

Supporting Information - Use of metered dose inhalers for bronchodilator responsiveness testing – laboratory practices in Australia and opportunities for carbon footprint reduction

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Appendix S1 – Survey

1) Laboratory Details

What is the name of your lung function testing laboratory? _____ (Free text)

Describe the location of your lung function testing laboratory?

- Metropolitan
- Regional
- Remote

*If you are uncertain of your laboratory's location type, you can look it up here:
<https://www.health.gov.au/topics/rural-health-workforce/classifications/rrma>

Does your lung function laboratory primarily test:

- Adults only
- Children only
- Both adults and children

*Children defined <18 years of age

Only if 'Both adults and children' selected above - Around what percentage of lung function tests are conducted on adults? _____ (Free text)

Do you know how many lung function tests your laboratory performed in 2022?

- Yes – exactly
- Yes – an estimate only
- No – but I'm willing to check
- No

*Please consider providing an estimate rather than no value at all

Only if 'yes – an estimate only' or 'no – but I'm willing to check' selected above - How many tests in 2022? _____ (Free text)

Only if 'yes – an estimate only' or 'no – but I'm willing to check' selected above - You can return to the survey at a later time and provide an updated response after checking your laboratory's data. Details on how to return to the survey are provided on the final page

****The above note with instructions appeared throughout the survey for any responses that listed 'yes – an estimate only' or 'no – but I'm willing to check'****

2) Bronchodilator (BD) response testing

Is BD response testing performed in your laboratory?

- Yes
- No

Only if 'yes' above - In which patient groups does your laboratory routinely assess BD response? (Select all that apply)

- Asthma
- Chronic obstructive pulmonary disease (COPD)
- Bronchiectasis
- Sarcoidosis
- Interstitial Lung Disease (ILD)
- All patients where BD response testing is requested
- All patients where spirometry only is performed
- Other, please specify: ____ (Free text)

Only if 'yes' above (Is BD response testing performed in your laboratory?) - Do you know what percentage of lung function tests are accompanied by an assessment of BD response?

- Yes – exactly
- Yes – an estimate only
- No – but I'm willing to check
- No

*Please consider providing an estimate rather than no value at all

Only if 'yes – exactly' or 'yes – an estimate only' selected above - What percentage in your laboratory? ____ (Free text)

Only if 'yes' above (Is BD response testing performed in your laboratory?) - Do you know what percentage of BD response tests demonstrate a significant change?

- Yes – exactly
- Yes – an estimate only
- No – but I'm willing to check
- No

Only if 'yes – an estimate only' or 'no – but I'm willing to check' selected above - What percentage in your laboratory? ____ (Free text)

Only if 'yes' above (Is BD response testing performed in your laboratory?) - Do you know what percentage of BD response tests are also accompanied by additional lung function tests?

*Additional tests might include measurement of absolute lung volumes, carbon monoxide diffusing capacity, airway resistance, inhalation provocation testing or respiratory muscle strength, fractional exhaled nitric oxide (FeNO)

- Yes – exactly
- Yes – an estimate only
- No – but I'm willing to check
- No

Only if 'yes – an estimate only' or 'no – but I'm willing to check' selected above - What percentage in your laboratory? ____ (Free text)

3) Bronchodilator drug

What is the most common bronchodilator drug (including the brand) used by your laboratory to determine BD response?

- Salbutamol (Ventolin) via MDI
- Salbutamol (Respolin) via MDI
- Salbutamol (Asmol) via MDI
- Salbutamol (Airomir) via MDI
- Salbutamol (Zempreon) via MDI
- Terbutaline (Bricanyl) via DPI
- Ipratropium bromide (Atrovent) via MDI
- Salbutamol (any brand) via nebuliser
- Ipratropium brodime (any brand) via nebuliser
- Other, please describe: _____ (Free text)

Approximately, what percentage of BD response tests in your laboratory are performed using the above drug? _____ (Free text)

Do you know how many inhalers of the above bronchodilator drug were used by your laboratory in 2022?

- Yes – exactly
- Yes – an estimate only
- No – but I'm willing to check
- No

*Please consider providing an estimate rather than no value at all

Only if 'yes – an estimate only' or 'no – but I'm willing to check' selected above – How many were used by your laboratory in 2022? _____ (Free text)

Only if 'adults only' or 'both adults and children' to 'Does your lung function laboratory primarily test' – How many puffs/inhalations of the above drug does your laboratory use for adults? _____ (Free text)

*If a nebuliser is used, write the dose administered

Only if 'children only' or 'both adults and children' to 'Does your lung function laboratory primarily test' – How many puffs/inhalations of the above drug does your laboratory use for children? _____ (Free text)

*If a nebuliser is used, write the dose administered

4) Reuse of inhaler devices

Does your laboratory regularly reuse the same inhaler for multiple patients for BD response testing?

- Yes
- No

Only if 'yes' above – Does your laboratory reuse the entire device, or only part(s) of the device?

- Entire device
- Part(s) of the device

Only if 'Part(s) of the device' above – Which part(s) of the inhaler device are routinely reused by your laboratory? (Select all that apply)

- Canister
- Actuator
- Other, please describe: ____ (Free text)

** This question assumes reuse of an MDI. If another device being reused, please select 'Other' then explain in free text*

Only if 'Entire device' above - Describe your process (if any) for cleaning the inhaler device between patients: ____ (Free text)

Only if 'Canister' above - Describe your process (if any) for cleaning the canister between patients: ____ (Free text)

Only if 'Actuator' above - Describe your process (if any) for cleaning the actuator between patients: ____ (Free text)

Only if 'Other' above - Describe your process (if any) for cleaning 'other' components between patients: ____ (Free text)

Only if 'yes' to 'Does your laboratory regularly reuse the same inhaler for multiple patients for BD response testing? - Does your laboratory exclude any patient groups from having BD response testing with a reused inhaler?

- Yes
- No

Only if 'yes' above – Which patient group(s) are excluded from having BD response testing with a reused inhaler? (Select all that apply)

- Cystic fibrosis patients
- Lung transplant patients
- Patients with a known history of drug-resistant bacteria in their sputum
- Other, please specify: ____ (Free text)

Only if 'yes' to 'Does your laboratory regularly reuse the same inhaler for multiple patients for BD response testing? - When do you change inhalers between patients? (Select all that apply)

- After a given number of tests
- When the device feels empty
- At the end of each session/day/weeks
- Other, please specify: ____ (free text)

**Please specify number or timing below*

Only if 'After a given number of tests' – Please specify number of tests used before change of inhaler: ____ (free text)

Only if 'At the end of each session/day/week' – Are inhalers changed at the end of each session? Each day? Each week? Please briefly describe: ____ (Free text)

Only if 'yes' to 'Does your laboratory regularly reuse the same inhaler for multiple patients for BD response testing?' - Please provide a detailed description of the approach your laboratory takes to reusing inhalers between patients for BD response testing: ____ (free text)
*you may use dot-points to outline your approach

Only if 'yes' to 'Does your laboratory regularly reuse the same inhaler for multiple patients for BD response testing?' - In your laboratory, approximately what percentage of BD response tests are performed with a reused inhaler? ____ (Free text)

Only if 'yes' to 'Does your laboratory regularly reuse the same inhaler for multiple patients for BD response testing?' - In your laboratory, how many puffs/inhalations (on average) do you think each inhaler is used for, prior to being discarded? ____ (Free text)

In your lung function laboratory, when pMDI propellant-containing canisters used for bronchodilator response tests are no longer required (e.g. because they are empty, or because your laboratory has a policy of not reusing pMDIs on all/some patients), which waste stream do they enter?

- General Waste (i.e. regular waste)
- Clinical Waste (i.e. alongside potentially infectious waste)
- Pharmaceutical Waste
- Other, please describe: ____ (Free text)
- I don't know

Does your laboratory ever use a patient's own inhaler for BD response testing?

- Yes
- No

Only if 'Yes' above - Approximately, what percentage of BD response tests are performed with a patient's own inhaler? ____ (Free text)

Only if 'Yes' above - Please describe the specific circumstances (or criteria to be met) when BD response tests in your laboratory are performed with a patient's own inhaler: ____ (Free text)

What is the name of the main spacer device used by your laboratory for BD testing? ____ (Free text)

What is the name of the main spacer device used by your laboratory for BD testing?

- Paper
- Plastic
- Other, please describe: ____ (Free text)

Only if 'Plastic' or 'Other' - Does your laboratory reuse its spacers, after appropriate cleaning?

- Yes
- No