

Mustistakeholder meetings to improve new drug development for rare diseases in the changing regulatory environment

Gilles Vassal, Gustave Roussy

December 12, 2024



ERICA

European Rare Disease Research
Coordination and Support Action

Meeting



EUROPEAN
COMMISSION

Towards a more science driven and patient centric regulation

Brussels, 26.4.2023
COM(2023) 193 final

2023/0131 (COD)

Proposal for a

REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

laying down Union procedures for the authorisation and supervision of medicinal products for human use and establishing rules governing the European Medicines Agency, amending Regulation (EC) No 1394/2007 and Regulation (EU) No 536/2014 and repealing Regulation (EC) No 726/2004, Regulation (EC) No 141/2000 and Regulation (EC) No 1901/2006

1. Unmet Medical Needs and High UMN

2. Mechanism of Action PIPs

3. Stepwise PIP

*mechanism of action



CHAPTER VII PAEDIATRIC MEDICINAL PRODUCTS

EU PROPOSAL

Article 95

European network

1. The Agency shall develop a European network of patient representatives, academics, medicines developers, investigators and centres with expertise in the performance of studies in the paediatric population. = **multistakeholder**
2. The objectives of the European network shall be, inter alia, to discuss priorities in the clinical development of medicines for children, in particular in areas of unmet medical need, to coordinate studies relating to paediatric medicinal products, to build up the necessary scientific and administrative competences at European level, and to avoid unnecessary duplication of studies and testing in the paediatric population.

Multi-stakeholder collaboration for prioritisation

Multi-Stakeholder Meetings

A disease or a class of compounds or devices

Specific objectives:

- Sharing publicly available information and advanced learning
- Define UMN* and update science
- Critical review of ongoing developments and issues to address
- Propose a strategy

Principles:

- ALL relevant stakeholders : clinicians, academics, patients and patient representatives, pharmaceutical companies, regulators, HTA
- Publication in a peer reviewed journal

To facilitate prioritisation

*unmet medical needs

Pediatric Strategy Forum

Setting

- 6 months preparation including TCs with speakers and pharma
- 2 days meeting
- On invitation following expression of interest (pharma, academia, parents)

Output

- Summary on websites
- Article in a peer-reviewed journal

Content

- Biology of disease
- Therapeutic needs including epidemiology, clinical features, standard therapy current needs and future therapeutic plans – Europe and North America
- Insight from patients and parents
- Non-clinical and clinical data on compounds
- Strategic discussion

Paediatric Strategy Forums

Overall more than 300 assets discussed by 2000 participants.

2017

PSF - 1

ALK inhibition



PSF - 2

Mature B-cell lymphoma



2018

PSF - 3

Checkpoint Inhibitors



2019

PSF - 4

Acute Myeloid Leukemia



PSF Prioritisation

Acute Myeloid Leukemia



2020

PSF - 5

Epigenetic modifiers



PSF Prioritisation

BET inhibitors



2021

PSF - 6

Second ALK inhibition



PSF - 7

CAR T cells



PSF - 8

TKI in Sarcomas



2022

PSF - 9

MAPK inhibitors



PSF -10

DNA Damaging agents



2023

PSF - 11

PI3K/AKT/mTOR Pathway



PSF - 12

CDK 4, 6 & 9 inhibitors



2024

PSF - 13

Diffuse Midline Gliomas



PSF - 14

GD2 therapies



PUBLICATION of PEDIATRIC STRATEGY FORUMS and PRIORITISATION MEETING

European Journal of Cancer 110 (2019) 74–85



N°2 Mature B cell Lymphoma

Original Research

ACCELERATE and European Medicine Agency Paediatric Strategy Forum for medicinal product development for mature B-cell malignancies in children

Andrew D.J. Pearson ^{a,*}, Nicole Scobie ^b, Koenraad Norga ^c, Franca Ligas ^d, Davy Chiodin ^e, Amos Burke ^f, Veronique Minard-Colin ^g, Peter Adamson ^h, Lynley V. Marshall ^{i,jam}, Arun Balakumaran ^{k,l}, Bouchra Benettaib ^k, Pankaj Bhargava ^l, Catherine M. Bolland ^m, Ellen Bolotin ⁿ, Simon Bomken ^o, Jochen Buechner ^o, Birgit Burkhardt ^q, Hubert Caron ^r, Christopher Copland ^r, Pierre Demolis ^l, Anton Egorov ^u, Mahdi Farhan ^v, Gerhard Zugmaier ^w, Thomas Gross ^x, Danielle Horton-Taylor ^z, Wolfram Klapper ^z, Giovanni Lesa ^d, Robert Marcus ^{aa}, Rodney R. Miles ^{ab}, Kerri Nottage ^{ac}, Lida Pacaud ^{ad}, Rosanna Ricafort ^{ae}, Martin Schrappe ^{af}, Jaroslav Sterba ^{ag}, Remus Vezan ^{ah}, Susan Weiner ^{ai}, Su Young Kim ^{aj}, Gregory Reaman ^{ak}, Gilles Vassal ^{al}

European Journal of Cancer 136 (2020) 116–129



N°4 Acute Myeloid Leukemia

Original Research

Paediatric Strategy Forum for medicinal product development for acute myeloid leukaemia in children and adolescents[★]

ACCELERATE in collaboration with the European Medicines Agency with participation of the Food and Drug Administration

Andrew D.J. Pearson ^{a,*}, C.Michel Zwaan ^{b,c,1}, E.Anders Kolb ^{d,1}, Dominik Karres ^e, Julie Guillot ^f, Su Young Kim ^g, Lynley Marshall ^h, Sarah K. Tasian ⁱ, Malcolm Smith ^j, Todd Cooper ^k, Peter C. Adamson ^l, Elly Barry ^m, Bouchra Benettaib ⁿ, Florence Binlich ^o, Anne Borgman ^p, Erica Brivio ^{b,c}, Renaud Capdeville ^q, David Delgado ^r, Douglas V. Faller ^s, Linda Fogelstrand ^l, Paula Goodman Fraenkel ^u, Henrik Hasle ^v, Delphine Heenen ^w, Gertjan Kaspers ^{b,c}, Mark Kieran ^x, Jan-Henning Klusmann ^y, Giovanni Lesa ^c, Franca Ligas ^z, Silvia Mappa ^z, Hesham Mohamed ^{aa}, Andrew Moore ^{ab}, Joan Morris ^{ac}, Kerri Nottage ^{ad}, Dirk Reinhardt ^{ae}, Nicole Scobie ^{af,ag}, Stephen Simko ^{ah}, Thomas Winkler ^{ai}, Koen Norga ^{aj}, Gregory Reaman ^{ak}, Gilles Vassal ^{al}

European Journal of Cancer 139 (2020) 135–148



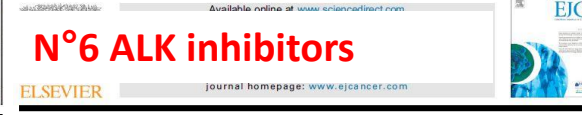
N°5 Epigenetic Modifiers

Review

Paediatric Strategy Forum for medicinal product development of epigenetic modifiers for children ACCELERATE in collaboration with the European Medicines Agency with participation of the Food and Drug Administration

Andrew D.J. Pearson ^{a,*}, Kimberly Stegmaier ^{b,1}, Franck Bourdeaut ^{c,1}, Gregory Reaman ^d, Delphine Heenen ^e, Michael L. Meyers ^f, Scott A. Armstrong ^g, Patrick Brown ^g, Daniel De Carvalho ^h, Nada Jabado ⁱ, Lynley Marshall ^j, Miguel Rivera ^k, Malcolm Smith ^l, Peter C. Adamson ^m, Amy Barone ^d, Christian Baumann ⁿ, Samuel Blackman ^o, Vickie Buenger ^p, Martha Donoghue ^q, Aundrietta D. Duncan ^q, Elizabeth Fox ^r, Brian Gadbaw ^s, Maureen Hattersley ^t, Peter Ho ^u, Ira Jacobs ^v, Michael J. Kelly ^w, Mark Kieran ^x, Giovanni Lesa ^y, Franca Ligas ^y, Donna Ludwinski ^z, Joe McDonough ^{aa}, Zariana Nikolova ^{ab}, Koen Norga ^{ac}, Adrian Senderowicz ^{ad}, Tilmann Taube ^{ae}, Susan Weiner ^{af}, Dominik Karres ^y, Gilles Vassal ^{ag}

European Journal of Cancer 157 (2021) 198–213



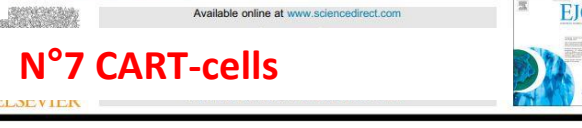
N°6 ALK inhibitors

Review

Second Paediatric Strategy Forum for anaplastic lymphoma kinase (ALK) inhibition in paediatric malignancies ACCELERATE in collaboration with the European Medicines Agency with the participation of the Food and Drug Administration

Andrew D.J. Pearson ^{a,*}, Elly Barry ^b, Yael P. Mossé ^c, Franca Ligas ^d, Nick Bird ^e, Teresa de Rojas ^f, Zachary F. Zimmerman ^f, Keith Wilner ^g, Willi Woessmann ^h, Susan Weiner ⁱ, Brenda Weigel ^j, Rajkumar Venkatramani ^k, Dominique Valteau ^l, Toby Trahair ^m, Malcolm Smith ⁿ, Sonia Singh ^o, Giovanni Selvaggi ^p, Nicole Scobie ^q, Gudrun Schleiermacher ^r, Nicholas Richardson ^o, Julie Park ^k, Karsten Nysom ^l, Koen Norga ^l, Margret Merino ^o, Joe McDonough ^y, Yousef Matloub ^o, Lynley V. Marshall ^z, Eric Lowe ^y, Giovanni Lesa ^d, Meredith Irwin ^z, Dominik Karres ^d, Amar Gajjar ^{aa}, François Doz ^r, Elizabeth Fox ^{aa}, Steven G. DuBois ^{ab}, Martha Donoghue ^o, Michela Casanova ^{ac}, Hubert Caron ^{ad}, Vickie Buenger ^{ac}, Diana Bradford ^{ae}, Patricia Blanc ^{af}, Amy Barone ^o, Gregory Reaman ^o, Gilles Vassal ^{ad}

European Journal of Cancer 160 (2022) 112–133



N°7 CART-cells

Review

Paediatric Strategy Forum for medicinal product development of chimeric antigen receptor T-cells in children and adolescents with cancer ACCELERATE in collaboration with the European Medicines Agency with participation of the Food and Drug Administration²

Andrew D.J. Pearson ^{a,*}, Claudia Rossig ^{b,1}, Crystal Mackall ^{c,1}, Nirali N. Shah ^{d,1}, Andre Baruchel ^{e,1}, Gregory Reaman ^f, Rosanna Ricafort ^g, Delphine Heenen ^h, Abraham Bassan ⁱ, Michael Berntgen ^j, Nick Bird ^k, Eric Bleickardt ^l, Najat Bouchkouj ^f, Peter Bross ^l, Carrie Brownstein ^m, Sarah Beaussant Cohen ^o, Teresa de Rojas ^o, Lori Ehrlich ^f, Elizabeth Fox ^o, Stephen Gottschalk ^o, Linda Hanssens ^p, Douglas S. Hawkins ^q, Ivan D. Horak ^r, Danielle H. Taylor ^s, Courtney Johnson ^t, Dominik Karres ^l, Franca Ligas ^l, Donna Ludwinski ^u, Maksim Mamonkin ^v, Lynley Marshall ^w, Behzad K. Masouleh ^x, Yousef Matloub ^y, Shannon Maude ^z, Joe McDonough ^{aa}, Veronique Minard-Colin ^{ab}, Koen Norga ^{ac}, Karsten Nysom ^{ad}, Alberto Pappo ^o, Laura Pearce ^{ac}, Rob Pieters ^{af}, Martin Pule ^{ag}, Alfonso Quintás-Carda ^{ah}, Nick Richardson ^{ai}, Martina Schübler-Lenz ^{aj,ab}, Nicole Scobie ^{aj}, Martina A. Sersch ^{ak}, Malcolm A. Smith ^{al}, Jaroslav Sterba ^{am}, Sarah K. Tasian ^z, Brenda Weigel ^{an}, Susan L. Weiner ^{ao}, Christian Michel Zwaan ^{af,ap,ar}, Giovanni Lesa ^l, Gilles Vassal ^{a,aq}

European Journal of Cancer 146 (2021) 115–124



Prioritising BET inhibitors

Review

Bromodomain and extra-terminal inhibitors—A consensus prioritisation after the Paediatric Strategy Forum for medicinal product development of epigenetic modifiers in children—ACCELERATE

Andrew D.J. Pearson ^{a,*}, Steven G. DuBois ^b, Vickie Buenger ^c, Mark Kieran ^d, Kimberly Stegmaier ^b, Pratiiti Bandopadhyay ^b, Kelly Bennett ^e, Franck Bourdeaut ^f, Patrick A. Brown ^g, Louis Chester ^h, Jessica Clymer ^b, Elizabeth Fox ⁱ, Christopher A. French ^j, Eva Germovsek ^k, Francis J. Giles ^l, Julia G. Bender ^{lm}, Maureen M. Hattersley ^o, Donna Ludwinski ^{np}, Katarina Luptakova ^q, John Maris ^r, Joe McDonough ^s, Zariana Nikolova ^t, Malcolm Smith ^u, Athanasios C. Tsiatis ^v, Rajeev Vibhakar ^w, Susan Weiner ^x, Joanna S. Yi ^z, Fred Zheng ^z, Gilles Vassal ^{aa,ab}

All available @ www.accelerate-paltform.org



c4c Multi-Stakeholder Meetings

MSM #1 - **Paediatric Inflammatory bowel disease**

14-15 April 2021, Virtual

MSM #2 - **Pediatric Atopic Dermatitis**

1-2 March 2022, Virtual

MSM#3 on **medical devices in type I diabetes**

21 February 2023, Berlin & Zoom

MSM #4 on **Perinatal Asphyxia**

18-19 Sep 2023, Rome & virtual

MSM #5 on **Irritability**

18-19 March 2024, Nice & virtual

674 PARTICIPANTS

366 ACADEMIA (54%)

130 INDUSTRY (19%)

75 REGULATORS (11%)

103 PATIENTS PARENTS (15%)



The C4C MSM Experts

Inflammatory Bowel Disease



Lissy de Ridder
Erasmus MC



Chrissi Pallidis
EMA
European Patients' Forum



Marco Greco



Nick Croft
Queen Mary UoL



Tara Altepeter
FDA



R. "Skip" Nelson
Johnson & Johnson



Wallace Crandall
Eli Lilly & Co.

Atopic Dermatitis



Suzanne Pasmans
Erasmus MC



Sebastien Barbarot
CHU Nantes



Bernd Arents
VMCE



Dobromir Penkov
EMA



Janelle Burnham
Pfizer

Perinatal Asphyxia



Karel Allegaert
KU Leuven



Anne Smits
KU Leuven



Nikki Robertson
UCL



Mark Turner
UoL



aisling walsh
EFCNI



Ralph Bax
EMA



An Massaro
FDA

Type I Diabetes



Thomas Danne
HKA



Eric Renard
CHU Montpellier



Torben Biester
HKA



Felix Resche
HKA



Maren Sturny
Dedoc



Robert Geertsma
RIVM



Michelle Katz
Eli Lilly



Elizabeth Niemoeller
Sanofi



Marc Julien
Diabeloop

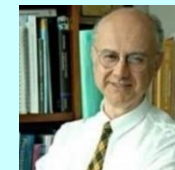
Irritability



Carmen Moreno
CUSM



Sara Carucci
UNICA



Benedetto Vitiello
UNITO



Florence Butlen
EMA



Argyris Stringaris
UCL



Christoph U. Correll
Charité



Fernando Pontes Soares
Servier

c4c multistakeholder meetings publications

MSM #1

Journal of Crohn's and Colitis, 2022, XX, 1–10
<https://doi.org/10.1093/ecco-jcc/jjac135>
Advance access publication 21 September 2022
Original Article



Paediatric Inflammatory Bowel Disease: A Multi-Stakeholder Perspective to Improve Development of Drugs for Children and Adolescents

Nicholas M. Croft,^{a,*}  Lissy de Ridder,^{b,*} Anne M. Griffiths,^c Jeffrey S. Hyams,^d
Frank M. Ruemmele,^{e,f} Dan Turner,^g Katharine Cheng,^h Irja Lutsar,ⁱ Marco Greco,^j
Zuzanna Gołębiewska,^k Floriane Laumond,^l Maria Cavaller-Bellaubi,^m Adam Elgreedy,ⁿ
Tara A. Altepeter,^o Chrissi Pallidis,^p Koen Norga,^q Robert Nelson,^h Wallace Crandall,^r Gilles Vassal^s

MSM #2 - Pediatric Atopic Dermatitis – To be submitted

MSM #3 on medical devices in type I diabetes – Submitted

MSM #4 on Perinatal Asphyxia – In writing

MSM #5 on Irritability – In writing



The 6th C4C multistakeholder meeting

Chronic Kidney Disease

April 2025, Heidelberg & virtual
Ahead of the ESCAPE meeting



Nephrol Dial Transplant, 2024, **39**, 907–909

<https://doi.org/10.1093/ndt/gfae029>

Advance access publication date: 2 February 2024

SGLT2 inhibitors: approved for adults and cats but not for children with CKD

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³Division of Pediatric Nephrology, Center for Pediatrics and Adolescent Medicine, University of Heidelberg, Heidelberg, Germany

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EDITORIAL





EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH

6 February 2023
EMA/635567/2022
Paediatric Medicines Office

Boosting the development of medicines for children

Closing report of the European Medicines Agency and European Commission
(DG Health and Food Safety) action plan on paediatrics

1. Identifying paediatric medical needs

| Action | Objectives | Achievements by January 2023 |
|--|---|---|
| <p>1 Develop overview of selected therapeutic areas to identify paediatric medical needs. Actions include:</p> <ul style="list-style-type: none"> • Conducting public survey on criteria proposed for determining paediatric medical needs and on perceived areas of needs • Selecting therapeutic areas based on various factors, including experience with PIPs and stakeholder feedback, for further analyses by multi-stakeholder focus groups • Conducting multi-stakeholder workshops in selected therapeutic areas • Publishing reports on the paediatric therapeutic landscape related to selected areas | <p>To raise awareness for paediatric medical needs with a view to providing a basis for strategic decision making on paediatric medicine development.</p> | <ul style="list-style-type: none"> • Strategies to address needs in children with malignancies were determined at multi-stakeholder forums organised by EMA together with the ACCELERATE platform: <ul style="list-style-type: none"> – ACCELERATE & EMA Paediatric Strategy Forum for medicinal product development of checkpoint inhibitors for use in combination therapy in paediatric patients (09/2018), related publication in Eur J Cancer (11/2019). – ACCELERATE & EMA Paediatric Strategy Forum for medicinal product development for acute myeloid leukaemia in children and adolescents (04/2019), related publication in Eur J Cancer (09/2020). – ACCELERATE & EMA Paediatric Strategy Forum for epigenetic modifiers in paediatric malignancies (01/2020), related publication in Eur J Cancer (11/2020). – ACCELERATE & EMA Paediatric Strategy Forum on CAR T-cell developments (5/2021), related publication in Eur J Cancer (11/2021). new – ACCELERATE & EMA 2nd Paediatric Strategy Forum on ALK inhibitors (06/2021), related publication in Eur J Cancer (11/2021). new |
| | | <p>focused workshops during 2020/21 in collaboration with the IMI c4c project.</p> <ul style="list-style-type: none"> – Contribution to a multi-stakeholder workshop on paediatric inflammatory bowel disease in collaboration with the IMI c4c project (04/2021). New – Contribution to a follow-up multi-stakeholder workshop on paediatric unmet needs (06/2021). New – Contribution to a multi-stakeholder meeting on priorities for antiretroviral drug optimisation in children (Paediatric Antiretroviral Drug Optimization [PADO] meeting) (09/2021). New – Contribution to a multi-stakeholder workshop on paediatric atopic dermatitis in collaboration with the IMI c4c project (03/2022). new |



**Paediatric Strategy Forum:
Mature B cell malignancies in children
13 & 14 November 2017**

Results and impact

Paediatric Strategy Forum: Mature B cell malignancies in children

13 & 14 November 2017

Participants

- 73 Participants
- European and North American academic experts
- Patient representatives from Unite2Cure (Europe) and Children's Cause for Cancer Advocacy (US)
- Regulators from EU national competent authorities, EMA & US FDA; and PDCO members
- 15 Pharmaceutical companies
- 20 Medicinal products discussed

- Highly effective current therapy for high-risk mature B cell malignancies with EFS~ 95% and no salvage therapy in relapse
- Acute toxicity – significant, but most survivors - no or mild long term toxicity

Unmet therapeutic needs

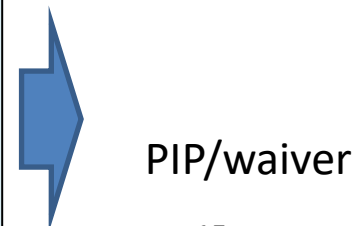
- i) develop innovative treatments for patients remaining incurable
- ii) reduce high acute toxicity of current therapy

Conclusion

- Most malignancies in children differ from those in adults
- Successful de-escalation at low risk in front line therapy can only be undertaken with an effective salvage regimen
- Priority = developing treatment for relapse
 - Very small number of patients = global strategy
 - Combination approach rather than monotherapy
 - Correlative biology studies should be integrated

Consensus of clinicians on priorities

- Antibody drug conjugates
- CAR-T cells (not products for initial use but only for consolidation)
- T-cell Engagers



Results

Anticancer drugs for non-Hodgkin lymphoma in adult

July 2007 – November 2017

- # of EMA decisions for **Paediatric Investigation Plans** \Rightarrow 15/27 (56%)
- # of EMA decision for **Full-waivers** \Rightarrow 12/27 (44%)

July 2015- July 2018 Revision of the class waiver list (CW/0001/2015)

November 2017- 2nd Paediatric Strategy Forum

December 2017 – June 2021

- # of EMA decisions for Paediatric Investigation Plans \Rightarrow 9/36 (25%)
- # of EMA decisions for Full-waivers \Rightarrow 27/36 (75%)



JNCI: Journal of the National Cancer Institute, 2024, 116(2), 200–207


<https://doi.org/10.1093/jnci/djad239>

Advance Access Publication Date: November 17, 2023

Review

Impact of ACCELERATE Paediatric Strategy Forums: a review of the value of multi-stakeholder meetings in oncology drug development

ACCELERATE in collaboration with the European Medicines Agency with participation of the Food and Drug Administration

Andrew D.J. Pearson , MBBS, MD, DCH,^{1,*} Teresa de Rojas, MD, PhD,¹ Dominik Karres, MD,² Gregory Reaman, MD,³ Nicole Scobie,⁴ Elizabeth Fox, MD,⁵ Giovanni Lesa, PhD,² Franca Ligas, MD,² Koen Norga, MD, PhD,^{6,7,8} Karsten Nysom, MD, PhD,⁹ Alberto Pappo, MD,⁵ Brenda Weigel, MD, MSc,¹⁰ Susan L. Weiner, PhD,¹¹ Gilles Vassal, MD, PhD^{1,12}



Conclusions

- The EU regulatory landscape is changing
- Demonstrated feasibility and value of multistakeholder meetings to support science-based and patient-centric pediatric drug development and to facilitate prioritization
- In this changing regulatory environment
- MSMs are adapted to each topic/disease addressed

MSM and Rare Diseases

- What potential role to improve and accelerate therapeutic innovations for patients with rare and ultra rare diseases?
- What are the needs?
- How MSM could strengthen interactions between ERNs and Industry (and regulatory bodies) with a strong insight of patients and advocates?