From Data to Health
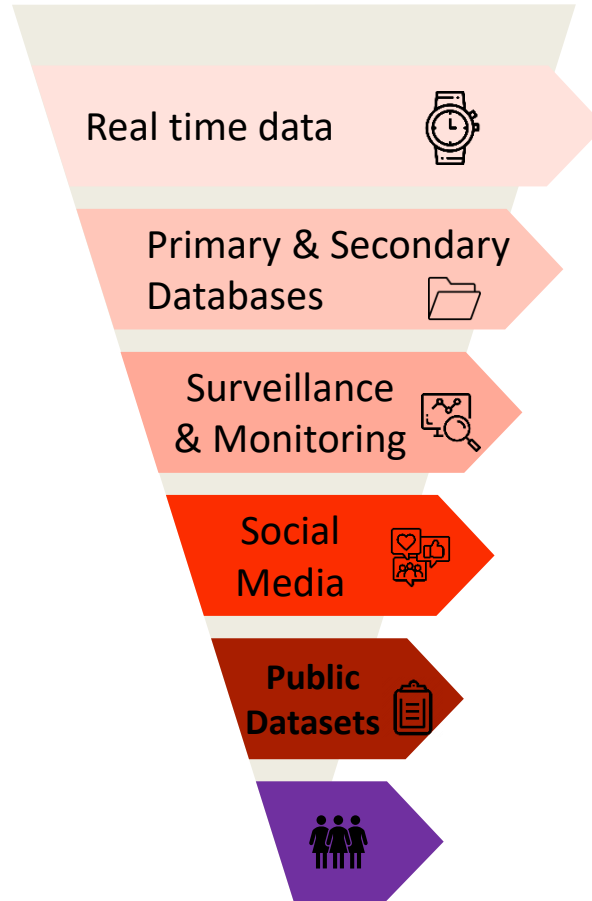
How social networks exchanges can bring us new medical insights

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A new world disrupted by data

New types of data, among many others

Real time data
Data collected through digital health technologies, including apps and wearables.

Primary & Secondary Databases
For example: Hospital Episode Statistics, Prescription data, etc.

Surveillance & Monitoring
For example, Drug Safety Monitoring Data

Social Media
Data representing patients and service users views and experiences, captured online

Public Datasets
Public Health and Social Care authorities datasets

Patient Organisation Data
Data collected by patient organization

Context Detec't

33% of the French population
share their personal healthcare information
online **

51% of the Americans
share their personal healthcare information
online*

What can we do
with this huge amount of data
in the **healthcare industry**?

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Social Media Data as a powerful patient-centric tool

Conversations on social media provide insights on how pharma companies can understand:

- **Patient sentiments** and what patients genuinely think about their treatments.
- **Caregivers struggles and pain points** with their role
- **HCP perception** on their drugs and patients management
- **Institutions, Government & Healthcare Authorities** perception of pharma companies initiatives
- **Public opinion** surveying (direct & indirect)
- Etc.
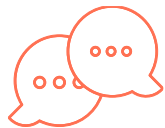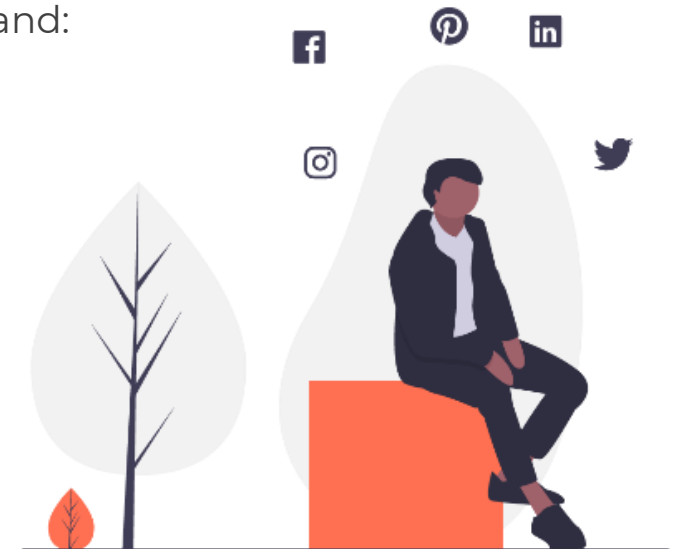
Social media can't be ignored!

It can influence treatment decisions, and make or brake the reputation of pharma companies

Detec't – Best in classs AI for Healthcare
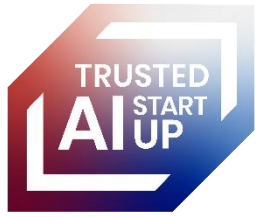
KAP CODE mobilizes its technology in social media listening & goes further by developing algorithms and dashboards dedicated to medical needs thanks to its Detec't solution

30 scientific articles published

More than 14 clients already

Partners varied from institutions, pharmaceutical companies, research labs, etc.

Detec't – More than 15 validated algorithms

- **Evaluate** the patients' **OPINION ABOUT YOUR MEDICINES**

- **Observe** the patients' **BEHAVIOR** regarding their choice or the change of their treatments

- **Identify** criteria of **ACCEPTABILITY OR OF BARRIERS** to treatment

- **Measure** the **BENEFITS EXPERIENCED** with specific drugs related to a disease

- **Analyze** the **IMPACT** of the disease on the patients' **QUALITY OF LIFE**

- **Study** **EXPERIENCES PATIENTS** made with the pathology of your choice

- **Monitor** patients' **CARE PATHWAYS**

- **Identify** **PAIN POINTS** & **UNMET NEEDS**

- …

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Detec't methodology

Detec't is an automated social network analysis based on methods of artificial intelligence and text mining

Detec't is tailored to the full product life cycle

Development

Commercialization

Development → **Pre-launch** → **Launch** → **Post-Launch** → **Maturity**

Development	Pre-launch	Launch	Post-Launch	Maturity
▶ Clinical Trials Strategy & Conception	▶ Digital Landscape & Competitive Intelligence	▶ Brand Management	▶ Brand Management	▶ Signal detection
▶ Patient Journey	▶ Patient Insights	▶ KOLs & DOLs	▶ Digital impact evaluation	▶ Advocacy
	▶ Brand Management	▶ Signal Detection	▶ Patient Insights	

Early Market Pulse
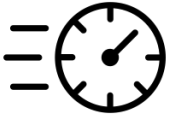
Quick & Accurate

Financial Optimization

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Detec't

Detec't is a cross-functional solution

Market Research & Sales

Communication & Public Affairs

Medical

Market Access/ HEOR

Pharmaco-vigilance

Our use cases

Detec't

Detec't is a cross-functional solution

Market Research & Sales
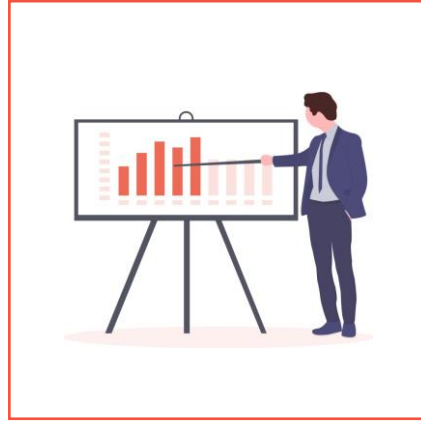
Communication & Public Affairs

Medical

Market Access/ HEOR

Pharmaco-vigilance

USE CASES

IV at Home
Analyzed difficulties and pain points from patient experiences to identify the best patient centric IV device for home-use

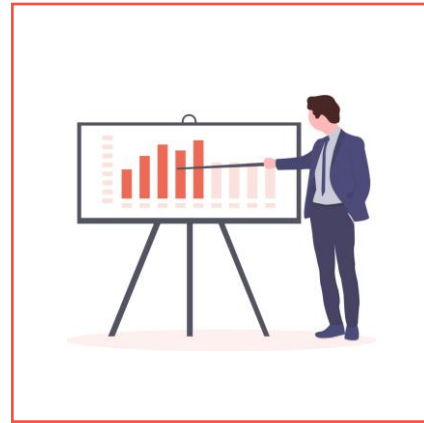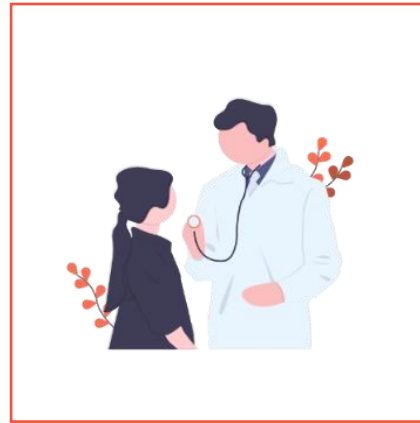**HCP insights for sales**
Identified patients and HCP difficulties in cardiology at a regional scale

Covid-19 Lockdown Perception
Analyzed French citizens perception of covid-19 lockdown and governmental preventive measures in the aim of adapting strategy

Antibiotics Knowledge
Analyzed French citizens knowledge on antibiotic resistance in the aim of preparing adapted medical communications

Quality of Life
Measured patients' QoL (Quality of Life) when taking immunotherapies, comparing social media data and PRO data (publication available)

Drug Packaging
Identifid if a new drug packaging and label impacted the drug usage and overdose. Infodemiology publication on drug usage

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*USE CASE_*IV at Home

Study Objectives

1 Better undestand needs and opportunities for use of IV treatments at home

2 Study IV at home solutions already on the market

3 Identify eligible patient profile for IV administration

Study Outcomes

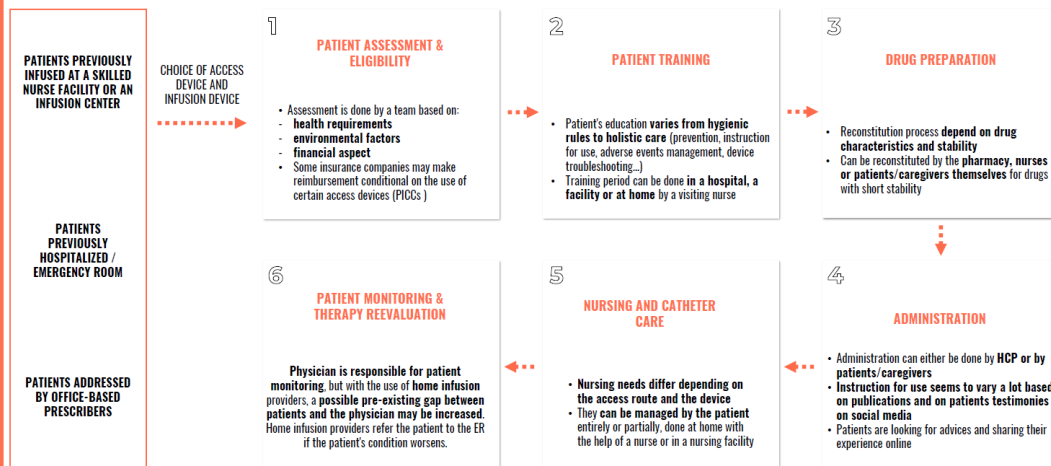*Patient Journey for IV at Home*

QoL & HEOR

Hospital versus at home

Patients experience and pain

Caregivers & HCPs perspective

Unmet Needs

*USE CASE*_IV at Home

IV AT HOME – PATIENT JOURNEY

PATIENTS PREVIOUSLY INFUSED AT A SKILLED NURSE FACILITY OR AN INFUSION CENTER

CHOICE OF ACCESS DEVICE AND INFUSION DEVICE

PATIENTS PREVIOUSLY HOSPITALIZED / EMERGENCY ROOM

PATIENTS ADDRESSED BY OFFICE-BASED PRESCRIBERS

1 PATIENT ASSESSMENT & ELIGIBILITY
- Assessment is done by a team based on:
  - **health requirements**
  - **environmental factors**
  - **financial aspect**
- Some insurance companies may make reimbursement conditional on the use of certain access devices (PICCs)

2 PATIENT TRAINING
- Patient's education **varies from hygienic rules to holistic care** (prevention, instruction for use, adverse events management, device troubleshooting…)
- Training period can be done **in a hospital, a facility or at home** by a visiting nurse

3 DRUG PREPARATION
- Reconstitution process **depend on drug characteristics and stability**
- Can be reconstituted by the **pharmacy, nurses or patients/caregivers** themselves for drugs with short stability

6 PATIENT MONITORING & THERAPY REEVALUATION

Physician is responsible for patient monitoring, but with the use of home infusion providers, a possible pre-existing gap between patients and the physician may be increased. Home infusion providers refer the patient to the ER if the patient's condition worsens.

5 NURSING AND CATHETER CARE
- **Nursing needs differ depending on the access route and the device**
- They can be managed by the patient entirely or partially, done at home with the help of a nurse or in a nursing facility

4 ADMINISTRATION
- Administration can either be done by **HCP or by patients/caregivers**
- Instruction for use seems to vary a lot based on publications and on patients testimonies on social media
- Patients are looking for advices and sharing their experience online

Paladino, J. A., & Poretz, D. (2010). Outpatient parenteral antimicrobial therapy today. *Clinical Infectious Diseases*, 51(Supplement_2), S198-S208.
Petroff, B., & Johnson, C. (2016). ASHP Guidelines on Evaluating and Using Home or Alternate-Site Infusion Service Providers. *American Journal of Health-System Pharmacy*, 73(12), 922-926. doi:10.2146/ajhp151013
Infusion Nurses Society. (2016). Infusion Therapy Standards of Practice (2016) (Vol. 39, Number 15)

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IV AT HOME – PATIENT EXPERIENCE
ACCESS DEVICES CHOICE

- Patients seem:
  - worried about **central access complications** and **want to "stick to peripheral" for as long as they can**
  - to report an **higher QoL** when they **PICCs or Port** even if they can impact daily activities

POSTS FROM SOCIAL MEDIA - EXAMPLES

Patient with a PICCline — Yesterday at 2:55am

My #PICCline has significantly improved my quality of life. I don't have to worry quite as much about whether or not I am getting enough oral fluids

Patient on peripheral IV line — Yesterday at 2:55am

I've been getting infusions for 4.5 years without a port. At least once a week but up to as many as 4 times a week depending on my symptoms. I too have terrible veins, to the point they used to draw straws on who would have to start the iv. I find that bringing a heating pad and wrapping my arm in helps significantly. The heat brings the blood to the surface and makes it easier to find a vein. It's not fool proof, but it definitely makes a difference. Just for reference, I have had a picc line and home health before as well. I would much rather continue without the picc line/port for as long as possible. I don't mind being stuck and the risk just isn't worth it (for me).

Patient on peripheral IV line — Yesterday at 2:55am

Yeah stick to peripheral as long as you can! You'll be able shower and swim and not worry about sepsis….just SOOO much better!!

Patient with hemophilia, self-administrating — Yesterday at 2:55am

Oh my god! The Terumo 27G 1/2" needles are incredible! I have been using them for about 4 years now and they are a live-saver. The shorter blade helps with control for small veins like the knuckle veins and the tiny veins on the outside edge of my elbow.
23G is brutal. I don't know why they're using those on you at your treatment centre..

Patient on TPN — Yesterday at 2:55am

One of the only perks of me being on TPN and being TPN dependent is that I get 2.5 liters a day of IV fluids and then 8-10 oz of liquid orally. So most of the time feel pretty good Dysautonomia wise. But that is like the only perk of being TPN dependent. It is kind of pain because I am hooked up 16-24 hours a day and TPN has much higher central line infection risks. I have love, hate relationship with my central line. It is very inconvenient at times to keep it dry and we have to be careful with the dressing because of my skin allergies and sensitivities. I am lucky because I have a double lumen central line so I can run two things at once.

Patient on home infusion — Yesterday at 2:55am

From all I have heard, and witnessed, I don't recommend a picc. Get a port. Yes ports can be deadly if infected, but so can pics. Everyone I know who has ever gotten a picc has had an infection. My cardio adviced against a picc because I am susceptible to infection. I have a port and thank god have not had any issues related to my port (on my second port in two years.) I also have only ever done infusions at home.

Patient self-administrating with a port — Yesterday at 2:55am

Hello Christina,
I've had a couple of PICC lines in my life. I had the port implanted within 3 days of the last PICC line. The catheter ends up in the same place and the port is completely covered by skin so you can swim and enjoy everyday life when it's not accessed. Chances are, you will forget your port is there after a while unless it's accessed.
PICC lines are a real pain in the butt. Your port can last forever or so I've been told. My port has been in now since I was 20 or 21 years old and I'm 35 years old now. It has never given me any problems. I use my port every month for at least a week so, as you can imagine, that adds up over the years.
You will hear about the possibility of the skin breaking down, I have not had that problem either. I'll show you what size huber needle I suggest using, it will save the port and keep the skin in good shape
The placement takes about 30 minutes and requires a small surgical procedure that I was awake for.(I'm awake sometimes this thing goes thing) (They don't like to put me under general for anything with a set of bad lungs like mine lol They get….nervous haha).
I didn't feel much during the surgery, maybe a pinch or two but that was all
That's pretty much all there is to the placement. My port was accessed right after surgery and the PICC removed.
It's a big decision but I feel you would find life much better with a port. I'll make some videos on it for you and if you have any questions just ask.
Cheers.

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A	Catheter choice	B	Drug preparation	C	Administration modalities
D	Risk of infection	E	Reassessment & follow-up		

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*USE CASE_*HCP & Patients Insights for Sales

Study Objectives

1 Collect insights on all main topics discussed

2 Identify unmet needs & difficulties expressed by patients

3 Extract insights with a focus on HCPs

Study Outcomes

Unmet Needs by cardiology disease

Difficulties expressed by patients

Patient consultation journey

HCP concerns

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USE CASE_ HCP & Patients Insights for Sales

A Atrial Fibrillation

B Heart Failure

C Deep Vein Thrombosis

D HCPs

USE CASE Covid-19 Lockdown Perception

Study Objectives

1 Identify perceptions, medical concepts and main topics discussed

2 Collect insights on lifestyle before the end of lockdown, and user needs for a new lifestyle post-lockdown

3 Measure the lockdown impact on mental health

4 Acceptability evaluation of tracking application and public health initiatives

Study Outcomes

Lockdown health impact measurement
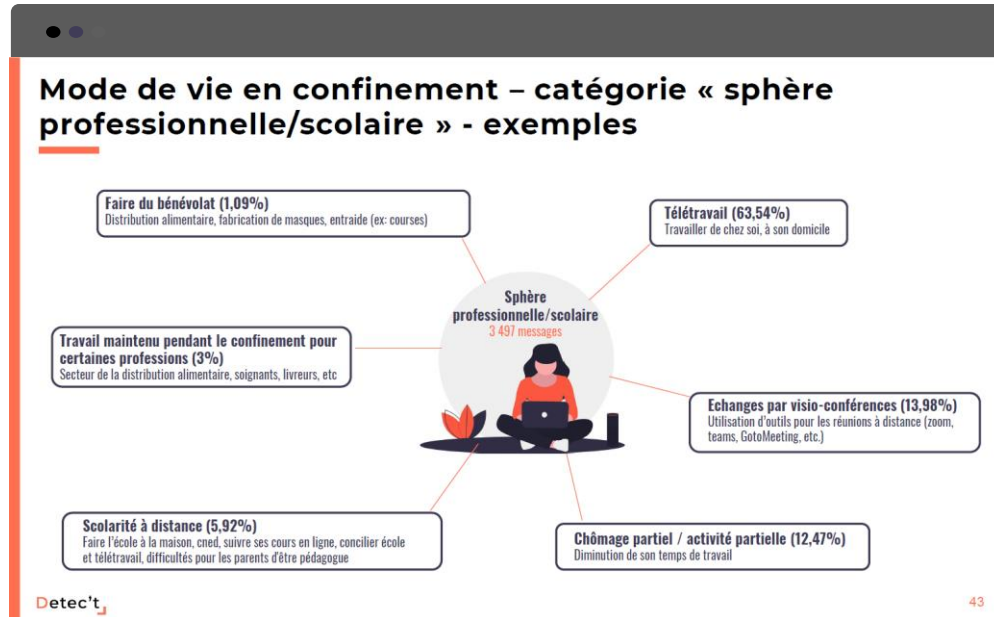
User lifestyle needs at lockdown end

User reaction to public health initiatives

Key perceptions & medical concepts

Main discussion topics during lockdown

User lifestyle before lockdown end

USE CASE_Covid-19 Lockdown Perception

Mode de vie en confinement – catégorie « sphère professionnelle/scolaire » - exemples

Faire du bénévolat (1,09%)
Distribution alimentaire, fabrication de masques, entraide (ex: courses)

Télétravail (63,54%)
Travailler de chez soi, à son domicile

Travail maintenu pendant le confinement pour certaines professions (3%)
Secteur de la distribution alimentaire, soignants, livreurs, etc

Sphère professionnelle/scolaire
3 497 messages

Echanges par visio-conférences (13,98%)
Utilisation d'outils pour les réunions à distance (zoom, teams, GotoMeeting, etc.)

Scolarité à distance (5,92%)
Faire l'école à la maison, cned, suivre ses cours en ligne, concilier école et télétravail, difficultés pour les parents d'être pédagogue

Chômage partiel / activité partielle (12,47%)
Diminution de son temps de travail

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Impact du confinement sur la santé mentale – top 5

Méthode :
L'ensemble des concepts médicaux appartenant au SMQ (Standardised MedDRA Queries) « Affections psychiatriques » du dictionnaire MedDRA, enrichi par du vocabulaire patient, ont été recherché au sein du corpus total (201 560 messages).

La solitude
25,17% des messages
Être isolé, être seul, sans interaction sociale

Le manque
9,96% des messages
En manque d'activités sociales, d'amour, de ses amis, d'alimentation particulière, etc.

Le bonheur
8,82% des messages
Être bien et heureux durant le confinement

Le besoin
6,48% des messages
Besoin de voir du monde, besoin de retourner au sport, etc.

La tristesse
6,48% des messages
Avoir du chagrin, pleurer, être malheureux

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| A | Mental Health | B | Substance abuse | C | Exercise | D | Top 3 Topics | E | Reactions to Public Health Initiatives |

*USE CASE*_Antibiotics Knowledge

Study Objectives

1 Identify key treatments, medical concepts, and main topics discussed

2 Identify online user typology, discussing antibiotic resistance on social media, & their level of knowledge

3 Identify concerns and information research expressed for antibiotic resistance

4 Identify the difficulties encountered and discussed

Study Outcomes

Online user typology

Main topics discussed around antibiotic resistance

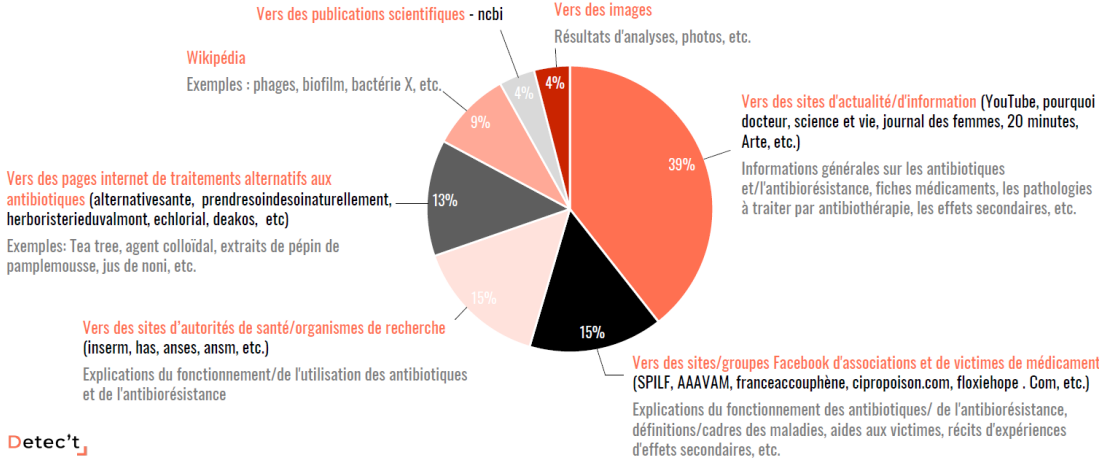*Messages evolution in time*

Key medical concepts expressed

Key treatments mentioned

Key online locations of discussions on antibiotic resistance

*USE CASE*_Antibiotics Knowledge

Partages et recherches d'information

Méthode :
Lecture manuelle d'un échantillon de 20% des messages du corpus « URLs »

Vers des publications scientifiques - ncbi

Wikipédia
Exemples : phages, biofilm, bactérie X, etc.

Vers des images
Résultats d'analyses, photos, etc.

Vers des sites d'actualité/d'information (YouTube, pourquoi docteur, science et vie, journal des femmes, 20 minutes, Arte, etc.)
Informations générales sur les antibiotiques et/l'antibiorésistance, fiches médicaments, les pathologies à traiter par antibiothérapie, les effets secondaires, etc.

Vers des pages internet de traitements alternatifs aux antibiotiques (alternativesante, prendresoindesoinaturellement, herboristerieduvalmont, echlorial, deakos, etc.)
Exemples: Tea tree, agent colloïdal, extraits de pépin de pamplemousse, jus de noni, etc.

Vers des sites d'autorités de santé/organismes de recherche (inserm, has, anses, ansm, etc.)
Explications du fonctionnement/de l'utilisation des antibiotiques et de l'antibiorésistance

Vers des sites/groupes Facebook d'associations et de victimes de médicament (SPILF, AAAVAM, franceaccouphène, cipropoison.com, floxiehope . Com, etc.)
Explications du fonctionnement des antibiotiques/ de l'antibiorésistance, définitions/cadres des maladies, aides aux victimes, récits d'expériences d'effets secondaires, etc.

Pie chart values: 39%, 15%, 15%, 13%, 9%, 4%, 4%

Niveau de connaissances – mécanismes de résistance – Connaissance de la résistance - exemples

Internautes qui ont connaissance du principe de résistance de façon générale au niveau de leur pathogène
70,5%

« ce qui fait le plus peur , c'est de savoir que malgré un antibiogramme qui montre l'absence de mutation du germe via les macrolides / fluoroquinolones , en prenant le médicament même correctement , le germe peut développer sa résistance . a tout moment et sur n'importe quai au final ! du coup maintenant je suis résistant c'est quasiment sur . enfin bref voila le combat continue tant pis hein a + »

« a j + 3 , l'infection repart . . . je l'appelle et il m'ouvre la dent , dis qu'il faut l'arracher car je suis résistant aux antibiotiques . J'en suis alors a 5 semaines de traitements , et l'infection est toujours , avec pour prime une dent à arracher»

« j'ai attrape une infection urinaire due au staphylococcus saprophyticus , qui dure depuis déjà une semaine . mon médecin m'a prescrit déjà 2 antibiotiques et aucun ne marche car la bactérie est résistant a pratiquement tous les antibiotiques . je dois revoir mon médecin mais voila j ai peur qu'encore une fois l'antibiotique ne marche pas »

Internautes qui ont connaissance du principe de multirésistances
15,8 %

« j'ai eu quant a moi un entretien avec ma médecin ce matin et ce qui est navrant c'est qu'a cause du problème des multi résistances aux antibios , les fluoroquinolones sont devenus les antibios qu'on donnent de plus en plus en première intention (la j'ai cru rêver quand j'ai appris ca , ou plutôt cauchemarder) certaines personnes sont aussi allergiques aux pénicillines , d'ou la prescription de plus en plus massive de cette géniale molécule ces dernières années»

« j'ai une patiente qui venait pour cystite . en fait 22 ans cystites a répétitions . aurait vu un urologue " spécialise dedans " . elle a eu plusieurs " cures " d'antibio . la elle sort de 7 mois de monuril, avait eu avant 3 mois de ciflox . . . je l'ai convaincu d'arrêter d y aller sauf si elle veut faire une bmr»

« bonjour svp y'a t'il un autre moyen a part les antibiotiques pour se débarrasser du staphylocoque, cette bactérie est devenu résistante a tous y a t'il un traitement pour ce genre de bactérie multi résistante on commence a perdre l'espoir ? »

39

| A | User segmentation | B | Top 3 Topics | C | Information sharing | D | Top 3 Concerns | E | Mis-use of antibiotics |

*USE CASE*_Quality of Life (QoL)

Study Objectives

1 Identification of needs expressed by patients

2 Identification of QoL concerns in patient messages by dimension

3 Classify patients by cancer, demographic and QoL typologies

Study Outcomes

Patient characterization

Main Topics discussed by patients taking immunology

QoL dimensions study on messages

Message perception study

Segmentation by cancer and QoL dimensions

*USE CASE*_Quality of Life (QoL)

QUALITY OF LIFE ACCORDING CANCER TYPE

Patients quality of life - N=137 (91%)
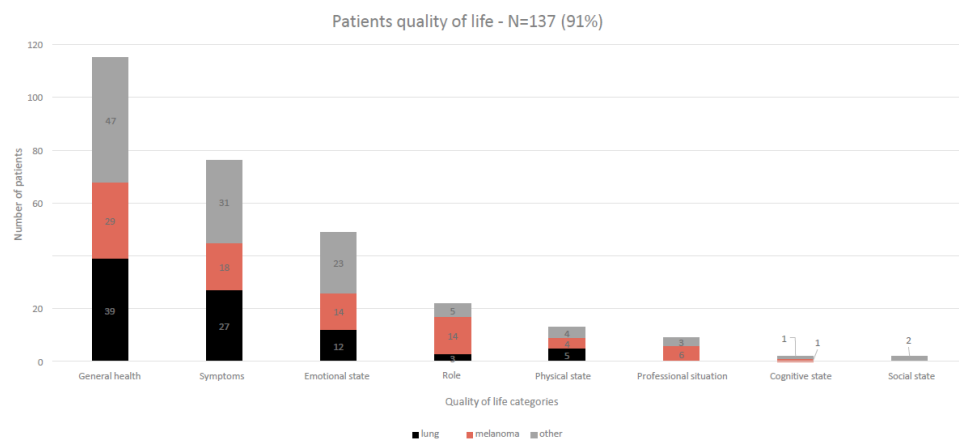
QUALITY OF LIFE — CORRELATION BETWEEN DIMENSIONS

- **Objective** : **To study the intensity of the bond between two variables**

- **Type de correlation** : Pearson correlations

Legend

The width of the line is proportional to the intensity of the bond

Two types of correlations: positives (in red) and negatives (in grey)

A QoL by cancer type
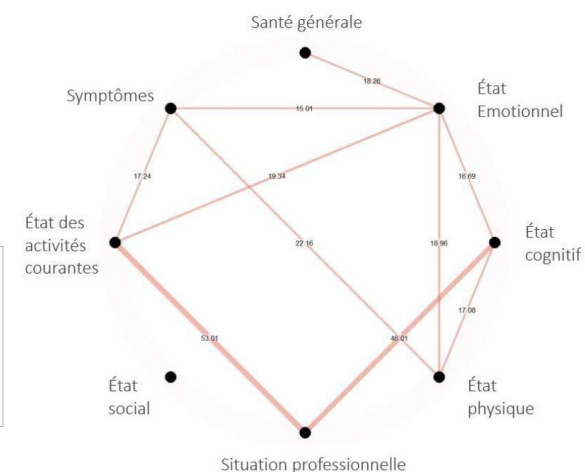
B Patient perception by QoL category

*USE CASE*_Drug Packaging

Study Objectives

1 Infodemiology monitoring on social media for paracetamol containing products

2 Brands monitoring for products containing paracetamol

3 Early signal detection study for identification of adverse events

Study Outcomes

Main topics & correlations

Overdose insights

Topics evolution over time

Off-label use detection

Pharmacodependance study

Signal detection for adverse events

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*USE CASE_*Drug Packaging
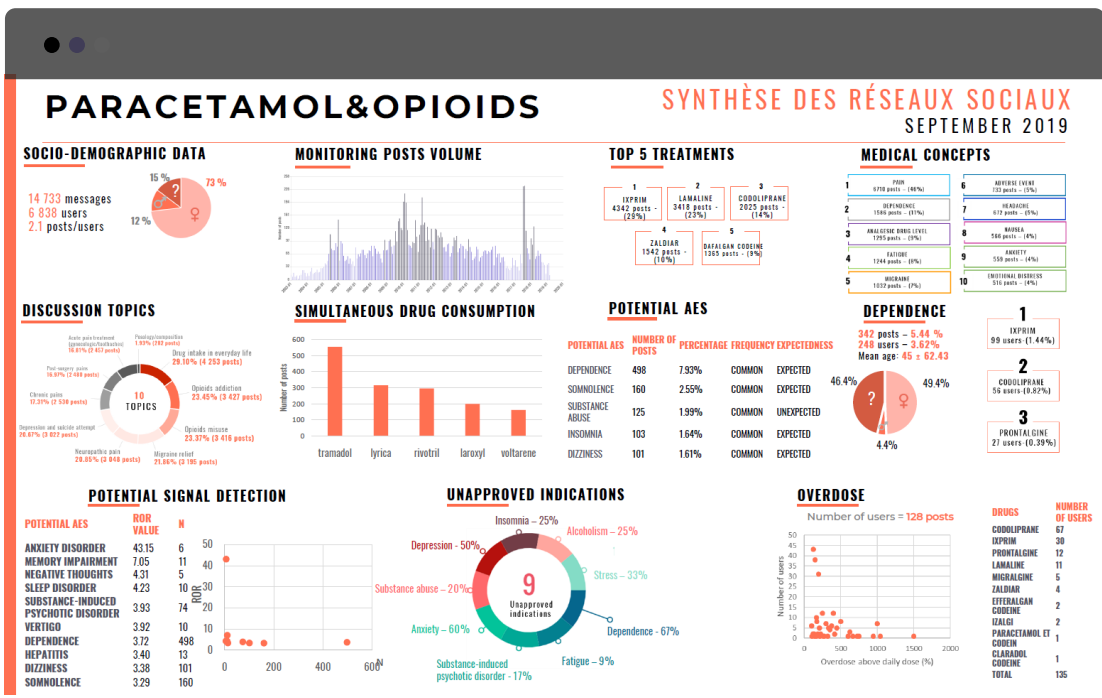
A Dashboard	
B Overdose related brands containing paracetamol	
C Dependence to paracetamol	
D Unapproved indications / Off-label use	
E Signal detection for paracetamol containing products	

Messages to take away

Detec't
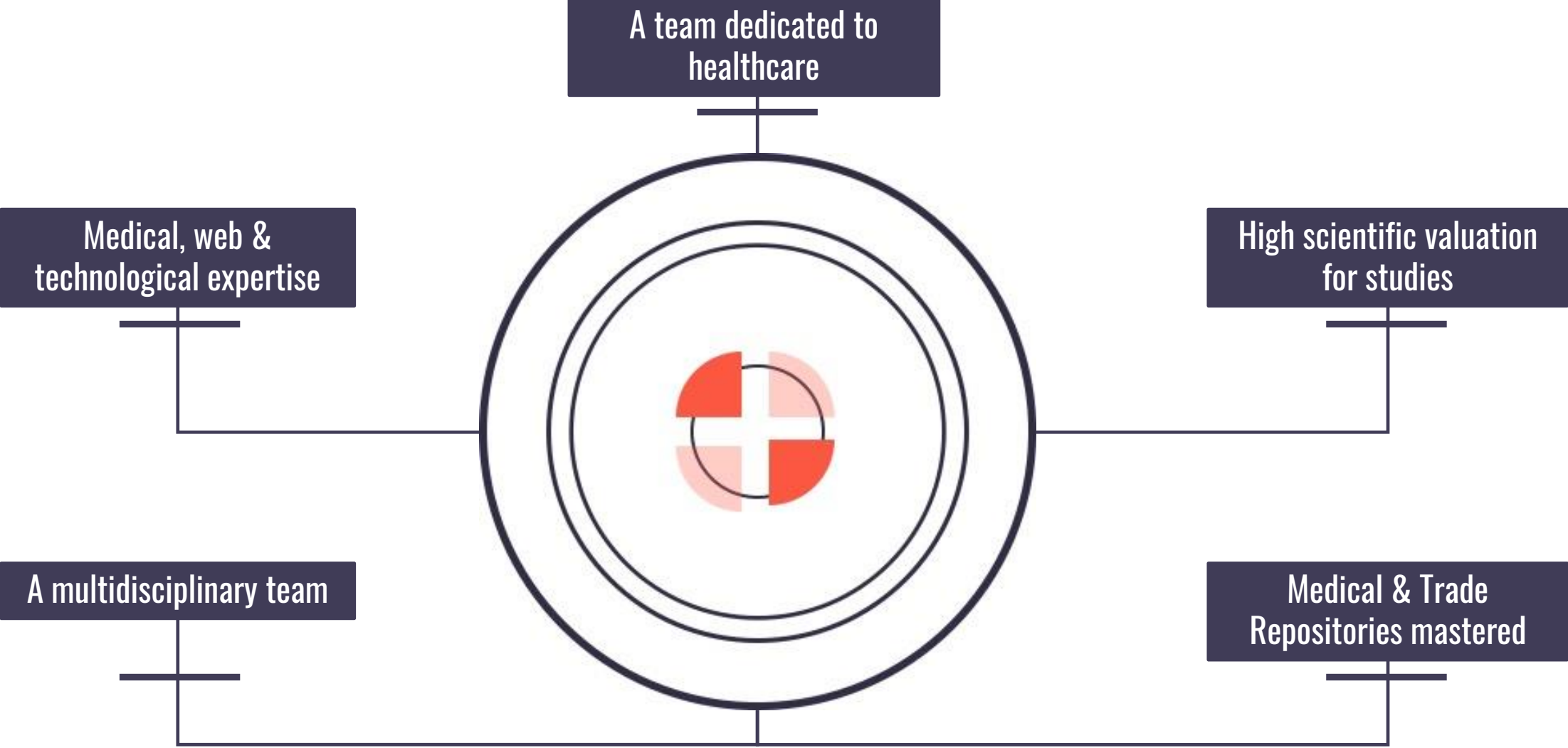
A differentiating team

DEDICATED TO HEALTHCARE

MORE THAN 15 YEARS OF SCIENTIFC EXPERTISE

A MULTIDISCIPLINARY TEAM WITH A MEDICAL EXPERTISE

KAP CODE goes further than classical social media listening solutions by developing algorithms & dashboard dedicated to medical needs thanks to its Detec't solution.

Kap Code – Objectives and specificities

A team dedicated to healthcare

Medical, web & technological expertise

High scientific valuation for studies

A multidisciplinary team

Medical & Trade Repositories mastered

Kap Code

Detec't

An ecosystem of partners

cegedim

Quantitative RWD

BearingPoint ®

Strategy Partner

STETHOS
RESEARCH & CONSULTING

Actionnable recommendations

Kap•Code

Feelity

Mobile & UX Design Development

KAPPA SANTÉ

Epidemiological monitoring

Ekimetrics.

Data science experts on other sources

Pons & Carrère Avocats

Legal Partner

They trust us

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