

# The journey of a patient with a Rare Immunological Disorder

A patient journey represents the entire sequence of events that a patient experiences within a given healthcare system or across providers, from scheduling an appointment for a regular checkup to receiving treatment for an illness or injury. A patient journey is an ongoing process that incorporates all parts of the healthcare ecosystem, from hospitals to physicians, specialty care, and outpatient therapy.



Symptoms

Diagnostic



Follow-up & Aging



Treatment

Autoimmune diseases (AI)



Autoinflammatory disorders (AID)



Paediatric Rheumatic diseases (PR)



Primary Immunodeficiencies (PID)



Glossary



# Primary Immunodeficiencies (PIDs)

● Autoimmune diseases (AI)

● Autoinflammatory disorders (AID)

● Paediatric Rheumatic diseases (PR)

● **Primary Immunodeficiencies (PID)**

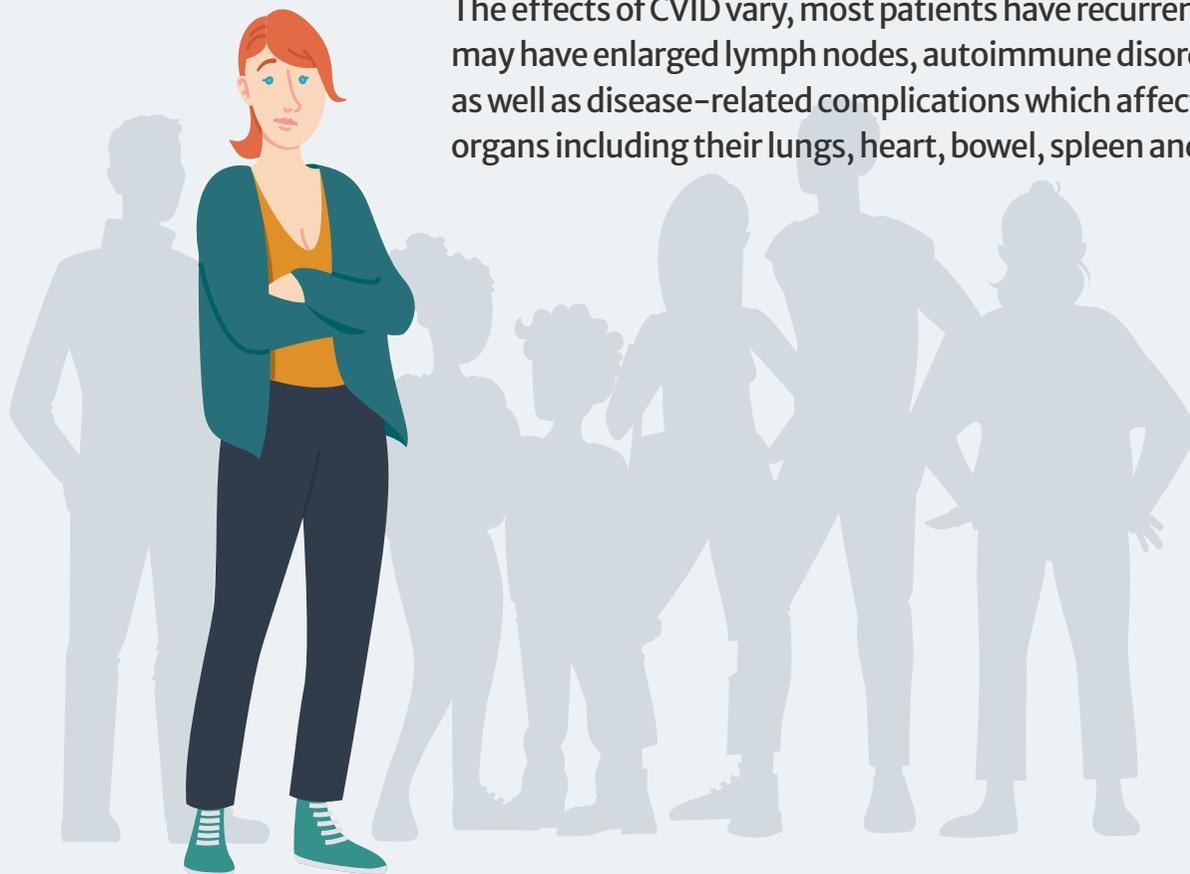
## Common Variable Immune Deficiency (CVID)



# The journey of a patient with CVID

**Meet Helen** She is a person with **Common Variable Immune Deficiency (CVID)**, an heterogeneous group of diseases characterised by a significant failure to produce specific antibodies and susceptibility to bacterial infections.

The effects of CVID vary, most patients have recurrent infections, and some may have enlarged lymph nodes, autoimmune disorders as well as disease-related complications which affect their organs including their lungs, heart, bowel, spleen and liver.



Symptoms



Diagnostic



Treatment



Follow-up & aging



Resources



# Symptoms description



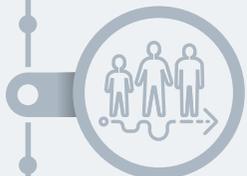
## Symptoms



## DIAGNOSTIC



## TREATMENT



## FOLLOW-UP & AGING

### GENERAL

Fever  
Fatigue

### ENT

Sinusitis  
Otitis  
Tinnitus  
Loss of hearing due to infections  
Dizziness in case of otitis  
Allergy

### NUTRITION

Eating disorders  
Malabsorption  
Denutrition  
Obesity

### GASTROENTEROLOGY

Gastro enteritis  
Splenomegaly  
Hepatomegaly  
Loss of appetite,  
Nausea, vomiting  
Weight loss  
Elevated liver enzymes  
Abdominal pain/discomfort  
Granulomas (liver, gut)  
Digestive ulcers  
Chronic/recurrent diarrhoea  
Mucus and blood in stool (infection-related or inflammatory bowel disease related)  
Infections (bacteria/viruses)

### HAEMATOLOGY

Pancytopenia (anemia, thrombocytopenia, lymphopenia)  
Lymphadenitis  
Haemolytic anemia  
Leukocytopenia  
Very low IgG level  
Very low IgM level  
Very low IgA level  
Low IgG subclasses  
Lymphomas/Leukemia  
Hepato-splenomegaly

### NEUROLOGY

Development/growth delay  
Meningitis  
Gait/motor alterations

### DERMATOLOGY

Skin infections (folliculitis, infections, delayed scarring, warts)  
Vasculitis  
Purpura/petechiae  
Muscle skin layer painful  
Chronic/recurrent eczema  
Bruising  
Silver hair, fragile hair  
Ombilical cord issues

### RESPIRATORY

Chronic cough  
Dyspnea, Shortness of breath, ...  
Sputum production  
Lung problems  
Intrapulmonary lesions (nodular lesion)  
Recurrent bronchitis and pneumonias  
Bronchiectasis  
Pneumatocele  
Interstitial lung disease  
Asthma

### RHEUMATOLOGY

Moving joint pains or inflammation  
Arthritis  
Osteopenia (in children/young)  
Osteoporosis  
Recurrent tendinitis

### INFECTIONS

Sepsis  
Long lasting/severe/repeated varicella  
Recurrent/More severe/Atypical or opportunistic infections  
Lymph nodes  
Shingles  
Repeated influenza  
Recurrent fever/inflammation  
Need of intravenous antibiotics



## REQUIRED PRACTITIONERS

- General Practitioners
- Paediatricians
- Internists
- Microbiologists
- Organ specialists:
  - Pulmonologist,
  - Digestive,
  - Dermatologist,
  - Hematologist,
  - Neurologist,
  - Rheumatologist,
  - Haematologists,
  - Immunologists,
  - Infectiologists,
  - Allergists
  - Dentists,
  - Ophthalmologists
- Emergency ward

# Symptoms Challenges



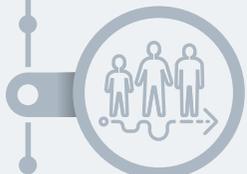
## Symptoms



### DIAGNOSTIC



### TREATMENT



### FOLLOW-UP & AGING



### HEALTH IMPACT

A wide range of very diverse symptoms:

- Varying from person to person
- Possibly changing throughout life
- Appearing in childhood as well as in adulthood

Various situations of onset:

- After repeated infections, pneumonias
- After autoimmune cytopenia
- After lymphadenopathy or splenomegaly enlargement
- After chronic diarrhoea
- After vaccine adverse reactions or infections
- After given birth
- After being in the sun
- After exercising



### ACCESS

Symptoms are addressed rather than the underlying condition that is not diagnosed



### ADDED RISKS

Risk of permanent organ damages (bronchiectasis/malignancy/death)



### HEALTHCARE PROFESSIONALS AWARENESS & EDUCATION

Doctors don't know about PIDs (ie when hospitalised...)

Lack of immunologist



### PSYCHOLOGICAL & SOCIAL IMPACT

Living with a chronic invisible condition

Being regularly unwell

Being afraid of catching infections

Absences from school

Absences from work

Family burden (care-takers)

Stigma because of unusual symptoms

People being always ill, but not being believed they are ill

Financial challenges (ability to work)

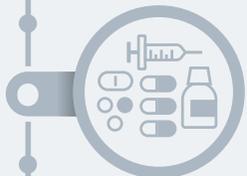
# Symptoms Needs



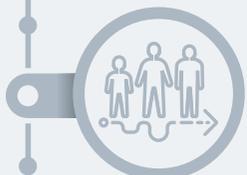
Symptoms



DIAGNOSTIC



TREATMENT



FOLLOW-UP  
& AGING



ACCESS

Early accurate diagnosis

Immunologists for children  
and adults

Expertise centres



HEALTHCARE  
PROFESSIONALS  
AWARENESS & EDUCATION

Awareness on warning signs

Medical education of general  
practitioners and other  
healthcare professionals



RESEARCH

Research on these conditions

Publications



SUPPORT &  
ADVOCACY

Patient organisations

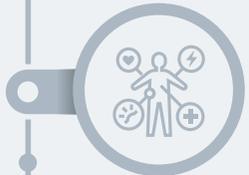


QUALITY OF LIFE

Possibility for home schooling  
or available distance learning  
service from school

Possibility for home working

# Diagnostic description



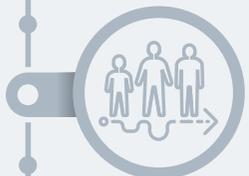
SYMPTOMS



Diagnostic



TREATMENT



FOLLOW-UP & AGING

## BIOLOGICAL

Decrease levels of immunoglobulins with abnormalities  
count of B cells  
Autoimmunity panels  
Microbiological tests

## IMMUNISATION

Immunisation response

## IMAGING TECHNIQS

## GENETIC TESTING

## CLINICAL

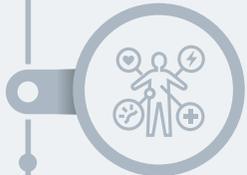
Family history  
Prenatal study  
Birth screening  
Infection history



## REQUIRED PRACTITIONERS

- PID specialists
- Immunologists
- Organ specialists
- Biologists
- Psychologists
- Social workers

# Diagnostic Challenges



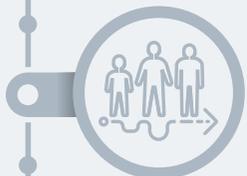
SYMPTOMS



Diagnostic



TREATMENT



FOLLOW-UP & AGING



## ACCESS

Patient odyssey before accurate diagnosis

Symptoms can appear before the age of 3, but no definitive diagnosis possible before age of 4

Misdiagnosis

Often not diagnosed until adulthood

Genetic counselling

Genetic testing



## PSYCHOLOGICAL & SOCIAL IMPACT

Difficulty for the patient/parents to accept the chronicity of the disease and of the treatment



## HEALTH IMPACT

Severe, unusual, recurrent bacterial infections

Late diagnosis can lead to permanent organ damages  
Need of ENT (Ear, Nose, Throat) surgery(ies)



## ADDED RISKS

Possible associated conditions

- Auto inflammation
- Auto immunity
- Allergy
- Malignancy

Be hospitalised for another reason than the PID in the emergency ward where doctors don't know about PIDs and may not listen to the patient /parent



## HEALTHCARE PROFESSIONALS AWARENESS & EDUCATION

Many specialists, no diagnosis

Not taken seriously by the doctors even addressed to a psychiatrist

Lack of medical knowledge on PIDs

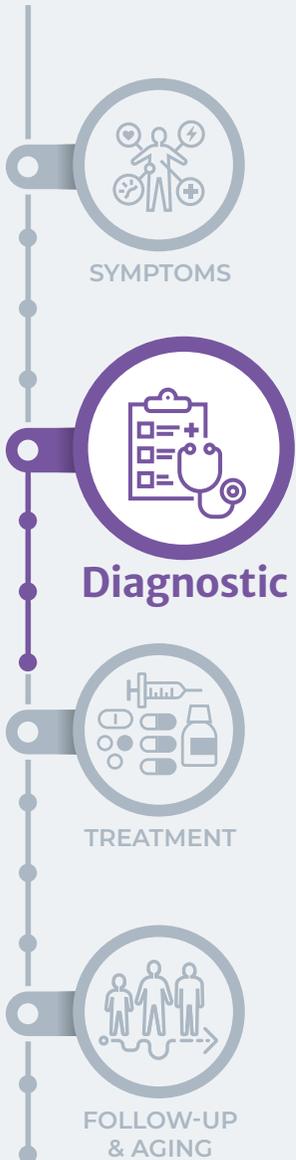
Difficult to find doctors who know about PIDs

Lack of immunologists

Lack of Adult immunologists experts in PIDs

PIDs, and especially CVIDs, are ignored by most curricula in many countries

Genetic counselling



# Diagnostic Needs



## ACCESS

Timely and accurate diagnosis

.....  
A network of expertise centres



## MEDICAL PRACTICE

Reevaluation of diagnosis in time given the progress in the field (including the possibility of genetic testing)

.....  
When an indication for psychiatric drugs, need of psychiatry consultation



## SUPPORT & ADVOCACY

Patient advocacy organisations

.....  
Stakeholders' cooperation



## DIGITAL HEALTH

Registries

.....  
Data sharing and interoperability



## COMMUNICATION & COORDINATION

International Cooperation



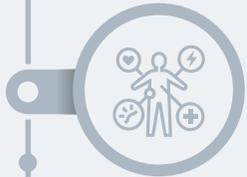
## HEALTHCARE PROFESSIONALS AWARENESS & EDUCATION

Need of Immunologists for children and adults (immunology not always considered as a subspeciality)

.....  
A range of medical specialists knowing CVIDs, including biologist, geneticist, infectiologist, psychologist, ...

.....  
Immunology: More education for medical students, GPs, specialists at pre and postgraduation

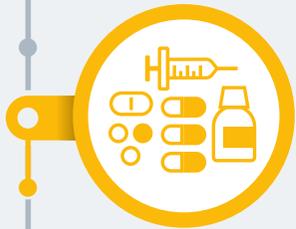
# Treatment description



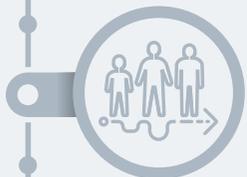
SYMPTOMS



DIAGNOSTIC



Treatment



FOLLOW-UP & AGING

IMMUNOGLOBIN REPLACEMENT THERAPY REGULAR AND LIFELONG



VACCINES (specific for pid)



ANTIBIOTICS (prophylaxis or on-demand)



SPECIFIC MEDICINES addressing specific symptoms



## REQUIRED PRACTITIONERS

PID specialists

Organ specialists knowing PIDs

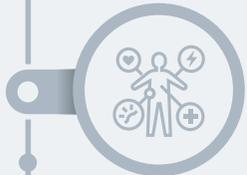
Specialised nurses

Other Healthcare professionals (physiotherapist, nutritionist, dentists...)

Psychologists / Psychiatrists

Social workers

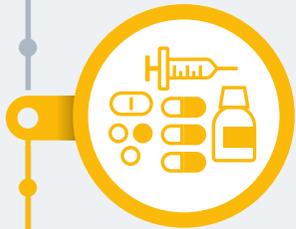
# Treatment Challenges



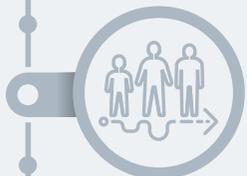
SYMPTOMS



DIAGNOSTIC



Treatment



FOLLOW-UP & AGING



## ACCESS

Supply tensions on immunoglobulins (Subcutaneous (SC) and Intravenous (IV))

Access to best tolerated immunoglobulin therapy (SC and IV)

Supply tensions/shortages on antibiotics

Access to efficient and innovative therapies (anti-infectious, targeted therapies, ...)

Access to off label immune suppressive drugs

Access to home therapy



## CHRONICITY OF TREATMENT

Treatment not well tolerated

Distance to travel to reach out to hospital for regular treatment

Distance to travel to get the medicine from hospital for home therapy



## ADDED RISK

Microbial multi resistance



## QUALITY OF LIFE

Fatigue

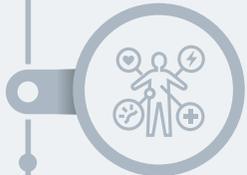
Time taken on family, work and social life for recurrent treatment



## PATIENT EDUCATION & EMPOWERMENT

Patient compliance to their chronic treatment

# Treatment Needs



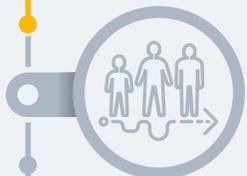
SYMPTOMS



DIAGNOSTIC



Treatment



FOLLOW-UP & AGING



## ACCESS

Continuous supply of needed medicines

Cost coverage of needed medicines

Patient's and physician's (not hospital's) choice of treatment regarding clinics and quality of life



## HEALTHCARE PROFESSIONALS AWARENESS & EDUCATION

Adapted medical devices (especially in children)

To take pain into account when administrating the treatment



## MEDICAL PRACTICE

Personalised treatment

Multidisciplinary teams

To adress side effects of treatment

Protocols to adjust therapy dosing or to withdraw anti-inflammatory therapy

Protocols on oncologic treatment in PID

Emergency protocols for PID patients



## QUALITY OF LIFE

Facilitating home therapy after patient's choice (availability, trained professionals, patients' training, ...)



## PATIENT EDUCATION & EMPOWERMENT

To understand their disease, cope with it, be compliant with treatment

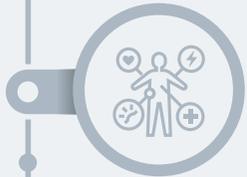


## RESEARCH

On new ways to fight off multi drug resistant bacterias

On vaccines

# Follow up & Ageing **description**



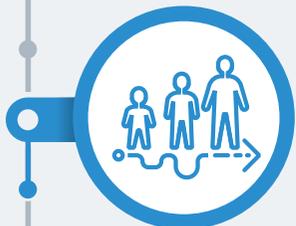
SYMPTOMS



DIAGNOSTIC



TREATMENT



**Follow-up & Aging**

**FOLLOW-UP OF SPECIFIC ORGANS**  
(ie lung, liver...)



**RE-EVALUATE TREATMENT REGULARLY**



**TRANSITIONING**

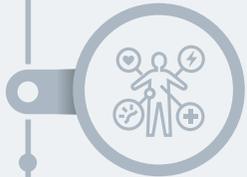


**REGULAR LIFELONG VISITS WITH A PID SPECIALIST**  
(vary from every 3 months to every 2 years or more)

**ADDED CO-MORBIDITIES LINKED TO AGE**



- 
- REQUIRED PRACTITIONERS**
- PID specialists
  - Organ specialists knowing PIDs
  - Specialised nurses
  - Emergency ward
  - Other Healthcare professionals (physiotherapists, nutritionists, ...)
  - Gerontologists
  - Psychologists
  - Social Workers



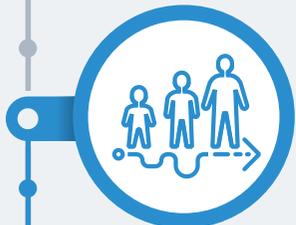
SYMPTOMS



DIAGNOSTIC



TREATMENT



**Follow-up  
& Aging**



## ACCESS

Access to treatment

.....  
Distance to travel to reach out  
to specialists



## MEDICAL PRACTICE

Onset of new symptoms and  
biomarkers

.....  
Lymphomas and other  
malignancies

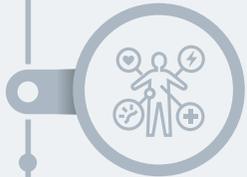
.....  
Processes and organisation for  
transitioning from paediatric  
to adult ward

.....  
Management of  
co-morbidities

.....  
Immunologists for adults or  
internists knowing PIDs/CVIDs

.....  
Identifying other specialists  
knowing PIDs

# Follow up & Ageing Needs



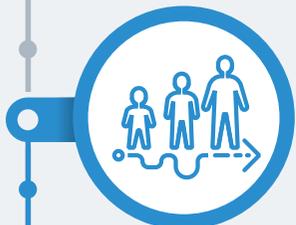
SYMPTOMS



DIAGNOSTIC



TREATMENT



Follow-up & Aging



## MEDICAL PRACTICE

A range of medical specialists knowing COVIDs

.....  
 Transitioning programmes for adolescent and aging persons

.....  
 Follow-up protocols



## DIGITAL HEALTH

Telemedicine



## COMMUNICATION AND COORDINATION

Communication between local hospitals/GPs and reference centres to ensure an optimal environment for the management of the condition and emergencies

.....  
 Multidisciplinary team taking a holistic approach

### International Patient Organisations

The following organisations provide a large amount of information and support material addressing their different audiences.

They also give insights on other organisations existing at national level.

#### ERN-RITA (<https://ern-rita.org/>)

The European Reference Network that aims at improving the care of patients with Rare Immunological Disorders. One stream of ERN-RITA addresses Primary Immunodeficiencies. RITA brings together leading European centres with expertise in diagnosis and treatment of rare immunological disorders. These rather potentially life-threatening conditions require multidisciplinary care using complex diagnostic evaluation and highly specialised therapies for all four streams.

#### IPOPI (<https://ipopi.org/>)

The International Patient Organisation for Primary Immunodeficiencies is the Association of national primary immunodeficiency (PID) patient organisations and the leading advocate for PID patients worldwide working in collaboration with patients, doctors, politicians, regulators, pharmaceutical industry and other relevant stakeholders.

#### ESID (<https://esid.org/>)

The European Society for immunodeficiencies is a medical society which is striving to improve the knowledge in the field of Primary Immunodeficiency (PID) by encouraging research, developing educational programs and fostering cooperation among all those involved in the diagnosis, treatment and management of these diseases.

#### Tools

- PID Life Index (<https://pidlifeindex.ipopi.org/#/en/principles/world-map>)
- The PID Life Index is an interactive tool built on 6 key principles of care that measures the status of the PID healthcare environment in a country.
- Clinical guidelines
- Common Variable Immunodeficiency diagnosis criteria <https://esid.org/Education/Common-Variable-Immunodeficiency-CVI-diagnosis-criteria>