

Nasal Cast Models

Anatomically Realistic Models for Infants, Children, and Adults

Existing nasal models were developed based on limited patient data, hindering accurate representation of nasal anatomy and drug deposition variability.

Researchers at Virginia Commonwealth University have developed 3D-printed nasal airway geometries representing diverse adult, pediatric, and infant nasal anatomies. These flexible models capture a wide range of drug delivery patterns, enabling precise analysis of drug distribution.

The Technology

These innovative nasal cavity models leverage CT scan data to represent diverse anatomical variations while predicting drug distribution and deposition for nasal spray products. Their flexible design allows for detailed drug distribution analysis, complementing FDA-recommended in vitro bioequivalence tests.

Derived from high-resolution CT scans of 40 adult nasal cavities, 40 pediatric models (ages 2-11, with half under six), and five infant head and neck scans (ages 3-24 months), these models represent low (L-Model), mean (M-Model), and high (H-Model) drug delivery scenarios, capturing variability in posterior deposition for thorough drug distribution analysis.

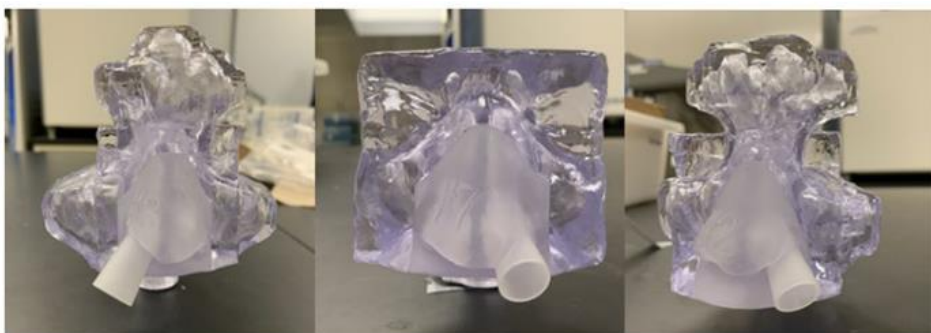


Figure 1 – Anatomically-accurate nasal airway replicas with nozzle holders (left to right) representing low (L-Model), mean (M-Model), and high (H-Model) posterior deposition.

Benefits

- » Enhanced population variability
- » Detailed drug distribution
- » Versatility across age groups

Applications

- » Pharmaceutical drug development
- » Intranasal device testing
- » Academic and clinical research

IP Status:

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License Status:

This technology is available for licensing to industry for further development and commercialization

Category:

Biomedical Research Tool

VCU Tech #:

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