

Report on 8th International Conference on Emergency Medicine

The following is a series of reports on the 8th International Conference on Emergency Medicine from our colleagues from the Hong Kong College of Emergency Medicine and the Hong Kong Society for Emergency Medicine and Surgery after they have attended this conference in Boston, USA in May 2000.

Lecture: Antibiotic update

Speaker: Dr. David A. Talen, MD, FACEP, FIDSA

In this lecture Dr. Talen reviewed recent advances in the understanding of infectious disease management. Recommendations that may have practical implications for local emergency care are summarised.

I. Early administration of antimicrobial agents

The associations of decreased mortality and shorter length of hospital stay with the timely administration of antimicrobial agents for various types of serious infections underscore the importance of emergency department diagnosis and management. (see Table 1)

II. Emerging bacterial resistance

Due to widespread antibiotics use, drug-resistant bacteria have emerged. (see Table 2) This has resulted in change in recommendation for treatment of specific conditions.

III. New recommendation on antimicrobial treatment of specific conditions

Acute otitis media

Antimicrobial drugs have a modest but significance impact on the primary control of acute otitis media at 7 to 14 days. Whereas antimicrobial treatment is standard practice in the United States, in other parts of the world, treatment is only given if symptoms do not resolve within 2 to 3 days. This is based on the high rate of self-resolution, minimal symptomatic benefit compared with analgesics alone, and questionable rare benefit in preventing the development of mastoiditis and meningitis.

Table 1. Effect of early antibiotic initiation.

Author	Study design	Patients	Finding
Meehan et al. ¹	Multicentre retrospective cohort study with medical record review	14,069 patients at least 65 years old hospitalised with pneumonia	30-day mortality was associated with antibiotic administration within 8 hours of hospital arrival (odds ratio, 0.85; 95% CI, 0.75-0.96) and blood culture collection within 24 hours of arrival (OR, 0.90; 95% CI, 0.81-1.00)
Hood et al. ²	Data were collected retrospectively from randomly selected discharged Medicare patients	24,389	Antibiotic administration within 4 hours of presentation and the acquisition of urine cultures in the first 24-hr of hospitalisation were independently associated with shorter length of stay.

Table 2. Emerging bacterial resistance.

Drug-Resistance Streptococcus pneumonia (DRSP)	
Penicillin	
Intermediate (MIC 0.1-1.0 µg/ml)	20-30%
High level (MIC ≥2 µg/ml)	10-20%
TMP/SMX	15-30%
Macrolides/azalides	5-25%
3rd generation cephalosporins	5%
Levo/ciprofloxacin	1%
<ul style="list-style-type: none"> ▪ Risk factors for DRSP: <ul style="list-style-type: none"> – young age – day care attendance – recent use of antimicrobial agents – hospitalization ▪ The mechanism of resistance to penicillin: alteration of penicillin-binding proteins, can be potentially overcome with high antimicrobial levels, and this has led to new antimicrobial strategies (e.g. high-dose amoxicillin for treatment of acute otitis media) ▪ Resistant against third-generation cephalosporins has resulted in recommendation that initial empiric treatment of bacterial meningitis should include the addition of vancomycin to a third-generation cephalosporin 	
TMP/SMX-resistant E. Coli	20-50%
Community-acquired MRSA	
Vancomycin reduced susceptibility S. aureus	
Quinolone-resistant gonorrhoea	
Penicillin- and Chloramphenicol-resistant N. meningitidis	

In light of increasing pneumococcal resistance, a Centers for Disease Control and Prevention (CDC) Working Group recently recommended new treatment strategies.

- 1st line: high dose amoxicillin - 80-90 mg/kg/day
- 2nd line: high dose amoxicillin/clavulanate, cefuroxime, IM ceftriaxone
- Refractory cases: IM ceftriaxone QD X 3, clindamycin, tympanocentesis

Sinusitis

A recent meta-analysis revealed that approximately two thirds of patients have spontaneous improvement or cure without antimicrobial treatment. However, the rate of clinical failure was reduced significantly, about one half, with the use of antimicrobial drugs. The antimicrobial groups experienced more adverse effects.

Consensus panels have recommended that antimicrobial agents not be initiated unless specific findings of acute sinusitis exist (e.g. purulent nasal

discharge with fever, toothache, facial tenderness, swelling, and/or erythema) or upper respiratory tract symptoms persisting for 10 days. A 10-day course of treatment is recommended as initial therapy. The pathogens involved in acute sinusitis are similar to those in acute otitis media, and similar drugs are recommended.

Bronchitis

The value of antimicrobial treatment for patients with acute bronchitis (i.e. cough and sputum production in patients without underlying lung disease) has not been convincingly demonstrated despite at least 7 randomised, double-blind, placebo-controlled studies.

For patients with exacerbations of chronic obstructive pulmonary disease (increased dyspnea, sputum production and purulence), studies suggest there is benefit associated with antimicrobial use, including standard therapies such as amoxicillin, doxycycline, and TMP/SMX.

Whether use of antimicrobial drugs with broader in vitro activity, including new fluoroquinolones, will result in better outcomes (e.g. infection-free interval) in certain patient groups remains to be established. These agents are best targeted for patients in whom other treatment have failed and those with more advanced structural lung disease who are more likely to be infected with DRSP, *S. aureus*, and *Pseudomonas aeruginosa*.

Pneumonia

Recommendations for treatment of community-acquired pneumonia have been published by the American Thoracic Society and Infectious Diseases Society of America. Low-risk patients (e.g. adults <50 years of age without underlying disease) with mild to moderate illness who can be managed as outpatients generally do well with standard antimicrobial therapy without enhanced activity against DRSP. Erythromycin, azithromycin, clarithromycin, and doxycycline (or erythromycin/sulfasoxazole for children) have activity against most pneumococci, *H. influenzae*, and atypical strains, and are recommended for patients older than 60 years (and younger than early infancy).

For higher-risk adults, new fluoroquinolones with enhanced pneumococcal activity should be considered.

Standard recommendations for inpatient cases of community-acquired pneumonia have been a combination of a second- or third-generation cephalosporin (e.g. cefuroxime or ceftriaxone) with erythromycin (for atypical coverage). Once-a-day intravenous azithromycin is a reasonable substitute for intravenous erythromycin.

Once-a-day administration of a new fluoroquinolone alone is now recommended as a standard empirical therapy option, and should be considered especially if DRSP is a concern.

Lower urinary tract infection

Uncomplicated lower urinary tract infections (i.e. cystitis in nonpregnant women), the large majority of which are due to *E. Coli*, are best managed with short-course of TMP/SMX or fluoroquinolones regimens. Three-day duration results in somewhat

enhanced cure rates compared with single-dose regimens while avoiding excessive adverse effects seen with longer courses of therapy. Short-duration regimens are not recommended in young children or pregnant women.

Urine cultures are not routinely recommended for uncomplicated lower tract infections (i.e. healthy adult women without other urologic abnormalities).

Pyelonephritis

Even moderate to severe acute uncomplicated pyelonephritis (i.e. in nonpregnant women without urologic or systemic disease) can be managed in the ED until an improvement in condition. Studies further suggest that this practice is safe in women pregnant up to 24 weeks' gestational age. Typically in such patients fever subsides and they are able to take fluids by 8 to 12 hours.

The recommended duration of treatment for acute uncomplicated pyelonephritis in women is 2 weeks (previously found to be as effective as 6 weeks), usually with TMP/SMX, a fluoroquinolone, or, in pregnancy, a cephalosporin.

Infectious diarrhoea

Most cases of infectious diarrhoea are mild, resolve spontaneously, and do not require treatment. Antimicrobial therapy is usually reserved for patients with severe illness (e.g. fever, bloody stools) presenting within 48 hours, with other compromising medical conditions, and young infants requiring hospitalisation.

In adults with domestic and travel-related acute and presumed infectious diarrhoea, treatment with a fluoroquinolone, including single-dose and 3-day regimens, has been associated with reduced duration of symptoms. Remarkably, this beneficial effect has been seen whether or not an enteropathogen was isolated.

TMP/SMX and antimotility agents promote the development of haemolytic-uraemic syndrome after *E. coli* O157:H7 infection. Hence, it may be best to avoid these therapies in children (unless there is accompanying sepsis or the bacterial aetiology, such as *Shigella*, is established).

Fever and neutropenia

Standard treatment of patients with fever and neutropenia has been hospitalisation for intravenous antimicrobial therapy. Recently, studies have identified a low-risk group that can be managed with outpatient intravenous antimicrobial drugs (and home nursing with patient education) or oral broad-spectrum regimens (e.g. fluoroquinolones alone or with clindamycin or amoxicillin/clavulanate).

Low-risk patients are those who develop fever outside the hospital, whose cancer (usually solid tumours) is controlled, and who do not have shock, organ dysfunction, an identified focus of infection (e.g. pneumonia), or profound (<100/mm³ absolute neutrophils) or expected prolonged neutropenia.

Meningitis

Because *S. pneumoniae* is now the most frequent cause of bacterial meningitis, the increasing prevalence of DRSP and observed DRSP meningitis treatment failures with third-generation cephalosporins, vancomycin should be added to standard third-generation cephalosporin regimens (cefotaxime or ceftriaxone) for initial empiric treatment of suspected paediatric and adult bacterial meningitis.

Chloramphenicol treatment of DRSP meningitis has been associated with a high failure rate. Therefore, it is recommended that vancomycin or chloramphenicol be added for patients with a history of severe β -lactam allergy.

The use of dexamethasone for treatment of bacterial meningitis remains controversial but is recommended for children older than 2 months who have not received the HIB vaccine. Some authorities also recommend dexamethasone for children and adults with any positive Gram stain or signs of increased intracranial pressure. Supportive evidence for dexamethasone's effectiveness in cases of pneumococcal meningitis exists (albeit less convincing than for *H. influenzae* meningitis), especially when administered before antimicrobial drugs. As delays of therapy may occur due to the wait to obtain cerebrospinal fluid and Gram stain

results, empirical dexamethasone should be strongly considered before antimicrobial treatment for cases in which there is a high clinical suspicion of bacterial meningitis, and those in which cloudy cerebrospinal fluid is found immediately after lumbar puncture.

Skin, soft tissue, and bite infections

Dog and cat bite infections are most frequently infected with *Pasteurella* species, staphylococci, streptococci, and anaerobes. Human bite infections are predominantly anaerobic, with staphylococci and streptococci involved as well. As single agents, the β -lactam/ β -lactamase inhibitor antimicrobial drugs are recommended. Combinations of clindamycin and a fluoroquinolone are alternatives in β -lactam allergic patients.

Necrotizing skin and soft tissue infections include a variety of potentially life- and limb-threatening syndromes such as gas gangrene caused by *Clostridium* species, Fournier's gangrene due to mixed aerobic/anaerobic bacterial infection, and the group A streptococcal toxic shock syndrome. Experimental studies suggest that clindamycin is more effective than penicillin for treatment of streptococcal myositis despite in vitro susceptibility of *S. pyogenes* to penicillin. Therefore, the inclusion of clindamycin is recommended in broad-spectrum empiric regimens for presumed necrotising infections. Intravenous immunoglobulin also appears to be effective as adjunctive therapy for streptococcal toxic shock syndrome compared with historical controls who did not receive this treatment.

References

1. Meehan TP, Fine MJ, Krumholz HM, et al. Quality of care, process, and outcomes in elderly patients with pneumonia. *JAMA* 1997;278:2080-4.
2. Hood HM, Allman RM, Burgess PA, et al. Effects of timely antibiotic administration and culture acquisition on the treatment of urinary tract infection. *Am J Med Qual* 1998;13(4):195-202.

(Report contributed by: Dr. Lam Kam Wah, Kwong Wah Hospital)

Mentoring: the good, the bad and the ugly

Speaker: Dr. Suzanne M. Shepherd

As the materials presented in this session have seldom been mentioned in our locality, I wish to share Dr. Shepherd's ideas on this topic, so that our own personal growth and development of our specialty are more complete.

What is mentoring?

A mentor is an experienced advisor of an inexperienced person. He can help an individual to adequately and realistically define career goals. A good mentor is the most critical aspect of a person's achievement of academic success and selection of a research career. He guides the mentee through transition periods of personal change and growth, by providing the impetus and confidence to stretch and successfully complete the task of adult development.

What to look for in a mentor?

A mentor acts as a role model. He shares ego ideals with the mentee. He shows scientific rigor and curiosity. He loves his job. He is altruistic, sincere and supportive. He acknowledges and accepts differences.

A mentor supports the mentee and lends credibility (reflected power), introduces the mentee to the unique customs of the organisational culture, helps the mentee to develop the necessary skills/knowledge base/visibility to succeed and become increasingly independent, and promotes the mentee at key times in organisation. A mentor is a resourceful individual who can provide guidance, help develop an appropriate network and develop avenues for career development.

A good mentor appropriately evaluates both the strengths and weaknesses of the mentee, fosters

double loop learning, creativity and assumption of responsibility and helps the mentee to define and redefine appropriate goals. This is one of the most difficult issues in mentoring, but one that must be done if the relationship is to be successful and meaningful to both parties.

Educationally, double loop learning, which is the incorporation of constant questioning of one's assumptions and behaviours into the learning process, is extraordinarily valuable in adult education. It forces continual self-examination and prioritisation, and eliminates defensive reasoning. If it is successful, it promotes an individual's sense of empowerment and control. However, it opposes most individuals' coping responses to tough issues, which are to avoid vulnerability, attempt to maintain control, avoid risk and the likelihood of embarrassment and to appear competent. Therefore it requires a great deal of trust in the teacher.

Why be a mentor?

Being a mentor provides emotional satisfaction/stimulation. It is a pleasure to see the mentee's raw talent and potential take shape. It allows the mentor to use own talents in a different way. Rejuvenation of enthusiasm is enabled, with long mastered work becoming less stale. It is a challenge to the mentor to find better ways to teach educational concepts/work. It allows the mentor to renew ties to past and review own mentoring relationship and prior mentoring relationships with others. Fresh ideas and viewpoints are introduced. Mentoring also helps specialty/organisation to continue to grow and adapt to new challenges.

4 stages of mentoring

Initiation 6-12 months

The first stage is for identification of possible individuals, either with elements of self or complements to self, and development of interpersonal closeness. Overprotection suppresses personal growth, while exerting oppressive criticism and control exploits the mentee for personal gain. It is a period when rules of the relationship are

set and the capabilities of mentor/mentee are tested. Hopefully mismatch is recognised early to avoid high price of hurt feelings, and loss of valuable time.

Cultivation 2-5 years

The second stage is the most active phase of relationship. Emotional bonds are deepened. The mentor provides tangible assistance in career development and gets satisfaction from high involvement. It must be recognised that all relationships have elements of love/hate, rivalry, control and dependence issues, and risks.

Separation - disruption of relationship

In this phase, the mentee has autonomy and independent thinking. Fear of loss, anxiety and turmoil may be present.

Redefinition - can last indefinitely

In the final stage, relation is reestablished based on new set of rules. Ideally it is a friendship based peer alliance. Initially there may be some ambivalence and discomfort.

Pitfalls

"Be all or end all" places tremendous pressure on individuals and relationship. Expectations, goals and rules need to be clearly outlined. It is required to be ethical, fair and honest in dealings. Time to greet regularly is made. Attention to details and deadlines is desirable. The mentor must be able to deal with difficult issues that arise, for example, substance abuse, psychological disorders or gender issues.

Multiple mentors provide a support group. Each contributes on basis of individual strengths. The

mentee learns multiple approaches to problem solving and situation management. It decreases the likelihood of personality conflict, but may also place one mentor against another. There may be inconsistencies of development. Expectations from each may not be clearly defined and understood. When points of view differ, the mentee may be placed in the middle.

Negative mentoring must be recognised. Either the behaviour is corrected or the relationship is severed early. Ambivalence or inattentiveness in the mentor leads to lack of respect for and investment in the mentee's career development, or unrealistic expectations. The mentor may lack mentoring skills, not realising his limitations and provide bad advice. He may be inaccessible. Insecurity in the mentor leads to inappropriate interpersonal behaviour; the mentor competes with the mentee. The mentor may place low value on needs/responsibility for mentorship, use mentee to further own career, take credit for mentee's work, and not give mentee opportunities or responsibilities that will develop skills and further career goals. Associated difficulty in relating to colleagues of other gender on professional level or active harassment may occur.

Mismatch of the mentor/mentee's cognitive abilities or growth trajectory may result in setting unrealistic goals, increasing impatience on the part of the mentor/mentee with the other person, increasing discomfort in the relationship and often injury to the confidence of the less cognitively powerful individual. To effectively lead/mentor an individual for a significant length of time, the mentor must be slightly cognitively higher than the mentee.

(Report contributed by: Dr. Peggy Chu, Kwong Wah Hospital)

Wound care: preventing infection

Speaker: Dr. Carlo L. Rosen, MD

Much focus has been put on the use of prophylactic antibiotics in wound management. However meticulous wound care remains the most important armament for the prevention of wound infection. Wound preparation and cleansing includes the following steps: hair removal, skin antiseptics, wound debridement, wound irrigation, and wound scrubbing.

Hair removal

Hair is a source of wound infection but its removal should be kept to a minimum. Clipper or scissor should be used to remove surrounding hair. Razor should be avoided as there is a reported increase in infection rate due to irritation of hair follicles.

Skin antiseptics

Disinfection of the skin around the wound should be initiated without contacting the wound itself. Most of the commonly used skin antiseptics are toxic to wound tissues. Therefore antiseptics should not be used directly onto the wound tissue unless they are diluted and declared safe for wound treatment by the manufacturer. Commonly used antiseptics suitable for skin and wound include:

- 1% Povidone-iodine (Betadine)
It is anti-bacterial (gram +ve and gram -ve), anti-fungal and antiviral. Its gram -ve activities is greater than other cleansers
- 0.05% Chlorhexidine
It has antibacterial property
- 0.015% Chlorhexidine & 0.15% Cetrimide

Debridement

The capacity of devitalised fat, muscle and skin to

enhance bacterial infection is significant. Removal of devitalised tissue prevents infection and improves wound healing. However an adequate but non-excessive debridement requires some experience and sometimes repeated examinations are needed.

Wound irrigation

Mechanical force is employed to remove bacteria and small particles from the wound. The degree of pressure generated is expressed in pressure per square inch (psi). Saline is the best solution for wound irrigation. It is cheap, non-toxic and does not reduce tissue resistance to infection.

Low pressure irrigation

Low pressure irrigation is usually used for clean wounds. Bulb syringe is used to generate a pressure of 0.5-2 psi. It may be useful in removing larger particles. However there is no evidence that low pressure irrigation can reduce bacterial count or infection rate.

High pressure irrigation

High pressure irrigation is effective in removing the dirt and bacteria from contaminated wounds. The pressure generated in a system of 35 ml syringe connected to a 19 gauge blunt needle is 8 psi. Similar force can be obtained by connecting a 20 ml syringe to a 20 gauge angio-catheter in our setting. Commercial kits, e.g. Irrijet, are also available to provide convenient, disposable and safe means for performing this procedure. During the procedure, the tip of the needle should be placed perpendicular and as close as possible to the surface of the wound.

Very high pressure irrigation

Pressure of more than 50 psi may be used for large, heavily contaminate wounds. However there is significant risk of tissue damage.

Is irrigation always necessary?

High pressure irrigation lowers the infection rates in contaminated wounds. However studies did not show an alteration of infection rates or cosmetic appearance in clean and non-contaminated wounds. On the other hand wound irrigation can result in splashing of tissue fluid and cause tissue oedema after the procedure.

Wound scrubbing

Mechanical scrubbing reduces the risk of developing infection. The ideal way of scrubbing is to use high porosity sponge soaked in a non-ionic surfactant like soapy water. This minimises tissue damage from frictional force. Soaking the wound in saline or 1% betadine solution for 10 min does not reduce bacterial counts. (Lammers 1990)

Wound closure

Careful consideration should be made to decide whether the wound is suitable for primary closure or not. Animal bites, old wounds and contaminated wounds require delayed primary closure. Puncture wounds and small animal bites can be allowed to heal by granulation and re-epithelialisation. Prophylactic antibiotics are given as indicated.

(Report contributed by: Dr. Matthew Tsui, Queen Mary Hospital)

Lecture: "Airway ventilation and intubation adjuncts" and "Rapid sequence intubation: State of the art, forewarned is forearmed"

Speaker: Dr. Ron Walls

In the lectures, Dr. R. Walls highlighted an algorithm for the management of the difficult airway and steps in predicting the difficult airway. The timing and steps in rapid sequence intubation are also discussed in details in his lectures. In the following paragraphs, some important points and tips from the lectures are mentioned for reference.

There are several dimensions in the management of the difficult airway: difficult to oxygenate and ventilate, difficult to intubate, and difficult to perform a cricothyrotomy. Emphasis is placed on the prediction of the difficult airway and maintenance of adequate oxygenation by bag-valve-mask ventilation. The decision to proceed to rapid sequence intubation in patients with predicted difficult airway must be considered in a high degree of certainty that it will be successful. If oxygenation is inadequate and the airway is predicted to be difficult to intubation using rapid sequence induction, the physician managing the airway must think of other alternatives, such as topical anaesthesia sedation and "awake" laryngoscopy, fiberoptic methods, lighted stylets, or even cricothyrotomy.

For prediction of the difficult airway, the "LEMON" law is a simple and easily remembered rule:

Look externally - Some anatomical features are clues of difficult intubation or ventilation. Obese patients are more difficult to intubate and ventilate. Abnormal facial shapes, facial and neck trauma, large teeth or tongue, the presence of a beard or moustache, make intubation, ventilation, or both become difficult.

Evaluate (3-3-2 rule) - The opened mouth should be able to accommodate 3 fingers from the upper to the lower incisors. There should be 3 finger-breadth space from the chin to the hyoid cartilage. Two fingers should be able to get between the floor of the mouth and the thyroid cartilage.

Mallampati - The Mallampati grading assessment can be done in the classical manner, or can be done by a tongue blade in an supine unresponsive patient as an estimation.

Obstruction - Obstruction in the upper airway, by tumour, foreign body, inflammatory conditions will lead to difficult ventilation and intubation. A disrupted airway poses another difficulty as obstructed airway does.

Neck mobility - This determines the optimal position for laryngoscopy. Patients with systemic arthritis and neck trauma may alert us of a potential difficult airway.

The second lecture was on aspects of Rapid Sequence Intubation (RSI). The speaker spent much of the time on the "timing" of the sequence in performing RSI. The following is a summary of the sequence. (The seven **P**s)

Zero minus 10 minutes	P reparation: Equipment, drugs, etc.
Zero minus 5 minutes	P re-oxygenation
Zero minus 3 minutes	P retreatment: Lidocaine, Opioid, Atropine, Defasciculation (LOAD)
Zero minute	P aralysis with induction
Zero plus 30 seconds	P rotection: cricoid pressure, position for optimal laryngoscopy
Zero plus 45 seconds	P lacement: intubate, confirm tube position
Zero plus 1 minute	P ostintubation management: ET tube secured, oximetry, blood pressure monitoring, chest X-ray, etc.

The above points are the essence of the lectures that I think would be useful in our daily practice.

(Reviewed by: Dr. Rocky HK Wong, Queen Mary Hospital)

Update on Paediatric Asthma (Synopsis from 8th ICEM)

Lecturer: Dr. Pamela Rosengarten, MD

Assessment of severity of acute asthma

Symptom/sign	Mild	Moderate	Severe	Life threatening
Use of accessory muscle	Nil	minor	marked	exhaustion
Mental state	normal	normal	agitated	drowsy/confused
SaO ₂	>95%	91-95%	<91%	—
PEFR % predicted	>80%	50-80%	<80%	can't perform

β₂ Agonists in mild/moderate asthma

- Inhaled β₂ agonists (salbutamol/albuterol) are drugs of choice in acute exacerbations.
- Produce significant bronchodilation within 5 minutes with duration of 3 to 4 hours.
- Recommended nebulised dose=0.15 mg/kg or 2.5 mg if less than 20 kg or 5 mg if more than 20 kg body weight.
- Metered dose inhaler (MDI) + spacer is as effective as nebulisation. Advantages of MDI + spacer include lower cost, O₂ or power source not required and enables continuity of treatment from hospital to home.
- Small volume spacers are as efficient as large volume spacers. Mouth piece is more efficient than mask.
- Dosage for MDI + spacer: actuate 1 puff β₂ agonist into spacer and inhaled with 1 to 2 deep breaths.
Children <6 yrs: 1 dose=6 puffs (600 μg)
Children >6 yrs: 1 dose=12 puffs (1200 μg)
- For mild attack: 1 dose and review at 20 minutes.
For moderate attack: 3 doses in 1 hour and review 10 minutes after 3rd dose.

β₂ Agonists in severe/life-threatening asthma

- No data for use of MDI + spacer.
- Recommended nebulised β₂ agonist at continuous 0.5 mg/kg/hr (minimal dose 10 mg/hr up to 20 mg/hr). Monitor for side effects.
- IV salbutamol 15 μg/kg over 15 minutes or IV terbutaline 10 μg/kg over 10 minutes for children not responding to maximal inhalation therapy.

Role of ipratropium bromide in acute asthma

- Indication in acute severe asthma.
- 3 doses of 0.25 mg or 0.5 mg ipratropium bromide with salbutamol 0.15 mg/kg via nebuliser in 1st hour of treatment.
- No evidence for ipratropium bromide after 1st hour of treatment.

Role of adrenaline in acute asthma

- Preferred β agonist of choice for subcutaneous use.
- Reserved for uncooperative patient not responding to optimal inhalation therapy.
- β and α side effects limit usage.

Role of steroids in acute asthma

- Reduce hospital admission rates and risk of relapse.
- Dose equivalent to 2 mg/kg/day prednisolone.
- Oral route of delivery is preferred which is as effective as IM/IV.
- Duration of treatment 3 to 5 days in acute asthma.

Role of aminophylline in acute asthma

- Use of aminophylline not supported in management of children with mild/moderate/severe asthma.
- IV aminophylline 10 mg/kg (maximum 500 mg) over 1 hour may be indicated in life-threatening asthma not responding to other maximal treatment modalities including IV β_2 agonists.

Role of magnesium in acute asthma

- Evidence does not support routine use of IV MgSO_4 in acute asthma.
- May have role in life-threatening asthma.
- MgSO_4 25 mg/kg (maximum 2 g) over 20 minutes.

Paediatric asthma management summary

Treatment	Mild	Moderate	Severe	Life-threatening
Inhaled β_2 agonist	MDI + spacer x 1 dose. 1 dose = 6 puffs if <6 yo or 12 puffs if >6 yo	MDI + spacer x 3 doses in 1 hour.	continuous nebuliser.	continuous neb.
ipratropium	no	no	Neb. x 3 in 1st hr	Neb. x 3 in 1st hr
steroids	Mostly no	Oral prednisolone	Oral prednisolone	IV methylprednisolone
IV β_2 agonists	no	no	no	Indicated if poor neb. response
IV aminophylline	no	no	no	If poor response to IV β_2 agonist

(Report contributed by: Dr. Daniel SK Ng, Pamela Youde Nethersole Eastern Hospital)

Photo Gallery



Figure 1. The Westin Copley Place.



Figure 2. Essex Ballroom.



Figure 3. Lobtailing: The whale's head is underwater while it holds its flukes above the water, slapping them forcefully and repeatedly against the surface.



Figure 4. Flippering: The whale lifts one or both flippers out of the water and slaps them against the water, sometimes several times in a row. Humpbacks sometimes also lie on their backs, waving both flippers in the air, before slapping them onto the surface of the water simultaneously.

(Photo gallery is contributed by Dr. Lam Kam Wah)