, sleepiness, and dizziness in 26 patients. One patient presented an excited delirium. Fifteen of the 23 prescribers (65.2%) reported that their patients had no side effects, which represented 122 patients (82.4% of the 148 patients included in this part).

The main reported reason for stopping dronabinol was the lack of effectiveness.

Twelve prescribers (48%) used the Neuropathic Pain Symptom Inventory (NPSI) to follow their patients' pain relief with an objective score, three (12%) the Brief Pain Inventory and the others

(n=10, 40%) used the Visual Analog Scale or the Douleur Neuropathique 4 questionnaire (DN4). (Table 5)

4. Discussion

Dronabinol is the only available cannabinoid-based medication in France. It can be prescribed in the context of a special authorization to treat chronic refractory pain as last-intention treatment. According to the ANSM database, 377 patients have been treated with dronabinol since its authorization in 2006, and in the latest assessment (December 2016) only 207 were still on dronabinol treatment in 17 French metropolitan regions (54.9%). Our survey reports 191 patients treated by dronabinol since 2006 with 90 still on the treatment in 2017. This represents 43.5% of patients of the ANSM cohort.

Our survey shows that 152 patients (81% of the 188) experienced more than 30% pain relief which is higher than that reported in the literature. The ANSM concluded that most prescribers report a mean pain relief of between 20 and 40% for their patients as well as an improvement in spasticity and quality of life, and few side effects (sleepiness, nausea and vomiting) with a good safety profile. In contrast, no significant results were obtained in the 2009 BIONORICA trial [10].

The most common side effects we found in our survey were nausea, dry mouth, sleepiness, and dizziness (with one case of excited delirium) affecting approximately 20% of the patients. These reported side effects are similar to those in the literature including the BINORICA trial in which 25% of the patients (31 of the 124) presented side effects with 7.5 mg of dronabinol over 7 months.

The ANSM database does not provide any information about the patients' symptoms or pathology. In our cohort, around half of the patients were suffering from MS (49.7%) and a third (36.6%) had central neuropathic pain from other causes. Only one patient had cancer. While improvement in the pain symptom was shown, our survey was not designed to associate this with improvement in the pathology. According to the literature, the 2004 trial of 24 patients with MS [9], found a pain reduction of 21% compared to baseline after 3 weeks of treatment with 10 mg of dronabinol.

In our survey, the duration of dronabinol intake ranged from 1 month to 6 years with a daily dose of 2.5 mg up to 30 mg and an initial prescription dose of 2.5 mg once a day up to 2.5 mg three times per day. To the best of our knowledge, no other study has reported on patients treated with dronabinol for more than a year.

Another indication for dronabinol is appetite stimulation with clinical trials showing a significant benefit for patients taking 10 mg of an oral form of tetrahydrocannabinol [11].

In France, dronabinol prescription is limited to the treatment of chronic pain but it could be of therapeutic value in other indications, such as for the side effects of chemotherapy in cancer patients. Only one patient in our survey had cancer and although dronabinol was officially prescribed for pain in this case, it can also relieve nausea and stimulate appetite. Thus, oncologists could be interested in receiving more information about this class of drug.

In spite of the effectiveness of dronabinol for the treatment of pain and its good safety profile, it can only be prescribed under special authorization in France for chronic refractory pain. All the physicians in our survey left a comment about the difficulty to obtain authorization to prescribe dronabinol. At the end of 2017, the ANSM further restricted the indication to “refractory central neuropathic pain” and became even more reluctant to grant authorization. Some applications for prescription have been refused even for patients with spinal injury, which is a part of the central nervous system.

The situation in France is baffling and in contrast to other countries. For example, between 2004 and 2013, 23 states in the USA legalized the medical use of cannabis. Interestingly, in those same states, mortality from non-voluntary opioid analgesic overdose [12] decreased on average by 24.8% from 1999 to 2010. The worrying trend of an increase in the number of deaths by opioid analgesic overdose has also been observed in France for a few years. Cannabinoid-based medicines could be an alternative to strong opioids for specific conditions and should arguably benefit from more lenient authorization with correct prescriber and patient information.

Overall, the prescribers who participated in our survey wanted to continue prescribing dronabinol and were interested in the use of other cannabinoid-based medications. For several prescribers from different centers in the same town or from different towns in a same region the answering center could not be determine. The practitioners were too widely dispersed, in a way not representative of the majority.

This investigation survey was complete in a retrospective way. Some data were missing due to prescriber memory bias. Further investigation with a different questionnaire could be interesting.

5. Conclusion

This survey, the first factual assessment about dronabinol use in France, highlights the difficulty of obtaining information from the French authorities and from prescribers as well as the need for more accurate information and studies to be able to treat more patients under good conditions.

Although cannabis legalization remains a big societal debate in France, cannabinoid-based medication represents an alternative and much needed solution to treat specific situations such as chronic pain, nausea and appetite loss.

Further studies are required in this field as well as correct and accurate information to inform physicians, including primary-care practitioners, and patients about the medical use of such drugs.

Acknowledgement

We thank the ANSM and the SFETD for sharing their information and all physicians who participated to this survey.

Figure 1: Prescriptions rates of dronabinol per town in France between January 2014 and December 2016 (data from ANSM)

Table 1: Distribution of dronabinol centers, prescribers and patients in France in 2017

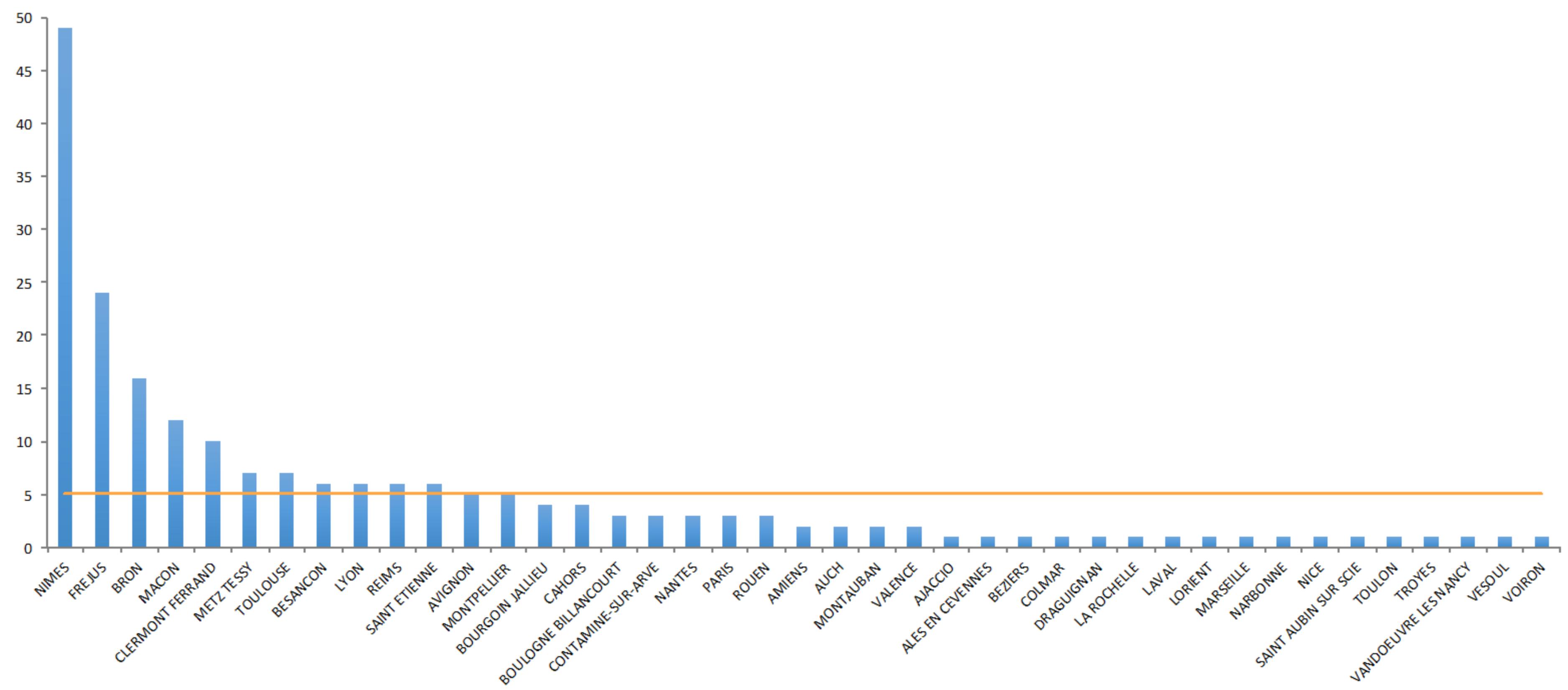
Table 2: Distribution of dronabinol centers, prescribers and patients in 2017. Centers in France that did not respond to survey.

Table 3: Characteristics of dronabinol prescribers

Table 4: Patient characteristics

Table 5: Pain drugs used before dronabinol

Table 6: Patient evaluation scales and prescribing intentions



NUMBER OF TOWNS PER REGION	NUMBER OF PRESCRIBERS PER REGION: DATA FROM SURVEY	PERCENTAGE	NUMBER OF TOWNS PER REGION	NUMBER OF PATIENTS PER REGION TREATED SINCE 2004: DATA FROM SURVEY	NUMBER OF PATIENTS PER REGION STILL TREATED IN 2017: DATA FROM SURVEY	NUMBER OF PATIENTS PER REGION TREATED JANUARY 2014 TO DECEMBER 2016 DATA FROM ANSM (total of 207 patients)
Bourgogne 1	3	12	Bourgogne 1	13	12	12
Champagne-Ardenne 2	2	8	Champagne-Ardenne 2	6	1	7
Languedoc-Roussillon 6	4	15	Languedoc-Roussillon 6	85	27	64
Corsica (Corse) 1	1	4	Corsica (Corse) 1	6	1	1
Lorraine 1	1	4	Lorraine 1	1	1	1
Rhône-Alpes 8	6	23	Rhône-Alpes 8	55	37	45
Midi-Pyrénées 3	2	8	Midi-Pyrénées	13	7	8
Franche-Comté 2	3	12	Franche-Comté 2	8	1	7
Provence-Alpes-Côte-d'Azur 6	1	4	Provence-Alpes-Côte-d'Azur 6	1	1	33
Poitou-Charentes 1	1	4	Poitou-Charentes 1	1	1	1
Alsace 1	1	4	Alsace 1	1	1	1
Ile-de-France 2	1	4	Ile-de-France 2	1	0	6
TOTAL 34	26	100	TOTAL 34	191	90	186

NUMBER OF TOWNS PER REGION	NUMBER OF PATIENTS PER REGION TREATED SINCE 2004: DATA FROM SURVEY	NUMBER OF PATIENTS PER REGION STILL TREATED IN 2017: DATA FROM SURVEY	NUMBER OF PATIENTS PER REGION TREATED JANUARY 2014 TO DECEMBER 2016 DATA FROM ANSM (total of 207 patients)
Haute Normandie 2	UNKNOWN	UNKNOWN	4
Auvergne 1	UNKNOWN	UNKNOWN	10
Bretagne 1	UNKNOWN	UNKNOWN	1
Pays de la Loire 2	UNKNOWN	UNKNOWN	4
Picardie 1	UNKNOWN	UNKNOWN	2
TOTAL 7	UNKNOWN	UNKNOWN	21

SPECIFIC PAIN DIPLOMA	NUMBER OF PRESCRIBERS	PERCENTAGE
QUALIFICATION (pain practitioner)	18	69
UNIVERSITY DEGREE (DU)	1	4
COMPLEMENTARY UNIVERSITY DIPLOMA (DESC)	1	4
NONE	6	23
TOTAL	26	100
PRESCRIPTION INITIATION	NUMBER OF PRESCRIBERS	PERCENTAGE
BEFORE 2010	1	4
BETWEEN 2010 AND 2013	10	40
SINCE 2014	14	56
TOTAL	25	100

SYMPTOM	NUMBER OF PATIENTS	PERCENTAGE
Central neuropathic pain	170	81.7
Peripheral neuropathic pain	16	7.7
Mechanical back pain	1	0.5
Spasticity	20	9.6
Multiple pain syndrome	1	0.5
TOTAL	208	100
DISEASE	NUMBER OF PATIENTS	PERCENTAGE
Cancer	1	0.6
Multiple Sclerosis	87	49.7
Central neuropathic pain (stroke)	64	36.6
Parkinson's disease	5	2.9
Peripheral neuropathic pain (diabetes, genetic disease)	14	8.0
Amputation	2	1.1
Fibromyalgia	0	0.0
Mechanical back pain	0	0.0
Mechanical back pain post surgery	0	0.0
Neuralgia	2	1.1
Complex Regional Pain Syndrome	0	0.0
TOTAL	175	100

PAIN KILLER USED BEFORE MARINOL ®	NUMBER OF PATIENTS	PERCENTAGE (total of 191 patients)
Weak opioids (codeine, tramadol or opium)	112	58.6
Strong opioids (morphine, oxycodone)	67	35.1
Tricyclic antidepressant (amitriptyline, clomipramine)	137	71.7
Antiepileptic drugs gabapentin, pregabalin, clonazepam, carbamazepine	140	73.3
Local pain killer lidocaine or capsaicin	39	20.4
Spasticity reduction (baclofen)	76	39.8
Other: ketamine	28	14.7

SCALE USED TO EVALUATE PAIN	NUMBER OF PRESCRIBERS	PERCENTAGE
BPI (Brief Pain Inventory)	3	12
NPSI (Neuropathic Pain Symptom Inventory)	12	48
OTHERS (interrogation, Visual Analog Scale, <i>DN4: neuropathic pain</i>)	10	40
TOTAL	25	100
DRONABINOL PRESCRIBING INTENTIONS	NUMBER OF PRESCRIBERS	PERCENTAGE OF 25 PRESCRIBERS
INCREASE PRESCRIPTIONS	18	72
DECREASE PRESCRIPTIONS	4	16
CONTINUE PRESCRIPTIONS	23	92
WOULD LIKE MORE CANABINOID- BASED TREATMENTS AVAILABLE	24	96