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## EDITORIAL

# Care for the Elderly: The Challenge in Family Practice

The care for the elderly has become an interesting topic in family practice and there are several reasons why this is so. The first reason is there is so much work to identify the unmet needs of elderly patients in the Philippines. The article of Dr. Maglonzo that appears in this issue recommends some strategies to answer the needs of elderly patients like nutritional and preventive care. The need for nutritional intervention is further supported by the article of Dr. Villaruel which establishes an association between weight loss and mortality in the elderly. In other countries, elderly needs are already identified with simple tools. Five priority areas are: senses (vision and hearing), physical ability (mobility and falls), incontinence, cognition, and emotional distress (depression and anxiety).[1] Family physicians must also be aware of all these other needs if they intend to provide special services for elderly people.

The second challenge that family physicians should recognize is to know the right pharmacologic intervention both for treating illnesses and for prevention of its complication. Dr. Villaruel's article noted that hypertension is the most prevalent medical condition accompanying weight loss in the study group. Other significant co-morbidities associated with weight loss are coronary artery disease, BPH and COPD. These diseases may occur simultaneously requiring polypharmacy which considerably increase the risk of adverse drug reactions in the elderly. This necessitates strategies to optimize medication including compliance, better collaboration and communication between primary care physicians and their patients. It must also be emphasized that a number of pharmacological regimens for older people are outperformed by non-pharmacological treatment alternatives involving competent individualized counseling.[2-3] Dr. Maglonzo recommends several exercise programs to supplement pharmacologic intervention in the elderly and the need to address psychosocial issues is also emphasized in the article of Dr. Villaruel.

The third challenge is the patient preferences and perception of services in general care and specialist care for the elderly. Finnish elderly more often visited a specialist compared to Norwegians and self-rated health was strongly associated with visits to a specialist in both countries and to a family physician in Norway.[4] The difference may be due to different practices of gate-keeping in these countries. In the Philippines, gate-keeping is not enforced and family physicians have to compete with specialists even for provision of primary care to the elderly. Measurement of patient needs and satisfaction by family physicians is a good strategy to face this challenge. Family physicians must also address the barriers for measuring patient satisfaction like cognitive impairment among patients, fear that they would not answer honestly and opposition to written material.[5]

To address these challenges, family physicians in the Philippines need to develop a model for providing health services in the elderly that addresses not only the medical, nutritional and preventive issues but also the psychosocial and the cultural issues as well.

**Noel L. Espallardo, MD, MSc**

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## EDITORIAL

# Appraising Critical Appraisal Workshop

In the article "Effectiveness of Critical Appraisal Workshop as a Method for Disseminating a Clinical Practice Guideline on Hypertension", two teaching methods were compared - critical appraisal workshop and lecture. The knowledge and appropriateness of care of medical interns were measured by a written examination and chart review, respectively.

In Family Practice, it is important that we train our students to be adult learners. Adult learning is a learning that is purposeful, participation is voluntary, participation is active not passive and opportunities for reflection should be provided. Thus, we must utilize educational methods that will foster critical thinking. Lecture is a passive form of teaching while a workshop enhances critical thinking and clinical reasoning.

In this article, it is expected that we will get good results with workshop since it fosters interaction and clarification. The article did not mention whether the lecture given was interactive or not. It was also not mentioned when the post test was given. This may have implications on the result especially if it was immediately given due to the recall factor. What was not addressed by the article is the item analysis of the questions. This can provide the difficulty and discriminating index. There might be differences between the two groups. It can also reveal the reliability of the evaluation method.

A future challenge for research is to conduct program evaluation of accredited family medicine training programs utilizing critical appraisal workshops. In family practice, sustaining behavior change towards conforming to evidence-based medicine is warranted.

**Eva Irene Yu-Maglonzo, MD, MHPEd**

ORIGINAL RESEARCH

# Involuntary Weight Loss in the Elderly Outpatient As Predictor of Morbidity and Mortality

Joseph Oliver R. Villaruel, MD

Department of Family and Community Medicine, Veterans Memorial Medical Center

**Background:** Physiologic changes accompanying aging include a physiologic decline in food intake, termed "the anorexia of aging." This reduction in food intake leads to poor nutrition and weight loss, which have detrimental effects on the elderly patient's health. **Objectives:** To determine the prevalence of involuntary weight loss among elderly patients, describe medical conditions and laboratory measures accompanying weight loss and to correlate weight loss with adverse health outcomes. **Method:** The research is a cohort study evaluating the clinical association of weight loss and death. **Results:** The study group was composed of 257 veteran and veteran dependents regularly consulting the outpatient department. Average age of the population was 72.28 $\pm$ 7.92 years. The prevalence of involuntary weight loss among elderly patients was noted at 19 percent. Hypertension is the most prevalent medical condition accompanying weight loss in the study group. Other significant co-morbidities associated with weight loss are coronary artery disease, BPH and COPD. Mortality rate was 6.1 percent among elderly patients with significant weight loss. **Conclusion:** There was a significantly higher death rate, hospitalization and frequency of emergency room visits among patients with weight loss compared to the general population. A closer look at the social components that contribute to development weight loss is recommended as a separate study due to its wide field of coverage.

**Key words**: weight loss, amorexia of aging, elderly

## Introduction

Physiologic changes accompanying aging include a physiologic decline in food intake, termed "the anorexia of aging." This reduction in food intake leads to poor nutrition and weight loss, which have detrimental effects on the elderly patient's health.[1] Weight loss, therefore, is one of the more common but often overlooked problem encountered by physicians treating older populations.[2] Moreover, it has been associated with adverse health outcomes such as increased frequency of hospitalization and death.[3] Hence, weight loss in the elderly is a clinically significant entity in geriatrics.

The degree of weight loss causing adverse health outcomes has not been fully established. Beginning at age 60 for men and 65 in women, it was thought that an average of 0.5 percent weight loss occurs annually,[4] and that men are at an increased risk of dying than women.[5] The most accepted definition of clinically significant weight loss is 5 percent in 6-12 months, based on the study by Barrocas.[6] Thus, a weight loss of 5 percent in 6 months warrants investigation and treatment, once identified.

However, very few studies have been done to evaluate weight loss in the elderly. The causes of involuntary weight loss have been categorized in

several ways. The basic approach to its etiology includes decreased food intake, accelerated metabolism, and increased loss of calories.[7] A narrative review done by Wise suggested a more detailed classification of these etiologies into four categories; namely, social, psychiatric, medical and age-related causes.[8] More specific causes of weight loss, according to Huffman, are depression, cancer, cardiovascular disorders and polypharmacy.[9]

Weight loss has been demonstrated to affect both the quality and quantity of life of geriatric patients. A study on elderly male veterans revealed an increase in mortality with 4 percent weight loss in 2 years.[5] A retrospective study also showed increased risk of dying and debilitation in elderly patients with a 10 percent weight loss over 6 to 13 years.[10] Confounding factors, such as the preexisting co-morbid conditions that affect the patient's health, make it difficult to evaluate weight loss in the elderly since these may affect the outcomes of the said health issues.

## Statement of the Problem

Involuntary weight loss and malnutrition have been associated with adverse health effects, such as infections, poor wound healing and even death, especially in the elderly population.[11] Despite its clinical significance, weight loss in the geriatric population is difficult to evaluate. In a quarter of patients, a specific cause of weight loss is not identified.[12]

Despite investigations made on the effects of weight loss on health outcomes of patients, knowledge of the problem in the ambulatory care setting has been limited. Most of the studies made, focused on the institutionalized patients, such as those in hospitals or nursing homes. Moreover, most of the studies done in the outpatient setting are retrospective and the parameters to evaluate the nutritional status of the subjects, vary with the investigator. This makes correlation of the outcomes difficult. Thus, the parameters for the evaluation of weight loss in the outpatient setting remain poorly characterized. To better address this problem, this study aimed to:

1) Determine the prevalence of involuntary weight loss among patients consulting at the OPD of VMMC
2) Describe medical conditions and laboratory measures accompanying weight loss, and
3) Correlate weight loss with the following adverse health outcomes:
   a) mortality and morbidity in patients with significant weight loss
   b) hospitalization and ER consultation in patients with significant weight loss

## Review of Related Literature

The loss of body weight and fat late in life has been associated with increased risk of disease and death. Researchers done showed a decrease in weight of more than 5 percent in 6 months warrants investigation as this has been correlated to increased morbidity and mortality.[13]

In the study by Wallace, the incidence of weight loss among elderly outpatients in a medical center was as high as 13.1 percent. This was a four-year prospective cohort study evaluating the clinical significance of weight loss. Anthropometric measures of centrally distributed fat were concluded to be congruent with the quantity of weight loss, and a 4 percent decrease in weight was concluded by the researchers to be a strong predictor of increased mortality.[5]

A clinical review by Gazewood, stated that weight loss is a common occurrence in the elderly and is associated with functional decline and mortality. Ten percent weight loss in 10 years was the author's gauge in predicting increased mortality and functional decline. Moreover, a 4 percent weight loss in one year warrants a search for a cause, according to the author. A detailed history, targeted physical examination and a simple laboratory evaluation was suggested by the authors as tools.[4]

In a retrospective study done by Wilson, et al. on outpatients of a university hospital, the results showed

that undernutrition was common in both the old and young population. However, the older population had a higher incidence of malnutrition. The condition was found to be readily treatable in both populations, but the older population was discovered to have higher oral control needs, which may have implications for treatment of their malnutrition.[14]

McWhirter, et al. made a prospective study on the incidence of malnutrition in hospitalized patients and concluded that malnutrition remains a largely unrecognized problem and emphasized the need for education on clinical nutrition.[15]

The study by Chapman showed that nursing home patients had a significantly higher mortality rate in 6 months after a 10 percent weight loss, irrespective of the preexisting medical conditions present during the study period.[16]

Ryan, et al. concluded that institutionalized elderly patients with a 5 percent weight loss in a month were 4 times more likely to die within one year.[17]

In the very few researches done to assess weight loss, the settings and parameters may vary, but the common conclusion remains that weight loss and malnutrition are strong predictors of morbidity and mortality, especially in the older population.

## Significance of the Research

The importance of evaluating the cause of weight loss has already been pointed out, as this has been related to increased morbidity and mortality for the patient. However, weight loss still remains an overlooked problem in health service. Oftentimes, health care providers fail to evaluate the patient's nutritional status until health problems have emerged. The need to identify the prevalence of weight loss is thus valuable to increase the physician's awareness of these conditions, so that better health care may be given, and adverse health outcomes prevented.

When patients present with involuntary weight loss, and multiple medical problems are identified, and patient is on polypharmacy, the differential diagnosis regarding its etiology can be extensive. Cognitive impairment, which is common in the elderly, can further complicate the evaluation. Anthropometric measures and ancillary tests used for evaluation are both time-consuming and expensive. It is therefore important to identify a more cost-effective way of screening patients at risk of malnutrition.

## Materials and Methods

*Duration*: 18 months

*Setting*: Veterans Memorial Medical Center-Outpatient Department

*Subjects*: Target population: 200 to 700 patients (95% CI: 5-10)

*Inclusion Criteria*

1. Patients aged >60 years old
2. Patients with regular consultations at the OPD

*Exclusion Criteria*

Patients with diseases known to be associated with poor nutrition and weight loss such as: poorly controlled diabetes mellitus (FBS >6.5), thyroid dysfunction (hypo/hyperthyroidism), cancer, liver diseases, malabsorption syndromes, congestive heart failure and severe pulmonary disease (FEV 1 < 70).

*Procedure*

The research is a cohort study evaluating the clinical association of weight loss and death. The weight of outpatient subjects was determined at entry point (time 0) and repeated after 6 months follow up. Patients showing more than 5 percent weight loss in six months, regarded as significant weight loss, are assigned as the case group, and patients without significant weight loss (<5% weight loss) as the control. Subjects were evaluated using anthropometric measures (height, weight and body mass index). Laboratory measures (cholesterol, serum albumin and CBC) were also requested.

After 1 year, follow up of subjects was done. These included chart review, home visits, and patient interview regarding hospitalizations, medications, emergency room and outpatient consultations and activities of daily living.

The prevalence of weight loss of more than 5 percent in six months was calculated. Anthropometric and laboratory measures from case and control groups were compared using independent t-test. Outcomes of interest were the number of hospitalizations and death occurring in both groups during the one year follow up. Data were compared using independent t-test. Logistic regression was used to determine whether weight loss is an independent predictor of the outcome of interest.

## Results and Discussion

The study group was composed of 257 veterans and veteran dependents regularly consulting the outpatient department. Average age of the population was 72.28 $\pm$ 7.92 years. There were 132 males and 125 females.

Among the self reported co-morbidities, hypertension ranked the highest, present in 212 of the 257 subjects (82.49%). Coronary artery disease ranked second with 134 patients (52.14%) affected. Diabetes ranked third among the diseases with 49 patients (19.07%) affected. Other diseases noted were arthritis, obstructive pulmonary diseases such as asthma and chronic obstructive pulmonary disease (COPD); and gut diseases, benign prostate hypertrophy in males and chronic kidney disease (CKD) in females. Three patients had a history of stroke (1.17%), but no residual neurological deficits were noted.

Weight loss is common in the elderly due to the "physiologic anorexia of aging."[12] The amount of circulating cholecystokinin, a hormone of satiety increases, leading to anorexia and subsequent weight loss.[18] Aside from physiologic changes, several factors are also correlated with involuntary weight loss. Depression[19], dementia[20], poverty[21], co-morbid conditions[22] and polypharmacy[23] have been correlated with weight loss in several studies. (Table 1)

**Table 1**. Study cohort demographics and clinical characteristics.

| Characteristics | Study Group (n = 257) |
|---|---|
| Demographics | |
| Age (years) | 72.28 +/- 7.92 |
| Sex | |
| Male | 132 (51.36%) |
| Female | 125 (48.64%) |
| Body mass index (kg/m$^2$) | 23.78 |
| Albumin (gm/L) | 39.68 +/- 2.39 |
| Cholesterol (mg/dL) | 5.10 +/- 0.74 |
| Hemoglobin | 133.06 +/- 9.54 |
| Self reported disease | |
| Hypertension | 212/257 (82.49%) |
| Diabetes | 49/257 (19.07%) |
| Coronary artery disease | 134/257 (52.14%) |
| Chronic obstructive pulmonary disease | 41/257 (15.95%) |
| Benign prostate hypertrophy | 27/257 (10.50%) |
| Arthritis | 47/257 (18.29%) |
| Stroke | 3/257 (1.17%) |

Statistics (SPSS Generated)
Descriptive Statistics

| Variable | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Age | 257 | 60.00 | 95.00 | 72.2840 | 7.91613 |
| Weight | 257 | 77.00 | 173.00 | 136.7385 | 22.16651 |
| Height | 257 | 142.24 | 185.42 | 161.3246 | 8.56397 |
| % WT Change | 257 | – | 7.60 | 1.3907 | 2.07660 |
| FBS | 49 | 4.70 | 6.50 | 5.6857 | .57987 |
| Chole | 257 | 2.60 | 7.80 | 5.1047 | .73627 |
| ALB | 257 | 32.00 | 49.00 | 39.6887 | 2.38738 |
| HGB | 257 | 94.00 | 154.00 | 133.0623 | 9.54205 |
| Valid N (listwise) | 49 | | | | |

**Table 2**. Baseline subject characteristics based on weight loss.

| Measure | Weight Losers (n = 49) | Non-Weight Losers (n = 208) |
|---|---|---|
| Age (years) | 73.61 | 71.97 |
| Weight (kg) | 56.13 | 63.57 |
| Height (cm) | 160.12 | 161.61 |
| BMI (kg/m$^2$) | 21.76 | 24.26 |
| % weight loss | 5.51 $\pm$ 2.08% | 0.42% |

The incidence of weight loss, in the study by Wallace[5] was 13.1 percent. Incidence of weight loss in the study population was noted to be higher, at 19.07 percent. Differences in the population may account for this since several factors may play a role in the development of weight loss. Social factors such as poverty and eating habits, affect food intake. The difference between our local setting and in other countries may account for the difference in the incidence of weight loss between the two populations.

Significant weight loss was determined as loss of 5 percent of body weight in 6 months, based on preceding studies. In our institution, 49 of the 257 patients had significant weight loss. The average age was 73.61 years. Mean weight and height were 56.13 kilos and 160.12 cm, respectively. Body mass index (BMI), a measure that assesses nutritional status accurately, is recorded at 21.76 among the weight losers. Normal BMI was set at 18.5-24.9 for adults[24], and a BMI of <22 for females and <23.5 for males was associated with increased mortality.[25] Average weight loss was 5.51 $\pm$ 2.08% in 6 months in contrast to 0.42 percent weight loss among the control group.

**Table 3**. Baseline subject characteristics based on gender.

| Measure | Male (n = 132) | Female (n = 125) |
|---|---|---|
| Age (years) | 73.20 | 63.45 |
| Weight (kg) | 67.44 | 46.55 |
| Height (cm) | 167.32 | 136.15 |
| BMI (kg/m$^2$) | 24.17 | 19.54 |

The average age of the male population was 73.20 years and 63.45 years for the female population. Mean weights were 67.44 and 46.55 kilograms for males and females, respectively. The average height of the male population was 167.32, while the female population has an average height of 136.15. The BMI was 245.17 for males and 19.54 for females.

**Table 4**. Demographics and clinical characteristics based on weight loss and gender.

| Measure | Weight losers | | Non weight losers | |
|---|---|---|---|---|
| | M (23) | F (26) | M (109) | F (99) |
| Age (years) | 72.52 | 74.58 | 73.87 | 69.88 |
| Weight (kg) | 64.41 | 48.81 | 70.47 | 55.77 |
| Height (cm) | 141.70 | 155.04 | 168.76 | 153.73 |
| BMI (kg/m$^2$) | 23.47 | 20.24 | 24.87 | 23.60 |
| Ave. weight loss (%) | 5.48% | 5.53% | 0.36% | 0.48% |
| Hypertension | 22 | 20 | 87 | 83 |
| Diabetes Mellitus | 8 | 8 | 8 | 25 |
| Coronary Artery Disease | 14 | 20 | 30 | 70 |
| Renal Disease | 10 | 0 | 15 | 2 |
| Infection | 5 | 7 | 1 | 0 |
| Pulmonary Disease | 8 | 3 | 26 | 4 |
| Infection | 3 | 0 | 4 | 2 |
| Degenerative Joint Disease | 3 | 10 | 31 | 3 |
| Cardiovascular Disease | 0 | 1 | 0 | 2 |

A younger male population did have weight loss. A study on weight loss at the Mayo Clinic[25] noted that males with weight loss had more adverse health outcomes than the general population. The study also concluded that males were more likely to develop weight loss. This study showed the contrary, with more females in the weight losers group. More males (67%) died in the weight losers group, though.

With regards to anthropometric measures, weight losers, as expected, were smaller and lighter compared to the non weight losers. Lesser weight and height mean a smaller muscle mass, which translates to decrease in strength and functionality of patients with significant weight loss. This may account for increased susceptibility to infections and adaptation to stress. Clinically, this is observed as more frequent hospitalization and emergency room consults among patients with weight loss.

Among the self reported illnesses, females were noted to be more afflicted with coronary artery disease, whether with significant weigh loss or not. Chronic obstructive pulmonary disease as well as BPH was common in males. Cerebrovascular disease occurred in 3 female patients. No residual neurological defects were noted.

**Table 5**. Baseline health status measures.

| Measure | Weight losers | Non-weight losers | t, p-value |
|---|---|---|---|
| Hospitalization | 5 | 4 | t = 10.33 (p = 0.0309) |
| ER visits | 15 | 13 | t = 7.60 (p = 0.0452) |
| Average weight loss | 5.51% | 0.42% | t = 2.174 (p = 0.048) |
| Hgb | 131.39 | 133.46 | t = 2.05 (p = 0.048) |
| Cholesterol | 5.20 | 5.08 | t = 0.003 (p = 0.997) |
| Albumin | 39.49 | 39.74 | t = 0.070 (p = 0.945) |

* T values significant at $p < 0.05$

In the study population, weight losers were noted to have more emergency room consultations and hospitalizations compared to non- weight losers. Accompanying ancillary procedures showed a higher hemoglobin and lower cholesterol level for non-weight losers. Statistical analysis, however showed no significant difference between the two groups. Albumin, an accurate estimate of levels of visceral proteins[26], was higher among non- weight losers. Although albumin has not been proven to correlate the nutritional status of patients, low protein levels in patients with weight loss may indicate a restricted reserve, which leads to poor defense against infections and stress.

**Table 6**. Correlation of baseline health measures with mortality among the general population.

| Measure | R, p-value |
|---|---|
| Hospitalization | R = 0.235 (p = 0.05) |
| ER visits | R = 0.139 (p = 0.170) |
| Average weight loss | R = 1.00 (p = 0.000) |
| Hgb | R = 0.371 (p = 0.004) |
| Cholesterol | R = 0.069 (p = 0.318) |
| Albumin | R = 0.044 (p = 0.382) |

* R values significant at $p < 0.05$

Logistic regression analysis of health measures with mortality showed that the number of hospitalization R = 0.235 (p = 0.05), the % weight change R = 1.00 (p = 0.000) and hemoglobin levels R = 0.371 (p = 0.004) are correlated with mortality.

**Table 7**. Association of weight loss with health outcomes.

| | Weight losers | | Non weight losers | |
|---|---|---|---|---|
| | No. | % | No. | % |
| Deaths | 3/49 | 6.1 | 1/208 | 0.44 |
| Hospitalizations | 5/49 | 10.2 | 4/208 | 1.9 |
| ER consults | 15/49 | 30.6 | 13/208 | 6.25 |

Outcomes of interest in this study were death, the frequency of hospitalization and emergency room consults between the two groups (weight losers and non-weight losers). Death rate in the weight losers group was 6.1 percent. Two patients died of cardiac causes (myocardial infarction) and 1 died of sepsis secondary to pneumonia. The single death in the non weight losers group was also due to sepsis secondary to UTI. Table 8 shows statistical significance of death between two groups at F value of 1.19 (p = 0.02).

**Table 8**. Comparison of health outcomes between weight losers and non weight losers.

| | Weight losers | Non-weight losers | F (p value) |
|---|---|---|---|
| Deaths | 3 | 1 | 1.19 (0.02) |
| Hospital | 5 | 4 | 2.74 (0.017) |
| ER | 15 | 13 | 3.41 (0.013) |
| HPN | 42 | 170 | 0.43 (0.51) |
| DM | 16 | 33 | 0.39 (0.56) |
| CAD | 34 | 100 | 0.791 (0.587) |
| Renal | 10 | 17 | 0.104 (0.065) |
| Pulmo | 11 | 20 | 0.476 (0.152) |
| DJD | 13 | 34 | 0.656 (0.652) |
| CVD | 1 | 2 | 0.719 (0.043) |
| Infection | 3 | 6 | 0.104 (0.065) |

* F values significant at $p < 0.05$

Rate of hospitalization was also noted to be higher among patients with significant weight loss ($F = 2.74$, $p = 0.017$). The causes of hospitalization among the weight losers group were recurrent urinary tract infections (3), pneumonia (1) and uncontrolled hypertension (1). Among the control group (non weight losers), UTI (1), pneumonia (2) and surgical indication (cholecystectomy) were the causes of hospitalization.

Emergency room consultations were also noted to be more frequent among patients with weight loss ($F = 3.41$, $p = 0.013$). The causes of consultations were blood pressure elevations (6), UTI (3), respiratory infections (2), joint pains (2) and body malaise (2). In the group without weight loss, causes of emergency room consultations were respiratory infections (4), joint pains (3), urinary tract infections (3), BP elevations (2) and chest pain (1).

**Table 9**. Correlation of health outcomes and baseline health status with weight change.

| Health Outcomes/Baseline Health Status | R (p value) |
|---|---|
| Death | 1.00 (–) |
| Hospital | 0.235 (0.05) |
| ER | 0.139 (0.17) |
| HPN | 0.095 (0.25) |
| DM | 0.00 (–) |
| CAD | 0.039 (0.39) |
| Renal | 0.645 (–) |
| Pulmo | 0.104 (0.23) |
| DJD | 0.065 (0.32) |
| CVD | 0.053 (0.36) |
| Infection | 0.235 (0.05) |

* R values significant at $p < 0.05$

## Conclusion

The prevalence of involuntary weight loss among elderly patients consulting the Outpatient Department of the Veterans Memorial Medical Center was noted at 19.07 percent, higher than values noted in previous studies done abroad. Psychosocial factors may influence the difference and warrant further investigations.

Hypertension is the most prevalent medical condition accompanying weight loss in the study group. Other significant co-morbidities associated with weight loss are coronary artery disease, BPH and COPD. Among the ancillary procedures done, only hemoglobin correlated with mortality.

Mortality rate was 6.1 percent among elderly patients with significant weight loss. There was a significantly higher death rate, hospitalization and frequency of emergency room visits among patients with weight loss compared to the general population.

## Scope and Limitation

The study does not indicate that significant weight loss causes deaths and morbidity in patients. The presence of preexisting disease in the study population may have played a role in the health outcomes noted. What the researcher wants to emphasize is the importance of anthropometric measures such as weight, height and body mass index, in assessing patients at risk of developing complications from preexisting diseases. Furthermore, the identification of clinically significant weight loss in patients, specially in the elderly should warrant investigation since the study shows significantly more adverse health outcomes such as death, hospitalization and emergency room consults among patients with weight loss.

## Recommendation

A longer period of study is recommended to assess the correlation of weight loss to adverse health outcomes. Other researches used 2 year follow up period to determine the outcome of weight loss in their study population. However, due to time limitations, only a one-year follow up period was feasible.

The addition of more anthropometric measures, such as skin fold tests is also recommended to assess the nutritional status of the subjects. Literatures have noted that central subcutaneous fat (abdominal skin folds) was a more accurate measure of the nutritional state compared to peripheral skin folds

(triceps, biceps fold). More data are needed for a more definitive correlation, however.

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ORIGINAL RESEARCH

# Profile of Children 0-23 Months Old with Acute Gastroenteritis

Mae Susan Enecio-Apolinario, MD

Department of Family Medicine, Visayas Community Medical Center, Cebu City

This is a descriptive study of children 0-23 months old with final diagnosis of acute gastroenteritis, based on reviews of their hospital records at the Visayas Community Medical Center in January 2001 - January 2002. **Methodology:** Forty seven (40%) of 118 admitted children belonged to the age group of 6-11 months old; 37 (31%) were 18-23 months old; 28 (24%) were 0-5 months old; 6 (5%) were 12-17 months old. **Results**: One hundred two (86%) patients with acute gastroenteritis had some signs of dehydration; fifteen (13%) with moderate to severe signs and one (0.85%) with no sign of dehydration. According to the type of water used: 58 (49%) used bottled water; 48 (41%) used water from MCWD; 7 (6%) from artesian well; 4 (3%) from deep well and 1 (0.85%) from water pump. Stool examinations revealed 112 (96%) with negative results. Among those who used bottled water, 56 (96%) had some signs of dehydration and majority belonged to the age group of 6-11 months old; only 1 (1.7%) had moderate to severe signs of dehydration. Among those who did not use bottled water, 46 (77%) developed some signs of dehydration and 14 (23%) had moderate to severe signs of dehydration. Fifty-five (92%) of stool examination results were negative among those who did not use bottled water and 57 (100%) unremarkable stool examination results for the bottled-water users.

**Key words**: gastroenteritis, dehydration

## Introduction

Acute gastroenteritis affects people regardless of age and sex and remains to be one of the major health problems in the Philippines.[1] Throughout the country, children admitted for diarrhea constitute a sizeable percentage of patients in pediatric wards. For children under 5 years of age, it is the second leading cause of morbidity and the fifth leading cause of mortality in the country, with nearly 3 episodes of diarrhea per child per year.[6]

Acute gastroenteritis is generally defined as 1-5 days of watery diarrhea with nausea and vomiting.[1] The condition can be caused by a bewildering number of infections, drugs, toxins and systemic diseases. Viruses are suspected when patient history and physical examination do not point to any other agent of injury and routine stool tests for usual bacterial pathogens are negative.[3]

The clinicians encounter acute gastroenteritis in 3 settings. The first is sporadic gastroenteritis in infants, which most frequently is caused by rotavirus.

The second is epidemic gastroenteritis, which occurs either in semiclosed communities (eg. Families, institutions, ships, vacation sports) or as a result of classic food-borne or water-borne pathogens. Most of these infections are caused by calciviruses. The third is sporadic acute gastroenteritis of adults, which most likely is caused by calciviruses, rotaviruses, astroviruses or adenoviruses.[6]

The pathogenesis of acute viral gastroenteritis in humans is not completely understood. The most extensive studies have been done with rotavirus because these viruses, unlike calciviruses, infect animal models and tissue cultures. Viral attachment and entry into the epithelial cell without cell death may be enough to initiate diarrhea.[4]

The clinical spectrum of acute viral gastroenteritis ranges from asymptomatic infection to severe dehydration and death. Mild fever is common. Death results from dehydration and acidosis. Viruses are the suspected cause of acute gastroenteritis when vomiting is prominent, when the incubation period is longer then 14 hours and when the entire illness is over in less than 3 days.[2]

**Review of Related Literature**

A 12-month prospective study was conducted at the National Children's Hospital to investigate the etiologic agents of diarrhea in children. A total of 620 children with diarrhea and 517 age and sex-matched controls were included in the study. Rotavirus (17%), enterotoxigenic E.coli (ETEC) (15%) and salmonella (15%) were the three most common pathogens isolated.[5] These organisms cause acute gastroenteritis in children through contaminated food and water. According to M. Lucero, et al. in their study, 99 percent of the patients were children under one year of age with high isolation rate of rotavirus of 22 percent in children 6 to 11 months old.

Rife-Iledan, et al. at Riverside Medical Center, Bacolod City from January 1976 to December 1978, had 5,651 admissions at the Nursery Department for diarrhea and diagnosed to have amoebiasis, however, dehydration was not apparent. The water supply of the hospital comes from a deep well.

Gozun of DENR emphasized that polluted water sources lead to water-borne diseases such as diarrhea which is a serious threat to Filipinos especially among infants.[8]

In Manila, over 36 percent of the country's river system serve as sources of public water supply and that up to 58 percent of groundwater sample is contaminated with coliform and needs treatment. Untreated wastewater affects health by spreading disease-causing bacteria and viruses, making it unfit for drinking and recreational use. Known diseases caused by poor water include gastroenteritis, cholera, typhoid, hepatitis, dysentery and more recently, severe acute respiratory syndrome.[10]

Internationally, acute viral gastroenteritis is a leading cause of infant mortality throughout the world. Butler, et al. estimated the deaths per year to be in the range of 5-10 million. By age 3 years, virtually all children become infected with the most common agents. Although acute viral gastroenteritis occurs throughout life, the etiologic agents and disease severity vary with age.[6]

**Significance of the Study**

This study intends to obtain the profile of children 0-23 months old with acute gastroenteritis who were admitted at Visayas Community Medical Center (VCMC) from January 2001 to January 2002. The clinicians encounter 3 types of acute gastroenteritis. The first is sporadic gastroenteritis in infants which is most frequently caused by rotavirus. The second is endemic gastroenteritis, which occurs either in semiclosed communities or as a result of classic food-borne or water-borne pathogens. Most of these infections are caused by calciviruses. The third is sporadic gastroenteritis in adults, which is most likely caused by calciviruses, rotaviruses, astroviruses or adenoviruses.[2] In this study, we gathered the type of water used and the hydration status of admitted children with acute gastroenteritis whose majority of stool examinations showed no ova and parasites. In our setting, most of the laboratory results did not reveal the specific pathogen. This paper would help

us determine the importance of water in the causation of acute gastroenteritis in relation to the degree of dehydration whose clinical spectrum ranges from asymptomatic infection to severe dehydration and death.

### Objectives

*General*

This study determined the profile of children 0-23 months old with acute gastroenteritis admitted at Visayas Community Medical Center, January 2001-January 2002.

*Specific*

This study sought to

A. Identify the number of children 0-23 months old admitted for acute gastroenteritis.
B. Identify the type of water used by these children admitted for acute gastroenteritis.
C. Classify the degree of dehydration of these children admitted for acute gastroenteritis.
D. Determine if there is a significant association between the children's degree of dehydration with the water source.

### Scope and Limitations

A. This study did not assess the postnatal nutrition and related illnesses or treatment of the children involved.
B. The amount of water taken and the caretaker were not evaluated in this study as well as the type of water treatment.
C. Causes of acute gastroenteritis other than viral are not included.
D. Number of days of hospital stay of the admitted children is not included in their profile.
E. The personal, social and financial profiles of the patients were not evaluated.

## Materials and Methods

### Study Design

Descriptive cross-sectional study utilizing a 12-month retrospective chart review.

### Study Setting

Visayas Community Medical Center, a tertiary medical center in Cebu City.

### Study Population

All children 0-23 months old with final diagnosis of acute gastroenteritis admitted at VCMC, January 2001-January 2002.

### Research Material

The hospital charts/records of the study subjects were reviewed carefully. Important data were noted like age of the patient, degree of dehydration, type of water used, stool examination results and the final diagnosis.

### Data Collection

*Preliminary Preparation*

The Medical Records Section of VCMC was informed of the research and permission was obtained for the retrieval of the hospital records.

*Actual Data Gathering*

The researcher accessed the medical records and used the history, laboratory and record sheets where relevant data of the children were documented. The data gathered were tallied, tabulated, analyzed and interpreted.

### Data Processing and Analysis

Descriptive statistics were used to organize data on age, degree of dehydration, type of water used

and stool examination result. Pearson chi square was used to interpret any significant difference of the variables involved.

## Results and Discussion

From January 2001 to January 2002, 118 children were admitted for acute gastroenteritis at Visayas Community Medical Center. As shown in Table 1, majority of the patients belonged to the age group of 6-11 months old.

**Table 1.** Age profile of admitted children, VCMC, January 2001 - January 2002.

| Age in Months | Frequency | Percent |
|---|---|---|
| 0 - 5 | 28 | 23.73 |
| 6 - 11 | 47 | 39.83 |
| 12 - 17 | 6 | 5.08 |
| 18 - 23 | 37 | 31.36 |
| Total | 118 | 100 |

Table 2 shows the degree of dehydration of admitted children. Eighty six percent of them had some signs of dehydration and only 0.85 percent showed no sign of dehydration.

Table 3 indicates that 49 percent of the subjects used bottled water. Butler, et al. said that food and water remain to be the vehicles of transmission of viral gastroenteritis.[9]

Table 4 shows the degree of dehydration in terms of the type of water used. This table indicates that 98 percent of those with some signs of dehydration used bottled water. However, in children with moderate to severe signs of dehydration, 19 percent used water from MCWD. In general, for those who did not use bottled water, 23 percent had moderate to severe signs of dehydration ($p < 0.05$).

Table 5 shows that majority of stool examination results were negative since in our setting, the test itself is non-specific for the viral pathogen.

**Table 2.** Degree of dehydration in children admitted at VCMC, January 2001 - January 2002.

| Level of Dehydration | Frequency | Percent |
|---|---|---|
| No sign of dehydration | 1 | 0.85 |
| Some signs of dehydration | 102 | 86.44 |
| Moderate signs of dehydration | 12 | 10.17 |
| Severe signs of dehydration | 3 | 2.54 |
| Total | 118 | 100.00 |

**Table 3.** Type of water used by children admitted for acute gastroenteritis, VCMC, January 2001 - January 2002.

| Type of Water Used | Frequency | Percent |
|---|---|---|
| MCWD | 48 | 40.68 |
| Bottled water | 58 | 49.15 |
| Artesian well | 7 | 5.93 |
| Deep well | 4 | 3.39 |
| Water pump | 1 | 0.85 |
| Total | 118 | 100.00 |

**Table 4.** Degree of dehydration of children admitted for acute gastroenteritis, VCMC, January 2001 - January 2002.

| Type of Water | Degree of Dehydration | | Total |
|---|---|---|---|
| | Some | Moderate-Severe | |
| MCWD | 39 (81%) | 9 (18.75%) | 48 (100%) |
| Bottled water | 56 (98.25%) | 1 (1.75%) | 57 (100%) |
| Artesian well, deep well, water pump | 7 (58.33%) | 5 (41.67%) | 12 (100%) |
| Total | 102 (87%) | 15 (13%) | 117 (100%) |

**Table 5.** Results of stool examination of children admitted for acute gastroenteritis, VCMC, January 2001 - January 2002.

| Using bottled water? | Stool Examination Result | | Total |
|---|---|---|---|
| | Negative | Positive | |
| No | 55 (92%) | 5 (8%) | 60 (100%) |
| Yes | 57 (100%) | 0 (0.00) | 57 (100%) |
| Total | 112 (96%) | 5 (4%) | 117 (100%) |

Table 6 indicates that most of the children who were dehydrated belonged to the age group of 6-11 months old. The high isolation rate of rotavirus of 22 percent were found in children 6-11 months old.[5]

**Table 6.** Age group by extent of dehydration.

| Age group (months) | No DHN (N = 1) | With DHN (N = 117) |
|---|---|---|
| 0 - 5 | 0 (–) | 28 (24%) |
| 6 - 11 | 1 (100%) | 46 (39%) |
| 12 - 17 | 0 (–) | 6 (5%) |
| 18 - 23 | 0 (–) | 37 (32%) |
| Total | 1 (100%) | 117 (100%) |
| Grand Total | 118 | |

DHN - dehydration

## Conclusion

Based on the results gathered and analyzed, most of the children with acute gastroenteritis with some signs of dehydration who were admitted at Visayas Community Medical Center in January 2001 to January 2002 used bottled water. In those with moderate to severe signs, a significant number of patients used water from MCWD, artesian well, deep well and water pump.

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# Effectiveness of Critical Appraisal Workshop as a Method for Disseminating a Clinical Practice Guideline on Hypertension

Noel L. Espallardo, MD, MSc

Department of Clinical Epidemiology, College of Medicine, University of the Philippines Manila

**Background:** This study was designed to determine the effectiveness of two methods of disseminating a clinical practice guideline: critical appraisal workshop vs. didactic lecture on the clinical practice guideline in terms of knowledge about the diagnosis and treatment of hypertension and appropriateness of care such as history taking, physical examination, laboratory work up, non-pharmacologic and pharmacologic treatment for patients with hypertension. **Methods**: Medical interns were randomized by groups into the two interventions, critical appraisal workshop and didactic lecture. The workshop involved critical appraisal of the clinical practice guideline and the articles used by the guideline in their recommendations. The other group received a didactic lecture on the recommendations of the clinical practice guideline for the treatment of hypertension. Their knowledge on the diagnosis and treatment of hypertension were evaluated by a written examination before and after the intervention. History taking, physical examination skills and prescribing practice were evaluated by doing a chart review before and after the intervention. Evaluators were blinded to the group where the medical intern was randomized. **Results**: A total of 162 medical interns were included in the study. Eighty-four were randomized to the didactic lecture group while seventy-eight were randomized to the critical appraisal workshop group. The demographic characteristics were not significantly different between the two groups. In terms of knowledge, both groups showed a significant increase in knowledge score after the intervention with a higher increase noted in the critical appraisal workshop group with 12.1% (95% CI; 8.6 - 15.7) and 9.2% (95% CI; 6.5 - 12.0) in the lecture group. The adherence to the guideline recommendations was also higher in the critical appraisal group than the lecture group in terms of history taking (OR=3.2; 95% CI: 1.1-9.0), physical examination (OR=5.6; 95% CI: 1.3-23.9) and non-pharmacologic treatment (OR=8.0; 95% CI: 3.9-16.2). The difference in the adherence to guideline recommendation was not significant in terms of diagnostic testing and pharmacologic intervention (OR=2.2; 95% CI: 0.6-7.5 and OR=2.1; 95% CI: 0.8-5.7, respectively). **Conclusion**: This study showed that critical appraisal workshop may be a better way of disseminating a clinical practice guideline for hypertension than plain didactic lecture. The mixed effect on the different outcomes needs further investigation.

**Key words**: critical appraisal, hypertension, clinical practice guidelines

## Introduction

Despite the existence of clinical practice guidelines for hypertension, the GPs ability to control it is still low.[1] Even among patients with higher risk, the GPs are only more aggressive in treatment but the appropriateness of the process and goal for the treatment is often not achieved.[2] In a Dutch cross-

sectional study, the median performance rates of the GPs were less than 51 percent for most guideline recommendations.[3]

One possible reason for this is the physicians' discordance of their attitude and practice behavior towards clinical practice guidelines. In some cases, awareness to the existence of the guideline is the most important problem.[4] However, awareness does not ensure utilization after the guidelines have been made available to physicians. There are reasons why clinical practice guidelines in hypertension fail to influence general medical practice. These include doubts about the applicability, poor attitude of GPs to treatment protocols, effect of time pressure, financial considerations, absence of an effective computer system and absence of an educational mentor.[5] Another reason why physicians do not follow the recommendation of the guideline is because they are not actively implemented and disseminated.[6]

Passive dissemination of guidelines to health professionals in primary care has not been very effective because of several attitudinal barriers to implementation.[7] However, dissemination and implementation processes that have been shown to be effective in developed countries like computer-based decision support system to improve dissemination and adherence to guideline recommendations[8] may be difficult to implement in developing countries. At present, there are two ongoing randomized trials testing simple interventions designed to improve dissemination and adherence of general practitioners to clinical practice guideline recommendations. One is in Italy where a guideline for diabetes is being tested for dissemination with a training module compared to dissemination without the training module.[9] The other is the Rational Prescribing in Primary Trial that is testing the multi-faceted approach.[10] The key components of this multi-faceted intervention are an educational outreach visit with audit and feedback. However, the results of these trials will be available in the next couple of years or so.

A more active intervention to increase family medicine resident knowledge and attitude toward the guidelines by guideline summaries in the patient chart failed to demonstrate a significant difference in knowledge. One of the significant barriers identified was lack of accessibility and critical appraisal ability.[11] It is hypothesized that a deeper understanding of clinical practice guideline development through critical appraisal of the articles that served as the basis for the recommendation will enhance adherence to the guideline recommendation. This study was conducted to determine the effectiveness of critical appraisal workshop compared to didactic lecture as a method for guideline dissemination in terms of improvement in the knowledge and adherence to guideline recommendations in terms of history taking, physical examination, laboratory diagnosis and treatment of patients with hypertension.

## Materials and Methods

Medical interns rotating with the Department of Family and Community Medicine (DFCM) of the Philippine General Hospital were randomized as a cluster into the two intervention groups. Each cluster was composed of 9 to 10 medical interns rotating in the DFCM at a time for two weeks. Two modes of intervention as a means of disseminating a practice guideline on hypertension were compared. The first was critical appraisal workshop on practice guideline and the second was a didactic lecture on the same practice guideline. The outcomes measured were adherence to the recommendations of the guideline in terms of history taking, physical examination, laboratory diagnosis and pharmacologic treatment of hypertension and the knowledge on the guideline recommendation. Adherence was measured one week before and one week after the intervention during their outpatient clinic rotation. Knowledge on the recommendations of the clinical practice guideline was also measured before and after the intervention.

### Interventions

The two methods of disseminating a practice guideline were considered as the interventions being compared in this study. The first method was the critical appraisal workshop on the guideline. This

was a half-day workshop that involved critical appraisal of at least one evidence used to arrive at the recommendations in the clinical practice guideline. The method of critical appraisal was done using the criteria published by the EBM Working Group in the Journal of the American Medical Association. The criteria for critical appraisal were the validity of the article, the results and the applicability of the article to the patients seen at the clinic. At the end of the workshop the group summarized the results of the critical appraisal and compare it with the recommendation of the guideline. The clinical practice guideline was later subjected to the same method of critical appraisal. At the end of the session, the group was asked to decide whether to accept the recommendations of the clinical practice guideline or not. The second method of disseminating a practice guideline was the didactic lecture on the practice guideline by an experienced lecturer. The lecture emphasized the main recommendations on the following: 1) diagnosis of hypertension, history taking and physical examination, 2) laboratory work-up of hypertension, 3) non-pharmacological treatment of hypertension, and 4) pharmacological treatment of hypertension.

### Outcomes and Analysis

Adherence to the clinical practice guideline was determined by reviewing the medical notes in the charts of hypertensive patients and compared it to the review criteria developed based on the guideline recommendations.[12] Charts of patients who consulted for hypertension in the outpatient clinic seen by a medical intern were reviewed and evaluated by three independent evaluators. The reviewers were blinded to the type of intervention the medical intern was randomized, the name of the patient and the medical intern and the date of consultation at the clinic.

The knowledge of the medical interns regarding the management of hypertension was evaluated by means of a multiple choice questionnaire. The questions were formulated based on the recommendations of the guideline. The set of questions were given to the reviewers of the study and other consultants in family medicine for comments on its content validity and concurrence with the guideline.

Data analysis was done using STATA software. Descriptive statistics was used for demographic data of the medical interns and hypertensive patients. All statistical analyses were adjusted for the design of the study (clusters). The effect of intervention on knowledge scores was analyzed using linear regression. The variables included in the model were the type of intervention and the baseline knowledge with knowledge after the intervention as the outcome. The adherence to the recommendations between the two interventions was analyzed using logistic regression adjusted for baseline adherence. The variables included in the logistic regression model were the type of intervention and the baseline adherence with adherence after the intervention as the outcome. The association was reported as odds ratio at 95% confidence interval.

## Results

A total of 162 medical interns were involved in the study. Eighty-four were randomized to the didactic lecture group while 78 were randomized to the critical appraisal workshop group. Three medical interns in the didactic lecture group and 4 in the critical appraisal workshop group were not able to take the second written examination and were considered as dropouts. The reasons for dropping out were absenteeism in 6 medical interns and one medical intern was on duty and could not leave her post at the time of written examination.

Of the 162 medical interns recruited for the study, only 35 (44.9%) in the critical appraisal workshop group and 45 (53.6%) in the didactic lecture group were able to see at least one hypertensive patient before and after the intervention for paired comparison. This small number can be due to the short duration of the rotation of medical interns in the department and their short duty at the outpatient department and the ambulatory care section of the emergency room. Thus, a total of 80 medical interns

were included in the analysis for the appropriateness of care to hypertensive patients.

Their demographic profile is shown in Table 1. The mean age was similar between the two groups, 25.2 years (SEM = 0.1) in the critical appraisal workshop group and 25.3 years (SEM = 0.2) in the didactic lecture group (independent t-test; p value = 0.366). Overall, there were 86 female medical interns. After randomization, majority in the critical appraisal workshop group were female [48 (64.9%)] while in the didactic lecture group, majority were male [43 (53.1%)]. The difference in sex distribution between the two groups was not statistically significant (Pearson chi-square, p value = 0.56).

**Table 1**. Demographic characteristics of medical interns included in the study.

| | EBM Workshop (n=74) | Didactic Lecture (n=81) | p value |
|---|---|---|---|
| Age | 25.2, 0.1 | 25.3, 0.2 | 0.48* |
| Sex | | | |
| Male | 26 (35.1%) | 43 (53.1%) | |
| Female | 48 (64.9%) | 38 (46.9%) | 0.56** |
| Medical School | | | |
| University of the Philippines | 47 (63.5%) | 51 (63.0%) | |
| University of the East | 18 (24.3%) | 19 (23.5%) | |
| Others | 9 (12.2%) | 11 (13.5%) | 0.97** |

Values adjusted for clusters are presented as mean, SEM or frequency (%)
T-test adjusted for clusters *
Pearson chi-square test adjusted for clusters **

The mean scores of the written examination taken by the medical interns before and after the intervention are shown in Table 2. After the intervention, there was an improvement in the mean score in both groups. In the critical appraisal workshop group, the score increased from 46.6 percent (SEM = 3.5) to 58.8 percent (SEM = 3.1) with a mean change of 12.1 percent (SEM = 3.4). In the didactic lecture group, the mean score increased from 45.7 percent (SEM = 2.4) to 55.0 percent (SEM = 1.9) with a mean change of 9.2 (SEM = 1.8). However, the difference in the increase between the two groups of 2.9 percent (SEM = 2.3) was not statistically significant (95% CI –1.6 and 7.4). Both groups showed an increase in the mean scores after the intervention and the difference of the change between the two groups was not statistically significant and was not affected by their baseline knowledge.

**Table 2**. Mean scores of the written examination taken by the medical interns at baseline and after the intervention.

| | Baseline | After Intervention | Change | 95% CI of the Change |
|---|---|---|---|---|
| EBM Workshop (n = 74) | 46.6, 3.5 | 58.8, 3.1 | 12.1, 3.4 | 8.6 and 15.7 |
| Didactic Lecture (n=81) | 45.7, 2.4 | 55.0, 1.9 | 9.2, 1.8 | 6.5 and 12.0 |
| Difference | | | 2.9 ± 2.3 | |
| 95% CI of Difference | | | -1.6 and 7.4 | |

Values adjusted for clusters are presented as mean, SEM

The odds ratios of adherence to the recommendations of the clinical practice guidelines are shown in Table 3. In terms of the recommendations on history taking, 20 (57.1%) the medical interns in the critical appraisal workshop and only 14 (31.1%) medical interns in the didactic lecture adhered to the recommendations. The odds of better adherence to history taking recommendation in the critical appraisal workshop group is three times higher than in the didactic lecture group and this was statistically significant (OR = 3.2; 95% CI 1.1 and 9.0). In terms of the recommendations on

physical examination, 21 (60.0%) of the medical interns in the critical appraisal workshop while only 10 (22.2%) of the medical interns in the didactic lecture adhered to the recommendations. The odds of better adherence to physical examination recommendation in the critical appraisal workshop group was almost six times higher than in the didactic lecture group and this was statistically significant (OR = 5.6; 95% CI 1.3 and 23.9). In terms of adherence to recommendations on laboratory examinations 30 (85.7%) of the medical interns in the critical appraisal workshop and only 33 (73.3%) of the medical interns in the didactic lecture adhered to the recommendation. The odds of better adherence to recommendations on laboratory examination in the critical appraisal workshop group was only two times higher than in the didactic lecture group and this was not statistically significant (OR = 2.2; 95% CI 0.6 and 7.5). In terms of the recommendations on non-pharmacologic treatment, 85.7 percent of the medical interns in the critical appraisal workshop and only 44.4 percent of the medical interns in the didactic lecture adhered to the recommendations. The odds of better adherence to history taking recommendation in the critical appraisal workshop group was eight times higher than in the didactic lecture group and this was statistically significant (OR = 5.6; 95% CI 1.3 and 23.9). In terms of the recommendations on pharmacologic treatment, 80 percent of the medical interns in the critical appraisal workshop and only 66.7 percent of the medical interns in the didactic lecture adhered to the recommendations. The odds of better adherence to history taking recommendation in the critical appraisal workshop group was almost two times higher than in the didactic lecture group but this was not statistically significant (OR = 2.1; 95% CI 0.8 and 5.7).

## Discussion

This study showed that there was an improvement in knowledge about the treatment of hypertension. This is based on the increase in the scores of the written examination, which was noted in both the didactic lecture and critical appraisal workshop group. Although it was greater in the critical appraisal workshop group than in the didactic lecture group, the difference was not statistically significant. This study confirmed the general findings in one review that critical appraisal type of intervention generally led to a greater improvement in knowledge based on written examinations. They noted it to be more significant among the undergraduate medical students with an improvement in score of 17 percent than among the residents with an improvement in score of 1.3 percent. This present study showed an improvement in score of 12 percent and was very near to the improvement in score noted by other studies.[13]

**Table 3**. Conformance to the recommendations on history taking, physical examination and diagnostic skills and appropriateness of non-pharmacologic and pharmacologic treatment given by the medical interns after the intervention.

| | EBM Workshop (n=35)* | Didactic Lecture (n=45)* | Odds Ratio | 95% Confidence Interval |
|---|---|---|---|---|
| Clinical History Taking Skills | 20 (57.1) | 14 (31.1) | 3.2 | 1.1 and 9.0 |
| Physical Examination Skills | 21 (60.0) | 10 (22.2) | 5.6 | 1.3 and 23.9 |
| Diagnostic Skills | 30 (85.7) | 33 (73.3) | 2.2 | 0.6 and 7.5 |
| Non-Pharmacologic Treatment | 30 (85.7) | 20 (44.4) | 8.0 | 3.9 and 16.2 |
| Pharmacologic Treatment | 28 (80.0) | 30 (66.7) | 2.1 | 0.8 and 5.7 |

* Values adjusted for clusters are presented as frequency (percent).

The study also showed a greater improvement in physicians' practice based on the increased conformance to the recommendations of the clinical practice guidelines. This was also noted to be significantly greater in the critical appraisal workshop than the didactic lecture. The higher conformance in the critical appraisal workshop group was noted in terms of clinical history taking skills, physical

examination skills, diagnostic skills and use of pharmacologic and non-pharmacologic interventions. But the difference was only statistically significant in terms of history taking, physical examination and non-pharmacologic intervention.

In general, the significant effect in the critical appraisal workshop group may be due to the interactive small group discussion in the workshop. Similar findings were also noted in some studies[14] where the opportunities for interaction in small groups led to increased interest in implementing evidence-based recommendations in clinical decision-making. Thus the method of education and guideline dissemination are very important. The fact that the educational intervention was based on an evidence-based clinical practice guideline, may not be able to explain the improvement we noted in terms of non-pharmacologic intervention alone. Small group interaction may be necessary to strengthen retention of recommendation and later conformance. A similar study on unstable angina showed that an educational program based on evidence-based clinical practice guidelines does not have an overall effect on the management of patients based on chart review.[15]

The mixed effect of the intervention when measuring multiple outcomes is not uncommon in the medical literature. A historical control study comparing critical appraisal workshop with didactic lecture in improving the management of hypertension was conducted among family physicians.[16] The study noted that the effect of critical appraisal workshop was mixed among the participants. While there was an improvement in terms of non-pharmacologic treatment, there was actually a decrease in appropriateness of pharmacologic treatment. The reason pointed out was that the resident became more cautious about prescribing drugs after the intervention, that patients who should be prescribed with a drug was given non-pharmacologic treatment. The level of blood pressure may also influence the mixed effect. In one study, the appropriateness of non-pharmacological advice and appropriate prescribing increases with increasing level of blood pressure i.e. DBP > 100 mmHg.[3]

## Conclusion and Recommendations

Based on the results presented, we conclude that both critical appraisal workshop and didactic lecture significantly improved the physicians' knowledge in the management of hypertension and the difference in improvement between the two groups was not significant. However, in terms of practice, the improvement was significantly better in the critical appraisal workshop in terms of history taking, physical examination skills and administration of non-pharmacologic intervention. Critical appraisal workshop was not better than didactic lecture in terms of improving physicians' diagnostic skills and pharmacologic intervention.

We recommend future guideline implementation that involves accountability on the part of participants to sustain the behavior change. This accountability can consist of voluntary peer pressure to conform to evidence-based medicine, and may not require a financial reward or penalty. One way of promoting accountability that does not involve reward or punishment is through performance feedback. Physicians can be encouraged to join small group circles where their performance can be evaluated and later receive aggregated peer-comparison feedback data in a strictly confidential manner.

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# Association Between Family Function and Hypertension

Louise P. Pascual Curammeng, MD

Department of Community and Family Medicine, Far Eastern University-Nicanor Reyes Medical Foundation

A cross-sectional analytic study was conducted to determine the relationship between family function and hypertension. **Methods**: A total of 266 families participated in the study. The main respondents in the families that were primarily analyzed were the household heads. **Results**: Of the total household head respondents, 33.5 percent had hypertension and the rate of dysfunctional family as measured by the family APGAR was 41.4 percent. Using multiple logistic regression analysis, the odds of developing hypertension is about 2.5 times more likely among dysfunctional families than among functional families, adjusting for the effects of the control variables like age, occupation, smoking, obesity, past medical history and family history of cardiovascular diseases.

**Key words**: family function, hypertension

## Introduction

Stress is a contemporary and pervasive public health issue in the United States as evidenced in individuals, families, workplaces, homes and communities. Stress is any strain or interference that disturbs a person's normal functioning. This could be due to external physical stress, internal physiologic stress, or internal psychological stress. Each of these interacts and interrelates with each other in various complex mechanisms causing medical diseases.[1]

Family relationships sometimes buffer the stresses faced by individuals during their lifetime. However, for many people, families can also be a source of stress. As an example, men and women going through marital problems are especially vulnerable to the effects of relationship conflict. They may suffer from emotional consequences such as depression and can have a compromised immune function leading to an increased rate of physical illness.[1] Medalie and coworkers (1973) studies 10,000 Israeli men and found that family dysfunction was equal in magnitude as hypertension and elevated cholesterol level, in relation to being risk factors for cardiovascular diseases.[5]

This study may help establish dysfunctional family as a risk factor for hypertension. Family intervention may thus become one of the preventive strategies in the management of hypertension. Once proven, we can utilize assessment of family function using Family APGAR, part of a wellness-screening tool for hypertension and maybe for some other stress-related diseases.

### Objective

This study aims to determine the relationship of family function using the family APGAR tool and hypertension among household heads aged 18 and above, residing at Cluster A, Group B, Payatas Trese, Quezon City, from September 2004 to November 2004.

## Materials and Methods

### A. Study Design

This is a cross-sectional analytic study, which looked into the relationship between family dysfunction and hypertension.

### B. Study Population

Study populations were those residing in Cluster A, Group B, Payatas Trese, Quezon City, composed of about 300 hundred families. An enumeration of all families in the area was supposed to be undertaken. However, only 266 families were enrolled, and 34 families were not included for various reasons, either families refused to be interviewed, or they transferred residence, or three times, they were absent during home visits.

### C. Data Collection

The researcher conducted house to house visit to collect the data. Family function was measured using the average family APGAR. Each member of the family, 18 years old and above was asked to answer the Family APGAR questionnaire. The scores were then tallied and the average was computed to obtain the average Family APGAR. The family was assessed to be either functional if the APGAR score was 8 and above or dysfunctional if the score was 7.9 and below.

Blood pressure of the household heads was also taken on a sitting position at least twice, 5 minutes apart using a well-calibrated mercurial sphygmomanometer. Elevated blood pressure readings were confirmed on the contralateral arm. Each member was then labeled as either hypertensive or not, based on the JNC 7 criteria. In this study, household head is defined as any family member, 18 years and above, who is given the authority to make decisions for the family.

Other control variables were also collected during the visit using interview-schedule. These variables included age; sex; civil status; occupation; family income per month; educational attainment; lifestyle habits like exercise, smoking, excessive alcohol use and food preferences and history of hypertension, cardiovascular diseases and endocrine diseases like diabetes and thyroid abnormalities. Weight and height for the body mass index were also taken for each of the adult family members using a properly calibrated weighing scale and a 3M meter, respectively.

All data gathered were then tallied using the Microsoft Excel and analyzed using SPSS and Stata statistical software.

### D. Statistical Analysis

Relationship between dysfunctional family and hypertension was analyzed using odds ratio. Level of significance was set at alpha = 0.05. The probable confounders were the two methods used to evaluate confounding. First, by definition, a confounder is an independent factor for hypertension that is also associated with family dysfunction. To apply this definition, the association of each probable confounder to hypertension was determined using chi-square and odds ratio. An association with a p-value equal to or less than 0.25 was further evaluated. For each associated variable with hypertension, its association with family dysfunction was also determined using the same method.

The second approach to evaluate confounding was the change-in-estimate approach. The crude odds ratio of dysfunctional family and hypertension was computed. This was adjusted using one probable confounder (control variable) at a time. When there was at least 10 percent change in the crude odds ratio, the control variable was considered a confounder.

In multivariate analysis after control variables have been selected, logistic regression using backward elimination was employed to find the estimate of the association between family dysfunction and hypertension controlling simultaneously for all confounders that were identified in the univariate analysis. The likelihood ratio test was made to determine the importance of each variable. The variable that had

the highest p-value, and thus the smallest likelihood ratio statistic G, was removed in the model one at a time, until no more variable could be removed. The "alpha" level for removal of a variable was put at 0.30.

## Results

### A. Descriptive Analyses

#### *1. Socio-demographic Profile of Respondents*

A total of 266 families from Cluster A, Group B, Barangay Payatas 13, Quezon City were enrolled into the study. The main respondent in the family that was primarily analyzed was the head of the family. Predictably, majority of these respondents were fathers (82.0%). Fifteen percent were mothers, and the rest were either the eldest or the second child. Majority of the respondents were males, constituting 82.7 percent of the total subjects. Mean age was 43.9 $\pm$ 13.3 standard deviation. Median age was 42 years. Most of the respondents were married (73.3%). More than half (55.3%) were high school graduates. Only 15.4 percent finished college; 26.3 percent, elementary and only 3.0 percent had no formal schooling (Table 1).

#### *2. Medical Profile of Household Heads*

The prevalence of dysfunctional family as measured by the average family APGAR score was 41.4 percent. Of the household head respondents, 33.5 percent had hypertension. Very close to two-fifths (39.5%) had a past medical history of illness related to hypertension and 56.0 percent had a family history of diseases associated with hypertension. A little more than one-third, (36.8%) were smokers. Only 8.6 percent were excessive alcohol drinkers, less than one-half (42.5%) had preference for salty and/or fatty foods and less than one-third (33.1%) had regular exercise. About one-half of them (50.2%) had normal BMI, 22.7 percent were obese and 52.6 percent had occupation predominantly involving manual labor (Table 2).

**Table 1**. Socio-demographic profile of the respondents (N = 226).

| Profiles | Number | Percent |
|---|---|---|
| Age, Mean $\pm$ SD | 43.9 | 13.3 |
| Sex | | |
| Male | 220 | 82.7 |
| Female | 46 | 17.3 |
| Role in the Family | | |
| Father | 218 | 82.0 |
| Mother | 40 | 15.0 |
| Eldest Child | 6 | 2.3 |
| Second Child | 2 | 0.7 |
| Civil Status | | |
| Single | 30 | 11.3 |
| Married | 195 | 73.3 |
| Widow/er/Separated | 41 | 15.4 |
| Education | | |
| None/Elementary | 78 | 29.3 |
| High School | 147 | 55.3 |
| College | 41 | 15.4 |
| Occupation | | |
| None | 49 | 18.4 |
| Manual Labor | 77 | 28.9 |
| Clerical/Office Work | 140 | 52.6 |

**Table 2**. Medical profile of the household heads.

| Medical History | Number | Percent |
|---|---|---|
| Dysfunctional Family | 110 | 41.1 |
| Hypertension | 89 | 33.5 |
| Past Medical Illness | 105 | 39.5 |
| Family History | 149 | 56.0 |
| Smoker | 98 | 36.8 |
| Alcohol Drinker | 23 | 8.6 |
| Obese | 60 | 22.7 |
| Fatty/Salty | 113 | 42.5 |
| Manual Labor | 140 | 52.6 |

### Statistical Analyses

#### *1. Crude Analyses*

Crude analyses of the association between the main exposure variable, family dysfunction and the

dependent variable, presence of hypertension, and also between the control variables and hypertension are summarized in Table 3. The odds of developing hypertension are more than 4 times among those with dysfunctional families than among those with functional families (OR = 4.09, 95% CI=2.38-7.03).

Among the control variables that were examined in their association with hypertension, on account of their significant association in the univariate analyses and subsequently included in the multivariate analysis, age group, obesity, family history of illness related to hypertension, past medical history, food preference, excessive alcohol drinking, smoking, civil status and occupation. Three other variables, sex, family income and education were included likewise since their association with the dependent variable had a p-value less than 0.25 (Table 3).

**Table 3**. Univariate analyses in the association between the different variables and hypertension.

| Variable | Odds Ratio (95% CI) | | | P > Chi² |
|---|---|---|---|---|
| | Estimate | Lower | Upper | |
| Dysfunction Family | 4.09 | 2.38 | 7.03 | 0.000 |
| Age Group | 2.63 | 1.54 | 4.48 | 0.000 |
| Family Income | 0.63 | 0.37 | 1.06 | 0.057* |
| Obesity | 2.30 | 1.28 | 4.15 | 0.005 |
| Family History | 4.57 | 2.54 | 8.22 | 0.000 |
| Past Medical History | 8.49 | 4.76 | 15.16 | 0.000 |
| Food Preference | 2.32 | 1.38 | 3.90 | 0.001 |
| Alcoholism | 2.35 | 1.01 | 5.57 | 0.047 |
| Smoking | 2.07 | 1.23 | 3.50 | 0.006 |
| Exercise | 1.31 | 0.77 | 2.23 | 0.326** |
| Sex | 0.66 | 0.35 | 1.27 | 0.210** |
| Occupation | 1.27 | 0.67 | 2.40 | 0.465** |
| Education | 0.70 | 0.47 | 1.05 | 0.084* |

** = Not significant
* = Borderline significant

## 2. *Multivariate Analysis*

Multiple logistic regressions were used to find the right model that would give the true estimate of the relationship between family dysfunction and hypertension. The control variables that were identified in the univariate analyses to be associated with hypertension were entered as the full model. These variables were age, sex, family income, obesity, family history, past medical history, food preference, excessive alcohol intake, smoking, civil status, education and occupation.

Using backward elimination and the likelihood ratio test (LRT), the final model that provided the best estimate of the relationship between family dysfunction and hypertension included age, occupation, family history, obesity, smoking and past medical history. (Table 4). The odds of developing hypertension is about 2.5 times more likely among dysfunctional families than among functional families (OR = 2.53, 95% CI, 1.31 – 4.90), adjusting for the effects of aforementioned control variables.

**Table 4**. Results of multiple logistic regression analysis.

| Variable | Odds Ratio (95% CI) | | | z | p > z |
|---|---|---|---|---|---|
| | Estimate | Lower | Upper | | |
| Dysfunctional Family | 2.53 | 1.31 | 4.90 | 2.770 | 0.006 |
| Age Group | 1.83 | 0.93 | 3.60 | 1.760 | 0.078 |
| Occupation | 0.35 | 0.15 | 0.83 | -2.390 | 0.017 |
| Family History | 1.91 | 0.91 | 4.01 | 1.710 | 0.087 |
| Obesity | 1.96 | 0.96 | 4.01 | 1.850 | 0.064 |
| Smoking | 2.11 | 1.11 | 4.02 | 2.270 | 0.023 |
| Past Medical History | 5.20 | 2.63 | 10.30 | 4.730 | 0.000 |

## Discussion

This study investigated the relationship of family function and hypertension. As shown in the analyses, household heads belonging to dysfunctional families as measured through APGAR score was significantly related (OR = 2.53, 95% CI, 1.31 – 4.90) to hypertension. This suggests that the link between family dysfunction and hypertension is independent on the already known risk factors of the disease. This study results completed the findings of previous studies that relied on perceived

family support using the Family APGAR where it showed a positive relationship with self-rated health and poor family function.[4] It corroborated the study of Medalie and co-workers that family dysfunction was equal in magnitude to hypertension and elevated cholesterol level as a risk factor for angina in men.[5]

In a healthy family, the forces of cohesiveness and individuation are balanced. Flexibility is maintained by the ability of the members to function separately and as a team, and the ability to change the rules of the system to accommodate growth and input from other systems is evident.

Rigidity produces mal-adaptation. Just as the body's defense against stress may produce illness by an exaggerated response, so may the families' defenses against a threat produce dysfunction or disease. Symptoms can be seen as failures of adaptation or as exaggerations of adaptive responses to stress.

For such family to be maintained, communication is also essential. In families, disruption of communication can also produce ill health and dysfunction of its members. If one member's good ceases to be subservient to the good of the whole, or if the parental subsystem is in conflict or communicates poorly, family dysfunction or one or more symptoms will result. Russek, et al. showed that perception of parental caring and support predicted health status in midlife. Those who suffered from more health problems such as coronary artery disease gave their parents significant lower ratings.[16] The degree of support and level of stress of the surrounding system will be an important factor in promoting both health and recovery for illness. Working with the family means working with and enhancing the hierarchical organization of a family, focusing on family strengths and goals, and facilitating communication. One animal study showed a 50 percent increase in serum cortisol levels-representing increased stress, in a rodent placed in a cage alone. There was no rise when the rodent was surrounded by familiar companions.[17]

The Family APGAR tool focuses on the emotional, communicative and social interactive relationships between the respondent and his or her family.[14] It is suggested that the family APGAR index is a simple and useful instrument to screen out family dysfunctional patients in daily office practice.[18] The Family APGAR on family function is valid and reliable.[19]

Disturbances in family function can predispose, precipitate, or sustain illness in a family member. However, determining the causal nature of these associations was not the goal of this study. It may prove useful to conduct longitudinal research on family function and hypertension among the identified household heads at risk to fully understand the causal relationships between these variables over time.

This is a cross-sectional analytic study that looked into the relationship of family dysfunction, the independent variable, and hypertension, the dependent variable. Any effect that may be found in the dependent variable cannot be attributed completely to the independent variable. Perhaps the dependent variable preceded the independent variable (time ordering), not the other way around. Other non-confounding variables like diabetes mellitus and dyslipidemia were also not determined. This is a preliminary study that looked into the relationship of family function and hypertension.

## Summary and Conclusion

In summary, a total of 266 out of 300 families from Cluster A, Group B, Payatas, Quezon City were included in the study. The main respondents in the family that was primarily analyzed were the household heads. Of the total household head-respondents, 33.5 percent had hypertension and the rate of dysfunctional family as measured by the family APGAR was 41.4 percent. Using multiple logistic regression analysis, the odds of developing hypertension was about 2.5 times more likely among dysfunctional families than among functional families, adjusting for the effects of the control variables like age, occupation, smoking, obesity, past medical history and family history of cardiovascular diseases.

## Recommendations

Comprehensive health care has become a very important issue, however, little is known about the

complex relationship between family stress measured through family function and hypertension among household adult family members. This preliminary study attempted to look into the relationship of these two variables. It is then recommended that: longitudinal researches on the association of family function and hypertension are conducted in the future.

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# Preventive Care for the Elderly

Eva Irene Yu-Maglonzo, MD, MHPEd

Preventive care for the elderly should include appropriate nutrition, exercise, disease screening and immunization. A well-balanced diet should match with their energy requirement and inclusion of food in the basic food groups. In cases wherein they cannot derive the basic nutrients from the food that they eat, vitamin and mineral supplementation is given. Disease screening entails a comprehensive geriatric assessment such as history, physical examination, use of certain tools such as mini mental status examination, geriatric depression scale and Katz index of activities of daily living and the various laboratory and ancillary procedures recommended for this age group. The exercise prescription should take into consideration strength, flexibility, endurance and balance as well as the various diseases of aging. Immunizations recommended include influenza, tetanus toxoid and pneumococcal vaccine.

## Introduction

A mediocre doctor treats the disease. A good doctor cures the disease, but a great doctor prevents the disease. Preventive geriatrics is one of the most effective interventions that physicians can undertake to increase not only the lifespan of their patients but more importantly their functional status. Unlike strategies for younger populations, prevention in the elderly has immediate positive impact and is very cost effective.

Prevention of illness and disability has been traditionally considered in terms of primary, secondary, and tertiary prevention. Primary prevention refers to interventions that are designed to reduce the risk of getting a disease. Secondary prevention refers to efforts to improve outcomes in people who already have a given disease. Tertiary prevention refers to efforts to prevent the progression of disability through systematic identification, treatment, and rehabilitation. Thus, the following areas can be the focus of prevention: nutrition, health screening, exercise and immunization.

### Objectives

1. To discuss the different aspects of preventive care for the elderly.
2. To discuss the specific recommendations for the elderly as to nutrition, health screening, exercise and immunization.

## Discussion

### 1. Nutrition

*Energy requirements*

Energy needs of those beyond 75 years old are likely to be somewhat less because of reduced body size, resting energy expenditure and activity. Light to moderate activity is encouraged to maintain muscle mass and well-being.

*Proteins*

The WHO suggest .75 g protein/kg/day for the elderly if highly digestible high quality protein such as

egg, meat, milk or fish is used; otherwise it is still 1.1g/kg/day. It should supply 10-15 percent of the total daily caloric allowance.

*Fat*

Large quantity of fat is to be avoided because of the delayed absorption capacity of older persons. A high-fat diet has been linked with cancers of the breast, colon and prostate. A reduced intake of fat helps control weight and lower the risk of heart disease. Fat intake should be limited to 20 percent of the total calories. Plant sources rather than animal sources are recommended.

*Calcium*

As one grows older, the requirements for calcium increases and the body also has difficulty absorbing calcium from the diet. After menopause and estrogen withdrawal, bone becomes increasingly sensitive to parathyroid hormone and calcium mobilization accelerates. Thus, loss of body calcium increases while net absorption decreases. This could make one susceptible to fracture. Calcium can be increased by adding nonfat dry milk powder to meat loaves, casseroles, cream soups and puddings. Yogurt, cottage cheese and milk with added lactase enzyme are good sources of calcium for seniors who are lactose-intolerant. Others calcium sources are malunggay, broccoli, turnips, cheese, ice cream. The daily requirement is 9-11 mg. In case they cannot get this from the diet, calcium tablet supplements may be given. Milk formula such as sustagen premium and ensure may also be given.

*Iron*

Iron deficiency anemia is common in the elderly because daily iron losses in the form of desquamated cells are estimated to be less than 1 mg/day in older men and non-menstruating women. Food containing iron includes red meat and liver. Food preparation is important because boiling can decrease iron content of vegetables by 20 percent and milling could decrease iron content of grains by 70-80 percent. Ferrous sulphate preparations may be given if they cannot meet the daily requirement.

*Vitamin D*

Skin makes less vitamin D from sunshine as one grows older. Sources of vitamin D include low fat milk and margarine, salmon and mackerel. An 8 ounce glass of milk contains 100IU of the vitamin.

*Thiamine, Riboflavin and Niacin*

Riboflavin requirements appear to increase when older people participate in physical training.

Older men require a daily dose of 1.96 mg vitamin B6 while older women need 1.90 mg. Food sources include the following: chicken, fish, pork, liver, soy beans, oats, brown rice, peanuts.

There is an increased requirement of vitamin B12 in elderly. This is attributed to decrease in intrinsic factor secreted by the gastric mucous. Food sources include lean meats of any kind.

Folic acid is a protective agent against cancer. Food sources include the following: spinach, legumes, citrus fruits. If vegetables are boiled for long periods, folic acid is destroyed.

Beta-carotene delays onset of illnesses like heart disease, cataracts and certain forms of cancer. It works to neutralize free radicals that could complicate some of the changes that occur with aging. Food sources include the following: mangoes, carrots, squash, sweet potatoes, kangkong and sili leaf.

*Vitamin E*

This is a powerful antioxidant and the primary defense against free radicals. Sources include nuts, polyunsaturated vegetable oils. Vitamin E supplementation may be given if diet is not adequate.

*Vitamin C*

Ascorbic acid metabolism in older men differs with that of older women. Older men have lower

plasma levels despite intakes equal to or higher than those of older women. Older men require intake of 150 mg/day while older women need only 75-80 mg/day. This difference could relate to the higher proportion of lean body mass in men. Vitamin C tablets can be given if diet is deficient.

*Water*

Adults 55-65 years old need 30 ml/kg of water while those 65 years old and above need 25 ml/kg.

**2. Health Screening**

Among elderly adults consulting for preventive health care, a clinical history focusing on previous symptoms or illness, family history of coronary heart disease, cancer and diabetes and social history of smoking, dietary habit and lifestyle and falls should be done. A general physical examination focusing on height and weight, blood pressure, thyroid, heart, lungs and abdomen should be done. Rectal and prostate examination is a routine procedure as well as clinical breast examination. Special examination for visual (Snellen's chart) and hearing difficulties should be done. Mini mental status examination and assessment of activities of daily living are recommended. Likewise, there should also be screening of psychosocial problems using the Geriatric Depression Scale.

The following laboratory examinations and ancillary procedures should be done as screening tests: a) total cholesterol and HDL cholesterol every 5 years, b) fecal occult blood annually, c) mammography every 2 years and d) pap smear every 3 years. ECG and FBS screening are recommended only for at risk patients.

**3. Exercise**

Just as drug prescriptions are individualized according to the patient and his needs, exercise prescriptions must also be individualized. In writing a prescription, physicians should specify short and long-term goals and include the following components:

*Flexibility*: Static stretching; daily, > 15 sec per muscle group

*Endurance*: Walking, cycling, swimming at 50-75% of maximum HR (220-age for men; 220 - (0.6 x age) for women); 3-4 x/ wk; goal of 20-30 min duration

*Strength*: Muscle resistance (weight training); 3 sets (8-15 repetitions) per muscle group 2-3 x/ wk

*Balance*: TaiChi, dance postural awareness; 1-3 x/ wk

The exercise prescription should include the frequency, intensity, timing and type of exercise. The optimal duration, frequency and intensity of exercise for production of conditioning in older persons has not been completely defined. Just like in younger persons, 2 days of exercise per week is necessary to achieve response. Sessions of 20-30 minutes are generally recommended but deconditioned elderly may only be able to exercise for 5-10 minutes initially. Intensity of exercise can be guided by the exercise tolerance test. For the frail and old elderly, progressive resistance training of the major muscle groups two times per week for about 2-3 sets is recommended. Balance training and joint stabilization must be done.

**Modification of Exercise Prescription in Specific Age-Related Conditions**

1. Degenerative Joint Disease

The emphasis is on the use of interval activity, low resistance exercises and low repetition exercises for strengthening. Cycling, water exercises and chair exercises are recommended.

2. Coronary Artery Disease

Moderate level activities, low resistance exercises with high repetitions for strengthening are

recommended. However, activities may be symptom-limited. More vigorous exercises will depend upon the discretion of the physician. Walking and slow cycling can be done.

3. Diabetes Mellitus

The following are recommended: daily, moderate endurance activities, low resistance, high repetition for strengthening and flexibility exercises. Symptoms should be monitored as well as the caloric intake. Nutritional regimen should be given together with the exercise prescription especially if the patient is obese.

4. Dizziness, Ataxia

There should be moderate flexibility such as having minimal movement from supine to prone to standing. Low resistance, low repetition for strengthening is recommended. Chair exercises can be used.

5. Back Syndrome

Moderate endurance activities, moderate flexibility exercises, modified abdominal strengthening, low resistance and low repetition for strengthening are recommended. Walking, cycling, chair exercise and water activities are the sample exercises that can be used.

6. Osteoporosis

The following exercises are recommended: a.) weight-bearing activities with intermittent bouts of activity, b.) low resistance, low repetitions for strengthening, and c.) chair level flexibility activities.

7. Chronic Obstructive Lung Disease

Recommendations include moderate level endurance activity (interval or intermittent bouts), low resistance, low repetition strengthening, modified flexibility exercises and stretching.

8. Orthostatic Hypotension

In order to avoid hypotension, one should minimize movements from standing to supine and from supine to standing. There should be sustained moderate endurance activities with short rest intervals. The emphasis is in activities that minimize changing of body positions.

9. Hypertension

The emphasis is on dynamic large-muscle endurance activities. One should minimize isometric activities. Low resistance, low repetition isotonic strengthening is recommended.

**4. Immunization**

The following vaccines should be given in the elderly:

a) *Influenza Vaccine*

Yearly vaccination for influenza continues to be necessary because of the changes that occur in the influenza virus itself, a factor that explains the failure of protective antibodies in our blood to develop in spite of previous infection. During influenza epidemics, older people may be hospitalized at two- to fivefold increased rates, which pose significant health and economic problems. Influenza vaccine is strongly recommended for all persons aged 65 or older. Furthermore, immunization of persons in risk groups should continue throughout the influenza season in a given community. It takes roughly two weeks for the influenza vaccine to become effective. Amantadine or rimantadine may be used to prevent influenza A illness in those who cannot receive vaccine. Influenza vaccine may be more effective in preventing lower- respiratory-tract involvement or other complications of influenza than in preventing upper-respiratory-tract involvement.

b) *Pneumococcal Vaccine*

Pneumonia is the second leading cause of morbidity and the third leading cause of mortality in

the Philippines. The 23-valent pneumococcal vaccine covers more than 85 percent of invasive infections and is recommended for all persons aged 65 or older. Most healthy elderlies show a two-fold rise in type-specific antibody 2-3 weeks after administration of a single dose of vaccine. Among immunocompetent older persons, vaccine efficacy is high and does not appear to decline with increasing intervals after vaccination. About half of the individuals given pneumococcal polysaccharide vaccine experienced mild side effects such as erythema and pain at the site of injection. Fever, myalgias, and severe local reactions have been reported by less than one percent of those given pneumococcal polysaccharide vaccine. Severe adverse effects such as anaphylactic reactions have rarely been reported approximately five cases per million doses administered.

c) *Tetanus*

Only 27 percent of persons aged 70 years or older have protective levels of tetanus antibody, as compared with 88 percent of those aged 6 to 11 years. Although the occurrence of tetanus has decreased dramatically because of the use of the tetanus toxoid, most of the remaining tetanus illness and most of the mortality related to tetanus occur in older populations. Therefore, it is recommended that older persons continue to receive booster vaccinations at mid decade every ten years (e.g., 65, 75, 85). For those with no history of tetanus vaccination, a primary series of three doses is recommended. The first two doses should be given at least four weeks apart, and the third dose should be given six to twelve months after the first dose. Local reactions (usually erythema and induration, with or without tenderness) can occur after Td is administered. Fever and other systemic symptoms are less common.

## Summary

Optimum quality of life should be given to the elderly. One strategy to attain this is to render preventive care through proper nutrition, early screening, health maintenance, lifestyle modification and immunization.

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# Chart Reminder Flyers and Group Feedback to Improve the Appropriateness of Referrals in Primary Care

Joshua A. Marcos, MD; Ma. Elinore M. Alba-Concha, MD and Noel Espallardo, MD, MSc

Department of Family and Community Medicine, Philippine General Hospital, University of the Philippines Manila

**Background:** The ability to carry out referrals from primary care to secondary/tertiary care requires the effective interaction between the patient, the family physician and the specialist. It has been shown that congestive heart failure patients when referred appropriately for experts' management results into a reduction in morbidity as well as mortality. Specialty care has been shown to improve the disease care process and patient outcomes while primary care results in similar health outcomes, lower mortality, less resource usage and lower costs. **Objective:** This study aims to examine the effects of group feedback to family physicians-in-training and the attachment of chart reminder flyers on the overall appropriateness of referrals of congestive heart failure patients seen in primary care. **Setting:** The Out-Patient Department (Family Medicine Clinic) and the Ambulatory Care Section of the Philippine General Hospital were the chosen study sites. **Subjects:** All first year residents of the family medicine program for the year 2002-2003 were included except for the mental health rotator of the specific month. **Design:** This is a before and after intervention study. **Intervention:** The utilization of chart reminder flyers as the physicians' educational intervention followed by the giving of structured feedback on the quality of referrals were the instruments used to enhance the appropriateness of congestive heart failure patients as measured by a chart audit. The target percentage appropriateness was arbitrarily set at 80 percent. **Outcome Measures:** A total of 100 patient charts (60 at baseline and 40 after the intervention) were randomly selected. Satisfaction of all the criteria for appropriateness (based on the existing guidelines) namely, the documentation of the appropriate clinic area, appropriate/valid reasons for referral and the timeliness of each referral was measured by chart audit. **Results:** The overall appropriateness of referral at baseline was 56.7 percent. After the biphasic intervention, the percentage appropriateness rose to 95 percent at p=.001. **Conclusion:** The institution of reminder flyers in the patient's chart coupled with a structured group feedback session improved the overall appropriateness of referral as documented in the patient charts. Resident physicians in training also have improved in terms of accuracy in diagnosis and charting habits. The current specialist to patient ratio, patient load of each specialty clinic, patient preferences and the referral system itself influence may directly affect the appropriateness of referrals and thus studies aimed at these confounding variables must be pursued. An in-depth analysis of the individual outcomes of each CHF referral made by family medicine residents may also be a better reflection of appropriateness.

**Key words**: referrals, congestive heart failure, chart reminder flyers

## Introduction

The ability to diagnose accurately and manage appropriately the early stages of congestive heart failure is a generalist's basic competency. However, patients necessitating expert care must be referred without delay. These patients may require sophisticated evaluative equipment and

expert's advice to totally improve quality of care.

In a study on specialty-related disparities in practice patterns and outcomes, those CHF patients managed by generalists improved symptom-wise (for Class I & II)[1], underwent significantly fewer in-hospital diagnostic tests and had shorter hospital stay. However, they had a 1.7-fold increased risk of readmission within 6 months. This disparity exists because of the inherent aggressiveness of the specialist in the management of the most subtle of symptoms which a generalist may overlook. Whenever the clinical status of a CHF patient deteriorates becomes refractory to treatment, or there is doubt regarding the presence or absence of CHF then a referral is warranted.

Specialty care has been shown to improve the disease care process and patient outcomes while primary care results in similar health outcomes, lower mortality, less resource usage and lower costs.[2] The provision of the most cost-effective and high quality patient care is the guiding principle of the quality assurance cycle.

Thus, an astute primary care physician who freely accepts his limitations in practice should be able to establish a decision point as to when to refer patients for tertiary or specialty care.

Recently, clinical practice guidelines have suggested that CHF should be aggressively managed in the outpatient setting. Hospital admission should be reserved for those with new-onset moderate to severe heart failure, recurrent heart failure complicated by accurately threatening events or clinical situations or decompensated chronic heart failure.

If management of CHF will be more judicious in the primary care level, then we can strongly inhibit hospital-crowding at least. In a retrospective evaluation of referrals from primary to secondary care, they were supposedly avoidable if not for underutilization of resources, lack of adherence to practice guidelines and lack of skills of physicians to perform certain procedures. This study aims to examine the roles of two interventions in improving the appropriateness of referrals in primary care-that is chart reminder flyers and group feedback of the residents ability to refer patients to tertiary care.

## Research Question

This study was conducted to answer the clinical inquiry: "Did the appropriateness of referrals of congestive heart failure patients seen at the PGH Ambulatory Care Section and Out-Patient Department Clinic to specialty care facilitated by first year family and community medicine residents improve after the implementation of chart reminder flyers and facilitation of a group feedback session on their performance?"

## Objectives

The general objective of this study was to determine whether chart reminder flyers and group feedback improved the appropriateness of referrals made by first year residents among congestive heart failure patients seen at the PGH Ambulatory Care Section and Family Medicine Clinic (OPD) as measured by a chart audit.

*Specifically, this study aimed to:*

1. Describe the socio-demographic profile of all patients seen by the residents
2. Determine the effectiveness of chart reminder flyers and group feedback on the appropriateness of referrals of CHF patients in terms of correctness of referral diagnosis, choice of appropriate area or specialty clinic, appropriate reasons for referral and timeliness of referral.

## Definition of Terms

*Primary care* is defined as first contact care at the ambulatory and emergency room. This refers to services rendered to an individual in fair health and the patient with the disease in the early symptomatic

stage. There is really no need for consultation with specialists.

*Congestive heart failure* is a clinical syndrome characterized by signs and symptoms of intravascular and intestinal volume overload or manifestations of inadequate tissue perfusion caused by left ventricular dysfunction. In family practice, CHF should be classified according to 1) functional capacity by New York Heart Association (NYHA) classification and 2) type of left ventricular dysfunction.

*Referral* as used in this study refers to the process of linking a consumer (patient) with a health service resource, which is a participating health agency.

In this case, a primary care center in linkage to a specialty which possesses highly technical and specialized knowledge, facilities and personnel in the care of congestive heart failure patients.

*Appropriateness of referral* is defined as the application of the recommendations on the referral of congestive heart failure patients for emergency or tertiary care as specified in the Clinical Practice Guidelines on the Management of Congestive Heart Failure in Family Practice set by the Family Medicine Research Group.

In order for the referral to be called appropriate, the resident must be able to fulfill all of the following criteria as evident in the chart:

1. Correctness of the diagnosis of congestive heart failure.
2. The correct clinic or specialty area is written on the chart
3. The appropriate or valid reasons for the referral are written on the chart
4. Timeliness of referral

Congestive heart failure is diagnosed correctly if the patient has the following signs and symptoms:

- ❑ Paroxysmal nocturnal dyspnea
- ❑ Orthopnea, dyspnea on exertion or at rest
- ❑ Increased jugular pressure (engorged neck veins)
- ❑ Audible 3rd heart sound
- ❑ Displaced apical impulse
- ❑ Bibasal rales or pleural effusion
- ❑ Hepato-jugular reflux

Significant results in:

- ❑ 2D-Echo ± Chest X-ray ± ECG ± Ventriculography

**Figure 1**. The chart indicated the correct clinical diagnosis

The following are the clinic/specialty areas wherein a CHF patient could be referred to:

- ❑ Section of Cardiology (Emergency or Outpatient basis)
  -- for confirmation of a doubtful clinical impression through an extensive systematic laboratory/imaging approach, evaluation of pharmacologic and non-pharmacologic therapy, and the identification of patients who will be candidates for surgical intervention.
- ❑ Section of Thoracovascular Surgery (Emergency or Outpatient basis)
  --for all patients requiring elective or emergent procedures e.g. coronary artery bypass grafting (CABG) and relative invasive procedures.
- ❑ Emergency Room
  --for the provision of immediate, life-saving care within the shortest time as possible as determined by preset guidelines.

**Figure 2**. The chart indicated the correct specialty or clinic area.

*Feedback* in this study is defined as the method of drawing the resident trainee's attention to the less satisfactory aspects while maintaining or even increasing the desire to learn, improve and seek further evaluation. This involves both praise and constructive criticism of a person's performance (the ability to facilitate an effective, appropriate referral process) to improve the quality of patient care delivered. In this study, the batch's performance as a whole was criticized following the principles of effective feedback, namely, descriptive, specific, sensitive, directed, timely and selective.

If the patient warranted admission, the chart must indicate one or more of the following reasons:

- ❑ Experiencing moderate to severe heart failure for the first time.
- ❑ Recurrent heart failure complicated by acutely life threatening events like pulmonary edema, hypotension, symptomatic arrhythmia, pulmonary or systemic emboli, recent myocardial infarction or other severe medical illness.
- ❑ NYHA Class II with mild to moderate decompensation of chronic heart failure

If the patient was referred to a cardiologist, the chart must indicate one or more of the following reasons:

- ❑ Presence or the severity of heart failure is uncertain
- ❑ Patients with two or more hospitalizations or emergency room visits for heart failure within the past 6 months
- ❑ Patients who become refractory to therapy
- ❑ Suspected acute myocarditis
- ❑ Moderate to severe aortic or mitral regurgitation
- ❑ With evidence of MI or potentially reversible dysfunction

**Figure 3**. The chart indicated the appropriate/valid reasons for referral.

For patients seen at the UP-PGH Outpatient Department,

- ❑ Patient was seen at least within 2 weeks of the designated schedule
- ❑ Patient was seen on a routine appointment as set by the clinic concerned

For patients referred to the UP-PGH Emergency Room,

- ❑ Patient was seen immediately at least within one hour from referral

**Figure 4**. Timeliness of referrals.

*Chart Reminder Flyers* are single sheets of 8.2 in x 11.6 in of neon-colored paper attached to the follow-up sheet of the patient's medical record containing the guidelines for an appropriate referral of a patient with congestive heart failure from primary to specialty and/or tertiary care. The practice guidelines on the management of CHF in primary care as well as those of the American Healthways served as the standards of care.

## Materials and Methods

### Setting and Study Subjects

The Family Medicine Clinic (IPO3) and the Ambulatory Care Section of the Philippine General Hospital were the designated sites of this study inasmuch as they embody the concept and practice of first contact care. An average of one to three (1 to 3) patients with congestive heart failure are seen daily at the IPO3 and an average of 3-4 are seen at the Ambulatory Care Section.

The study subjects were the first year Family and Community Medicine residents for the year 2002-2003 who met the following criteria were included:

1. On duty at the Family Medicine Clinic and Ambulatory Section from January 2002 to September 2002.
2. Has seen cases and managed accordingly CHF patients.
3. Has recorded management plans including referrals in retrieved hospital records.

Excluded from this study was one resident who underwent the scheduled Mental Health rotation during the post intervention phase of the study.

### Study Design

This is a before and after intervention study aiming to improve the quality of CHF referrals facilitated by the residents in training of the department.

To account for the differences in the entry competencies as well as the different rotation schedules, the charts of patients were randomly selected from a given list at each month where there was an opportunity to see such a patient.

Charts of CHF patients were then randomly selected via coded numbers from the disposition logbook at the Ambulatory Section and from the individual resident's logbook. A total 60 charts were obtained in the pre-intervention phase and another

40 charts during the post intervention phase. The disparity of the numbers was due to several inevitable factors such as the consultation rate of such a disease in that area, poor listing, loss of charts and the unavailability of one mental health resident.

A referral audit by a single investigator was then conducted both at baseline and post-intervention using a criterion sheet based on the above established standard guidelines.

Reminder flyers with the imprinted guidelines for an appropriate referral were attached to the follow-up sheets of the records of known congestive heart failure patients for the residents to browse and/or memorize. This intervention lasted for approximately three weeks during the month of September 2002.

On the last week, a group feedback session was facilitated based on the results of the baseline data gathering. All but one resident (mental health rotator) was present during the session.

This feedback session included a computerized graphical summary of the group's overall appropriateness of referral in terms of correctness of diagnosis, selection of the appropriate specialty/ clinic area, valid reasons for referral and the timeliness of referral. The residents were shown their individual performance. First, the investigator probed on the resident's strengths (behavior-wise) in the referral both at baseline and post-intervention. Secondly, the residents were asked to specify their own difficulties and limitations in the referrals made. They shared their insights regarding the contributions of the hospital set-up, the patient factors as well as the receiving clinic in the success of a referral. Recommendations to improve the quality of referrals were then formulated. The feedback session was closed by emphasizing again the residents' favorable behavior in carrying out a quality referral.

### Statistical Analysis

Data management was done using a statistical package. Descriptive statistics such as frequencies, percentages and means when appropriate were used to summarize data.

The differences in the appropriateness of care between baseline and post-intervention were compared using test of two proportions. The level of statistical significance was pegged at a p-value of 0.05.

## Results

### Socio-demographic Profile of the Subjects

A total of 100 charts were audited (60 charts at baseline and 40 charts after the feedback and chart reminder flyers). Table 1 summarizes the socio-demographic profile of first year residents. Their mean age was 29.917 $\pm$ 7.2796 years. Seven were males while five were females. Mean year graduated from medical school was 2.6667 $\pm$ 1.7233 with a range of 1994 to 2000.

**Table 1.** Socio-demographic characteristics of first year resident trainees.

| Characteristics | N = 12 |
|---|---|
| Age (mean +/- SD) | 29.9167 $\pm$ 7.2796 |
| Number Years from Graduation (Medical School) | 2.6667 $\pm$ 1.7233 |
| Sex | |
| Male | 5 |
| Female | 7 |

### Appropriateness of Referral at Baseline

At baseline, a total of 60 charts were collected of which 34 were referred to the different specialty areas. The percentage appropriateness for each category as well as the overall appropriateness is summarized in Table 2.

Among the patients labeled as congestive heart failure in the clinic areas, the diagnosis was correct in 85 percent of the time. Only 23 charts (38%) had the clinic area specified and 21 (15%) of which had the appropriate clinics indicated.

**Table 2.** Comparison of appropriateness of referrals at baseline and at post-intervention phase.

| Criteria | Baseline N = 60 | Post-Intervention N = 40 | P-value |
|---|---|---|---|
| Overall | 34 (56.7%) | 38 (95%) | .001 |
| Correctness of diagnosis | 51 (85%) | 39 (97.5%) | .0439 |
| Clinic indicated in the chart | 23 (38%) | 20 (50%) | .2377 |
| Choice of specialty | 21 (15%) | 20 (50%) | .0003 |
| Reasons indicated | 15 (25%) | 20 (50%) | .0117 |
| Appropriate reasons | 9 (15%) | 19 (47.5%) | .0006 |
| Timeliness | 20 (33.3%) | 20 (50%) | .0920 |

Of the charts collected, 15 (25%) had the reasons for referral. The reasons were appropriate or valid in 9 charts (15%) only. Only 20 referrals (33.3%) were considered timely. Hence, the overall appropriateness of referrals of the patients diagnosed with CHF was only 56.7 percent.

From the above figures, merely the documentation of the reasons and appropriate clinic areas was a problem.

Since no similar quality assurance studies aiming at improving referrals to specialty care in our institution (CHF in particular) can be used as reference for comparison, during the study period, the investigators had set the standard for appropriate referrals arbitrarily at 80 percent of the time.

### Comparison of Appropriateness of Referrals at Baseline and Post-intervention

The percentages of appropriateness of referrals after the utilization of chart reminder flyers and the delivery of effective group feedback can be summarized in Table 2.

At the post-intervention phase, only 40 charts were collected. Appropriate diagnosis was now seen in all except one (97.5%). The 12.5 percent difference in the correctness of diagnosis from baseline was statistically significant at p-value of .04. Specifying the clinic in the chart was now seen in 20 out of the 40 charts (50%) however, this increase was not statistically significant.

The appropriateness in the choice of clinic to be referred to had increased to 50 percent which was statistically significant at p-value of .003. This 35 percent difference from baseline is accounted by placing for example, "cardiology" rather than internal medicine (IBO4) alone in the chart. Furthermore, a two-fold increase from baseline in the percentage (25%) of the reasons for referral being reflected in the patient's records was observed after the two interventions were utilized and this was found significant (p = .0117). A three-fold increase in the appropriateness of reasons for referring patients was seen at the end of the study and this was also statistically significant. (p = .0006). Timely referrals were seen in 20 out of 40 charts (50%) (p = .092).

In general, delivery of effective group feedback to the resident's performance in the referral process plus the employment of chart reminder flyers had strongly enhanced the overall appropriateness of referrals to 95 percent which was beyond the pre-set standard of 80 percent (p = .001).

## Discussion

### Issues Inherent in the Referral Process

We have just presented a simple in-hospital referral where the concerned specialties are within reach in terms of availability of specialist care as well as the necessary resources needed to evaluate and/or treat our patients more comprehensively. The establishment of criteria for appropriateness of referral therefore was then limited to the doctors' as well as the institution's own perspective. In the real setting, we can categorize appropriateness at the population level which is always constrained by finances and at the individual level which are modified by the patient's characteristics, preferences and sets of values. Unfortunately, exploration of the patients' influence to self-seek a referral was beyond the scope of this study.

A multiethnic, inner city study conducted by Elwynn, et al.[3] has shown that the top two reasons why primary care physicians refer to specialties include assistance with management and diagnostic help. Indeed, in a study in UP-PGH conducted by Mulati involving 385 referrals revealed that the need for further alliance in treatment from specialists accounted for 32.08 percent of the referrals and the performance of diagnostic procedures was at 15.09 percent.[4] The above study dictates that some referrals could have been avoided if resources at the primary care level were fully utilized and if there was strict adherence to recognized management plans. Although it is true that a fraction of the avoidable referrals were due to the physician's lack knowledge and skills or attitude regarding the concepts of specialty care, this yet has to be further validated through more investigations. Nevertheless, we have to gear our interventions to the main instigators of referrals – the doctors' practice attitudes and behaviors toward facilitation of referrals as pre-established by a set of referral guidelines. According to Stange, family physicians who do not follow guidelines are often tailoring care to individual patient characteristics.[2] Thus, the best mix of generalist and specialist care is still not clear but it is likely to partially depend on the skill of the primary care physician during the provision of first contact care.

Looking back at the results, indicating the appropriate reasons for referral e.g. confirmation of diagnosis, extensive evaluation of life-threatening signs and symptoms by specialists' expertise play a big role in the judgment of referral quality. As an example, the cross sectional studies of Forrest, et al.[5] and Tabenkin, et al.[6] have reiterated that a high degree of diagnostic uncertainty among family practitioners is the prime reason for referring patients.[6] Since we highly and variably tolerate this degree of uncertainty in making a diagnosis, we find it difficult to judge questions about the appropriateness of referrals that are made to reduce this uncertainty. Having a correct diagnosis prior to referring patients makes a referral to the appropriate specialty easy at least in our set-up. If the referral was called for in order to maximize therapeutic management, less time, effort and resources will be spent if the diagnosis of congestive heart failure was already accurate upon initial consult. How a family physician in training rates and values his diagnostic acumen as both a limitation or a strength in the referral process warrants further analysis.

The second issue which we need to address is the choice of specialty. In the real population-based, community practice of primary care-the specialist of choice in particular both by the referring doctor and the patient himself-profoundly affects outcome.

To improve the standards of current practice, clinical practice guidelines should include the specific health agencies/specialties and their corresponding minimum competencies in the management of congestive heart failure. This study also failed to show the outcomes of the referrals wherein the patients themselves chose the specialty/specialist. Under certain circumstances, a patient's request for appropriate specialty consultation may be a sufficient and legitimate reason for referral.

Routinely, for a referral to be called appropriate, the referring physician must indicate his choice of specialty (or even the specialist for that matter) in a contemplated referral. Official medical records must reflect in detail the referring agency, the receiving agency, the personalities involved/ contacted and manner of transport.[7] This was in accordance to the model referral system proposed for the Philippine General Hospital twenty years ago. In our institution, physician trainees simply write on the "refer for evaluation" or "refer for further management" to save time and space provided. One can surmise that if the reasons for referral are not clear enough, substituting a general statement for more specific details concerning the clinical status of the patient, will cover up one's gaps in knowledge. This discourages time-efficiency and may delay efforts of the receiving specialty in patient care.

Forrest's prospective study involving 963 consecutive referrals has shown that inclusion of plans for co-managing patient care was significantly

related to the referring doctor's over all satisfaction.[8] This stresses that better collaboration between the primary physician and the specialist consequently improves the referral process. Therefore, it is imperative that we give more attention to actually talk to the specialists prior to referring our CHF patients, a scenario not much observed in the PGH setting.

Several inquiries regarding the criteria for timeliness of referral were raised during the feedback session. The guidelines actually picture out the ideal set-up. However, this is not happening in this institution. Certain difficulties lie within the referral system of the hospital which is beyond the reach of any intervention meant to enhance referral quality. In PGH, daily patient load, the small specialist to patient ratio and clinic schedules have caused slow momentum in the facilitation of the specialty consultation. In itself, the combination of the above problems delays the referral process aside from the numerous patient factors. It is but prudent to say therefore that in the establishment of standards for a timely referral, the two concerned parties should reach an agreement.

**Issues in the Intervention Utilized**

This study has shown how a biphasic intervention such us the giving of effective feedback and the employment of simple, yet easy to implement chart flyers can enhance the quality of specialty referrals among the patients diagnosed with congestive heart failure seen in primary care. The intervention which contributed to a greater change was not directly determined in this study.

Chart reminder flyers as a tool in improving quality patient care has been documented in several controlled trials. Casebeer, et al.[9] in 1999 and Concha A in 2001.[10] both concluded that chart reminder flyers plus an interactive audio-conference had improved physician's adherence to hypercholesterolemia management guidelines. McDaniel in a similar study, showed an increase of referrals of patients to a smoking cessation program among nurses.[11]

We can deduce that chart reminder flyers steered an inner motivation to self-check one's prior knowledge and skill in managing patients with complicated diseases to avoid practice errors. Reminder flyers are easy to construct and implement. However, the full benefit of its use in this study was not adequately assessed because of a shorter intervention period.

Feedback of the practitioners' practice is a central dimension in any quality improvement cycle. Self audit of practice followed by any form of oral and/or written feedback has been proven in well designed controlled trials of Jorde, et al.[12] and Dunn, et al. with the latter study also improving the timeliness of referral among diabetics with nephropathy. Borjiel, et al. utilized a formal practice assessment report and a continuing medical education plan in significantly increasing global quality care scores including appropriateness of referrals of women to undergo screening mammography.[14]

Structured feedback in this study was through a group approach with the contention that there was no statistically significant differences in the quality of the individual referrals. However, still we realized the need to invite the resident to view their individual performance in relation to others. This individualized approach was strengthened by a local controlled trial by Alba, et al.[15] and foreign based studies by O'Connell, Bordley and O'Brien.[16,17,18]

This group of residents had unified comments regarding suggestions to improve the quality of referrals by renewing their commitment to do accurate charting and collaborating with the specialties concerned to reach the preset quality standard.

Since these residents are under training, the inherent fear factor as a prime motivator to do well in carrying out a referral to avoid accusations and blame by colleagues should always be taken into consideration. Imposing penalties for mismanagement of patients in exchange for delivery of quality care may be misconstrued by them but in some way may serve as negative reinforcement.

Chart audit as a means of assessing quality of referrals has it own limitations. What you did not

write in the chart does not necessarily equate with not doing. Hence, the true measure of appropriateness will always go beyond documentation. The patient being directed to a specialist who can specifically address the medical concerns and ultimately lead to clinical improvement is the true phase value of appropriateness.

Over all, the appropriateness of referrals of patients with congestive heart failure to tertiary care may be improved at any angle. An approach to assuring quality interactions among the patients, generalist and specialist within the managed care concept involves a cycle of engaging into the accepted modes of practice, anticipating future barriers for care and mapping out their respective solutions, giving feedback specifically directed to the behavior of the two physicians and reassessment of the referral facilitated.

Shared care makes sense. We need to understand which patients benefit from shared care, when that care is advantageous, where it should be provided and how to maximize the effectiveness of generalist and specialist co-management.

## Conclusion

Having no point of comparison from similar studies, the appropriateness of referrals of congestive heart failure patients from primary to secondary care at baseline were below the set arbitrary 80 percent standard.

The combination of chart reminder flyers and group feedback has been shown at least to improve the appropriateness of referrals among CHF patients seen in first contact care. Enhancing the accuracy of diagnosis, encouraging the documentation of the appropriate clinic area and the valid reasons prior to referral are only few of the parameters that have improved with the implementation of the above two strategies.

The true measure of appropriateness of referrals will always go beyond simple record documentation. The individual outcomes of each of the referrals should be analyzed.

## Recommendations

1. A descriptive study which takes into account the personal views of the referrals made by the residents of family medicine should be undertaken.
2. In return, we must know from the specialists (cardiologists, internists) when they perceive referrals from primary care as appropriate.
3. Quality assurance projects should ensure that the residency curricula should provide the physicians-in-training with skills and knowledge necessary to expand their scope of practice as well as know the boundaries of their clinical uncertainty and scopes of practice.
4. Personal insights of the residents regarding the referrals they made should be described in details.

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SPECIAL ARTICLE

# Developing Role Models of Humane and Compassionate Physicians Among Faculty and Consultants*

Eva Irene Yu-Maglonzo, MD, MHPEd

Role models have been shown as a way to inculcate professional values, attitudes, and behaviors in students and young doctors.

Excellent role models will always inspire, teach by example, and excite admiration and emulation. Mentorship differs from role modelling in that the mentor is actively engaged in an explicit two way relationship with the junior colleague. A good mentor is a coach and has an active role in guiding his junior colleagues as they develop their own special attributes. The modelling process should be a purposeful activity that demonstrates the knowledge, skills, attitudes, and ethical behavior that students should acquire. Role-modelling is a powerful teaching technique and especially well suited to the apprenticeship system of instruction in medicine.

Students need an environment in which their beliefs, attitudes, and behavior can be observed, analyzed, and challenged. Medical schools should create significant changes in clinical teaching that will require the development of creative and useful ideas which are consistent with faculty values.

## Introduction

Role models-people we can identify with, who have qualities we would like to have, and are in positions we would like to reach-have been shown as a way to inculcate professional values, attitudes, and behaviours in students and young doctors.

According to Wright, the most important qualities in role models are a positive attitude to junior colleagues, compassion for patients, and integrity. Clinical competence, enthusiasm for their subject, and teaching ability are also important, but research achievement and academic status are not much. Compared with colleagues, physicians who were identified as excellent role models spent more time teaching and conducting rounds and were more likely to stress the importance of the doctor-patient relationship and psychosocial aspects of medicine. They also socialised more with house staff, sharing professional experiences and talking about their personal lives.

The most commonly identified characteristics are: as physicians, enthusiasm for the their specialty, clinical reasoning skills, doctor-patient relationships, and viewing the patient as a whole; as teachers, enthusiasm for teaching, involving students, and communicating effectively with students; and as people, enthusiasm, compassion, and competence. The attributes found in the bottom of the list are excellence of research, publications, success in

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raising grants, senior management roles, service development, and professional leadership.

Listed below are some examples of consultant-resident interactions that have effects on role modelling:

1. Consultants as good role models
    a. "Dealing with young patient who was dying of cancer on a Saturday evening and the consultant on call was there throughout the terminal process. I felt sad and helpless. I respected the calm way she handled the situation"
    b. "Once when a particularly aggressive alcoholic patient was admitted, just watching [the consultant] control the situation, make his examination and treat a patient no one else could control"
    c. "A patient died. I thought it was my fault, but consultant came on ward at 8 am to explain to me that it wasn't. I was very grateful. He was extremely kind."

2. Consultants as poor role models
    a. "Complaint was made about me by senior nurse. Consultant was only willing to listen to my point of view. I was initially pleased that he backed me, but should he not have supported her? He seemed blasé, uninterested."
    b. "Consultant got angry on ward round when I couldn't find the most recent blood tests because the notes were very big-he snatched the top result sheet and complained it was out of date. The correct results were found shortly after, and he put his arms around me. I thought him irritable, unpredictable and unprofessional."
    c. "My consultant handled a patient with cancer in a way I thought was very bad. She turned to me and said (self satisfied), `I used to run after my consultant when I was a house officer to sort out people he had been emotionally upset with' I could only agree!"

3. Consultants as unethical role models
    a. "Consultant wanting to do an invasive procedure on a cancer patient who would be dead in three days. I refused to fill in the form. I was incredulous. I thought he was disrespectful, incompetent, and mean."
    b. "After an unexpected death, surgical consultant tried to take advantage of my inexperience by asking me to write retrospectively in notes."
    c. "While caring for a terminal patient whose condition deteriorated and I phoned up the consultant at home who told me to administer a fatal dose of diamorphine. I said I didn't feel this was appropriate as the patient needed to speak to relatives, etc, and he eventually agreed."
    d. "Patient with gonococcal arthritis. I was asked to do an HIV screen, but patient refused consent. Consultant got very angry and demanded that we take off some blood and `just do it.' I refused. Consultant walked off ward round and didn't speak to me for over a week!"

## Objective

1. To discuss the concept of role modelling.
2. To identify strategies to improve role modelling among faculty and consultants.

## Discussion

### The Process of Role Modelling

The modelling process should be a purposeful activity that demonstrates the knowledge, skills, attitudes, and ethical behavior that students should acquire. Students need opportunities to observe role models in action and to study the behavior that constitute their effectiveness. Role-modelling is a powerful teaching technique and one especially well suited to the apprenticeship system of instruction in medicine.

To be an intentional role model requires the ability to articulate the mental process that led to the successful completion of a diagnosis or clinical procedure. In a study of clinical medical education, it was found that students were generally exposed only to the instructor's solution process that led to that solution. Role-modelling requires that a teacher demonstrates a skill being demonstrated; and discuss the criteria by which the outcome was achieved. This process enables the learner to imitate more effectively that behavior.

Another aspect of role-modelling is the demonstration of clinical competence. Much of the attending physician's credibility is established by demonstrating such competence. The health care teams' perception of the attending physician's clinical credibility is influenced by the physician's ability to demonstrate effective history and physical examination skills, discuss recent advances in the field, demonstrate effective patient interaction skills at the bedside, and model decision-making skills in group discussions.

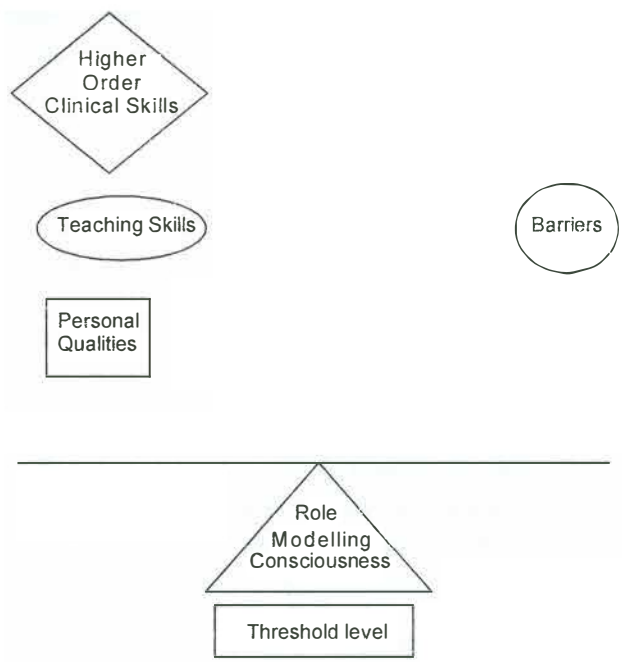
Modelling also involves demonstrating exemplary professional characteristics. These include the non-cognitive dimensions of professional practice such as showing genuine concern for patients, recognizing one's own limitations, showing respect for others, taking responsibility, and not, appearing arrogant. Students quickly discern the codes of conduct and acceptable behavior of the health care team and act accordingly. If patients are treated with respect and genuine concern by the attending physician and the residents, students will do the same. The reverse is also true.

Various intervention strategies to change attitudes and to raise the level of moral reasoning of medical students include: (a) attending physicians can exert leadership by setting the moral tone of the organization; (b) they can change the group norms of the health care team; (c) they can help students encounter ideas and conflicts that require struggle and challenge at a level commensurate with the student's ability. Students need an environment in which their beliefs, attitudes and behavior can be observed, analyzed and challenged. Attending physicians need to recognize that they are dealing with a mutually reinforcing network of attitudes and behavior that are amenable to change only through concerted effort.

Another characteristic of excellent clinical teachers and outstanding role models is their enthusiasm for the practice of medicine and for teaching. They tend to be dynamic, energetic individuals with an infectious enthusiasm that comes from self-confidence, excitement about medicine, and pleasure in teaching. The apparent impact of enthusiasm on students is to capture their attention, stimulate further thinking, and infuse the learning environment with energy. Enthusiasm has been found to correlate with student learning gains in several studies.

Role-modelling is the primary teaching strategy of clinical education. Faculty members demonstrate clinical skills, model and articulate expert thought processes, and manifest positive professional characteristics. Through this modelling process, student knowledge, skills, and attitudes can be changed profoundly.

**Conceptual Model for Role Modeling**



**Strategies for Improvement**

Medical schools are in a constant state of change. The change process involves the adaptation of the school to its environment in ways that are consistent with its value system. Creating significant changes in clinical teaching will require the development of creative and useful ideas that are promoted by medical school leadership and consistent with faculty values.

1. Leadership

Leaders set the tone and help shape the value system of the medical schools' hospitals and clinics. If the dean, associate deans and department chairmen are strongly supportive of the teaching mission of the school, the faculty will perceive its importance and respond accordingly. Medical school leaders can demonstrate their commitment to teaching by allocating the necessary resources needed to offer outstanding clinical instruction. Every opportunity should be taken to highlight the importance of teaching for the faculty, for example, highlighting academic issues first in faculty meetings, articulating the values and virtues of teaching at faculty gatherings, and setting a positive role model of concern for the well-being of medical students.

2. Institutional Policies

Institutional policies and procedures implement the values and the mission of the school at an operational level. Teaching excellence should be rewarded through academic promotions, merit pay, and teaching awards. To do this requires systematic evaluation of teaching so that documentation can be available at critical junctures in the decision-making process.

3. Faculty Development

Faculty development activities are designed to help faculty members improve their teaching skills and to modify their instructional practices so that students develop better attitudes toward learning and learn more from the instruction.

A. Workshops and seminars—The most frequently used technique involves short-term, intensive workshops and seminars designed to change participant's attitudes, generate enthusiasm for teaching, and/or develop specific instructional skills. These workshops focus on the instructional process rather than the content to be taught. Examples of workshop topics include clinical supervision skills, demonstrating clinical procedures, feedback skills, problem-based instructional strategies, and lecture skills. Workshops often include practice with feedback, as in micro teaching.

B. Consultation—Personal consultation involves the use of a specialist in the teaching process to help faculty members improve their teaching. Consultants work with faculty members to diagnose teaching needs, design new approaches to instruction, develop new skills, and evaluate the effectiveness of instruction.

C. Collaborative research—Educational research conducted jointly between an educational researcher and a physician is an improvement method advocated by some medical educators. An applied educational research study becomes the mechanism for resolving educational problems through the development and testing of new techniques of teaching and learning in medicine. Faculty members who participate in such research gain new insights into the educational process and frequently become concerned about broader educational issues as well.

D. Extended learning approaches—These programs take the form of long term learning experiences such as one-year sabbaticals, fellowships and formal degree work in education. Participants regularly report that such programs have a significant personal impact upon them.

E. Grants to support faculty projects—Grant competitions are held in some schools for faculty members who propose teaching-improvement projects. Grants may be used to purchase material, pay personnel, support travel, provide release time, and permit consultation with educational specialists. In the process of completing the projects, faculty members can gain new skills, design new instructional resources, develop greater enthusiasm for teaching, and create a communication network with like-minded faculty members in their own institution and in others.

F. Assessment of teaching—Feedback from student ratings and peer review of teaching can serve as an impetus for changed teaching, particularly if specific suggestions for improvement are included in the comments. Self-assessment can also be useful if based on specific criteria.

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Acknowledgments and Conflict of Interest Statement. Those who contributed to the study but do not meet the criteria for authorship should be listed as acknowledgments. The authors should also declare the presence or absence of possible conflict of interest. This section must immediately follow the text and precede the references.

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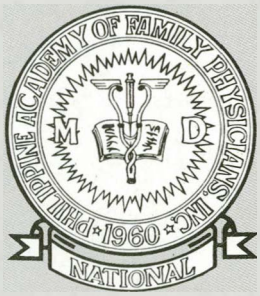


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