Plenary Session 2: Packaging Technologies
Primary container design

Next-Generation Vaccine Delivery Technology Meeting
Geneva, Switzerland

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A catalyst for global health

Photo: PATH

VPPAG updates

VPPAG is finalizing updates to the generic preferred product profile (gPPP), including:

- Dimensional harmonization of primary, secondary, and tertiary packaging.

- Environmentally friendly packaging.

- Bundling of vaccine components.

- Labeling vaccines for high-temperature storage.
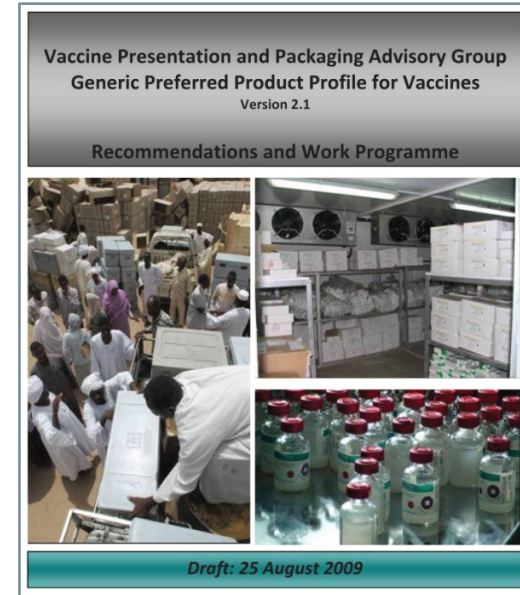
- Label standardization.

- Barcoding.

Vaccine Presentation and Packaging Advisory Group
Generic Preferred Product Profile for Vaccines
Version 2.1

Recommendations and Work Programme

Draft: 25 August 2009

Photo: CNW Group; Sanofi Pasteur

All photos (except otherwise noted) : Crucell; Korea
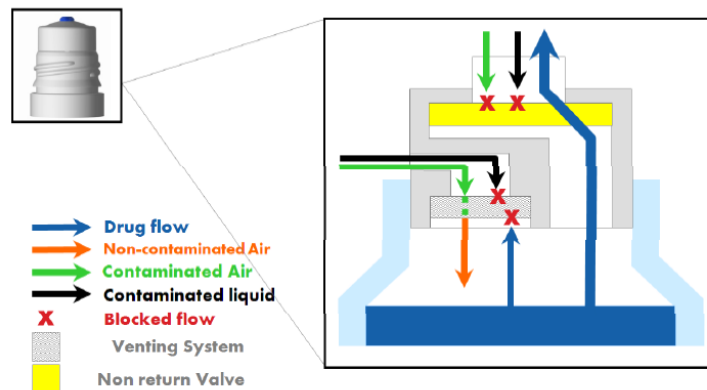
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Preservative-free packaging

Technology:

Filling and packaging technologies for preservative-free pharmaceuticals with an integrated mechanical barrier to prevent contamination of open vials:

- *Ocular/nasal delivery:* Rexam, Aptar, URSAPHARM, AeroPump, MWV.
- *Parenteral/oral delivery:* MEDInstill.


Photo/graphic: MEDInstill

Drug flow
Non-contaminated Air
Contaminated Air
Contaminated liquid
X   Blocked flow
Venting System
Non return Valve

REXAM
Your partner for eye care
Novelia®
Preservative free system

Graphic: Rexam

WET-COMOD®
befeuchten
Augentropf
10 ml

WET-COMOD®
Povidon 2 %
befeuchtende
Augentropfen

URSAPHARM

Graphic: URSAPHARM

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Technology example: MEDInstill

Description	Technology consists of fully enclosed filling (which allows sterile filling outside of a clean room) and one-way valve systems (which enable sterile, multiple-dose dispensing). Multiple packaging and delivery options are available using this core technology with sterile non-preserved and preserved products.
Status	Core technologies currently used in the food industry, pharmaceuticals, and dermatology. In development for multiple-dose vaccines.

The valve
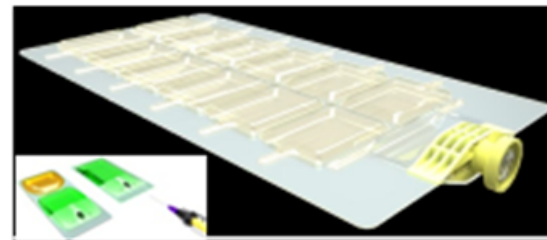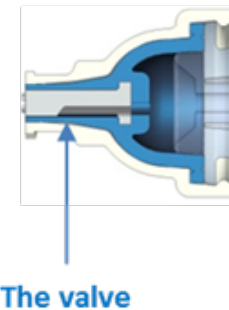
All graphics: MEDInstill

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Preservative-free packaging

Benefits:

- Could enable use of multi-dose presentations if thimerosal is unavailable or for vaccines which are incompatible with preservatives (e.g., rotavirus).

- Reduction in open-vial vaccine wastage.

- Filling can take place in lower-cost non-aseptic facilities.

Challenges:

- Requires new filling equipment.

- Higher per-container packaging cost compared to standard vials.

- For injectable vaccines, luer syringes with separable needles are required to access container through valve.

Graphic: MEDInstill

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Prefilled syringes

Technology:

- Prefilled syringe made of glass or polymer material and filled with liquid vaccine.

Benefits:

- Ease of use/time efficient.

- Preference of health care worker.

- Current trend towards prefilled syringes in high-income countries.

Challenges:

- Higher per-container packaging cost compared to vials.

- For traditional prefilled syringes, high cold chain volume and lack of autodisable feature are an issue. Compact, prefilled autodisable devices such as Uniject™ offer a solution.
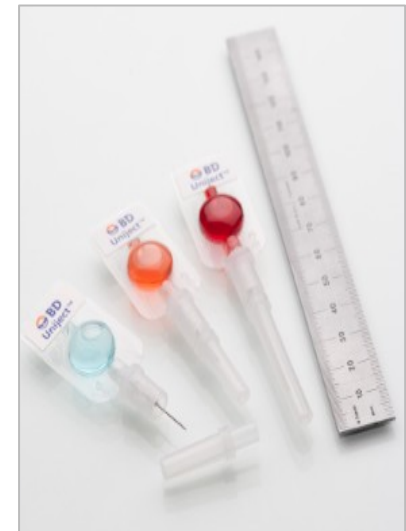

Photo: Gerresheiner

Photo: PATH

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Blow-fill-seal

Technology:

- Plastic containers formed, filled, and sealed in a continuous process.

  - *Example manufacturers:* Rommelag®/Maropack, Nephron, Weiler Engineering.

- Widely used for pharmaceuticals; determined to be technically compatible with live attenuated influenza and rotavirus vaccines.
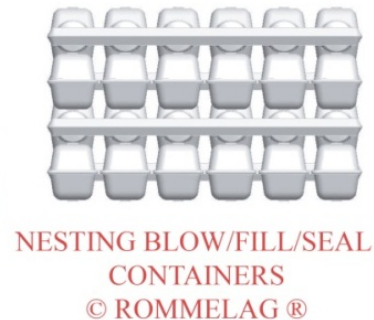
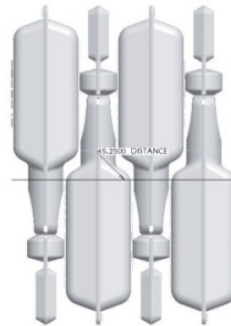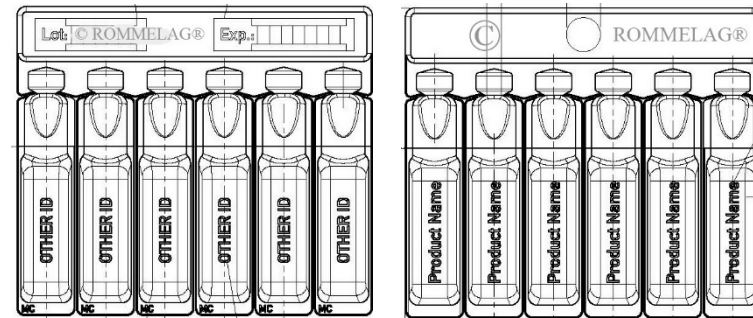All photos/videos: Rommelag®

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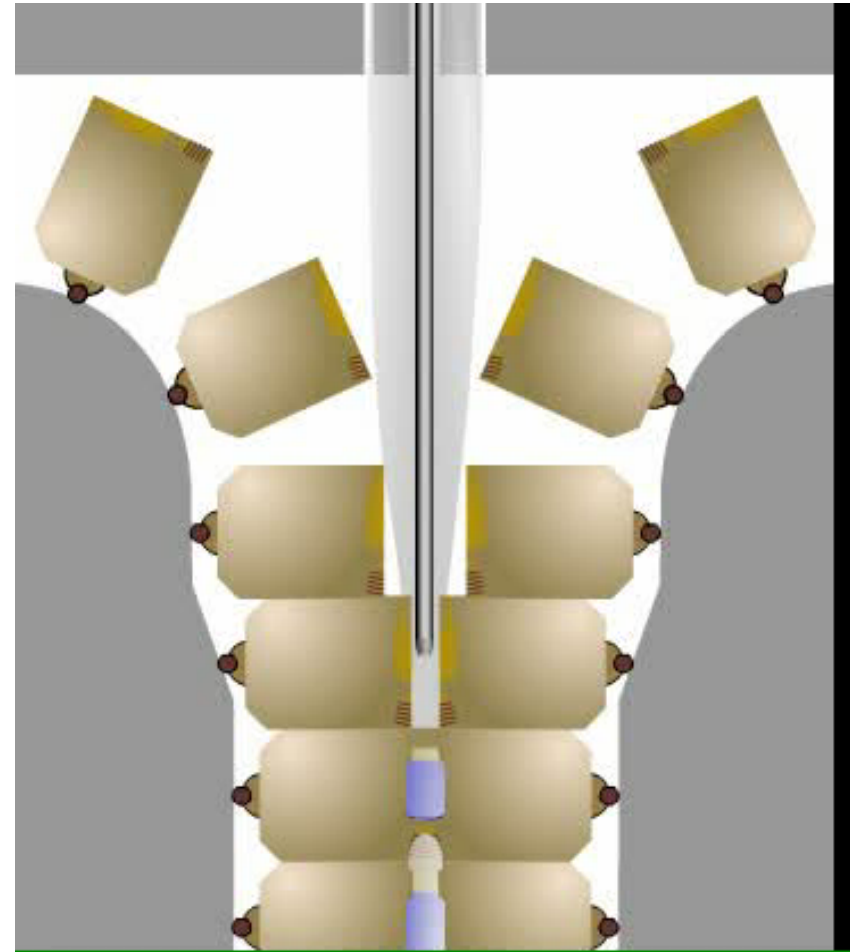
Technology example: Multi-mono-dose
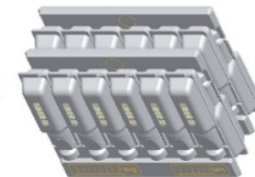
Multi-mono-dose:

- A conjoined strip of single-dose containers with a single label and VVM.

- Separating a single container from the strip opens the container.

- Formed using blow-fill-seal or other plastic container technologies.

Graphic: Lameplast.

NESTING BLOW/FILL/SEAL CONTAINERS © ROMMELAG ®

All graphics except where noted: Rommelag®

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Blow-fill-seal

Benefits:

- Cold chain volume efficiencies compared to existing single-dose presentations.

- Addresses trend toward small-dose presentations (preservative/vaccine wastage).

- Per-dose manufacturing costs lower than traditional packaging.

Challenges:

- Requires new filling facilities/equipment.

- Higher start-up costs for manufacturing.

- Compatibility of individual vaccines must be assessed.

All photos: Rommelag

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Thank you

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