Twenty years of supporting paediatric research: from unmet needs to future priorities

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TEDDY Network: Two Decades of Paediatric Research

2005 — TEDDY started under FP6 as a Network of Excellence

2006–07 — EU Paediatric Regulation adopted, then enters into force

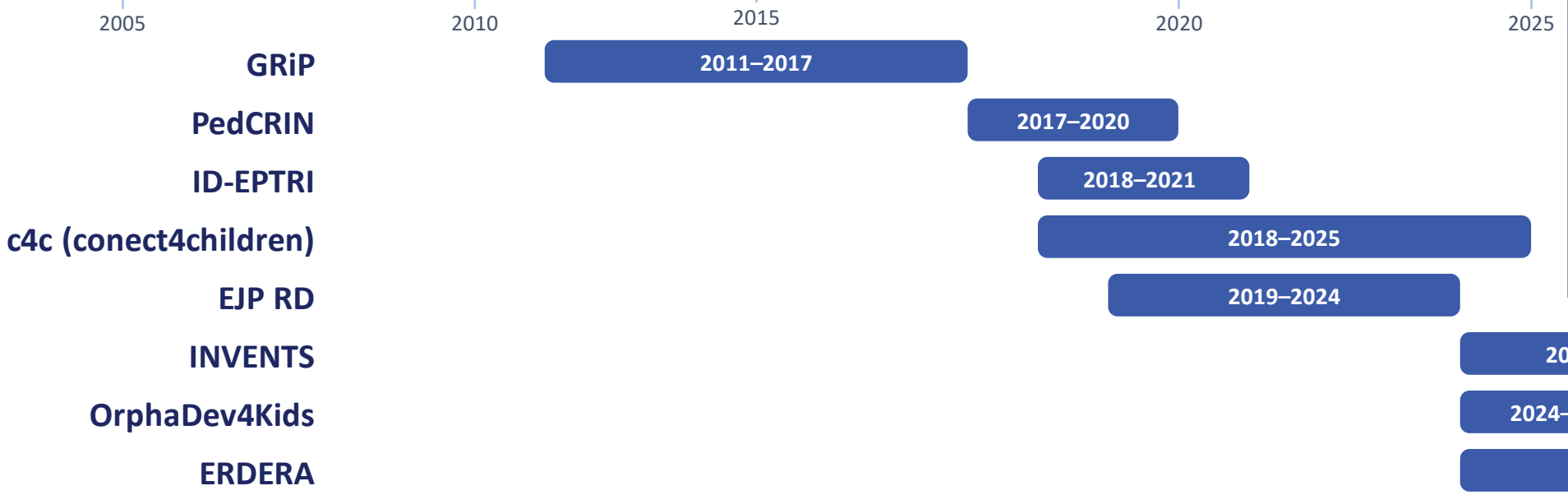
2014–16 — Enpr-EMA member (Cat. 4 → Cat. 1); registered with ENCePP (2015)

2017 — Becomes independent NGO; YPAGs & TEDDY KIDS Network created

2024 — Joins ACT-EU Multistakeholder Platform; Enpr-EMA Coordinating Group member actively contributes ERAMET, ERDERA, INVENTS, OrphaDev4Kids)

2025 — Becomes an official member of EPTRI AISBL

EU-Funded Research Projects



TEDDY Working Groups

- Off Label Uses Mitigation
- Paediatric Research Methodologies
- Children Engagement and Advocacy
- Health Data & Real-World Evidence

A Fragmented Paediatric Research Landscape

Before 2006

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Widespread Off-Label Prescribing

The lack of specific clinical trial data and age-appropriate regulatory approvals forced clinicians to rely heavily on off-label and unlicensed therapies for paediatric care.

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Lack of Age-Appropriate Formulations

Very few medicines were available in suitable dosage forms (e.g., liquids, chewables) or carried clear paediatric labelling, creating major administration challenges.

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Methodological & Ethical Barriers

Stringent ethical constraints and methodological hurdles severely restricted the evidence base for paediatric medicines.

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Fragmented Efforts & Weak Market Incentives

Limited commercial motivation led to isolated, uncoordinated research initiatives, leaving paediatric populations systematically underserved.

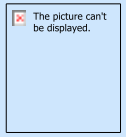


TEDDY NETWORK

A clear need emerged for stronger coordination and a structured European approach to paediatric research.

Initial Baseline Problem

(1995-2006)



Prior to the implementation of the EU paediatric regulation, the European Commission did not have a regulatory framework or dedicate financing mechanism for clinical trials designed specifically for formal pediatric regulatory authorisation

Stable Approval

- Overall paediatric medicine approvals remained stable across the 10-year period (1995-2005)
- A positive increase was observed primarily in treatments of rare/serious conditions

Gaps & Disparities

- Young pediatric populations (especially <2 years) suffered from a significant deficit of authorized products
- High reliance on off-label prescribing across non-orphan therapeutic sector

Targeted Mandates

- Evidence confirmed voluntary measures could resolve structural paediatric deficits
- Clear necessity for targeted regulatory mandates

2006 Ceci A. et al. — Medicines for children licensed by the European Medicines Agency (EMEA): the balance after 10 years

Paediatric Drug Prescription & Exposure Across Europe

- **Objectives**: Assess and compare outpatient drug prescription patterns and exposure in paediatric populations (aged 0–18) across the United Kingdom, the Netherlands, and Italy.
- **High Real-World Evidence**: Findings show first significant epidemiological evidence, with medicine use being consistently high across all three countries.
- **Prescribing Drivers**: Significant cross-national variation in drug prescription driven by clinical habit, demanding for **harmonised paediatric clinical trial, safety data, rationalised prescription guidelines**



TEDDY NETWORK

2008 Sturkenboom MC. et al. — Drug use in children: cohort study in three European countries (BMJ)

Teddy Network: 3-Year Key Achievements

19
Research Centers
11 EU & Associated Countries

200+
Researchers & Experts
Multidisciplinary Network

600
Medicines Mapped
EPMD Database Created

14
Expert Groups (TEGs)
Therapeutic Priority Setting

Multinational Collaboration

Unified pediatric research groups across Europe to foster cross-border interaction and overcome fragmentation.

- Integrated academia, SMEs, and regulatory bodies (EMA).
- Cooperation with trial networks (PENTA, PRINTO).
- Support for EU Paediatric Regulation (Jan 2007).

STAKEHOLDER INTEGRATION

European Medicines Database

Created the European Paediatric Medicines Database (EPMD) evaluating pediatric drug availability and gaps.

- Compared off-label, unlicensed, & approved drugs.
- Assessed trial methodology for regulatory PIPs.
- Mapped therapeutic priorities across EU states.

EVIDENCE & PIP PRIORITIES

Ethical & Trial Frameworks

Developed ethical standards and guidelines tailored for recruiting and protecting minors in clinical research.

- Pioneered harmonized assent/consent guidelines.
- Pharmacovigilance & off-label safety frameworks.
- Specialized training programs for research ethics.

ETHICS & PATIENT PROTECTION

TEDDY NETWORK

2009 Ceci A. et al. — The Task-force in Europe for Drug Development for the Young (TEDDY) Network of Excellence

Regulatory Milestone

Private–Public Funding Success

76 proposals were submitted and 20 were funded with a success rate of 26.3%

20 projects selected to study 24 off-patent medicines in paediatrics and use the knowledge to:

- Ensure better medicines use
- Apply for a Paediatric Medicinal Product Marketing Authorisation (PUMA) at EU level

Total amount awarded to project: 98.6 million euros

Consortium network made of 246 partners across 29 countries, made of public and private partnerships

All paediatric subgroups were represented in clinical trials: 44% of CTs include newborns and preterm newborns

Seven projects specifically address neonatal conditions

12.5% of development plans are intended to study paediatric-only studies

TEDDY NETWORK

2015 Ruggieri L. et al. — Successful private-public funding of paediatric medicines research: lessons from the EU programme to fund research into off-patent medicines

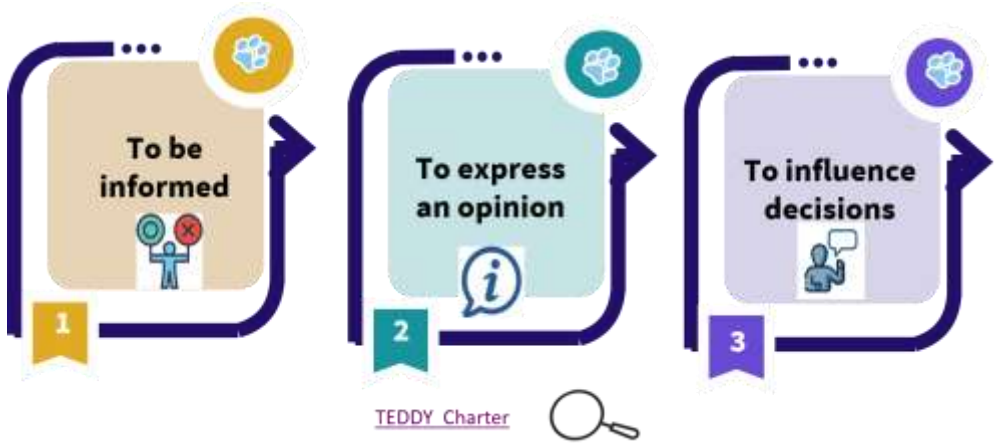
Children/Young Patient Engagement

The model adopted by the TEDDY NETWORK

Objective

Promote a shift in the perspective that places the empowerment of children and adolescents at the center, recognizing their active role in decisions that affect their health, and valuing their experiences and specific knowledge.

The involvement of children in health and biomedical research is a progressive process, aligned with the development of their capacities, and involves different levels of participation:



- 01 Strong motivation
- 02 Scientific contribution on par with experts
- 03 Appropriate educational tools (cartoons, videos)
- 04 Engagement with institutions and external stakeholders

Our Statutes provide for an **ADVISORY GROUP – TEDDY KIDS**, one member of which is part of the **TEDDY Board of Directors**.





The first **YPAG** from **TEDDY** was established in 2017.
To date, 10 groups are members of the **TEDDY KIDS Network** and are also part of **iCAN** (international Children Advisory Network).



Children/Young Patient Engagement

Ongoing European funded projects involving TEDDY as a Partner, and its TEDDY KIDS Network

The **Patients Experts' Committee (PEC)** supports the definition of the therapeutic needs related to the project's case studies. Also, ethical, legal and regulatory advice will be delivered in document preparation for clinical study submission.

Last event:
Kick-off Meeting of the Patient Expert Committee of the European project OrphaDev4Kids
University of Bologna, 15 March 2025



In the INVENTS project TEDDY is tasked with delivering the necessary knowledge and know-how to a young group of young patients affected by Juvenile Idiopathic Arthritis (JIA) or Multiple Sclerosis (MS) through the setup and development of a Patients Expert Group (PEG).

Last event:
Patient Expert Group
face-to-face training meeting for paediatric patients
1-3 November 2024 - Hotel Excelsior, Bari, Italy.



Monthly educational sessions
This group participated in monthly educational sessions (From January to June 2025) focusing on methodological, ethical, and regulatory aspects of rare diseases, aiming to inform adolescents with chronic conditions such as Juvenile Idiopathic Arthritis (JIA) and Multiple Sclerosis (MS).

In the framework of ERDERA, the Young Patient Training initiative is conducted under WP20, Subtask 20.1.2. coordinated by TEDDY. The focus is particularly on paediatric rare diseases, ensuring young patients are informed contributors to the research processes that affect them.

Last event:
On May 2nd and 3rd, the ERDERA Young Patients Training was held in Athens at the Hotel Stratos Vassilikos, Olympia Room.



Pediatric Medicinal Products in Europe

As of December 2019, a significant portion of medicinal products (MPs) and active substances (AS) were approved for children, despite existing disparities

Despite an increase in PIPs for neonates and infants, the number of paediatric medicines covering all age groups remains very low, highlighting an ongoing need for broader coverage

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Market Landscape (Dec 2019)

- **1190 MPs** and **843 ASs** on the market in Europe
- **405 MPs (34%)** and **322 ASs (38%)** were approved for children

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Approval Trends (2007-2019)

- **296 MPs (34%)** and **216 ASs (36%)** were approved as paediatric medicines
- Annual increase of paediatric approvals is **significantly lower** than overall MP approvals since EMA's inception

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Impact of Paediatric Regulation

- Of the 296 Paediatric MPs, **136 (46%)**, followed a Paediatric Investigation Plan (PIP)
- The remaining **160 (54%)** were approved without a PIP under Directive 2001/83/EC

TEDDY NETWORK

2021 Toma M. et al. — Paediatric Medicines in Europe: The Paediatric Regulation—Is It Time for Reform?

Off-label is not always off-evidence: Improved Efficacy and Safety of Pediatric Pharmacotherapy

Alternative Data Sources:
When standard trial data is lacking, results from investigator-initiated studies, cohort studies, case studies, can provide critical evidence

Reducing Off-Label Use:
Making Benefit-risk assessment public can aid professionals in reducing unwarranted off-label prescribing

Financial & Regulatory Reforms:
Financial incentives to encourage academic collaboration with marketing authorization holders

Data Scrutiny:
Non-traditional studies require careful evaluation due to potential limitations (e.g, good clinical practice, bias, low evidence quality)

Regulatory Reforms:
Updated legislations to allow non-pharma stakeholders to request label updates

Quality Standards:
Academia must uphold high quality standards in clinical trials and registry data to support valid regulatory changes

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2023 de Wildt SN. et al. — Off-label is not always off-evidence: authorising paediatric inidcations for old medicines

Methodological Advancements



27 applications following Implementation of the EMA Qualification Procedure for Novel Methodologies

70% of methodologies were potential of interest to pediatric patients, yet only 6 (22%) included paediatric data

Substantial proportion of novel, qualified methodologies held significant promise for application in the pediatric population

2024 Giannuzzi V. et al. — Innovative research methodologies in the EU regulatory framework: an analysis of EMA qualification procedures from a pediatric perspective

Advancing Paediatric Trial Standards



TEDDY supported, promoted and contributed to **International standardisation** of the protocol design SPIRIT-C and trial reporting CONSORT-C

- Develope in partnership with young people (age 10-14) and family caregivers.
- Comprising 13 new items.
- Facilitateing comprehensive reporting, enhancing transparency, reproducibility, accuracy, and utility of pediatric reports.

2026. Baba et al. — Innovative research methodologies in the EU regulatory framework: an analysis of EMA qualification procedures from a pediatric perspective

2026. Baba et al. —SPIRIT-Children and Adolescents (SPIRIT-C) 2026 extension statement: enhancing the reporting and usefulness of paediatric randomised trial protocols

Key Achievements of the TEDDY Network

Twenty Years of Impact (2005–2026)

STRATEGIC INFRASTRUCTURE & GOVERNANCE

Network Coordination

United fragmented paediatric research groups into a sustained, collaborative European network.

Shared Data Ecosystem

Built pharmacovigilance and epidemiological databases for real-world medicine monitoring

Ethical Standards & Assent

Developed ethical recommendations and age-tailored assent frameworks across member sites.

Public-Private Models

Pioneered collaborative funding models (e.g., GRiP) for off-patent paediatric therapies.

CLINICAL, METHODOLOGICAL & PATIENT IMPACT

Patient & Youth Engagement

Empowered children via **9 YPAGs**, interactive trial portals, and direct research input.

Standardised Terminology

Led European consensus (Delphi) defining off-label and unlicensed drug use *(Ceci et al. 2009)*.

Off-Patent Research

Mobilised 246 institutions across 5 calls; 80% focused on child-friendly formulations.

Novel Methodologies

Co-developed EMA-qualified trial designs and global standards (*SPIRIT-C / CONSORT-C*).

Key Achievements of the TEDDY Network

Institutional Partnerships

European Network of Pediatric Research at the European Medicines Agency (EMA) (Enpr-EMA)

TEDDY expresses one of the 12 members of the Coordinating Group of the Enpr-EMA.

European Network of Centres for Pharmacoepidemiology and Pharmacovigilance (ENCePP)

TEDDY actively participates in ENCePP activities, with the goal of advancing focused pediatric research initiatives.

2024 — Publishes “Descriptive Analysis of Pediatric Studies Included in the EU Post-Authorization Study Register from 2010 to 2023”, analysing trends across the EUPAS registry.

European Paediatric Transnational Research Infrastructure (EPTRI)

TEDDY offers services such as engaging Young Patient Advisory Groups (YPAGs), supporting paediatric therapies and Advanced Therapy Medicinal Products (ATMPs), providing regulatory and ethical guidance, and optimizing paediatric study designs.

Accelerating Clinical Trials in the European Union (ACT-EU)

TEDDY contributes to three key Priority Actions: PA 1 (mapping trial activities), PA 3 (stakeholder platform for exchanging views), and PA 8 (accelerating guidance development) and expresses one of the twenty permanent members of the ACT-EU Multistakeholder Platform Advisory Board.

COUNCIL OF EUROPE (CoE)

The mission of promoting children's rights and active participation in decision-making processes, reached a milestone, when the TEDDY KIDS, TEDDY Network’s young persons advisory groups (YPAGs), from Albania, France, Greece, Italy, Latvia, and Malta collaborated with the Council of Europe (CoE) to develop the "Guide to the participation of children in decision-making processes regarding their health”, released in 2023. A video was developed by TEDDY Network and TEDDY KIDS, in coordination with the Council of Europe.

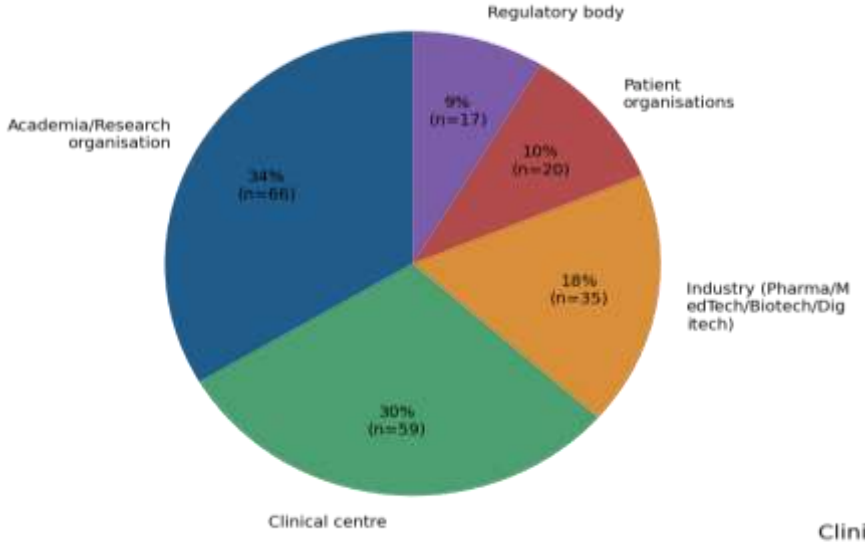
TODAY: What do stakeholders need now?

EPTRI Paediatric Research Needs Survey

OBJECTIVE: Identify systemic barriers, knowledge gaps and support needs to inform integrated cross-stakeholder research infrastructure

Respondent Profile

197 responses from 5 stakeholder categories: Academia/Research (66), Clinical Centres (59), Industry (35), Patient Organisations (20), Regulatory Bodies (17)

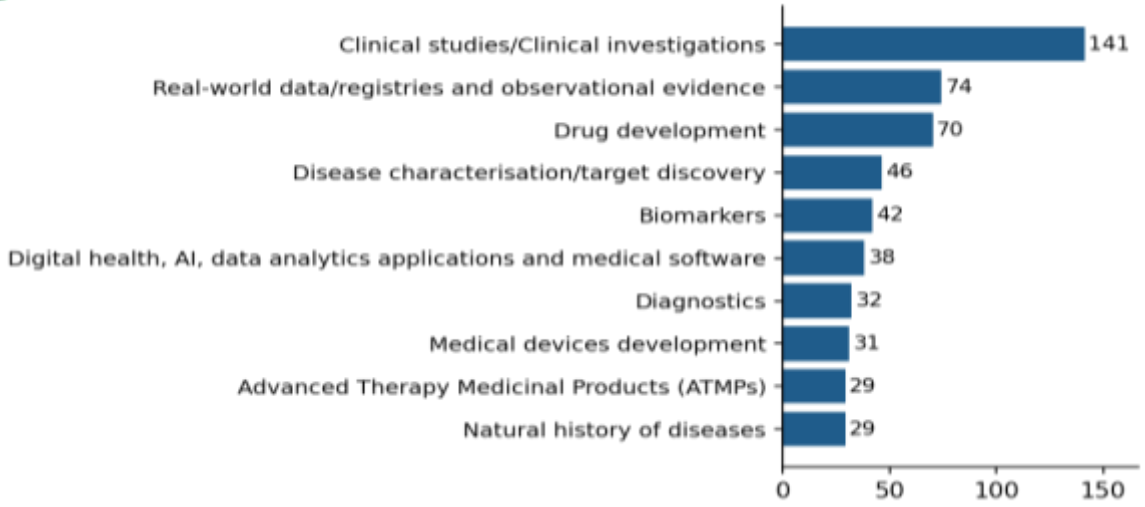


Geographic Coverage

29 countries represented, with Italy (24), Spain (9), USA (9), UK (9), Poland (8) most frequently reported

Most Relevant Innovation Areas

Clinical Studies **141 mentions**
Real-World Data/Registries **74 mentions**
Drug development **70 mentions**



Knowledge Gaps & Barriers

Top Knowledge Gaps

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Limited Paediatric Real-World Data & Registries

78 mentions — top priority for **Academia (28)** and **Clinical Centres (22)**. Absence of robust registries limits evidence generation and longitudinal tracking.

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Limited Paediatric-Specific Clinical Evidence

74 mentions — insufficient clinical trial data tailored to paediatric populations hampers treatment development and regulatory submissions.

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Non-Validated Biomarkers & Endpoints

71 mentions — lack of validated paediatric-specific biomarkers and endpoints is a critical barrier to trial design and regulatory approval.

Most Reported Barriers

Limited Funding & Economic Incentives

133 out of 197 respondents — the single most frequently reported barrier across all stakeholder groups.

Recruitment & Feasibility Challenges

96 mentions — small patient populations and site capacity constraints make paediatric trial recruitment particularly difficult.

Regulatory Complexity

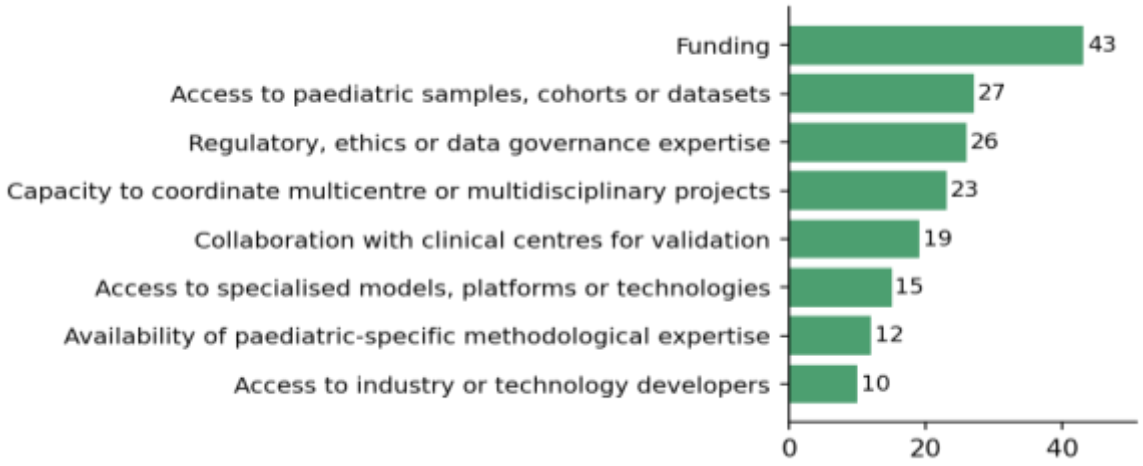
89 mentions — navigating paediatric regulatory pathways remains a significant operational burden across stakeholder groups.

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Academia/Research Organisation (n=66)

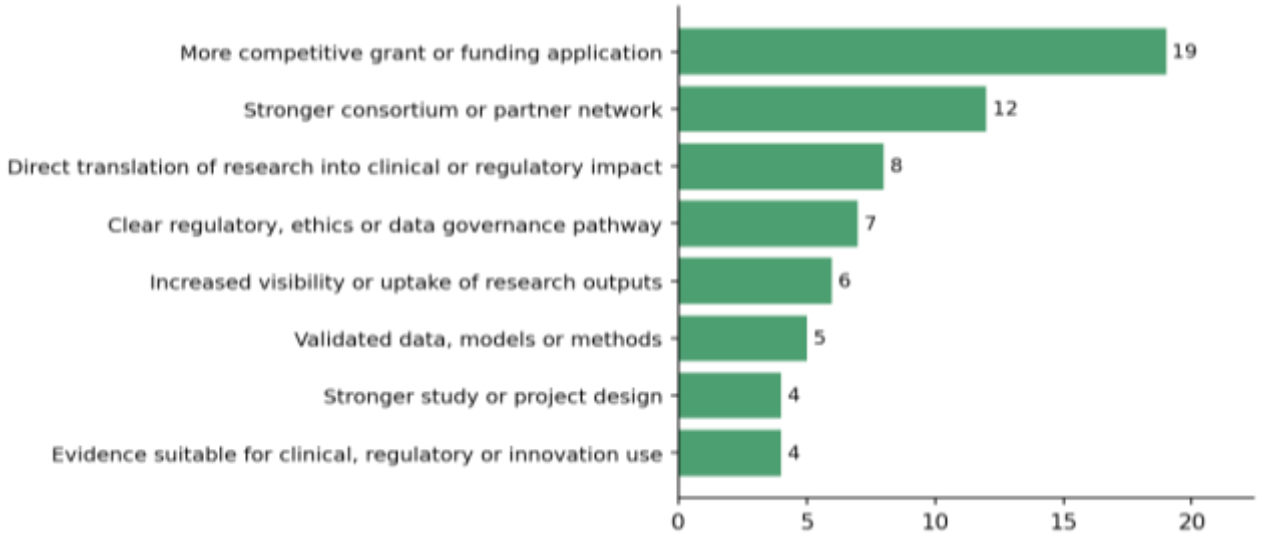
Practical Gaps in Translational Research:

- Access to funding (43)
- Access to paediatric samples, cohorts or datasets (27)
- Regulatory, ethics or data governance expertise (26)
- Capacity to coordinate multicentre or multidisciplinary projects (23)
- Collaboration with clinical centres for validation (19)



Most Valuable Expected Outcomes of Specialised Support:

- More competitive grant or funding applications (19)
- Stronger consortium and partner networks (12)
- Direct translation of research findings into clinical or regulatory impact (8)
- Clear regulatory, ethics or data governance pathway (7)



Clinical Centres (n=59)

Key Needs

Participation in multicentre paediatric studies

33 mentions

Support for studies in rare or low-prevalence conditions

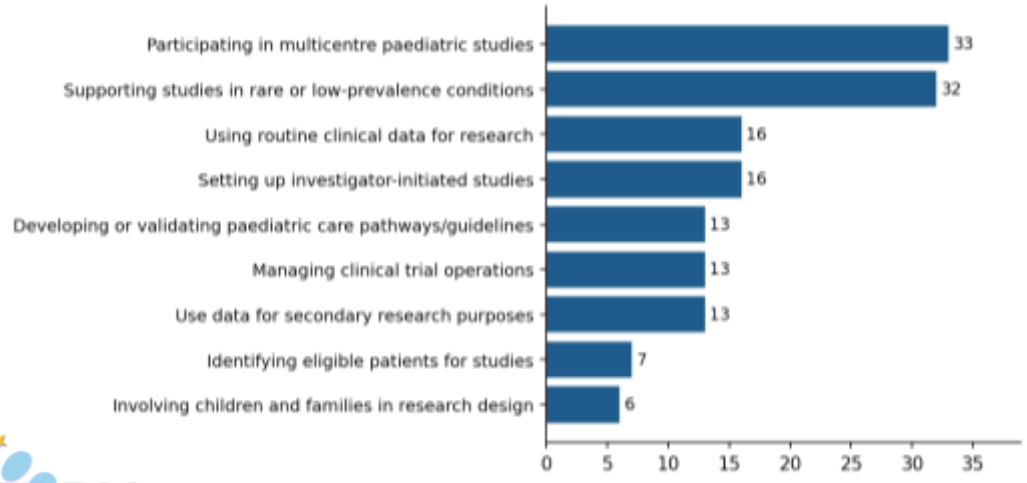
32 mentions

Use of routine clinical data for research

16 mentions

Setting up investigator-initiated studies

16 mentions



Main Internal Limitations

Lack of protected time for clinicians to engage in research

47/59 mentions

Limited funding for local study activities

43 mentions

Insufficient dedicated research staff

35 mentions

Most Valuable Specialised Support

Data extraction, quality and interoperability support

33 mentions

Study and trial coordination

29 mentions

Training for clinical research staff

26 mentions

Industry – Pharma/MedTech/Biotech/Digitech (n=35)

Strategic Positioning:

Core part of development strategy
13/35 respondents

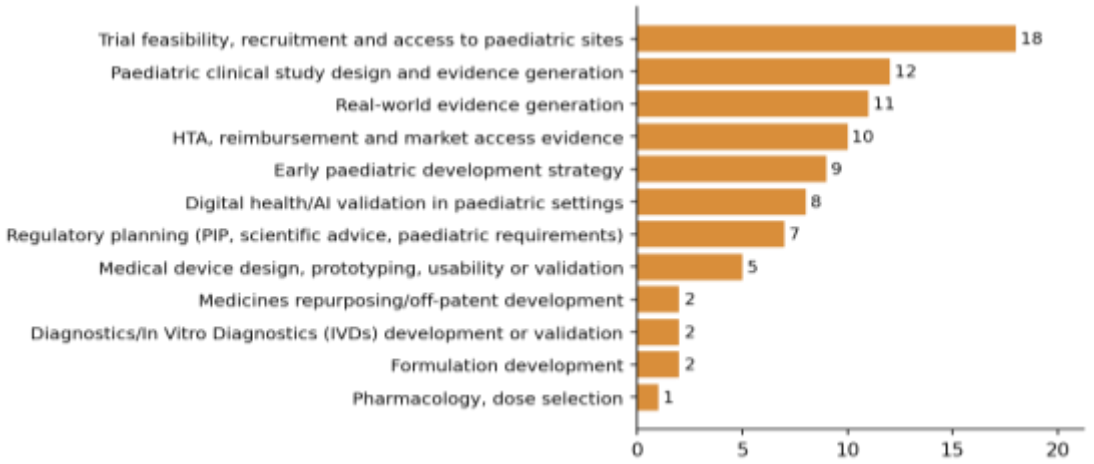
Significant opportunity in selected therapeutic areas
13 respondents

Niche but strategically relevant area
4 respondents

Mainly a regulatory requirement
4 respondents

Areas Needing Most Specialised Support:

- **Trial feasibility, recruitment and access to paediatric sites (18)**
- **Paediatric clinical study design and evidence generation (12)**
- **Real-world evidence generation (11)**
- **HTA, reimbursement and market access evidence (10)**



What Makes External Services Credible:

- Access to specialised paediatric centres or networks (10)
- Recognised paediatric expertise (17)
- Evidence of impact on regulatory, clinical or market access readiness (14)

Patient Organisations (n=20)

Least Addressed Needs

- **More equitable access across countries or regions** (15/20)
- **Better access to appropriate treatments, including age-appropriate options** (13)
- Earlier diagnosis (11)
- Better access to clinical trials or research opportunities (6)

What Makes Patient Involvement More Meaningful

- **Earlier involvement in research priority setting** (16)
- **Demonstrable impact of patient input on research decisions** (9)
- Clearly defined role in study design and review (8)
- Better communication between researchers and patient groups (8)
- Reimbursement/support for participation time and costs (7)

Regulatory Bodies (n=17)

Evidence Hardest to Assess:

- Evidence from small paediatric populations or limited sample sizes (15/17)
- Evidence based on extrapolation from adult data (13)
- Real-world evidence / registry-based evidence (7)
- Evidence including patient/family relevant outcomes (4)

Factors Limiting Regulatory Usability:

- Insufficient methodological robustness (12/17)
- Lack of validated endpoints and biomarkers (10)
- Limited consideration of age/developmental subgroups (9)
- Insufficient data quality, completeness or interoperability (6)

TEDDY NETWORK

Support Models & Implementation Priorities

Most Requested Support Types

Collaboration & Consortium-Building

83 mentions — Top-ranked support need across stakeholder groups

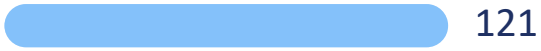
Paediatric Study Design & Protocol Development

77 mentions — Strong demand for specialised methodological support

Data Access & Real-World Evidence

76 mentions — Critical for both research and market access purposes

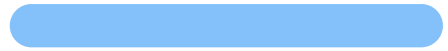
Preferred Support Models



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Long-Term Strategic Collaboration

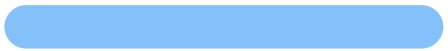
Strongly favoured over one-off engagement



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Integrated Paediatric Research Infrastructure

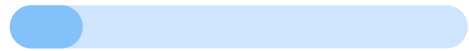
Sustained, embedded support preferred



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Multi-Stakeholder Co-Development

Highly valued across sectors



16

One-Off Consultation

Least preferred model by far

Strategic Implications & Next Steps

1 Systemic Convergence

Despite diverse stakeholders, findings reveal remarkable consensus on barriers and needs — challenges are **systemic, not stakeholder-specific**.

2 Fragmented Innovation Landscape

Stakeholders face similar challenges but lack **coordinated mechanisms** to access expertise, data, and collaborative opportunities.

3 Financial Sustainability

Stakeholders prefer **grant-funded and collaborative models** (67 mentions) over direct payment; most have no available budget (57) or indicate feasible investment below €10,000.

Success requires coordinated investment in **scientific excellence, regulatory frameworks, data ecosystems and collaborative networks** — not isolated interventions.

Looking Ahead:
Future Priorities for Paediatric Research

Twenty years of progress have laid a strong foundation. The next chapter must address the challenges that remain.

Close Remaining Evidence Gaps

Target therapeutic areas and age groups where off-label use persists despite regulatory progress

Embrace Innovation

Integrate digital methodologies, adaptive trial designs, and personalized medicine approaches into paediatric research

Strengthen Global Partnerships

Deepen international collaboration to ensure equitable access to safe, effective medicines for all children

TEDDY's mission continues — from documenting unmet needs to shaping the future of child health across Europe and beyond.





Building the Future of Paediatric Medicine Together

Thank You for 20 Years of Partnership