

Appendix 2: Research questions with verbatim quotes

1. Treatment options

What is the best IV therapy and in what order should the IV options be given?

“Why are we giving these patients a dose of magnesium just to make the number better? What effect is it having on the patient? Those kinds of things, we do it because we think it's the right thing to do, but do we have evidence that it actually makes a critical difference?” Paediatric Intensivist, United Kingdom

“Can we identify patients where aminophylline for example would work better than magnesium or where it should be given earlier, and why are we giving magnesium only as a second line and not first up “ Paediatric Intensivist, Australia

“Perhaps there's a role for some way to know what child might respond to a certain bronchodilator versus another”. Emergency Physician, America

“Each child with asthma has a large individual difference so statistical data requires a large number and a lot of effort to understand individual difference responses to treatment”. Emergency Physician, China

What is the utilization of NIV and high flow?

“Use of non-invasive ventilation and high flow. To my reading, there hasn't been a lot of research into the roles of those therapies in acute severe asthma. I don't use them. I don't have much experience with them and I haven't read much research around them. That might be something that would be useful to clarify, that utility or non-utility of those therapies” Emergency Physician, Australia

“Since the high flow became available, so it is questionable what are we really doing with that and why” Emergency Physician, New Zealand

“Is high-flow cannula really making an impact or not, which non-invasive system has the better results” Emergency Physician, Costa Rica

For high flow. *“there isn't evidence to augment one way or another, it would be good to focus on which is the best way to ventilate patients rather than pharmacological treatment”.* Emergency Physician Spain

Which steroid is “best” for exacerbations of asthma, what dosing?

“We go for hydrocort or if the child is coming into PICU very sick, we go for methylpred. There should be some consensus, like we'll be able to know which is definitely better. Instead of giving oral pred, whether we can give hydrocort itself in the initial dose so that we can avoid the child entering into the PICU or avoiding admissions.” Emergency Physician, India

“I know there has been studies done but again there is huge confusion about for example using nebulized steroids in the treatment of acute asthma” Respiratory physician, Costa Rica

What are the risks of giving IV therapy on the ward?

“Whether it's an evidence gap or clarification around if the- a guideline about when you're giving IV and mag sulphate recommendations about where that should be monitored, because that would have a big impact” General Paediatrician, Australia

“If you're on an infusion, you're not going to the ward. That creates a problem, which may be a driver for giving bolus and hoping you get better and staying on inhaled medication versus starting an infusion” Emergency Consultant, New Zealand

What is the role of nebulized magnesium?

“The effectiveness hasn't nebulized anything when you're that sick. Does it get in? Does it really make a difference? Are we using the right drugs?” Paediatric Intensivist, United Kingdom

“I'd like a definitive answer on magnesium, which I don't think we have yet. BTS suggests adding it to your nebulized therapy, if your nebulized therapy” Emergency Physician, United Kingdom

“I would like more evidence on use of nebulized magnesium” Emergency Physician, Argentina

What is the role of ketamine?

“I would also love to see-- I know there's case studies and a few reports and stuff about it, but does a low dose ketamine preventive admissions, or PICU admissions or intubations on some of these kids?” Emergency Physician, Canada

“Does low dose ketamine prevent admissions, or PICU admissions or intubations in some of these kids?” Paediatric emergency physician, Canada

How does Atrovent help in an acute exacerbation of asthma?

“I'm not sure if there is evidence out there for the use of Atrovent [Ipratropium] in your mild to moderate, rather than moderate to severe asthmas.” Emergency Physician, Australia

What is the role of IM adrenaline?

“The important thing there is, is there a role so that early administration of IM adrenaline because again, my practice is that's something that I do late in the kid that I'm really worried about when I'm preparing to intubate” Emergency Physician, Australia

What is the role of Heliox?

“I'm a big fan of Heliox, I'd quite like to know whether that doesn't make any difference or not” Paediatric Intensivist, United Kingdom

2. Diagnosis and classification**What is the usefulness of peak flow in diagnosis and classification of severity?**

“We are not as such using any peak flow meters in the ER. Obviously, it's very difficult to use in less than five-year-old kids, but in adolescents and older kids, if it is useful and we can use it for the management, it will be good to know.” Emergency Physician, India

“One idea is to use it in the older ones, and compare the differences in the first two hours of treatment” Emergency Physician, Argentina

“In research I think pulmonary function tests would be important (like spirometry). I think they're important as they provide a more objective measure of response to therapy” Emergency Physician, Tanzania

How do you identify those with secondary pneumonia?

“Yes, I'd like to hear things like some of the more precision stuff comes in to identify a marker of infection or bacterial involvement versus non-bacterial involvement” Emergency Physician, Canada

What is the utility of point of care US?

“Point of care ultrasound in asthmatics. Is there a difference in a diaphragmatic excursion in terms of those kids that are much more severe versus less severe?” Emergency Physician, Canada

Working towards an international alignment of clinical practice guidelines and research goals?

“I think it will be very helpful to help us all to align our guidelines” Emergency Physician, Singapore

“But it's really worth to work collaboratively between networks in different settings, that in my opinion, is a priority of research.” Emergency physician, Uruguay

3. What are reasonable treatment goals?**For clinical parameters including respiratory function?**

“I would love to have a device that tells me what's going on when I deliver a treatment. measure of respiratory function at a moment in time, and then repeatedly or continuously, that tells me I'm starting to improve this patient. Now, lung compliance, gas exchange, energy expenditure of the patient, they're changing.” Paediatric Intensivist, Australia

What should be the Target oxygen level?

“Oxygen saturation is one important thing. I mean people say, some say it's 93, so I'm sure that there's not so bad outcomes if you set it under 90.” Emergency Physician, Singapore

4. Questions related to families and children

Prevention of exacerbation

“Something more feasible like pharmacological formulation or a nutritional formulation because the problem with preventer therapy is compliance, and if the compliance is poor, they end up in emergency some way or the other.” Emergency Physician, India

Knowledge translation of asthma care plans

“As to what to do, and then advise them to follow up with primary care, or with the respiratory nurse, or respiratory department, or wherever it's managing. Has that actually made any difference, or not? Are people doing it? If they are doing it, does it make a difference? Frankly, I don't know whether it makes any difference or not.” Emergency Physician, United Kingdom

