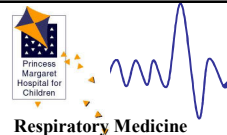


Laboratory usage habits and delivered salbutamol dose of spacers available in Australia and New Zealand

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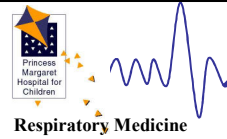
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Background



- Spacers are classified as semi-critical devices.
- In July 2007 changes to TGA regulations for re-processing of such devices came into effect.
- Delivery device may be influenced by
 - Purchase and processing costs
 - Delivery efficiency
- Delivery efficiency will be influenced by
 - Materials used
 - Valve design
 - Inhalation technique.

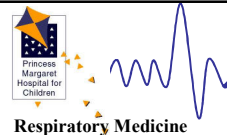
Aims



- We aimed to:
 - Determine laboratory medication delivery device habits
 - Quantify the delivered salbutamol dose of locally available spacers
- Our primary objective was to provide evidence able to be used for spacer purchasing decisions.

Methods

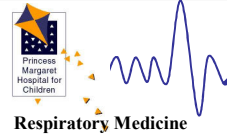
- Survey



- An on-line survey was used to obtain spacer usage and processing habits of RFLs
- Questions included details of:
 - Aerosol delivery method (spacers, pMDI, nebs)
 - Spacer type (if used)
 - Processing procedures

Methods

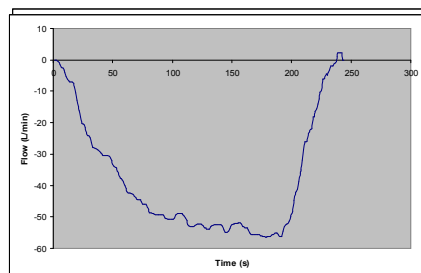
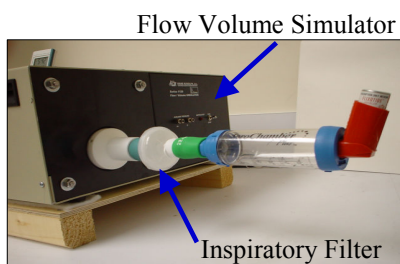
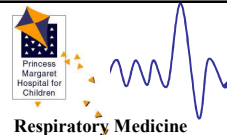
- Output and particle size distribution



- Aerosol is fractionated by particle size onto plates
- Quantification of respirable dose
 - UV spectrophotometry ($\lambda=246\text{nm}$)
- Results presented as average of 6 measurement runs per spacer type
- A run is average of 10 “puffs” of 100 μg Salbutamol.

Methods

- Flow volume simulation

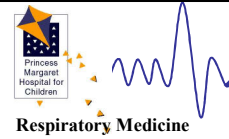


- Patterns used to simulate breathing using a flow volume simulator (FVS)
- Results presented as average of 6 measurement runs per spacer type
- A run is average of 5 “puffs” of 100 mg Salbutamol.

	Mean	SD
Insp. volume (ml)	3000	260
Insp. time (sec)	4.5	0.2
Peak insp. V' (L/min)	69.9	8.9

Results

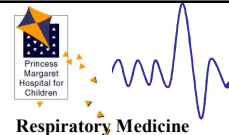
- Survey



- Responses received from 50 RFLs representing ~ 70% response rate
- Bronchodilator delivery methods included:
 - Nebuliser 18
 - pMDI 6
 - Spacer 37
 - Dry powder 10
- 18 RFLs used two or more delivery methods

Results

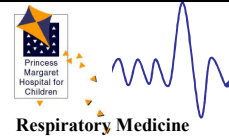
- Survey



- 8 different spacers were used and included:
 - Volumatic 23
 - Breath-a-tech 8
 - Space Chamber 7
 - LiteAire 1
 - Aerochamber 1
 - Volumetric 1
 - Babyhaler 1
 - Pocket chamber 1

Results

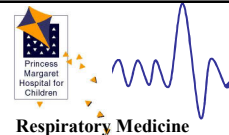
- Survey



- RFLs reported discarding or giving to patients 4 spacer types
- RFLs processed 39 spacers types, of which 23 (59%) classified as single patient use.
- Reported processing costs averaged \$4.60 per item and included staff time and consumables.

Results

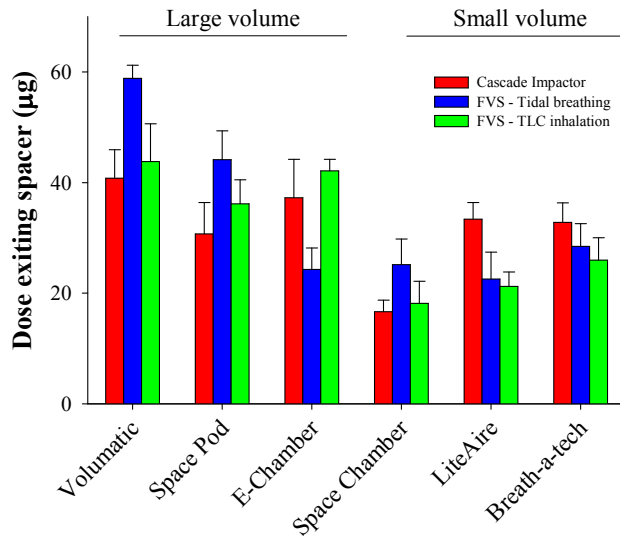
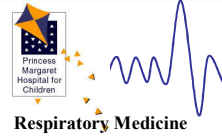
- Salbutamol delivery



- Volumatics (GSK) were tested being the most prevalent spacer in use.
- Other spacers tested included :
 - LiteAire
 - Space Chamber
 - Space Pod
 - Breath-a-tech
 - E-chamber
 - Thayer Medical
 - Medical Developments International
 - Medical Developments International
 - Visiomed
 - Bird Healthcare

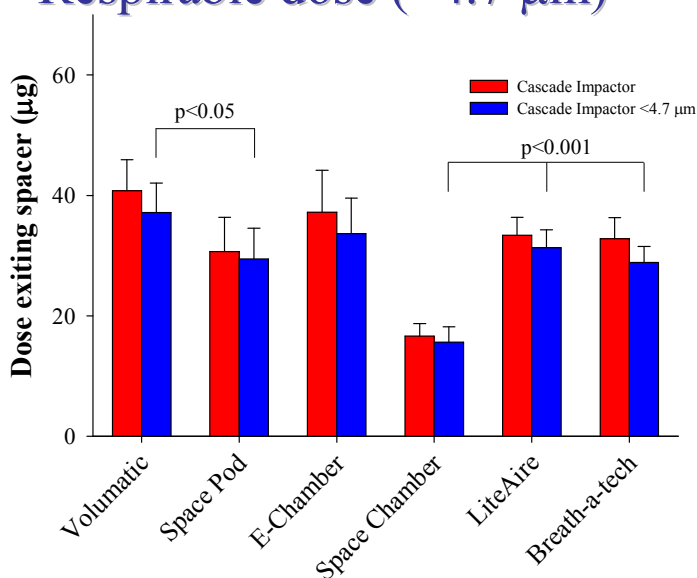
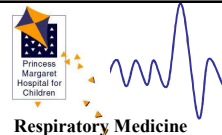
Results

- Salbutamol delivery



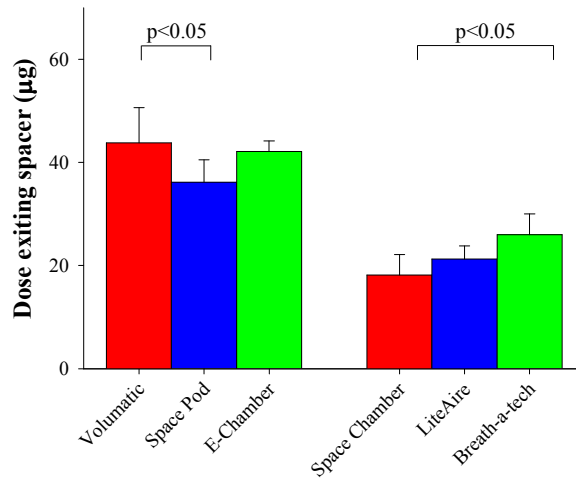
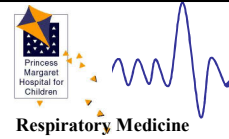
Results

- Respirable dose (<4.7 µm)

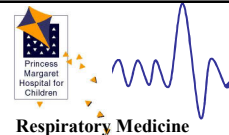


Results

- Slow maximal inhalation

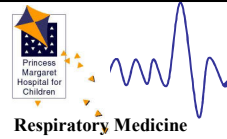


Discussion



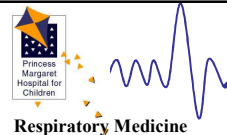
- Spacers the most common delivery device in RFLs in Australia and New Zealand
- Nearly 60% of RFLs were processing single patient spacers in mid 2007.
- Spacer performance significantly altered by inhalation technique
- The clinical relevance of the differences in delivered dose between spacers is unknown

Conclusions



- RFLs need to ensure the revised TGA guidelines are followed for spacer processing.
- Large volume spacers provide increased Salbutamol delivery compared to smaller spacers
- The current results provide evidence able to be used for spacer purchasing decisions.

Acknowledgements



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 - Thayer Medical
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- Companies had no input into study design, data analysis or interpretation.