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### Literature search results

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#### Search details

Occupational therapists giving pulmonary rehabilitation for bronchiectasis patients. Is this a better model than other ways of giving this rehabilitation?

#### Resources searched

NHS Evidence; TRIP Database; Cochrane Library; AMED; BNI; CINAHL; EMBASE; HMIC; MEDLINE; Google Scholar

**Database search terms**: bronchiectasis; BRONCHIECTASIS; “chronic lung”; “chronic respiratory”; CHRONIC LUNG DISEASE; exp RESPIRATORY TRACT DISEASES; exp LUNG DISEASES; exp LUNG DISORDERS; exp RESPIRATORY SYSTEM AND DISORDERS; “pulmonary rehabilitation”; rehabilitation; exp REHABILITATION; exp PULMONARY REHABILITATION; “occupational therap*”“; OCCUPATIONAL THERAPY; OCCUPATIONAL THERAPY SERVICE; OCCUPATIONAL THERAPISTS.

**Google search string**: bronchiectasis "pulmonary rehabilitation" ("occupational therapy" OR "occupational therapist" OR "occupational therapists") (evaluation OR measurement OR performance OR effectiveness OR outcome OR outcomes OR satisfaction OR cost OR costs OR delivery)

#### Summary

There is some research into the use of pulmonary rehabilitation for patients with bronchiectasis; however most mention the desirability of having an occupational therapist as part of the multidisciplinary team treating the patient; or study the effectiveness of pulmonary rehabilitation on its own or when compared to another treatment. There is little that discusses the effectiveness of occupational therapy’s role in pulmonary rehabilitation. For this reason I broadened the search to include rehabilitation, and respiratory infections more generally. However you may some of the following studies, especially those in the Google Scholar section, useful.
**Guidelines**

**American College of Chest Physicians**

Pulmonary rehabilitation: joint ACCP/AACVPR evidence-based clinical practice guidelines 2011

The interdisciplinary team of health-care professionals in pulmonary rehabilitation may include physicians; nurses; respiratory, physical, and occupational therapists; psychologists; exercise specialists; and/or others with appropriate expertise.

**British Thoracic Society**

Statement on pulmonary rehabilitation 2001

There is now strong scientific evidence to recommend the application of pulmonary rehabilitation programmes that comprise physical training, education, dietetics, occupational therapy, psychology, and social support. The benefits include improvements in exercise performance, health status, dyspnoea, and reduction in usage of health services. Other potential advantages are suspected but, as yet, unproven.

**Map of Medicine**

Bronchiectasis - secondary care management 2011

**MJA Clinical Guidelines**


Pulmonary rehabilitation is employed in several different chronic respiratory conditions. It involves a multidisciplinary approach, including exercise training, self-management education, and psychosocial and nutritional intervention. Inspiratory muscle training may be beneficial in adults with bronchiectasis. A recent small RCT showed that an 8-week program of pulmonary rehabilitation and inspiratory muscle training significantly improved the incremental shuttle walking test. Unless specific contraindications exist, physical activity should be encouraged.

**Evidence-based reviews**

**Published research**

1. **Effects of pulmonary rehabilitation in bronchiectasis: A retrospective study**

   **Author(s):** Ong H.K., Lee A.L., Hill C.J., Holland A.E., Denehy L.

   **Citation:** Chronic Respiratory Disease, February 2011, vol./is. 8/1(21-30), 1479-9723;1479-9731 (February 2011)

   **Publication Date:** February 2011

   **Abstract:** There is limited information about the benefits of pulmonary rehabilitation (PR) in patients with bronchiectasis. This study aimed to evaluate the effects of an out-patient PR program in patients with a primary diagnosis of bronchiectasis and to compare them with a matched COPD group who completed the same PR program. A retrospective review was conducted of patients with bronchiectasis or COPD who completed 6 to 8 weeks of PR at
two tertiary institutions. The outcome measures were the 6-minute walk distance (6MWD) and Chronic Respiratory Disease Questionnaire (CRQ). Ninety-five patients with bronchiectasis completed the PR (48 male; FEV₁, 63 [24]% predicted; age 67 [10] years). Significant improvements in 6MWD (mean change 53.4 m, 95% CI 45.0 to 61.7) and CRQ total score (mean change 14.0 units, 95% CI 11.3 to 16.7) were observed immediately following PR. In patients with complete follow-up (n = 37), these improvements remained significantly higher than baseline at 12 months (20.5 m, 95% CI 1.4 to 39.5 for 6MWD; 12.1 points, 95% CI 5.7 to 18.4 for CRQ total score). The time trend and changes in the 6MWD and CRQ scores were not significantly different between the bronchiectasis and the COPD groups (all p > 0.05). This study supports the inclusion of patients with bronchiectasis in existing PR programs. Further prospective RCTs are warranted to substantiate these findings. The Author(s) 2011.

Source: EMBASE

Full Text:
Available in fulltext at EBSCO Host

2. Better awareness, better service: Seeking currently optimal strategies against the "preventable and treatable" chronic obstructive pulmonary disease

Author(s): Shu J.

Citation: Southern Medical Journal, February 2011, vol./is. 104/2(85-86), 0038-4348 (February 2011)

Publication Date: February 2011

Source: EMBASE

3. Optimizing chronic obstructive pulmonary disease management in primary care

Author(s): Yawn B.P.

Citation: Southern Medical Journal, February 2011, vol./is. 104/2(121-127), 0038-4348 (February 2011)

Publication Date: February 2011

Abstract: Diagnosis of chronic obstructive pulmonary disease (COPD) in primary care is complex, as many clinical symptoms are similar to asthma and heart disease, which may lead to misdiagnosis and suboptimal disease management. Spirometry is the best method for diagnosing COPD and distinguishing between COPD, asthma, and cardiovascular diseases. Airway obstruction is fully reversible in asthma, but not in COPD, and can be confirmed when the postbronchodilator ratio of forced expiratory volume in one second (FEV₁) to forced vital capacity (FVC) is <0.7. Knowledge of COPD treatment guidelines and a proactive attitude toward disease management by primary care physicians are key to improving symptom control and patients’ quality of life. Identification of the appropriate drug/inhaler combination, patient education, training on inhaler use followed by regular monitoring, and pulmonary rehabilitation are also vital to successful COPD management. This review outlines steps to aid physicians in devising and implementing an optimal management plan for COPD patients. Copyright 2011 International Anesthesia Research Society.

Source: EMBASE

4. Six-minute walk test in pulmonary rehabilitation: Do all patients need a practice test?
Abstract: The six-minute walk test (6MWT) is widely used as an outcome measure in pulmonary rehabilitation programs (PRP). A learning effect for the test has been reported in COPD; however, limited data exist in patients with other respiratory diagnoses. The objectives of this study were to: (i) report the magnitude of change in 6MWD with test repetition in patients referred to an outpatient PRP, and (ii) compare the magnitude of change in 6MWD with test repetition in patients with COPD, interstitial lung disease (ILD), bronchiectasis and asthma. Methods: Retrospective study of 349 patients with stable COPD (n=245), ILD (n=21), bronchiectasis (n=33) or asthma (n=50) who performed two 6MWT at enrolment into a PRP. Results: 6MWD increased in all groups on the second test (all P<0.001). At least 80% of patients in each diagnostic group walked further on their second 6MWT. The magnitude of change (mean, 95% CI) was greater (P<0.05) in the COPD (37m, 95% CI: 33-41m) and ILD (41m, 95% CI: 27-55m) cohorts compared with the bronchiectasis (22m, 95% CI: 14-31m) and asthma (19m, 95% CI: 11-27m) cohorts. Conclusions: Respiratory diagnosis influences the magnitude of the learning effect for the 6MWT. The findings support the recommendation of a practice 6MWT at baseline assessment in order to provide an accurate measure of the effects of rehabilitation on 6MWD. This study shows that the majority of patients entering a pulmonary rehabilitation program increase their 6MWD when a repeat test is performed. The findings support the recommendation of a practice 6MWT at baseline assessment in order to provide an accurate measure of the effects of rehabilitation on 6MWD. 2010 Asian Pacific Society of Respirology.

Source: EMBASE

Author(s): Chang A.B., Bell S.C., Byrnes C.A., Grimwood K., Holmes P.W., King P.T., Kolbe J., Landau L.I., Maguire G.P., McDonald M.I., Reid D.W., Thien F.C., Torzillo P.J.

Citation: Medical Journal of Australia, September 2010, vol./is. 193/6(356-365), 0025-729X;1326-5377 (20 Sep 2010)

Publication Date: September 2010

Abstract: * Consensus recommendations for managing chronic suppurative lung disease (CSLD) and bronchiectasis, based on systematic reviews, were developed for Australian and New Zealand children and adults during a multidisciplinary workshop. * The diagnosis of bronchiectasis requires a high-resolution computed tomography scan of the chest. People with symptoms of bronchiectasis, but non-diagnostic scans, have CSLD, which may progress to radiological bronchiectasis. * CSLD/bronchiectasis is suspected when chronic wet cough persists beyond 8 weeks. Initial assessment requires specialist expertise. Specialist referral is also required for children who have either two or more episodes of chronic (>4 weeks) wet cough per year that respond to antibiotics, or chest radiographic abnormalities persisting for at least 6 weeks after appropriate therapy. * Intensive treatment seeks to improve symptom control, reduce frequency of acute pulmonary exacerbations, preserve lung function, and maintain a good quality of life. * Antibiotic selection for acute infective episodes is based on results of lower airway culture, local antibiotic susceptibility patterns, clinical severity and patient tolerance. Patients whose condition does not respond promptly or adequately to oral antibiotics are hospitalised for more intensive treatments, including intravenous antibiotics. * Ongoing treatment requires regular and coordinated primary health care and specialist review, including monitoring for complications and comorbidities. * Chest physiotherapy and regular exercise should be encouraged, nutrition optimised, environmental pollutants (including tobacco smoke) avoided, and vaccines administered according to national immunisation schedules. * Individualised long-term use of oral or nebulised antibiotics, corticosteroids, bronchodilators and mucoactive agents may provide a benefit, but are not recommended routinely.

7. Utility of the chronic respiratory questionnaire in non-cystic fibrosis (CF) bronchiectasis


Citation: Respirology, March 2010, vol./is. 15/(A78), 1323-7799 (March 2010)

Publication Date: March 2010

Abstract: Introduction: Chronic cough, reduced exercise tolerance and poor health related quality of life (HRQOL) are common clinical features of patients with non-CF bronchiectasis. The Chronic Respiratory Questionnaire (CRQ), a commonly used measure of HRQOL in COPD has not been applied in this population. The aim of this study was to identify the relationship between the CRQ and other measures of health status, including psychological function, the impact of chronic cough and exercise capacity. Methods: Twenty-seven participants (mean [SD] age 64[13] years, FEV1 70[17] %) with non-CF bronchiectasis enrolled in a trial of pulmonary rehabilitation completed three questionnaires (CRQ, Leicester Cough Questionnaire [LCQ] and Hospital Anxiety and Depression Scale [HADS]). Exercise capacity was measured using the 6-minute walk test (6MWT) and incremental shuttle walk test (ISWT). Results: None of the CRQ domains related to walking
distance on the 6MWT or ISWT (all r < 0.35, p > 0.05). There was a moderate relationship between the total CRQ score and total LCQ score (r = 0.51, p < 0.01). Greater fatigue was associated with poorer LCQ physical function due to coughing (r = 0.62, p < 0.001). CRQ emotional function (r = -0.60, p < 0.01) and mastery (r = -0.71, p < 0.001) were strongly related to depression. Conclusions: Lower HRQOL on the CRQ is associated with higher depression scores and greater impact of chronic cough in non-CF bronchiectasis. Further research will determine the responsiveness of the CRQ as a measure of HRQOL in this population.

Source: EMBASE

Full Text:

Available in fulltext at EBSCO Host

8. Six-minute walking test (6MWT): Observed adverse events and oxygen desaturation in a large cohort of patients with chronic lung disease

Author(s): Jenkins S., Cecins N.

Citation: Respirology, March 2010, vol./is. 15/(A39), 1323-7799 (March 2010)

Publication Date: March 2010

Abstract: Introduction: The 6MWT is widely used to assess patients with chronic lung disease (CLD). Anecdotal reports and studies in small numbers of patients suggest that adverse events associated with the 6MWT are rare in patients with CLD. This study reports observed adverse events and predictors of oxygen desaturation during the 6MWT in patients with stable CLD referred to an out-patient pulmonary rehabilitation service. Methods: About 741 consecutive patients completed the 6MWT in accordance with a standardised protocol that included continuous monitoring of oxygen saturation (SpO₂) and heart rate (HR, Polar). The respiratory diagnoses of the patients were chronic obstructive pulmonary disease (COPD), n = 565 (76%); interstitial lung disease (ILD), n = 84 (13%); bronchiectasis, n = 46 (6%) and asthma n = 39 (5%). Results: Observed adverse events occurred in 43 tests (6%). One test was terminated when the patient reported chest pain and one patient developed persistent tachycardia (HR > 200 bpm) immediately following the test. In 35 tests (5%), the tester instructed the patient to stop walking due to profound oxygen desaturation (SpO₂<80%). Six patients prematurely terminated the 6MWT due to intolerable symptoms. Forty-seven per cent (n = 345) of patients demonstrated oxygen desaturation, defined as a decrease in SpO₂ >=4% to <90% during the test. Pre-exercise SpO₂ was a significant predictor of desaturation in the COPD (1.79, 1.54 to 2.08, adjusted odds ratio [OR], 95% confidence intervals) and ILD (OR 1.40, 1.11 to 1.77) cohorts with FEV₁ also a predictor in patients with COPD (OR 3.02, 1.77 to 5.15). Conclusions: Profound oxygen desaturation is the commonest adverse event observed during the 6MWT in patients with stable CLD. This finding questions the American horacic Society guidelines for the 6MWT which state that oximetry is optional.

Source: EMBASE

Full Text:

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9. Does the ISWT elicit more maximal cardiorespiratory responses in non-cystic fibrosis (CF) bronchiectasis?

Author(s): Cecins N., Lee A., Holland A.E., Hill C., Rautela L., Thompson P.J., Stirling R.G., Mcdonald C.F., Jenkins S.

Citation: Respirology, March 2010, vol./is. 15/(A27), 1323-7799 (March 2010)
Abstract: The 6 minute walk test (6MWT) and incremental shuttle walk test (ISWT) are commonly used to assess functional exercise capacity, prescribe the training intensity and measure the efficacy of pulmonary rehabilitation. No studies have compared these tests in patients with non-CF bronchiectasis. Aims: To compare peak dyspnea and heart rate (HR), and nadir oxygen saturation (SpO2) during the 6MWT and ISWT in subjects with non-CF bronchiectasis. Methods: Twenty-seven participants (aged 64 +/- 13 year, FEV1 70 +/- 17%pred, FVC 82 +/- 16%pred) with non-CF bronchiectasis enrolled in a trial of pulmonary rehabilitation, completed two 6MWTs and two ISWTs in random order. Results: The 6 minute walk distance (6MWD) and the incremental shuttle walk distance (ISWD) were significantly greater on the 2nd test (both p <0.02). The mean (95% CI) increase in the 6MWD was 22 m (9 to 35 m); 4% (2 to 7%) and in the ISWD was 22 m (4 to 39 m); 6% (2 to 10%). The greatest 6MWD and ISWD was 560 +/- 86 m and 446 +/- 151 m respectively. There was a strong relationship between the 6MWD and ISWD (r = 0.89, p <0.001). Peak dyspnoea was higher for the ISWT (4.2 +/- 1.2 vs. 3.6 +/- 1.2, p = 0.02) but there was no difference in peak HR (76 +/- 11 vs. 75 +/- 10% age pred maximal HR, p = 0.67) or nadir SpO2 (93.5 vs. 93.3%, p = 0.65). Conclusion: Although peak HR was similar, the externally paced, incremental nature of the ISWT may account for the higher dyspnea scores in these subjects with non-CF bronchiectasis. Future research will determine the responsiveness of the ISWT and 6MWT following pulmonary rehabilitation in this population.

Source: EMBASE

Full Text:

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10. Singing for children and adults with bronchiectasis

Author(s): Irons J.Y., Kenny D.T., Chang A.B.

Citation: Cochrane database of systematic reviews (Online), 2010, vol./is. 2/(CD007729), 1469-493X (2010)

Publication Date: 2010

Abstract: BACKGROUND: Bronchiectasis is a common respiratory disease, especially in developing countries. Its cause varies from chronic infection to rare immune deficiencies. Bronchiectasis can be present with other respiratory diseases, such as chronic obstructive pulmonary disease (COPD). People with bronchiectasis may suffer from chronic cough, fatigue, shortness of breath, chest pain and coughing up blood. Their lung function may decline with time. These can also have a negative impact on their quality of life. Thus, a holistic management is needed to provide treatment and support. Therapies which include breathing manoeuvres, such as singing, may have health benefits for respiratory function and psychological well being. OBJECTIVES: To evaluate the effects of a singing intervention as a therapy on the quality of life, morbidity, respiratory muscle strength and pulmonary function of children and adults with bronchiectasis. SEARCH STRATEGY: We searched the Cochrane Airways Group (CAG) trials register, the Cochrane Central Register of Controlled Trials, major allied complementary databases, and clinical trials registers. Professional organisations and individuals were also contacted. CAG performed searches in February, and additional searches were carried out in June 2009. SELECTION CRITERIA: Randomised controlled trials in which singing (as an intervention) is compared with either a sham intervention or no singing in patients with bronchiectasis. DATA COLLECTION AND ANALYSIS: Two authors independently reviewed the titles, abstracts and citations to assess potential relevance for full review. No eligible trials were identified and thus no data were available for analysis. MAIN RESULTS: No meta-analysis could be performed. AUTHORS’ CONCLUSIONS: In the absence of data, we cannot draw any conclusion to support or refute the adoption of singing as an intervention for people with bronchiectasis. Given the simplicity of the potentially beneficial intervention, future randomised controlled trials are required to evaluate singing therapy for people with
bronchiectasis.

**Source:** EMBASE

**Full Text:**

Available in *fulltext at Wiley* [Link](#)

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**11. The effects of pulmonary rehabilitation in patients with non-cystic fibrosis bronchiectasis: protocol for a randomised controlled trial**

**Author(s):** Lee A.L., Cecins N., Hill C.J., Holland A.E., Rautela L., Stirling R.G., Thompson P.J., McDonald C.F., Jenkins S.

**Citation:** BMC pulmonary medicine, 2010, vol./is. 10/(5), 1471-2466 (2010)

**Publication Date:** 2010

**Abstract:** BACKGROUND: Non-cystic fibrosis bronchiectasis is characterised by sputum production, exercise limitation and recurrent infections. Although pulmonary rehabilitation is advocated for this patient group, its effects are unclear. The aims of this study are to determine the short and long term effects of pulmonary rehabilitation on exercise capacity, cough, quality of life and the incidence of acute pulmonary exacerbations. METHODS/DESIGN: This randomised controlled trial aims to recruit 64 patients with bronchiectasis from three tertiary institutions. Participants will be randomly allocated to the intervention group (supervised, twice weekly exercise training with regular review of airway clearance therapy) or a control group (twice weekly telephone support). Measurements will be taken at baseline, immediately following the intervention and at six and 12 months following the intervention period by a blinded assessor. Exercise capacity will be measured using the incremental shuttle walk test and the six-minute walk test. Quality of life and health status will be measured using the Chronic Respiratory Questionnaire, Leicester Cough Questionnaire, Assessment of Quality of Life Questionnaire and the Hospital Anxiety and Depression Scale. The rate of hospitalisation will be captured as well as the incidence of acute pulmonary exacerbations using a daily symptom diary. DISCUSSION: Results from this study will help to determine the efficacy of supervised twice-weekly pulmonary rehabilitation upon exercise capacity and quality of life in patients with bronchiectasis and will contribute to clinical practice guidelines for physiotherapists in the management of this population. TRIAL REGISTRATION: This study protocol is registered with ClinicalTrials.gov (NCT00885521).

**Source:** EMBASE

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**12. The effects of an eight-week pulmonary rehabilitation programme in patients with bronchiectasis... Annual Conference of the Irish Society of Chartered Physiotherapists.**

**Author(s):** Cassidy C, Baily C, Quinn J, Korn B

**Citation:** Physiotherapy Ireland, 01 December 2009, vol./is. 30/2(0-),

**Publication Date:** 01 December 2009
13. Clinical challenges in managing bronchiectasis series

**Author(s):** Tsang K.W., Bilton D.

**Citation:** Respirology, July 2009, vol./is. 14/5(637-650), 1323-7799;1440-1843 (July 2009)

**Publication Date:** July 2009

**Abstract:** Bronchiectasis is a common disease in the Asia-Pacific and affected patients suffer from chronic sputum production and recurrent exacerbations.Bronchiectasis is largely idiopathic although there is diverse aetiology. The pathogenesis of bronchiectasis comprises infective, inflammatory and enzymatic elements. These interact to perpetuate continued airway damage in bronchiectasis leading to progressive airway and lung damages. Treatment of bronchiectasis is unsatisfactory and there are only very few trials. Existing data suggest some efficacy of inhaled corticosteroid therapy, which has been shown recently to clinical and anti-inflammatory properties in bronchiectasis. Immunomodulating agent such as low-dose macrolides have also been shown to have some efficacy although more data are needed to advocate their long-term usage. Antibiotic therapy is complex in bronchiectasis and includes short-term empirical treatment for acute exacerbation, and consideration of long-term maintenance of oral, nebulized and i.v. therapy. This long-neglected illness should receive more research attention in order that we can have better understanding of its aetiology, pathogenesis and treatment. 2009 Asian Pacific Society of Respirology.

**Source:** EMBASE

**Full Text:**

Available in fulltext at EBSCO Host

14. Guidelines for the physiotherapy management of the adult, medical, spontaneously breathing patient


**Citation:** Thorax, May 2009, vol./is. 64/SUPPL. 1(i1-i52), 0040-6376;1468-3296 (May 2009)

**Publication Date:** May 2009

**Source:** EMBASE

**Full Text:**

Available in fulltext at Highwire Press

15. Nurse led telephone follow up in ovarian cancer: a psychosocial perspective.

**Author(s):** Cox A, Bull E, Cockle-Hearne J, Knibb W, Potter C, Faithfull S

**Citation:** European Journal of Oncology Nursing, 01 December 2008, vol./is. 12/5(412-417), 14623889

**Publication Date:** 01 December 2008
Abstract: Survivorship is a relatively new concept in ovarian cancer due to improvements in diagnosis, surgery and chemotherapy. As more women require long term follow up for ovarian cancer the pressure on these services is increased and the question of how best to care for these women needs to be addressed. This paper considers the results of a pilot study of nurse led telephone follow up in ovarian cancer from a psychosocial perspective. Fifty-two women received telephone follow up over a 10-month period; one aspect of this intervention was the opportunity for women to discuss psychosocial concerns with the clinical nurse specialist. A nurse database held records of patient discussions, and patient feedback regarding the service was collected using FACT Ovarian quality of life questionnaire, plus the satisfaction and experience with follow up questionnaire. Thirty-three women were recorded as discussing psychological concerns with the nurse, 42% discussed feelings of anxiety or depression and 33% discussed fear of disease recurrence. Thirty-nine women were recorded as having discussed social concerns with the nurse, 56% discussed their family (husband, children, etc.), 51% discussed work and/or finances, and 41% discussed sexual intimacy. The majority of women (73%) expressed a preference for nurse led telephone follow up, the main advantages were reported as the relationship and discussions between the patient and the nurse, and the convenience of having follow up appointments over the phone instead of attending clinic. This pilot study suggests that nurse led telephone follow up offers an acceptable opportunity for psychosocial support for women with ovarian cancer.

Source: CINAHL

16. Diagnosis and treatment of bronchiectasis


Citation: Archivos de Bronconeumologia, November 2008, vol./is. 44/11(629-640), 0300-2896;1579-2129 (November 2008)

Publication Date: November 2008

Abstract: Bronchiectasis is the end result of several different diseases that share principles of management. The clinical course usually involves chronic bronchial infection and inflammation, which are associated with progression. The cause of bronchiectasis should always be investigated, particularly when it can be treated. We recommend evaluating etiology, symptoms, bronchial colonization and infection, respiratory function, inflammation, structural damage, nutritional status, and quality of life in order to assess severity and to monitor clinical course. Care should be supervised by specialized units, at least when there is a history of chronic bronchial infection, recurrent exacerbations, or a cause that is likely to respond to treatment. Improving symptoms and halting progression are the goals of management, which is based on treatment of the underlying cause and of acute or chronic infections and on the drainage of secretions. Complications that arise must also be treated. Antibiotic prescription is guided by monitoring how well infection is being controlled, and this is indicated by the color of sputum and a reduction in the number of exacerbations. We recommend inhaled antibiotics when bronchial infection is chronic and does not respond to oral antibiotics or when these cause side effects, or when the cause is Pseudomonas species or other bacteria resistant to oral antibiotics. Inhaled administration is also advisable to treat initial colonization by Pseudomonas species.

Source: EMBASE

17. Management of bronchiectasis and chronic supplicative lung disease in indigenous children and adults from rural and remote Australian communities.

Author(s): Chang AB, Grimwood K, Maguire G, King PT, Morris PS, Torzillo PJ

Citation: Medical Journal of Australia, October 2008, vol./is. 189/7(386-93), 0025-729X;0025-729X (2008 Oct 6)
Publication Date: October 2008

Abstract: 1) Consensus recommendations for managing bronchiectasis in Indigenous children and adults living in rural and remote regions were developed during a multidisciplinary workshop and were based on available systematic reviews. 2) Successful diagnosis, management and prevention of bronchiectasis in Indigenous Australians requires access to comprehensive health care services, as well as improved housing, education and employment and reduced poverty levels. 3) Diagnosis of bronchiectasis requires a chest high-resolution computed tomography scan. Children who have bronchiectasis symptoms but non-diagnostic scans are described as having chronic suppurative lung disease (CSDL), rather than bronchiectasis. Untreated CSDL may progress to bronchiectasis. 4) Chronic wet cough (> 4 weeks) or recurrent wet cough (> 2 episodes/year) are important but often under-reported symptoms. Bronchiectasis is suspected when chronic cough is excessively prolonged (> 12 weeks) or if a chest radiographic abnormality persists despite appropriate therapy. 5) Intensive treatment aims to improve symptom control and quality of life while preserving lung function and reducing acute exacerbation frequency. 6) Antibiotics should be prescribed for acute infective episodes according to culture results of respiratory secretions, local susceptibility patterns and clinical severity. Patients not responding promptly to oral antibiotics should be hospitalised for more intensive treatment. 7) Ongoing care requires regular primary health care and specialist review, including monitoring for complications and comorbidities. Corticosteroids, bronchodilators and mucoactive agents may be used in individual cases, but routine use is not recommended. Physiotherapy and exercise should be encouraged, nutrition optimised, environmental pollutants (including tobacco smoke) avoided, and immunisations maintained.

Source: MEDLINE

18. Bronchiectasis: pathophysiology, presentation and management.

Author(s): Farley AH, Hendry C, Johnstone CC

Citation: Nursing Standard, 24 September 2008, vol./is. 23/3(50-56), 00296570

Publication Date: 24 September 2008

Abstract: Bronchiectasis, although not as common as other respiratory disorders, can be life-limiting and remains a significant problem for many patients, as well as being a considerable challenge for nurses caring for this patient group. This article examines the pathophysiology and presentation of bronchiectasis and identifies various management strategies.

Source: CINAHL

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19. Current Australian and New Zealand physiotherapy practice in the management of patients with bronchiectasis and chronic obstructive pulmonary disease.
Physiotherapy is an important component of the management of patients with non-cystic fibrosis bronchiectasis and chronic obstructive pulmonary disease (COPD), yet the types of interventions commonly utilised and measures of treatment efficacy are unclear. This study aimed to determine the current clinical practice of airway clearance therapy and exercise prescription in bronchiectasis and COPD. Two postal questionnaires were distributed to physiotherapists throughout Australia and New Zealand (n=120). Of the 120 questionnaires mailed in each study, 102 and 98 surveys were returned (a response rate of 85% and 82% respectively). The most commonly used airway clearance techniques for both conditions included active cycle of breathing technique, positioning, deep breathing exercises and positive expiratory pressure (PEP) therapy using Bottle PEP. Physical exercise was recommended by the majority of respondents for patients with bronchiectasis and COPD (98% and 100% respectively) with pulmonary rehabilitation ‘always’ prescribed (n=41, 39%). Respondents primarily used the Six-Minute Walk Test as a formal measure of exercise efficacy (n=71, 78%). This survey demonstrated that the most frequently employed airway clearance techniques were selected in similar proportions for both diseases. Assessment of exercise efficacy included measurements which are evaluation tools within pulmonary rehabilitation programs.
overview of systematic reviews

Author(s): Garrod R., Lasserson T.

Citation: Respiratory Medicine, December 2007, vol./is. 101/12(2429-2436), 0954-6111 (Dec 2007)

Publication Date: December 2007

Abstract: Four Cochrane respiratory reviews of relevance to physiotherapeutic practice are discussed in this overview. Physiotherapists aim to improve ventilation for people with respiratory disease, and approach this using a variety of techniques. As such, the reviews chosen for discussion consider a wide range of interventions commonly used by physiotherapists: breathing exercises, bronchopulmonary hygiene techniques and physical training for peripheral and respiratory muscles. The reviews show that breathing exercises may have beneficial effects on health-related quality of life in asthma, and that inspiratory muscle training (IMT) may improve inspiratory muscle strength. However, the clinical relevance of increased respiratory muscle strength per se is unknown, and the longer-term effects of breathing exercises on morbidity have not been considered. One review clearly shows that bronchopulmonary hygiene techniques in chronic obstructive pulmonary disease (COPD) and bronchiectasis increase sputum production. Frequent exacerbation is associated with increased sputum and high bacterial load, suggesting that there may be important therapeutic benefit of improved sputum clearance. Future studies evaluating the long-term effects of bronchopulmonary hygiene techniques on morbidity are recommended. In the third review, the importance of pulmonary rehabilitation in the management of COPD is once again reinforced. Physiotherapists are crucial to the delivery of exercise training programmes, and it is likely that the effects of pulmonary rehabilitation extend to other important outcomes, such as hospital admission and re-admission. On the basis of the evidence provided by these Cochrane reviews, this overview highlights important practice points of relevance to physiotherapy, and recommendations for future studies. 2007 Elsevier Ltd. All rights reserved.

Source: EMBASE

22. Treatment of bronchiectasis in adults

Author(s): Ten Hacken N.H.T., Wijkstra P.J., Kerstjens H.A.M.

Citation: British Medical Journal, November 2007, vol./is. 335/7629(1089-1093), 0959-8146 (24 Nov 2007)

Publication Date: November 2007

Source: EMBASE

Full Text:
Available in fulltext at Highwire Press
Available in print at Grantham Hospital Staff Library
Available in print at Lincoln County Hospital Professional Library
Available in print at Louth County Hospital Medical Library
Available in print at Pilgrim Hospital Staff Library

23. Dissociation of lung function, dyspnea ratings and pulmonary extension in bronchiectasis

Author(s): Martinez-Garcia M.A., Perpina-Tordera M., Soler-Cataluna J.J., Roman-
Bronchiectasis is a heterogeneous disease in terms of its clinical and functional presentation. Some isolated parameters have been used to assess the severity of bronchiectasis or its response to treatment. A study was undertaken to evaluate whether lung function, dyspnea and extension of the disease are separate entities in the impact of bronchiectasis upon patients using factor analysis. Patients with bronchiectasis diagnosed by high-resolution computed tomography (HRCT) and airflow obstruction defined by FEV1/FVC<70% were included. Data were collected relating to clinical history, three different clinical ratings of dyspnea (Medical Research Council (MRC), Borg scale and Basal Dyspnea Index), the extent of bronchiectasis and functional variables. A total of 81 patients (mean age (SD): 69.5 (8.7)) years were included. The degree of dyspnea (MRC) was 1.9 (0.8). Mean FEV1 was 1301 ml (56.9% pred.). Four factors were found that accounted for 84.1% of the total data variance. Factor 1 (45.6% of the data variance) included the three measurements of dyspnea. Factor 2 (16% variance) comprised airflow obstruction parameters (FEV1, FEV1/FVC and PEF). Factor 3 (13.8% variance) included RV/TLC and RV (lung hyperinflation). Factor 4 (8.6% variance) included bronchiectasis extent. Dyspnea was more closely correlated with lung hyperinflation (r:0.33-0.54) than with airflow obstruction parameters (r:0.17-0.26). Conclusions: Airflow obstruction, dyspnea, lung hyperinflation and the lung extent of the bronchiectasis are four independent entities in the impact of bronchiectasis upon patients. 2007 Elsevier Ltd. All rights reserved.

Positive expiratory pressure and oscillatory positive expiratory pressure therapies... includes discussion.

Author(s): Myers TR

Airway clearance techniques, historically referred to as chest physical therapy, have traditionally consisted of a variety of breathing maneuvers or exercises and manual percussion and postural drainage. The methods and types of airway clearance techniques and devices have rapidly increased in an effort to find a more efficacious strategy that allows for self-therapy, better patient adherence and compliance, and more efficient durations of care. Mechanically applied pressure devices have migrated from European countries over the last several decades to clinical practice in the United States. I conducted a comprehensive MEDLINE search of two such devices: positive expiratory pressure (PEP) and oscillatory positive expiratory pressure (OPEP) and their role in airway clearance strategies. This was followed by a comprehensive search for cross-references in an attempt to identify additional studies. The results of that search are contained and reported in this review. From a methods standpoint, most of the studies of PEP and OPEP for airway clearance are limited by crossover designs and small sample sizes. While PEP and OPEP do not definitively prove superiority to other methods of airway clearance strategies, there is no clear evidence that they are inferior. Ultimately, the correct choice may be an airway clearance strategy that is clinically and cost effective, and is preferred by the patient so that adherence and compliance can be at the very least supported.

Airway clearance applications in infants and children... includes discussion.

Author(s): Schechter MS
Abstract: The rationale for airway clearance therapy and basic principles of its application are identical for children and adults, but there are important differences in physiology (regarding airway mucus characteristics and airway mechanics) and pathological processes in children, as well as other considerations unique to the pediatric population. The major obstacle in reviewing the evidence for efficacy of airway clearance therapy in pediatrics is the lack of data from well-performed, adequately powered clinical trials. This problem is partially alleviated by the use of published meta-analyses. A review of pediatric studies suggests that airway clearance therapy is of clear and proven benefit in the routine care of cystic fibrosis, and that no specific airway-clearance technique is clearly superior, but for any individual patient the technique that is most likely to maximize patient adherence to treatment is preferred. Airway clearance therapy appears likely to be of benefit in the routine care of children with neuromuscular disease and cerebral palsy, and is probably of benefit in treating atelectasis in children on mechanical ventilation. Airway clearance therapy may be of benefit in preventing post-extubation atelectasis in neonates. Airway clearance therapy appears to be of minimal to no benefit in the treatment of children with acute asthma, bronchiolitis, hyaline membrane disease, and those on mechanical ventilation for respiratory failure in the pediatric intensive care unit, and it is not effective in preventing atelectasis in children immediately following surgery. All in all, however, given that these conclusions are based on very little data, future well-performed clinical trials might change the weight of evidence to contradict these current conclusions.

Source: CINAHL

26. Analysis of the factors related to mortality in patients with bronchiectasis

Author(s): Onen Z.P., Eris Gulbay B., Sen E., Akkoca Yildiz O., Saryal S., Acican T., Karabiyikoglu G.

Citation: Respiratory Medicine, July 2007, vol./is. 101/7(1390-1397), 0954-6111 (Jul 2007)

Abstract: Background: Bronchiectasis is a common disabling but rarely fatal disease. However the long-term prognosis and risk factors for mortality are not well known. Objective: The aim of this study was to determine prospectively the survival and predictive factors of mortality in patients with bronchiectasis, during 4-year follow-up. Patients and methods: From September 2000 to January 2005 survival of bronchiectasis (as evaluated by computed tomography) and predictors of mortality were assessed in 98 outpatients. Fifty-one of the patients had self-reported history of pulmonary infection including tuberculosis. Baseline data, reevaluated in every single year according to scheduled visits. Results: The mean age was 61+/−10 and 74% of the patients were female. In total, 16 patients (16.3%) died; mean survival time was 44.06+/−1.6 months. The survival rates were 97%, 89%, 76%, 58% at 1, 2, 3 and 4 years, respectively. Cox proportional hazard model revealed that long-term mortality was significantly associated with age, body mass index (BMI), Medical Research Council (MRC) dyspnea scale, vaccination, radiographic extent, hypoxemia, hypercapnia and functional parameters. However, MRC and BMI had more significant effects on the mortality than the functional parameters. Conclusions: These results suggest that high BMI, regular vaccination and scheduled visits may have beneficial effects on the survival of bronchiectasis. Besides, presence of hypoxemia, hypercapnia, dyspnea level and radiographic extent were more closely correlated with mortality. 2007 Elsevier Ltd. All rights reserved.

Source: EMBASE

27. Self-administered acupressure reduces the symptoms that limit daily activities in bronchiectasis patients: pilot study findings.
Author(s): Maa SH, Tsou TS, Wang KY, Wang CH, Lin HC, Huang YH

Citation: Journal of Clinical Nursing, April 2007, vol./is. 16/4(794-804), 0962-1067;0962-1067 (2007 Apr)

Publication Date: April 2007

Abstract: AIMS AND OBJECTIVES: To examine and compare the effects of acupressure on the perceived health-related quality of life of the participants with bronchiectasis. BACKGROUND: In an attempt to offer comfort, pain control and symptom management, nursing is becoming increasingly involved in offering complementary-alternative medicine as part of its caring-healing focus in comprehensive patient care. Acupressure is one such modality that is being increasingly used by both medical and nursing professionals. While acupressure has been reported to have beneficial effects in patients with respiratory disease, the benefits to bronchiectasis patients have remained uncertain. DESIGN: A randomized, partially blinded study consisting of three groups. METHODS: Thirty-five out-patients of both genders, aged 59.46 SD 11.52 years, who were suffering from bronchiectasis, were randomly split into one of three groups: standard care with supplemental acupressure for eight weeks (11 participants); standard care with supplemental sham acupressure for eight weeks (11 participants); and standard care alone (13 participants). Outcomes were determined by changes in daily sputum amounts, sputum self-assessment, six-minute walking distance, breathing difficulty (measured on the dyspnea visual analogue scale) and health-related quality of life (measured by the Saint George Respiratory Questionnaire). RESULTS: The sputum self-assessment score improved over time for the sham acupressure participants (P = 0.03), when compared with the controls. For acupressure participants, the Saint George respiratory questionnaire activity component scores also improved over time, compared with controls (P = 0.01) after adjustment for covariates (treatment, time, age, sex and baseline values). Other variables did not differ between the standard care alone group and the other two groups. CONCLUSIONS: Eight weeks of self-administered acupressure could be useful in reducing the effects of bronchiectasis on a patient’s daily activities. RELEVANCE TO CLINICAL PRACTICE: Acupressure may be regarded as a viable nursing intervention.

Source: MEDLINE

Full Text:
Available in fulltext at Ovid
Available in fulltext at EBSCO Host
Available in print at Grantham Hospital Staff Library
Available in print at Pilgrim Hospital Staff Library


Author(s): Lavery K, O'Neill B, Elborn JS, Reilly J, Bradley JM

Citation: European Respiratory Journal, March 2007, vol./is. 29/3(541-7), 0903-1936;0903-1936 (2007 Mar)

Publication Date: March 2007

Abstract: Self-management programmes for chronic disease are a high priority for healthcare providers. The content and method of delivery of self-management should give consideration to the specific requirements of the disease population. The aims of the present study were to assess the physical and psychosocial impact of bronchiectasis, to determine whether patients with bronchiectasis are receptive to self-management and to identify any obstacles or sources of support for a disease-specific self-management
programme. A total of 32 patients with a diagnosis of bronchiectasis attended four focus groups. Each focus group was videotaped and subjected to qualitative analysis using the grounded theory approach. Bronchiectasis had an impact on patients' physical and psychosocial well-being. Patients demonstrated the potential to self-manage with strategies including self-regulation of medication and airway clearance. Perceived obstacles to self-management included lack of information and confidence. Patients suggested that self-management could be promoted through disease-specific information and appropriate healthcare procedures. In summary, patients with bronchiectasis have their lives disrupted by this chronic condition, but are receptive to self-management. The present study has provided information from the patients' perspective of elements which need to be included in a successful disease-specific self-management programme.

Source: MEDLINE

Full Text:
Available in fulltext at Highwire Press
Available in print at Pilgrim Hospital Staff Library

29. Bronchiectasis

Author(s): King P., Holdsworth S., Freezer N., Holmes P.

Citation: Internal Medicine Journal, November 2006, vol./is. 36/11(729-737), 1444-0903;1445-5994 (Nov 2006)

Publication Date: November 2006

Abstract: Bronchiectasis is generally classified into cystic fibrosis and non-cystic fibrosis bronchiectasis. This review article describes non-cystic fibrosis bronchiectasis in adults. Bronchiectasis can be considered a heterogeneous condition characterized by irreversible airway dilatation with chronic bronchial infection/inflammation. It remains a common condition and is a major cause of respiratory morbidity. Many factors are associated with bronchiectasis, but most commonly patients will have idiopathic disease. Important clinical findings include chronic productive cough, rhinosinusitis, fatigue and bi-basal crackles. Patients have usually had symptoms for many years. Diagnosis is confirmed by high-resolution computed tomography scanning using standardized criteria. Spirometry shows moderate airflow obstruction and there is a high prevalence of bronchial hyperreactivity. The most common pathogens are non-typeable Haemophilus influenzae and Pseudomonas aeruginosa. There may be considerable overlap with other chronic airway diseases. Treatment regimens are still not well defined. Patients tend to have ongoing symptoms and decline in respiratory function despite treatment. 2006 Royal Australasian College of Physicians.

Source: EMBASE

Full Text:
Available in fulltext at EBSCO Host

30. Pulmonary rehabilitation improves exercise tolerance in patients with bronchiectasis.

Author(s): Bradley J, Moran F

Citation: Australian Journal of Physiotherapy, 01 March 2006, vol./is. 52/1(65-65), 00049514

Publication Date: 01 March 2006

Author(s): Byrnes C

Citation: Paediatric Respiratory Reviews, 2006, vol./is. 7 Suppl 1/(S255-7), 1526-0542;1526-0542 (2006)

Publication Date: 2006

Source: MEDLINE

32. Exercise training and inspiratory muscle training in patients with bronchiectasis.

Author(s): Goldstein RS

Citation: Thorax, November 2005, vol./is. 60/11(889-90), 0040-6376;0040-6376 (2005 Nov)

Publication Date: November 2005

Source: MEDLINE

33. Exercise training and inspiratory muscle training in patients with bronchiectasis.

Author(s): Goldstein R.S.

Citation: Thorax, November 2005, vol./is. 60/11(889-890), 0040-6376 (Nov 2005)

Publication Date: November 2005

Source: EMBASE

34. Exercise training and inspiratory muscle training in patients with bronchiectasis.
Abstract: Background: Bronchiectasis is a chronic suppurative lung disease often characterised by airflow obstruction and hyperinflation, and leading to decreased exercise tolerance and reduced health status. The role of pulmonary rehabilitation (PR) and inspiratory muscle training (IMT) has not been investigated in this group of patients. Methods: Thirty two patients with idiopathic bronchiectasis were randomly allocated to one of three groups: PR plus sham IMT (PR-SHAM), PR plus targeted IMT (PR-IMT), or control. All patients (except the control group) underwent an 8 week training programme of either PR or PR plus targeted IMT. Exercise training during PR was performed three times weekly at 80% of the peak heart rate. IMT was performed at home for 15 minutes twice daily over the 8 week period. Results: PR-SHAM and PR-IMT resulted in significant increases in the incremental shuttle walking test of 96.7 metres (95% confidence interval (CI) 59.6 to 133.7) and 124.5 metres (95% CI 63.2 to 185.9), respectively, and in endurance exercise capacity of 174.9% (95% CI 34.7 to 426.1) and 205.7% (95% CI 31.6 to 310.6). There were no statistically significant differences in the improvements in exercise between the two groups. Significant improvements in inspiratory muscle strength were also observed both in the PR-IMT group (21.4 cm H_2O increase, 95% CI 9.3 to 33.4; p = 0.008) and the PR-SHAM group (12.0 cm H_2O increase, 95% CI 1.1 to 22.9; p = 0.04), the magnitude of which were also similar (p = 0.220). Improvements in exercise capacity were maintained in the PR-IMT group 3 months after training, but not in the PR-SHAM group. Conclusion: PR is effective in improving exercise tolerance in bronchiectasis but there is no additional advantage of simultaneous IMT. IMT may, however, be important in the longevity of the training effects.

Source: EMBASE

Full Text:
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Available in fulltext at National Library of Medicine
Available in print at Pilgrim Hospital Staff Library

35. Defining the role of pulmonary rehab in non-COPD lung disease

Author(s): Kyprianou A.C., Russo R.M.

Citation: Journal of Respiratory Diseases, March 2005, vol./is. 26/3(105-114), 0194-259X (Mar 2005)

Publication Date: March 2005

Abstract: In addition to its well-established benefits in persons with chronic obstructive pulmonary disease, pulmonary rehabilitation can be beneficial in patients with other lung diseases, such as interstitial lung disease (ILD), asthma, and cystic fibrosis, as well as in those with impaired pulmonary function caused by neuromuscular disease. Components of a pulmonary rehabilitation program may include education of patients and their families, psychosocial support, pharmacologic therapy, supplemental oxygen, breathing retraining, and exercise. In patients with ILD, incremental and constant-load exercise tests, strength tests, and the 6-minute walk test with oximetry help assess functional improvement. Important factors for the success of pulmonary rehabilitation in patients with asthma include premedication with inhaled beta_2-agonists, exercise in a warm indoor pool or varied aerobic workouts, long warm-ups and cooldowns, and interval training.
36. Airway clearance in the ICU: a critical need for improvement.

**Author(s):** Finder JD

**Citation:** RT: The Journal for Respiratory Care Practitioners, 01 March 2005, vol./is. 18/3(28-29), 10406050

**Publication Date:** 01 March 2005

**Abstract:** We take airway clearance for granted until something comes along that impairs it. Airway clearance consists of two separate but connected, mechanisms: mucociliary clearance and cough clearance. Mucociliary clearance refers to the escalator mechanism in which the ciliated respiratory epithelial cells beat, propelling a thin layer of mucus in the direction of the airway opening. Secretions that reach the central airways are coughed out and either swallowed or expectorated. Primary diseases of mucociliary clearance are cystic fibrosis (CF) and primary ciliary dyskinesia. Secondary diseases of mucociliary clearance include bronchiectasis and chronic obstructive pulmonary disease (COPD).

Source: CINAHL


**Citation:** Australian Journal of Physiotherapy, 2005, vol./is. 51/2(71-85), 0004-9514;0004-9514 (2005)

**Publication Date:** 2005

**Abstract:** The purpose of this project was to summarise the available evidence on the effectiveness of exercise therapy for patients with disorders of the musculoskeletal, nervous, respiratory, and cardiovascular systems. Systematic reviews were identified by means of a comprehensive search strategy in 11 bibliographic databases (08/2002), in combination with reference tracking. Reviews that included (i) at least one randomised controlled trial investigating the effectiveness of exercise therapy, (ii) clinically relevant outcome measures, and (iii) full text written in English, German or Dutch, were selected by two reviewers. Thirteen independent and blinded reviewers participated in the selection, quality assessment and data-extraction of the systematic reviews. Conclusions about the effectiveness of exercise therapy were based on the results presented in reasonable or good quality systematic reviews (quality score > or = 60 out of 100 points). A total of 104 systematic reviews were selected, 45 of which were of reasonable or good quality. Exercise therapy is effective for patients with knee osteoarthritis, sub-acute (6 to 12 weeks) and chronic (> or = 12 weeks) low back pain, cystic fibrosis, chronic obstructive pulmonary disease, and intermittent claudication. Furthermore, there are indications that exercise therapy is effective for patients with ankylosing spondylitis, hip osteoarthritis, Parkinson's disease, and for patients who have suffered a stroke. There is insufficient evidence to support or refute the effectiveness of exercise therapy for patients with neck pain, shoulder pain, repetitive strain injury, rheumatoid arthritis, asthma, and bronchiectasis. Exercise therapy is not effective for patients with acute low back pain. It is concluded that exercise therapy is effective for a wide range of chronic disorders.

Source: MEDLINE

38. Effectiveness of pulmonary rehabilitation in patients with asthma and
ch**on**c obstructive pulmonary disease (COPD)

**Author(s):** Lusuardi M., Garuti G., Massobrio M., Spagnolatti L.

**Citation:** Minerva Pneumologica, January 0001, vol./is. 48/1(73-84), 0026-4954 (Marzo 2009)

**Publication Date:** January 0001

**Abstract:** According to the European Respiratory Society/American Thoracic Society (ERS/ATS) definition "Pulmonary rehabilitation is an evidence-based, multidisciplinary, and comprehensive intervention for patients with chronic respiratory diseases who are symptomatic and often have decreased daily life activities. Integrated into the individualized treatment of the patient, PR is designed to reduce symptoms, optimize functional status, increase participation, and reduce health care costs through stabilizing or reversing systemic manifestations of the disease". There is scientific evidence that PR improves dyspnea, exercise tolerance and quality of life in patients with chronic obstructive pulmonary disease (COPD). Pulmonary rehabilitation (PR) may be indicated also in other obstructive respiratory disorders such as bronchial asthma, cystic fibrosis, bronchiectasis, and conditions such as pre- or post surgical treatment in major thoracic and abdominal surgery, prevention of complications in the respiratory intensive care unit. Optimal drug treatment and smoking cessation are important pre-requisites for starting PR. Physical training is the main component of any PR programme (A degree of evidence) with particular regard to exercise training of lower limbs. Interval training is preferable for patients with severe symptom limitation. Other important items of a PR programme are: upper extremity training, respiratory muscle training, breathing exercises, chest physiotherapy, health education, psychosocial support, occupational therapy, and nutrition. After a baseline functional assessment, a correct outcome measurement must compare end-of-programme versus baseline evaluation of exercise capacity with an ergometric test or a 6min walking test, evaluation of dyspnea during exercise (Borg or Visual Analogue Scale [VAS]) or in daily life activities (MRC, BDI/TDI) and quality of life with a specific questionnaire such as the Saint George's Respiratory Questionnaire (SGRQ).

**Source:** EMBASE

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**Some additional results**

39. Medical treatment of bronchiectasis: scientific evidence

**Author(s):** Calderon Gonzalez AM

**Citation:** Rehabilitacion, 2005, vol./is. 39/2(70-7), 0048-7120 (2005)

**Publication Date:** 2005

**Source:** AMED

40. Pulmonary rehabilitation: An interdisciplinary approach.

**Author(s):** Garrod, R

**Citation:** Int J Therapy & Rehabilitation, November 2005, vol./is. 12/11(476), 1741-1645 (2005 Nov)

**Publication Date:** November 2005

**Abstract:** Multidisciplinary rehabilitation programmes are described for COPD patients. The role of physiotherapists, nurses, dieticians and occupational therapists in a holistic
approach to pulmonary rehabilitation is described. 6 refs.

Source: BNI

Full Text:
Available in fulltext at EBSCO Host

Available in print at Pilgrim Hospital Staff Library

41. A pilot study of a pulmonary rehabilitation programme evaluated by four adults with chronic obstructive pulmonary disease.

Author(s): Norweg A, Bose P, Snow G, Berkowitz ME

Citation: Occupational Therapy International, 2008, vol./is. 15/2(114-32), 0966-7903:0966-7903 (2008)

Publication Date: 2008

Abstract: The purpose of this qualitative study was to analyse participants' perceptions of a pulmonary rehabilitation programme, which combined occupational therapy with physical therapy. Semi-structured interviews were used to collect data from four adults with chronic obstructive pulmonary disease (COPD) who attended an outpatient pulmonary rehabilitation programme in New York City. Features of the occupational therapy programme reported to be valuable were biofeedback and clinician support. Participants reported more control of dyspnoea, improved mental health and confidence in performing daily activities, less fatigue, more physically active lifestyles and hope for the future. Limitations of the study were that participants were interviewed only once and themes were not verified with participants. The study results also cannot be generalized. Further research is needed to evaluate the effectiveness of occupational therapy in promoting self-management and coping skills and restoring occupational performance in adults with COPD. Participants’ responses provide additional support for developing cognitive-behavioural protocols in occupational therapy and measuring their effectiveness in relieving anxiety symptoms and promoting dyspnoea management.

Source: MEDLINE

Full Text:
Available in fulltext at EBSCO Host

42. Functional and economic outcomes of cardiopulmonary patients: a preliminary comparison of the inpatient rehabilitation and skilled nursing facility environments.

Author(s): Vincent HK, Vincent KR

Citation: American Journal of Physical Medicine & Rehabilitation, May 2008, vol./is. 87/5(371-80), 0894-9115;1537-7385 (2008 May)

Publication Date: May 2008

Abstract: OBJECTIVE: To examine the major clinical and economic outcomes of cardiopulmonary patients referred for inpatient rehabilitation or skilled nursing care after an acute care stay.DESIGN: Retrospective, exploratory study conducted at inpatient rehabilitation facilities (IRF) and a matched skilled nursing facility (SNF). Participants were cardiovascular and pulmonary patients (n = 495, 76.2 +/- 0.5 yrs). Measurements included changes in functionality (assessed by functional independence measure [FIM] and minimum data set [MDS]), length of stay (LOS), total and itemized facility charges, discharge disposition, and mortality.RESULTS: Participation in physical and occupational
therapies occurred during 72-78% and 48-51% of total days in the IRF and SNF, respectively (P < 0.001). Changes in eating, grooming, bathing, dressing, toileting, bed-chair transfers, walking, verbal expression, problem solving, and auditory comprehension were greater in patients from the IRF than SNF (all P < 0.0001). LOS was longer in the SNF than IRF (34.7 +/- 3.4 vs. 14.9 +/- 0.5 days, P < 0.0001). In the IRF compared with the SNF, total charges ($22,162 vs. $10,873), pharmacy charges ($3104 vs. $1604), and combined physical and occupational therapy charges were higher ($5225 vs. $3582), all P < 0.0001. More IRF patients than SNF patients were discharged home (77.5% vs. 44.1%), and fewer IRF patients than SNF patients were discharged to acute care (15.8% vs. 23.2%) or expired (1.3% vs. 13.6%) during their stay (P < 0.05). CONCLUSIONS: More patients achieved functional independence, had shorter LOS, and had a higher rate of homebound discharge in the IRF than in the SNF, and this is associated with a higher cost of care. These SNF outcomes may be related to advancing age, type of illness, dementia, and inability to fully participate in therapies.

Source: MEDLINE

43. Rehabilitation therapy and outcomes in acute respiratory failure: an observational pilot project.

Author(s): Zanni JM, Korupolu R, Fan E, Pradhan P, Janjua K, Palmer JB, Brower RG, Needham DM

Citation: Journal of Critical Care, June 2010, vol./is. 25/2(254-62), 0883-9441;1557-8615 (2010 Jun)

Publication Date: June 2010

Abstract: PURPOSE: The aim of this study was to describe the frequency, physiologic effects, safety, and patient outcomes associated with traditional rehabilitation therapy in patients who require mechanical ventilation. MATERIALS AND METHODS: Prospective observational report of consecutive patients ventilated 4 or more days and eligible for rehabilitation in a single medical intensive care unit (ICU) during a 13-week period was conducted. RESULTS: Of the 32 patients who met the inclusion criteria, only 21 (66%) received physician orders for evaluation by rehabilitation services (physical and/or occupational therapy). Fifty rehabilitation treatments were provided to 19 patients on a median of 12% of medical ICU days per patient, with deep sedation and unavailability of rehabilitation staff representing major barriers to treatment. Physiologic changes during rehabilitation therapy were minimal. Joint contractures were frequent in the lower extremities and did not improve during hospitalization. In 53% and 79% of initial ICU assessments, muscle weakness was present in upper and lower extremities, respectively, with a decreased prevalence of 19% and 43% at hospital discharge, respectively. New impairments in physical function were common at hospital discharge. CONCLUSIONS: This pilot project illustrated important barriers to providing rehabilitation to mechanically ventilated patients in an ICU and impairments in strength, range of motion, and functional outcomes at hospital discharge. Copyright (c) 2010 Elsevier Inc. All rights reserved.

Source: MEDLINE

44. Six-minute walk distance in patients with severe end-stage COPD: association with survival after inpatient pulmonary rehabilitation.

Author(s): Enfield K, Gammon S, Floyd J, Falt C, Patrie J, Platts-Mills TA, Truwit JD, Shim YM

Citation: Journal of Cardiopulmonary Rehabilitation & Prevention, May 2010, vol./is. 30/3(195-202), 1932-7501;1932-751X (2010 May-Jun)

Publication Date: May 2010

Abstract: PURPOSE: To evaluate the relationship between the 6-minute walk distance (6MWD) and survival in a cohort of patients with severe end-stage chronic obstructive pulmonary disease (COPD) who received inpatient pulmonary rehabilitation (IPR) from
METHODS: We retrospectively analyzed 815 patients with severe end-stage COPD who received IPR. 6MWDs before and after IPR (pre-6MWD, post-6MWD) were compared to assess whether 6MWD was significantly changed after IPR. The Kaplan-Meier survival curves were constructed to show the relationship between survival and 6MWD. The age- and or comorbidities-adjusted Cox proportional hazard model was applied to assess association between the survival and the pre-6MWD, post-6MWD, or difference in 6MWD from the pre-6MWD to post-6MWD (Delta6MWD). RESULTS: Baseline demographics demonstrated a median age 74.0 years, mostly women (60.1%), and white (89.9%) patients with significant comorbid diseases who were most recently hospitalized in acute care facilities (95.1%). IPR significantly increased the 6MWD (mean distance change: 86.4 m; 95% confidence interval [CI], 81.5-91.3 m). Pre-6MWD was not significantly associated with survival. However, post-6MWD was significantly associated with age- and comorbidity-adjusted survival (post-6MWD hazard ratio = 1.336; 95% CI, 1.232-1.449 [post-6MWD x m relative to post-6MWD 2x m]), and Delta6MWD was also significantly associated with age-, comorbidities-, and pre-6MWD-adjusted survival (Delta6MWD hazard ratio = 1.337; 95% CI, 1.227-1.457 [Delta6MWD x m relative to Delta6MWD 2x m]). CONCLUSIONS: In patients with severe end-stage COPD, IPR significantly improved 6MWD, and the post-6MWD and Delta6MWD were positively associated with the length of survival.

Source: MEDLINE

45. Early physical medicine and rehabilitation for patients with acute respiratory failure: a quality improvement project.


Citation: Archives of Physical Medicine & Rehabilitation, April 2010, vol./is. 91/4(536-42), 0003-9993;1532-821X (2010 Apr)

Publication Date: April 2010

Abstract: OBJECTIVES: To (1) reduce deep sedation and delirium to permit mobilization, (2) increase the frequency of rehabilitation consultations and treatments to improve patients' functional mobility, and (3) evaluate effects on length of stay. DESIGN: Seven-month prospective before/after quality improvement project. SETTING: Sixteen-bed medical intensive care unit (MICU) in academic hospital. PARTICIPANTS: 57 patients mechanically ventilated 4 days or longer. INTERVENTION: A multidisciplinary team focused on reducing heavy sedation and increasing MICU staffing to include full-time physical and occupational therapists with new consultation guidelines. MAIN OUTCOME MEASURES: Sedation and delirium status, rehabilitation treatments, functional mobility. RESULTS: Compared with before the quality improvement project, benzodiazepine use decreased markedly (proportion of MICU days that patients received benzodiazepines [50% vs 25%, P=.002]), with lower median daily sedative doses (47 vs 15 mg midazolam equivalents [P=.09] and 71 vs 24 mg morphine equivalents [P=.01]). Patients had improved sedation and delirium status (MICU days alert [30% vs 67%, P<.001] and not delirious [21% vs 53%, P=.003]). There were a greater median number of rehabilitation treatments per patient (1 vs 7, P<.001) with a higher level of functional mobility (treatments involving sitting or greater mobility, 56% vs 78%, P=.03). Hospital administrative data demonstrated that across all MICU patients, there was a decrease in intensive care unit and hospital length of stay by 2.1 (95% confidence interval: 0.4-3.8) and 3.1 (0.3-5.9) days, respectively, and a 20% increase in MICU admissions compared with the same period in the prior year. CONCLUSIONS: Using a quality improvement process, intensive care unit delirium, physical rehabilitation, and functional mobility were markedly improved and associated with decreased length of stay. Copyright 2010 American Congress of Rehabilitation Medicine. Published by Elsevier Inc. All rights reserved.

Source: MEDLINE

46. The effect of pulmonary rehabilitation on perceptions of breathlessness and activity in COPD patients: a qualitative study.
**Author(s):** Williams V, Bruton A, Ellis-Hill C, McPherson K

**Citation:** Primary Care Respiratory Journal, March 2010, vol./is. 19/1(45-51), 1471-4418;1475-1534 (2010 Mar)

**Publication Date:** March 2010

**Abstract:** AIM: The aim of this study was to explore, using qualitative research methods, how pulmonary rehabilitation (PR) programmes affect the experience of activity and breathlessness of people with COPD. METHODS: A qualitative, interview-based approach was employed. Participants were interviewed pre- and post-PR. Data were analysed using systematic strategies informed by grounded theory methods. RESULTS: Nine participants (three female) took part. A change in participants' perception of breathlessness and lessening of fear of activity were the main themes identified. PR appeared to impact on the experience of physical social activities, allowing participants to overcome feelings of social isolation. CONCLUSIONS: Prior to PR, participants associated activities with breathlessness and panic; post PR, participants reported reduced fear and felt able to increase their activities. These findings add to our understanding of the impact of PR on individuals' experience of activity and may contribute to improved programmes by addressing patients’ needs.

**Source:** MEDLINE

47. *Effectiveness of pulmonary rehabilitation in reducing health resources use in chronic obstructive pulmonary disease.*

**Author(s):** Rubi M, Renom F, Ramis F, Medinas M, Centeno MJ, Gorriz M, Crespi E, Martin B, Soriano JB

**Citation:** Archives of Physical Medicine & Rehabilitation, 01 March 2010, vol./is. 91/3(364-368), 00039993

**Publication Date:** 01 March 2010

**Abstract:** OBJECTIVE: To determine the effectiveness of a multidisciplinary, outpatient pulmonary rehabilitation (PR) program in patients with severe and very severe chronic obstructive pulmonary disease (COPD). PR is recommended in advanced COPD, but there is limited evidence on the effectiveness of PR in reducing health care resources when applied in outpatients. DESIGN: Before and after intervention, a prospective research trial of patients enrolled in a PR program. SETTING: Outpatient respiratory department in a specialized hospital. PARTICIPANTS: We considered prospectively 82 consecutive patients with advanced COPD and finally studied 72 patients who completed the PR intensive phase. INTERVENTION: PR program. MAIN OUTCOME MEASURES: The effectiveness of this PR program was assessed by comparing health resources use from the year before and the year after PR. Clinical variables including dyspnea; the body mass index, obstruction, dyspnea, exercise capacity (BODE) index; and the Chronic Respiratory Questionnaire and health resources use including the number of exacerbations, the number of hospitalizations, and days of hospitalization. RESULTS: Patients had a forced expiratory volume in the first second percentage predicted (mean +/- SD) of 33.0 +/- 9.8 and a BODE index of 5.0 +/- 2.0. Significant improvements after PR were found in dyspnea, exercise capacity, and quality of life and on the BODE index (P<.05). Compared with the 12 months before PR, there were also significant reductions during the year after PR on exacerbations (3.4 +/- 3.5 vs 1.9 +/- 2.0, P=.002), hospitalizations (2.4 +/- 2.0 vs 0.9 +/- 1.2, P<.001), and days of hospitalization (36.1 +/- 32.7 vs 16.1 +/- 31.3, P<.001) (ie, a reduction of 44%, 63%, and 55%, respectively; all P<.05). CONCLUSIONS: We conclude that a multidisciplinary, outpatient PR program substantially reduces health resources use in patients with severe and very severe COPD. Copyright CO 2010 by the American Congree of Rehabilitation Medicine

**Source:** CINAHL

Pulmonary rehabilitation, a multidisciplinary and structured intervention for patients with chronic pulmonary diseases, has been shown to improve exercise tolerance, reduce dyspnea and improve health-related quality of life. Pulmonary rehabilitation appears to be cost-effective, since it reduces health care utilization. Exercise training represents the cornerstone of every pulmonary rehabilitation program. To obtain clinically relevant effects, training should closely supervised, of high intensity, lasting 30-45 min for at least 3 days/week. Patients should undertake a minimum of 20 sessions, but longer programs result in larger and more long-lasting effects. Education and self-management programs have been shown to result in a substantial reduction in hospital admissions. Nutritional intervention should be considered for patients who are underweight or those with body composition abnormalities. Patients reporting fear and anxiety may benefit from psychosocial support, and the integration of occupational therapy in a pulmonary rehabilitation program can improve independence in activity. Multidisciplinary pulmonary rehabilitation is preferably implemented in an outpatient hospital- or community-based setting. Inpatient programs are suited for patients with limited transportation capabilities or severe deconditioning. The most convincing effects of home-based rehabilitation are in maintaining the improvements obtained in an outpatient setting.

Source: MEDLINE

49. Do supervised weekly exercise programs maintain functional exercise capacity and quality of life, twelve months after pulmonary rehabilitation in COPD?

Author(s): Spencer L.M., Alison J.A., McKeough Z.J.

Citation: BMC pulmonary medicine, 2007, vol./is. 7/(7), 1471-2466 (2007)

Abstract: BACKGROUND: Pulmonary rehabilitation programs have been shown to increase functional exercise capacity and quality of life in COPD patients. However, following the completion of pulmonary rehabilitation the benefits begin to decline unless the program is of longer duration or ongoing maintenance exercise is followed. Therefore, the aim of this study is to determine if supervised, weekly, hospital-based exercise compared to home exercise will maintain the benefits gained from an eight-week pulmonary rehabilitation program in COPD subjects to twelve months. METHODS: Following completion of an eight-week pulmonary rehabilitation program, COPD subjects will be recruited and randomised (using concealed allocation in numbered envelopes) into either the maintenance exercise group (supervised, weekly, hospital-based exercise) or the control group (unsupervised home exercise) and followed for twelve months. Measurements will be taken at baseline (post an eight-week pulmonary rehabilitation program), three, six and twelve months. The exercise measurements will include two six-minute walk tests, two incremental shuttle walk tests, and two endurance shuttle walk tests. Oxygen saturation, heart rate and dyspnoea will be monitored during all these tests. Quality of life will be measured using the St George's Respiratory Questionnaire and the Hospital Anxiety and Depression Scale. Participants will be excluded if they require supplemental oxygen or have neurological or musculoskeletal co-morbidities that will prevent them from exercising independently. DISCUSSION: Pulmonary rehabilitation plays an important part in the management of COPD and the results from this study will help determine if supervised, weekly, hospital-based exercise can successfully maintain functional exercise capacity and quality of life following an eight-week pulmonary rehabilitation program in COPD subjects in Australia.

Source: EMBASE
50. Pulmonary rehabilitation in chronic obstructive pulmonary disease

Author(s): Troosters T., Casaburi R., Gosselink R., Decramer M.

Citation: American Journal of Respiratory and Critical Care Medicine, July 2005, vol./is. 172/1(19-38), 1073-449X (01 Jul 2005)

Publication Date: July 2005

Abstract: Careful review of the currently available literature clearly shows the benefit of pulmonary rehabilitation in COPD. More evidence has become available concerning the magnitude and mechanisms of the obtained benefits. In addition, it has become clearer that patients at both ends of the disease spectrum can be good candidates for properly designed rehabilitation programs. We attempted to summarize the available evidence and added some clinical practice advice in our attempt to define the present state of the art. Rehabilitation programs should be part of a larger decision tree including optimal medical therapy and nonpharmacologic treatment options, such as surgery, not discussed in the present review. Future research in rehabilitation should focus on further fine-tuning the rehabilitation programs for individual patients. However, the overwhelming evidence currently available is clearly sufficient for regulatory authorities to conclude that there is an evidence base for reimbursement for pulmonary rehabilitation. The current programs improve health-related quality of life and exercise tolerance to a greater extent than any other intervention currently available for patients with COPD. Pulmonary rehabilitation reduces health care use in patients with excessive use of health care resources. Tailoring programs to make these benefits as large and as long-lasting as possible remains a major challenge.

Source: EMBASE

Full Text:

Available in fulltext at Highwire Press

51. The relation between therapy intensity and outcomes of rehabilitation in skilled nursing facilities.

Author(s): Jette DU, Warren RL, Wirtalla C

Citation: Archives of Physical Medicine & Rehabilitation, March 2005, vol./is. 86/3(373-9), 0003-9993;0003-9993 (2005 Mar)

Publication Date: March 2005

Abstract: OBJECTIVE: To examine the relation between therapy intensity, including physical therapy (PT), occupational therapy (OT), and speech and language therapy (SLT), provided in a skilled nursing facility (SNF) setting and patients’ outcomes as measured by length of stay (LOS) and stage of functional independence as measured by the FIM instrument.DESIGN: A retrospective analysis of secondary data from an administrative dataset compiled and owned by SeniorMetrix Inc.SETTING: Seventy SNFs under contract with SeniorMetrix health plan clients.PARTICIPANTS: Patients with stroke, orthopedic conditions, and cardiovascular and pulmonary conditions (N=4988) covered by Medicare+Choice plans, and admitted to an SNF in 2002.INTERVENTIONS: Not applicable.MAIN OUTCOMES MEASURES: LOS and improvement in stage of independence in the mobility, activities of daily living (ADLs), and executive control
domains of function as determined by the FIM instrument. RESULTS: Higher therapy intensity was associated with shorter LOS (P < .05). Higher PT and OT intensities were associated with greater odds of improving by at least 1 stage in mobility and ADL functional independence across each condition (P < .05). The OT intensity was associated with an improved executive control stage for patients with stroke, and PT and OT intensities were associated with improved executive control stage for patients with cardiovascular and pulmonary conditions (P < .05). The SLT intensity was associated with improved motor and executive control functional stages for patients with stroke (P < .05). Therapy intensities accounted for small proportions of model variances in all outcomes. CONCLUSIONS: Higher therapy intensity was associated with better outcomes as they relate to LOS and functional improvement for patients who have stroke, orthopedic conditions, and cardiovascular and pulmonary conditions and are receiving rehabilitation in the SNF setting.

Source: MEDLINE

52. A randomised controlled trial of the effectiveness of an exercise training program in patients recovering from severe acute respiratory syndrome

Author(s): Lau H.M.-C., Ng G.Y.-F., Jones A.Y.-M., Lee E.W.-C., Siu E.H.-K., Hui D.S.-C.

Citation: Australian Journal of Physiotherapy, 2005, vol./is. 51/4(213-219), 0004-9514 (2005)

Publication Date: 2005

Abstract: The aim of this study was to evaluate the effectiveness of an exercise training program on cardiorespiratory and musculoskeletal performance and health-related quality of life of patients who were recovering from severe acute respiratory syndrome (SARS). A 6-week supervised exercise training program was carried out in the physiotherapy department of a university teaching hospital. One hundred and thirty-three patients referred from a SARS Review Clinic solely for physiotherapy were included. Cardiorespiratory fitness (6-minute walk test, Chester Step Test for predicting VO2max), musculoskeletal performance (isometric deltoid and gluteal muscles strength, handgrip strength, 1-minute curl-up and push-up tests) and health-related quality of life (SF-36) were measured and evaluated. Patients were assigned randomly to either a control group (standardised educational session about exercise rehabilitation) or an exercise group. After 6 weeks, significantly greater improvement was shown in the exercise group in the 6-minute walk test (77.4 m vs 20.7 m, p < 0.001), VO2max (3.6 ml/kg/min vs 1 ml/kg/min, p = 0.04), and musculoskeletal performance (handgrip strength, curl-up and push-up tests, p < 0.05). Effects on health-related quality of life were not statistically significant. It was concluded that the exercise training program was effective in improving both the cardiorespiratory and musculoskeletal fitness in patients recovering from SARS. However, health-related quality of life was not affected by physical training.

Source: EMBASE

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NS Hill - Proceedings of the American Thoracic Society, 2006 - Am Thoracic Soc ... In a recent controlled trial, an **occupational therapist** taught controlled breathing and energy ... Patients with bronchiectasis also respond to exercise training, but without added benefit ... **Pulmonary rehabilitation** has also been used pre- and postoperatively for lung resection, lung ...

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AL Ries, GS Bauldoff, BW Carlin...
- Chest, 2007 - chestjournal.chestpubs.org
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