



Consumption of prescription opioids in Belgium (2006-2017)

Elien De Mooter, scientific assistant MEID
Hans Willems, pharmacist inspector MEID

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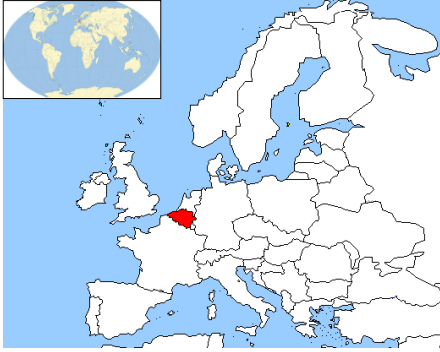


I. INTRODUCTION

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I. 1. Situation in Belgium



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I. 1. Situation in Belgium

+ 11.358.357 Belgian citizens (01/01/2018)

+ Mandatory health and disability insurance

+ Expenses (2016):

- ◆ Global Health care expenses: ± \$ 29,2 billion
- ◆ Pharmaceutical products: ± \$ 5 billion

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I. 1. Situation in Belgium

+ National Institute for Health and Disability Insurance

- ◆ NIHDI
- ◆ Organizes the health and disability insurances at a national level

+ NIHDI's Medical evaluation and inspection department

- ◆ MEID
- ◆ 227 employees
- ◆ Missions: safeguarding the optimal use of funds
 - controle of health care providers
 - analysis of invoice data

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I. 1. Situation in Belgium

Pharmaceutical products in Belgium:

- ❖ only available in pharmacy
 - ± 5.000 community pharmacies
- ❖ for most drugs a prescription by a physician is needed
 - all opioids are prescription drugs
 - no OTC opioids, codeine needs prescription too
- ❖ no medication refill system
 - new prescription is needed for every dispensing of a prescription drug





I. 2. Origine database

Database of all reimbursed pharmaceutical products distributed by all community pharmacies in Belgium

- ❖ complete data from the entire country !
 - no sample
- ❖ unique database (worldwide)
- ❖ accurate data

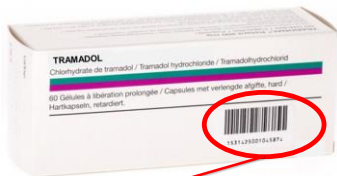
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I. 2. Origine database

Accurate data

- ❖ How can we be so sure?



Unique barcode (UBC)
On every reimbursed pharmaceutical product available in Belgium

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I. 2. Origine database

+ Accurate data

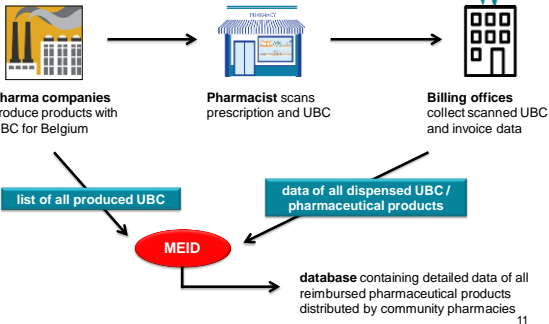
- ❖ Unique barcode (UBC)
 - Belgian system
 - Since 2005
 - Purpose:
 - ✓ fraud detection
 - ✓ monitoring of dispensed pharmaceutical products
 - European system is currently under development



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I. 2. Origine database



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I. 3. Analyzed opioids

+ MEID: 5 opioids analyzed

ATC code	Substance name
N02A-X02/J13	tramadol (+ paracetamol)
N02A-A05/A55	oxycodone (+ naloxone)
N02A-B03	fentanyl (patches)
N02A-C03	piritramide
N02A-X01	tilidine

- ❖ extra: codeine + paracetamol (N02A-J06)
 - not reimbursed
 - no OTC allowed (only on prescription)

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ATC= Anatomical Therapeutic Chemical Classification System



I. 3. Analyzed opioids

+ ATC → DDD: Defined Daily Dose (Definitie WHO)

"The DDD is the assumed average maintenance dose per day for a drug used for its main indication in adults (70kg/154lbs)"

Substance name	DDD	administration
tramadol	300 mg	oral / parental
tramadol (+ paracetamol)	150 mg	oral
oxycodone	75 mg	oral
fentanyl (patches)	1,2 mg	transdermal
piritramide	45 mg	parenteral
tildine	200 mg	oral
codeine (+ paracetamol)	90 mg	oral

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II. Consumption of opioids in Belgium

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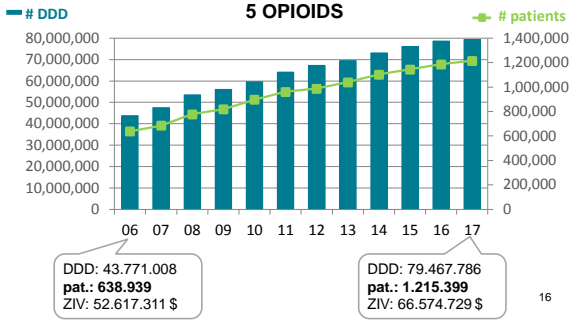
II. Consumption of analyzed opioids in Belgium

1. Evolution of consumption 5 opioids: 2006-2017
2. High and chronic consumption (2017)
3. Top 20 consumers
4. Case studies

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II. 1. Evolution of consumption 5 opioids: 2006-2017



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II. 1. Evolution of consumption 5 opioids: 2006-2017

- 1,215,399 patients collected at least once a prescription of an opioid in a community pharmacy in 2017
- ± 10 % Belgian citizens

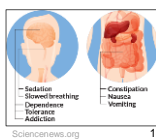
	# patients
tramadol	1.004.667
fentanyl	72.097
tilidine	59.390
oxycodone	77.874
pirtramide	1.371

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II. 2. High and chronic consumption (2017)

- Analysis of HIGH and CHRONIC use of opioids
 - side effects: tolerance, dependence
 - hyperalgesia



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II. 2. High and chronic consumption (2017)

+ Classification of high and chronic consumers (MEID):

- ◆ > 365 DDD on **annual** basis (2017)
 - theoretically: avg. 1 DDD / day
- ◆ > 730 DDD on **annual** basis (2017)
 - theoretically: avg. 2 DDD / day

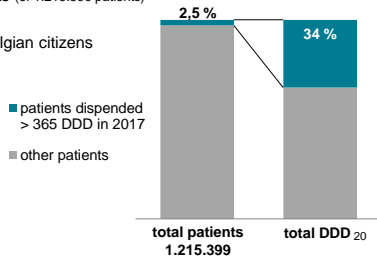
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II. 2. High and chronic consumption (2017)

+ Consumption >365 DDD (2017)

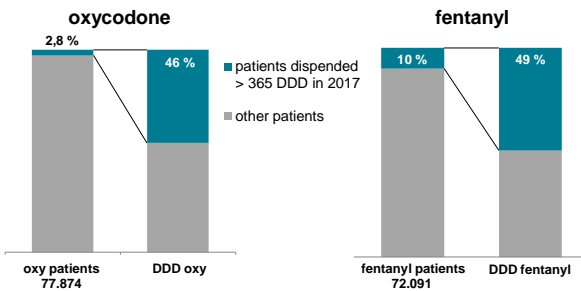
- ◆ **30.525** patients (of 1.215.399 patients)
- ◆ ± 3 / 1.000 Belgian citizens





II. 2. High and chronic consumption (2017)

+ Consumption >365 DDD (2017)

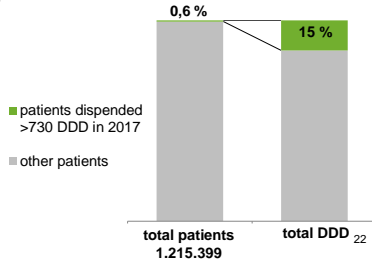




II. 2. High and chronic consumption (2017)

Consumption > 730 DDD (2017)

7.266 patients





II. 2. High and chronic consumption (2017)

High chronic consumption of opioids is increasing

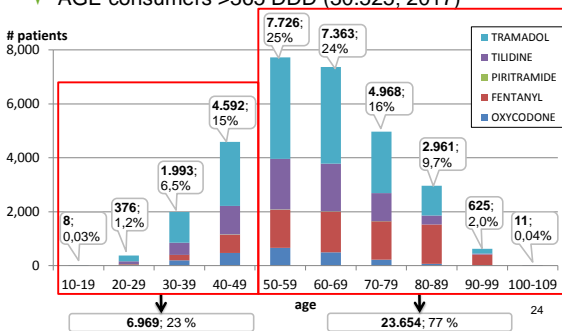
# patients	2010	2017	% increase
Total (5 opioids)	898.367 →	1.215.399	35 %
Consumption > 365 DDD	23.750 →	30.525	29 %
Consumption > 730 DDD	5.956 →	7.266	22 %

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II. 2. High and chronic consumption (2017)

AGE consumers >365 DDD (30.525; 2017)



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II. 3. Top 20 consumers

+ Inspections on 'high and chronic consumption':

- ✦ maintenance of addiction
- ✦ falsified prescriptions
- ✦ medical shopping (= doctor and pharmacy shopping)
- ✦ quality of pain therapy:
 - monitoring dosage (reduction)
 - rotation opioids
 - adjuvants
 - psychoactive medication
 - alternative therapy

} education

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II. 3. Top 20 consumers

+ TOP 20 consumers in 2017 per opioid

- ✦ year of birth (YOB.)
- ✦ history of consumption opioids until 2017 (DDD)
- ✦ medical shopping indicator
 - # prescribers + proportion of main prescriber (> 70 %)
 - # pharmacies + proportion of main dispenser (> 70 %)

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II. 3. Top 20 consumers

FENTANYL patches (N02AB03): invoiced quantity !

YOB.	Evolution invoiced DDD fentanyl							2017				
	'09	'10	'11	'12	'13	'14	'15	'16	invoiced DDD	# MD	# 1 MD: >70% ps	# 1 pharm >70% ps
1 1975								2.100	38.255	7	✓	50
2 1961	10.395	15.680	18.340	18.060	23.940	31.790	30.660	33.180	30.520	3	✓	1
3 1952									23.940	3	✓	24
4 1980							3.220	15.632	20.440	16	✓	13
5 1979	3.359	2.800	7.315	8.691	7.000	12.145	18.445	20.650	20.370	3	✓	1
6 1967		158	3.010	5.740	6.405	8.960	10.675	14.700	17.872	1	✓	8
7 1969	3.378	4.200	4.200	10.476	11.148	14.350	13.580	14.630	17.080	3	✓	4
8 1988					3.547	10.623	11.437	12.861	17.025	2	✓	5
9 1969	6.300	4.760	7.665	3.220	10.028	9.008	15.313	16.048	16.905	3	✓	4
10 1974					185	2.672	6.294	11.705	16.762	5	✓	2
11 1990									15.925	3	✓	30
12 1959	3.790	4.445	9.472	11.340	12.880	15.400	15.120	15.120	15.820	2	✓	2
13 1955	16.660	16.670	14.735	19.145	17.500	14.105	18.305	15.435	15.365	2	✓	4
14 1962							158	4.043	14.280	3	✓	1
15 1965	1.960	1.260	1.260	1.750	3.290	4.270	4.480	6.365	14.033	6	✓	4
16 1977							676	6.198	13.090	1	✓	1
17 1958	7.980	10.920	10.780	5.110	5.880	7.140	11.830	15.680	12.880	7	✓	9
18 1958								11.060	12.740	10	✓	9
19 1962	11.638	8.820	9.590	10.220	11.550	11.550	13.650	12.600	12.600	1	✓	1
20 1972				201	525	2.905	6.335	11.060	12.460	2	✓	3



II. 3. Top 20 consumers

TRAMADOL (N02AX02/J13)

YOB.	Evolution invoiced DDD oxycodone						2017						
	'10	'11	'12	'13	'14	'15	Invoiced DDD	# MD	1 MD: >70% ps	# pharm	1 pharm >70% ps	% X02	% J13 combi
1 1985						86	8.575	18		83		100%	
2 1961	3.550	15			650	3.445	5.466	7.340	82		85		100%
3 1984		17	137	1.533	4.087	2.033	3.186	5.430	3	✓	25		100%
4 1982	10	1.213	1.087	1.336	2.353	2.517	3.763	5.187	9		34		100%
5 1964	1.128	1.667	2.860	3.200	4.453	4.798	4.908	4.960	9		11		100%
6 1957	5.337	5.020	4.618	4.693	3.730	4.458	4.735	4.783	4	✓	3		100%
7 1974						503	4.415	7		4	✓	5	65%
8 1971	985	1.870	3.975	3.200	1.323	975	4.445	4.415	7		4		35%
9 1968	2.500	1.633	2.003	2.550	3.333	3.837	3.950	4.367	4		20		100%
10 1969	910	1.073	2.750	3.871	3.843	5.480	5.120	4.360	1	✓	5	✓	100%
11 1984	225	230	665	930	2.462	2.963	4.320	3.967	6		9		100%
12 1977	5		15	673	1.853	3.730	3.213	3.848	11		18		3%
13 1973	455	590		215	1.325	15	4.025	3.765	2	✓	62		97%
14 1949	1.943	2.603	2.710	3.235	3.273	2.900	3.243	3.670	2		8		100%
15 1959	3.828	2.828	3.083	3.415	3.880	1.887	3.088	3.465	12	✓	26		100%
16 1973	2.735	3.700	3.530	3.565	3.320	3.440	3.470	3.435	3	✓	57		100%
17 1967	3.172	3.353	3.398	3.317	2.553	3.183	3.318	3.372	18		27		92%
18 1980		75		10	80	443	1.073	3.360	3		4		8%
19 1968		1.270		543	1.103	1.947	2.677	3.263	1	✓	8		100%
20 1983	2.717	3.387	3.187	2.843	3.383	3.167	2.700	3.250	3	✓	8		100%



II. 3. Top 20 consumers

OXYCODONE (N02AA05 + 55)

YOB.	Evolution invoiced DDD oxycodone						2017						
	'09	'10	'11	'12	'13	'14	'15	'16	Invoiced DDD	# MD	1 MD: >70% ps	# pharm	1 pharm >70% ps
1 1971	1.560	3.992	4.928	7.936	10.272	10.112	8.704	11.008	12.352	1	✓	1	✓
2 1987							777	4.271	9.501	2	✓	3	✓
3 1974					97	1.148	4.513	4.342	9.305	3	✓	4	✓
4 1971							584	1.634	6.432	3	✓	1	✓
5 1981			76	661	1.376	1.550	2.856	3.784	6.208	2	✓	2	✓
6 1978						7	4	71	5.893	8	✓	5	✓
7 1971		4	704	1.248	1.203	3.284	5.408	7.056	5.712	7	✓	3	✓
8 1963			27	241	2.111	2.743	4.480	7.414	5.367	2	✓	6	✓
9 1970							504	4.990	4.962	5	✓	3	✓
10 1971						1.552	2.488	840	4.912	2	✓	7	✓
11 1970							900	3.323	4.717	12	✓	4	✓
12 1968					736	3.236	2.784	3.616	4.264	4	✓	2	✓
13 1945	1.280	1.216	1.184	1.156	1.472	1.696	2.512	3.040	4.480	4	✓	1	✓
14 1948	96	224	400	416	384	448	934	3.537	4.373	1	✓	1	✓
15 1986		142	777	926	1.378	2.651	1.594	3.306	4.133	3	✓	2	✓
16 1982				120	120	606	938	4.305	3.932	8	✓	18	✓
17 1968			264	487	1.021	1.580	1.896	3.144	3.863	11	✓	3	✓
18 1964				9	133	752	910	1.495	3.794	7	✓	16	✓
19 1967						1.295	2.990	3.085	3.623	3	✓	3	✓
20 1958	76	1.016	1.104	2.208	2.688	2.896	2.992	3.264	3.552	3	✓	1	✓



II. 3. Top 20 consumers

+ Codeine + paracetamol

YOB.	Evolution invoiced DDD codeine						2017						
	'10	'11	'12	'13	'14	'15	'16	Invoiced DDD	# MD	1 MD: >70% ps	# pharm	1 pharm >70% ps	
1 1964	75	11	11			1.976	3.241	4.140	4.250	6		5	
2 1957	384	523	1.045	1.184	1.589	3.104	2.293	4.157	1	✓	20		
3 1982	1.952	1.621	2.496	4.779	4.085	4.533	1.685	3.987	2	✓	1	✓	
4 1962	21							1.817	2.660	2.980	3.570	1	✓
5 1970				220	3.303	4.120	3.990	3.400	1	✓	13		

◇ DDD paracetamol in this combined product = 1,5 g

◇ topconsumer (1964):

➢ 425 packages codeine + paracetamol tablets (30) in 2017

➢ Daily consumption

✓ Intake of 34 tablets

✓ 17,5 g paracetamol

✓ 1,05 g codeine



II. 4. Case studies

Fentanyl case

- ❖ MD prescribes 'out of habit'
- ❖ MD prescribes more than realized
- ❖ pt uses >>> intended dose
- ➔ Remain actively aware of the amount you are prescribing

Oxycodone case

- ❖ follow-up by pain center
 - patient lies about amount
- ❖ MD prescribes large quantities
 - ignores advice pain center
- ❖ pain center unaware that reported dose <<< taken dose
- ➔ Need for consultable patient medication profiles

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II. 4. Case studies – fentanyl

➔ Case study fentanyl

YOB.	Evolution invoiced DDD fentanyl							2017					
	'09	'10	'11	'12	'13	'14	'15	'16	Invoiced DDD	# MD	1 MD: >70% ps	# pharm	1 pharm >70% ps
1962	11.638	8.820	9.590	10.220	11.550	11.550	13.650	12.600	12.600	2	✓	1	

- ❖ topconsumer
- ❖ idiopathic pancreatitis
- ❖ incapacitated
 - no falsified prescriptions
 - no medical shopping
 - quality of therapy ?

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II. 4. Case studies – fentanyl

➔ Medical history patient:

- ❖ 2004: diagnosis of idiopathic pancreatitis, stent placed in ductus of Wirsung
- ❖ 2004 - 2006: stent regulary causes problems
 - analgesic drugs:
 - paracetamol,
 - fentanyl 75 µg/h,
 - morfine Direct 30 mg if needed every 4h,
 - pethidine IV if needed.
- ❖ 2006: hospitalization for pain, new stent placed
 - consult at pain clinic: detoxification of opioids recommended

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II. 4. Case studies – fentanyl

- ❖ October 2008: hospitalization
 - post-meal pain
 - discharge medication:
 - fentanyl 125 µg/h every 2 days,
 - tramadol retard 200 mg, 2x1/day,
 - alprazolam

- ❖ 2011: hernia surgery
- ❖ 2012: second hernia surgery
- ❖ 2013: spinal fluid leak

- ❖ 2015: diabetes with diabetic polyneuropathy

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II. 4. Case studies – fentanyl

- ❖ 2004 – 2017: ductal stent replaced several times, permanent problems

- ❖ 2017: hospitalization for pain relief and follow-up
 - discharge medication:
 - ✓ fentanyl (patch 100 µg/h), 1 patch every 2 days
 - ✓ fentanyl (patch 50 µg/h), 1 patch every 2 days
 - ✓ trazodon, 100 mg, 1/d,
 - ✓ escitalopram, 10 mg, 1/d,
 - ✓ metformine, 850 mg, 2/d,
 - ✓ gabapentine, 300 mg, 2/d
 - ✓ lormetazepam, 2 mg, 1/d
 - ✓ alprazolam, 1 mg, 1/d,

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II. 4. Case studies – fentanyl

- ✦ MEID inspectors interviewed MD in 2017
 - ❖ hospital report 2017:
 - fentanyl (patch 100 µg/h), 1 patch every 2 days
 - fentanyl (patch 50 µg/h), 1 patch every 2 days

 - ❖ prescribing profile MD (database):
 - fentanyl (patch 100 µg/h), 3,28 patch every 2 days
 - fentanyl (patch 50 µg/h), 3,28 patch every 2 days

 - ❖ consumption higher than intended dosage
 - explanation MD:
 - ✓ patient complains of itching, the patches come off quickly
 - ✓ MD treated patient for several years (→ routine)

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II. 4. Case studies – fentanyl

✦ Conclusions patient case

- ✦ no referral to a pain center (after 1st consult 2006)
- ✦ no reduction of fentanyl patches, no opioid rotation
- ✦ consumption by patient 3x as high as intended dosage

- ➔ Remain aware of the amount you are prescribing!
- ➔ Need for frequent follow-up in pain center

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II. 4. Case studies - oxycodone

✦ Case study oxycodone

YOB.	Evolution invoiced DDD oxycodone					2017						
	'12	'13	'14	'15	'16	Invoiced DDD	# MD	1 MD: >70% ps	# pharm	1 pharm >70% ps	% IR	% MR
1963	7	79	1.655	3.619	3.257	2.511	9	✓	13		96 %	4 %

- ✦ 2015:
 - collected 519 packages oxycodone
 - ± 40 tablets per day
- ✦ no falsified prescriptions
- ✦ 1 MD prescribes 95 %

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II. 4. Case studies - oxycodone

✦ Medical history patient

- ✦ '90: 2 car accidents: chronic leg pains, chronic neuropathic ankle pains bilaterally
- ✦ chronic pancreatitis
- ✦ alcohol abuse
- ✦ years of abuse: fentanyl, piritramide, morphine MR ...
- ✦ 2008: epileptic seizures due to too rapid decreasing opioids

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II. 4. Case studies - oxycodone

- ❖ 2008 – 04/2014: the pain clinic tried several therapies:
 - lidocaine infusions (on regular intervals)
 - pregabalin
 - gabapentin
 - fenytoine
 - tramadol
 - TENS
 - invasive pain therapies (infiltrations)
 - oxycodone

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II. 4. Case studies - oxycodone

- ❖ entire period follow-up by pain centers:
 - stated amount of oxycodone to pain clinic
 <<<< actual amounts consumed
 - example:
 - ✓ consult 08/2015: 4x 30mg/day oxycodone IR
 - ✓ medication profile 09/2015:
 37 packages oxycodone IR 20 mg (28 tabl.)
 2 packages oxycodone MR 40 mg (30 tabl.)

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II. 4. Case studies - oxycodone

- ❖ 12/2016: temporary spinal cord stimulator implanted
infection on electrode → delayed permanent implant
- ❖ 05/2017: permanent spinal cord stimulator implanted
 - decrease oxycodone dosing
 - consultation pain center: oxycodone IR reduced to 3x 40mg/day
 - medication profile: 8 à 9 x 40mg/day

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II. 4. Case studies - oxycodone

➔ Impact spinal cord stimulator on oxycodone use

date	2016		2017												2018	
	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2
# DDD	254	276	181	302	256	352	291	153	134	147	166	181	123	123	52	0

temporary electrode
(trial therapy)

permanent spinal cord
stimulator implanted

stop oxycodone
start methadone

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II. 4. Case studies - oxycodone

➔ Conclusion of patient case (different perspectives):

- ❖ pain center:
 - makes every effort to follow up on the patient
 - does not have a total picture of consumption
- ❖ MD:
 - continues to prescribe large quantities
- ❖ patient:
 - complex pain problems and addiction
 - receives 1 month's packaging per DAY for 3 years!
 - quality therapy/follow-up by MD?

➔ Need for consultable patient medication profiles

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III. Medical shopping

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III. Medical shopping

+ Estimation of medical shopping at a national level?

- ❖ >X pharmacies or >Y MD → not sufficient
- ❖ proportion main prescriber in total consumption of patient
- ❖ method of calculation MEID
 - main prescriber >70 % of total # DDD patient
 - objective view
 - no medical shopping

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III. Medical shopping

- ❖ # patients with main prescriber < 70 %:
 - >30 DDD in 2017, 353.389 patients
 - ➔ for ± 28 % of the patients
- ✓ possible sources of some bias:
 - 1) group practices are not identified in this overview
 - 2) not always abuse

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III. Medical shopping

+ Proposition MEID:

- ❖ MD and pharmacist can consult patients medication profile
- ❖ collaboration between the various care providers

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IV. CONCLUSION

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IV. Conclusion



+ Unique database

- ❖ complete and accurate data
- ❖ population level

+ High/augmented consumption

- ❖ scientific research
- ❖ debate needed on opioid consumption

+ Medical shopping

- ❖ enable detection by care providers
- ❖ patients medication profile (reimbursable and not reimbursable) consultable for MDs and pharmacists

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IV. Conclusion



+ Aim MEID:

- ❖ Not to deny patients access to treatment/medication
- ❖ Address abuse and non-medically responsible consumption
- ❖ Preventive approach:
 - raising awareness of high consumption/possible abuse amongst healthcare professionals
 - raising awareness amongst patients
 - collaborating with partners for structural solutions

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Contact info



Hans Willems
Tervurenlaan 158
1150 Brussel
Belgium
Hans.willems@riziv.fgov.be

Elien De Mooter
Tervurenlaan 158
1150 Brussel
Belgium
elien.demooter@riziv.fgov.be
