Paediatric Respiratory Reviews 15 (2014) 75–81

Contents lists available at ScienceDirect

Paediatric Respiratory Reviews

CME article

Managing End Stage Lung Disease in Children

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EDUCATIONAL AIMS

- To illustrate the benefits of integrating of palliative care principles with restorative and life-prolonging care for children with End Stage Lung Disease (ESLD)
- To discuss the trajectory of ESLD in children and when to initiate Integrated Palliative Care Planning
- To review strategies applicable to the symptomatic and restorative management of ESLD
- To illustrate aspects of the psychological and social challenges faced by children and their families in coping with ESLD
- To discuss the impact of lung transplantation upon the management of ESLD

ARTICLE INFO

Keywords:
Lung disease
Palliative care
Symptom management
Psychosocial care
Death

SUMMARY

Over the course of a career most physicians will manage only a handful of children through End Stage Lung Disease. Nonetheless, the approach of the physician to this challenge will have a profound impact on the children and families they encounter. Managing the end of life well can bring personal growth and professional satisfaction. In this review we highlight aspects of the Palliative Care approach and its integration with restorative and life-prolonging care. We review the role of active treatment, respiratory support, symptom management and psychosocial aspects of the management of End Stage Lung Disease.

INTRODUCTION

End Stage Lung Disease (ESLD) is uncommon in children. The prevalence of life limiting conditions in childhood has been estimated at 32 per 10,000 children in the UK from birth to 19 years of age.[1] Respiratory diagnoses account for 8.8–12% of the burden of life limiting conditions of childhood.[1,2] When ESLD is encountered it is usually in the context of Cystic Fibrosis or Broncho-Pulmonary Dysplasia. The scope of life-limiting lung conditions in childhood includes: bronchiectasis, interstitial lung diseases, surfactant deficiencies and conditions of the vasculature such as idiopathic pulmonary hypertension. It should be noted that mortality usually proceeds through a final common pathway of cardiorespiratory insufficiency and as such respiratory failure is a common feature of the end of life due to diverse disease processes in children.

The evolution of life-threatening lung disease in children can be quite variable, making a standard approach difficult. The Association for Children's Palliative Care (ACT) describe four patterns of evolution in life limiting conditions of childhood (Table 1).[3] It is clear from the variation in natural history of evolution that an individualised approach to management of ESLD will be necessary.

Emerging respiratory failure becomes evident in a child when their ability to accommodate stresses (respiratory infection, recovery from general anaesthesia, exercise, sleep) becomes limited. Aggressive optimisation of the medical management of lung disease is warranted including: extended microbiological investigation and tailored antimicrobial treatment, optimisation of airway clearance techniques, targeted efforts to improve nutritional status and, revisiting disease modifying strategies to retard underlying disease mechanisms.

As disease progresses, the waxing and waning nature of respiratory failure at low lung function can often make short term prognostication difficult even if the final outcome is clear. Signs that lung disease is reaching End Stage are described in Table 2.[4,5]

PALLIATIVE CARE APPROACH

At the end stages of lung disease, increasing support is often needed for symptom relief and to address the spiritual, social and

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http://dx.doi.org/10.1016/j.prrv.2013.07.002

Table 1
The Association for Children's Palliative Care describe 4 patterns of evolution of life limiting illnesses.

ACT Categories of Life Limiting Conditions (3)
1. Life-threatening conditions for which curative treatment may be feasible but can fail
2. Premature death is inevitable. There may be long periods of intensive treatment aimed at prolonging life and allowing participation in normal activities.
3. Progressive conditions without curative treatment options, where treatment is exclusively palliative and may commonly extend over many years.
4. Irreversible but non-progressive conditions causing severe disability leading to susceptibility to health complications and likelihood of premature death.

psychological needs of the child and family. Active disease treatment often continues, but decisions are more often framed in the context of balancing treatment burden against benefit or treatment goals. The American Thoracic Society recommends that palliative care begin when a patient becomes symptomatic, should run concurrent with restorative and life-prolonging care, and be titrated to the needs of the patient and family.[6]

The Center to Advance Palliative Care have recommended "automatic" and "suggested" criteria for referral of paediatric pulmonology patients to a palliative care specialist. Their "automatic" criteria include: CF patients considering/at the time of lung transplant; CF patients with FEV_1<30%, ventilator dependence or ineligibility for lung transplant in CF patients, and, Bronchiolitis Obliterans. "Suggested" criteria include: CF patients with multiple hospitalizations, pain, dyspnoea or likely to benefit from symptom management, Central hypoventilation syndromes, and patients who are chronically ventilator dependent.[7]

The Palliative care approach has been defined as:

> '*An active and total approach to care, from the point of diagnosis or recognition, throughout the child's life, death and beyond. It embraces physical, emotional, social and spiritual elements and focuses on the enhancement of quality of life for the child/young person and support for the family. It includes the management of distressing symptoms, provision of short breaks, and care through death and bereavement.*'[3]

INTEGRATED PAEDIATRIC PALLIATIVE CARE PLANNING

Care planning and discussion is best initiated at the earliest stage when it is recognised that the child's lung disease is life threatening. This can be introduced to the family and child as a 'Preparatory Phase'. Barriers to addressing the issue may include the anticipation of transplant, unrealistic expectation of cure and family denial.[8] Care planning incorporates sensitive and regular provision of honest and realistic information about health status, clarity about the objectives of treatments, and structured discussion and documentation of the patient and family's wishes regarding options for care.[4] Plans are revisited and adapted as the child's and family's need evolves. Himelstein et al. recognise five practice spheres to be addressed in care planning (Figure 1).[9] More detailed advice on Paediatric Palliative care service planning can be found in the RCPCH(UK) Guide to the Development of Children's Palliative Care Services.[10]

Table 2
End Stage Lung Disease characteristics.

End Stage Lung Disease Characteristics (4, 5)
Persistent dyspnoea despite optimisation of medical management
Inability to maintain metabolic compensation for chronic respiratory acidosis
Decreased mobility
Increasing hospitalisation for chest infection or respiratory decompensation
Resistant respiratory pathogens
Limited improvement following hospital admission/prolonged intravenous antibiotic therapy
Accelerated rate of decline in pulmonary function despite therapy
Oxygen dependence
Pulmonary hypertension
Unrelenting weight loss that cannot be halted or reversed by supplemental nutrition

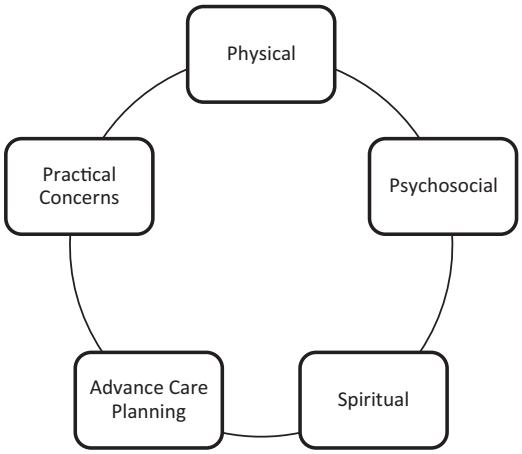

Figure 1. Core elements of Integrated Paediatric Palliative Care Planning (9).

LUNG TRANSPLANTATION

One of the most significant treatment decisions in ESLD surrounds lung transplant as a potential active treatment option. Important issues to consider include: treatment goals, suitability for transplantation, organ availability, timing of referral, potential survival gains, and use of aggressive treatment modalities designed to prolong life whilst waiting for a lung transplant.

The goal of lung transplant is to prolong life. For most patients it is a palliative rather than curative treatment. The process of assessment for lung transplantation can be stressful and involve prolonged separation from support networks. The burden of treatment is high following lung transplantation, and this must be factored into any consideration of the balance between survival and quality of life.[11]

Not all candidates will be eligible for transplantation. The ISHLT statement[11] defines absolute and relative contraindications and transplant centres can be consulted for advice. It is recommended that listing for transplantation occur when life expectancy is greatly reduced but nonetheless greater than the expected waiting time for a suitable organ. Transplantation should be performed when life expectancy after transplantation exceeds life expectancy without the procedure.[11]

Organ availability and allocation practices vary internationally. Algorithms may be based on waiting time, or the balance between waiting list survival and post-transplant survival for each candidate. In the US in 2006, 54 paediatric candidates received lung transplants and 16 died while waiting.[12]

The lung transplant half-life (i.e. the time after which 50% of paediatric lung transplant recipients have died) reported by the ISHLT for the period January 1990 to June 2009 was 5.5 years. The functional status of surviving paediatric lung transplant recipients is very good, with 86% of children having no physician-reported activity limitation even 5 years after transplant. The most common causes of late death after transplant are bronchiolitis obliterans and infection.[13]

For a child on the lung transplant waiting list, the focus of life-prolonging therapy is to keep the child as well as possible whilst awaiting organ allocation. Given the reality that a proportion of children will die waiting, it is important for care planning to incorporate palliative care principles.

It is common among this patient group to employ aggressive interventions including intensive care and ventilation as bridges to transplant, however the counterpart of this strategy is that patients on the lung transplant waiting list have an increased tendency to die in the Intensive Care Unit receiving assisted ventilation.[8]

MANAGEMENT OF CHRONIC RESPIRATORY FAILURE

Physiotherapy and Airway Clearance

Physiotherapy and airway clearance are cornerstones of chronic respiratory failure management. Airway clearance can improve patient comfort, help avoid and treat respiratory infection and reduce VQ mismatch and thus hypoxaemia and dyspnoea. An in-depth discussion of airway clearance is beyond the scope of this article. For children with end stage lung disease, individual consultation with a paediatric respiratory physiotherapist is of great importance as airway clearance regimes must be individualised and take account of what is required and what can be tolerated by the child. More broadly, effective physiotherapy can help maintain exercise tolerance, counteract fatigue and reduce musculoskeletal pain.[14]

Antibiotic Management in ESLD

Many children with chronic suppurative lung disease die following overwhelming pulmonary infection. In a study of individuals with CF, 75% continued to receive intravenous antibiotics in the last 12 hours of life.[8] Anti-microbials are often given with mixed therapeutic and palliative intent. The symptomatic benefit from antibiotic use in the paediatric ESLD context is relatively untested. One study in adults with advanced cancer found a 33-50% symptom response to antibiotics for respiratory tract infection.[15] The palliative care approach of time-limited trials of therapy assessed against agreed treatment goals is recommended, giving consideration to the burden of treatment, route of administration and location of care.

Treatment of Hypoventilation

ESLD can result functionally in hypoventilation, giving rise to hypercarbia, manifest symptomatically as disturbed sleep, daytime hyper-somnolence and morning headaches. Non Invasive Ventilation (NIV) can be used as a strategy to counteract hypoventilation. NIV assists the respiratory muscles, decreases the work of breathing and improves gas exchange by increasing tidal volume and augmentation of resting alveolar volume.

NIV has been systematically reviewed for its utility in Cystic Fibrosis where benefit was demonstrated with respect to improved ease of airway clearance. When added to oxygen therapy, NIV may improve gas exchange during sleep to a greater extent than oxygen therapy alone in moderate to severe disease, yielding improvements in exercise tolerance.[16]

Bi-level positive airway pressure (BiPAP) has been successfully employed in acute on chronic respiratory failure to avoid the need for intubation and facilitate successful discharge from the ICU. Using BiPAP whilst awaiting transplantation may prevent post-transplant lung infection and acute rejection.[17]

There is a wealth of evidence for the palliative use of NIV as a symptomatic treatment for dyspnoea in adult patients with hypercapnic respiratory failure, both in the hospital and domiciliary setting.[18] The ATS Clinical Policy Statement on Palliative Care for Patients with Respiratory Diseases advocates the use of NIV in palliation of dyspnoea, but cautions that children can be exquisitely sensitive to parental anxiety about the use of such equipment which may appear threatening to the family.[6] Challenges to tolerability include feelings of claustrophobia, inability to tolerate pressure, mask discomfort, poorly managed initial set-up and parent or patient anxiety.[19]

Tolerability issues should be anticipated and actively managed in the set-up of NIV. Important factors contributing to the success or failure of a trial of NIV include: patient selection; choice of interface & fit; ventilation mode; skin care; and heating and humidification of the inhaled gases. There are a range of interfaces available; oro-nasal mask, nasal mask, helmet and mouthpiece.[20] Careful mask selection, titration of pressure and ventilation mode to effect and support for the child and family are all vital aspects of the effective initiation of NIV in this area.

Treatment of Hypoxaemia

Chronic hypoxaemia is a common feature of ESLD contributing to dyspnoea, impaired exercise tolerance, poor sleep, tiredness, lethargy, headache and reduced appetite. Low flow oxygen supplementation may improve the sensation of breathlessness by self-report, even independently of its effect on measured oxygen saturation. In CF, a systematic review of short-term oxygen therapy during sleep and exercise revealed improved oxygenation but was associated with modest and probably clinically inconsequential hypercapnia. Improvements were demonstrated in exercise duration, time to fall asleep and regular attendance at school or work.[21]

Reaching the milestone of dependence on supplemental oxygen may have a negative psychological impact for patients. Nasal cannulae can be visually intrusive reminder of declining lung function and lead to feelings of self-consciousness. The limitation to mobility associated with being tethered to the tank or oxygen concentrator can contribute to social withdrawal.

SYMPTOM MANAGEMENT

The management of life-limiting illness and its symptomatology is an entire speciality in itself and readers are strongly encouraged to seek the partnership of specialist palliative care teams. There are few paediatric reports on the symptomatology of ESLD. One study of children with CF dying in hospital reported headache, chest pain and dyspnoea as prominent symptoms.[8] A review of end of life symptomatology in a mixed population of inpatient children (both cancer and non-cancer) reported; lethargy, drowsiness, skin changes, irritability and pain, in more than 50% of patients.[22]

Dyspnoea

Dyspnoea, or the subjective sensation of difficulty breathing, can provoke profound fear and psychological distress and even be interpreted as impending death. The patients' perceived intensity of dyspnoea may appear unrelated to objective parameters of respiration and as such, particular care should be taken when visual analogue scales are used to assess symptom intensity. The sensation can be broken down into two components;

1. The intensity of sensory input into the sensory cortex from mechanoreceptors in the airway and chemoreceptors
2. The contextual interpretation of this information

Table 3
Management approaches for dyspnoea.

Approaches to Breathlessness	
Reversible Peripheral Factors	
Hypercapnia	NIPPV
Hypoxia	Low Flow Oxygen therapy
Bronchospasm	Salbutamol, Ipratropium Bromide, Steroid
Pain	NSAID's, Opioids
Thick Secretions	Nebulised Saline, DNAse Physiotherapy
Excessive Watery Secretions	Anticholinergics; Hyoscine, Glycopyrronium
Reversible Central Factors	
Anxiety	Calm atmosphere, Play Spiritual & Psychological Support Benzodiazepines, Midazolam Consider claustrophobic effect of masks
Central Interpretation of Respiratory Afferent Signals	Opioids
Perception of Airflow Limitation	Positioning, Open windows, Fan

Physiological and contextual factors contribute to the experience of dyspnoea: neuro-mechanical dissociation related to muscle weakness: reduced lung compliance and airways resistance: increased respiratory drive due to hypoxia or hypercapnia: loss of airway control and choking, retained secretions: loss of control over breathing; anxiety, depression and panic.[23] Treatment includes addressing contributory factors and should be escalated until relief is achieved (Table 3).

Opioids

Opiates reduce air hunger, dyspnoea induced anxiety and also ventilatory drive in response to hypercarbia and hypoxia.[24,25] A systematic review of opioid use for the palliation of dyspnoea reported a significant reduction in dyspnoea scores with subcutaneously administered morphine.[26] Respiratory depression is still a feared side effect of opioid therapy though several studies find no evidence of this effect at therapeutic doses.[27,28] One study specifically examined the safety of combination therapy with therapeutic doses of opioids co-administered enterally with anxiolytics and found the regimen to be both efficacious and safe, finding no evidence of significant respiratory depression in their adult oncology study group.[28] A review of the nebulized route for morphine administration did not find convincing evidence of efficacy for dyspnoea though several positive case reports have been published.[29] Adverse effects of opiates are usually amenable to treatment and include: nausea, vomiting, anorexia, constipation and drowsiness.

Cough

Persistent cough can adversely affect sleep, precipitate vomiting, exhaustion and chest or abdominal pain. The mainstays of symptomatic management are airway clearance techniques including assisted coughing and alleviation of bronchospasm. While not addressing the cause of coughing opioids are very effective at reducing the symptom.

Nausea

Nausea is multifactorial in origin and often exaggerated by anxiety. Reversible causes should be sought including: systemic infection, opioid toxicity and gastric irritation. Approaches to consider include: relaxation strategies, avoidance of unpleasant odours, distraction, acupressure bands, dietary modifications, prokinetic drugs, phenothiazines (eg. Chlorpromazine), antihistamines and 5-HT3 antagonists (eg. Ondansetron).[30]

Anorexia

Ensuring that our children are adequately nourished is a basic parental instinct. The anorexia, weight loss and change in appearance associated with end stage lung disease are very distressing for parents. Contributory factors which can be addressed include: nausea, vomiting, pain, depression and oral pain or irritation. Poor nutrition may be associated with susceptibility to infection, irritability and reduced motivation and energy for play. Nutritional care decisions need to take into account the expected survival of the child, balancing the use of hyper-caloric diets and appetite stimulants against an acceptance that food intake will decline as death approaches.[30]

Pain

Pain is a complex multidimensional phenomenon. The Palliative care literature recognises the "Integrative Approach" to total pain management combining pharmacological, physical and psychological methodology. Integrative approaches include physical comforts (like rocking, cuddling, therapeutic touch, acupressure and TENS), distraction (music and play), and cognitive behavioural approaches (art and music therapy, imagery and hypnosis, relaxation exercises, biofeedback and psychotherapy).[30]

The core pharmacologic approach has recently changed; the WHO three-step ladder has been abandoned for children in favour of a two-step approach. Step One: The medicines of choice for mild pain are paracetamol and ibuprofen. Step Two: If pain severity is assessed as moderate or severe, the administration of a strong opioid is necessary. Morphine is the medicine of choice for the second step. Other strong opioids should be considered in the event of intolerable side-effects. Further recommendations include regular scheduling by the least invasive route, individualised to the child's pain and response to treatment.[31]

Refractory Symptoms

Pharmacological induction of deep sedation is uncommon in paediatric practice. It is a last resort strategy for intractable distressing symptoms reported by physicians as being instituted only when there were no options left to alleviate symptoms and death was imminent.[32]

MECHANICAL VENTILATION

When respiratory failure finally transpires, decisions must be made about whether or not to intervene with mechanical ventilation. It is always easier if this dilemma has been addressed in an open and honest discussion at the preparatory stage when setting goals and objectives of treatment.

Forethought must be given to all possible outcomes including the child's death on a ventilator and the unsettling burden of the decision to withdraw ventilatory support.[4]

In a study looking at the outcomes of patients with CF aged 5 - 43 admitted to ICU, requiring mechanical ventilation for acute on chronic respiratory failure in whom NIPPV had failed, outcomes were extremely poor (whether they were being ventilated for acute respiratory failure or during the period awaiting lung transplantation).[17] In a similar study focusing on children with CF admitted to ICU for mechanical ventilation, a more favourable prognosis was seen in children under 5 years of age (mortality of 22%) as compared with 5 - 34 year olds (mortality of 75%).[33] Outcomes of ventilation may be better in those admitted for

reversible indications such as haemoptysis, pneumothorax or antibiotic allergy and in those for whom the time frame for transplantation is imminent, for whom similar post transplant outcomes have been reported in ventilated versus non ventilated patients.[4]

Resuscitation

Outcomes of resuscitation depend on the nature and severity of the underlying process. An open and sensitive discussion of the balance between expected benefits and burdens can inform goal setting for this aspect of end of life care. 'Do Not Attempt Resuscitation' orders can be used to specify which aspects of resuscitation should be instituted, limited or withheld.

LOCATION OF CARE

The consensus view is that for most children and families the best place to face the terminal phase of an illness is at home, in familiar surroundings with the comfort of familiar people, smells and toys.[34] In practical terms, most children with ESLD die in hospital due to the unpredictability of the course of end stage lung disease; on-going concurrent efforts to achieve clinical improvement; the prospect of transplant; and the use of medical technologies such as NIV for symptom management.

All efforts should be made to support children and families to fulfil their wishes irrespective of the location of their terminal care. When hospital is the location of death, privacy and the acceptance of the wider use of palliative care can help to minimise distress and give children and parents a greater sense of control over their experience of end of life care. When the preference is to die at home, practicalities to be considered include a clear plan of care in partnership with the family simplification of care regimes organising for 24 hour support for nursing care and palliative emergencies unrestricted access to the hospital respiratory and palliative care teams provision of long term oxygen therapy and/or NIV for symptom management at home liaison with primary care teams education about the expected course of disease and in skills that promote comfort care counselling and support.

PSYCHOSOCIAL ASPECTS

Attainment of a mature concept of death is a process that occurs over time and depends on cognitive development (Table 4).[34]

Communicating with terminally ill and dying children

In communicating with terminally ill children it helps to take into account their developmental level, personality, life experience, patterns of communication, supports and the family context. Children with a terminal illness will often have a greater understanding of death than is attributed to them by those around them. They gather information from all available sources to help them make sense of their illness and develop a personal story about why they became sick, why they have to cope and how they perceive themselves.[34]

Supporting Parents & Families

Some of the challenges faced by parents of a terminally ill child include:

- Communicating with and dealing with the fear of the child and his siblings about terminal illness and death
- The practical tasks of physical care for the child in discomfort and pain
- Navigating their own feelings of anger, fear, powerlessness, failure, loneliness, isolation, grief and later bereavement
- Fear of what would happen at the time of death, fear of not coping

'Protection' or hiding the truth about the seriousness of their illness from older children is probably impossible and is likely to erode trust between the child and his family. Guidance for parents should include the recommendation for: listening and providing space for the child to express concerns and feelings before offering information checking that the child has understood the information by getting the child to express it in his own words paying particular attention to feelings being expressed indirectly avoiding euphemisms like 'falling asleep' or 'going on a long trip' as these may be confusing to younger children advice to dispel magical notions about the cause of illness and assure the child that the disease is not a punishment for bad behaviour reassurance that the child is loved and will not be abandoned.[34]

Table 4
Developmental aspects of a child's understanding of death.

Stage	Understanding of Death
Infants and Toddlers	Little or no real cognitive understanding of death Equated with separation Death anxiety expressed through separation anxiety
Preschool Children (3 to 6 years)	Egocentrism – Children believe they are at the centre of a magical world in which wishes can come true Death is from the outside The dead can come alive again Sick people can be made well again through wishing or magic
6 to 12 years	Most children acquire all aspects of a mature concept of death *Even when children with a fatal condition are not informed about their disease, they are aware of its seriousness and experience increased levels of anxiety*
Teenage years >12 years	Ask questions dealing with meaning Spiritual issues may become paramount concerns Share commonalities with adults Can return to egocentrism believing death can happen to others and not them

MULTI-DISCIPLINARY TEAM

A co-ordinated palliative care plan may involve the input of a range of professionals in the hospital and community. The precise constitution of the team depends on the individual needs of the child and family and evolves over time. Key principles in co-ordinating the activities of care providers are flexibility; clear role definition; formulation of specific goals; clear written and oral communication of information between team members and families; and the identification of a Key Worker to act as a co-ordinator, advocate and point of contact for the child and family.[30]

Care of the Team

Health care professionals can be deeply affected by the death of a child for many different reasons, some relating to the medical aspects of the process (such as perceived failure), some relating to emotional aspects and some to do with their own personal experiences which may be revisited in the context of the death.[30,34] An important priority in caring for the team is to create an environment in which care-providers are offered support and feedback to understand and come to terms with their feelings surrounding the death.

CONCLUSION

Management of end-stage lung disease is a complex process which is much easier to get wrong than right given that it is not often encountered and occurs in a highly charged emotional environment. The key to successful management lies in early, effective, open communication with the family and formulation with them of an integrated palliative care plan for the child. There is significant overlap between active respiratory treatment and symptom control underlining the importance of the joint input of paediatric respiratory and palliative care specialists early in the process.

PRACTICE POINTS

- Early open communication with the family
- Integrated Paediatric Palliative Care Planning
- Optimisation of respiratory treatments that promote wellbeing

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CME SECTION

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CME QUESTIONS/EXPLANATIONS:

Which of the following is NOT a sign that lung disease is reaching 'End Stage':

A. Increasing hospitalisation for chest infection or respiratory decompensation
B. Unrelenting weight loss that cannot be halted or reversed by supplemental nutrition
C. C.Feelings of hopelessness, irritability, loss of interest in activities and changes in eating and sleeping habits
D. Pulmonary hypertension
E. Accelerated rate of decline in pulmonary function despite therapy

Which of the following patients are good candidates for Palliative Care referral:

A. A 10 week old child with confirmed Surfactant Protein B deficiency on mechanical ventilation who has been referred for assessment for Lung Transplantation
B. A 16 year old girl with Cystic Fibrosis and an FEV_1 of 28% who is colonised with *Burkholderia cepacia* and losing weight
C. A 7 year old boy with Sickle Cell disease and pulmonary hypertension on ECHO who has been admitted to hospital for the third time in 6 months with acute chest syndrome
D. A & B only
E. All of the above

Non Invasive Ventilation is used in the management of ESLD with the aim to:

A. Improve the quality of sleep and counteract daytime hypersomnolence
B. Avoid the need for intubation and mechanical ventilation in the context of acute on chronic respiratory failure
C. Improve the sensation of breathlessness
D. Improve the ease of airway clearance
E. Manage pneumothorax

With regard to the management of dyspnoea in ESLD in children which of the following statements is TRUE:

A. Opioids should not be used because of the risk of respiratory depression
B. Visual analogue scales can be used reliably to assess symptom intensity
C. Co-administration of opioids and anxiolytics should never be considered
D. Masks may contribute to claustrophobia
E. Anxiety plays more of a role in an adult's experience of breathlessness than in a child's experience of breathlessness

With regard to the management of pain in ESLD in children which statement is FALSE:

A. The WHO recommendations include Codeine as a treatment for moderate pain
B. Medications should be scheduled by the least invasive route
C. Morphine is the medicine of choice for moderate to severe pain
D. Rocking, cuddling and TENS are elements of an 'Integrative Approach' to pain management
E. Cognitive behavioural strategies include relaxation exercises, biofeedback and hypnosis