

## PHYSICIAN CHARACTERISTICS:

1. Are you currently practicing as an emergency physician with emergency medicine training and supervision completed (staff or faculty in Canada) or ST5+, Consultant, Associate Specialist or Equivalent (UK), or Consultant or Senior Medical Officer (Australia/New Zealand)?

- Yes
- No – *redcap will use skip logic to take respondents to the END*

2. Of the patients you see in the ED, what proportion are patients within the pediatric age group, as defined by your local health care system?

- 100%
- 75-99%
- 50-74%
- 25-49%
- 5-24%
- 0-4% – *redcap will use skip logic to take respondents to the END*

3. How many years have you been working in emergency medicine since you completed the highest level of your clinical training?

- Less than 5 years
- 5 to 9 years
- 10 to 14 years
- 15 to 19 years
- 20 + years

4. What is your highest level of post-graduate medical training (check all that apply)?

- Certification in pediatrics
- Certification in pediatric emergency medicine
- Certification in general emergency medicine
- Certification in family/general practice
- Other (please state): \_\_\_\_\_

5. How would you best describe your primary emergency practice setting? (*if you have a 50-50 appointment, choose one with the university affiliation if applicable*)

- University affiliated pediatric emergency department

- Non-university affiliated (district/regional) pediatric emergency department
- University affiliated urban general emergency department
- Non-university affiliated urban (district/regional) general emergency department
- Rural general emergency department
- Other (please state): \_\_\_\_\_

6. Which network is your emergency department associated with?

- PERC (Canada)
- PERUKI (United Kingdom/Ireland)
- PREDICT (Australia/New Zealand)

SURVEY QUESTIONS:

### CLINICAL SCENARIOS

We wish to determine how IV magnesium is used in asthma management internationally. We describe two clinical scenarios using examination findings. These findings are also summarized using the Pediatric Respiratory Assessment Measure (PRAM). The PRAM scores are given at the end of each scenario. For those not familiar with PRAM scores, PRAM 1-3 = mild disease, 4-7 = moderate disease and 8-12 = severe disease.

Children with severe acute asthma are usually stabilized with inhaled  $\beta_2$  agonists, anticholinergics and systemic corticosteroids. For the purpose of this survey, please consider optimal initial therapy as systemic corticosteroids with 3 treatments of a high dose (according to local guidelines) of inhaled  $\beta_2$  agonists and anticholinergics within one hour.

*The following scenario A is relevant to the questions below*

**Scenario A:** Marked respiratory distress post initial stabilization therapy

A 5-year-old otherwise healthy boy with known asthma presents to your ED with an asthma attack following a mild upper respiratory illness.

He is alert, afebrile, HR 120, RR 44, saturation 94%.

He has marked neck retractions and tracheal tug, markedly decreased air entry to entire chest and a wheeze audible without stethoscope, Pediatric Respiratory Assessment Measure (PRAM) =8.

There is no past history of ICU admissions or ED visits/asthma hospitalizations in the last year and parents are well educated in asthma care.

For the stabilization therapy, you prescribe a systemic corticosteroid and 3 consecutive treatments with an inhaled  $\beta_2$  agonist and an anticholinergic (defined by your local practice/guideline) in the next hour.

At the completion of this initial therapy, his status does not change.

7. Please quantify how often you use IV Mg in children with acute asthma who appear as described in Scenario A above after maximized initial stabilization therapy with salbutamol, ipratropium and systemic corticosteroids.

- 80-100% of the time
- 60-79% of the time
- 40-59% of the time
- 20-39% of the time
- 5-19% of the time
- <5% of the time
- I do not know
- I do not use IV Mg

8. Please indicate your personal goals of therapy with IV Mg in children with acute asthma who remain in marked respiratory distress after optimized initial stabilization therapy [*Scenario A above*] (please check all that apply).

- To prevent hospitalization
- To prevent ICU admission
- To facilitate admission to the inpatient ward and prevent a long ED stay
- To satisfy my institutional or ED order set
- To comply with my national or local management guideline
- To avoid administration of other IV bronchodilators locally used (IV salbutamol, aminophylline)
- To provide some symptom relief
- I do not use IV Mg in this scenario
- Other (specify)

9. Suppose the patient in Scenario A (HR 120, RR 44, saturation 94%, marked neck retractions, tracheal tug, markedly decreased air entry to entire chest and a wheeze audible without stethoscope, PRAM 8) has an excellent response to IV Mg:

After IV Mg therapy, respiratory rate is 22, there are mild neck retractions, no wheeze, normal air entry, oxygen saturation 96%, PRAM 2 (sustained for  $\geq 3$  hours post IV Mg):

Please quantify how often you would consider this patient a candidate for discharge home from the ED in your personal practice (one answer only):

- 80-100% of the time
- 60-79% of the time
- 40-59% of the time
- 20-39% of the time
- 5-19% of the time
- <5% of the time (never/almost never)
- I do not know
- I do not use IV Mg
- Other (specify)\_\_\_\_\_

10. Please quantify your agreement with this statement:

Current evidence is adequate for me that children who are in marked respiratory distress after optimized initial stabilization therapy with salbutamol, ipratropium and systemic corticosteroids and who then attain a satisfactory and sustained clinical response to IV Mg therapy (mild asthma severity status) can generally be safely discharged home from the ED.

- Strongly agree
- Agree
- Disagree
- Strongly disagree
- I do not know
- Not applicable: I do not use IV Mg

11. This question concerns your usual first choice of IV bronchodilators in children with severe asthma refractory to inhaled  $\beta_2$  agonists and systemic corticosteroids:

In a child with severe asthma not responding to inhaled bronchodilators and systemic corticosteroids which agent would be your initial choice? (one answer only)

- Magnesium IV
- Salbutamol IV
- Terbutaline IV
- Aminophylline IV
- Adrenaline / Epinephrine IV
- Other (specify)

*The following scenario B is relevant to the questions below*

**Scenario B:** Moderate respiratory distress post initial stabilization therapy

Suppose the above patient with identical initial presentation of marked distress (HR 120, RR 40, saturation 94%, marked neck retractions, tracheal tug, markedly decreased air entry to entire chest and a wheeze audible without stethoscope, PRAM 8) experiences the following asthma status after initial therapy with bronchodilators and systemic corticosteroids:

HR 110, RR 36, saturation 96%, neck retractions, inspiratory and expiratory wheeze, bilateral decreased air entry to entire chest, PRAM 6.

12. Please quantify your personal use of IV Mg in children with acute asthma who appear as described in Scenario B above (moderate persistent respiratory distress) after optimized initial stabilization therapy with salbutamol, ipratropium and systemic corticosteroids (one answer only).

- 80-100% of the time
- 60-79% of the time
- 40-59% of the time
- 20-39% of the time
- 5-19% of the time
- <5% of the time (almost never/never)
- I do not know
- I do not use IV Mg

13. Please indicate your personal goals of therapy with IV Mg in children with acute asthma who remain in moderate respiratory distress after optimized initial stabilization therapy [Scenario B] (please check all that apply).

- To prevent inpatient hospitalization
- To prevent admission to ICU
- To satisfy my institutional or ED order set
- To comply with my national or local management guideline
- To provide some symptom relief
- I do not use IV Mg in this scenario
- I do not know
- Other (specify)

14. Suppose the patient in Scenario B [moderate respiratory distress post initial therapy] has an excellent response to IV Mg:

After IV Mg therapy, respiratory rate is 22, there are mild neck retractions, no wheeze, normal air entry, oxygen saturation 96%, PRAM 2 (sustained for  $\geq 3$  hours post IV Mg):

Please quantify how often you would consider this patient a candidate for discharge home from the ED setting in your personal practice:

- 80-100% of the time
- 60-79% of the time
- 40-59% of the time
- 20-39% of the time
- 5-19% of the time
- <5% of the time (almost never/never)
- I do not know
- I do not use IV Mg in this scenario/I do not use IV Mg

*The following questions refer to your IV Mg practice in general*

15. With what minimum level of asthma severity after optimized initial stabilization therapy do you usually use IV Mg (one answer only)?

- Very severe asthma: e.g. tracheal tug, scalene retractions, poor air entry to entire chest, wheeze audible without stethoscope, saturation 91-92%, PRAM 10-12
- Severe asthma: e.g. tracheal tug, poor air entry to entire chest, inspiratory and expiratory wheeze, saturation 91%, PRAM 8
- Moderate to severe asthma: tracheal tug, poor air entry to entire chest, inspiratory and expiratory wheeze, saturation 93%, PRAM 7.
- Moderate asthma: tracheal tug, poor air entry to entire chest, inspiratory and expiratory wheeze, saturation 95%, PRAM 6.
- Moderate asthma: tracheal tug, decreased air entry to lung bases, inspiratory and expiratory wheeze, saturation 95%, PRAM 5.
- I do not use IV Mg
- Other (specify)

16. Please quantify your agreement with this statement:

In children with acute asthma who present with marked respiratory distress and have unsatisfactory response to optimized initial stabilization therapy, my decision to use IV Mg also usually prompts me to admit to our hospital inpatient ward, irrespective of the clinical response to IV Mg.

- Strongly agree
- Agree
- Disagree
- Strongly disagree
- I do not use IV Mg

- I do not know

17. If you agree/strongly agree with the previous statement, please tell us why (check all that apply):

- Current evidence of benefit of IV Mg on decreasing inpatient hospitalizations is not adequate
- I usually use IV Mg in children who are likely candidates for ICU
- I am concerned that discharge home after IV Mg may not be safe, even with satisfactory response to IV Mg
- The recommended workflow criteria for my ED do not generally permit me to observe children in the ED after IV Mg
- My institutional guidelines do not support discharge home after IV Mg.
- Other (specify)\_\_\_\_\_

18. What dose of IV Mg do you use? (please choose one only)

- < 40 mg/kg
- 40 mg/kg
- 50 mg/kg
- 60 mg/kg
- 70 mg/kg
- $\geq 75$ mg/kg
- Other (specify)
- I do not use IV Mg

19. What is your level of concern about hypotension with the use of IV Mg?

- Very high
- High
- Low
- Very low
- I do not use IV Mg
- I do not know

20. In general, by what time after commencing therapy for children with acute asthma in the ED do you have to make a decision about whether to admit to an inpatient ward, send home, or transfer to an ED-run observation unit? (one answer only)

- 2-3 hours
- 4 hours
- 5-7 hours
- $\geq 8$  hours

- No limit on ED length of stay
- I do not know

*The following questions address the planned trial of IV Magnesium:*

21. Please quantify your agreement with this statement:

A large randomized trial to determine the efficacy and safety of IV Mg is indicated in children remaining in respiratory distress after maximized initial stabilization therapy.

- Strongly agree
- Agree
- Disagree
- Strongly disagree
- I do not know

22 a. [ONLY if agree or strongly agree with previous question]: What are your reasons for supporting such a trial? Please check all that apply.

- Lack of sufficient evidence that IV Mg is effective in decreasing inpatient hospitalizations
- Lack of conclusive evidence that IV Mg is effective in decreasing ICU admissions
- Lack of conclusive evidence that children can be safely discharged home after IV Mg
- Lack of conclusive evidence that IV Mg decreases respiratory distress
- Lack of sufficient evidence as to what patients are the best candidates for IV Mg therapy
- Lack of adequate safety data for IV Mg therapy
- I do not know
- Other (specify)\_\_\_\_
- I do not support the trial idea

22 b. [ONLY if disagree or strongly disagree with the previous question]: What are your reasons for not supporting such a trial? Please check all that apply.

- There is adequate evidence that IV Mg therapy is effective/ineffective in decreasing hospitalizations
- There is adequate evidence that IV Mg therapy is effective/ineffective in decreasing ICU admissions
- There is adequate evidence that IV Mg therapy is effective/ineffective in decreasing respiratory distress
- IV Mg therapy is safe, thus a trial is unnecessary



- Other (specify)\_\_\_\_\_
- I support the trial

23. If this trial were to demonstrate that IV Mg administration can safely reduce hospitalization in refractory acute asthma, how likely would this finding alter your current practice regarding inpatient hospitalizations after IV Mg therapy?

- Very likely
- Likely
- Unlikely
- Very unlikely
- I do not know

24. If this trial were to take place, what is your preferred most important primary outcome? [ICU admission is very uncommon and the trial cannot be powered for this outcome]. Please choose the best option.

- Hospitalization to inpatient unit at the index ED visit.
- Hospitalization to inpatient unit at the index ED visit, based on persistent respiratory distress incompatible with discharge home or need for supplemental oxygen, as per clinical re assessment by the treating ED physician after experimental therapy.
- Treatment failure: a) hospitalization for asthma or b) return visit to any hospital within 24 hours of disposition requiring therapy with inhaled bronchodilators more than every 4 hours or additional systemic corticosteroids or open-label IV Mg.
- Treatment failure: administration of open-label IV Mg in the ED after experimental therapy or hospital length of stay >12 hours
- Other- specify:\_\_\_\_\_

25. In a conclusive trial testing the benefit of any therapy, it is critical to use a sufficient dose of the interventional medication. The recommended dose of IV Mg ranges from 20-75 mg/kg; doses of up to 100 mg/kg have previously been used in studies, and the IV Mg doses used in Canadian EDs range from 40-75 mg/kg/dose. If 75 mg/kg of IV Mg were to be used in this trial, how comfortable would you be with this dose?

- Very comfortable
- Comfortable
- Uncomfortable
- Very uncomfortable
- I do not know
- I do not think this trial should take place