The Hospital Pharmacy, Rigshospitalet
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Assessment of the Applicability of 3D-Printed Medicines in a Paediatric Ward

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What was done

A clinical assessment of the applicability of 3D-printed medicines from a paediatric perspective, with the limitations of the chosen technique.

Aim

To identify specific areas where 3D-printed medicines provide viable solutions to the complexities surrounding paediatric drug-related challenges.

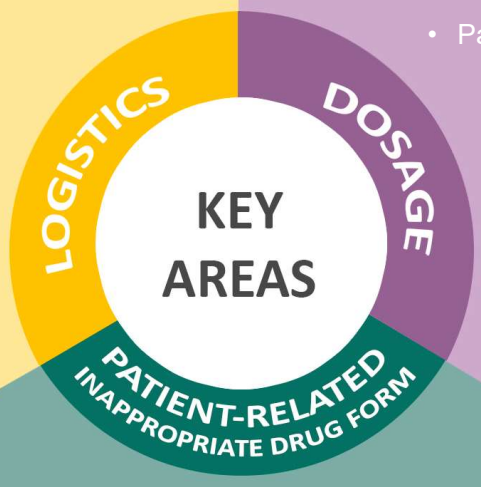
Why was it done

Paediatric medicine has limited availability of on-label, age-appropriate formulations. Drug-related challenges encompass variability in dosing, use of tube administration, and the necessity for child-friendly approaches, including formulation issues as well as taste and acceptability of medications.

How was it done

To minimize the need for individual medicine manipulation, we identified key challenges by reviewing the manufacturer's API list and comparing it with nationally available compounded products. This analysis offered historical insight on the shortcomings of commercial products in addressing patient needs. Additionally, consultations were held with nurses and doctors in selected paediatric wards for further input.

What has been achieved – Three key areas were identified where 3D-printed medicines could benefit paediatric wards



- Practical individual packaging
- Storage at room temperature
- Lower risk of total dose loss due to container breakage

- Patient-specific doses
- Customizable low doses
- Assisting dose tapering
- Minimizing dosing errors

- Chewable tablets that can be partially dissolved facilitating administration for patients with swallowing difficulties
- Customizable flavors offering more flexibility than commercial products

Areas with no added benefit:

- APIs with a wide therapeutic index should align with commercial products
- An oral mixture is better suited for frequent dose adjustments
- Tube administration

Highlighting that 3D-printing should **complement, rather than replace**, existing options

What is next

A prioritized and condensed list of APIs will be conducted based on the identified key areas and assessed by pharmacists, doctors, and nurses. Appropriate wards will be selected for the pilot implementation of 3D-printed medicines.

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No conflict of interest

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