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Title: Can young children learn and follow the instructions relating to a new pMDI training device?

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Body: Background: Correct pressurized metered dose inhaler (pMDI) technique can be difficult for young children to achieve. A new training device (In-Check Flo-Tone®) which attaches to the pMDI mouthpiece produces a whistle at an appropriate inspiratory flow rate, during the inhalation manoeuvre. Aim: An observational study on the ability of asthmatic children to correctly use the Flo-Tone. Methods: 18 children, 10M and 8F, aged 4-12 yrs (mean 8.1) with mild (13) to moderate (5) asthma (mean duration 4.9 yrs) were trained by an asthma nurse to use the device when combined with a placebo pMDI. Repeat-practice and assistance from an adult were permitted, simulating the clinic-to-home setting. After 20 minutes each child was asked to use the device plus pMDI three times. We defined successful Flo-Tone use as the ability to get all of the following 4 tasks correct at least once: attach Flo-Tone; generate whistle; actuate pMDI during whistle; maintain whistle during inspiration. Results:

Successful Flo-Tone use correlated with age and spacer use (routine and intermittent):

Success	n	spacer+pMDI	pMDI alone
		(age of each child)	
Yes	10	7, 8, 11, 12, 12	7, 9, 9, 10, 11
No	8	4, 5, 5, 6, 6, 6, 9, 10	-

Children under 7 years (n=6) failed to achieve all 4 tasks; 5 through difficulty actuating the canister on each of the tests. One child also failed to attach the Flo-Tone. All of these children were using spacer devices routinely. Lack of success was linked to inability to coordinate actuation with inhalation. Conclusion: In this

sample, most asthmatic children aged 7 years and older correctly used the Flo-Tone training device. Spacer use should not imply correct technique. Further study with controls is needed.