European Paediatric Formulation Initiative

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Formulating better medicines for children

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Quick facts

www.eupfi.org

European Paediatric Formulation Initiative

=> Non profit organisation

=> Established in London (UK) in 2007 led by The School of Pharmacy

⇒ ~ 20 Members from industry, academia, hospital and regulatory agencies

Mission & Objectives

European Paediatric Formulation Initiative

EuPFI MISSION

To promote and facilitate preparation of better & safer medicines for children through

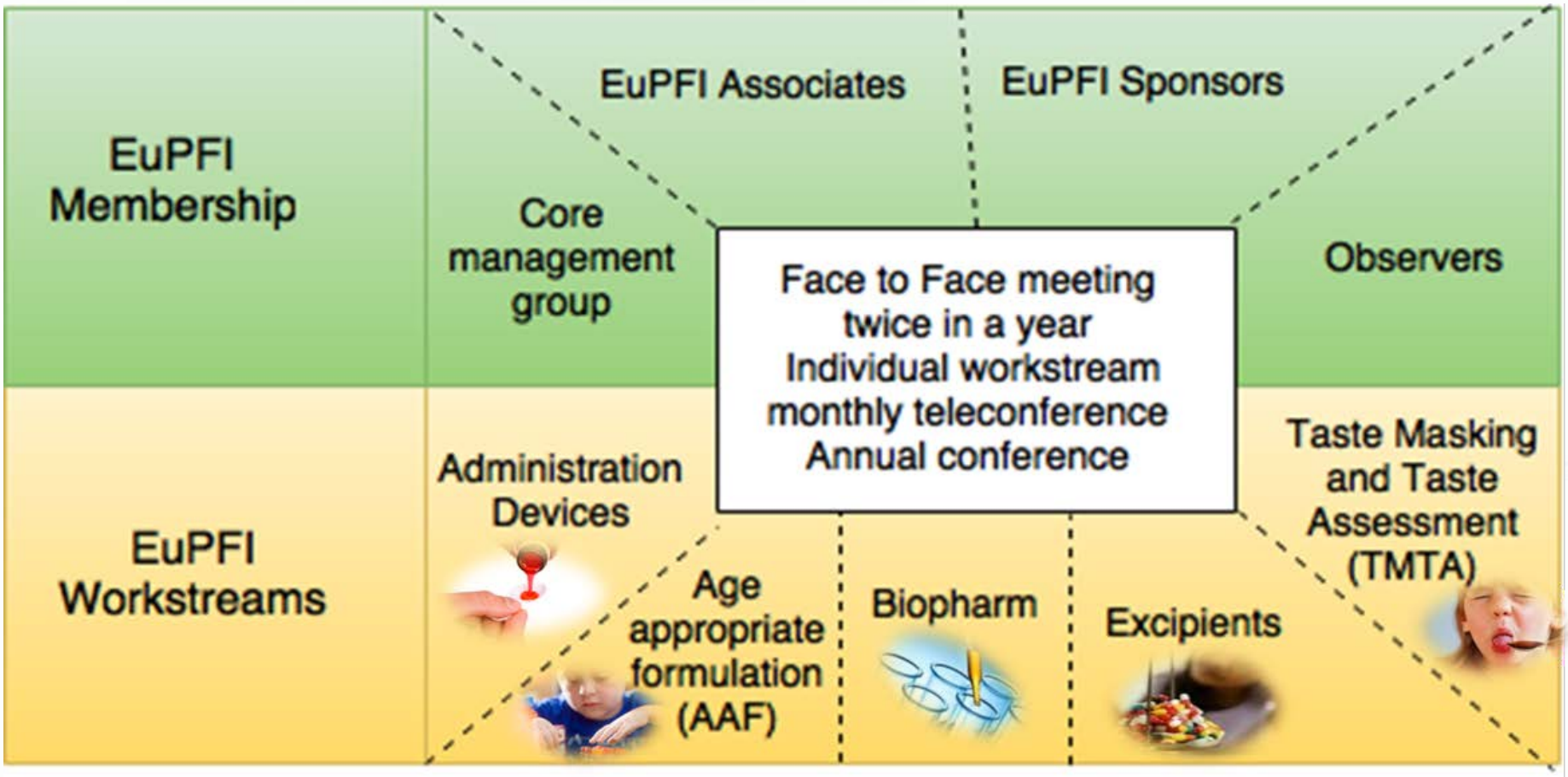
- Sharing expertise and interactive discussion between industry, academia, clinical and regulatory professionals.
  - EMA observer
- Information dissemination
- Raising awareness (publications, conferences etc.)
- Linking and networking
  - IQ
  - SPeaDD-UK (iUK) : *tools for taste, acceptability and vitro/vivo correlation*

EuPFI OBJECTIVES

1. **Identify** the issues and challenges - development of paediatric formulation & consider ways towards better medications and clinically relevant dosage forms for children
2. **Promote** early pharmaceutical consideration for development of paediatric medicines.
3. **Identify** potential information, knowledge, know-how gaps in the paediatric formulation development.
4. **Improve** the availability of information of paediatric formulations.

Annual Conferences

Framework


EuPFI Membership
EuPFI Associates
EuPFI Sponsors
Core management group
Observers
Face to Face meeting
twice in a year
Individual workstream
monthly teleconference
Annual conference
EuPFI Workstreams
Administration Devices
Taste Masking and Taste Assessment (TMTA)
Age appropriate formulation (AAF)
Biopharm
Excipients

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Key outputs

TASTE (MASKING & TESTING)

Etat des lieux (Cram et al – 2009)

Taste-Masking Technologies

Approaches to taste masking (Walsh et.al, 2015)

Taste Assessment

E-tongue interlab work (Pien et al, 2014)

EXCIPIENTS

US PFI (NIH NICHD)

STEP database

Safety & Toxicity of Excipients For Paediatrics

3 Papers published
40 Excipients
> 700 users (Salunke et al, 2013, 2014, 2015)

GRIP

Global Research in Paediatrics

AGE-APPROPRIATE FORMULATIONS

Acceptability/Preference

Review on formulation factors affecting acceptability (Liu et al, 2015)

Modification vs Manipulation of DF

Standardization of types of paediatric pharmaceutical preps (Ernest et.al, 2012)

Risk/benefit framework proposed

for the selection of AAF (Sam et al, 2012)

ADMINISTRATION DEVICES

-Current devices challenges + recent developments (Walsh et al, 2012)

-Devices views/ experiences by EU HCPs (Walsh et al, 2015)

COLLABORATIVE OUTPUTS`

- IQ survey (EuPFI Athens 2014)

-Non-human tools for the evaluation of bitter APIs (SPeaDD-UK) drug discovery today May 2016

BIOPHARMACEUTICS

BCS Classification paed ? (Batchelor et al, 2014, 2016)

Review – paed biopharm method GAPS (Batchelor et al 2013)

Current key priorities

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AGE APPROPRIATE FORMULATIONS/ TASTE

- Palatability assessment of paediatric dosage forms /APIs (*including in vitro methods)*
- Dosage form acceptability, safety, efficacy and dose flexibility
- Modification of dosage forms
- Manufacturing challenges/Poorly soluble APIs

BIOPHARM

- Prioritise research - in paediatric biopharmaceutics
- Review strategies - bridging studies to support the development of paediatric medicines
- Review the impact of food on the predicted in vivo performance of paediatric medicines

EXCIPIENTS

- EXPAND STEP DATABASE
- Identify how excipients can affect the absorption of drugs and also affect GI physiology in children

ADMIN. DEVICES

- Survey – patients and carers on use of administration devices for children

Shared vision

Initial discussion Oct. 2012…idea of a '*paediatric symposium with FDA*'
Oct. 2013…evolved into a transatlantic workshop since Dec. 2014

Bring together subject matter experts/key players/stakeholders in the field to find solutions to

- Acceptability assessment of paediatric dosage forms
- Derisking food/drink effects when administered with medicines and biopharm considerations
- Safety qualification of excipients for paediatric medicines

Harmonized Strategies

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For more information read our article "European Paediatric Formulation Initiative - Formulating ideas for better medicines for children in the ***upcoming AAPS PharmSciTech Special Theme Issue on pediatrics dosage forms***

www.eupfi.org

Thanks to **M- Cersi** abbvie Bristol-Myers Squibb Lilly

BACK-UP SLIDES

Key priorities & outputs

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AGE APPROPRIATE FORMULATIONS

- Dosage form acceptability, safety, efficacy and dose flexibility
- Food/drink effects on administration of medicines
- Safety and efficacy of co-administration
- Manufacturing challenges in developing paediatric formulations

International Journal of Pharmaceutics
Volume 435, Issue 2, 5 October 2012, Pages 124–130

Review

Preparation of medicines for children – A hierarchy of classification

This paper is dedicated to the memory of the late John Hempenstall (formerly of GlaxoSmithKline).

Terry B. Ernest[a, 1], Jo Craig[a], Anthony Nunn[b], Smita Salunke[c], Catherine Tuleu[c], Joerg Breitkreutz[d], Rainer Alex[e], John Hempenstall[a]

compounding and manipulation - approval by medicines regulators and non-approved preparation to fulfil the needs

International Journal of Pharmaceutics
Volume 435, Issue 2, 5 October 2012, Pages 115–123

A benefit/risk approach towards selecting appropriate pharmaceutical dosage forms – An application for paediatric dosage form selection

Tom Sam[a, 1], Terry B. Ernest[b], Jennifer Walsh[c], Julie L. Williams[d, 2], on behalf of the European Paediatric Formulation Initiative (EuPFI)

Balancing of a quality target product profile against technical challenges and development feasibility

International Journal of Pharmaceutics
Volume 492, Issues 1–2, 15 August 2015, Pages 341–343

Formulation factors affecting acceptability of oral medicines in children

Fang Liu[a], Sejal Ranmal[b], Hannah K. Batchelor[c], Mine Orlu-Gul[b], Terry B. Ernest[d], Iwan W. Thomas[e], Talia Flanagan[f], Richard Kendall[b], Catherine Tuleu[b, 1]

how **formulation factors affect the acceptability** of different oral medicines in children

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TASTE ASSESSMENT & TASTE MASKING

Bring together subject matter experts/key players/stakeholders in the fields of taste evaluation to propose a synopsis (guidance) for acceptable, sound, scientific approaches to address acceptability/palatability assessment of paediatric dosage forms

Understand the current state of the art of taste masking technologies and platforms. Focus on the limitations and technology gaps (in formulation platforms suitable for different age ranges) and identify opportunities more effective age-appropriate taste masking technologies.

Understanding the current state of the art, and limitations, of taste assessment in vitro and in vivo methodologies.

Commentary

Challenges of developing palatable oral paediatric formulations

Anne Cram[a], Jörg Breitkreutz[b], Sabine Desset-Brèthes[c], Tony Nunn[d, e], Catherine Tuleu[f], On behalf of the European Paediatric Formulation Initiative (EuPFI)

International Journal of Pharmaceutics

Volume 365, Issues 1–2, 5 January 2009, Pages 1–3

Advanced Drug Delivery Reviews

Volume 73, 30 June 2014, Pages 14–33

Drug delivery and the paediatric population: where are we at?

Playing hide and seek with poorly tasting paediatric medicines: Do not forget the excipients ☆

Jennifer Walsh[a], Anne Cram[b], Katharina Woertz[c], Joerg Breitkreutz[c], Gesine Winzenburg[d], Roy Turner[d], Catherine Tuleu[e], On behalf of the European Formulation Initiative (EuPFI)

ADMINISTRATION DEVICES

PURPOSE:

Highlight all relevant aspects from specific development issues to appropriate standard laboratory test methods and methodologies for handling studies of such devices. In-depth literature research is performed to create an overview on the topic and to come up with guidance on requirements and feasibility.

CURRENT PRIORITIES:

- Evaluate current status of child appropriate administration devices.
- Get insight in devices test methods.
- Investigate requirements for handling studies.
- Develop a guideline

ADMINISTRATION DEVICES

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WS 1 WS 2 WS 3 WS4 WS5

International Journal of Pharmaceutics

Volume 415, Issues 1–2, 30 August 2011, Pages 221–231

Review

Delivery devices for the administration of paediatric formulations: Overview of current practice, challenges and recent developments

Jennifer Walsh[a], Deborah Bickmann[b], Joerg Breitkreutz[c], Maryvonne Chariot-Goulet[d], on behalf of the European Paediatric Formulation Initiative (EuPFI)

This reflection paper
overview of **currently available paediatric administration devices** and highlights some of the **challenges associated with, recommendations** and recent developments in delivery devices

International Journal of Pharmaceutics

Volume 492, Issues 1–2, 15 August 2015, Pages 304–315

Devices for oral and respiratory paediatric medicines: What do healthcare professionals think?

Jennifer Walsh[a], Marie-Christine Math[b], Jörg Breitkreutz[c], Thomas Zerback[d], Herbert Wachtel[e], ☆On behalf of the European Paediatric Formulation Initiative (EuPFI)

exploratory survey
provided some valuable insights into the views and experiences of European hospital doctors, nurses and pharmacists, regarding oral and respiratory administration devices for paediatric patients.

PHARMACEUTICAL EXCIPIENTS

PURPOSE:

To address safety issues and problems associated with the excipients likely to be used in paediatric formulations.

CURRENT PRIORITIES:

STEP database

Safety & Toxicity of Excipients For Paediatrics

PHARMACEUTICAL EXCIPIENTS

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WS 1 WS 2 WS 3 WS 4 WS 5

The STEP (Safety and Toxicity of Excipients for Paediatrics) database. Part 1—A need assessment study

Smita Salunke[a, b, 1], George Giacoia[c, 2], Catherine Tuleu[a, b, 1]

The STEP (Safety and Toxicity of Excipients for Paediatrics) database: Part 2 – The pilot version

Smita Salunke[a, 1], Barbara Brandys[b, 1], George Giacoia[c, 1], Catherine Tuleu[a, 1]

The STEP database through the end-users eyes—USABILITY STUDY

Smita Salunke[1], Catherine Tuleu[1]

Database launched
OCT 2014
40 excipients
> 700 users
> 50 citations

BIOPHARMACEUTICS

PURPOSE:

Understand the current tools available to measure biopharmaceutical performance of paediatric medicines

Highlight the importance of additional research into paediatric biopharmaceutics

Undertake collaborative research to drive the development of age-appropriate in vitro tools that can be used to predict the in vivo performance of paediatric medicines

BIOPHARMACEUTICS

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WS 1 WS 2 WS 3 WS 4 WS 5

Review highlight several **knowledge gaps in current methodologies in paediatric biopharmaceutics**

provide **recommendations based on existing knowledge** to adapt tests to better represent paediatric patient populations

Note brings together some **key issues in direct extrapolation from adults into paediatric populations.**

explore how a paediatric BCS may differ to that in adults

CURRENT PRIORITIES

- Prioritise research activity to be undertaken in paediatric biopharmaceutics
- Review strategies currently used in bridging studies to support the development of paediatric medicines
- Review the impact of food on the predicted in vivo performance of paediatric medicines