The Middle East Journal of
Family Medicine

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EDITORIAL

# *From the Editor*

**BACKGROUND:**

Once again we have a wide range of articles from across the region.

A case study on Aspiration and Death from Amitraz-Xylene Poisoning, has been presented by FATMA YÜCEL, BEYAZTAS, SINAN GURSOY1, YELTEKIN DEMIREL2, KENAN KAYGUSUZ1, and CANER MIMAROGLU of the Cumhuriyet University School of Medicine, due to the paucity of literature on this topic. Amitraz-Xylene is a commonly used insecticide for treating ticks on animals.

An article from M. Mumtaz Mazicioglu, Cevat Yazici and Ahmet ÖztÜrk, of the Erciyes University Medical Faculty Department of Family Medicine, looks at Reference values of hematological parameters of healthy Anatolian Males aged 18-45 years old, as reference values of full blood count have been determined in several trials, but there are no reports on reference values of full blood count parameters in Anatolia.

Dr Safaa Bahjat from Kirkuk in Iraq, has written on the need for a Middle East Center of Disease Control, to not only cater to some of Iraq's immediate problems but for the entire Middle east region. With increased vigilance required due to avian flu, and less recently SARS, this is a timely call to look at control of disease in the region.

A learned and articulate article on Home Health Care Team members by Dr Nabil Kurashi, President of the Saudi Society of Family & Community Medicine and Associate Professor of Family Medicine, College of Medicine, King Faisal University, Dammam, Kingdom of Saudi Arabia and Member, Scientific Council, Arab Board of Medical Specialties. Home health care (HHC) is that component of a continuum of comprehensive health care whereby health services are provided to individuals and families in their places of residence for the purpose of promoting, maintaining or restoring health, or maximizing the level of independence, while minimizing the effects of disability and illness, including terminal illness. Dr Kurashi writes that while HHC programs have been established as hospital-based programs for over the past ten years to solve the long-term occupancy of their hospital beds, it has just started in Saudi Arabia.

Another case study by Suha M. Ajeilat, Reham I. Shaban, Ayman S. Madanat, looks at Scleromalacia Associated with Marfan's Syndrome. Scleromalacia occurs as a complication of Herpes Zoster Ophthalmicus, Rheumatoid arthritis, Vogt Koyanagi Harada syndrome and following retinal detachment surgery, but it has never been reported as a complication of Marfan's syndrome.

Our featured Team Member this month is Dr Manzoor Butt of Rawalpindi Pakistan, a regular contributor. Manzoor's article, Skilled Health Workers - A Solution to Primary Health Problems in Pakistan, provides a pragmatic approach to the many needs of rural and impoverished communities in Northern Pakistan. He has also contributed for Women's Empowerment Week a short article on problems encountered by blind school girls, and programs he has implemented to teach personal hygiene especially when it comes to

menstruation. Dr Butt's 'leaflet' for school girls has been included as a print out for other practitioners who may have children with similar needs in their communities.

Childhood Orbital Cellulitis Complicating Sinusitis in Tafila from Khalid M Alrashed and Hussein A Bataineh from Prince Zeid Hospital, has been provided to determine the importance of sinusitis as a cause of orbital cellulitis, the causative organisms and peak age of occurrence.

Acute Exacerbations of Chronic Obstructive Pulmonary Disease (COPD): Evidence-Based Approach has been presented by Dr. Abdullah Alsaeedi, Dr. Mahmoud Hanafy, and Dr. Youssif Lamey of Aljhara Hospital, Kuwait. Even though other conditions such as asthma and bronchiectasis are included in some definitions of COPD, this review deals with COPD due to chronic bronchitis and emphysema.

Much effort has been put into two articles, Acceptance of self-treatment in Hemophilic Patient: A Training Method, and A Study of Depression Prevalence of Nurses and It's Effective Factors in Shiraz Namazi Hospital, which were presented by S.Habibollah Kavari, PhD, Assistant Professor of School of Management and Medical Information Sciences, Shiraz University of Medical Sciences, Iran. While we have had to extensively edit these articles they are important topics, especially with falling rates of personnel in the nursing profession. The article on home self- treatment of hemophilic patients also deals with the issues of health professional resources, with home care, and self treatment, taking pressure off existing personnel resources and health spending.

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**ORIGINAL CONTRIBUTION AND CLINICAL INVESTIGATION**

## *Acute Exacerbations of Chronic Obstructive Pulmonary Disease. Evidence-Based Approach*


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## ABSTRACT

Chronic obstructive pulmonary disease (COPD) is the fourth leading cause of death in the United States, and it accounts for approximately 500,000 hospitalizations for exacerbations each year. New definitions of acute COPD exacerbation have been suggested, but the one used by Anthonisen et al. is still widely accepted. It requires the presence of one or more of the following findings: increase in sputum purulence, increase in sputum volume, and worsening of dyspnea. Patients with COPD typically present with acute decompensation of their disease one to three times a year, and 3% to 16% of these will require hospital admission. Hospital mortality of these admissions ranges from 3% to 10% in severe COPD patients, and it is much higher for patients requiring ICU admission. The etiology of the exacerbations is mainly infectious (up to 80%). Other conditions such as heart failure, pulmonary embolism, nonpulmonary infections, and pneumothorax can mimic an acute exacerbation or possibly act as "triggers." Baseline chest radiography and arterial blood gas analysis during an exacerbation are recommended. Oxygen administration through a venturi mask seems to be appropriate and safe, and the oxygen saturation should be kept just above 90%. Either a short acting 2-agonist or an anticholinergic is the preferred bronchodilator agent. The choice between the two depends largely on potential undesirable side effects and the patient's coexistent conditions. Adding a second bronchodilator to the first one does not seem to offer much benefit. The evidence suggests similar benefit of MDIs when compared with nebulized treatment for bronchodilator delivery. If MDIs are to be used, spacer devices are recommended. Steroids do improve several outcomes during an acute COPD exacerbation, and a 10 to 14 day course seems appropriate. Antibiotic use has been shown to be beneficial, especially for patients with severe exacerbation. Changes in bacteria strains have been documented during exacerbations, and newer generations of antibiotics might offer a better response rate. There is no role for mucolytic agents or chest physiotherapy in the acute exacerbation setting. Noninvasive positive pressure ventilation might benefit a group of patients with rapid decline in respiratory function and gas exchange. It has the potential to decrease the need for intubation and invasive mechanical ventilation and possibly decrease in-hospital mortality.

## INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is not only the fourth leading cause of death in the United States, but is also a disease of high morbidity. [1] Each year, it accounts for an estimated 14-million office visits and approximately 500,000 hospitalizations for exacerbations of COPD. [2] The annual hospitalization rate for COPD in the United States has increased from 9.7 to 24.5 per 10,000 populations between 1988 and 1998. [3*]

### Definition of Acute COPD Exacerbation

Even though other conditions such as asthma and bronchiectasis are included in some definitions of COPD, this review deals with COPD due to chronic bronchitis and emphysema. Acute COPD exacerbation is variously defined in the medical literature, and an exact definition is still a matter of debate. After the 1999 Aspen Lung Conference dedicated to COPD, a common operational definition of acute COPD exacerbation emerged from a group of respiratory physicians from the United States and Europe. COPD was defined as "a sustained worsening of the patient's condition, from the stable state and beyond normal day-to-day variations, that is acute in onset and necessitates a change in regular medication in a patient with underlying COPD." [4] Based on health-care utilization, an exacerbation can be further classified as: mild, when the patient has an increased need for medication, which he/she can manage in his/her own normal environment; moderate, when the patient has an increased need for medication and feels the need to seek additional medical assistance; or severe, when the patient/caregiver recognizes obvious and/or rapid deterioration in condition, requiring hospitalization. However, most of the studies published in the medical literature during the last decade, have followed the earlier definition used by Anthonisen et al. [5] It requires the presence of one or more of the following findings: increase in sputum purulence, increase in sputum volume, and worsening of dyspnea. Type I (severe) has all of the three symptoms, type II (moderate) has two, and type III (mild) has one symptom plus at least one of the following: upper respiratory infection in the past 5 days, fever without another apparent cause, increased wheezing, increased cough, or increase in respiratory rate or heart rate by 20% above baseline. This definition based on symptoms and findings can be linked to therapeutic decisions that are elaborated later.

### Implications of Acute COPD Exacerbations

Patients with COPD typically present with acute decompensation of their disease one to three times a year. [6, 7] However, 50% of the exacerbations are not reported to physicians. [6, 8] Of the reported

exacerbations, 3% to 16% will require hospital admission. [8, 9] Hospital mortality of these admissions ranges from 3% to 10% in severe COPD patients. [10, 11] The 180-day, 1-year, and 2-year mortality after a hospital admission is 13.4%, 22%, and 35.6%, respectively. [12] The hospital mortality rate after an ICU admission is 15% to 24% and goes up to 30% in patients more than 65 years old. [13*, 14] After an acute exacerbation, a temporary decrement in functional status and quality of life is expected. [8] One study showed that the peak flow had returned to normal in only 75% of patients 35 days after exacerbation, and 7% of patients still had not returned to their baseline levels of lung function 91 days after exacerbation. [6] Half of the patients who are hospitalized required readmission at least once in the following 6 months. [11]

**Etiology of Acute COPD Exacerbations**

Respiratory infections are the most common causes of COPD exacerbations. However, other conditions such as air pollutants, heart failure, pulmonary embolism (PE), nonpulmonary infections, and pneumothorax can mimic an acute exacerbation or possibly act as "triggers" of an exacerbation. [11] The available evidence suggests that at least 80% of the acute COPD exacerbations are infectious in origin. Of these infections, 40 to 50% are caused by bacteria, 30% by viruses, and 5 to 10% by atypical bacteria (Table 1). Concomitant infections by more than one infectious pathogen appear to occur in 10 to 20% of patients. [15**, 16-25] Although there is epidemiological data suggesting that increased pollutants are associated with mild increase in COPD exacerbations and hospital admissions, the mechanisms involved are largely unknown. In a European study, increases of 50 µg/m3 in the daily level of pollutants were shown to increase the relative risk of hospital admissions for COPD for SO2 (RR 1.02), NO2 (RR 1.02), and ozone (RR 1.04). [26] PE can also cause an acute COPD exacerbation, and, in one recent study, PE was present in 8.9% of the patients hospitalized with a COPD exacerbation. [27*]

**Evidence Based Data for Individual Interventions in Acute COPD Exacerbations**

**Diagnostic Testing**

*Chest roentgenography.* Use of routine thoracic diagnostic imaging (Chest x-ray) has been found to be helpful in the initial assessment of patients with acute COPD exacerbation. Data from observational studies show that in 16% to 21% of the chest radiographs of patients with acute COPD exacerbations, there were abnormalities significant enough to justify changes in the management of those patients. [28-30]

**Arterial Blood Gases Sampling**

Arterial blood gas analysis is helpful in assessing the severity of an exacerbation. It properly assesses the degree of hypoxemia (as compared with indirect measurement by pulse oximetry) and hypercarbia, and adds valuable information to identify patients that are likely to require additional mechanical ventilatory support. [31**]

**Spirometric Testing**

Available evidence does not support the routine measurement of lung function tests (either spirometry or peak flow) in patients with acute COPD exacerbations, since it does not seem to affect the therapeutic approach. [31**]

**Therapeutic Interventions** - **Oxygen.**

Based on previous data, it appears that patients with simultaneous hypercarbia and hypoxemia are at greatest risk of worsening respiratory failure during an acute COPD exacerbation. [32] The administration of oxygen has potential therapeutic benefits, which include relief of pulmonary vasoconstriction, decrease on right heart strain, and decrease in myocardial ischemia (if present), and it has become part of the "standard-of-care" during an acute decompensation. However, many clinicians are concerned about worsening of hypercarbia and respiratory failure, when oxygen is administered to this group of patients. Several observational studies have shown consistent increase in arterial PaCO2 during administration of oxygen to patients with acute COPD exacerbation. However, two recent small studies (n = 34 and n = 18) have shown more reassuring results about the safety of administering oxygen. The first study did not find major complications rates (i.e., severe symptomatic acidosis, hypotension, symptomatic cardiac arrhythmia) secondary to significant hypercarbia in either of the groups who received oxygen titrated to keep a PaO2 greater than 60 mm Hg or 70 mm Hg. [33*] The second study compared two groups, assigned to get oxygen through a venturi mask or nasal prongs for 24 hours, with a therapeutic goal of keeping the O2 saturation above 90%. [34] After 24 hours, the patients were crossed over to the other oxygen delivery system. It was observed that oxygen administered through both delivery systems improved arterial oxygen tension to the same extent (P = NS), without any significant effect upon arterial carbon dioxide tension or pH. Additional analysis suggested that the venturi mask system kept the oxygen saturation above 90% for more hours than the nasal prongs ($P < 0.05$). Based on these data and the previous literature, one can conclude that the risk of worsening hypercarbia and respiratory acidosis should not deter one from using controlled oxygen

treatment in patients with simultaneous hypercarbia and hypoxemia during an acute COPD exacerbation. Keeping the O2 saturation just above 90% (or PaO2 > 60 mm Hg) is recommended, and administration of oxygen through a venturi mask may be safer and more effective than through nasal prongs.

**Bronchodilating agents**

A recent systematic review of the literature found very few controlled trial data on the use of inhaled short-acting 2-agonist agents in acute exacerbations of COPD, and none that compared these agents with placebo. [31**, 35] Overall, the available data show similar FEV1 improvement during an acute exacerbation, when short acting 2-agonists was compared with anticholinergic-type bronchodilators. Both agents also did better when compared with all parenterally administered bronchodilators (i.e., parenteral methylxanthines and sympathomimetics). Anticholinergic agents have a safer and more tolerable side effect profile (tremors, dry mouth, and urinary retention) when compared with 2-agonists (tremors, headache, nausea, vomiting, palpitations, heart rate, and blood pressure variations). This may be an important point to consider, when deciding which bronchodilator agent to use during an acute exacerbation. A recent position paper on acute COPD exacerbations suggests a benefit of adding a second inhaled bronchodilating agent (i.e., anticholinergic or short acting 2-agonist agent) once the maximal dose of the initial agent is reached. [36] However, systematic reviews have not found strong evidence to confirm this recommendation. [35] The use of a methylxanthine drug, such as aminophylline as an additional bronchodilator agent during an acute exacerbation, is not well supported by evidence. One study did show a decrease in hospitalization rate in the aminophylline group compared with the control group but this was not statistically significant. [37] A recent systematic review on use of methylxanthines in acute COPD exacerbation did not find any evidence to support its routine use. [38] Methyl-xanthines do not appreciably improve FEV1 during COPD exacerbations and cause important adverse effects (including nausea, vomiting, headache, arrhythmias, and seizures). Furthermore, another systematic review found that the use of intravenous aminophylline in acute asthma did not result in any additional bronchodilation when compared with standard care with -agonists. [39]

There is very limited data describing use of long-acting 2-agonists (formoterol and salmeterol). Two recent small studies suggest similar effects of a short acting agent vs. the long acting agents on FEV1 measurements, when either agent was given during a mild acute COPD exacerbation. [40, 41] Additional evidence is needed before these agents are recommended as first line therapy in exacerbations. Regarding the choice of delivery systems, a recent meta-analysis found that bronchodilator delivery by means of a metered-dose inhaler (MDI) or wet nebulizer is equivalent in the acute treatment of adults with airflow obstruction. [42] Spacer devices were used for bronchodilator delivery with an MDI in most studies and are recommended for the treatment of acute airflow obstruction. The decision of what method to use will depend on the need for expedient treatment, availability of staff, and consideration of costs.

Steroids. Appraisal of the current literature on glucocorticosteroids for acute COPD exacerbation show that a short course of systemic corticosteroid therapy improves spirometry and decreases the relapse rate. [31**] A systematic review of this topic also concluded that treatment with oral or parenteral corticosteroids increases the rate of lung function improvement over the first 72 hours of a COPD exacerbation; however, the benefit was not maintained after 72 hours. [43*] The largest trial on use of corticosteroids for acute exacerbation included 271 patients, randomized to receive placebo or 3 days of IV methylprednisolone. [44] The latter group included patients who completed a 2-week regimen of oral prednisone after the initial 3-day IV dose (with progressive tapering of the oral prednisone) or an 8-week regimen of oral prednisone. The corticosteroid group showed a significant reduction in the rate of first treatment failure when compared with the placebo group at 30 days (23% vs. 33%, P = 0.04) and at 90 days (37% vs. 48%, P = 0.04). Treatment-failure rates did not differ significantly at 6 months. In addition, the duration of glucocorticoid therapy (2-week vs. 8-week regimen) had no significant effect on the rate of treatment failure at any time. The difference in improvement of FEV1 was evident by the first day of therapy, but this difference was no longer significant between the steroid and placebo groups by the end of 2 weeks. Hyperglycemia was the most common side effect in the intervention group. Another recent study compared the impact on PaO2 and FEV1 levels between two groups of patients assigned to receive glucocorticoids for 3 days (IV methylprednisolone, 0.5 mg/Kg IV q6h) vs. 10 days (first 3 days of same IV methylprednisolone dose and dose tapering over the next 7 days according to protocol) during an acute COPD exacerbation. [45] Both groups showed improvement in outcomes, but the 10-day regimen group did better with significantly higher levels of PaO2 and FEV1, improved FVC, and decreased dyspnea on exertion.

Most studies using steroids for exacerbations have been done on patients requiring hospitalization, and only few have described the role of steroids in the outpatient setting. A randomized controlled trial studied 27 patients with acute COPD exacerbations not requiring hospitalization. [47] Patients were assigned to receive a 9-day tapering dose of oral prednisone or placebo (in addition to continuing their baseline medications and

increasing their 2-agonist use). The prednisone group showed a more rapid improvement in PaO2, FEV1, and peak expiratory flow (PEF), all of which were statistically significant results. This therapy also resulted in fewer treatment failures (P = 0.002) and a trend toward more rapid improvement in dyspnea scale scores compared with the placebo groups.

Are inhaled corticosteroids in lieu of systemic steroids effective in treating acute exacerbations of COPD? A randomized control trial was carried out in 199 patients with acute COPD exacerbations requiring hospitalization, and they were assigned to receive nebulized budesonide, oral prednisolone, or placebo. [46] By 3 days after study enrollment, the steroid groups (inhaled and oral) showed a significant improvement in FEV1 (0.10-0.16 L) when compared with the placebo group. The difference between the two steroid groups was not statistically significant. The limited data on this issue (inhaled steroids for acute COPD exacerbations) makes it difficult to make a recommendation at this point. However, if future research on this area confirms this finding, inhaled steroids would be a safer therapeutic option.

**Antibiotics:** As infectious etiologies account for approximately 80% of the acute COPD exacerbations, it is reasonable to expect that the outcome of such exacerbations would be improved with antibiotic therapy. Anthonisen et al. [5] demonstrated a significant benefit of antibiotic treatment in acute COPD exacerbations, with a success rate of 68% for the antibiotic group vs. 55% for the placebo group. This study also established useful clinical criteria to determine the severity of an exacerbation, depending on how many symptoms and signs are present (i.e., increased dyspnea, sputum production, and sputum purulence). Patients in whom these three findings are present during an exacerbation exhibit a greater benefit from the antibiotic administration when compared with those who only have one or two of the clinical findings. Subsequent meta-analysis and literature appraisal of this topic have found that antibiotics are beneficial in the treatment of patients with acute exacerbations of COPD [31**, 48] and that patients with more severe exacerbations are more likely to benefit than those who are less ill. Analysis of the randomized controlled trials (RCTs) found that the peak expiratory flow rate (PEFR) was the most consistently measured end point, and it improved a mean of 10.75 L/min more in patients treated with antibiotics than in patients treated with placebo. [48]

Many initial studies on antibiotics and COPD exacerbation were conducted in a very mild antibiotic resistance era. Controversy exists regarding the need to use newer and more broad-spectrum (and more expensive) antibiotics vs. the more older and traditional antibiotics (i.e., co-trimoxazole, doxycycline, and erythromycin). This issue has not been resolved yet, but some light has been shed by more careful documentation of the infectious agents associated with exacerbations. [15**16-25] Organisms, such as Pseudomonas aeruginosa and nontypeable Haemophilus influenzae, have been recovered especially from patients who have more severe underlying lung disease established by an FEV1 < 50%. [18] Also, active tobacco smoking was associated with a high risk of H. influenzae isolation. [18] The presence of purulent sputum as subjectively described by the patients (and objectively confirmed by the investigators allocating a sputum number by reference through a standard color chart) was described in another study as highly predictive of the presence of active infection. [49*] In this study, a positive bacterial culture was obtained from 84% of patients' sputum, when it was purulent on presentation, compared with only 38%, when it was mucoid (P < 0.0001). Statistically significantly, elevated levels of C-reactive protein measured during the acute exacerbation episode also correlated this difference. In the stable clinical state, the incidence of a positive bacterial culture from sputum was similar for both groups. In essence, the presence of green (purulent) sputum was 94.4% sensitive and 77% specific for the yield of a high bacterial load. This subset of patient episodes identified at presentation is likely to benefit most from antibiotic therapy.

Two recent trials found significantly lower failure rates (defined as return visits within 14 days of the initial presentation with the patient having persistent or worsening symptoms) in patients who were treated with antibiotics. [50, 51] They also concluded that the type of antibiotic used made a difference in the failure rates. In the first trial, significant amounts of bacteria were found in about 50% of the patients. [50] The most common bacteria isolated from 362 patient visits were Haemophilus species, Moraxella catarrhalis, and Streptococcus pneumoniae. There were no significant differences in other therapies prescribed to treat the acute exacerbation (i.e., bronchodilators and corticosteroids) in patients who did and did not relapse. Interestingly, patients who were treated with amoxicillin had a higher relapse rate than those who did not receive antibiotics (P = 0.006). The second trial studied 224 episodes of acute COPD exacerbation. [51] Patients receiving first-line agents (amoxicillin, co-trimoxazole, tetracyclines, and erythromycin) failed more frequently than third-line agents (co-amoxiclav, azithromycin, and ciprofloxacin): 19% vs. 7% (P < 0.05). In addition, patients who were prescribed first-line agents were hospitalized more often within 2 weeks of outpatient treatment when compared with patients who were prescribed third-line agents (18% vs. 5.3% third-line agents; P < 0.02). As a counterpoint, a recent study tried to identify factors associated with poor

treatment outcome of 232 exacerbations over a 2-year period. [52] In this study, use of home oxygen and frequency of exacerbation correctly classified failures in 83.3% of the patients, but the choice of an antibiotic did not affect the treatment outcome. Regimens that are administered once a day for 3-5 days might offer better compliance rates when compared with 7- to 10-day regimens (BID or TID).

**Mucolytic agents:** Five RCTs comparing different mucolytic agents in acute exacerbations of COPD were reviewed in a recent analysis. [31**] There was no evidence of shortening in the duration of the exacerbations or improvement of the FEV1 values. The analysis did suggest that mucolytics might improve symptoms compared with controls. [53, 54] In the nonacute COPD setting, systematic reviews have found a reduction in the number of acute exacerbations and days of illness when mucolytics were routinely used.[55, 56]

**Chest physiotherapy:** When used during acute COPD exacerbations, mechanical percussion of the chest as applied by physical/respiratory therapists is ineffective in improving symptoms or lung function. Furthermore, there might even be a transient decrease in FEV1 after chest percussion. [31**]

**Noninvasive positive pressure ventilation:** Mechanical ventilation through an endotracheal tube adds morbidity and mortality risks to patients with acute COPD exacerbation. Noninvasive mechanical ventilation has become an acceptable option for ventilatory support of COPD patients with exacerbation. During the last decade, several studies have consistently shown that noninvasive positive-pressure ventilation (NIPPV) decreases the likelihood of requiring invasive mechanical ventilation and possibly increases survival time. [57-59] A meta-analysis found that patients randomized to receive NIPPV had a statistically significant decrease in the need for invasive mechanical ventilation and in the risk of death. [60] These findings have been replicated. [61] Patients hospitalized for exacerbations of COPD with rapid clinical deterioration should be considered candidates for NIPPV, according to a recent international consensus conference in intensive care medicine. [62*] The use of NIPPV in this setting should prevent further deterioration in gas exchange, respiratory workload, and the need for endotracheal intubation. However, it should be noted that there are no standardized criteria to predict which patients will benefit from this therapy and which may deteriorate. Contraindications for this type of therapy are summarized in Table 2.

**Heliox:** Helium is an inert gas that in combination with oxygen (heliox) has been used as an additive treatment in upper airway obstructions and other causes of respiratory failure. The rationale for its use is to diminish respiratory effort, peak pressure, and intrinsic positive end-expiratory pressure. A recent meta-analysis evaluated the limited literature on the use of heliox in acute COPD exacerbations (ventilated or nonventilated patients) and concluded that there is insufficient data to support its use. [63] One of the randomized trials included in the meta-analysis evaluated the administration of heliox as a driving gas for the updraft nebulization of bronchodilators during the first 2 hours of treatment of an acute COPD exacerbation. The use of heliox in this trial failed to improve FEV1 faster than the use of air. [64] A recent retrospective study evaluated acute COPD exacerbations initially treated in the emergency department (39 patients on heliox vs. 42 patients without it). The authors found a statistically significant decrease in intubation and mortality rates in the heliox group. [65] This study is limited by its retrospective design, but offers intriguing findings that will likely prompt larger RCTs.

## SUMMARY AND RECOMMENDATIONS

### Definition of Acute COPD Exacerbation

Even though new operational definitions have been described, the definition and types of exacerbation suggested by Anthonisen et al. [5] has been used extensively in the current literature and should be followed for now to maintain a more consistent terminology.

### Predictors of Poor Outcome in Acute COPD Exacerbations

This issue has been addressed by several studies, but there seems to be significant differences in the findings by different authors. [31**] Use of home oxygen and frequency of exacerbations predicted treatment failures in 83% of acute COPD exacerbations in the outpatient setting in one study. [52] Treatment failure has been defined as a return visit for persistent respiratory symptoms that required a change of an antibiotic in < 4 weeks. Use of antibiotics has been suggested to decrease the failure rate. However, antibiotic selection might also be important, since use of amoxicillin had higher failure rates in one study. [50] This increased risk of failure rate because of "proper" antibiotic selection has not been confirmed in all studies. [52] Treatment failure is seen in 12-14% of the outpatient treatments. More than half of these failures will require hospitalization.

**Diagnostic Testing**
Current literature suggests a benefit in ordering chest radiograph and arterial blood gas analysis in patients admitted with an acute COPD exacerbation.

**Need for Hospitalization and ICU Admission**
Table 3, Table 4 provides general guidelines to decide when to admit a patient to the hospital or to the ICU. [66] Individual patient factors may affect these decisions.

## Therapy

**Oxygen:** Patients should receive the necessary amount of oxygen to maintain an oxygen saturation just above 90%. There seems to be benefit of delivering the oxygen through a venturi mask but nasal prongs can also be used. It is important to remember that $PaCO_2$ may increase secondary to oxygen use, but the available evidence shows that this effect might not be as severe as previously thought.

**Bronchodilator agents:** Short acting 2-agonists or anticholinergic agents seem to be the preferred bronchodilators to be used. The choice between the two might depend on potential undesirable side effects based on the comorbidity of the patient. Adding a second bronchodilator to the first one does not seem to add much benefit. Methylxanthines do not offer additional improvement, and they might add significant and serious side effects. The mode of delivery for the bronchodilators might depend on several issues (i.e., staff availability and costs) but the evidence suggests similar benefit of MDIs when compared with nebulized treatment. If MDIs are to be used, spacer devices are recommended.

**Steroids:** Steroids do seem to improve several outcomes during an acute COPD exacerbation. Even though the optimal dose and duration of therapy has not been established, a 10- to 14-day course of steroid treatment would be appropriate. Different tapering methods have been used, but some studies have shown that it is safe to stop steroids without dose tapering at the end of the 10- to 14-day period (provided the patient was not on chronic steroid therapy before the exacerbation). Parenteral administration of high doses of methylprednisolone was used during the first few days of therapy in most of the trials, and this might be the recommended option during the initial treatment.

**Antibiotics:** Use of antibiotics seems to benefit patients with acute COPD exacerbation (especially those with severe exacerbations) and improve several outcomes (i.e., lung function and decrease in treatment failure rates). Patients with documented purulent sputum might benefit the most from antibiotic treatment compared with patients with clear sputum. Severe COPD patients with very low FEV1 (< 35% predicted) may be at an increased risk of infection by Pseudomonas aeruginosa or Haemophilus influenzae. The latter seems to be increased in active smokers also. While several studies still recommend the use of the traditional antibiotics (i.e., amoxicillin and co-trimoxazole) for treatment of an exacerbation, recent evidence suggests that new bacteria strains are important. [19**] These new strains can include antibiotic-resistant bacteria, and they might require newer and more potent antibiotics (i.e., newer generation of macrolides and fluoroquinolones) for an effective treatment. Our recommendation is to try to establish a narrow spectrum coverage, while keeping in mind the need for treatment of more resistant bacteria. This purpose might be better served by newer generations of antibiotics but we agree that additional evidence is needed to confirm this recommendation. [67*]

**Mucolytic agents and chestphysiotherapy:** The current evidence does not suggest a role for these interventions in the acute setting, and they should not be instituted in patients with acute COPD exacerbations.

**NIPPV:** This intervention does seem to benefit a group of patients with rapid decline in respiratory function and gas exchange. It has the potential to decrease the need for intubation and invasive mechanical ventilation, and it might even decrease mortality. The physician should be aware of the contraindications for this intervention and especially recognize the features that suggest when the patient might need invasive mechanical ventilation (Table 4).

**Heliox.** No clear-cut benefit has been demonstrated through prospective investigation, even though some retrospective data seemed promising. For now, it should not be part of the evidence-based approach to treatment of an acute COPD exacerbation.

**Table 1.** Infectious causes of acute COPD exacerbations

| Bacteria | Virus | Atypical bacteria |
|---|---|---|
| Haemophilus influenza | Rhinovirus (common cold) | Chlamydia pneumonia |
| Moraxella catarrhalis | Influenza | Mycoplasma pneumoniae (rare) |
| Streptococcus pneumoniae | Parainfluenza | Legionella |
| Pseudomonas aeruginosa | Coronavirus | |
| Enterobacteriaceae | Adenovirus | |
| Hemophilus parainfluenza | Respiratory syncytial virus | |

**Table 2**. Patient contraindications for noninvasive positive pressure ventilation trial

| Respiratory | Nonrespiratory |
|---|---|
| Respiratory arrest | Cardiac arrest) |
| Upper airway obstruction | Mental status change (i.e., obtundation) |
| Unable to protect the airway | Active upper gastrointestinal bleeding |
| Unable to clear respiratory secretions | Facial surgery or trauma |
| High risk for aspiration | Facial deformity |
| | Nonfititting mask (i.e., significant air leak) |

**Table 3.** Indications for hospitalization of patients with acute chronic obstructive pulmonary disease exacerbation

1. Presence of acute exacerbation characterized by dyspnea plus one or more of the following
   **a**. Inadequate response of symptoms to outpatient management
   **b.** Inability to walk between rooms (patient previously mobile)
   **c**. Inability to eat or sleep because of dyspnea
   **d**. Conclusion by family and/or physician that patient cannot manage at home, with supplementary home care resources not immediately available
   **e.** High risk comorbid condition, pulmonary (e.g., pneumonia) or nonpulmonary
   **f.** Prolonged, progressive symptoms before emergency visit
   **g.** Altered mentation
   **h.** Worsening hypoxemia
   **i.** New or worsening hypercarbia
2. Patient has new or worsening cor pulmonale unresponsive to outpatient management
3. Planned invasive surgical or diagnostic procedure requires analgesics or sedatives that may worsen pulmonary function
4. Comorbid condition, e.g., severe steroid myopathy or acute vertebral compression fractures, has worsened pulmonary

**Table 4**. Indications for ICU admission of patients with acute chronic obstructive pulmonary disease exacerbation

1. Severe dyspnea that responds inadequately to initial emergency therapy
2. Confusion, lethargy, or respiratory muscle fatigue (the last characterized by paradoxical diaphragmatic motion)
3. Persistent or worsening hypoxemia despite supplemental oxygen or severe/worsening respiratory acidosis (pH < 7.30)
4. Assissted mechanical ventilation is required, whether by means of endotracheal tube or noninvasive technique

## REFERENCES


**1.** Murphy SL: Deaths: final data for 1998. Natl Vital Stat Rep 2000, 48:1-105.

**2.** Morbidity and mortality: chartbook on cardiovascular, lung, and blood diseases. Rockville, MD: National Heart, Lung, and Blood Institute/National Institutes of Health; 1996. [Publication no. 96-50.]

**3.** Trends in chronic bronchitis and emphysema: morbidity and mortality. Available at: http://www.lungusa.org/data/copd/copd1.pdf. Accessed November 10, 2002.

**4.** Rodriguez-Roisin R: Toward a consensus definition for COPD exacerbations. Chest 2000, 117:398S-401S.

**5.** Anthonisen NR, Manfreda J, Warren CP, et al: Antibiotic therapy in exacerbations of chronic obstructive pulmonary disease. Ann Intern Med 1987, 106:196-204.

**6.** Seemungal TA, Donaldson GC, Bhowmik A, et al: Time course and recovery of exacerbations in patients with chronic obstructive pulmonary disease. Am J Respir Crit Care Med 2000, 161:1608-1613.

**7.** Miravitles M, Mayordomo C, Artes M, et al: Treatment of chronic obstructive pulmonary disease and its exacerbations in general practice. Respir Med 1999, 93:173-179.

**8.** Seemungal TA, Donaldson GC, Paul EA, et al: Effect of exacerbation on quality of life in patients with chronic obstructive pulmonary disease. Am J Respir Crit Care Med 1998, 157:1418-1422.

**9.** Miratviles M, Murio C, Guerrero T, et al: Pharmacoeconomic evaluation of acute exacerbations of chronic bronchitis and COPD. Chest 2002, 121:1449-1455.

**10.** Mushlin AI, Black ER, Connolly CA, et al: The necessary length of hospital stay for chronic pulmonary disease. JAMA 1991, 266:80-83.

**11.** 11. Connors AF, Dawson NV, Thomas C, et al: Outcomes of acute exacerbations of severe chronic obstructive lung disease. Am J Resp Crit Care Med 1996, 154:959-967.

**12.** Almagro P, Calbo E, de Echaguen AO, et al: Mortality after hospitalization for COPD. Chest 2002, 121:1441-1448.

**13.** Afessa B, Morales IJ, Scanlon PD, et al: Prognostic factors, clinical course, and hospital outcome of patients with chronic obstructive pulmonary disease admitted to an intensive care unit for respiratory failure. Crit Care Med 2002, 30:1610-1615..

**14.** Seneff MG, Wagner DP, Wagner RP, et al: Hospital and 1-year survival of patients admitted to intensive care units with acute exacerbation of chronic obstructive pulmonary disease. JAMA 1995, 274:1852-1857.

**15.** Sethi S: Infectious etiology of acute exacerbations of chronic bronchitis. Chest 2000, 117:380S-385S.

**16.** Wedzicha JA: Exacerbations, etiology and pathophysiologic mechanisms. Chest 2002, 121:136S-141S.

**17.** Sethi S, Murphy TF: Bacterial infection in chronic obstructive pulmonary disease in 2000: a state-of-the-art review. Clin Microbiol Rev 2001, 14:336-363.

**18.** Miratviles M, Espinosa C, Fernandez-Laso E, et al: relation between bacterial flora in sputum and functional impairment in patients with acute exacerbations of COPD. Chest 1999, 116:40-46.

**19.** Sethi S, Evans N, Grant BJB, et al: New strains of bacteria and exacerbations of chronic obstructive pulmonary disease. N Eng J Med 2002, 347:465-471.

**20.** Murphy TF, Sethi S: Chronic obstructive pulmonary disease: role of bacteria and guide to antibacterial selection in the older patient. Drugs Aging 2002, 19:761-775.

**21.** Lieberman D, Ben-Yaakov M, Lazarovich Z, et al: Chlamydia pneumoniae infection in acute exacerbations of chronic obstructive pulmonary disease: analysis of 250 hospitalizations. Eur J Clin Microbiol Infect Dis 2001; 20:698-704.

**22.** Lieberman D, Lieberman D, Ben-Yaakov M, et al: Infectious etiologies in acute exacerbation of COPD. Diagnostic microbiology and infectious disease 2001, 40:95-102.

**23.** Lieberman D, Lieberman D, Shmarkov O, et al: Serological evidence of Legionella species in acute exacerbations of COPD. Eur Respir J 2002, 19:392-397.

**24.** Greenberg SB, Allen M, Wilson J, et al: Respiratory viral infections in adults with and without chronic obstructive pulmonary disease. Am J Respir Crit Care Med 2000, 162:167-173.

**25.** Seemungal TAR, Harper-Owen R, Bhowmik A, et al: Detection of rhinovirus in induced sputum at exacerbation of chronic obstructive pulmonary disease. Eur Respir J 2000, 16:677-683.

**26.** Anderson HR, Spix C, Medicna S, et al: Air pollution and daily admissions for chronic obstructive pulmonary disease in 6 European cities: results from the APHEA project. Eur Respir J 1998, 11:992-993.

**27.** Erelel M, Cuhadaroglu C, Ece T, et al: The frequency of deep venous thrombosis and pulmonary embolus in acute exacerbation of chronic obstructive pulmonary disease. Respir Med 2002, 96:515-518.

**28.** Emerman CL, Cydulka RK: Evaluation of high-yield criteria for chest radiography in acute exacerbation of chronic obstructive pulmonary disease. Ann Emerg Med 1993, 22:680-684.

**29.** Sherman S, Skoney JA, Raviskrishnan KP: Routine chest radiographs in exacerbations of chronic obstructive pulmonary disease: diagnostic value. Arch Intern Med 1989, 149:2493-2496.

**30.** . Tsai TW, Gallagher EJ, Lombardi G, et al: Guidelines for the selective ordering of admission chest radiography in adult obstructive airway disease. Ann Emerg Med 1993, 22:1854-1858.

**31.** 31. McCrory DC, Brown C, Gelfand SE, et al: Management of acute exacerbations of COPD: a summary and appraisal of published evidence. Chest 2001, 119:1190-1209.

**32** Bone RC, Pierce AK, Johnson RL: Controlled oxygen administration in acute respiratory failure in chronic obstructive pulmonary disease: a reappraisal. Am J Med 1978, 65:896-902.

**33.** Gomersall CD, Joynt GM, Freebairn RC, et al: Oxygen therapy for hypercapnic patients with chronic obstructive pulmonary disease and acute respiratory failure: a randomized, controlled pilot study. Crit Care Med 2002, 30:113-116.

**34.** Agusti AG, Carrera M, Barbe F, et al: Oxygen therapy during exacerbations of chronic obstructive pulmonary disease. Eur Respir J 1999, 14:934-939.

**35.** McCrory DC, Brown CD: Inhaled short-acting beta2-agonists versus ipratropium for acute exacerbations of chronic obstructive pulmonary disease. Cochrane Database Syst Rev 2001,( 2): CD002984.

**36.** Snow V, Lascher S, Mottur-Pilson C: Evidence base for management of acute exacerbations of chronic obstructive pulmonary disease. Ann Intern Med 2001, 134:595-599.

**37.** Wrenn K, Slovis CM, Murphy F, Greenberg RS: Aminophylline therapy for acute bronchospastic disease in the emergency room. Ann Intern Med 1991, 115:241-247.

**38.** Barr RG, Rowe BH, Camargo Jr : CA Methyl-xanthines for exacerbations of chronic obstructive pulmonary disease. Cochrane Database Syst Rev 2001, 1:CD002168.

**39.** Parameswaran K, Belda J, Rowe BH: Addition of intravenous aminophylline to beta2-agonists in adults with acute asthma. Cochrane Database Syst Rev 2000, 4:CD002742.

**40.** Cazzola M, D'Amato M, Califano C, et al: Formoterol as dry powder oral inhalation compared with

salbutamol metered-dose inhaler in acute exacerbations of chronic obstructive pulmonary disease. Clin Ther 2002, 24:595-604.

**41.** Cazzola M, Califano C, Di Perna F, et al: Acute effects of higher than customary doses of salmeterol and salbutamol in patients with acute exacerbation of COPD. Respir Med 2002, 96:790-795.

**42.** Turner MO, Patel A, Ginsburg S, et al: Bronchodilator delivery in acute airflow obstruction. A meta-analysis. Arch Intern Med 1997, 157:1736-1744.

**43.** Wood-Baker R, Walters EH, Gibson P: Oral corticosteroids for acute exacerbations of chronic obstructive pulmonary disease. Cochrane Database Systematic Review 2001,( 2): CD001288..

**44.** Niewoehner DE, Erbland ML, Deupree RH, et al: Effect of systemic glucocorticods on exacerbations of chronic obstructive pulmonary disease. N Engl J Med 1999, 340:1941-1947.

**45.** Sayiner A, Aytemur ZA, Cirit M, et al: Systemic glucocorticoids in severe exacerbations of COPD. Chest 2001, 119:726-730.

**46.** 46. Maltais F, Ostinelli J, Bourbeau J, et al: Comparison of nebulized budesonide and oral prednisolone with placebo in the treatment of acute exacerbations of chronic obstructive pulmonary disease. Am J Respir Crit Care Med 2002, 165:698-703.

**47.** Thompson WH, Nielson CP, Carvalho P, et al: Controlled trial of oral prednisone in outpatients with acute COPD exacerbation. Am J Respir Crit Care Med 1996, 154:407-412.

**48.** Saint S, Bent S, Vittinghoff E, et al: Antibiotics in chronic obstructive pulmonary disease exacerbations: a meta-analysis. JAMA 1995, 273:957-960.

**49.** Stockly RA, O'Brien C, Pye A, et al: Relation of sputum color to nature and outpatient management of acute exacerbations of COPD. Chest 2000, 117:1638-1645.

**50.** . Adams SG, Melo J, Luther M, et al: Antibiotics are associated with lower relapse rates in outpatients with acute exacerbations of COPD. Chest 2000, 117:1345-1352.

**51.** Destache CJ, Dewan N, O'Donohue WJ, et al: Clinical and economic considerations in the treatment of acute exacerbations of chronic bronchitis. J Antimicrob Chemother 1999, 43 (suppl A): 107-113.

**52.** Dewan NA, Rafique S, Kanwar B, et al: Acute exacerbation of COPD: factors associated with poor treatment outcome. Chest 2000, 117:662-671.

**53.** 53. Finiguerra M, Conti P, Figura I, et al: Clinical study on the effects of antibiotic and mucolytic association (amoxicillin and domiodol) in hypersecretory chronic bronchopulmonary diseases. Curr Ther Res 1982, 31:895-905.

**54.** Peralta J, Poderoso JJ, Corazza C, et al: Ambroxol plus amoxicillin in the treatment of exacerbations of chronic bronchitis. Arzneimittelforschung 1987, 37:969-971.

**55.** Poole PJ, Black PN: Mucolytic agents for chronic bronchitis o chronic obstructive pulmonary disease. Cochrane Database Syst Rev 2000,( 2): CD001287.

**56.** Poole PJ, Black PN: Oral mucolytic drugs for exacerbations of chronic obstructive pulmonary disease: systematic review BMJ 2001, 322:1271-1274.

**57.** Bott J, Carroll MP, Conway JH, et al: Randomized controlled trial of nasal ventilation in acute ventilatory failure because of chronic obstructive airways disease. Lancet 1993, 341:1555-1557.

**58.** Brochard L, Mancebo J, Wysocki M, et al: Noninvasive ventilation for acute exacerbations of chronic obstructive pulmonary disease. N Engl J Med 1995, 333:817-822.

**59.** Kramer N, Meyer TJ, Meharg J, et al: Randomized, prospective trial of noninvasive positive pressure ventilation in acute respiratory failure. Am J Respir Crit Care Med 1995, 151:1799-1806.

**60.** Keenan SP, Kernerman PD, Cook DJ, et al: Effect of noninvasive positive pressure ventilation on mortality in patients admitted with acute respiratory failure: a metaanalysis. Crit Care Med 1997, 25:1685-1692.

**61.** 61. Thys F, Roeseler J, Reynaert M, et al: Noninvasive ventilation for acute respiratory failure: a prospective randomised placebo-controlled trial. Eur Respir J 2002, 20:545-555.

**62.** International consensus conferences in intensive care medicine: noninvasive positive pressure ventilation in acute respiratory failure. Am J Respir Crit Care Med 2001, 163:283-291..

**63.** Rodrigo G, Pollack C, Rodrigo C, et al: Heliox for treatment of exacerbations of chronic obstructive

pulmonary disease. Cochrane Database Syst Rev 2002,( 2): CD003571.

**64.** deBoisblanc BP, DeBleiux P, Resweber S, et al: Randomized trial of the use of heliox as a driving gas for updraft nebulization of bronchodilators in the emergent treatment of acute exacerbations of chronic obstructive pulmonary disease. Crit Care Med 2000, 28:3177-3180.

**65.** Gerbeaux P, Gainnier M, Boussuges A, et al: Use of heliox in patients with severe exacerbation of chronic obstructive pulmonary disease. Crit Care Med 2001, 29:2322-2324.

**66.** American Thoracic Society: Standards for the diagnosis and care of patients with chronic obstructive pulmonary disease. Am J Respir Crit Care Med 1995, 152:S77-S120.

**67.** Anthonisen NR: Bacteria and exacerbations of chronic obstructive pulmonary disease. N Engl J Med 2002, 347:526-527.

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# *Acceptance of self-treatment in Hemophilic Patient: A Training Method*

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**ABSTRACT**

Introduction. Home therapy for chronic diseases is suitable for hemophilics, because it is one clinical area where home monitoring is recommended. In our country, home therapy is an advantage as it utilises less resources. For success in this procedure, participation and acceptance of the patient is an essential requirement.

Methods. Study was done for a 6 month period from the beginning of 1380 (Note from Editor: Islamic date - around 600 years ago ) for investigation into acceptance of self-treatment by patients suffering from hemophilia. Patients were above 5 years of age, and their family lived in Shiraz. In this investigation, training was used as a means of transferring the minimum information and also to evaluate the increasing rate of self-treatment and its acceptance by the hemophilic patient and their family. 21 people were selected randomly. Related information pertaining to social status of the patient and family, before and after training, was collected by questionnaire and analyzed with statistical tests.

Results From twenty-one patients, or selected families, 16 cases were found to be successful in self-treatment. Success in acceptance of home treatment was 75%, showing a meaningful connection with level of literacy ($P<0.05$), but no connection was found between the number of patients with family, or of a particular sex, or duration of the disease.

Discussion. Findings show the rate of acceptance, and participation of patients is ideal, and it is suggested to consider teaching self-training, initially in centers, for hemophilic patient's self-treatment.

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**Keywords:** Hemophilia, Home therapy, Training, Self-treatment.

## INTRODUCTION

The first examples of knowledge of hemophilia were made in the 5th century A.D. At that time Jewish clergy issued exemption for circumcision of boys in families where bloodshed culminated in death (1).

Hemophilia is an inherited disease that is dependent on sex. Its prevalence is one1 in ten thousand in all societies (2).

In Iran there are more than 5,000 patients suffering from hemophilia with 3300 persons with hemophilia type A. Until the present time there is no cure and for maintenance of life, the patient s have been dependent on factor 8, which is injected. In most chronic diseases home therapy is recommended, because of the advantages of administering of drug treatment in the home (5-3). Home administration of therapy has been successful in patients with chronic disease, among them, hemophilia. (6)

The injection of factor 8 helps in preventing adverse events of hemophilia. It is important therefore that families of affected individual should have access to the treatment

In hemophilia, self-treatment is a type of home therapy whereby in administering the drug, the patient or his/her family contribute directly in the management which will help in providing better services, provided the patient or his family receive adequate scientific advice.

In spite of acceptance of home therapy in most countries, this method in our country has been used less frequently, and until now study has not been done into its efficacy. The published articles have focused on different advantages of home therapy; decrease in costs, decrease in infection rates and promotion of physical status, and none have discussed the rate of acceptance of this method, by patients. (8, 7, 5 - 3). The present study has taken into consideration this important point, to find information, which will be more effective in gaining cooperation of patients.

## METHODS

The method of study was by trial. Gathering of initial data was done at a center of uncontagious diseases of hygienic assistance, a transfusion of blood organization, and at a clinic of special diseases. The place of training was at a clinic for special patients in Shiraz city.

The study population was 42 persons in the age group 5 years and above, and who suffered from hemophilia type A. The amount of factor 8 in their blood, according to a card at the central transfusion of blood organization, was less than 2 units. Half of the patients were selected for random study. Studying began in 1977 and continued for 6 months. The patients, along with their family, participated in theoretical and practical training classes. Before training began questionnaires of evaluation of personal information of the disease were distributed. Gathering information by questionnaires was analysed statistically before and after the period with t-paired and x2 test. Training in theory was done via lecture, and questions and answer sessions related to that were conducted before training.. Every 2 hour session, 3 days a week, continued for 2 months.

Practical training was in the form of groups of several persons within the clinic and practicing injections continued until confidence was attained.

The book of Self-treatment of Iran hemophilia society was given to associates, of the patient as well. This book contains necessary information for patients; questionnaires relating to specific drugs and methods of self-treatment. Criterion of success was not necessary for personal injections. Control and supervision was done in clinics of special diseases with recording of all actions in patients' files, and with supervision by responsible personnel.

## RESULTS

The average age of patients for the study was 11.95+ 6.5 year (maximum 26 and minimum 5 years). From twenty-one patients, 19 were male and 2 female. 8 patients were aged under 10 years and their family members (father and brother) trained on their behalf, and 13 persons participated in training themselves.

In the duration of the study fortunately no cases of death, migration or major accidents were observed. Level of education of educated persons (parent + children) consisted of: diploma - 3 persons, under diploma -10

persons and illiterate - 8 persons. After the end of the period, 15 persons succeeded to self-treatment and 6 persons were unsuccessful.

**Table 1.** Rate of success in self-treatment

| | | |
|---|---|---|
| Success in self-treatment | 71.4% | 15 persons |
| Unsuccessful in self-treatment | 28.6% | 6 persons |
| Total | 100% | 21 persons |

**Table 2.** Comprehension of theory of persons in beginning of training

| Percent | Number | Comprehension |
|---|---|---|
| 9.5 | 2 | 15 |
| 28.6 | 6 | 20 |
| 19 | 4 | 25 |
| 33.3 | 7 | 30 |
| 9.5 | 2 | 35 |
| 100 | 21 | Total |

**Table 3.** Comprehension of theory of persons after training

| Percent | Number | Comprehension |
|---|---|---|
| 4.8 | 1 | 50 |
| 19 | 4 | 70 |
| 23.8 | 5 | 75 |
| 9.5 | 2 | 80 |
| 28.6 | 6 | 85 |
| 14.3 | 3 | 90 |
| 100 | 21 | Total |

The average of comprehension of the theory before training was 25.23 + 6 but after training increased to 78.33 + 9.5 ($P<0.01$). The group of instructed parents had no major difference in outcome than the group that had trained themselves.

Improvement in comprehension showed no difference between the sexes. Confidence in self-treatment after training, showed 75% percent improvement.

Success in self-treatment did not vary between the sexes but did show a correlation with the literacy of the person.

During the study, no obvious accidents were reported, not even incorrect dosage.

## DISCUSSION

Birmingham in an article entitled "work order of selection of patient for venous treatment in home" declared that medical expense was an important factor (7). Modern doctors should evaluate every patient and their

clinical status to find the best method of home treatment. The article places more emphasis on key criterions of selection of venous methods for home therapy than, type of drug and disease (3).

In another article the special manner of order of blood products in home for different diseases was studied, and has been criticized from unassimilation of its order and it has been suggested that a blood bank organization play a more active role (5).

Catania emphasises the storage requirements of injectionable drugs in the home with attention to factors like: heat, light, PH type of liquid and constancy of consumed drug (8).

In another investigation, on five dogs suffering from hemophilia B, injection of factor IX in the form of subcutaneous, muscular and inperituvan, was compared with venous injection with subcutaneous injection offering better results.

Subcutaneous and venous injections were compared in humans, as well. Because of similar results, some problems of hemophilia treatment in home, among them problems of venous injection, subcutaneous injection replaced venous injection (9).

Instruction to assistants has been included the need for personal hygiene (2).

The book of "self-treatment in hemophilia" that was translated and published by the hemophilia society of Iran, has explained the special requirements of self-treatment perfectly (6).

With attention to above references, home therapy or in this case, self-treatment, is a useful method and has been accepted in treatment of chronic diseases, among them hemophilia. But supervision, selection of patient and special manner of treatment and skills of doctors are important factors in order to decrease accidents and increase success rates.

This study was undertaken to investigate acceptance of self-treatment by hemophilia patients. Self-treatment was considered an advantage as once undertaken by the patient or family, it alleviates pressure on prevention and primary care facilities or centres.

With attention to the conclusions of our investigation, patients' knowledge increased in the form of meaningful ($P<0.01$) results. Grades of success did not show a meaningful connection with sex, or number of sufferers, when the individual or their family member is the agent of self-treatment. There is meaningful connection with level of literacy however. The most important outcome was that 75% percent of participants succeeded to self-treatment.

All hemophiliacs require coagulation factors, and because these can be stored properly in the home, the role of the patient in home treatment is indicated.

The conclusions of this study show that the rate of success in self treatment can be achieved through the education of patients and due to the success of the patients involved in the study, we believe that self-treatment of hemophilia is and desired.

## REFERENCES


1. Rambod, sh. Light future for hemophilia patients. Iran hemophilia society, Tehran 2006.
2. Choopan, A. Inheritance in hemophilia. Tehran, Iran hemophilia society 2002: 14-16.
3. Choopan, A. Self-treatment in hemophilia. Iran hemophilia society, Tehran 2001.
4. Lameiee, A. Principles and basis of instruction of patient low literacy. The collection of summary of articles of seminar of instruction to patient, Shiraz 2004.
5. .Behrman RE, Kleigman RN, Arvin AM. Nelson Text book of Pediatrics. 15th ED. Philadelphia, Saunders Co. 1996.

6. Abraham M. Rudolph pediatrics. 19th Ed. California, Appleton & Lange Co. 2002.

7. Birmingham JJ. Decision matrix for selection of patient for a home infusion therapy program. J Intervene Nurse 2002; 20(5): 258-53.

8. Catania PN. Storing potential medication at home. Home Care provide 2002; 2(6): 292-4.

9. Buck C. Siliastic catheters for home antibiotic therapy in patient with cystic fibrosis. Euro J Pediatrics 2000; 156(3): 209-11

## *A Study of Depression Prevalence in Nurses and It's Effect in Shiraz Namazi Hospital*

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**ABSTRACT**

In a cross-sectional survey, depression prevalence of 130 nurses in Shiraz Namazi hospital, Iran, has been investigated by using long form test items (21 questions) of Beck depression questionnaire. Also necessary data for independent variables was collected by interview.

The findings of this study indicated that depression rates of mild, moderate and severe types were 73.1%, 21.5% and 5.4%, respectively.

In this study a statistically significant association has been found between depression and marital status ($P<0.0001$), level of education ($P<0.005$), overtime hours at work ($P<0.02$) and parent's death in childhood (before 11th year of age) ($P<0.001$).

**Key Words:** Depression; Nurses; Prevalence; Beck questionnaire

**INTRODUCTION**

Depression encompasses feelings of indisposition, shortage of energy, despair, uselessness, disinterestedness and pessimism that may lead to suicide.
The prevalence of this disease in society is 9 to 20 percent, but when more exact criterion was taken into consideration for measurement of mature depression, its prevalence is 3% in men and 4 to 9% in women. (3).

Probability of suffering from depression in duration of life, for women is almost 20% and for men 10% and that only 20 to 25 percent of people have criterions of depression that have been cured. The prevalence of depression is in women twice that of men and age of beginning of depression varies from childhood until the age of retirement but in 50% of cases disease begins between the ages 20 to 50. (Average age at the beginning of this disorder is about age 40.) (3).

There is a direct relationship between onset of depression and physical stress. In a work environment

physical, psychological and social stimulants can contribute to stress (4). In nurses a variety of stressors, create a state of chronic weariness and depression is the result of despair (5).

Nurses don't only assume the role of carers but are also administrators and supervisors of patients.(6). They perform the role of advisor on the subject of hygiene and are members of a group trained to be responsible for public health, disease prevention, and advocates for the full health of individuals, of families and of society (7).

Nursing is a profession where depression is apparent and documented ( 8). The abandonment of nursing as a profession and a decrease in the number of volunteers in this field has been due to different reasons, with one factor lack of job satisfaction. If expectations of a nursing career, both professional and personal are not met, discouragement and disillusionment contribute to an abandonment of the profession (9).Absenteeism due to depression also causes problems (10)

In our research one aim was to compare the rates of depression between our nurses and those in other societies. Research focused particularly on upper levels of stress in nurses in Iran, compared to nurses in other societies. 75.6% nurses have job stress in the little and middle categories. (11).

It is important to have a stress and depression free, nursing profession, as nurses are responsible for many services including hygiene and the guaranteeing of a healthy society. The present study was devised for with the purpose of finding the levels of depression in nurses in Shiraz Namazi hospital and the connection with some effective factors.. These factors consisted of: age, marital status, educational qualification, occupation of spouse, education of spouse, number of children, parent's death before 11th age (at childhood), absence of support by relatives in the preceding 6 months, continuous use of contraceptives in the previous three months, existence of present pregnancy, rate of over time hours worked and rate of night-shift hours.

Namazi hospital is an important center of sciences and medical technology in the south of the country that performs many services which entail heavy workloads and shortages of staff leading to fatigue and depression.

## METHODS & MATERIALS

The type of study was cross-sectional. The study population consisted of: 130 nurses from Namazi hospital.

Information was gathered by a questionnaire consisting of two original parts, and included gathering of social and occupational information. A test of 21 questions, by Beck, was completed first, by the nurses. Beck test appoints different rates of depression from mild till severe. The maximum grade in the test is 63.This test is independent from culture and isn't specific to any class or economic or educational levels.

For analyzing, information was used from statistical tests analyzing variance and T test, in SPSS software.

## FINDINGS

In this study, 130 nurses were interviewed and 73.1% of subjects had mild depression, 21.5% had moderate depression and 5.4% had severe depression. (Table 1).

**Table 1.** Distribution of proportional abundance of intensity of depression in Namazi hospital nurses

| Percent | Number | Intensity of depression |
|---|---|---|
| 73.1 | 95 | Mild |
| 21.5 | 28 | Moderate |
| 5.4 | 7 | Severe |
| 100 | 130 | Total |

The depression prevalence according to independent variables of marital status and parent's death before 11th age (at childhood) has been shown in Table 2.

The maximum prevalence of severe depression was observed in widowed persons and a group that had lost their parents before 11th year of age.

Statistical specification of depression according to independent variables has been shown in Table 3. Between age, occupation of spouse, education of spouse, number of children, absence of relatives in last 6 months, continuous using of contraception in last three months, existence of present pregnancy and rate of night-shift hours (hour per week) there wasn't any meaningful connection with the state of depression.

Between depression prevalence with marital status (P<0.0001), educational qualification (P<0.006), parent's death before 11th year of age (P<0.001) and rate of over time hours per week (P<0.02) there was a meaningful connection.

**Table 2.** Distribution of depression intensity according to different variables, before recent 6 months

| Total | | Severe | | Moderate | | Mild | | Depression |
|---|---|---|---|---|---|---|---|---|
| percent | number | percent | number | percent | number | percent | number | Independent variables |
| | | | | | | | | Marital status |
| 30.8 | 40 | 2.5 | 1 | 20 | 8 | 71.5 | 31 | Single |
| 59.2 | 77 | 2.6 | 2 | 16.9 | 13 | 80.5 | 62 | Married / divorced |
| 4.6 | 6 | 16.6 | 1 | 66.6 | 4 | 16.6 | 1 | widow |
| 5.4 | 7 | 42.9 | 3 | 42.9 | 3 | 14.3 | 1 | Parent’s death before 11th age |
| 12.3 | 16 | 25 | 4 | 43.8 | 7 | 31.2 | 5 | Yes |
| 87.7 | 114 | 2.6 | 3 | 18.4 | 21 | 78.9 | 90 | No |

**Table 3.** Statistical specifications of depression privilege according to independent variables in Namazi hospital nurses

| | | | | |
|---|---|---|---|---|
| P<0.0001 | | | | **marital status** |
| | 9.37 | 11.2 | 40 | Single |
| | 8.82 | 11.27 | 77 | Married |
| | 9.46 | 25.67 | 6 | Divorced |
| | 8.49 | 26.14 | 7 | Widow |
| P<0.006 | | | | **Educational document** |
| | 11.39 | 17.54 | 26 | |
| | 9.21 | 11.51 | 104 | Parent’s death before 11th age |
| P<0.001 | 9.97 | 23.56 | 16 | Yes |
| | 9.98 | 11.19 | 114 | No |
| P<0.02 | | | | **Rate of over times hours (hour per week)** |

| | | | | |
|---|---|---|---|---|
| | 9.57 | 12.03 | 72 | Hours per week |
| | 12.33 | 18.5 | 22 | 0 - zero |
| | 8.69 | 10.95 | 20 | Lower than 14 |
| | 6.80 | 9.79 | 14 | Lower than 14 |

## FINDINGS

The findings of this study showed that 21.5% people studied have moderate depression, and 5.4% have severe depression.

Therefore it can be said that in total 26.9% have notable depression.

In this study the connection between depression prevalence and marital status was meaningful (P<0.0001). Divorced and widowed people were more depressed than single and married persons.

In this concern we can say that social support among family relations and matrimony have an inverse relationship with creation of stress and physical illness(12) and in subjects without support, there are increased rates of occupational stress. (13) Married nurses experienced less occupational depression due to support from family. (14). In the research 41% of nurses studied supported themselves 18% had a spouse and family (11) 37.5% divorced and widowed persons were inclined to change their profession, while this was 27.7% in married persons.

In this study the inclination to change employment was an issue for nurses(15) and with attention to family and lack of formal support (16) divorced and widowed persons had enjoyed less social support from family members, than married and single subjects.

In this study there was a meaningful and inverse relationship between intensity of depression and level of education (P<0.005). When nurses do not have sufficient clinical information or training, this causes lack of confidence (17) and we can conclude that with increasing of levels of education and clinical information income will increase and depression decrease.

The correlation between depression prevalence an parent's death before 11th age was seen as a meaningful connection (P<0.001).Persons who had lost parents before 11th year of age, have been deprived of important support in early years, and have undergone hardships in formative years and this problem has culminated in the appearance of the disorder.

In our research on overtime hours per week and the intensity of depression there was a meaningful connection (P<0.02) between the probability of increased work hours leading to increased income for nurses and in relation to occupational stress connected with the rate of income of nurses (17) which decreases depression.

Existence of social supports is very important in the workplace because there is an inverse relationship between support by head nurses and colleagues with occupational stress of nurses (14).

Head nurses and supervisors are the frontline people best able to show attention, supporting and cooperation (17). In our research only 45% of nurses mentioned receiving support from these personnel. (11). Head nurses especially should pay more attention to young nurses requiring support because with maturity such problems decrease with an increase in support. (12).

## REFERENCES

1. Perko, JE, and Kreigh, H. Z Psychiatric and Mental health nursing A commitment to care and concern. Third edition- Appletion and lance 1999 pp, 143-146.
2. Gold man HH: Review of General psychiatry (2nd Ed.) USA.
3. Kaplan HJ, Sandock BJ: synopsis of psychiatry, behavioral sciences, Clinical psychiatry (5th Ed.) Baltimore: Williams & Wilkins 2001.
4. Kalimo, R. and et al. psychosocial factors at work. World Health Organization Jeneva 2000, p.2.
5. Gallaghere, Dianel. Is stress ripping nursing a part? NSNA, April 2003 pp, 59-63.
6. Korn, Thora, the management of patient care, W.B. Saunders Company 9th edition, 1998 pp, 78.
7. Dugas. Beverly, weiter introduction to patient, a comprehensive approach to nursing fourth edition. Philadelphia W.B.Saunders company 1983, 2004, P: 71-90.
8. Faulkner, N. and Mackay, EC. Stress in the work place public health and hospitals nurses. The Canadian nurse, April- 2000 pp 40.
9. Ostooie, Nasrin Dokht. Considering of selection motivation of nursing profession and appointment of measure of job satisfaction of occupying nurses in Tehran instructional hospital, thesis of P.H.D of nursing college, the center of Aran medical sciences university, Tehran 2003.
10. Dugas, Beverly, writer instruction to patient care a comprehensive approach to nursing eight editions. Philadelphia. W.B.Saunders Co. 2002 pp, 241.
11. Paiamy Busari, Mitra. Considering of state of social supports and it's relation with job wearing of nurses, cares of specially P.H.D nursing instruction - tendency of comprehensive hygiene of medical sciences college - university of education of teacher 2000.
12. Norbeck, Jane S. types and sources of social support for managing Job stress in critical care nursing. Nursing research vol. 34(4) Jul-Aug. 2001 pp, 223-225.
13. Mac abee, Occupational stress and burnout in the nursing progression, a mode of prevention. AAO HNJ. Vol 39 (12) Dec 1991 pp. 568-585.
14. Morano, J. the relationship of workplace social support to perceived work-related stress a many staff nurses. J. post onesth nurse. Vol 8(6) Dec, 2000. pp, 395-402.
15. Taiebeh, Narges. Effect of methods and social supports in stabilization of nursing graduates of Tehran in self selectional profession, thesis of high Institute of Firoozgar, Tehran 1363.
16. Bigel, David, Magziner, Jay & Baum, Martha. Social support network of white and black elderly people of risk of institutionalization, health & social work. Vol 16 No. 4 NOV. 2002 pp, 245-257.


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## MEDICINE AND SOCIETY

# *Home Health Care Team Members*


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**ABSTRACT**

Home health care (HHC) is that component of a continuum of comprehensive health care whereby health services are provided to individuals and families in their places of residence for the purpose of promoting, maintaining or restoring health, or maximizing the level of independence, while minimizing the effects of disability and illness, including terminal illness. (9) Even if HHC programs have been established as hospital-based programs for over the past ten years to solve the long-term occupancy of their hospital beds, it has just started in Saudi Arabia. There are no-community-based HHC services in the country.

The members of the home health care team may include: physician, nurse, medical social worker, home health aide, physician's assistant, psychologist, paid homemaker, dentist, rehabilitation personnel, dietician, optometrist, volunteer, friend, and family caregiver. Each professional from each discipline brings a special set of knowledge, attitudes, and skills to home care. The patient's needs and the requirements outlined in the home care plan are the bases of the level of involvement of each professional in the home care. There may be overlapping of functions because of patient's needs and the intermittent, part-time nature of professional home care services. (2) The home care professional is alone in the patient home with the patient, and must often provide, in addition to the planned professional interventions, a general view of the entire team's home care program. The shared tasks are brief assessment of the overall effectiveness of the comprehensive home care plan; assessment of patient and caregiver interactions and satisfaction with the home care program; identification of any new problem; notification of appropriate team member(s) for follow-up of new problems; and encouragement and reinforcement of instructions from other team members.(2) Each team's composition depends on each patient's needs and on its responsibilities to take care of these needs.

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**Key words.** Home Health Care (HHC)

**INTRODUCTION**

Home health Care (HHC) is a formal, regulated program of care provided by a variety of health care professionals in the patient's home. (1) The unique aspect of home care is the nature of the collaborative team effort.(2) Each professional from each discipline brings a special set of knowledge, attitudes, and skills to home care. The patient's needs and the requirements outlined in the home care plan are the bases of the level of involvement of each professional in the home care. There may be overlapping of functions because of patient's needs and the intermittent, part-time nature of professional home care services. (2) Unlike in hospital setting where other team members are readily around, the home care professional is alone in the patient home with the patient, and must often provide, in addition to the planned professional interventions, a general view of the entire team's home care program. The shared tasks are brief assessment of the overall effectiveness of the comprehensive home care plan; assessment of patient and caregiver interactions and satisfaction with the home care program; identification of any new problem; notification of appropriate team member(s) for follow-up of new problems; and encouragement and reinforcement of instructions from other team members.(2) Each team's composition depends on its responsibilities which each patient needs. A HHC team may include any of the following: physician, nurse, medical social worker, home health aide, physician's assistant, psychologist, paid homemaker, dentist, rehabilitation personnel, dietician, optometrist, volunteer, friend, and family caregiver. (2)

This article is a review of literature on the role of HHC team members. According to Home Health Care websites, the home health care team consists of physicians, nurses, home health aides, medical social workers and therapists who coordinate care based on an individual's needs. (3,4,5,6,7)

The physician's role in the HHC team cannot be undermined. (8) Home visits very important to HHC for many reasons. They can help the physician gather information that may not have been uncovered in the office visit as evidence of neglect, incontinence, or use of multiple medications, understand better the environmental and family factors that might influence a person's health, and assess better pertinent activities of daily living and clarification of a situation that may have been perplexing in the office setting. Home visits serve as opportunities to monitor home care service. Physicians can act as administrators and active participants. By knowing the patient's baseline data, the physician can direct other health care professionals who are members of the HHC team. By understanding the role of each team member, the primary care physician will be able to provide more cost effective care. Another purpose of home visits is providing emotional support to the patient and the family. When a patient is seen by a physician in the home, fears of being abandoned will be relieved. (9)

There are two models for physician participation in the HHC team. The common model shows the physician relying on the home health care nurse to be liaison, team leader, and coordinator in addition to performing the regular nursing activities. (2) The second model is active physician participation in HHC. A mnemonic INHOME (9) (which stands for Immobility, Nutrition, Home Environment, Other home health care team members) was devised to help family physician remember its role. It expanded to INHOMESSS4 (which stands for Immobility, Nutrition, Home Environment, Other home health care team members, Medications Examination, Safety, Spiritual Health, and Services by home health agencies).

Corrective interventions can be made by physicians when proper assessment can be done of patient's mobility (daily activities of bathing, dressing, feeding, toileting, continence, shopping for food, paying bills, preparing meals, doing homework, etc.) and these can be properly evaluated more properly in the home. Corrected interventions can be made at any deficiencies noted. (9,10) Physicians can better evaluate the patient's current nutritional status and state of hydration as well as his capabilities for maintenance of proper nutrition. (9,10)

The patient's home environment should allow for privacy, social interaction and both spiritual and emotional comfort and safety. It can also reflect the patient's interests and hobbies. The physician can assess the patient's safety and sense of security in his home, and thus can recommend activities, which the patient can do at home. (10)

Family physicians should evaluate and assess the other home health care team members' tasks. As the patient's social support system cannot be fully appreciated during office visit, the accessibility and helpfulness of family members and neighbors, especially in an emergency situation, need to be evaluated. Evaluation of the caregiver's needs and risk of burnout is critically important. (10) In the home, cues for caregiver stress or burnout are more evident and can be assessed easier, thus recommendations for respite care can be made more easily (9, 11)

The physician can assess the patient's medicine cabinet to be certain of the full extent of the prescription and nonprescription drug use by an individual patient, (9) and also allow a direct estimate of patient compliance, uncover evidence of "doctor shopping," and identify the use or abuse of over-the-counter medications and herbal remedies.(10)

The physician should be able to assess the patient's and caregivers' ability to manage the equipment at home such as ventilators, peak flow meter, self monitoring glucose levels, and others so as to teach them the proper use of each.(9,10)

Home safety assessment is done to assess the patient's environment as to his comfort and safety so that unreasonable injury is avoided. The physician should simply state the intention to identify and help modify condition to ensure safety. (10) Home safety elements are: furniture such as tables and chairs, stairs, bathroom, loose carpets and throw rugs, lighting and night lights, emergency actions and safety route, fire and smoke detectors, and fire extinguishers, water source, hot water heater, heating and air conditioning, gas and electric utilities.

The physician should well know that religion and tradition plays a strong role in Saudi Arabian society. The physician's ability to fast and to pray may be affected by his illness, and the physician should be able to assess this. He should be able to convince the patient on the medical aspect of health.

The nurse's role in the team is very important in the HHC since the most HHC service is provided by nurses. (10) The nurse collaborates with the physician to provide the patient with home care that he needs. Home care nurses also work with various personnel from ancillary disciplines to coordinate services designed to optimize a client's quality of life. A nurse determines the type and frequency of nursing interventions to be implemented and evaluates the patient for any needed ancillary services when performing a client's initial assessment. (10) The home care nurses primarily implement the medical and nursing care plans and identify needs for ancillary services and make recommendations to physicians. (12) Physicians revise treatment plans based on the nurse's report of changes in the patient since they see the patient frequently than the doctor. Developing comprehensive problem lists and assessment of care and goal plans are HHC nurses' responsibilities, too. (10, 11) All the HHC team personnel perform initial assessments, and subsequent assessment hereto after which all there services are based from; these they coordinate with the nurse. Case conferences are held wherein multidisciplinary team meets collectively to brainstorm strategies that will most effectively help patients to achieve their goals which the team members' goals are compatible with. The nurse coordinator establishes a schedule of visits with several people performing different interventions in rapid succession do not overwhelm patients. Lack of communication can cause unnecessary conflicts in treatment plans that send mixed messages to patients and lay caregivers, thus resulting in lay caregivers to lose trust in the home care team. The nurse coordinator sees to it that regular communication is important to ensure that interventions are complementary. (10, 11)

In addition, the nurse should provide the documentation, keeping all patient data (patient clinical assessment, diagnosis, HHC treatment plan, objectives, and goals) recorded. (10,12) Nurses must also stay in contact with different community services and organizations which will meet the comprehensive long-term needs of patients as: equipment, medical supplies, food, socialization, laboratory testing, and personal care. These organizations can facilitate and enhance the ability of patients to maintain independence in their own homes.(10,13)

The Pharmacist's role in the HHC team is guided by the American Society for Hospital Pharmacists' guidelines. He is responsible for willingness and ability of the patient or caregiver to be trained to properly administer medication; and appropriate indication, dose, route and method of administration of medication; and appropriate laboratory test for monitoring patient to medication orders. The appropriateness of whether the first dose of medication is to be given in the home should be guided by clinical judgment. The pharmacist should ensure that the patient or caregiver receives the appropriate education, training, and counseling regarding the patient's drug therapy. Pharmacist should be readily accessible in the event that problems or questions arise. The pharmacist should use clinical judgment for many procedures and equipment use and maintenance, home inventory maintenance, and procedures for securing additional supplies and medication when needed, potential adverse effects, drugs interactions, drug nutrient interaction, and their management; special precautions for the preparation, storage handling, disposal of the drug, supplies and biomedical waste, and emergency procedures. (13) The pharmacist with the patients or caregiver and other health care professionals is responsible for developing an appropriate pharmaceutical plan for each patient.

The physical therapist's role in the team is helping evaluate a patient's need for assistive devices (such as canes, walkers, crutches) and educate patients about their safe and appropriate use. He also assists patients to improve mobility and to reduce the risk of injuries resulting from accidents. He is most useful in putting up a plan for patients with mobility problems, difficulties with ambulation, transfers, or bed mobility and chronic pain, balance or coordination problems, or decreased range of motion and strength. He establishes the home exercise program to enhance or maintain a client's range of motion, muscle strength, and endurance. (9,10)

The occupational therapist's role in the HHC team is managing patients with diseases or disabilities affecting their functional status. Occupational therapists provide services to increase a patient's ability to perform activities of daily living such as: bathing, dressing, toileting, cooking, eating, and homemaking. They instruct clients on techniques on techniques, equipment, and aids that can help them to overcome their disabilities. (11) They also assist patients incapacitated by illness or injury with adapting their homes to improve functionality, as well as educate patients with reduced respiratory capacity (such as COPD, CHF) or with chronically compromised strength and endurance (such as muscular dystrophies) in energy conservation techniques. (10) They may recommend ways to adapt clothing that enable patients to dress themselves, use specially designed utensils or devices that will help patients maximize their autonomy, which can profoundly affect self-esteem and the ability to leave alone. (10, 11)

Occupational therapists develop exercise programs for home care patients who have decreased functions in upper extremity or hand because of impairment such as nerve or brain injury, or CVA. They can apply

splints, which are used to rest inflamed joints in optimal positions to prevent or to correct deformities. Occupational therapist also deals with applications for home adaptations, including stair lights or rails, grab rails, bathroom adaptation, widening door for wheel chairs, and positions of switches and extra heating appliances. (10)

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The primary objective of a caregiver for an aging or disabled individual is to provide a safe environment combined with the highest level of achievable independence. Fortunately, the home health care industry and medical products manufacturers have produced innovative products and equipment designed to help patients maintain independence, dignity and safety. Medical Supplies & Equipment is a reliable, established home health care supplier offering a wide range of physician-prescribed home health care.(14)

The speech therapist's role in HHC team is to help patients develop their remaining communication skills and to learn compensatory communication mechanisms through visual cues and cognitive retraining. He sets up a variety of communication aids and technology, assists patients with learning sign language,

obtaining hearing aids or mastering the use of an electro larynx, and teaches them to use a simple communication board that includes common messages they wish to communicate, which enable patients to point messages on the board indicating whether they are hungry, thirsty, hot, or cold. Recent advances in computer technology provide telecommunication systems for hearing loss patients, which transcribe spoken words into written messages on a screen. (10)

The role of social workers in the HHC team is to provide invaluable assistance to the home care team by providing emotional and psychological supports. Sometimes HHC becomes stressful due to conflicts between the caregivers and patients, limited community resources, restrictions on the type and amount of care provided, and the challenges to patient autonomy that arise as a result of chronic and acute illnesses. When patients inexplicably fail to comply with instructions outlined in their treatment plans and the refusal of care to participate in the care of a patient for reasons that are not apparent to the clinicians involved, social aspect of HHC management may appear. The social worker is the key figure in access to community care services for care of elderly patients or old age psychiatry. (15) When an extra support at home is needed, social worker will start a formal assessment procedure, which varies from an initial assessment of mobility, personal care abilities, and current environment process involving input from other members of HHC team and including assessment of finances. (16) He links the patients also to formal and informal sources of support, and providing emotional support to help them resolve feeling related to loss, the burden of caregiver, and the need to readjust relationships in the face of illness and disability. (16) The social worker's community-based activities of care are coordination, health education, counseling, assessment, and skill in facilitating decision making related to ethical issues. To insure that standard are maintained the social worker will do regular inspection and monitoring unit visit (16). The social services departments provide 24 hour emergency call system for people who are: elderly or disabled; living alone or unable to use an ordinary or adopted telephone, which consists of press button and loud speaker installed in the phone or a portable pendant that is worn around the neck or as a bracelet or brooch. (16)

The role of home health aid in the HHC team performs services involving the personal care of the patient. The home health care assistant works under the direct supervision of the home care nurse to follow a course care outlined in the written care plan. (10) He may help the patient in bathing, transferring in and out of bed, grooming, dental care, exercise, and taking of medications. He may also help with light housekeeping chores, such as changing bed linens. (10) A trained paid housekeeper can take this role of the home health aid.

Family members can provide personal care, wound care and administration of intravenous medications. (17) Although HHC has the ability to lower the more obvious health care costs associated with hospitalization or long-term institutional care, home health care may also increase the personal cost to family member's emotional, social, physical, and financial well-being. (17, 18) If the patient's informal support network becomes unable to handle the increased burden resulting from disease progression, treatment intensity or depletion in available resources, home health care may collapse. A home health care team should consider the increased family caregiver burden and try to decrease it by looking for other alternative such as respite care. The aim of respite care is to ease the pressure of the caregiver by substituting an alternative method of care for a period of time, which may be a few hours, days or weeks. (16)

In cancer care, home health care team members are composed of the following:(19,20) oncologist, rehabilitation specialist, nurse, psychologist, psychiatrist, social worker, dietary or nutritional service, and home health aides. The services of a rehabilitation specialist help people recover from physical changes caused by cancer or cancer treatment. It includes the services of physical therapists, occupational therapists, counselors, speech therapists, and other professionals who help you physically recover from cancer.

In Saudi Arabia, the results of the Al Hazmi study 21 showed that health care professionals had positive attitudes toward HHC services. Virtually all health care professionals agreed that there is a need for home health care services in Saudi Arabia because of their importance to patients. This was supported by almost all their answers to the important questions related to providing HHC to their patient. This reflects from their experiences from their professional day-to-day practice the actual patients' needs of home health care. It was also found out that no structured HHC services were available in government hospitals and PHHCs in Al-Khobar and Al-Dammam.

## CONCLUSION

The quality of life of the terminally ill patients relies heavily on the psychosocial skills of health care professionals. The health care team consists of a physician, nurse, respiratory pharmacists, therapists, social worker, home health aide and volunteers. The team develops an individual care plan, which will provide an appropriate support system for the patient and their family up to and beyond patient's death. Weekly meetings allow the team to focus on the changing needs of the patient and make adjustments to their plan.(13)

## REFERENCES


1. Montauk L. Home health care. .Am Fam Physician 1998; 58: 1608-1614.
2. American Medical Association. Medical management of the home care patient: guidelines for physicians. 2nd ed. Chicago: The Association, 1998.
3. Frequently Asked Questions on Home Health Care. July 16, 2005. <http//www.co. sauk.w.us/dept/ph/homecare/faq.htm.
4. Our Multidisciplinary Team. November 2005. http://www.uchs.org/hch/ homehealth.cfm.
5. Home Health Care. Jan 2006 http://phcris.org.au/publ.
6. Anonymous. Geriatrics in GCC Countries. 2000.
7. Neighbors M, Monahan, F. A re ADNS Prepared to be Home Health Nurses? N & HC: Perspectives on Community 1997: 18:15-18.
8. Unwin B, Jerant A. The Home Visit. Am Fam Physician 1999; 60:1481-1488.
9. Knight A. Adelman A. The family physician and home care. Am Fam Physician 1991; 44: 1733-1737.
10. Green K. Home care survival guide. Philadelphia: Lippincott; 1998.
11. American Medical Association. Physician guide to home care patient: guidelines for physicians. Chicago: The Association, 1989.
12. Bean C. High-Tech Homecare Infusion Therapies. Critical Care Nursing Clinics of North America 1998; 10 (3): 278-304.
13. Swanson J, Nies M. Community Health Nursing. Second edition, Philadelphia: Saunders company; 1997.
14. Egan M, Kadushlik G. The Social Worker in the Emerging Field of Home Care: Professional Activities and Ethical Concerns Health and Social Worker 199; 24 (1): 43-55.
15. Health Care Alternatives. July19,2005. <http://www. homehealthworks. com /faq.asp >
16. Simmons J Community-based care: The new health social work paradigm. Social Work in Health Care 1994; 20: 35-46.
17. Reswick D. Caring for older people: Community care and social services. BMJ 1996; 313: 869 - 872.
18. Sevick MA, Kamlet MS, Hoffman LA, Rawson I. Economic cost of home-based care for ventilator-assisted individuals: a preliminary report. Chest 1996; 109:1597-1606.
19. Thimoleon, Jacqueline. Home Health Care. July 19, 2005. <http: //www.nu. educlasses/keefer/com/thimo.html>.
20. Cancer Care, Inc. December 2005 http://www.ufaqs.com/cancerfacts/ Your%20Health%20Care%20 team%20%20Your%20Doctor%20 Is%20Only%20 the%20Beginning.htm.
21. Al Hazmi, A. Home Health Care in Al-Khobar and Al-Dammam. 2001.

# *Call for a Middle East Center of Disease Prevention*

**AUTHOR**

Dr Safaa Bahjat

A Middle East Centre of Disease Prevention and control which deals only with communicable disease - is it a dream that is hard to become true? Is it like getting into a hot water?

The proposed Centre will not replace the public health institutions in member states of the Middle East. Instead it will act as a coordination resource and support centre on which these countries can call. Among the tasks for this center will be harmonization of surveillance methodologies across the Middle East providing scientific opinions and technical assistance supporting preparedness, planning for health emergencies and will provide a rapid response to health threats. Since the 1950's, Arabs have made little progress in health related areas for several reasons; the Arab Israeli conflict, the catastrophic health and economic sanctions in Palestine, the embargos on Iraq and the major wars which have erupted in the past few decades, mainly in Lebanon (1975-1991), Kuwait 1990, and Iraq 1980-1988, 1991 and 2003. Military spending by Arabs amounts to about US 60 billion dollars of which only 0.9 billion is allocated to research and development.

Oman, Saudi Arabia and Kuwait spent more than 10% of their gross domestic Product GPD on defense. Iran spent more than 5% of their GDP on defense, than on health at 4%. Historical population and GDP data were obtained from the US Census Bureau (http://www. census.gov/ips/www/idbacc.html) and EconStat (http://econstat .com) respectively.

The stand off between Iran and the Security Council about it's nuclear program has an alarming extra twist. It will have a detrimental effect on the output of scientific research and endanger more the instability of the region. From a public health prospective, avoidance of violent conflicts is the key objective in international relations. Are there any ways of analyzing such stand-offs, which might suggest ways to resolve them? Commentators have noted similarities between this conflict and that of the USA and the USSR during the cold war, in which game theory was first used to analyze and attempt to predict the behavior of the participants. One such a game is "chicken" when two participants engage into a competition; say a head-on car race, which is bound to end in a disaster unless one swerves. To outsiders the game seems insane but to the participants in whom many complex principles of prestige, honour, territory security and so on are at stake, it can feel as if they have no choice but to take part. International diplomacy is the art of persuading one or both to swerve with out loss of face. Sometimes this is done by introducing a new factor into the game, which both participants can agree on and use as a way out of direct confrontation.

Are there any diversions that might be used to draw the attention of the participants away from the conflict? One might be reassessment of how such games affect the country's economy. So instead of military spending which is draining resources, governments can invest in civil health.

One of the urgent questions is are we prepared for the next pandemic of influenza? As we began the new century did we launch arrangements carefully and thoughtfully in order not to be overwhelmed in the first wave of global infection, while there is still time? There is a window of opportunity open now that will gradually close over the coming months. Remember, the 2 pandemics in 1917 and 1968 the causalities numbered 6 million worldwide and the virology community did very little except to observe and record. The coming influenza pandemic will cut huge swathes in the world's community and history will look with jaundiced eyes, should governments hesitate?

The SARS outbreak of 2003 awakened a new aggressive spirit underpinned with molecular science and rapid diagnosis .We would no longer wish to be the audience at macabre theatres of infection, rather, infectious disease experts, mathematicians, virologists, vaccine specialist's and chemotherapists would be thrown into the fray. The world was lucky with SARS.

In the living memory is the capricious Mother Nature .The Bam earthquake and the tsunami tragedy in Asia cruelly exposed the citizens of this area to the mercy of nature through lack of planning and scientific planning. The earthquake in South Asia is another example. We should seize the opportunity of the economic boom, achieved by the huge rise in the oil prices, which afford a good chance for the countries of the Middle East to improve the public health infrastructure of the region.

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## *Skilled Health Workers - A Solution to Primary Health Problems in Pakistan*


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### 1. Background

Pakistan has a population of 153 million [1]. It has an organized infrastructure for delivering health care even in small villages but these health care centres are devoid of medicines, equipment, doctors and trained paramedics. There is one doctor, one nurse and one bed for 1400,3261 and 1531 people respectively. 76% deliveries occur at home[2 ] .Main part of budget allocated for health goes to teaching institutions and major hospitals of federal and provincial capitals; very little is left for towns and small villages. Doctors are not willing to work in small cities, towns and villages. They prefer government hospitals of federal and provincial capitals. This is justified if they work in a proper manner on merit on rotational basis but this seldom happens. They use all means to stay in these hospitals until some more resourceful replace them [8].

Pakistan is a country where health facilities exist between the two extremes, i.e. very sophisticated as in Aga Khan University Hospital, to almost very primitive as in remote basic health care units. The access of people to medical facilities also varies greatly from very privileged to absolutely devoid. Annual growth rate (2003) is 2.6%. Dependency ratio per 100 in 2003 is 82 whereas it was 87 in 1993. Percentage of population aged 60+years in 2003 is 5.7 whereas it was 5.6 in 1993. Total fertility rate in 2003 is 5, it was5.8 in 1993[1]. Per capita GDP in international dollars (2001) is 2,146.Total expenditure on health as % of GDP (2001) is 3.9 Per capita total expenditure on health at average exchange rate (US$), 2001 is 16. General Government expenditure on health as % of total expenditure on health 2001 is 24.4. General Government expenditure on health as % of total general government expenditure 2001 is 3.5. Private expenditure on health as % of total expenditure on health, 2001 is 75.6.Sources of private health expenditure are Prepaid plans as % of private expenditure on health, 2001=0 and Out-of-pocket expenditure on health as % of private expenditure on health, 2001=100 [3].

Both the government and private health services are available to people. Our upper and middle classes have full access to government as well as private health facilities. The real problem is with the masses and the people that live below the poverty line. People usually avoid government hospitals for primary care because of overcrowding, difficulty in getting due attention and admission even in emergency situations, casual and non-serious behaviour of doctors, more than one male doctor examining the female patient at one time and the fear of a crowd of medical students present at time of examination [8].

## 2. Present System of Primary Health Care Providers in Pakistan

It consists of [9];

**A) Medical Services**

***1-Doctors***
The minimum qualification is M.B., B.S. They should have a valid registration with Pakistan Medical & Dental council.

***2- The Health Workers {Paramedical Staff}***
The following categories are usually included under this term in Pakistan;

i) Classified Nurse: The female must have passed high school examination in science to get admission into this course. She takes a four years course in Nursing during which she has to reside in hospital. Due to proper education and training, they work ethically and are aware of importance of working in own limits.

ii) Lady Health Visitor (LHV): The female must have passed high school examination in science to get admission into this course. She takes a short course of about two years and she is basically trained in women's health and midwifery

iii) Locally Trained Nurses: This is the most available variety. Some of them are high school graduates but most of them are usually middle passed or less. They are neither adequately educated nor properly trained.

iv) Lady Health Worker (LHW): This type was produced by government to induce health education and create awareness about women's health. They are usually only middle pass and a local resident.

v) Midwives or Traditional Birth Attendants (TBA): In Pakistan, TBAs are absolutely uneducated and non-trained. 81% of deliveries are conducted by them.

vi) Male Paramedics
25 % of this group are qualified but 75% are just locally trained in clinics and pathology labs. We do not have an appreciable number of life saving paramedics.

vii) Highly Trained Mobile Paramedics
This is very recent addition to the system. At the moment, these are only found in army, Navy, Air force and in some Flying Squads. These are fully qualified.

**B) The Alternate Medical Services**

These include;

1- Registered Hakims (traditional healers)
2- Registered Homeopaths
3- Traditional Quacks
4- Religious Quacks

## 3. How will the system and needs of the population change within the next 10 years?

A major part of our budget goes to defence. 35 million people live below poverty line [4]. Despite all efforts for reduction of poverty, more and more people are going below the poverty line. Our population is growing rapidly. There is a rapidly increasing burden on the government funded health care system. There would be an additional requirement of 175,000 doctor and 40,000 nurses by 2010[5].

We have to shift more care from hospital to primary care; most important in this context is Antenatal care. The total population of Pakistan (in thousands) was 141,256.2 in the year 2000. It would be 181,384.7 in the year 2010 and 227,781.1 in the year 2020. Total Numbers of people (from age group 0 to 60+ years) requiring daily care was 8,292.1(in thousands) in the year 2000. It is expected to be 10,908.2(in thousands) in 2010 and 14,254.5 (in thousands) in year 2020. This means the total Numbers of people (from age group 0 to 60+ years) requiring daily care would increase by 32% in the year 2010 and 72% in the year 2020 as compared to year 2000 [6]. During the year 1996-97, 36 % of pregnant woman received 1+ Antenatal visit and 16 % received 4+ Antenatal visits. 17 % births took place in health facilities. In the year 1998, 20% of births were attended by skilled health care personnel [7]. In the year 2003, PROBABILITY OF DYING (per 1000) in under age 5 m/f was 98/108 and between ages 15 and 60 years m/f was 225/199[1].

**4. What is the role of Health Workers {Paramedics} in the delivery of primary care?**

Health workers play the largest part in the delivery of primary care [10]. They are the first contact of people who not only seek their help for primary care but also in acute emergencies and accidents. There is no organized platform for Health Workers in Pakistan.

**5. What challenges the forthcoming time will pose on Health Workers?**

There is an urgent need to train and organize Health Workers in this country. They have to play a vital role in the delivery of primary care in coming years because of tendency of people to avoid hospitals. Health Workers lack adequate knowledge and skills especially regarding antenatal care and safe childbirth. They have to address their shortcomings [8].

**6. How can these challenges be best met?**

In fact there is no organized system of involvement of Health Workers in health care in primary care. We have to establish an effective system of Paramedical Care. There is an immediate need for establishment of a Platform for Health Workers {Paramedics} that should;

a) Set a code of ethics and lobby for legislation about their involvement in health care services.
b) Should organize educational and vocational training for them.
Most important in this regard is to explore new avenues to get a more educated and more understanding batch of new health care workers [8].

**7-How we are addressing the situation?**

I take the liberty to describe our efforts towards this end in our community-Shamsabad. On this "World Health Day", we launched a program for organization and training of Health Workers {Paramedics} in antenatal care. [13]

**A-Object:**

1- To evolve a platform for training of existing and new health workers on CME pattern.[12]
2- To create and maintain a "Data Base" of existing and new health workers so that all recent knowledge and skills could be conveyed to them.
3- To evolve an easy to understand manual [ both in English & Urdu] for education and training of existing and new health workers
4- To help the health workers to evolve their own organizations that could strive for them in accordance with the following guideline principals of WHO--- ;
   i) Cater for their education& training
   ii) Provide support and protection to them

iii) Enhance their effectiveness
iv) Tackle imbalances and inequalities

**B-Who would be benefited by our training**
Our doors are open for all existing and new health workers. We are specially focusing on Female Health Workers initially but we will help all regardless of their age, gender, race, religion, creed and method of treatment. All health concerns like doctors, nurses, midwives, TBAs, Hakims, Homeopaths, laboratory technicians, dental technicians, and community health workers are welcome.

**C-What is our strategy for Training?**

Step-1: Identification and registration of existing and new health workers for training
Step-2: Determination of Extent of training
Step-3: To impart training
Step-4: To evaluate the candidates after completion of training

**D-What would be the extent of training?**

There are three levels of education and training depending upon the extent of curriculum.

***The syllabus in our case {Delivery Technicians} includes:***
In my opinion, every care provider must have very clear understanding and skills of;
Monitoring of Vital Signs {Pulse, BP, Temperature and Respiratory rate}& weight recording, Cardio-Pulmonary Resuscitation, Sterilization and Asepsis, Very brief Surface anatomy of woman and foetus, Brief Basic knowledge about Menstrual cycle, Contraception-----both regular & emergency, and Examination of Breast.

***The Main Syllabus includes:***
Nutrition, Anemia, Brief Anatomy (maternal & foetal), Menses, Family planning (both regular & Emergency), Gynaecological examinations, Antenatal Care, Rhesus incompatibility, Pre-Eclampsia, Eclampsia, CPR, Foetal growth & well being, Vaginal bleeding during pregnancy (Ectopic pregnancy, Miscarriage & abortion, Antepartum Hemorrhage, Post Partum Hemorrhage, Placenta Praevia, accidental Haemorrhage, Hydatidiform mole), Twin pregnancy, Labour (normal & abnormal), Various methods of delivery (Normal delivery, mal-positions, hygiene, avoiding trauma, analgesia, and danger signs and how to manage hemorrhage), Postnatal care of mother (Normal and danger signs such as endometritis, bleeding, Eclampsia), Puerperium, Brief knowledge of D&C, E&C, Resuscitation of newborn, Immediate Post-natal care of the child, breast feeding, vaccination,. Etc

***Primary Level of Training:*** This is mean for community health workers. It would be in form of short and basic courses.

***Incentives for learners*:** No big incentives are required; just certificates of appreciations would be sufficient.

*Secondary Level of training*: This is meant for those who intend to adopt it as profession.

***Incentives for learners:*** Certain incentives like certificates plus some financial support in form of scholarship are necessary.

***Tertiary level of training:*** This is full and advance training to evolve life saving paramedics

***Incentives for learners:*** Definite incentives like certificates, financial support during learning plus employment opportunity are essential.

**E-What would be the Infrastructure?**

To avoid unnecessary expenses, I am using my clinic for imparting this training.

**F-Who will train?**

I, Dr Manzoor Butt, have started the work with the intention to evolve a new batch of "Delivery technicians". We have started training in how to do antenatal care and conduct safe birth. We will enrol more relevant persons as the activity continues.

**G-How the training would be imparted?**

Firstly, the learners would be taught through audio-visual lectures. They would be given opportunity to learn on patients. The training and skills in how to conduct the labour would be given on Manikin. This Manikin is donated by Emeritus Professor Dr John Beasley of Wisconsin [15]

**H-Who will monitor & evaluate?**

My seniors, Dr Christopher Rose of U.K [ 14 ], Ms. Lesley Pocock, executive director of WorldCME-Australia[ 12 ] and Emeritus Professor Dr John Beasley[15] would guide through and monitor the activity.

**I-Who would certify the successful candidates?**

World CME-Australia would initially certify the successful candidates until the World CME/Pakistan starts operation. [12]

**J-What resources would be required?**

We have started the activity on our own. It is our aim to make our clinic a model clinic engaged in health education of community and involved in training and evolution of new health workers.
To execute all these ventures on large scale, more resources are required. Our government, International agencies like WHO, UNICEF, and national and international NGOs should contribute to achieve this goal. I believe we must put more and more stress on organized Antenatal care at community level because women, at least in this country, have a very low tendency to go to hospitals [11]. Our aim should be to identify and anticipate mode of delivery in most of our cases. This will help in timely referral and avoidance of long labour. We should encourage and help the care providers of a community to establish and organize a network of their own which should work under guidance of Family Physician or the nearby hospital [8].

**K-How the activity could be extended to other areas**

We will encourage other family Physicians to replicate these activities in their own communities. Some incentive would be required.

**L-How the activity would be sustained?**

These activities just require support and guidance. These do not need lots of funding. The expenses could be catered by the Family Physicians organizing these trainings.

## REFERENCES


1. Basic indicators for all WHO Member States, Page: 1 of 3 PDF-document-World health report-2005
   Available at www.who.int/entity/whr/2005/annex/indicators_country_p-z.pdf
2. Position in 2004, Page-32, Population Growth & its Implications-July 2004 by National Institute of Population studies, Islamabad.
3. WHO Statistical Information System (WHOSIS). Statistics by country or region. Selected national health accounts indicators: Country-Pakistan.
   Available at www3.who.int/whosis/country/indicators.cfm?country=pak

4. Other hard facts, page35, Population Growth & its Implications-July 2004 by National Institute of Population studies, Islamabad.
5. Additional requirement by 2010-page34, Population Growth & its Implications-July 2004 by National Institute of Population studies, Islamabad.
6. Pakistan, Appendix 3: Sensitivity analysis. Numbers of people requiring daily care, total population, proportion of total population requiring care, and dependency ratio by region, country and year, based on three severest Global Burden of Disease study disability categories (levels 5, 6, 7).
   Source: www.who.int/docstore/ncd/long_term_care/emro/pak.htm
7. Selected indicators related to reproductive, maternal and newborn health, Page: 3 of 3, World Health Report-2005, PDF document.
8. Observations & Recommendations of author who is working in this field for last nineteen years.
9. Health Care System in Pakistan: An article by Dr Manzoor Ahmed Butt-In Press
10. What can health workers do for their community?
    http://www.emro.who.int/whd2006/Media/PDF/HealthWorkers_MaqboolClinic.pdf
11. Why people avoid going to hospitals: An article by Dr Manzoor Ahmed Butt---In Press
12. Ms Lesley Pocock, Publisher---WorldCME
    http://www.worldcme.com/webpages/subscribe.htm
13. World Health Day-2006
    Source: http://www.geocities.com/manzor60/whd2006.html
14. Dr Christopher Rose, an eminent development scientist from Tregron, Glangors, U.K.
15. Emeritus Professor Dr John Beasley, Chairman--International Federation of Primary Care Research Networks (IFPCRN)
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# *The Blind School Project-An activity from School Health Program*


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**Activity executed by:**

Project Manager: Dr Manzoor Ahmed Butt
Project Team Leader---Mrs. Rahila Manzoor
Venue: Government Blind Girl's School, Shamsabad, Rawalpindi.

**Team Members:**

From Clinic: Mrs. Rahila Manzoor, Ms.Musarat [Community Health Nurse],
Mr. Mumtaz Bhatti [Senior Community Health Technician & Support Person]

From community: Ms. Sajida [Senior Community Health Worker & School Teacher], Mrs.Afshan Munir [Junior Community Health Worker & House-Wife],

From School: Mrs. Waseem Sanaullah [Principal of the School]. Ms. Fauzia Khanum [Physical Training Instructor & Hostel warden]

## BACKGROUND:

There is a "Blind school" for girls in Shamsabad. It is owned and operated by the Punjab Government that caters for their education, training and lodging. The school has about 80 girls, out of which 75 reside in the hostel of school, which is within the school grounds.

All girls come from very poor sections of the community, from remote areas of Rawalpindi and other adjacent areas that are not in our geographic region but because of poverty and unavailability of such facilities girls in those areas are granted admission.

Just imagine the situation in a country like ours. Count the weak points;

1) Very Poor
2) Girl
3) Blind
4) Lack of interest of parents - the worst

Education & lodging is free and there is also a small facility for games like running, jumping and cricket. When there are health problem, these girls come to us for treatment. We provide them treatment at concessional rates.

Major Problems

1) More than 70% are suffering from Scabies
2) They have difficulties in maintaining personal hygiene - the most important in this is care during menses.
3) They have free treatment facilities at Rawalpindi General Hospital but they cannot go there, especially at night, because no body is free enough to go to that hospital.

## OUR STRATEGY:

1-We are already providing them treatment at low cost.

2-We have started Health education especially in personal hygiene, care and protection during menses plus oral care. Our team visits them regularly to provide them this education, training and essentials of personal life like soap, toothbrushes, toothpaste, shampoos, detergents, accessories used during menses.

3-To help these girls, we have to have exact understanding of their usual habits. Towards, this end, we have done two surveys.

4-We have established a small first aid dispensary in this school to cater to emergency first aid medicines, for example, analgesics, anti-emetics, anti-diarrheals, etc.

To make this dispensary useful and safe, we have selected their Hostel warden for training as a Health Worker. Ms. Fauzia Khanum, who is also their senior school teacher, will daily attend our clinic at evening [her free time from school] for 6weeks to learn the basics.

## WHAT WAS DONE ON 08-03-2006

The project leader along with the team visited the school for training the girls and their teachers. This training included:

Washing Hands, When & how to clean teeth, hygiene and care during menses plus other aspects of personal cleanliness. The team donated them some soaps, toothbrushes, shampoos, sanitary pads plus training in how to make these sanitary pads in their school for themselves.

For those who do not know habits of our women regarding personal care, please read the following.

It is a common practice in our country that women do not bathe at all during menses. They think that menses is some sickness and bathing during this period will cause cold in bones etc. This results in a feeling of tiredness, ill health, lethargy and very severe body odor during these days. Please note our religion Islam does restrict praying (Namaz/Salat), Fasting (Roza/Som) or touching Quran (The holy book) during bleeding period but it does not restrict bathing at all during menses, it is only a misbelief .

What women commonly use during Meneses.

We have done research in it according to which:

1) Most of women do not use underwear at all. They simply insert cotton with help of a thick thread or string.
2) Second category of women use old used and abolished clothes with the help of underwear.
3) Only a minority uses proper sanitary pads.

Because of low income, the prices of sanitary pads are too high and thus unaffordable for women.

My wife teaches girls and women attending our clinic for any reason about personal hygiene, care and protection during menses. She also visits girl's high schools for imparting this training.

She trains women and girls in personal hygiene and in making of sanitary pads. We have formed various groups of girls and women. Each group consists of five girls or five women of same age and a group leader. We train group leaders who in turn train their group members. We hold tests to assess the training and the knowledge induced.

She recommends the girls and women:

-If women can afford, they should definitely use Sanitary Pads from some reliable company.

-If this is not possible, they should purchase ordinary cotton cloth (or any other cloth which is not rough and irritating) from market and make a pad using this cloth and cotton wool.

-The sanitary pad or self-made ordinary pad should always be worn with some non-irritating underwear. It is not wise to put cloth in vulva and vagina with the help of some string or thick thread.

-The pad must be changed as soon as it is soaked. It specially applies to those women who have heavy bleeding. In those women who have scanty bleeding and the pad is not much soaked, the pad must be replaced after 6-8 hours or more often, especially in summer.

-Every woman must have at least two sets of underwear to be used on alternating days, change it next day, wash it and keep for next day.

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## CLINICAL RESEARCH AND METHODS

### *Scleromalacia Associated with Marfan's Syndrome*


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**ABSTRACT**

Scleromalacia means sclero-malakia (Thinning), scleromalacia occurs as a complication of Herpes Zoster Ophthalmicus, Rheumatoid arthritis, Vogt Koyanagi Harada syndrome and following retinal detachment surgery but it never has been reported as a complication of Marfan's syndrome.

49 year old female patient presented to the emergency room with bilateral anterior chamber dislocated lenses with high intraocular pressure. She was medically treated for the high intraocular pressure, then she underwent left pars plana lensectomy and vitrectomy, during surgery it was noted that she had blue discoloration of the sclera in her left eye. She was lost to follow up to present eight months later with a protruding mass in her right eye near the limbus with deterioration of visual equity, normal intraocular pressure. She was diagnosed as a case of scleromalacia perforans. History and general examination revealed family history of Marfan's syndrome (one brother), the patient was tall and thin, long limbs, fingers and hands are long, slender and have spider like appearance, high arched palate.
With this patient we were faced with scleromalacia without any history of any known cause other than association with Marfan's syndrome.

49-year-old female patient presented to the emergency department at King Hussein Medical Center with severe pain in both eyes. Examination revealed visual acuity of 6/36 in the right eye, 6/60 in the left eye,

dislocated lenses in the anterior chamber in both eyes, intra ocular pressure 45 mm Hg in each eye with no corneal edema.The patient was managed medicalyto decrease intraocular pressure, followed by lensectomy_vitrectomy for the left eye. During surgery the sclera was found to be very thin. The patient was given appointment for surgery to the right eye,but the patient was lost for follow-up. She presented eight months later with a black mass in the right eye with deterioration of visual acuity, she gave no history of recent pain nor inflammation of the eye. On examination: Right eye, a well-defined superonasal dark coloured bulge of the sclera encroaching on the limbus was found. It could be brightly transilluminated. The visual acuity unaided was counting fingers 4 meters improving to 6/24 with -1.00,+5.00x180° (irregular retinoscopy reflex). Intra ocular pressure was 10 mm Hg. Supero_temporal sublaxated lens. Cup disc ratio was 0.3 with no evidence of any retinal nor choroidal pathology. Left eye was aphakic with dark discoloration of the sclera superiorly, visual acuity unaided was 6/60 improving to 6/12 with +10, posterior segment was normal and visual field was not informative. Coloured photography was taken to document the extent of the lesion.

General examination revealed tall thin patient with long limbs and high arched palate compared to other family members. The fingers and hands were long, slender and have spider like appearance, joint mobility was normal. There was no evidence of cardiovascular disease and the echocardiogram was normal. Family history was positive for Marfan's syndrome (one brother).

## COMMENTS

Scleromalacia means sclero-malakia (thinning) on presentation it is characterized by thinning and discoloration of the sclera which can be confused for extrascleral extension of uveal melanoma(1). All previous reported cases of scleromalacia occur as a complication of herpes zoster ophthalmicus(2), rheumatoid arthritis(3), Vogt Koyanagi Harada syndrome(4), ulceraltive colitis(5), and following retinal detachment surgery(6).

Regarding our patient, we were faced with a patient who presented with high intra ocular pressure due to acute, anterior dislocation of the crystalline lens which was complicated months later by scleromalacia without any known cause of scleromalacia other than the characteristics Marfanoid features including ectopia lentis, tall thin patient, long limbs, slender and spider shaped, hands and fingers, high arched palate and positive family history of Marfan's syndrome. Marfan's syndrome results from an inhereted defect in the extracellular glycoprotein called fibrillin, these fibrils form a scafolding on which tropo_elastin is deposited to form elastic fibers (7). The sclera is a dense tough fibrous structure consisting mainly of collagen and elasic fibers embedded in mucopolysaccharide matrix (8). Under the effect of attack of high intraocular pressure the defective scleral tissue has yielded resulting in scleromalacia. Based on that it was concluded that it was a case of scleromalacia associated with Marfan's syndrome.

**Figure 1.** Both eyes

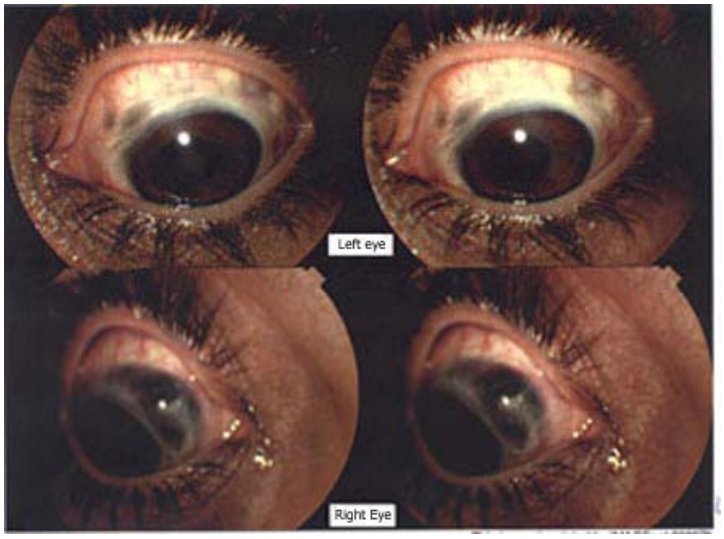
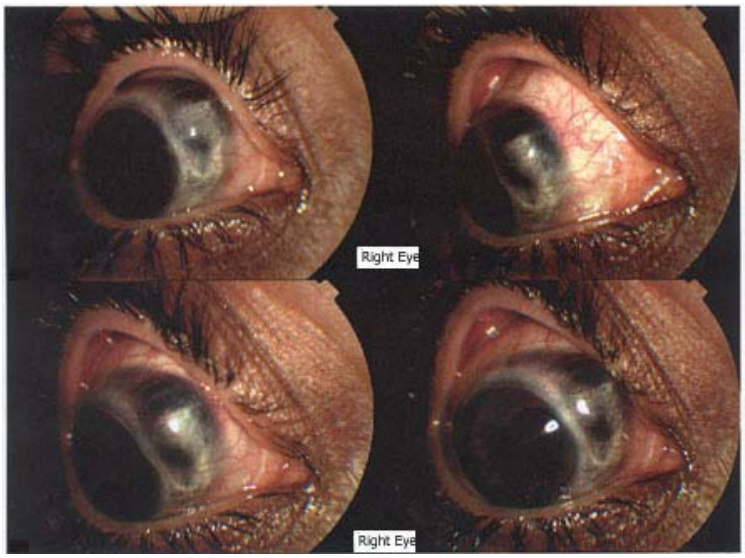


**Figure 2.** Right eye




## REFERENCES


1. A Berry_Brincat, H Von Lany and N Evans.Scleromalacia as a complication of herpes zoster ophthalmicus.Eye (2003) 17,449-51.doi:10.1038/sj.eye.6700336.

2. Marsh RJ, Cooper M. Ophthalmicus herpes zoster. Eye1993;7:350-370.

3. Modrzejewska M, Przerwa DM. A case of necrotic scleromalacia during the course of Rheumatoid arthritis.Klin Oczna. 1995 Jan-Feb;97(1-2):31-3.

4. Tabbara KF. Scleromalacia associated with Vogt Koyanagi Harada syndrome . Am J Ophthalmol.1988 Jun 15;105(6) :694-5

5. Tesar PJ, Burgess JA,GoyJA,Lazell RW. Scleromalacia perforans in ulcerative colitis.Gastroenterology. 1981 Jul;81(1):153-5

6. Chechelnitsky M, Mannis MJ, chu TG. Scleromalacia after retinal detachment surgery Am J Ophthalmol. 1995 Jun;119(6):803-4

7. Robbins. Pathologic Basis of Disease. Ramzi S.Cotran, MD. Vinay Kumar MD,FRCPath. TuckerCollins, MD, Ph.D. Sixth edition. W.B.Saunders company.
Chapter 6.page 148.

8. Opthalmic Pathology. An Atlas and Textbook.
Hogan and Zimmerman.
Second edition. W.B.Saunders company.
Chapter 6(The Cornea and Sclera).page 335_336.

# *Reference Values of Hematological Parameters of Health Anatolian Males Aged 18-45 Years Old*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## INTRODUCTION

Full blood count is a frequently used laboratory test performed to support the diagnosis of several diseases; anaemia, certain cancers, infections, acute hemorrhagic states, allergies and immunodeficiency disorders or used in periodic health examination and preoperative evaluation (1). Reference values of full blood count have been determined in several trials but we could not find reports on reference values of full blood count parameters in Anatolia. Interpretation of haematological parameters by physicians with reference values produced from the population living in this region would provide a unified standard. Social, nutritional, and environmental factors together with age, sex, body build, ethnic background and altitude are also required to get a unified standard (2,3). Variances among populations are widely contributed to genetic factors and the minimum number of subjects needed to determine precisely the lower and upper limits of reference values is quite large (4).

The present study was conducted to determine the reference values of haematological parameters in healthy Anatolian males who are 18-45 years old and living at the same altitude (1050m) in similar socio-economical and environmental conditions. These references than can be used in clinical laboratories to interpret test results

## MATERIALS AND METHODS

**Subjects and blood analysis procedure**
Males who were 18-45 years old and living in Anatolia were recruited in this study. Physical examination was performed with routine biochemical (Fasting blood glucose, renal and hepatic function tests), full blood count and urinary analysis. Venous blood sampling was drawn from the antecubital vein into 3 ml tubes containing K3EDTA anticoagulant with Terumo venoject. Blood samples were kept at room temperature and tested in one-hour time. Blood analysis was processed using the Coulter Counter ZF6 to determine hemoglobin (Hb), hematocrit (Hct) and red cell indices as mean cell volume (MCV), mean cell hemoglobin (MCH), and mean cell hemoglobin concentration (MCHC) and red cell distribution width (RDW). Reference

values of full blood count parameters were defined for values between 2,5-97,5 percentiles in 95% confidence limits. Subjects were all healthy males living in Anatolia who attended for check-up and they live at the mean altitude of 1050m. Subject's previous diseases, operations, dietary habits and blood donation in the previous six months were investigated.

**Statistical Analysis**
Distribution of data was abnormal for normal or lognormal distribution for age so medians were used for analysis. Power analysis was performed to determine the number of subjects required for this study. Correlation analysis was performed to obtain the relationship between age, BMI and full blood count erythrocyte indices.

## RESULTS

Distribution of collected data was abnormal for normal or lognormal distribution for age so medians were used in analysis. In 95% confidence limits and significance level of 0.05 (two-sided) 99 percent power was maintained if at least 481 subjects were enrolled according to MCV, which has the greatest standard deviation. Full blood count values of 530 healthy males who were 18-45 years old were determined. Subjects mean age was 26,23±6,26 (range: 18-45) years and mean body mass index (BMI) was 23,46±2,64 (range: 17,20-28,60). On the base of physical examination, blood and urine analysis; subjects were accepted as healthy. There was no correlation between age, red blood cell count, haemoglobin, hematocrit, MCV, MCH, MCHC, RDW values. Correlation between age and BMI was weak and positive (p>0,01). Subjects own and coulter reference values for Hb, Hct and red cell indices were then compared and reference value of MCH was found to be similar (p>0,05) but all other indices and Hb, Hct reference values were significantly different from each other (Table I). White blood cell counts of subjects were under reference values in 1,1%, in normal reference value in 94,3% and over reference value in 4,5%. White blood cell counts differential analysis was in favour of lymphocytes so they were considered to be viral infections. Subjects were divided into three age groups (18-24, 25-34, 35-45) and their percentiles of BMI, Hb and Hct were given in Figures1, 2, 3, 4. Percentiles of 2,5, 5, 10, 25, 50, 75, 90, 95, 97,5 of RBC, Hb, Hct, MCV, MCH, MCHC, RDW were shown in Table II. Main geographical factors in this region during the study period were noted as follows; annual daily sunshine was 6.41 hours, humidity was 64.0% and temperature was 10.3$^{o}$ C.

## DISCUSSION

This paper provides reference values for full blood count parameters of Hb, Hct, MCV, MCH, MCHC and RDW of healthy Anatolian males who were 18-45 years old. In this study group subjects' body mass indexes were covering the lean (<20: 10%), normal (20-24,9: 59,2%) and overweight (25-29,9: 30,8%) values mentioned for our population (5). National Centre for Health Statistics of United States currently uses the 85th percentile of BMI for persons aged 20-29 as >27,8 as less severe obese. Subjects enrolled in this study were all in normal value, in less severe obese value, or lean. This limits our contribution on an overweight population.

There were significant differences detected in reference values of full blood counts in adult population (3,6,7). Characteristics of subjects, analytical methods and methods of calculation all may contribute to differences in reference values. Hemoglobin, Hct and red blood cell parameters are considered to be sex dependent but others (MCV; MCH; MCHC, RDW) are generally calculated for the general population (6).

Iron and iron binding capacity of subjects in the study group could not be determined because there was not any relevant physical sign or symptom of anaemia. In our check-up procedure, additional laboratory tests are ordered if any physical sign or symptom exists, or any disturbance was detected by individuals/subjects. Subjects with a past history of any disease, previous blood donations, extraordinary nutritional habits were enquired about and subjects who donated blood less than six months previously, experienced serious diseases or anaemia previously, consuming more than 20 cigarettes in a day, and who are under drug therapy for any reason, were excluded. Red cell distribution width of all subjects were in normal value, so iron deficiency anaemia with normal erythrocyte indices was not considered although iron and iron binding capacity levels were not studied. Subjects who had any disease or disturbance together with abnormal laboratory results were excluded from the study, but anyone who had no disturbance or symptom in physical examination but abnormal laboratory test results (full blood count, liver and renal function tests, electrolytes, urinalysis) were not excluded from the study group.

Our laboratory is included in a quality control program with daily, weekly and monthly calibrations for instrument imprecision, so accuracy of measurements can be considered reliable. Together with efforts spent in quality improvement, each laboratory can develop its own references if sufficient contributions can be made.

In conclusion, reference values of haematological parameters in middle-aged healthy men were evaluated. The contribution of this study could be in presenting reference values of Anatolian males that can be used in clinical settings or in analytical laboratories to calculate relevance of laboratory full blood count test results. Reference values obtained in this study may also be compared with other studies conducted in populations from different geographical and environmental conditions.

**Figure 1:** Percentiles of body mass index in 18-24, 25-34, 35-45 years old males

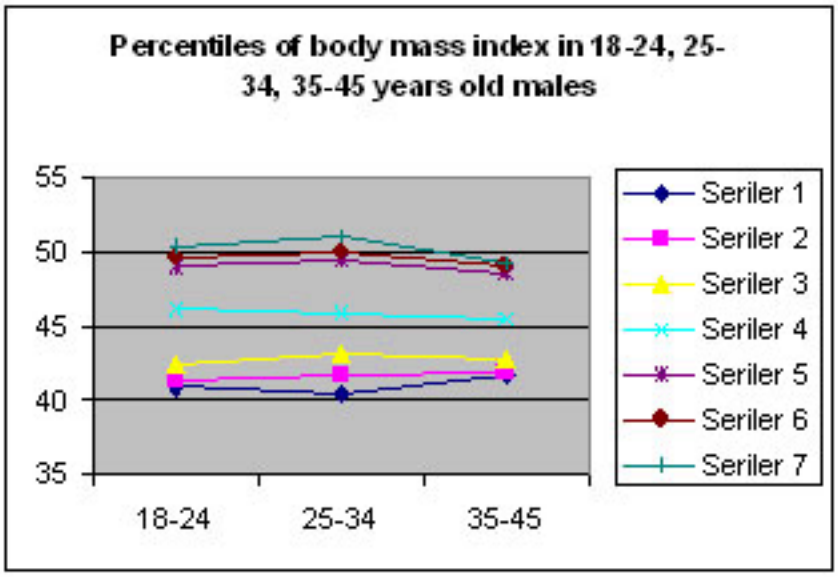


**Figure 2:** Percentiles of Hb for 18-24, 25-34, 35-45 years old males

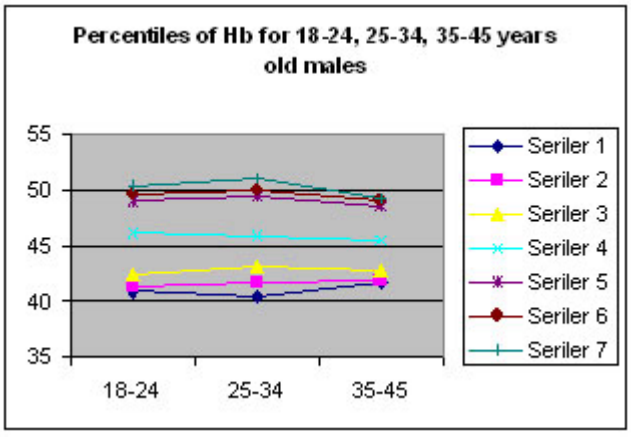

**Figure 3:** Percentiles of body mass index in 18-24, 25-34, 35-45 years old males

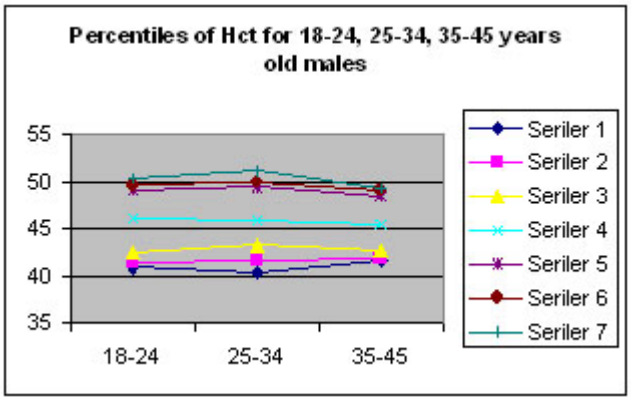


**Figure 4:** Percentiles of body mass index in 18-24, 25-34, 35-45 years old males

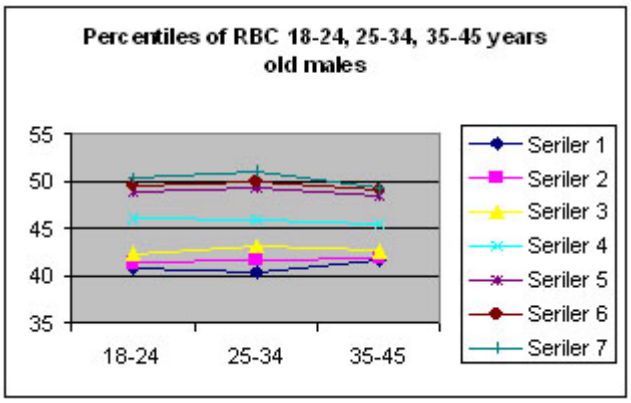


**Figure 5:** Box plot diagram of full blood count parameters

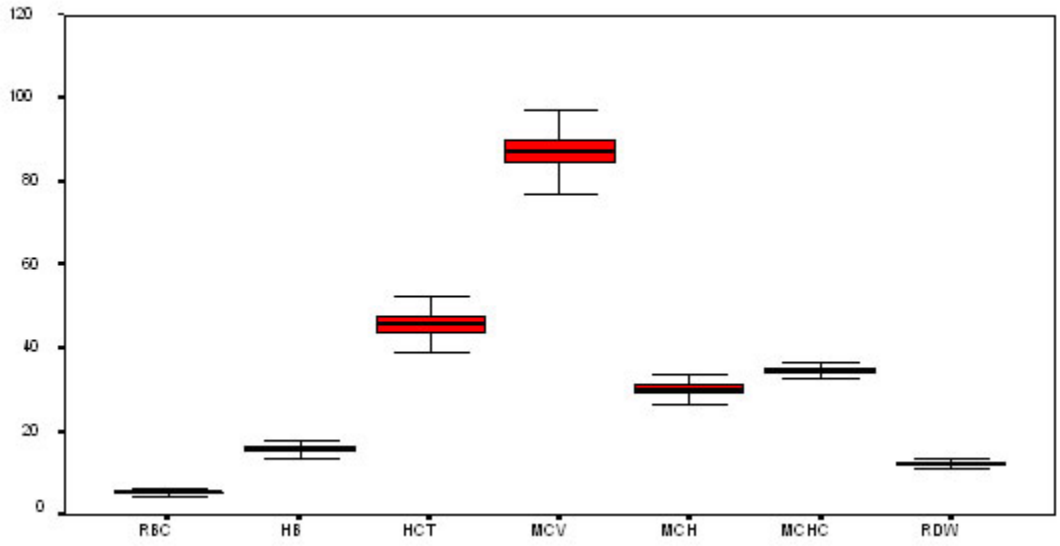

**Table 1.** Full blood count measurements of 18-45 years old males and comparison of subjects reference value with the Coulter

| Full blood count parameters | Median (Minimum-maximum) | Reference intervals | |
|---|---|---|---|
| | | Subject | Coulter |
| RBC (106µl) | 5,29 (4,49-6,67) | 4,63-5,93 | 4,70-5,40 |
| Hb (g/dl) | 15,90 (11,30-18,90) | 13,90-17,70 | 14,0-16,0 |
| Hct (%) | 45,95 (66,0-97,0) | 40,45-50,67 | 42,0-52,0 |
| MCV (fl) | 87,20 (10,40-34,10) | 78,70-94,04 | 80,0-94,0 |
| MCH (pg) | 30,20 (10,40-34,10) | 26,20-32,77 | 27,0-31,0 |
| MCHC (g/dl) | 34,60 (30,40-36,90) | 32,80-36,10 | 32,0-36,0 |
| RDW (%) | 12,10 (11,0-16-60) | 11,30-13,97 | 11,5-15,5 |

**Table 2.**

| Full blood count parameters | Percentiles | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2,5th | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97,5th |
| RBC | 4,63 | 4,75 | 4,90 | 5,07 | 5,29 | 5,50 | 5,67 | 5,80 | 5,93 |
| HB | 13,9 | 14,20 | 14,70 | 15,20 | 15,90 | 16,50 | 17,00 | 17,40 | 17,70 |
| HCT | 40,45 | 41,75 | 42,80 | 44,10 | 45,95 | 47,50 | 49,00 | 49,80 | 50,67 |
| MCV | 50,67 | 80,30 | 81,80 | 84,50 | 87,20 | 89,70 | 91,90 | 93,00 | 94,04 |
| MCH | 26,20 | 27,25 | 28,30 | 29,30 | 30,20 | 31,20 | 31,90 | 32,44 | 32,77 |
| MCHC | 32,80 | 33,20 | 33,60 | 34,10 | 34,60 | 35,10 | 35,60 | 35,90 | 36,10 |
| RDW | 11,30 | 11,40 | 11,60 | 11,80 | 12,10 | 12,52 | 13,00 | 13,34 | 13,97 |

## REFERENCES


1. George GB, Parker K. Understanding the complete blood count with differential. J Perianesth Nurs. 2003: 18(2); 96-114
2. Soldin SJ, Murthy JN, Agarwalla PK, Ojeifo Olumide, Chea J. Pediatric reference values for creatine kinase, CKMB, Troponin I, iron, and cortisol. Clinical Biochemistry 1999; 32(1): 77-80
3. Mohsen AF, Arjumand SW. Normal reference values for hematological parameters, red cell indices, HBA2 and HBF from early childhood through adolescence in Saudis. Ann Saudi. Med 2001; 21(3-4): 165-169
4. Bernard John. Clinical diagnosis and management by laboratory methods, 20th Ed. Philadelphia, WB Saunders Company. 2001: 140

5. Arslan P. Obesity and its interaction with various diseases and scientific practice in diet therapy. Vocational educational seminary.1993: 8

6. Bossche JV, Devreese K, Malfait Ronald, Vyvere MV, Wauters A, Neels H, Schouwer P. Reference intervals for a complete blood count determined on different automated haematology analysers: Abx Pentra 120 retic, Coulter Gen-S, Sysmex SE 9500, Abbott Cell Dyn 4000 and Bayer Dvia 120. Clin Chem Lab 2002; 40(1): 69-73

7. Kargbo RB, Wurie AT, Gevao SM. Normal haematological values in adult Sierra Leonean males in Freetown. West Afr J Med 1999: 18(1); 24-26

## CASES

### *Aspiration and Death from Amitraz-Xylene Poisoning*

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**ABSTRACT**

Amitraz is an acaricide and insecticide indicated for the treatment of dogs and for the control of ticks and mites in cattle and sheep. We report the clinical, laboratory and postmortem features of a suicide case by ingestion of amitraz. The major clinical findings were unconsciousness, respiratory failure requiring mechanical ventilation, miosis, hypothermia and bradycardia. The laboratory findings were hyperglycemia. The postmortem findings were pulmonary edema and congestion in the lungs and fatty changes in the liver.

In this case report, we concluded that xylene aspiration was responsible for pulmonary edema and congestion in the lungs, and the aspiration pneumonitis rapidly led to septicemia which was the probable cause of death. This case was reported because of the limited information in the literature on this subject.

**Key Words:** Amitraz, xylene, poisoning, fatality, forensic medicine.

## INTRODUCTION

Amitraz [1, 5 di-(dimethylphenyl)-3-methyl-1, 3, 5-triazapenta-1, 4-diene] is a formamidine pesticide widely used in agriculture and veterinary medicine. Amitraz inhibits monoamine oxidase and prostaglandin synthesis and is an alpha-2 adrenergic agonist. Xylene, a mixture of o-, m-, and p-dimethylbenzene, is widely used in industry (Bonsall and Turnbull 1983). In Turkey, amitraz is available commercially under the proprietary name Kenaz, in the form of an emulsion in xylene containing 12.5 % amitraz and 57.5 % xylene in water.

Amitraz is a potent a2-adrenegic agonist and many of the clinical effects observed in amitraz poisoning are related to a2-adrenegic agonistic activity. In addition, amitraz possesses other pharmacological properties, including monoamine oxidase inhibition and prostaglandin E2 synthesis inhibition (Bonsall and Turnbull 1983; Cullen and Reynoldson 1990). Reported effects of amitraz poisoning in humans include central nervous system (CNS) depression, bradycardia, hypotension, vomiting, hyperglycemia, and miosis (Jorens and Zandijk 1997; Aydin et al. 1997). Information about the biological actions of amitraz in humans is primarily based on theories from animal studies. Cases of human poisoning with amitraz are extremely rare in the literature. Mortality in humans due to amitraz poisoning has been reported in some research studies (Bonsall and Turnbull 1983; Abu-Al Ragheb et al. 1986). Sporadic fatal cases due to accidental industrial inhalation or ingestion of this product have also been reported (Abu-Al Ragheb et al. 1986). In the current case we present the clinical and laboratory features of a 46-year-old man who died from complications of amitraz ingestion for suicidal purposes.

## CASE REPORT

A previously healthy 46-year-old man, 72 kg body weight ingested approximately 100 ml kenaz (amitraz 12.5% + xylene 57.5%) for purposes of intentional suicide. Approximately two hours later after drinking the poison the initial predominant initial symptoms, were nausea, vomiting, dizziness, and dysphagia. This was followed later by loss of consciousness and his family examined him more closely. That is when they found near him, a 100 ml bottle of kenaz, which they were certain had been full. During this time the individual was not conscious and he vomited twice while unconscious. Based on this information the family understood he had attempted to commit suicide and decided to take him to the hospital. About 6 hours after ingestion, the victim was brought to the emergency room of Cumhuriyet University Hospital. Upon arrival, the major clinical findings of the case were lethargy, hypothermia (350C), respiratory distress (moist crackles in his right lung), miosis (2 mm in diameter), heart rate 90 beats/min. Arterial blood pressure (120/80 mmHg), and ECG and brain stem reflexes were normal. Arterial blood gas results were pH 7.26, pO2 80 mmHg, pCO2 52.4 mmHg, HCO3 20.1 mmol/L, BE -4.1mmol/L, O2 saturation 92 %. The other laboratory findings can be seen in Table 1. The man was transferred to the intensive care unit for close monitoring.

After gastric lavage, activated charcoal (1 g/kg) was administered. He was hydrated intravenously and was given oxygen by mask. About one hour after admission, his blood pressure was 75/40 mmHg, and heart rate was 40 beats/min. Dopamine infusion was begun immediately and atropine was administered. Five hours after he was hospitalized, his respirations were inadequate and examination of the blood gases showed respiratory acidosis and hypoxia (pH 7.19, pO2 58.2 mmHg, pCO2 60.2 mmHg, HCO3 18.1 mmol/L, BE -5.9 mmol/L, O2 saturation 81 %). He was intubated immediately with an endo-tracheal tube and connected to a mechanical ventilator with CMV (Control Mechanic Ventilation) mode. There was a little clinical improvement in the level of consciousness, at 24 hours after amitraz ingestion. The post intubation arterial blood gas result were pH 7.35, pO2 109.4 mmHg, pCO2 48.8 mmHg, HCO3 21.3 mmol/L, BE -2.9 mmol/L, O2 saturation 98.6 %.

On the second day after the ingestion of amitraz, the patient began to have respiratory effort. Respiratory support was changed to SMIV (Synchronized Intermittent Mandatory Ventilation) mode. But his respiratory effort continued to be inadequate, and dopamine infusion was started . And then, his condition deteriorated rapidly, pO2 decreased and his respiratory effort stopped, and the ventilator was changed to CMV mode from SMIV mode. Cultures of trans-tracheal aspiration material and blood samples were taken due to the symptoms of moist crackles with auscultation and hyperthermia (380C). On the second day after the ingestion of amitraz, his clinical condition improved hemodynamically (the blood pressure 120/80 mmHg), and the dopamine infusion was stopped. The bottle of amitraz was empty when the family brought it to the hospital for analysis but the quantity consumed by the patient was not known. In addition, he was known to

consume large quantities of alcohol and had been in emotional and financial crises. No amitraz toxicology laboratory studies are available in our hospital or region. Blood alcohol level was not measured in the patient.

On the third day after the ingestion of amitraz, Pseudomonas auroginosa was isolated from blood and trans-tracheal cultures and antibiotic therapy was started according to the antibiogram results. On the fourth day the patient again became hypotensive and dopamine infusion was re-started. In spite of dopamine, the blood pressure ranged from 50/30 mmHg to 80/45 mmHg. In addition he again became bradycardic. Atropin is useful hemodynamically in the treatment of bradycardia. However the clinical findings deteriorated. The level of consciousness decreased and the blood gases worsened (pH 7.21, pO2 61.5 mmHg, pCO2 54.8 mmHg, HCO3 17.2 mmol/L, BE -8.1 mmol/L, O2 saturation 86 %). In spite of having a normal ECG, the patient went into sudden cardiac and respiratory arrest. Cardiopulmonary resuscitation was attempted, but the resuscitation efforts were unsuccessful and he was pronounced dead.

**Postmortem Evaluation**
**On gross examination;** no evidence of violence or trauma was noted. About 250 ml of the bloody fluid was obtained from his lung. The lungs were grossly firm in consistency. Tissue samples were taken for histopathologic examination. On microscopy; the lungs showed areas of pulmonary edema and congestion. The heart was free of infarcts and the coronary arteries were unremarkable. The liver showed fatty changes. The other viscera examined were essentially unremarkable. No superficial erosions or deep ulcerations could be identified on the gastric mucous.

## DISSCUSION

The major findings of amitraz poisoning in humans are loss of consciousness, respiratory failure, miosis, hypothermia, bradycardia, and hyperglycemia (Jorens et al. 1997; Aydin et al. 1997; Doganay et al. 2002; Yaramis et al. 2000; Ertekin et al. 2002). The principal acute effects of xylene are its action on the CNS and respiratory depression (Abu-Al Ragheb et al. 1986). Similar findings were present in our case.

There is no specific therapy or antidote for the subsequent possible pharmacological effects of amitraz. Amitraz poisoning is generally benign and only requires supportive measures because amitraz metabolizes rapidly and the effects of the product last for a short of period of time (Jorens et al. 1997; Turnbull 1983). Yaramis et al. (2000) presented clinical and laboratory features of poisoning by oral route with amitraz in 11 children. They concluded that CNS depression resolved within 8-14 hours. Ertekin et al. (2002) concluded that the signs of CNS depression in 21 children of oral amitraz poisoning resolved within 6-28 hours. Respiratory depression from human poisoning has also been reported (Aydin et al. 1997; Doganay et al. 2002; Yaramis et al. 2000; Ertekin et al. 2002). Respiratory depression usually lasts less than 24 hours (Doganay et al. 2002; Aydin et al. 2002). Abu Al Ragheb et al. (1986) reported a case of a 27-year-old male of suicide by ingestion of a large quantity of xylene. They reported acute pulmonary edema end severe congestion in the lungs. Sevcik et al. (1992) emphasized that intravenous xylene leads to progressive pulmonary failure that develops in the course of a few minutes following the injection.

This case of poisoning did not progress benignly and the symptoms did not resolve rapidly. His CNS depression, which is the most important sign, never resolved completely. The respiratory depression seen after his arrival didn't recover completely. We concluded that pulmonary edema and congestion due to aspiration pneumonitis had been responsible for his respiration depression. In contrast to Elinav et al. (2005) and Gursoy et al. (2005), our case was dead. We concluded that the probable cause of death in this case was rapidly evolving septicemia due to pulmonary infection. Pulmonary aspiration probably caused the moist crackles observed in his right lung on first examination. He was seen to vomit while unconsciousness on the day of admission. Aspiration pneumonitis was not controlled and continued to progress. We concluded that the aspiration of xylene/amitraz in the gastric content was responsible for non-controlled aspiration pneumonitis because this product is an irritant to the skin and mucous membranes (Bonsall and Turnbull 1983; Abu-Al Ragheb et al. 1986). The postmortem changes observed in the lungs of the victim such as acute pulmonary edema and congestion, bloody fluid, pointed to non-controlled aspiration pneumonitis.

In the presented study, we concluded that xylene aspiration was responsible for pulmonary edema and congestion in the lungs, and that aspiration pneumonitis rapidly evolved, and that the cause of death could be due to septicemia. Also, we would like to emphasize that an increase in poisoning with amitraz has been seen since its usage has increased. Although amitraz poisoning causes serious CNS depression and

respiratory failure, all cases can recover completely in a short period of time with close observation and supportive medical treatment.

**Table 1. Laboratory data.**

| | Reference ranges | First day | Second day | Third day | Fourth day |
|---|---|---|---|---|---|
| Glucose (mg/dl) | 70-110 | 94 | 64 | 170 | 127 |
| BUN (mg/dl) | 8-25 | 14 | 15 | 23 | 32 |
| Creatinine (mg/dl) | 0.8-1.6 | 0.5 | 2.3 | 1.6 | 1.9 |
| ALT (U/L) | 13-40 | 17 | 17 | 15 | 18 |
| AST (U/L) | 15-48 | 57 | 51 | 48 | 35 |
| LDH (U/L) | 230-460 | 564 | 597 | 664 | 444 |
| Direct bilirubin (mg/dl) | 0.0-0.3 | 0.2 | 0.1 | 0.2 | 0.2 |
| Indirect bilirubin (mg/dl) | 0.0-1.0 | 0.4 | 0.2 | 0.3 | 0.3 |
| CL- (mmol/L) | 100-110 | 92 | 96 | 94 | 90 |
| Na++ (mmol/L) | 136-146 | 130 | 135 | 131 | 131 |
| K+(mmol/L) | 3.5-5.0 | 3.8 | 3.2 | 3.7 | 4.5 |
| Ca++ (mg/dl) | 8.4-10.2 | 7.3 | 8.3 | 8.5 | 7.7 |
| WBC (x10.e3/uL) | 4.0-11.0 | 19 | 14 | 10.8 | 2.8 |
| Hb (g/dl) | 14-18 | 15.9 | 15.8 | 14.7 | 13.1 |
| PLT(x10.e3/uL) | 150-400 | 320 | 310 | 241 | 210 |

**REFERENCES**


1. Abu-Al Ragheb, S., Salhab, A.S. & Amr, S.S. (1986) Suicide by xylene ingestion. A case report and review of literature. The American Journal of Forensic Medicine and Pathology, 7, 327-329.
2. Aydin, K., Kurtoglu, S., Poyrazoglu, M.H., Uzum, K., Ustünbas, H.B. & Hallaç, I.K. (1997) Amitraz poisoning in children: Clinical and laboratory findings of eight cases. Human Experimental Toxicology, 16, 680-682.
3. Aydin, K., Per, H., Kurtoglu, S., Poyrazoglu, M.H., Narin, N. & Aslan, D. (2002) Amitraz poisoning in children. European Journal of Pediatrics, 161, 349-350.
4. Bonsall, J.L. & Turnbull, G.J. (1983) Extrapolation from safety data to management of poisoning with reference to amitraz (a formamidine pesticide) and xylene. Human Toxicology, 2, 587-592.
5. Cullen, L.K. & Reynoldson, J.A. (1990) Central and peripheral alpha 2-adrenoceptor actions of amitraz in the dog. J. Vet. Pharmacol. Ther., 3, 86-92.
6. Doganay, Z., Aygun, D., Altintop, L., Guven, H. & Bildik, F. (2002) Basic toxicological approach has been effective in two poisoned patients with amitraz ingestion: Case reports. Human Experimental Toxicology, 21, 55-57.
7. Elinav, E., Shapira, Y., Ofran, Y., Hassin, T. & Ben-Dov, I.Z. (2005) Near-fatal amitraz intoxication: The overlooked pesticide. Basic. Clin. Pharmacol. Toxicol., 97(3), 185-187.
8. Ertekin, V., Alp, H., Selimoglu, M.A. & Karacan, M. (2002) Amitraz poisoning in children: Retrospective analysis of 21 cases. The Journal of International Medical Research, 30, 203-205.
9. Gursoy, S., Kunt, N., Kaygusuz, K. & Kafali, H. (2005) Intravenous amitraz poisoning. Clin. Toxicol. (Phila), 43(2), 113-116.
10. Jorens, P.G., Zandijk, E., Belmans, L., Schepens, P.J. & Bossaert, L. (1997) An unusual poisoning with the unusual pesticide amitraz. Human Experimental Toxicology, 16, 600-601.
11. Sevcik, P., Hep, A. & Peslova, M. (1992) Intravenous xylene poisoning. Intensive Care Med, 18, 377-378.
12. Turnbull, G.J. (1983) Animal studies on the treatment of poisoning by amitraz (a formamidine pesticide) and xylene. Human Toxicology, 2, 579-586.
13. Yaramis, A., Soker, M. & Bilici, M. (2000) Amitraz poisoning in Children. Human Experimental Toxicology, 19, 431-433.

OFFICE BASED FAMILY MEDICINE

# *Ten minute consultation: Otalgia*

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**Case scenario**

A 40-year-old male patient presents to you with persistent otalgia. Lately he has been suffering from odynophagia (painful swallowing). He is a lifelong smoker and drinks heavily.

**What issues to cover?**

Otalgia is a common presentation in general practice. It has many origins and distinguishing otological from referred pain causes can be done based on an accurate history and examination. Otalgia may also sometimes be the only symptom of underlying malignancy and therefore should not be taken lightly.

- Onset and duration of otalgia
- Associated otological symptoms e.g. hearing loss, tinnitus and vertigo. Unilateral, conductive type of hearing loss (from glue ear) in an adult may the sign of nasopharyngeal carcinoma.
- History of progressive dysphagia, odynophagia, food sticking in the throat and/or hoarseness and weight loss suggests laryngopharyngeal lesion e.g. tumours
- Fevers or rigors, rapid onset and progression may be a sign of an infective process e.g. tonsillitis, peritonsillar abscess or supraglottitis.
- Smoking and alcohol history has a strong associated with head and neck cancers
- Referred pain can originate from dental disease (Vth cranial nerve), temporomandibular joint dysfunction and cervical spondylosis (C2, C3 nerve)

**What should you do?**

*Examination*

*Examine the ear*

- Pinna- look for perichondritis, vesicles (Herpes zoster)
- External auditory canal- wax, debris/pus canal (otitis externa, otitis media),

- Tympanic membrane-red bulging drum (acute otitis media), perforation (underlying cholesteatoma, chronic otitis media), unilateral glue ear (nasopharyngeal carcinoma)
- Postauricular swelling/tenderness (Mastoiditis)

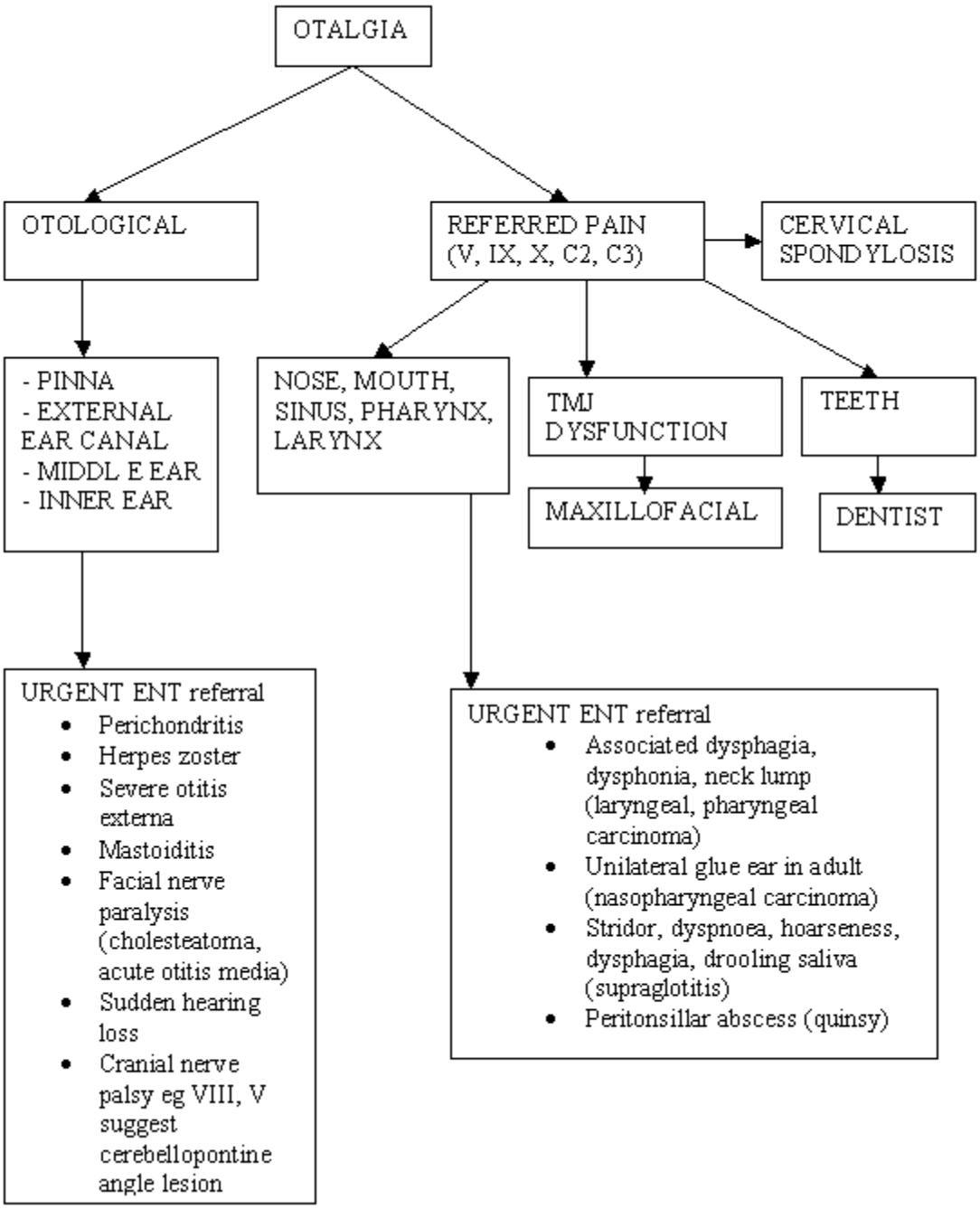
*Head and neck examination*

- Oral cavity, tonsils, tongue and nose should all be examined for infection or suspicious malignant lesion
- Any neck swelling should raise the suspicion of malignancy. Of the head and neck neoplasms that present as an isolated neck mass, 40% are due to metastatic squamous carcinoma and 40% are lymphomas.
- One should also examine the dental status, temporomandibular joint (TMJ) tenderness/clicking and cervical tenderness and range of movement (spondylosis)

*Treatment (see table)*

- Any suspicion of malignancy (history of smoking and alcohol in a middle-aged person, persistent hoarseness-duration>3 weeks, dysphagia) should be referred to an ENT surgeon for fibreoptic endoscopic examination.
- Features suggestive airway compromise or inadequate oral intake may suggest supraglottitis or tumour, also need immediate referral.
- Sudden hearing loss, facial paralysis, features or mastoidits or suspicion of malignant otits externa should be referred to ENT immediately.
- Acyclovir should be started early in Ramsay Hunt syndrome to prevent progression
- Dental or TMJ dysfunction should be referred to the dentist and maxillofacial surgeons respectively.

## MANAGEMENT OF OTALGIA




**REFERENCES**


1. Key Topics in Otolaryngology, 2nd Edition, NJ Roland, RDR MacRae, AW McCombe p206-208
2. http://www.emedicine.com/ent/topic199.htm. Otalgia, John Lee, Thomas W Ulrich
3. Logan Turner's Diseases of the Ear, Nose and Throat, 10th Edition, AGD Maran, p237-245

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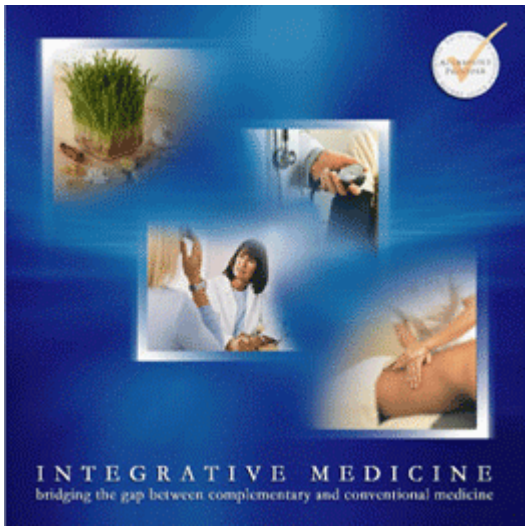


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