



Penta

Child Health Research



Social Report **2021**

Letter to our stakeholders

Dear friends,

With a grateful heart, following our recent Penta ID Meeting (PIM) in Sorrento, I hand you the results of an intense year of work, which has been particularly significant for us, as 2021 marks our 30th year of valuable scientific collaboration.

Thirty years ago, the Penta ID Network started with the shared passion of like-minded scientists who wanted to ensure that children were not left behind in the treatment of HIV/AIDS. Recalling our discussions at PIM, I realise how that idea still sits in the hearts of our investigators. Not only has this desire to improve treatment options for children spread around the globe, but it has also enabled the birth of other critical interventions beyond HIV.

Thanks to research, child and maternal health has improved greatly and in 2021 we did our part to ensure that children and pregnant women are better protected against COVID-19 and other infectious diseases. Too often these populations are overlooked in the roll-out of lifesaving drugs and vaccines, but with more than 30 years of experience under our belt, we remain committed to driving change through research that is deliberate and inclusive of the most vulnerable populations.

2021 was the year in which one of our most important studies, ODYSSEY, came to an end. Besides its huge scientific value, the study also demonstrated how crucial it is to involve patients in every step of our research. As many global social movements have been calling for inclusive participation and democratic processes, we are working on strategies that will make our research more responsible, transparent and open to society. Young patients in our studies are fully engaged in our discussions and we are excited at the prospect of working more with them to make our science ever more relevant.

However, the line of progress is never straight. As I write this, Ukraine is ravaged by war, millions are fleeing, the majority of those displaced are sadly women and children. The cruelty of attacks on civilians goes against everything we believe in: as scientists, we claim the values of brotherhood, universalism and collaboration beyond any political and social prejudices. We are grateful to our members for rapidly responding to our call for supporting the Ukrainian population's immediate needs.

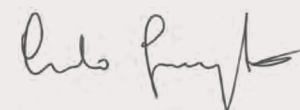
With this Social Report, we highlight how our investigators and teams forged ahead and took critical new steps toward securing better outcomes for mothers and children with infections.

We also feature some of our own Network members and demonstrate their dedication to our mission and their enthusiasm for being part of the Penta family.

Moving forward, we will increase our global presence, bolster our support for better and safer treatment for childhood infections, and invest more thoughtfully in collaborative science.

We will also continue to forge lasting partnerships and make sure our research is meaningful and impactful.

Carlo Giaquinto,
on behalf of Penta Foundation Board of Directors



Methodological note



Social reporting is defined as measuring, disclosing and being accountable to internal and external stakeholders for organization's activities that have social impact.

Penta Social Report 2021 is written in accordance with *the Guidelines on how to write Third Sector organisations' Social Report*, as outlined in the Ministry of Labour and Social Policies Decree, dated 4 July 2019.

Our Report aims to provide our stakeholders with clear and transparent information regarding our social and environmental responsibilities, the way we pursued our social goals and the results we achieved during the financial year that began on 1 January 2021 and concluded on 31 December 2021.

Where possible, the information related to this period is compared with that of the previous year.

An element of complexity in the Penta Social Report is due to the peculiarity of the reporting perimeter, represented by the multiple entities that the Penta environment is made of, all united by a common vision: the Penta Foundation, a legal entity under the Italian law, its spin-off Penta ID Innovation, our UK branch office and the Penta ID Network, an alliance of clinicians, researchers and healthcare professionals in 31 countries. This Report is designed to provide a unified picture, while devoting attention to the distinct features of the Foundation and those that pertain to the other entities within its environment.

The process of designing the document and selecting and processing its contents was coordinated by the Communications Team at the Penta Foundation, with the involvement of all the Foundation's staff.

Data provided in the Report was compiled through various systems, primarily Penta's Contacts Institutions Projects Database, Penta's accounting system and our Gender Equality Plan.

The Report and the consolidated financial statements have been reviewed, commented on and approved for publication by the Senior Leadership Team and the Board of Directors on 31 May 2021.

The Board of Directors, the President and CFO declare that the consolidated financial statements have been prepared in accordance with the Italian Civil Code and that disclosures herein give a true and fair view of Penta's financial position and results of operations.

The audit report providing an overview of how Penta Foundation is working has been issued, confirming the adoption of best practices. The audit involved reviewing certain metrics to evaluate current economic and social activities. The Audit report confirmed the results and methods as presented.

The stories featured in this Report were collected during the year 2021; they are intended to give a voice to the multitude of people who have contributed substantially to the achievement of our objectives. We want to reflect a positioning that is increasingly oriented towards engaging our stakeholders, enhancing our human capital and generating impact for the communities we serve.

With reference to the quality of information in this Report, we have applied the principles established by the Ministerial Decree (relevance, completeness, transparency, neutrality, clarity, truthfulness and verifiability of data, period competence, comparability, reliability and autonomy of third parties), as well as the guiding principles of Penta (inclusion, team spirit, responsibility, transparency).



Penta's Social Report is published on a yearly basis.

For any information relating to the Annual Social Report, please contact us by writing to:
communication@pentafoundation.org

Our Annual Social Report is also available on our website:
www.penta-id.org/annual-reports

Some 30 odd years ago, we envisioned a network of researchers and healthcare professionals stemming from every corner of the globe, working together to improve the health outcomes of every child and pregnant woman. As the decades have rolled by, we made great strides and we cannot let the war in Ukraine threaten this progress.





1.

ABOUT US



We are a **global, independent, scientific collaboration** devoted to determining and implementing the best ways to **prevent, diagnose and treat diseases in children**

Our vision

To be at the forefront of clinical science that improves prevention, diagnosis and treatment of infection in children



Our mission

To build a global network that conducts excellent research to help health systems achieve optimal outcomes for children



What makes us unique

**One network
One vision
One voice**



Our Network of collaborators and investigators share our vision. We are all convinced of the power of our partnership and are serious about improving prevention and treatment options for children with infection everywhere – for good.

Our values

**Sharing,
collaboration
and belonging**



We encourage and support the sharing and exchange of ideas, innovations, data and proposals within the Network, and we value every contribution.

Our guiding principles

Inclusion, team spirit, responsibility, transparency



As an international collaborative platform coordinating and undertaking research designed to improve child health and combat infections – we include and respect investigators throughout our network. Making space for all those passionate about our mission is something we pride ourselves on - we seek to create a genuine platform for teams to build a body of research that counts for children's wellbeing.

Our journey continues

We are on an exciting journey to become a leading global research partnership working to transform the prevention and treatment of infection in children.

Thirty years ago, Penta started with a shared passion of like-minded scientists who wanted to ensure that children were not left behind in the treatment of HIV/AIDS. Today, that idea has not only spread around the globe; it has birthed other interventions beyond HIV.

The Paediatric European Network for Treatment of AIDS (PENTA) was established in 1991 as a collaboration between paediatric HIV centres in Europe. The primary aim of the Network was to undertake independent clinical trials to address specific questions about antiretroviral therapies in children living with HIV.

Over time, as the Network started to grow beyond HIV clinical trials and observational studies, Penta became an ideal platform to generate, develop and support research and training activities – and thus the **Penta Foundation** was born.

Recognising that other infections in children were

similarly neglected, in 2011, Penta evolved into **Penta ID** (Infectious Diseases), extending its research (both clinical and basic) to other paediatric infectious diseases. With the growing threat of antimicrobial resistance – Penta has since built an ambitious and unique agenda to tackle antimicrobial resistance, developing prevention and

treatment strategies for children and newborns.

In 2021 the fight against COVID-19 became an important focus for us; as central to our scientific strategy, we pulled together our Network members and collaborators to investigate the impact of SARS-CoV-2 on children and mothers' health. We believe that only through

joining our resources and experience can we advance our knowledge and inform strategies for virus control.

As we continue to accelerate towards truly becoming the reference in child health research, we'll keep being guided by the values and behaviours that underpin everything we do.

From our initial focus on HIV to the inclusion of other infectious diseases

1991

Penta
Paediatric European Network for Treatment of AIDS

2004

Penta Foundation
was set up, an Italian based non-profit organisation

2011

Penta ID
Extension of the Network to address other Infectious Diseases

2016

Penta ID Innovation
For-profit spin-off company

2019

Penta UK
Our UK-based charity

2020

Penta ID Network
Launch of the 5-year scientific strategy

2021

Penta turns 30
Start of the Brighter Future conversations



“There was a time mothers had to grapple with the fact that their children may live with HIV because there was nothing they could do about it. With scientists and communities coming together, they were able to develop some kind of breakthrough. And today so many children are born living free of HIV to parents who are HIV positive. What a miracle! And this work is not over yet. We know that so many other infectious diseases are still out there. So, I join Penta to say together we can paint a brighter future for child health research.”

Kehinde Bademosi
storyteller, Penta Foundation



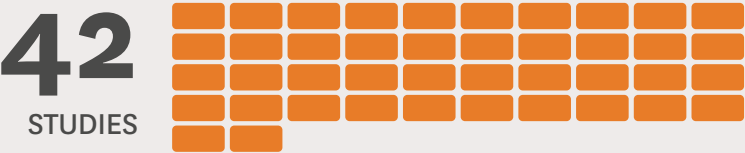
Sun & Petals is a 12-minute award-winning documentary (and official documentary for six major film festivals) about how mothers and children were left behind in the response to HIV/AIDS in the early days of the pandemic.

Researchers and doctors, recognising this as a major problem, joined hands and established Penta in a collaborative effort to ensure equitable and inclusive access to medication for women and children globally.

This is a documentary of shared and connected stories told by scientists, advocates and the families whose children's lives were affected by HIV.

[WATCH OUR FILM](#)

Since we started



MORE THAN
50,000
WOMEN AND CHILDREN ENROLLED
IN OUR STUDIES (SINCE 2012)

WITH OVER
280
MEMBERS IN OUR
NETWORK

OVER
250
PEER-REVIEWED
SCIENTIFIC ARTICLES

An interview with Diana Gibb

As one of the founders of Penta in 1991, Diana Gibb has led us through a journey of impactful research and medical management change. Here she reflects on how challenges in 2021 further shaped our work and organisation.



Diana Gibb,
member of Penta
Foundation Board of
Directors

What has changed in these 30 years?

What has not changed and keeps driving us?

The biggest change over the last 30 years since Penta started, has been the evolution in the landscape of paediatric HIV. In 1991 I remember looking after incredibly sick young children with HIV who often died and we had no specific treatments. There was no prevention of HIV transmission from mother-to-child and mothers often didn't know they had HIV. This is unrecognisable today where, with ART, transmission from mother-to-child is rare and most HIV-infected children are reaching adulthood. This is all very

good news, and Penta trials and research have contributed significantly to bringing better treatments to children. Sadly, there is still no cure, and children need lifelong treatment, so there is more work to do. Our trials have become more innovative and collaborations have expanded globally, particularly to African partners. Penta has expanded from being solely HIV-focused to other infections including antimicrobial resistance, sepsis, hepatitis, fungal infections and of course, more recently, COVID-19. We undertake many forms of research from large cohort collaborations, pharmacokinetic studies to basic science, these also

being efficiently nested within trials. What hasn't changed with expansion and improvements in structure and oversight, is Penta's commitment and enthusiasm for research, and the unswerving sense from individuals of belonging to Penta.

How has Penta evolved in 2021?

In 2021 in the midst of the COVID-19 pandemic, Penta, collaborating clinical centres, trial and study coordinating teams at trial units have found innovative ways to continue research more or less on track. Penta has continued to successfully obtain new funding,

particularly for COVID-19 research, thereby ensuring women and children are not left behind. Other highlights have been the wonderful work of the Youth Trials Board, first set up within the ODYSSEY trial, but expanding to other trials, with global (particularly African) representation, and the start of a vibrant early career researcher group, including members from low- and middle-income countries. All these activities owe much to dedication and support from the core Penta Foundation team in Italy.

What would you personally mention as a key achievement of 2021?

I have to mention completion of both the global main ODYSSEY trial evaluating new treatment with dolutegravir for children, published in New England Journal of Medicine at the end of 2021, and the 'baby ODYSSEY trial' which will be published in 2022. ODYSSEY has informed WHO and other global ART guidelines, has contributed significantly to licensing simplified dolutegravir dosing for children and used a new innovative Bayesian design of borrowing information from the older children in the main trial to inform the baby cohort. I think this could be an important new way forward for paediatric trials in the future.

Coming full circle, has COVID-19 changed the way Penta works and how?

COVID-19 has changed everything for everyone! Some things are better – less travelling and more inclusion in on-line meetings particularly for centres in LMICs. PentaTr@ining has continued and Penta 'Aperitivo' – our monthly online scientific webinars – have been vibrant. Of course, we are all very much looking forward to meeting again face to face. COVID-19 is here to stay but Penta is thriving and in addition to all its other activities, will, I am sure, contribute enormously to our understanding of COVID-19 in children.

Where are we with childhood infections?



INFECTIOUS DISEASES

Globally, **INFECTIOUS DISEASES**, including pneumonia, diarrhoea, malaria and sepsis remain **THE LEADING CAUSES OF DEATH FOR CHILDREN 1 MONTH TO 9 YEARS OF AGE.** (WHO)



HIV

In 2020 there were **1.7 MILLION CHILDREN (0-14 YEARS) LIVING WITH HIV.** If untreated, children living with HIV experience the highest **RISK OF MORTALITY IN THE FIRST 5 YEARS OF LIFE.** Children have persistently lower ART coverage globally as compared to adults. (UNAIDS)



NEW HIV INFECTIONS

Most of the **150,000 NEW HIV INFECTIONS** among children occurred because adolescent girls and women **COULD NOT ACCESS OR CONTINUE WITH THE HIV TESTING, PREVENTION AND TREATMENT** services throughout pregnancy and breastfeeding. (UNAIDS)



LOWER RESPIRATORY TRACT INFECTION

LOWER RESPIRATORY TRACT INFECTION IS THE LEADING INFECTIOUS CAUSE OF DEATH AMONG CHILDREN UNDER 5, killing approximately **800,000 CHILDREN A YEAR.** In many parts of the world, a child dies from pneumonia every 39 seconds even though the disease is entirely preventable and can be easily managed with antibiotics. (UNICEF)



TUBERCULOSIS

TUBERCULOSIS (TB) is a disease that the world knows how to prevent and treat. Yet, **OVER 600 CHILDREN UNDER THE AGE OF 15 DIE FROM IT EVERY DAY** – nearly a quarter-million each year. Most of these deaths occur among children under the age of 5. (UNICEF)



ANTIMICROBIAL RESISTANCE

More than **214,000 BABIES DIE BECAUSE OF ANTIMICROBIAL RESISTANCE ANNUALLY,** with up to 40% of all bacterial infections among newborns showing drug resistance. (GARDP)



HEPATITIS C

An estimated **3.3 MILLION CHILDREN ARE LIVING WITH CHRONIC HEPATITIS C INFECTION,** with 20 countries accounting for 80% of all cases among children 0–18 years of age. (GAP-F)



LACK OF NEW ANTIBIOTICS

THERE ARE VERY FEW NEW ANTIBIOTICS UNDER DEVELOPMENT TO REPLACE ANTIBIOTICS THAT NO LONGER WORK. The latest discovery of a new antibiotic class that has reached the market was back in 1987. (ReAct)

Our objectives for the period 2020-2025

At the heart of our studies is our desire to improve the health and wellbeing of children across the world. We are committed to making the best treatments available to children in all disease areas in which we are active. We can count on a unique and ever-growing network of investigators, who are leading champions for child health in their home countries.

To nurture

a vibrant network of experts and investigators generating solutions for children's health, notably infections

To develop

impactful research on prevention, diagnosis and treatment of infections in children

To deliver

training and education programs for clinical providers and researchers that ensures high quality of care and research

To collaborate

with international partners to drive research agendas and deliver impact

To inspire

a new generation of leading researchers in paediatric infectious diseases

Our progress in realising our vision will be measured by the number of

Infections prevented and treated in children, decreasing mortality, morbidity, disability-adjusted life years & healthcare cost

Better therapeutic and prevention options for children and in pregnancy

Better and faster licensing of drugs for paediatric use

The power of Penta to advance the UN Sustainable Development Goals

In 2021 we created a strong foundation and positive momentum for impactful research. Our studies are generating a direct contribution to the United Nations Sustainable Development Goal 3 *Ensure healthy lives and promote well-being for all at all ages.*



3 GOOD HEALTH AND WELL-BEING



Despite success in the prevention of vertical transmission of HIV, there were still an estimated 1.7 million children living with HIV and 150,000 new infections in children in 2020 alone. Sub-Saharan Africa is where 9 out of 10 children affected by HIV live. With good treatment, these children can reach adulthood and have significant gains in life expectancy.

Findings from our ODYSSEY study on the use of dolutegravir (DTG) in children living with HIV have contributed to informing the WHO dosing guidance and to new licenses for the drug in the United States and Europe. DTG's potency, high resistance barrier, safety, tolerability, acceptability and ability to dose with anti-tuberculosis therapy compared to previous standard-of-care regimens, represents an important milestone in the access to better treatment for infants and young children. Data from the ODYSSEY study can drive the rollout of DTG-based ART, and also provide

increased momentum to identify all HIV-infected children as early as possible, so as to start early treatment and improve outcomes.

The United Nations Sustainable Development Goal 3.8 aims by 2030 to “Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all”.

At Penta, we are fighting to minimise health inequalities between adults and children, and between low- and middle-income, and high-income countries. In the UNIVERSAL project, we are developing two priority fixed dose combinations that will enable all children, from high-income countries as well as from Africa, to receive safe treatment (already used in adults) as a single medicine.

The SDG Goal 3.2 aims by 2030 for all countries to reduce neonatal mortality to as low as 12 per 1000 live births.

From 2000 to 2015, global under-five mortality has fallen by 44%. Mortality rate reductions were particularly marked in Sub-Saharan Africa, nearly halving within 15 years. But the pace of change in neonatal mortality has been much slower. Neonates now account for at least half of under-five deaths. Up to 4 in 10 neonatal deaths may be preventable with high-quality care for mother and baby at birth. But while care in a neonatal unit results in a greater chance of survival in newborns with serious illness, it also increases the risk of exposure to bacteria from the hospital environment. These can cause serious infections in babies, which are commonly resistant to many routinely used antibiotics.

In resource-limited settings, simple tools to monitor outcomes can provide simple bundles of optimal care, which combined with cheap low-cost interventions

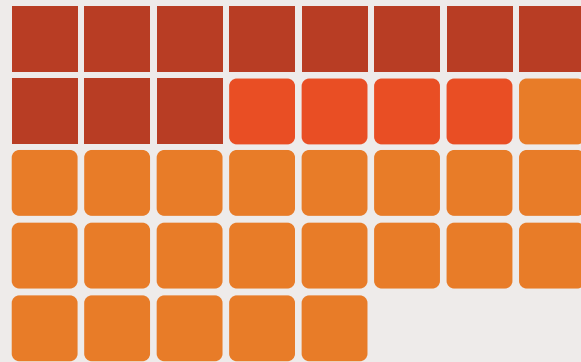
such as antiseptics, have the potential to significantly reduce morbidity and mortality. Through the NeolPC project, we want to improve the availability of tested cost-effective models for prevention and treatment of bacterial infections in healthcare settings with high prevalence of resistant infections.

Penta is also developing a range of strategic trials to identify novel combinations of old antibiotics and new antibiotics to reduce mortality in babies with serious infections. These trials will also provide the evidence needed for future global optimal prescribing guidelines for antibiotics.

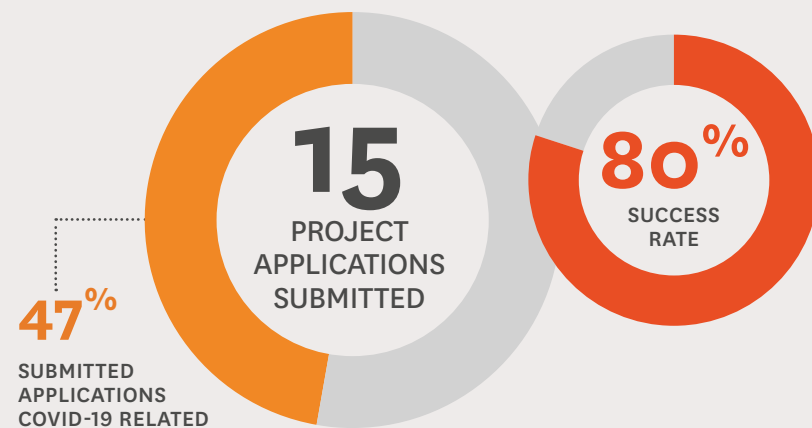
Penta will continue to build upon the pillars of this work in research and education while helping health systems achieve optimal outcomes for pregnant women and children.

2021 at a glance

37
STUDIES AND
PROJECTS ONGOING



11 STARTED IN 2021
4 CONCLUDED
ENROLMENT



MORE THAN

110

ACTIVE SITES IN **31** COUNTRIES
ENGAGED IN OUR STUDIES

5 PENTATR@INING COURSES
HELD IN **2021**

MORE THAN

1 000

DELEGATES FROM OVER
20 DIFFERENT COUNTRIES
TRAINED

HIV & OTHER CONGENITAL INFECTIONS
ONLINE COURSE DELIVERED
IN SPANISH AND RUSSIAN

TOTAL FUNDS
MANAGED BY THE
FOUNDATION

167 M EUROS



2.

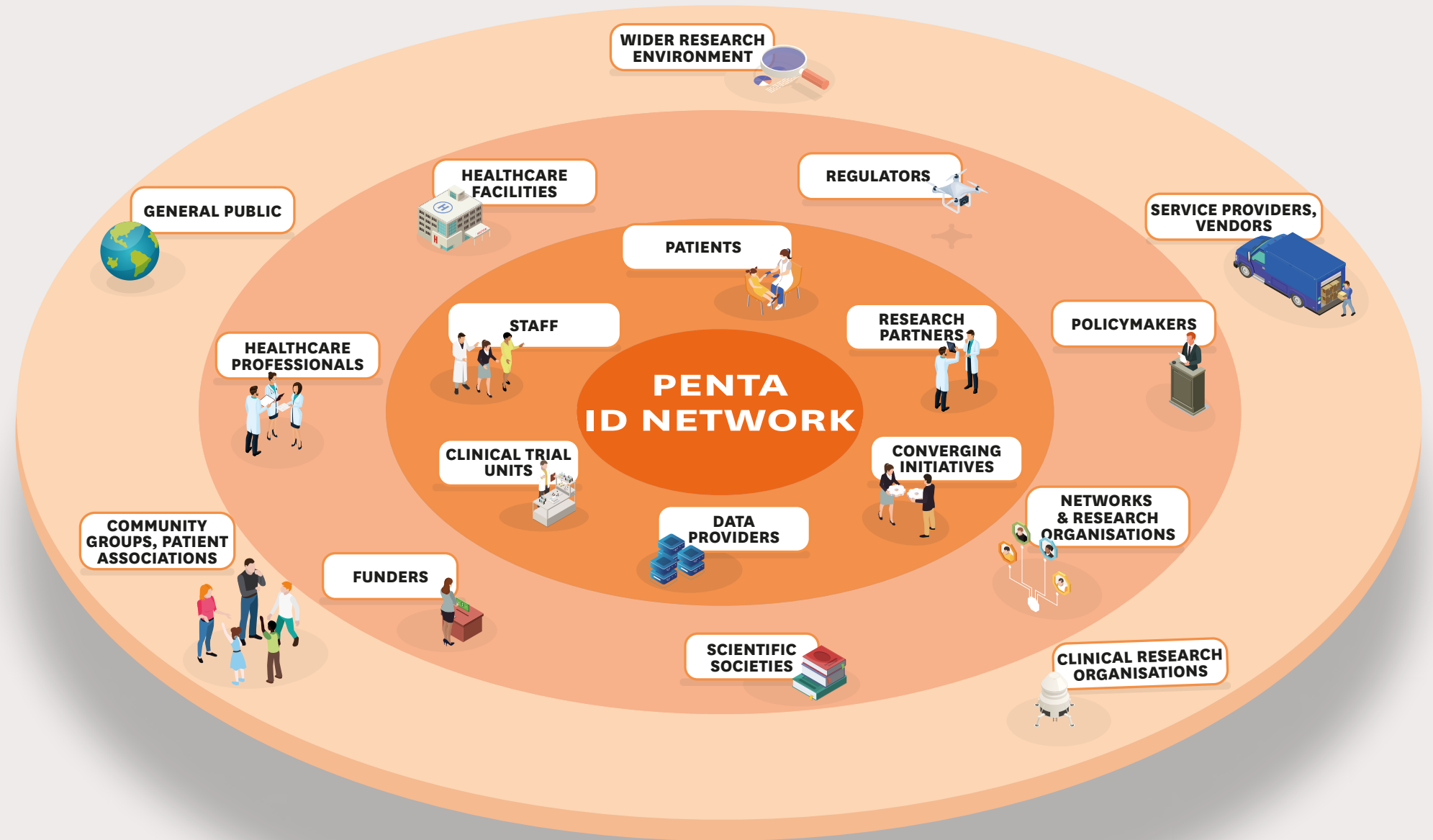
HOW WE OPERATE



The flexible,
multidimensional,
Penta environment

Our Stakeholders

Our mission is our guiding light and cannot be accomplished by us alone. Our stakeholders play significant roles in the efforts to achieve our goals. We actively seek out and promote partnerships, resources, and input from our stakeholders to accelerate efforts to advance our mission and achieve lasting impact.



Penta ID Network

The Penta ID Network is central to everything we do at Penta. With the skills, experience and expertise of all our Network members, we develop and deliver world class research and training to drive understanding and good practice around the management of infections in children, young people and pregnant women.

The Penta ID Network reaches almost every corner of the world, with members spanning from Asia, Africa and the Americas and has grown steadily since its initial set up in Europe back in 1991. Our members are clinicians, researchers and healthcare professionals, and cover an incredible depth and breadth of expertise in paediatric infectious diseases.

We leverage this diversity in conducting world-changing research and cutting-edge training programmes – all with the aim to improve the lives of women and children

through the generation and application of new scientific knowledge.

Throughout 2021, we worked towards the key scientific priorities set out in our Penta ID Network **scientific strategy**:

- HIV & viral infections
- Severe sepsis and antimicrobial resistance
- Pregnancy and vertical transmission
- Neglected or emerging childhood infections

Our **scientific working groups** have been working to lead the delivery and development of new research concepts, training programs and activities in each of these scientific areas.

With six **scientific working groups** in place in 2021, we began reviewing the Penta ID Network organisational structure to enable greater transparency, decision making and collaboration. Changes to the organisational structure of the Penta ID Network will be implemented in 2022.

The scientific working groups focus on:

- Blood-borne viruses
- Infection in pregnancy and vertical transmission
- Severe bacterial infections and AMR
- Fungal Infections
- Basic Science
- Clinical Pharmacology.

Training and education is a cross-cutting theme across our scientific working groups. Our training and education working group coordinates these programmes and is made up of key people from these scientific working groups.

STORIES FROM PENTA



Adilia Warris,
lead of Penta Fungal
Infections Scientific
Working Group

“See, I believe that together with Penta, we can paint a brighter future for child health research.”

It is an immense pleasure to be part of the Penta family. Yes, it is a family. Or how does one describe an international group of paediatricians and researchers with a shared passion to improve children's health? Penta's experience and expertise in preventing and treating HIV in children have shown to be valuable tools for other infectious diseases affecting child health. Take fungal infections, for instance. Superficial fungal diseases can result in lifelong disabilities, such as blindness and skin and limb deformities. Some fungal diseases can even lead to childhood death. Unfortunately, those infections remain understudied compared to other childhood infectious diseases. I consider it a great honour to lead the fungal infections program as part of Penta Child Health. With Penta's unique infrastructure, we now have a tremendous opportunity to design and set up clinical trials to investigate the burden of fungal diseases in children and learn how to best manage them. And I can't wait to see better health outcomes for children worldwide as a direct result of these investigations. I believe that together with Penta, we can paint a brighter future for child health research.



Julia Bielicki,
lead of Penta Severe
Bacterial Infections and
AMR Scientific Working
Group

“At Penta you can literally stand on the shoulders of giants to address questions that are of importance for children's health all over the world.”

When I joined Penta, I was told Joining Penta is like joining a family. You get love, support, discussion, laughter and tears. And most importantly, you will never be able to leave. But also, why would you want to?

At Penta you can literally stand on the shoulders of giants to address questions that are of importance for children's health all over the world.

It is an amazing platform to launch very complex and ambitious projects, with innovative approaches. As a member, you must expect to get challenged: what is the research question? Is this the best way to answer the question that you want to address? But, if you're onto something good, you will get the support you need to do research that can literally save the lives of millions of children around the world.

Thinking back to myself 10 years ago, it is true to say that I've never wanted to leave Penta. I did get all the things that I was promised and I'm hoping that future generations of researchers who join Penta will benefit from the same.

STORIES FROM PENTA

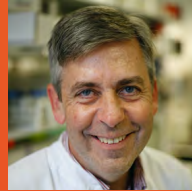


Laura Ferreras Antolin,
member of Penta Early
Career Researcher
Group

“I have been inspired by Penta in the way they strive for answers.”

Together we can paint a brighter future for maternal and child health research. I thought that the film Sun & Petals is a good summary of why Penta is the ideal place to work and grow as an early career researcher. Paul Farmer said “With rare exceptions, all of your most important achievements on this planet will come from working with others or, in a word, partnership”. Penta is that community. Personally, it is giving me the opportunity to learn and collaborate with colleagues from different backgrounds, which is really motivating. It is exceptional to find a research group as diverse, strong and where the younger members are so well supported and mentored.

While working as a paediatrician, we face an endless number of questions. For me, to work in paediatric research is all about asking the right questions and finding the answers to make children’s health (and their future) better. Many of these questions do not have an answer yet...or the questions keep on changing! I have been inspired by Penta in the way they strive for answers. From the start focused on HIV to the new challenges with AMR, Invasive Fungal Disease and the list that goes on and on...



Mike Sharland,
member of Penta
Foundation Board
of Directors

“Penta is a supportive environment for young researchers.”

It is crucial to identify, train and mentor a new generation of researchers, if we want to succeed as a sustainable research organisation leading the response to global paediatric and maternal health challenges. Penta has always worked as a global clinical network, identifying the next generation of clinicians and scientists in each collaborating centre. All members of Penta ID Network are encouraged to identify the next generation of researchers to become involved in existing projects, undertake PhDs, write papers, present results at major meetings and develop their own research ideas and grants. Penta is a supportive environment for young researchers, enthusiastically encouraging the development of new networks and international collaborations.

2. HOW WE OPERATE

Early Career Researchers

A key focus for the scientific working groups is facilitating the involvement of early career researchers to support the sustainability of the Penta ID Network. In 2021, we set up an early career researcher’s (ECR) working group, where all ECRs in the Penta ID Network can come together to share ideas, learnings, and access peer support. One of the central aims of the ECR working group is to support the growth and development of the next generation of leaders in paediatric infectious disease by:

- Developing a Penta mentoring programme, as well as channels for peer support
- Providing training opportunities and an information platform specifically tailored to ECRs
- Promoting involvement in the Penta ID Network and sharing career development opportunities.

Engaging with our Network members

Our members are involved in everything we do at Penta. We meet regularly in online and face-to-face Scientific Meetings, online Penta ‘Aperitivo’ webinars and connect with members through our communications.

All of these provide an avenue for members to share information, to network and strengthen their collaboration. As we go forward into 2022, we will be developing more channels for member engagement.

STORIES FROM PENTA



Hilda Angela Mujhuru,
Penta ID Network

“So, Penta’s vision and recognition of the need for child friendly formulations and simplified dosing regimens for children was the best thing ever.”

In the early years of HIV, seeing children with HIV with nothing to offer them was the most difficult part of this pandemic for most of us. It was hard to counsel a family, one didn’t know what to tell them when they asked for how long their child would survive.

It was the look in their eyes, the expression on their faces that told the story.

A story of a devastated family, of a system that has failed them, a story of lost hope and loss of trust in this medical profession which had no answers! 1987 brought a glimmer of hope when Zidovudine (AZT) became available – but this was only for adults with HIV. At that time, we felt that children were not left behind, but they were left out!

When adult formulations became available as fixed dose combinations, we started breaking adult tablets for treatment of HIV in children....

trying to save children’s lives. It worked to some extent, I bet with a lot of challenges!

Then some paediatric formulations started to be available, mostly as single drug and as suspensions. Some of the suspensions were unpalatable and very difficult to administer with poor acceptability by the children. So, in real life the children’s treatment was not optimal. Practically the treatment was not effective.

Because they were single drug formulations, parents would come with huge bags to carry the bottles of antiretroviral drugs. Added to this was the need for refrigeration which was barrier for most patients. I remember advising parents to improvise using sand or mud for drugs like Lopinavir/Ritonavir, which needed refrigeration.

So, Penta’s vision and recognition of the need for child friendly formulations and simplified dosing regimens for children was the best thing ever. Clinical trials on fixed dose combinations for children and dispersible tablets could not have been timelier. It was such a relief when these became readily available for children with HIV at appropriate dosages and adopted by WHO for international guidance – thanks to policy changing studies like ODYSSEY and CHAPAS to mention but a few.

Simplification of regimens for children has remained one of Penta’s main objectives, reflected in the clinical trials we are conducting in collaboration with various partners. These make it possible for children to also get once daily dosing of antiretrovirals. I applaud Penta for the continued advocacy and ensuring that children are prioritised when decisions are made on clinical trials for most efficacious medicines, thereby accelerating the availability of these medicines for children. So much has been accomplished @30, yet so much still to be done!

2. HOW WE OPERATE



Penta Foundation

We invest in projects that improve the lives of children with infections.

The Penta Foundation is a non-profit organisation of social utility (under Italian Legislative Decree no. 460 of 4 December 1997) set up in 2004 by "Comitato Assistenza e Ricerca AIDS Pediatrico C.A.R.A.P - ONLUS" (AIDS Paediatric Assistance and Research Committee - non-profit organisation).

The Foundation's scope is to develop, promote and support scientific research of particular social interest concerning disadvantaged people in the field of paediatric infectious (and general) diseases. In this context, the Foundation is a coordination hub of a network of scientists, researchers and healthcare

professionals at an international level, dedicated to child health. In this role, it is a promoter of clinical studies, it leads national and international research projects and delivers training programmes.

The Foundation has adopted an Organisation, Management and Control Model under the Italian Legislative Decree No. 231 of 8 June 2001,

related to the "Administrative liability of legal entities, companies and associations, including those lacking legal personality". This Model includes the appointment of a supervisory body and an ethical code that outlines the general behavioural standards to which all people working or collaborating with the Foundation must adhere.

Our governance

Penta's Board of Directors is the Foundation's primary governance body.

Furthermore, in the spirit of full transparency and to ensure compliance with applicable laws and regulations, Penta's Board has adopted a supervisory structure composed of a Statutory Supervisory Body and a Supervisor specifically focused on verification of compliance with the Italian Legislative Decree 231/2001.

As a constructive mechanism for promoting continuous improvement, the Board undergoes a periodic performance self-assessment.

In accordance with EU Regulation 679/2016 General Data Protection Regulation (GDPR), we have appointed a **Data Protection Officer**, an external expert consultant who assists the Foundation in the implementation of the Guidelines of the European legislation on personal data protection and who constitutes the contact point between the Italian Data Protection Authority and any person interested in the way we manage personal data.

The current members are:

- **CHAIR**
Carlo Giaquinto
- **VICE CHAIR**
Diana Gibb
Mike Sharland
- **BOARD OF AUDITORS**
Francesco Gallo (President)
Francesco Grassi
Elisa Mormile
- **SECRETARY GENERAL**
Francesco Simone
- Carlo Giaquinto (*Chair*), Paediatrician and Professor of Paediatrics at the University of Padua, Italy
- Diana Gibb (*Vice Chair*), Paediatrician and Professor of Epidemiology and Clinical Trials at MRC Clinical Trials Unit at University College London
- Mike Sharland (*Vice Chair*), Paediatrician and Professor of Paediatric Infectious Diseases at Centre for Neonatal and Paediatric Infection, St George's University London, UK
- Paolo Rossi, Immunologist and Professor of Paediatrics at the Children's Hospital Bambino Gesù/ University of Rome Tor Vergata, Italy
- Claire Thorne, Epidemiologist and Professor of Infectious Disease Epidemiology in the Population, Policy and Practice Research and Teaching Department, UCL Institute of Child Health, University College London, UK
- Elizabeth Robinson, Vice Chairman Indaco Venture Partners SGR.

The six members of the Board define the rules and practices by which the Foundation is directed and controlled. They review and approve the yearly financial statements. The Board delegates processes and day to day management of activities to the Senior Leadership Team which is composed of the Chief Financial Officer, the Chief Programme Officer and the Chief People, Communications & Culture Officer.

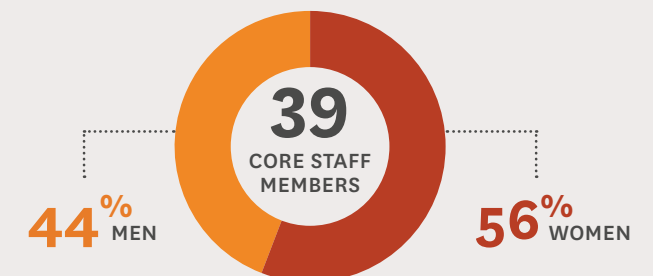


Penta Foundation staff

We take pride in our multiculturalism, our diversity and inclusion. We offer a diverse, safe and ethical working environment, in which all employees have equal opportunities to realise their potential.

Our people

38.5
YEARS
AVERAGE AGE



7
COLLABORATORS

3.8%
TURNOVER RATE IN 2021

20
CONSULTANTS

90%
PERCENTAGE OF STAFF WITH BACHELOR'S DEGREE

50
VOLUNTEER EXPERTS FOR PENTATR@INING

60%
PERCENTAGE OF WOMEN WITH A LEADING ROLE (LINE MANAGERS AND DEPARTMENT CHIEFS)

97.3%
RATE OF PERMANENT WORK CONTRACTS ON TOTAL NUMBER OF EMPLOYMENT CONTRACTS

Our responsibility towards our People

As part of our 2020-2025 strategy, we are making positive interventions to embed the ethos of **diversity and inclusion** into policy, processes and everyday practice, working to eliminate barriers to participation and success. In 2021 we started to analyse the gender dimension in our mode of operation, based on the Gender Equality Assessment Implementation (GEAI). The data we collected show that Penta has achieved 54,15% of GEAI. Our will is to achieve even greater equality rates in the coming years. The way we will achieve this will be outlined in our Gender Equality Plan (GEP), our structural plan of objectives,

actions and targets. As part of the plan, a Gender Equality Work Group will be set up to implement and monitor the progress of GEP. Our commitment to high levels of equity does not stop with our employees. We strive to build gender equality in research and training, both on the side of researchers and trainers, and on the side of patients and trainees day by day.

We have significantly improved our **Company welfare**. In 2021 Penta introduced a facultative paternity leave package. Where the Italian law sets a 7-day paternity leave 100%

financially covered by the Social Security Service, Penta has added two more weeks, 100% financially covered by the Foundation and three-month remote working reserved to new fathers.

We are building teams by nurturing our employees' **sense of purpose**, a key element of our social responsibility. In October 2021 we held our annual retreat with all our staff members and close collaborators; this is an important opportunity to engage our people, understand their needs and help them make sense of what they do.

Because we believe our success hinges on highly qualified and motivated employees, we launched an **Education call in March 2021**, open to all our employees, to support their individual career plans in a transparent manner. The Education call provided 17,900.00 euros to fund job specific training; 53.8% of our employees benefitted from financial support, with a total of 97.5% applications accepted. In addition to this, all Penta Project Managers attended a Prince2 Project Management training and obtained the certification.

“Our objective is to reduce the gender gap, enabling women to pursue their career paths. As we have seen during the COVID-19 pandemic, we believe fathers have the right and the duty to share the parental responsibility with mothers. If this does not happen, women’s careers will remain only an option. The Italian law is still behind but our facultative paternity leave package is in line with European best practices. We can do more, this is only the beginning. I strongly believe in equal parental leave as something that Europe and companies should promote together.”

Giuseppe Bonura

Penta Foundation, Chief People, Communications and Culture Office



Our respect for the planet

We want our offices to be great places for our people and for the environment

The United Nations recognises the role of responsible consumption and production in achieving the Sustainable Development Goals. The targets under Goal 12, in particular, call on organisations to substantially reduce waste generation through prevention, reduction, recycling and reuse.

One way we bring our purpose to life – to build a global network that conducts excellent research to help health systems achieve optimal outcomes for children – is by integrating environmental considerations into our research and education work.

To minimise our waste footprint, we are reducing single-use plastic in our offices and expanding our recycling programs. We have dramatically reduced the amount of printed paper in our offices and we have completely gone digital with our corporate communication and dissemination activities.

We are also engaging our suppliers to help reduce their footprint. We have made this a core topic in conversations with our collaborators and vendors, and we are continuing to work with them to strengthen our environmental performance.

We are working to weave this mindset into all areas of our action - from the Foundation's operations to our studies implementation - to achieve our goals while also creating long-term value for all our stakeholders.

Penta Foundation core competencies

In 2021, following digital transformations across societies and healthcare systems, we strengthened our capacity to analyse Real-World Data and the resulting Real-World Evidence for medication use, benefits and risks.

Data management and infrastructure

The Data Management and Infrastructure (DM&I) team brings together organisational and technical expertise to support the development of key areas of work. The team collaborates with experts from the extensive Penta ID Network to deliver high quality and innovative data services to healthcare research. From data management planning and data collection for observational studies to validation, transformation, long term storage and secondary use of data. In 2020, a seed was planted by the DM&I team promoting a technical and cultural shift toward cloud technologies and information security. A digital transformation to

improve efficiency, value and innovation within Penta that fully blossomed during 2021. The DM&I team now handles health research data with the efficiency, security, and regulatory compliance that only modern cloud technologies can ensure. Thanks to its cloud-based approach, in 2021 the DM&I team was able to provide internal data services for Penta's operations as CIP smart dashboarding and reporting tool for project management. As we move onto 2022, we are working to bring Machine learning (ML) and Real-World Data (RWD) approaches to the forefront of our commitment to support excellent healthcare research within Penta ID Network.

Program Operations

Following the reorganisation of the Operations Team in 2020, where the Project Management and the Clinical & Regulatory areas were merged, in 2021 the team focused on gathering new skills in operations management while continuing to support effective coordination and oversight of all Penta projects. In 2021, the Operations team promoted the initiation of two international European funded projects where Penta will be leading on different tasks, among which project management and overall coordination of the consortia. As in 2020, the team

continues to support the Penta ID Network in conducting global multi-centre clinical research studies, sponsored by Penta. Our Clinical Project Managers have been working along CTUs and CROs in opening two global clinical trials that will facilitate the authorisation and use of paediatric formulations for HIV treatment. With our regulatory expertise, we continue to act as the primary point of contact for Regulatory Agencies and the European Medicines Agency for Paediatric Investigation Plan applications.



PRESIDENT
Carlo Giaquinto



CHIEF PROGRAM OFFICER
Laura Mangiarini

- NETWORK, EDUCATION AND TRAINING
- PROGRAM OPERATIONS
- DATA MANAGEMENT AND INFRASTRUCTURE



CHIEF FINANCE AND ADMINISTRATION OFFICER
Luigi Comacchio

- FINANCE
- LEGAL
- ADMINISTRATION



CHIEF PEOPLE, COMMUNICATIONS AND CULTURE OFFICER
Giuseppe Bonura

- HR
- COMMUNICATIONS
- IT
- QUALITY ASSURANCE

Our forward-thinking leadership team is made up of dedicated, focused and experienced individuals who work hand in hand with each other and the Penta staff to make a difference for all our stakeholders.



Quality Assurance

Penta is committed to promoting and maintaining a quality-focused culture to ensure the delivery of high-quality, meaningful research. At Penta, we define quality as meeting and exceeding expectations in all critical aspects of research, including:

- Ensuring participant safety and wellbeing.
- Safeguarding compliance with regulatory requirements and international standards and guidelines.

Streamlined and efficient operations based on structured and documented processes. Our approach to managing quality is through the Penta Quality Management System (QMS), as an instrument to achieve the intended objectives, guarantee compliance with requirements and expectations, and promote continuous improvement. We do this by holding ourselves accountable to the highest standards and by requesting that the same standards are

adopted by our collaborators when working with us.

In 2021, Penta successfully underwent several external audits/assessments, with the intent to evaluate adherence to principles and requirements as prescribed by regulatory bodies, and to the expectations of our partners. We took this as a chance to benchmark the status of our performance and to identify new opportunities for improvement.

Finance, Legal and Administration

Penta values transparent and sound financial management and promotes a culture of strict compliance with national and international standards. The Finance, Legal and Administration team works to guarantee the efficient and effective use of financial resources and provides the Penta ID Network with the legal expertise it requires to achieve success in its endeavours.

Network, Education and Training (NET)

The NET team brings together training, education and Penta ID Network management to support the development and synergy between these key areas of work. The team collaborates with experts from the extensive Penta ID Network to deliver high quality, interactive, comprehensive, tailored training and education courses to healthcare workers and young people across the globe, with a particular focus on low- and middle-income countries. This is achieved through an innovative

approach of combining face-to-face courses with engaging digital e-learning methods. Over 2020-21 we fully revamped our PentaTr@ining online platform and further embedded the participation of young people in the design and delivery of our courses. This is another key area of work for the NET team, supporting and coordinating the involvement of children and young people in all of our work in Penta. The team provides structure and management to the Penta ID Network, and in 2021 we

initiated the early career researchers's (ECR) working group to support ECRs across the globe to develop their research careers. As we move into 2022, we are working to enable greater collaboration between all of our members. We will be launching the Penta ID Network Membership and implementing some improvements to the organisational structure of our Penta ID Network, so that we can ensure we are building a Network that is truly built to last.

Communications

We believe that making science accessible to everyone is key for democracy and progress. Penta is committed to communicating its methods and results openly, and engaging in the public debate around the role of science and the importance of paediatric research in our society.

Penta's Communication team coordinates the internal and external communications of the Foundation and across the Network.

We are a diverse and experienced group of people, committed to putting the needs of mothers and children with infection high up on the political agenda and citizenship awareness. Aside from supporting the dissemination of the outcomes of all the projects and studies Penta participates in, the Communications team strives to build awareness of Penta and its commitment to excellence with the general public.

We are enthusiastically engaging with the Youth Trial Boards, our scheme of active patient participation in paediatric HIV clinical trials. They play an integral role in helping society and the general community understand the relevance of our research and ensure that the ethos of "About us, with us" is central to everything we do. In 2021 we launched the video series **Penta on a mission**, to communicate the benefit of our research projects to society.

On 1 December, World AIDS Day, we proudly launched the campaign **Paint a brighter future for child health** to celebrate Penta's 30th anniversary. Our film **Sun&Petals** was selected as the official video for some of the main film festivals in Europe.

Penta ID Innovation

We want to accelerate the research that makes a difference to children's health.

Penta ID Innovation is Penta's consultancy spin-off. Stemming from the Penta ID Network of experts in paediatric infectious diseases, Penta ID Innovation aims to reduce the gap between industry and academia to deliver high-level consultancy services and enhance paediatric drug development.

Working for the biggest players of the market, Penta ID Innovation is collaborating with IQVIA and CROMSOURCE (two Contract Research Organisations) to create new capabilities in managing worldwide drug development programs to address the challenges of bringing new therapies to children.

Today we can claim that Penta ID Innovation clinical and regulatory expertise in antifungal treatments for children is considered a point of reference by most companies operating in the sector.

Penta UK

Strengthening opportunities and collaborations with the UK.

In line with our growth, the Penta Foundation has set up a branch office in the UK, which has been registered as a charity. The objectives of the Charity are for the public benefit and in

line with the Foundation's strategic priorities. The first research initiative of Penta UK is now underway and new opportunities are being explored.

Our key partners

Our passion for collaborative research and knowledge sharing never ends. We will continue to grow our Network of researchers and build new partnerships to expand our research and training.

Penta's clinical research is only made possible through our long-standing collaboration with three leading clinical trials centres: MRC CTU at UCL (UK), INSERM (France) and PHPT (Thailand).

Our commitment to keep the focus on children's need for better medicine also reflects on our partnerships and collaborations. The Global Accelerator of Paediatric Formulation – **GAP-f**, which we contributed to set up, entered into its implementation phase this year. GAP-f is a WHO-led innovative collaborative

model that will accelerate the availability of optimised treatment options for infectious diseases such as HIV, tuberculosis and viral hepatitis affecting children in low- and middle-income countries. Within this partnership, we are leading the Clinical Research Working Group, that will facilitate all the clinical research activities in the GAP-f portfolio.

Another one of our key partners is the Global Antibiotic Research & Development Partnership – **GARDP**, which is committed to tackling serious and

drug-resistant infections in children by accelerating the development of antibiotic treatments with a focus on global neonatal and paediatric strategic trials aiming to build the evidence base for public health interventions and inform treatment guidelines.

We have also entered into a number of framework collaboration agreements with other organisations that help us deliver our vision.

In Italy, our key partners are Ospedale Pediatrico Bambino Gesù (OPBG) in Rome and the University of Padova. With the clinical team at the Paediatrics Clinic at the University of Padova, we integrate clinical expertise with regulatory and operational skills to ensure that our research produces information which can be translated into practice and accessible medicines.

In Africa, we have formalised collaborations with our longstanding partners; Joint Clinical Research Centre (JCRC) in Uganda and Makerere University – John Hopkins University Research Collaboration (MUJHU), to ensure the delivery of the best care to Ugandan children.

We have strengthened our collaboration with Doctors

“There is an urgent need to develop and ensure access to novel antibiotic treatments to keep pace with rising rates of resistance among babies with neonatal sepsis. We are incredibly grateful to Penta, who have given us essential support to make the neonatal sepsis observational study possible. Guided by these new insights, we have the opportunity to place children at the centre of the international response to antibiotic resistance.”

Manica Balasegaram, Executive Director of GARDP

with Africa CUAMM, a Non-Governmental Organisation based in Italy. Together, we aim to develop programs to protect vulnerable communities in Sub-Saharan Africa.

Penta is a member of the European Network of Paediatric Research at the European Medical Agency (**Enpr-EMA**). We are also part of the WHO's Paediatric Antiretroviral Working Group (**PAWG**) and Paediatric Antiretroviral Drug Optimization (**PADO**).

Thanks to **EPPICC** (European Pregnancy and Paediatric Infections Cohort Collaboration) and **EPIICAL** (Penta's cohorts platform focused on HIV), we have expanded our partnerships

further. The **EPPICC** collaboration has taken on the legacy of EUROCOORD, an EU funded Network of Excellence established in 2011 by the biggest HIV cohorts and collaborations within Europe: CASCADE, COHERE, EuroSIDA, and Penta. Today, EPPICC comprises 12 pregnant cohorts in 9 countries and 24 paediatric cohorts in 18 countries in Europe and Thailand. By sharing scientific expertise and resources, the EPPICC cohorts are collecting safety data on antiretrovirals after their roll out into the market.

The **EPIICAL** collaboration has expanded to new world class laboratories and new cohorts from low- and middle-income countries. This collaboration is becoming a unique basic

research asset for infections beyond HIV.

We have started new collaborations in the area of research on COVID-19. We will bring the expertise and capabilities of our Penta ID Network into **Vac4EU** (Vaccine monitoring Collaboration for Europe), an open community for scientific debate and study implementation around COVID-19 vaccines. Pedianet, a database of electronic medical records of children visiting general practitioners in Italy, is among them.

We have recently signed the EPTRI's Paediatric Manifesto, which contains important recommendations for the inclusion of Paediatric Research topics in the EU Agenda.



3. ACTIVITIES AND ACHIEVEMENTS

Not just
clinical studies,
but **cohort** and
pregnancy studies,
educational,
training
programmes and
big data

Research activities

2021 is particularly significant for Penta as it represents the 30th year of successful activities for our Network! During this time, we have built an ever-increasing portfolio of projects which includes not only clinical trials, but also large observational and cohort studies and pregnancy studies, supported by an expanding basic science platform and training and educational programmes across the world.



Laura Mangiarini
Penta Foundation
Chief Operations
Officer

This has allowed us to nurture a vibrant multidisciplinary network of outstanding researchers and foster innovative partnerships to deliver research programs through which we aim to impact on children lives.

Our ODYSSEY trial provided the definitive evidence bringing two dolutegravir formulations accessible as first and second line for children of all ages and weight, as now recommended by WHO guidelines. The Penta Basic Science platform, initially developed

as a project-based partnership, has now reached the stage of validation of the immunological and virological markers and endpoints in intervention studies. Our continuous recommendations on the need to protect also children in the COVID-19 pandemic has been finally recognised and listened to and in 2021 VERDI, our project which prioritises women and children in the research on new coronavirus variants, was awarded by the European Commission.

These are only few examples of our commitment to fight children's infections and treatment inequalities.

In doing so, we always fathom what is happening around us and across the world, in terms of evolving technologies, methodologies and processes to accelerate the pathway towards our goals, and to be a global network at the forefront of science.

Ongoing research activities

Penta now has a strong portfolio of studies and projects driving sustainable growth.

HIV

Antimicrobial resistance

Other viruses

Network building

COVID-19

2021 studies and projects

HIV

We support research that seeks to better understand both the dynamics of transmission and how to obtain optimal health outcomes for pregnant women and children.

BREATHER Plus

A randomised open-label 3-arm, 96-week trial evaluating the efficacy, safety and acceptability of weekends off dolutegravir-based antiretroviral therapy (ART) and monthly long-acting injectable ART compared to daily dolutegravir-based ART in virologically suppressed HIV-infected children and adolescents in sub-Saharan Africa

Aim

To compare short cycle therapy (five days on, two days off) dolutegravir-based antiretroviral therapy to daily dolutegravir-based ART in virologically suppressed adolescents living with HIV in sub-Saharan Africa

from 2019 until 2024

Penta budget
€ 88,187

Total budget
€ 7,401,327

Funder
European Commission – EDCTP2

Penta’s Role
PARTNER

D3

A randomised non-inferiority trial with nested PK to assess DTG/3TC fixed dose formulations for the maintenance of virological suppression in children with HIV infection aged 2 to <15 years old

Aim

To assess whether DTG/3TC is non-inferior to Standard of Care, consisting of an anchor drug (NNRTI, PI or INSTI) and 2 NRTIs, in terms of virological suppression

from 2020 until 2026

Penta budget
€ 15,245,002

Total budget
€ 15,245,002

Funder
ViiV Healthcare

Penta’s Role
SPONSOR

<div><div>EMPIRICAL</div><div>Empirical treatment against cytomegalovirus and tuberculosis in severe pneumonia in HIV-infected infants: a randomised controlled clinical trial</div><div><div>Aim</div><div>To develop a clinical trial to evaluate whether empirical treatment against cytomegalovirus and tuberculosis improves survival of HIV-infected infants with severe pneumonia</div><div>from 2019 until 2024</div><div><div>Penta budget</div><div>€ 571,420</div></div><div><div>Total budget</div><div>€ 7,680,619</div></div><div><div>Funder</div><div>European Commission – EDCTP2</div></div><div><div>Penta’s Role</div><div>PARTNER</div></div></div></div>	<div><div>EPIICAL</div><div>Early treated Perinatally HIV Infected individuals: Improving Children’s Actual Life</div><div><div>Aim</div><div>To implement novel strategies to obtain long-term viral remission in Early Treated HIV infected Children</div><div>from 2020 until 2024</div><div><div>Penta budget</div><div>€ 8,502,850</div></div><div><div>Total budget</div><div>€ 8,502,850</div></div><div><div>Funder</div><div>ViiV Healthcare</div></div><div><div>Penta’s Role</div><div>COORDINATOR</div></div></div></div>	<div><div>EPPICC</div><div>Kaletra study</div><div><div>Aim</div><div>To assess the safety and efficacy of Kaletra (Lopinavir/Ritonavir) oral solution in children aged 14 days to 2 years who are living with HIV in Europe</div><div>from 2019 until 2021</div><div><div>Penta budget</div><div>€ 534,864</div></div><div><div>Total budget</div><div>€ 534,864</div></div><div><div>Funder</div><div>AbbVie</div></div><div><div>Penta’s Role</div><div>SPONSOR</div></div></div><div><div>DOLOMITE STUDY</div><div><div>Aim</div><div>To assess the pharmacokinetics, usage and safety of Dolutegravir in pregnancy and exposed infants in Europe</div><div>from 2018 until 2023</div><div><div>Penta budget</div><div>€ 3,139,242</div></div><div><div>Total budget</div><div>€ 3,139,242</div></div><div><div>Funder</div><div>ViiV Healthcare</div></div><div><div>Penta’s Role</div><div>COORDINATOR</div></div></div></div></div>	<div><div>Cabotegravir Study</div><div><div>Aim</div><div>To evaluate the use of CAB in pregnant women, describe the maternal characteristics, estimate the frequency of adverse pregnancy-neonatal outcomes and the perinatal transmission rates; assess proportion of viral suppression achievement</div><div>from 2021 until 2027</div><div><div>Total budget</div><div>€ 1,030,575</div></div><div><div>Funder</div><div>ViiV Healthcare</div></div><div><div>Penta’s Role</div><div>COORDINATOR</div></div></div></div>
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<div><div>EPPPR</div><div>Embedding Patient Participation in Paediatric Research</div><div><div>Aim</div><div>To develop a fully digital model of global paediatric patient participation to support the engagement of young people living with HIV in clinical trials</div><div>from 2020 until 2022</div><div><div>Penta budget</div><div>€ 171,464</div></div><div><div>Total budget</div><div>€ 171,464</div></div><div><div>Funder</div><div>ViiV Healthcare</div></div><div><div>Penta’s Role</div><div>PARTNER</div></div></div></div>	<div><div>HVRRICANE</div><div>Phase I, Proof of Concept, Open-Label, Randomised Clinical Trial to Evaluate the Safety and Effects of Using Prime-boost HIVIS DNA and MVA-CMDR Vaccine Regimens with or without Toll-like Receptor 4 Agonist on HIV Reservoirs in Perinatally HIV Infected Children and Youth</div><div><div>Aim</div><div>To explore whether HIVIS DNA and MVA-CMDR vaccination will lead to a reduction in HIV reservoir markers as a result of vaccine-induced immune responses</div><div>from 2018 until 2024</div><div><div>Penta budget</div><div>€ 53,268</div></div><div><div>Total budget</div><div>€ 3,145,857</div></div><div><div>Funder</div><div>Henry M. Jackson Foundation and Penta</div></div><div><div>Penta’s Role</div><div>PARTNER</div></div></div></div>
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STORIES FROM PENTA



Hermione Lyall and Caroline Foster, Penta ID Network

“We’d like to celebrate the teenagers and young people that we look after, who show such great resilience, enormous enthusiasm and the real need to continue the research and the progress down to 2030.”

Thanks to the fact that such fantastic anti-HIV drugs are available now, the virus can be put to sleep and people can stay fit and healthy. And no mother needs to be worried about passing the virus to her baby. It’s such good news. We want to make sure that women, wherever they are, can get access to the treatment they need during pregnancy and of course when they are breastfeeding too.

We’d like to celebrate the teenagers and young people that we look after, who show such great resilience, enormous enthusiasm and the real need to continue the research and the progress down to 2030.

ODYSSEY

A randomised trial of dolutegravir (DTG)-based antiretroviral therapy vs standard of care (SOC) in children with HIV infection starting first-line or switching to second-line ART

Aim	<i>from 2014 until 2021</i>
To assess the efficacy and toxicity of dolutegravir plus 2 NRTI versus standard of care among HIV positive children and adolescents	<i>Penta budget</i> € 11,590,153
	<i>Total budget</i> € 11,590,153
	<i>Funder</i> ViiV Healthcare
	<i>Penta’s Role</i> SPONSOR

Based on data gathered from the ODYSSEY trial, in 2020 the U.S. Food and Drug Administration approved the use of dolutegravir dispersible tablets to treat children living with HIV, a decision based in part on data from the ODYSSEY trial. Results from a sub-study of the ODYSSEY trial has shown that children over 20kg can safely take adult doses of dolutegravir. ODYSSEY has also contributed data for the regulatory approval of a generic fixed dose combination tablet suitable for children in South Africa.

REACH

Research on HIV, tuberculosis (TB) and/or hepatitis C (HCV) in patients with mono-, co-infections and/or comorbidities in the context of fostering collaboration with the Russian Federation

Aim	<i>from 2019 until 2021</i>
A collaborative effort to fill the knowledge and data gaps on the HIV epidemic affecting children, adolescents and pregnant women across Russia. It will provide new data on long-term antiretroviral therapy toxicity, HIV resistance, Hepatitis C virus and Tuberculosis coinfections and comorbidities in this setting	<i>Penta budget</i> € 1,164,507
	<i>Total budget</i> € 2,986,749
	<i>Funder</i> European Commission – Horizon 2020
	<i>Penta’s Role</i> COORDINATOR

The REACH project successfully ended in 2021. The health promotion activities conducted with pregnant women and their infants demonstrates that the overall vertical transmission rate has decreased to 1.8% in 2017-2019. Among the small number of pregnancies where vertical transmission occurred, around half of women were diagnosed in pregnancy or at delivery.

SHIELD

A multicentre, open-label, single-arm trial to evaluate the safety, pharmacokinetics and antiviral activity of fostemsavir in combination with optimised background therapy (OBT) in HIV-1 infected children and adolescents who are failing their current combination antiretroviral therapy (cART) and have dual- or triple-class antiretroviral (ARV) resistance

Aim
To evaluate the safety of 24 weeks of treatment with fostemsavir + OBT in at least 60 HIV-1 infected children and adolescents aged 6 to < 18 years and weighing at least 20kg who are failing their current antiretroviral treatment and have dual-or-triple-class ARV resistance
<i>from 2020 until 2027</i>

<i>Penta budget</i> € 9,158,955
<i>Total budget</i> € 9,158,955
<i>Funder</i> ViiV Healthcare
<i>Penta’s Role</i> SPONSOR

SMILE

Strategy for Maintenance of HIV suppression with once daily Integrase inhibitor + darunavir/ritonavir in childrEn

Aim
To evaluate safety and antiviral effect of a once daily integrase inhibitor administered with darunavir/ritonavir compared to current standard antiretroviral therapy among HIV-1 infected, virologically suppressed paediatric participants

<i>from 2013 until 2021</i>
<i>Penta budget</i> € 2,664,961
<i>Total budget</i> € 2,664,961
<i>Funder</i> Janssen, Gilead, ViiV Healthcare, Penta

<i>Penta’s Role</i> SPONSOR
<i>Penta budget</i> € 1,619,218
<i>Total budget</i> € 3,999,819
<i>Funder</i> European Commission – EDCTP2
<i>Penta’s Role</i> COORDINATOR

UNIVERSAL

Pharmacokinetic and safety studies of new antiretroviral formulations: expediting UNIVERSAL first and second line regimens for all children living with HIV in Africa

Aim
To develop two complementary paediatric antiretroviral fixed dose combinations (FDCs) for infants and children newly diagnosed with HIV initiating antiretroviral therapy (ART), and for children failing first line therapy who need to switch to a new treatment regimen, as well as monitoring long-term safety. This work will fully address the main treatment gaps for CLWHIV in Africa

<i>from 2021 until 2025</i>
<i>Penta budget</i> € 1,619,218
<i>Total budget</i> € 3,999,819
<i>Funder</i> European Commission – EDCTP2
<i>Penta’s Role</i> COORDINATOR

Antimicrobial resistance

Both mothers and children are at the heart of Penta: we work on the prevention of mother-to-child transmission but also on the identification of optimal treatment for babies who are infected, using old and new antibiotics and testing new combinations of antibiotics.

COMBACTE-MAGNET <i>Combatting Bacterial Resistance in Europe - Molecules Against Gram Negative Infections</i>	NeoIPC <i>Establishing innovative approaches for optimal infection prevention of resistant bacteria in NICUs by integrating research, implementation science and surveillance in a sustainable global platform</i>
Aim To determine more effective treatment strategies for intensive care unit (ICU) infections, particularly with Gram-negative bacteria	Aim To evaluate and implement IPC activities in neonatal intensive care by applying innovative methodology for IPC intervention trials from design to analysis, embedding both trial conduct and non-trial IPC activities within an implementation framework and fostering IPC engagement in neonatal intensive care
<i>from 2015 until 2022</i>	<i>from 2021 until 2026</i>
<i>Penta budget</i> € 397,530	<i>Penta budget</i> € 3,185,688
<i>Total budget</i> € 167,002,000	<i>Total budget</i> € 9,999,817
<i>Funder</i> European Commission – Innovative Medicines Initiative - IMI	<i>Funder</i> European Commission – Horizon 2020
<i>Penta’s Role</i> PARTNER	<i>Penta’s Role</i> PARTNER

PediCAP <i>Impact of duration of antibiotic therapy and of oral step-down to amoxicillin or co-amoxiclav on effectiveness, safety and selection of antimicrobial resistance in severe and very severe childhood community-acquired pneumonia (CAP): a randomised controlled trial</i>	Value-Dx <i>The value of diagnostics to combat antimicrobial resistance by optimizing antibiotic use</i>
Aim To optimise antibiotic treatment for children aged 3 months to 10 years hospitalised with severe/very severe community-acquired pneumonia in South Africa, Uganda, Mozambique, Zambia and Zimbabwe	Aim To facilitate and accelerate the rigorous assessment and implementation of new diagnostic technologies into healthcare settings, by establishing the infrastructure, methods, processes and approaches needed to understand, evaluate, assess, and demonstrate the multi-faceted value of diagnostics, and overcome the associated barriers to their widespread adoption and use
<i>from 2019 until 2024</i>	<i>from 2019 until 2023</i>
<i>Penta budget</i> € 792,756	<i>Penta budget</i> € 719,593
<i>Total budget</i> € 6,779,077	<i>Total budget</i> € 13,651,397
<i>Funder</i> European Commission – EDCTP 2	<i>Funder</i> European Commission – Innovative Medicines Initiative - IMI2
<i>Penta’s Role</i> COORDINATOR	<i>Penta’s Role</i> PARTNER

Other viruses

We leverage our expertise in the study and prevention of mother to child transmission of HIV, we investigate the mechanisms and consequences of vertical transmission of other viruses.

PROMISE <i>Preparing for RSV Immunization and Surveillance in Europe</i>	RESCEU <i>Respiratory Syncytial virus Consortium in Europe</i>
Aim To conduct systematic reviews to consolidate all available published and unpublished data at global level to address current gaps in RSV epidemiology and to synthesise evidence to inform development of novel severity score for RSV infection in young children	Aim To gather information on the scale of Respiratory Syncytial Virus (RSV) infection in Europe and its economic impact and use this information to design best practice guidelines for monitoring of RSV and to shape future vaccination programmes
<i>from 2021 until 2024</i>	<i>from 2017 until 2021</i>
<i>Penta budget</i> € 53,750	<i>Penta budget</i> € 223,306
<i>Total budget</i> € 7,024,387	<i>Total budget</i> € 25,453,316
<i>Funder</i> European Commission – Innovative Medicines Initiative - IMI2	<i>Funder</i> European Commission – Innovative Medicines Initiative - IMI2
<i>Penta’s Role</i> PARTNER	<i>Penta’s Role</i> PARTNER

ZIKAction <i>Preparedness, research and action network on maternal-paediatric axis of ZIKV infection in Latin America and the Caribbean</i>	Despite the Zika Virus epidemic ending during the run of the project, the Consortium managed to develop a unique population-based cohort. Data collected during and after the emergency provided substantial information on clinical and neurodevelopmental outcomes of children affected by Zika Virus in Argentina, Brazil and Jamaica. This database, which contains important information on vertical transmission and effects of the virus in children, sets the basis for data gathering in other congenital infections, including new outbreaks or re-emergent ones.
Aim Initially developed to address key knowledge gaps relating to Zika virus epidemiology and its natural history and pathogenesis, this project shifted its focus to implementing tools and building an infrastructure for data collection that could be used in future epidemics	
<i>from 2019 until 2020</i>	
<i>Penta budget</i> € 152,650	
<i>Total budget</i> € 2,994,560	
<i>Funder</i> European Commission – Horizon 2020	
<i>Penta’s Role</i> COORDINATOR	

Network building

We are improving the landscape of clinical research: we facilitate the generation of information needed to ensure that the right drugs, at the right doses are developed and made available for children and newborns.

In 2021, GAP-f concluded its first phase, where some of the missing paediatric formulations for HIV and TB were identified and prioritised within the WHO Model List of Essential Medicines for Children (EMLc). This gap analysis will continue in the next phase of the GAP-f programme and will support the assessment of existing paediatric formulations and identification of overall gaps.

GAP-f
Global Accelerator for Paediatric Formulations

Aim
To enhance the coordination and accelerate the prioritisation, investigation, development, introduction, and safe rollout of high-quality medicines in optimal formulations for children

from 2020 until 2021

Penta budget
€ 264,250

Total budget
€ 264,250

Funder
WHO

Penta's Role
PARTNER

C4C
Collaborative Network for European Clinical Trials For Children

Aim
To develop a large, collaborative paediatric network that will facilitate the development of new drugs and other therapies for the entire paediatric population in Europe

from 2018 until 2024

Penta budget
€ 7,011,250

Total budget
€ 182,018,216

Funder
European Commission – Innovative Medicines Initiative - IMI2

Role
COORDINATOR

PREPARE
EPlatform foR European Preparedness Against (Re) emerging Epidemics

Aim
To harmonise large-scale clinical research studies on infectious diseases, preparing rapid responses to any severe infectious disease outbreak and providing real-time evidence for clinical management of patients

from 2014 until 2021

Penta budget
€ 630,325

Total budget
€ 23,992,375

Funder
European Commission – The Seventh Framework Programme - FP7

Penta's Role
PARTNER

ECRAID
European Clinical Research Alliance on Infectious Diseases

Aim
To establish a coordinated and permanent European infrastructure for clinical research on infectious diseases

from 2019 until 2025

Penta budget
€ 250,000

Total budget
€ 31,774,875

Funder
European Commission – Horizon 2020

Penta's Role
PARTNER

COVID-19

Working through joint collaborations to advance treatment and care of COVID-19 and building research preparedness for future emerging infections with the potential to impact maternal and child health.

C4591021 PFIZER-BioNTech PASS STUDY
Post Conditional Approval Active Surveillance Study Among Individuals in Europe Receiving the Pfizer BioNTech Coronavirus Disease 2019 (COVID-19) Vaccine

Aim
To determine whether an increased risk of prespecified AESI exists following the administration of at least one dose the Pfizer-BioNTech COVID-19 vaccine

from 2021 until 2024

Penta budget
€ 899,500

Total budget
€ 7,594,618

Funder
Pfizer Inc

Penta's Role
COORDINATING CENTRE

CORONA
Children with COVID-19

Aim
Corona is a multi-centre retrospective observational study to collect clinical, epidemiological and outcome data in children with confirmed infection with SARS-CoV-2

from 2021 until 2022

Penta budget
€ 90,000

Total budget
€ 90,000

Funder
UniCredit Foundation

Penta's Role
COORDINATOR

EPPICC COVID
EPPICC Serology Study

Aim
To describe the prevalence and distribution of SARS-CoV-2 antibodies in children and young adults living with HIV in Europe and South Africa.

from 2020 until 2022

Penta budget
€ 282,172

Total budget
€ 282,172

Funder
ViiV Healthcare

Penta's Role
SPONSOR

ORCHESTRA
Connecting European Cohorts to Increase Common and Effective Response to SARS-CoV-2 Pandemic

Aim
By creating a new pan-European cohort built on existing and new large-scale population cohorts in European and non-European countries, the project will advance knowledge on the control of the COVID-19 infection. The data sharing infrastructure will allow data to be shared and made available throughout Europe and beyond, shaping the continuously evolving public health and vaccination strategies

from 2020 until 2023

Penta budget
€ 1,100,000

Total budget
€ 29,799,685

Funder
European Commission – Horizon 2020

Penta's Role
PARTNER

RBDCOV
RBD Dimer recombinant protein vaccine against SARS-CoV-2

Aim
To test the efficacy, tolerability, and safety of two new vaccines against different variants of COVID-19 based on the outstanding data generated using a recombinant protein (Receptor Binding Domain (RBD) adjuvanted with very well-established adjuvant, MF59 by the consortium partners

from 2021 until 2024

Penta budget
€ 250,000

Total budget
€ 9,779,211.25

Funder
European Commission - Horizon Europe

Penta's Role
PARTNER

RECoVER
Rapid European SARS-CoV-2 Emergency Research response

Aim
To develop data and evidence-based knowledge on the SARS-CoV-2 epidemic and translate these into recommendations for improved patient management and/or public health response measures

from 2020 until 2022

Penta budget
€ 36,250

Total budget
€ 20,590,195

Funder
European Commission – Horizon 2020

Penta's Role
PARTNER

VACCELERATE
European Corona Vaccine Trial Accelerator Platform

Aim
Pan-European backbone for the acceleration of phase 2 & 3 COVID-19 vaccine trials. The overall objective is to connect all European stakeholders involved in vaccine development to provide a pan-European platform for clinical trial design and conduct

from 2021 until 2024

Penta budget
€ 25,000

Total budget
€ 12,000,000

Funder
Horizon Europe

Penta's Role
THIRD PARTY

VERDI
SARS-CoV-2 variants Evaluation in pRegnancy and paeDiatrics cohorts

Aim
To enhance the understanding of the epidemiology, outcomes, prevention and treatment of variants of SARS-CoV-2 amongst children and pregnant women as a global response to the pandemic. In the short/medium term, the project aims to describe the impact of: Variants of Concern on the role of children in transmission of SARS-CoV-2, in their homes and schools; VoC on clinical disease in children and adverse pregnancy outcomes, and treatment; vaccine strategies in children and pregnant women on disease and transmission in the face of new VoC. This evidence will allow us to rapidly deliver recommendations on the best strategies to control viral spread in paediatric populations, as well as on optimised clinical management and treatment of COVID-19 children and pregnant women

from 2021 until 2024

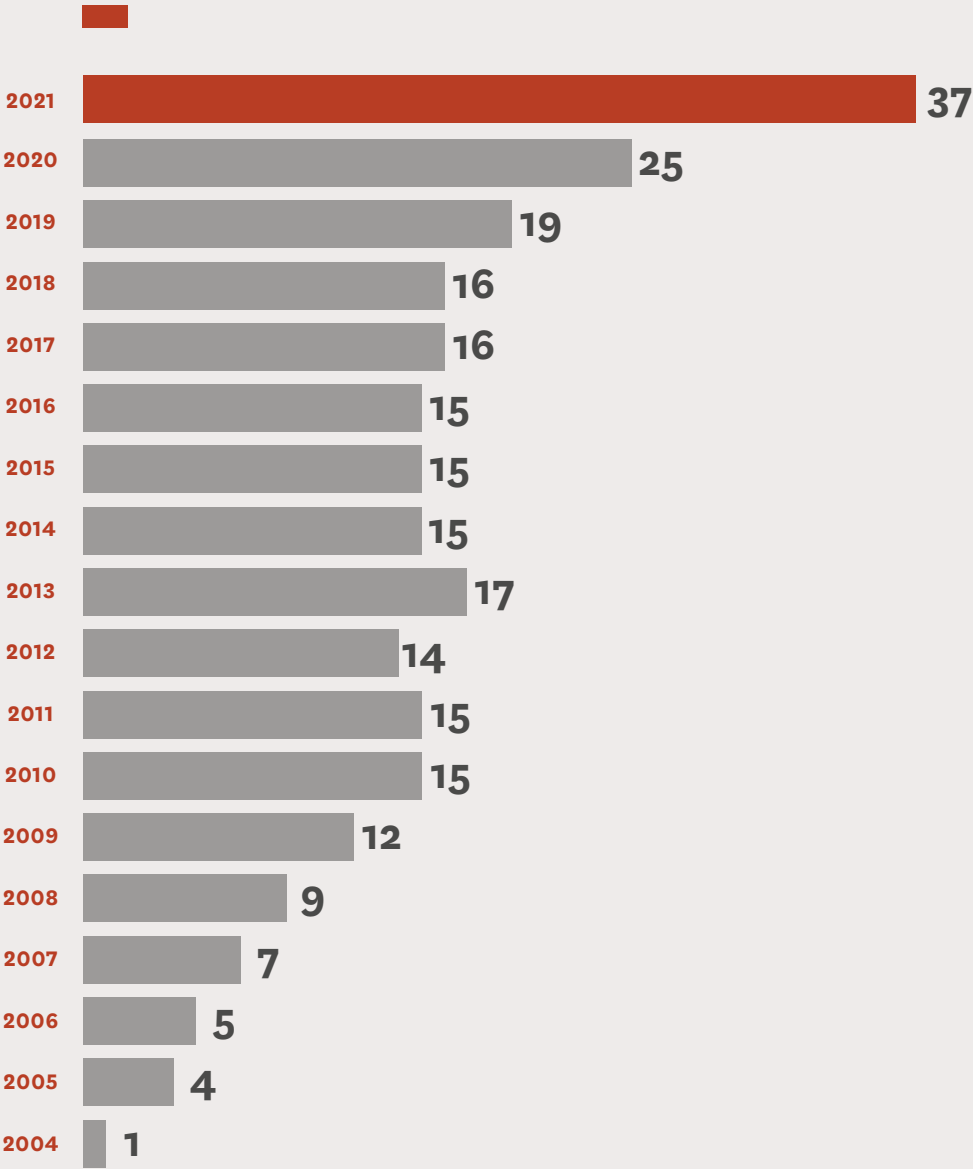
Penta budget
€ 954,226

Total budget
€ 9,999.998

Funder
European Commission - Horizon Europe

Penta's Role
PARTNER

An ever-increasing number of research activities



Other activities

Education

Patient involvement

PentaTr@ining

Penta involvement in International Cooperation Projects

Education

Education is one of the most effective tools in prevention of infectious disease, and Penta's sexual education programmes are addressed to young people and adults to support the awareness and prevention of disease spread.

In 2021, despite the ongoing COVID-19 pandemic, Penta Foundation continued to deliver educational activities via face-to-face and online programmes focused on sexually transmitted infections (STIs) prevention and sexual education.

- Sexual Education Programme - Schools Students (Middle Schools)**
 The main objective of the programme is to empower young people to take control and make informed decisions aimed at developing respectful social and sexual relationships, protecting their health and preventing the risk of acquiring STIs, understanding and ensuring the protection of their rights throughout their lives. In 2021, we delivered 3 face-to-face courses in different schools in Italy.

- Sexual Education Programme - Adult Courses**
 Across Italy, we rolled out a national online course addressed to adults working with children and young people in different settings, parents, educators, and healthcare professionals. These programmes aimed to provide adults with the necessary skills to support young people to develop the knowledge, skills, ethical values, and attitudes they need to make conscious, healthy and respectful choices about relationships, sex and reproduction. Between 2020 and 2021, we trained 246 adults coming from 13 different cities in 6 different regions of Italy.
- EDU-CARE during the COVID-19 pandemic.**
 We firmly believe in the power of peer education as the most effective method for young people living with HIV to acquire knowledge about their HIV status and empower them to manage their health condition to achieve a good quality of life. Since 1992 Penta has been supporting a multidisciplinary team of educators,

"Is it normal that I don't think about the infection and that I want to live my life without talking about the infection?"

"How can I have more confidence in myself and the others?"

"I would like to better understand the ways in which you can have the infection."

peer-educators and healthcare professionals working at the Paediatric Infectious Disease and Immunologically Acquired Syndrome, Department of Women's Health Department, University Hospital of Padua. The team was set up to provide psychological support and deliver educational activities to a group of children living with HIV, to improve self-awareness, acceptance of their condition and empower them in the transition to adulthood. Since 1992, 75 children aged between 8 and 18 have been involved in our educational programs, with peak participation occurring every year during the residential summer camps, where the young people

are given the opportunity to discuss issues amongst peers and gain insights through mutual sharing of knowledge and experiences. In Summer 2021 – due to COVID-19 – the team organised only daily trips, where 20 young people participated.

In mid-2021, we decided to further the scope of our educational programmes to deliver educational content to the public inline with Penta's scientific priorities. To kick this off, we joined a new European-funded project, Science4Pandemics (S4P). This is a three-year project due to start in 2022, which will develop a digital gamification platform to educate the public on the prevention and management of pandemics.

Patient involvement

Young people understand their own needs and bring a unique perspective into the planning, design and implementation of our studies. In 2021 we included their voice in more ways than ever.

PPI in the Penta Foundation is the active, ethical and meaningful involvement of the patients and community we serve – children, young people and their families – across paediatric infectious disease prevention and treatment. This has been achieved through consultation, collaboration and co-production with patients and the public to influence multiple areas of our work. The outcomes generated include:

1. training and education material for the Penta ID Network;
2. education materials for the community;
3. policies and guidelines;
4. communication campaigns;
5. wider representation by young people across Penta's work.

Increasingly it is recognised that patients, including children and adolescents, must be involved in research – not just as passive beneficiaries but as leaders and influential drivers. Penta has been pioneering in developing examples of how researchers can engage children and their families into their research work. This includes:

- **The Embedding Patient Participation in Paediatric Research (EPPPR)** project began in September 2020, funded by ViiV Healthcare. This is a continuation of the **Youth Trial Board (YTB)** pilot project that developed an interactive, youth-friendly, activity-based training and delivery programme with young people living with HIV across four different countries (Uganda, Zimbabwe, South Africa

and the UK). COVID-19 presented multiple challenges, but we acted quickly to create a digital model to support young people to access equipment and data so their voices could still be heard across Penta's research. This model is now live across four global clinical trials; ODYSSEY, D3, Breather Plus and will be operational in LATA in 2022.

- The YTB groups have developed research findings sheets for **ODYSSEY** using youth-friendly language and images. This have been translated into multiple local languages and will be distributed in 2022. Additionally, a set of short social media videos are in the production, that will share the study findings more widely with their community.
- For **D3**, the YTB groups created a logo and design palette and are completing a poster that will support explaining the D3 study clearly to children as part of the recruitment process.
- The YTB groups completed infographic Patient Information Sheet for **Breather Plus**, to support

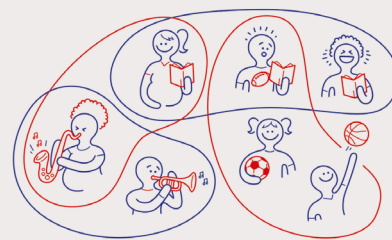
understanding amongst young people recruited to the study.

- Three YTB groups have co-designed a **training workshop** on 'Communicating Science to young people' which they will co-facilitate across multiple Clinical Trials Unit sites during 2022.
- To consolidate and improve our work in this area, and improve practice more widely, we began the process of engaging key stakeholders to draft **Quality Standards for the meaningful and ethical participation of children and young people in research**. Stakeholders involved has included: WHO, IAS, Global Network of young people living with HIV, Elizabeth Glaser Pediatric AIDS Foundation, Zvandiri and ViiV Healthcare, as well as leads from paediatric clinical trials (c4c, D3, ODYSSEY, Breather Plus and LATA). The standards will be disseminated in Spring 2022.

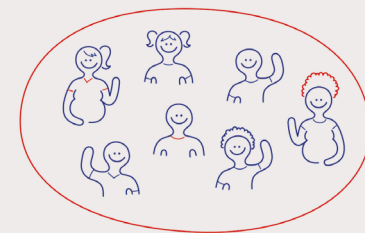
We continued to work with PNG+ as part of the **REACH** study. This is a group of young people living with HIV and HCV across the Russian Federation. The

THE REACH STUDY DESCRIBED BY PNG+

PNG+ have created information and graphics to explain to children, young people, families and the public what a Cohort Study is and more details about REACH.



REACH is a Cohort Study. A 'cohort' is a group of people with something in common like a sports team or musicians.



The cohorts REACH is studying are children, young people and pregnant women with HIV, HIV and HCV (called co-infection) or just with HIV, HCV or TB across 5 medical centres in Russia.



REACH has brought together all the 'data' (stories) of these groups, and is looking at this data (analysing) to find patterns so they can have a better understanding of HIV, HCV and TB. They are finding out about the different illnesses children might get, how the medicine works and what happens to children over a long period of time.

group created information for Instagram, sharing the initial findings from this cohort study with their community. Through this area of work, young people were also engaged with EPPICC, driving

the design of the project identity and communication materials. This is an area we will be developing in 2022. During 2021, we partnered with the CIPHER/International AIDS Society (IAS) to develop

and run the **CIPHER Youth Advisors Project**. Penta's role was to mentor a group of young people living with HIV across 5 continents (Middle East, North Africa, Latin America, Europe, Asia

"YTB has had a huge impact on the site. It has opened our eyes more and made us to be more open minded about Young People opinions and their ideas, because we have realised that Young People's do have a voice and when they are given the correct platform to express themselves, they can teach the health workers as well as others about what they need in their life and what they need in the management of their condition, not only HIV but their living lifestyle in general."

YTB co-coordinator South Africa

PentaTr@ining

Penta remains committed to providing expert training in paediatric HIV and other infections as part of its goal to improve clinical care and health outcomes for children and families, and to ensure robust high-quality clinical assessment as part of its trials. We also continually seek to expand capacity building by ensuring that new investigators are trained and supported to carry out research and are able to design their own studies. The [WHO Toolkit](#) for research and development of paediatric antiretroviral drugs and formulations, developed in collaboration with Penta, was a major step towards this. Moreover, Penta provides [HIV Treatment guidelines](#) for clinicians and other healthcare professionals. Our updated guidelines were released in October 2021 in conjunction with [European AIDS Clinical Society \(EACS\)](#), and act as a concise reference document to guide antiretroviral choices for children and adolescents with perinatally acquired HIV.

Starting in 2005, PentaTr@ining is an in-depth training platform designed to provide specialist knowledge for healthcare workers caring

for HIV infected children, adolescents and pregnant women. This pioneering course has integrated innovative distance learning methods together with interactive face-to-face courses. Having carried out 75 training courses to date, Penta is able to tailor and deliver its high-quality training for a range of settings – with a particular focus on low- and middle-income regions.

Amid the extraordinary circumstances of the ongoing COVID-19 pandemic, HIV services in 2021 continued to be eclipsed by the need to manage and treat COVID-19 patients. With the specific problems that can stem from reduced access to HIV care, it remained crucial to ensure that training needs of healthcare workers caring for vulnerable populations continued to be met. Following the remarkable success of our revamped flagship online course ‘HIV & other Congenital Infections’ in 2020, we then updated, translated and delivered the course in both Russian and Spanish languages during 2021. We also carried out targeted live webinar trainings for

healthcare workers based in Uganda, Namibia and Uzbekistan. Moreover, Penta sponsored and contributed to the coordination of the ‘3rd International Meeting on Childhood Tuberculosis’, which was hosted by pTBnet online from Sofia, Bulgaria.

A key strategic aim of our training courses is to foster meaningful and verifiable change in professional practice in our delegates and their institutions over the long term. Throughout 2021, we began implementing a series of ‘Impact Assessment’ surveys to gather crucial information on changes in practice and patient health outcomes, as well as on the development

of local and international networks and capacity building.

PentaTr@ining continues to grow and evolve in response to the changing needs of children and pregnant women living with infectious diseases. In 2021, we began expanding the development of our training programmes into other clinical areas of Penta’s research activity – including hepatitis, antimicrobial resistance, and fungal infections in paediatrics. As we look to the future, our ambitions are to widen our network and training portfolio more and more – and where it matters most!

“I thoroughly relished the learning experience. All the tutors just kept every one of us on our toes.”

“Discussion of real-life cases, the practicalities of handling them in different countries, and the power of sharing experiences.”

PENTATR@INING

Since we started

75
TRAINING COURSES
DELIVERED TO **6 000+**
HEALTHCARE WORKERS FROM
37 COUNTRIES

TYPE OF PROFESSIONALS TRAINED MAINLY PHYSICIANS

OTHERS INCLUDE:

- EPIDEMIOLOGISTS
- HEALTH PROGRAMME ADVISORS
- LAB TECHNICIANS
- MEDICAL ASSISTANTS
- MEDICAL STUDENTS
- NURSES
- NUTRITIONISTS
- PATIENT GROUPS
- PHARMACISTS
- PSYCHOLOGISTS
- RESEARCHERS
- SOCIAL WORKERS

**SINCE 2013
YOUNG PEOPLE LIVING
WITH HIV HAVE BECOME
INCREASINGLY INVOLVED
IN THE DESIGN AND
DELIVERY OF OUR
TRAINING
PROGRAMMES**

COURSES HAVE BEEN DELIVERED IN:

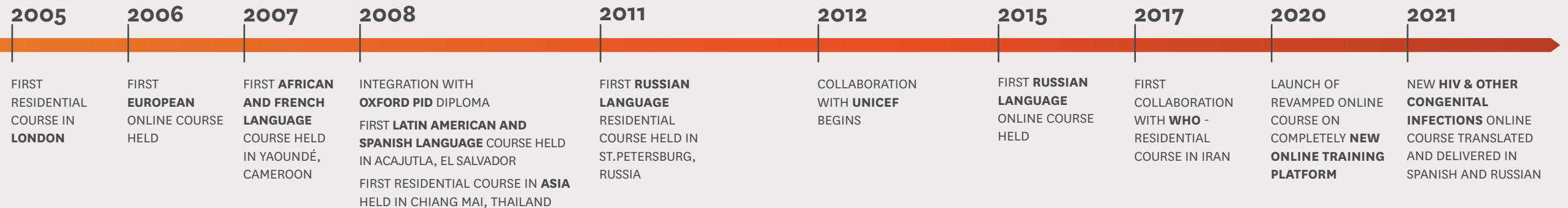
- ENGLISH
- RUSSIAN
- SPANISH
- FRENCH
- PORTUGUESE
- GEORGIAN

PENTATR@INING

Map

ONLINE COURSE
"HIV & OTHER CONGENITAL
INFECTIONS"

2020/2021 (ENGLISH)
2021 (RUSSIAN)
2021 (SPANISH)

TIMELINE
MILESTONES

PENTATR@INING

What is our impact?

IN **2021**, WE MEASURED MEANINGFUL IMPACT AND ENDURING CHANGES IN PRACTICE AMONG PARTICIPANTS OF **6** PENTATR@INING COURSES.

SAMPLE SIZE:

628 PEOPLE**29%** RESPONSE RATE

Has the training course increased your confidence in applying treatment guidelines?



Has your own professional practice changed in any way since the training?



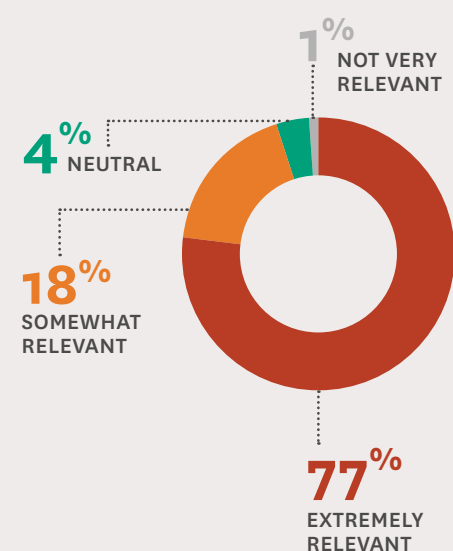
Have you had the opportunity to share acquired knowledge and help train your own colleagues?



Has your institution begun implementing changes in day-to-day practice as a result of the training?



How would you rate the overall relevance of the course?



Penta involvement in International cooperation projects

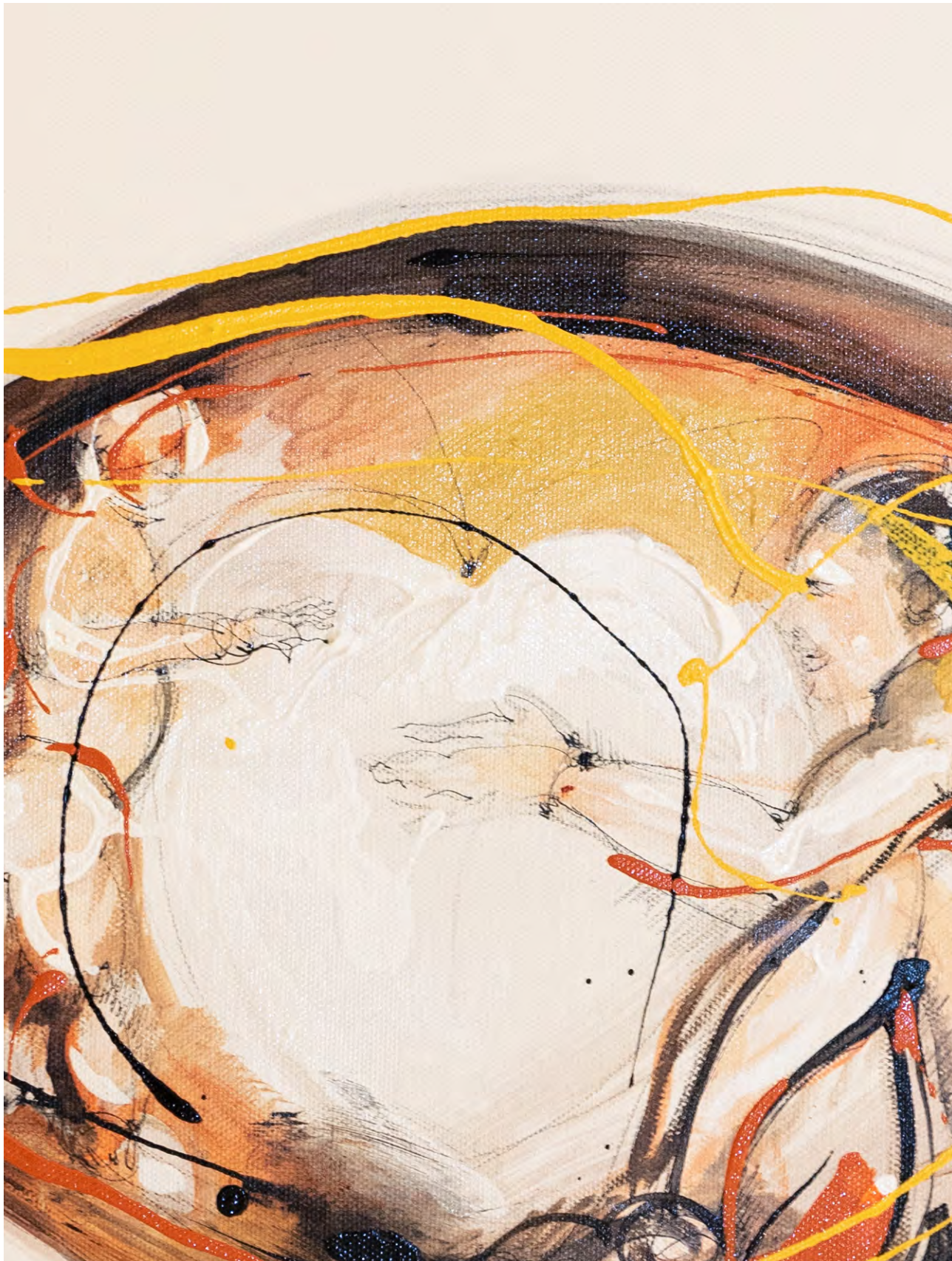
Since the early 2000s, Penta has been involved in the management of several international cooperation projects in low- and middle-income countries, in partnership with different Italian and international NGOs, such as “Casa Accoglienza alla Vita Padre Angelo” and various hospitals and associations in Eastern Europe and Sub-Saharan Africa. These initiatives aim to improve the health conditions and the quality of life of children and adolescents living with HIV and their families.

Recently, we have devoted particular attention to:

- the problem of domestic and gender-based violence, by raising awareness in communities and consolidating links of mutual respect within the family.

- the fight against HIV stigma, by supporting adolescents living with HIV and engaging with the communities they live in. Together with our partners, we are running the **Action for Life** project, which is targeting the health and psycho-social situation of HIV positive children and adolescents, by supporting clinical activities, sports and cultural activities, as well as professional trainings.

In addition to social activities, through the implementation of our projects we are contributing to building the expertise of our local partners in the conduct of research projects.



4.

THE FUTURE: CHALLENGES AND OPPORTUNITIES

Looking forward

Currently, the necessary measures to safeguard patients makes the process of collecting experimental data slow, expensive if not entirely impractical or unethical under specific circumstances. This is especially true in paediatrics and pregnancy where a large part of studies fails to collect enough subjects to derive reliable evidence, thus preventing children and pregnant women from getting the best medical treatment.

The slow pace of drug development for paediatrics and pregnancy is a long-term problem impacting on equitable and safe provision of healthcare for these populations. Despite regulation aiming to address this, an estimated 50-70% of drugs licensed for adults with potential benefits for paediatric use remain untested for children and pregnant people, and therefore off-label.

The global effort against COVID-19 exposed the need for faster and more flexible tools in the hands of researchers, regulatory agencies, and policy makers. In response to those needs a strong interest in Digital Health Technology is emerging in the international healthcare landscape.

At Penta, we are convinced that empowering healthcare with the full potential of digital technologies will make medicine faster, more personalised and precise.

Digital technology is already at the forefront of our daily lives and data is being generated at an unprecedented rate and volume, healthcare systems being no exception. Patient's health data is routinely collected from a variety of sources and for a variety of reason. That wealth of data is collectively called real-world data and is already used to generate useful clinical evidence, that in turn is called real-world evidence.

The possibility to supplement classic clinical studies with real-world data will allow for faster, cheaper, and better results. This in turn will make health systems more affordable, more responsive to crises, and will equip clinicians with those much-needed tools to face future challenges.

At Penta we are convinced that the potential of real-world data is only just now being understood.

We are ready to be part of this transformation, bringing in the right expertise, new collaborations and novel ideas to generate real-world evidence to support better healthcare for babies, children and mothers.





5. FINANCIAL RESULTS



Penta is an independent organisation funded by **public and private contributions** from international organisations

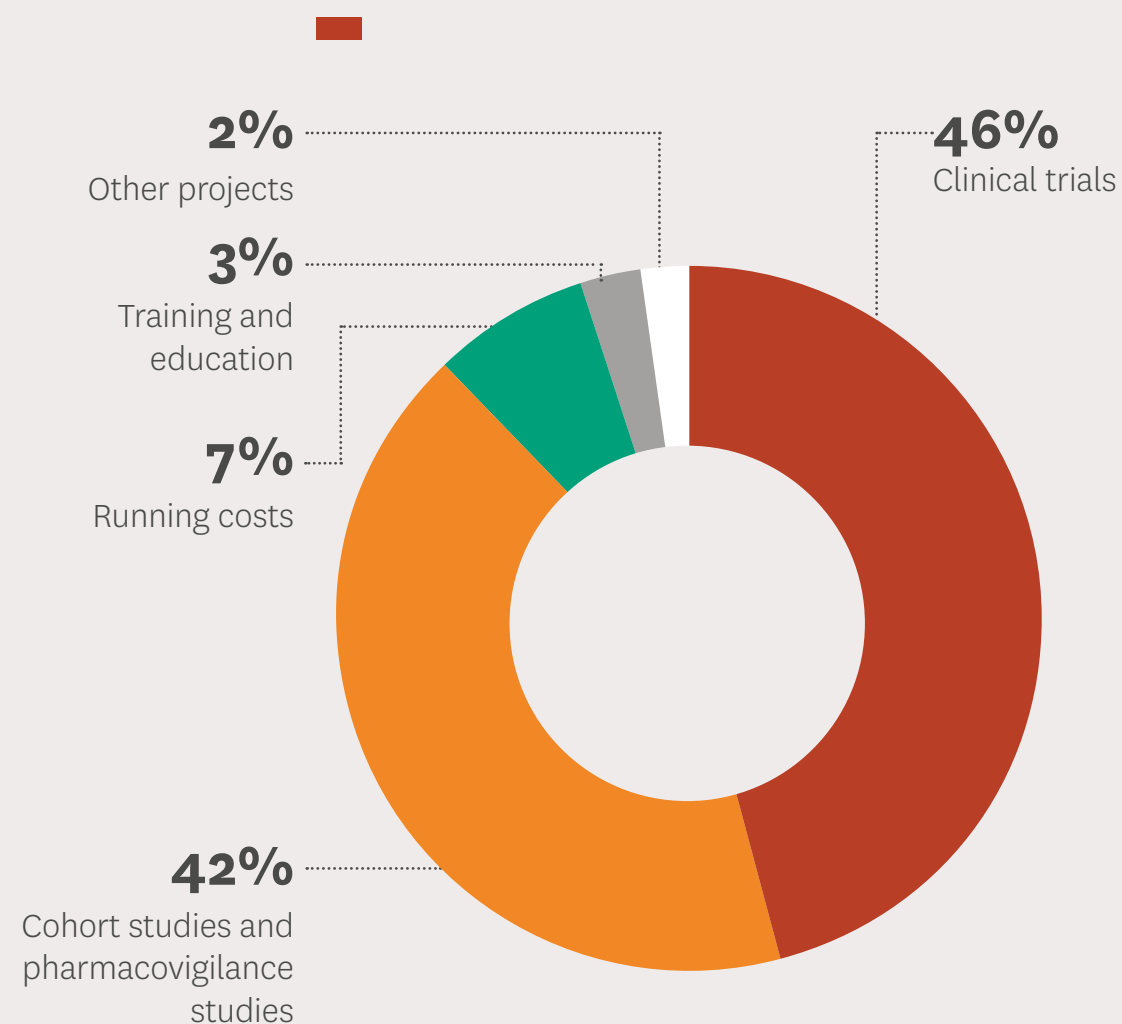
Following previous trends, HIV remains a key element in the research activities of the Foundation. However, the COVID-19 pandemic led to new collaborations and projects, opening a new research area.

At the same time, antimicrobials and network building still represented a considerable share of Penta's activities.

Additionally, the use of resources is mainly directed to project-related activities, especially the implementation of the clinical trials and cohort studies in which the Foundation is involved.

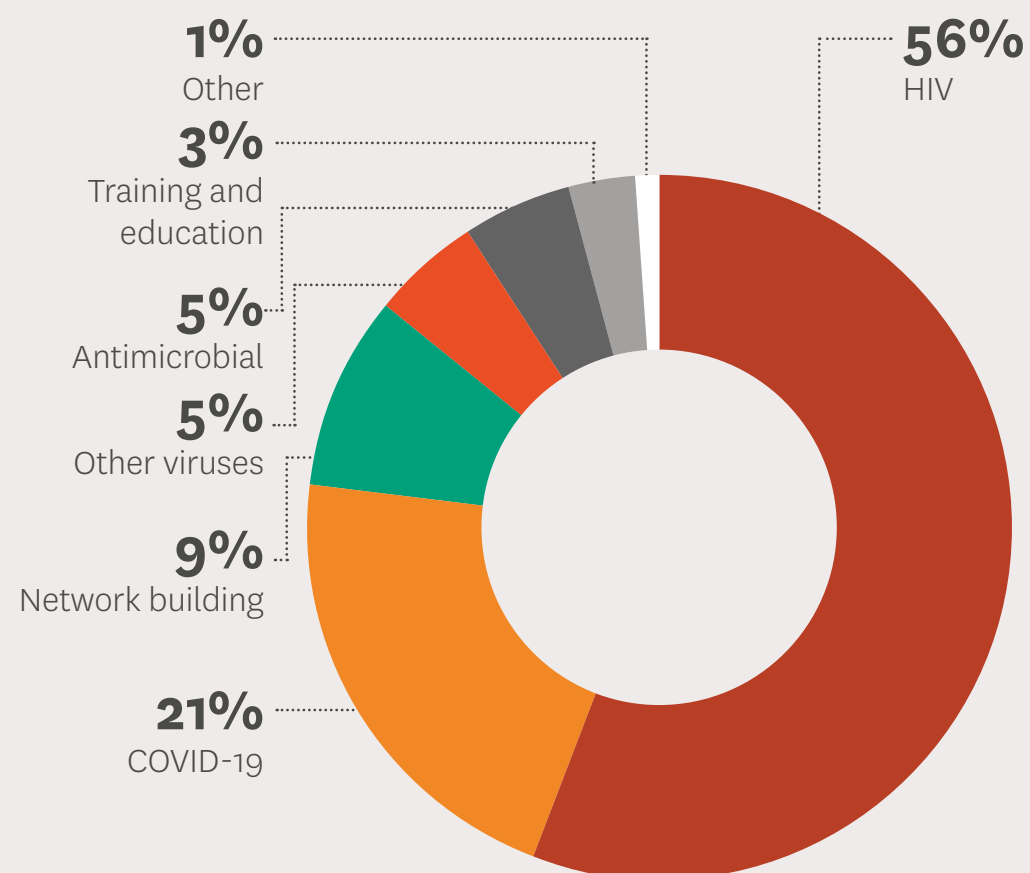
In 2021, the Foundation received funding from an array of sources, mostly from private and international institutions showing the numerous collaborations the Foundation has in place.

Expenses by type of activity



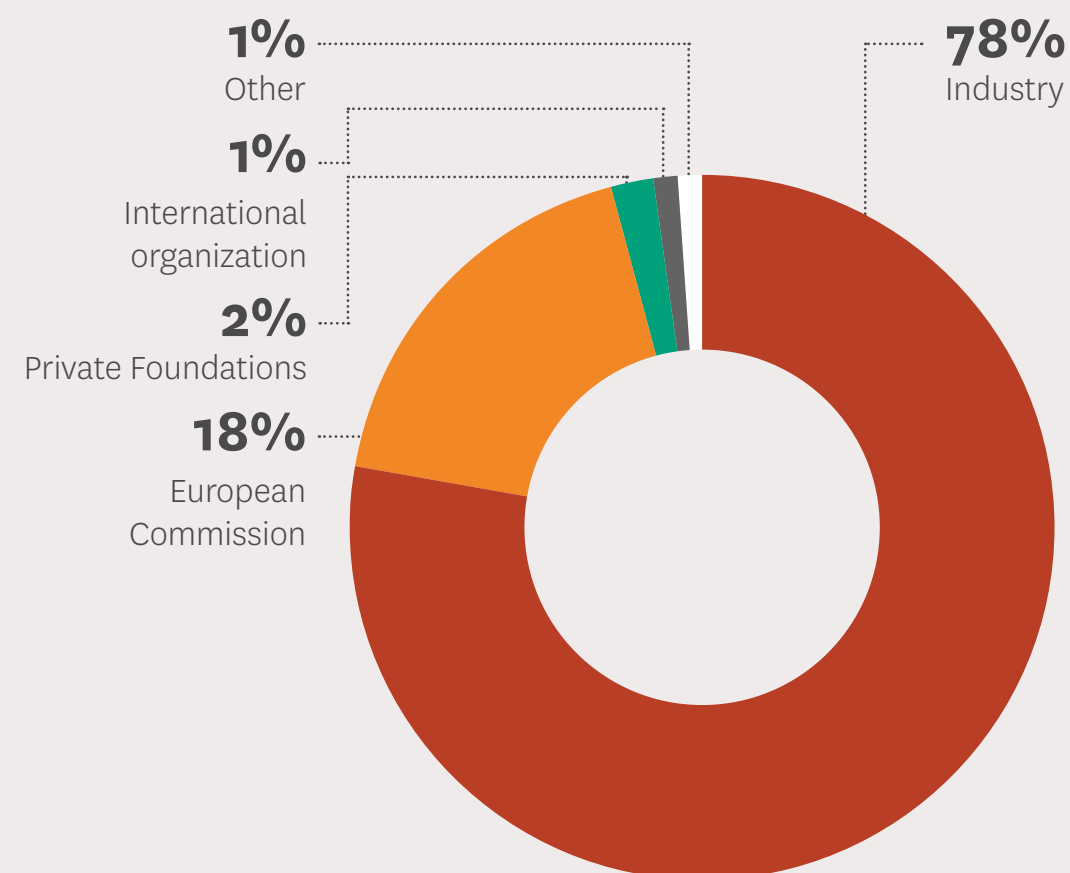
THE CHART SHOWS THE PERCENTAGE DISTRIBUTION OF THE USE OF RESOURCES BY TYPE OF ACTIVITY FOR 2021. AS SHOWN, MOST OF THE EXPENSES WERE INCURRED IN RELATION TO THE IMPLEMENTATION OF CLINICAL TRIALS AND COHORT STUDIES, HIGHLIGHTING THE NUMEROUS STUDIES THE FOUNDATION IS RUNNING.

Revenues by research area



THE CHART SHOWS THE PERCENTAGE DISTRIBUTION OF REVENUES BY RESEARCH AREA IN 2021. HIV CONTINUES TO BE THE FOUNDATION'S KEY RESEARCH AREA. THE SIGNIFICANT INCREASE IN ANTIMICROBIAL AND NETWORK BUILDING ACTIVITIES COMPARED TO PREVIOUS YEARS HIGHLIGHTS THE GROWING IMPORTANCE OF THESE AREAS. COVID-19 RESEARCH GAINED A REMARKABLE SHARE OF OUR ACTIVITIES.

Revenues by funder



THE CHART SHOWS THE PERCENTAGE DISTRIBUTION OF REVENUES BY FUNDER IN 2021. THE HIGHEST PROPORTION CORRESPONDS TO PRIVATE SOURCES, WHICH SHOWS THE NUMEROUS COLLABORATIONS THE FOUNDATION HAS IN PLACE. THE EUROPEAN COMMISSION CONTINUES TO BE A KEY FUNDER.

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LIST OF ACRONYMS

AMR Antimicrobial Resistance	GEAI Gender Equality Assessment Implementation	PADO Paediatric Antiretroviral Drug Optimization
DTG Dolutegravir	GEP Gender Equality Plan	PAWG Paediatric Antiretroviral Working Group
ECR Early Career Researcher	HCV Hepatitis C Virus	PHPT Program for HIV Prevention and Treatment
EDCTP European and Developing Countries Clinical Trials Partnership	IMI1/IMI2 Innovative Medicines Initiative	PIM Penta ID Meeting
ENPR-EMA European Network of Paediatric Research at the European Medicines Agency	INSERM Institut National de la Santé et de la Recherche Médicale	REACT Action on Antibiotic Resistance
FDC Fixed Dose Combination	JCRC Joint Clinical Research Centre	STI Sexually Transmitted Infection
GARDP Global Antibiotic Research & Development Partnership	MRC CTU Medical Research Council Clinical Trials Unit	TB Tuberculosis
GAP-F Global Accelerator for Paediatric Formulations	MUJHU Makerere University Johns Hopkins	UCL University College London
GDPR General Data Protection Regulation	NGO Non Governmental Organization	UNAIDS Joint United Nations Programme on HIV/AIDS
	OPBG Ospedale Pediatrico Bambino Gesù	UNICEF United Nations Children's Fund
		WHO World Health Organization



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