

# Optimized inhaler mouthpiece design allows for more effective drug delivery

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Researchers have developed an optimized mouthpiece design to aid efficient drug delivery to the lungs by reducing the amount of medication wasted as it passes through the mouthpiece of an aerosol inhaler. With current inhaler designs, only approximately 10 to 20 percent of asthma medications are delivered to the lungs. And, because the lungs provide a direct and effective route of entry for medications into the bloodstream, an optimized mouthpiece design will reduce medication waste and may provide reproducible delivery of future inhaled medications.

"Through a process of computational and experimental analysis and design for a new inhaler, we were able to optimize a prototype mouthpiece that allowed for more medication to pass through the mouthpiece and be available to reach the lungs," said Michael Hindle, Ph.D., research associate professor at Virginia Commonwealth University (VCU) School of Pharmacy and presenter at the 2009 American Association of Pharmaceutical Scientists (AAPS) Annual Meeting and Exposition. "By optimizing the design, it will help ensure delivery efficiency so less medication will be wasted and more will be effectively delivered to the lungs for relief from symptoms."

Dr. Hindle adds that this rational computational inhaler analysis and design approach, which was developed with Worth Longest, Ph.D. from the School of Engineering at VCU, may be applicable for other inhalers and medications that require reproducible delivery. "Insulin is an example of a drug that requires a reproducible delivery strategy that can

be administered painlessly and as effectively through aerosol inhalers."

Further research at this year's AAPS Annual Meeting and Exposition will address computational and experimental design methods to improve inhaler performance and how they affect the future of aerosol [drug delivery](#).

Source: American Association of Pharmaceutical Scientists

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