

Evaluating the Sustainability of Family Physicians' Knowledge in Armenia

Master of Public Health Thesis Project utilizing research Grant Framework

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Abstract

The quality of healthcare is suffering seriously in transition period in Armenia. Vital basic social services (healthcare and education) have rapidly become less accessible, in terms of both supply and demand. Little attention is paid to the quality of primary care, and in particular to the application of clinical competencies and critical thinking in clinical practice of family practice (FP) physicians.

The intention of the proposed program is to assess the effectiveness of the family medicine training program twelve months after the implementation of family medicine in Armenia. The proposal is addressed to the Ministry of Health of the republic Armenia. The program is implemented in pilot polyclinics of Yerevan city and in polyclinic # 4 in city Vanadzor, which are the pioneers of family medicine implementation in Armenia. The target group is a group of family physicians from pilot polyclinics in Armenia, educated by the lectures and curriculum approved and supervised by the USAID Armenia Social Transition Program. In the core of the proposal stands a cross-sectional survey. This proposed project has an aim to evaluate the knowledge gained one year after the initiation of the FP education program. Questionnaire will measure the retained knowledge of the family physicians, comparing similar rates from the preceding twelve months of its implementation. The ultimate role of the proposed FP program in Armenia is huge. It would justify the costs and efforts of implementation of family medicine in Armenia and would help to ameliorate various problems in the healthcare system occurring under the conditions of the current market economy.

Background information

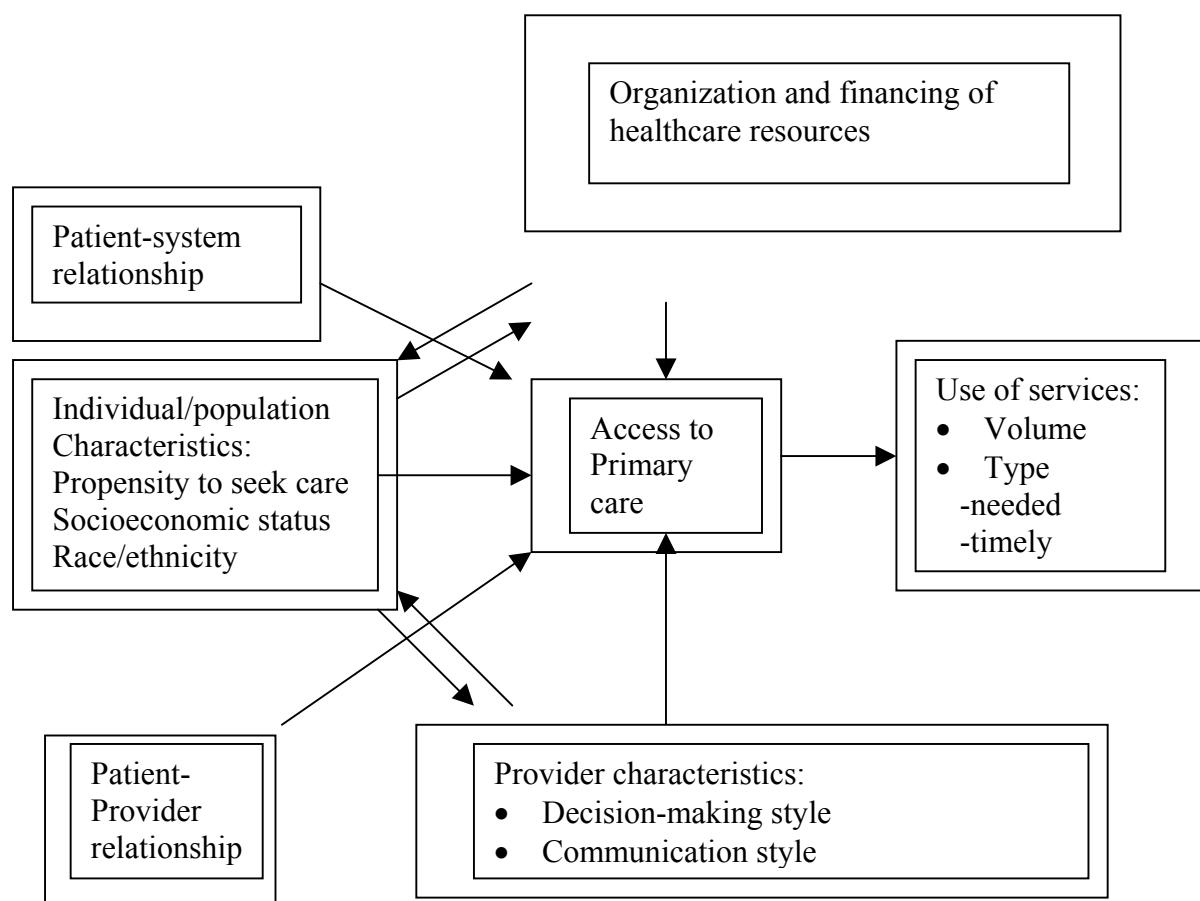
The current state of the health care system in Armenia requires radical reforms in all spheres including public health. The purchasing power of the population for obtaining the necessary amount and quality of social services has decreased considerably. The State budget expenditures in the social sphere (education, healthcare, social transfers) have decreased from 38.4% in 1992 to 27.7% in 1998, comprising US\$ 26 per capita in 1998, while healthcare expenditures in 1992 constituted US\$ 35 per capita [1]. Healthcare questions are, as usual, addressed in view of providing medical care in general. Little attention is paid to the quality of this care, and in particular to the application of clinical competencies and critical thinking in clinical practice of the new FP physicians. Compared with hospital care, family practice is slowly developing in Armenia. The importance of reforming the system of primary medical care has started getting attention only recently [2]. A distinguishing characteristic of managed care arrangements is their emphasis on the role of the primary care provider as a gatekeeper and coordinator for all health care services [3].

Primary care is defined as “provision of continuous, comprehensive and coordinated care to populations undifferentiated by gender, disease or organ system” [4]. What is more, primary, secondary and certain aspects of tertiary prevention are important elements of primary care [5].

Access to primary healthcare creates a serious problem in Armenia. In order to improve access to primary healthcare, radical changes are necessary. Primary healthcare includes the comprehensive, community and family –oriented care, and clinical practice addresses the medical and psychosocial problems of population. The health care sector in Armenia is experiencing a slow transition toward primary health care and market –oriented system. Although much of the structure of the fully –subsidized Soviet system remains, funding has been reduced drastically and payrolls are frequently unmet. Formally or informally,

providers are charging fees for their services in order to feed their families, consequently limiting access to needed health care. The structure of hospital-based, highly medicalized health care is slowly being replaced with more responsive and effective family medicine. For successful development of the new healthcare system it is especially important to prioritize preventive activities of Armenian generalists in the frame of their gatekeeping role and health care structures integrating functions [6]. When care is received, but in amounts that are insufficient to bring about realizable benefits in patient health and welfare, the care is clearly poor in quality because of quantitative inadequacy [7].

The following conceptual framework adopted from Aday & Anderson identifies main barriers to accessing continuous, comprehensive and coordinated healthcare.



1. During the transitional period the polyclinic system was changed. Because of financial and maintenance hardship many polyclinics were closed. Optimization Program

implemented from the year 2000 aimed to allocate scarce financial resources and cut overloaded staff, caused problems with unemployment and “brain drain” of qualified specialists. Since the year 1997 the introduction of fee-for-service in whole health care system created new difficulties. Along with loss of trust towards Healthcare system workers, patients started to visit rarely health care facilities. Compared with the year 1992 the overall number of patient visit to polyclinics in 2002 has decreased more than fourfold [1].

2. Migration processes also had a disastrous impact on the work of the polyclinic system. Coverage of population served by the physicians of polyclinics decreased with decreased population density of corresponding areas. As a result many doctors were losing time and money waiting for hours for the patients.
3. Access to healthcare is also important in evaluation process of healthcare quality. Trained family physicians will replace internists of the old system thus widening the sphere of provided services and substantially facilitating the interaction between the patients and doctors, which eventually hopefully will improve the access to the healthcare system. Historically in the territory of Commonwealth Independent States the primary care providers were practicing in the polyclinics. It was their responsibility administering the primary treatment, such as vaccination and patients’ post-operational follow-up. There was easy access into the polyclinic system. A large number of general practitioners in Armenia were working in polyclinics.

The old polyclinic system became paralyzed and the only program performed appropriately by the polyclinics was the vaccination program.

Although polyclinics are weakened, they still remain the main institutions between patient and hospital. Today the role of polyclinic primary care providers is increasing. There is also

a gap between patient and doctors practicing in hospitals which could be filled by the family doctors. Educated family practice physicians would hopefully bridge this gap between patients' primary care and hospital- based care since they will be well acquainted with their patients, their diseases and the progression of the diseases. It is the family doctors responsibility to refer their patients to hospital doctors if the patients need that level of care. Rehabilitation of patients after any surgical procedure is also relies on responsibility of family doctors. The emphasis now in Health Care reform is the strengthening of polyclinics with the qualified family doctors who will provide an improved quality of medical services eventually increasing the patient satisfaction, resulting an improved health status of the population.

The USAID Armenia Social Transition Program (ASTP) is implementing a new comprehensive program to mitigate the short-term adverse effects of the transition in a market economy. USAID assistance will focus on establishing the legal and institutional foundation for sustainable key social insurance systems; improving the efficiency and effectiveness of the government in providing social assistance and primary health care [8].

Since the year of 2000 USAID Social Transition Program is implementing a family medicine in Armenia, choosing the polyclinic of the hospital Erebuni and #17 polyclinic in Yerevan city, # 1 and # 4 polyclinics in city Vanadzor as pilot polyclinics for training family physicians (9). The polyclinics announced the new system of primary health care service delivery to the population. The Department was opened with the support of the Republic of Armenia Ministry of Health, Yerevan Municipality and USAID/Armenia Social Transition Program.

Implementation of Family Medicine is a program approved by the Government of Armenia. The Pilot Program of the new system of primary health care service delivery to the

population is being implemented in these three polyclinics of Armenia as pilot sites for the implementation of the Republic of Armenia Primary Health Care Strategy's goals and objectives. The experience gained from these pilot polyclinics eventually will guide the nationwide rollout of the Family Medicine model of care. The Family Medicine Department consists of Family Medicine groups composed of family medicine doctors in teams with traditional providers - therapists, obstetrician/gynecologists, and/or nurses [10]. People now have the opportunity to choose their primary care physician based on a new mechanism for open enrollment. Physicians of pilot polyclinics have received training in clinical medicine, management of health care delivery, computer literacy and the concepts of quality improvement. The training of family physicians was financed from three main sources; World Bank's Health Project Implementation Unit, Government order and by private sources. The number of family physicians trained every year by the Government order and by the financial aid of World Bank's Health Project Implementation Unit is limited.

Currently some 116 physicians are receiving their training funded by the World Bank Health Project in the departments of Family Medicine of National Institute of Health Care (NIH) and Yerevan State Medical University (YSMU) according to the head of Family Medicine Department of National Institute of Healthcare Professor Samvel Hovhannisyan. This training funded by the new system is meant to improve the overall quality of medicine by increasing the effectiveness of primary healthcare. It should also reduce health-care costs for patients, as the medical services provided by specialists tend to be more expensive. Whereas a patient might have gone directly to a specialist - a gynecologist or pediatrician, etc. - the new system will introduce doctors whose general knowledge can treat a variety of problems for all ages and both sexes. Family doctors get to know a patient's entire medical history and encourage the patient to participate in treatments. "There are two ways to become a family doctor or as we call them, family physician," says Mikayel Narimanyan, the head of Family

Medicine Department of Yerevan State Medical University. "The first way is when a student after completing Medical University applies for a two year course of sub faculty of Family Medicine. The second way is when a practicing physician such as pediatrician or therapist completes a year course to become family doctor. In both cases along with diploma of physician they will get the certificate of Family Health"[11].

The Ministry of Health of Armenia, Yerevan Municipality and the USAID funded Armenia Social Transition Program (ASTP) provided assistance to pilot polyclinics to implement the Family Medicine Pilot Program. A Trilateral Agreement of Cooperation was signed between the Yerevan Municipality, pilot polyclinic of Erebuni Medical Center (EMC) and USAID/Armenia Social Transition Program.

Mr. Grigor Mirzoyan, Deputy Mayor of Yerevan, chief-doctors of pilot polyclinics, General Director of EMC and Dr. Tatyana Makarova, Armenia Social Transition Program (ASTP) Health Team Leader signed the Agreement of Cooperation [10].

Goals and specific objectives

The goal of this proposal is to measure the knowledge of family physicians after the year of implementation of family practice and thus to justify the costs and efforts of the implementation of the FP program.

Ultimately FP program plans to create overall an integrated healthcare sector, providing better access to primary medical and healthcare services, oriented towards helping families and communities, along with support in favor of a flexible and stable system of hospitals and polyclinics and achieving improved health for everybody.

Therefore, the main priority of healthcare reform is the quality improvement of primary medical and healthcare services including the quality of care delivered to patients by FP physicians.

Research question addressed by this proposal:

Does the clinical knowledge gained during Family Medicine training program sustain over a year?

The specific measurable objective of my project is:

Measure the difference between mean scores of knowledge a year after the implementation of family medicine program. Entry level scores are obtained from the database of USAID ASTP office test results, which has been performed in November 2002. It is hypothesized that the mean difference of knowledge scores measured in family doctors will be 10 % higher after one year of family practice [3].

Study design:

The cross-sectional study design is used in this observational survey. According to notation developed by Campbell & Stanley [12]:

Program trained Polyclinic family physicians ----- x O O

The knowledge of physicians is measured in time series. Baseline data are obtained from the first (0) observation, taken place in November 29 of the year 2002 just after completing the training program (x) by the first group of family physicians, which show the average scores of the questionnaires completed by the program trained physicians. Survey proposes to measure the program trained family physicians knowledge by the same questionnaire after one year in order to reveal time decay on obtained knowledge and justify the costs and effectiveness of the implementation of family medicine program in Armenia.

The target population of program is the group of program trained physicians in pilot polyclinics of family medicine implementation in Armenia. Sample size is determined

already by the Ministry of Health. This program will educate a limited number of physicians every year due to scarce financial resources. Sample size is 44. Physicians who have learned their postgraduate (PG) education and re-training in Primary Care (PC) and Family Medicine (FM) are considered to be as family physicians in this sample (table 1). The Survey proposes to measure the knowledge sustainability of this group after one year of training program.

The independent variable is the physicians' group participation in this program and time (one year between two observations). The outcomes (dependent variables) are increased knowledge of family physicians and as a result the higher quality of provided services. Both female and male physicians participate in this program. Median medical experience of family doctors is seven years. Retraining status of participants in Primary Care (PC) and Family Medicine (FM) is described in table 1[appendix 2].

Sample size

The target population of the proposal is selected based on the research question. It is the group of forty-four physicians who received postgraduate education (PG) and retraining in Primary Care (PC) and Family Medicine (FM).

Designing an experiment, we had difficulties with sample size N that is necessary to provide a specified power. The problem was in sample size, which has been determined already by the Ministry of Health. In order to obtain adequate power for the estimations, stata program has been used;

$H_0: M_d = 0$

$H_a: M_d \neq 0$

. sampsi 0 5 ,sd (10) onesam n(44)

Estimated power for one-sample comparison of mean

to hypothesized value

Test $H_0: m = 0$, where m is the mean in the target population

Assumptions:

alpha = 0.0500 (two-sided)

alternative m = 5

sd = 10

sample size n = 44

Estimated power:

power = 0.9126

Thus one needs to increase the power of the test to estimate adequately the difference in means of knowledge scores in this small sample size.

Because we do not know the standard deviation, we use t-test rather than z-test. The test statistics: $t = \frac{X - Mo}{S/\sqrt{n}}$ [16].

Methodology

The questionnaire consists of two parts:

1. Basic paper that helps to collect personal data from each participant (name, specialty, etc.)
2. 75 questions on primary Care with Multiple choice answers supported with a tape of electrocardiogram and pictures of skin eruptions.

The questionnaire is bilingual (Armenian, English) and reflects all spheres of family medicine (attachment 1). 70 questions from 75 are originally designed in English, then translated into Armenian and only 5 are originally designed in Armenian. All Multiple Choice Questions (MSQs) were chosen from authorized sources such as American Association of Pediatrics in consultation with American family doctors and local ASTP medical specialists. Main criteria for question selection are:

1. Questions will represent the whole spectrum of family Doctors activity in both health prevention and the treatment of acute/common illness.
2. Questions will test both the patient management skills and the fundamental clinical knowledge of physicians.
3. Each question will meet the standards and requirements determined by FM Program objectives approved by the Ministry of Health of republic Armenia.
4. The questionnaire will not contain any question, which requires higher technological knowledge in patient management than that required in Primary Care and family physicians' practice in Armenia.

When the design was completed, the questionnaire was pretested among eight physicians. As an outcome of this pretesting, some questions were reworded to make them more understandable and adapted to the Armenian medical terminology; some grammatical errors were found and remediated. Additional three pediatric questions were added to the questionnaire.

Administration of Questionnaire

After completion of the demographic part in questionnaire one and half an hours will be given to each participant to answer the questions. The participants will be divided into four groups each one of them consisting from eleven family physicians. Each group will complete the questionnaires in a separate room. The test will start for the four participating groups simultaneously. The groups will have a clock or watch in the examination room for time management. A proctor will announce the last five minutes of the exam. Each participant is expected to complete his/her own work or they will be

disqualified. No participant will be allowed to leave a room until completing the questionnaire.

Data entry and analysis:

Data double checking and cleaning will be conducted to minimize personal and systematic errors. Data entry will be done using Statistical Package SPSS- based statistical analysis. The analysis of findings will start with comparison of mean scores of family physicians' knowledge obtained during the test with the similar rates of knowledge scores of the same FP obtained the year before. Based on the study results conclusions will be made and appropriate recommendations will be generated.

Inclusion and exclusion criteria

The evaluation of program is limited because only 44 family physicians were trained. Evaluator's prediction: There will be 10 % increase in mean scores of knowledge after one year of hypothesis implementation. Thus, the increased knowledge of family physicians and the higher quality of medical services provided by them will eventually increase the patient satisfaction from provided healthcare services.

Ethical Considerations

The proposal was submitted to the Institutional Review Board/Committee on Human Research of the American University of Armenia and obtained its approval. The implementation of family medicine program in Armenia based on the knowledge that this kind of service will be beneficial in the Republic. The issue in this instance is to justify expenses of training of medical personnel and implementation of the program in terms of improved organization of services. The survey is free of potential harm effects, and its implementation is not difficult in terms of financial costs. Participants need to devote one and half an hours to complete the test and will not directly benefit from their participation.

Personal score of each participant will be kept private and will be shared only with the participant in a sealed envelope. However, the results of the study can be helpful for the Ministry of Health and executive bodies of Primary Healthcare facilities for review and consideration in decision-making process and for the evaluation of the effectiveness of Family Medicine implementation in Armenia. The data will be stored at the CHSR for a two-year period. Only the principal investigator or Project Coordinator will have access to the data.

Before the test oral informed consent will be obtained from the participants. The text of informed consent is outlined in the IRB package [appendix 1].

Limitations

The major limitation of the case series is the lack of appropriate controls or comparison groups. Another limitation involves the biases of selection inherent in every case series. The case series usually represents the specific population within which the study has been done. In this case the specific population is the group of doctors, trained by the curriculum of family medicine. Generalizability of inferences from most case series is very limited.

In case series comparisons are made internally or based on external standards. The major strength of the study is that it is population based. One important limitation is the absence of standards to assess the quality of primary care.

Internal: The appropriate selection of comparison and program physicians to insure maximum homogeneity, combined with the knowledge measurement scheme within twelve months, minimizes the influences of history, maturation, testing and instrumentation threats to internal validity. The more the comparability of survey, the more it's internal validity.

The consistency can be achieved by the more reliability of measurement instruments

(Questionnaire). The weakest point of this design is the selection bias, because the selection is oriented toward an independent variable in this case [8].

External validity: The polyclinic chosen for the program implementation is a representative of the Armenian polyclinics. This enhances the generalizability of program implementation and minimizes selection-treatment interaction. The basic threat to external validity remains the reactive effect with testing.

Data collection

The baseline data can be collected from the office of Social Transition Program in the city Yerevan. After the implementation of the educational program, which includes basic necessary skills of narrow specialists and deeper knowledge in internal medicine, pretest measures are taken both for program and non-program family physicians, measuring the difference of provided services and the quantity of provided services. Properly formulated questionnaires and medical records could serve as a source of this information. The pretest measurements taken from November 29 of the year 2002 shows that the average score of the knowledge of the program trained family physicians is 42.5%, while the average score of non program physicians in polyclinic is 37.8 %. It is proposed to do a measurement after twelve months of working in the same polyclinic in order to assess the sustainability of the acquired knowledge. The program outcome includes efficient and high quality healthcare, which will eventually lead to the optimum health of population. This may be assessed by completion of the questionnaires, asking questions about the quality of provided services, the rights of patients and availability of medical equipment. This part is not included in this proposal.

Comparative analysis

Technique of quantitative analysis is used to assess program impact, efficiency and outcome and to compare with non-equivalent control group. Bivariate assessment can measure the magnitude and the significance of program. For interval and ratio comparisons, the t-test will be used in order to compare differences in sample means.

Time frame of the project

The proposed duration of the project is ten days. It will start with the hiring of personnel for creating a database and for data entry. It is proposed to hire AUA MPH students or graduates for these work activities. Proctors will participate as volunteers. Coding and data entry will begin after completion of the test within three days. Two days will be sufficient for data analysis and the formulation of recommendations based on that analysis.

Budget

Budget needed for implementation of proposal project does not exceed \$ 1000. It includes the following categories:

- Personnel costs
- Materials and supplies
- Operating costs
- Computer processing of the data
- Travel expenses and the cost of room accommodations of family doctors arriving from city Vanadzor.

Four proctors will work on voluntary basis. More detailed calculations are included in table 2 [appendix 3].

Summary

In sum, it is projected that the implementation of family medicine in Armenia will significantly improve the quality of healthcare services. It is obvious, that the transitional period in market economy has created a gap between demands and supply of provided healthcare services. The poor access to healthcare and insufficient quantity of provided services have decreased patient satisfaction. Financial problem, which face both patients and healthcare providers, also affects health care service, which eventually places a barrier between patients and healthcare providers. The Healthcare system has to overcome great challenges in order to regain the lost trust of patients and to improve the quality of provided services. The implementation of family medicine in Armenia may be one of the quality improvements. Family physicians would be instruments in regaining mutual trust and co-operation between patients and healthcare providers thus achieving improved health status of patients and their satisfaction in provided healthcare services.

The implementation of family medicine requires tremendous work activities, resources and costs. The government of Armenia with International donor organizations such as World Bank and USAID ASTP try to reform the old system of Healthcare and to improve the quality of healthcare services and especially the quality of Primary Care.

The proposed project will justify all the efforts and expenses of implementation of Family Medicine in Armenia.

References:

1. [Common Country Assessment \(CCA\): UNDP Armenia, 2000](#)
2. Narimanyan MZ, Gasparyan AY Sakanyan GH. An Implementation of Family Medicine in Armenian Health Care System in Transition Period, 2000.
www.medlib.am/2000_4_23AE.htm - 6k - [Cached](#) - [Similar pages](#)
3. Safran D, et al. (1994). Primary Care performance in Fee-for- service and Prepaid Health care systems; JAMA.
4. Kimball, H & Young, P. (1994). A statement on the Generalist physician from the American Boards of family Practice and Internal Medicine. [Journal of the American Medical Association](#).
5. Shi, L. & Douglas, S (1998). Delivering Health Care in Armenia: a Systems Approach. Gaithersburg, Maryland: Aspen Publishers, Inc.
6. [“Developing clinical care protocols \(guidelines\) in order to improve the quality of primary medical care in Armenia” Ruzanna Yuzbashyan](#)
3:E .
7. Donabedian A. The definitions of quality and approaches to its assessment. Vol.1. Ann Arbor, Michigan: Health Administration Press; 1981.
8. Program overview; The USAID/Armenia Program 1999-2003.
9. Decision of the Government of RA on the organisation of primary healthcare; 2002.
10. www.churcharmenia.com/news_2003/June%202003/erebuni_pilot_family.htm - 5k
- [Cached](#) - [Similar pages](#)

www.armenianow.com/2002/november15/features/ - 24k - [Cached](#) - [Similar pages](#)

11. Campbell D, Stanley J. Experimental and quasi-experimental Designs for Research.
Boston: Houghton Mifflin Company; 1963.
12. Fink A. Evaluation fundamentals: Guiding health programs, research and policy.
London: Sage publications; 1993.
13. Floyd J. Fowler: Survey research methods: Sage Publications, Inc.; 2002.
14. Aday, Lu Ann Designing and conducting Health Surveys: A comprehensive guide;
Jossey-Bass A Wiley Company, 1996. New York.
15. Haroutune K. Armenian, Sam Shapiro: Epidemiology and Health Services; Oxford
University press, 1997. New York.
16. Marcello Pagano, Kimberlee Gauvreau. Principles of Biostatistics. Belmont: An
impact of Woodsworth Publishing Company;1992.

Appendix 1

American University of Armenia

Department of Public health

Institutional Review Board/Committee on Human Research

Consent Form

The purpose of the survey is to assess physicians' knowledge. Filling the questionnaire will take two hours. We appreciate your time and participation in this study.

Risks/Discomforts:

There is no known risk for the participants of this survey. The research possesses risk, discomfort, and inconvenience the same as encountered in your daily life.

Benefits:

You will not receive monetary benefits for your participation in this project.

Confidentiality:

Please, rest assured that the information you conveyed during this survey will be used only for the research project and your names would not reported, published or disseminated to others. Only aggregate data will be provided to you to show the results of the survey. Be advised that you are free not to tell your name or anything else that will relate to the information you will provide, so that its confidentiality is completely protected. Your responses will be accessible for the Public Health department of AUA.

Voluntariness:

Your participation is voluntary. You are not obliged to participate in this project. In case you will want to stop the test any time after starting, we will do so. Your refusal to participate in this study at any time will not affect your job. We appreciate your participation to conduct this test. Whom to contact:

You will be provided with the contact information of my faculty who you may refer to with any further questions.

[Michael Thompson] phone number: (3741) 512592

e-mail: mthomps0@aua.am

Would you like to participate?

Signature of investigator_____

Date_____

Appendix 2

Table 1: Retraining status of participants

Groups	PG education/re-training		Number of physicians
	Type of training/Duration Months	Place	
Family Physicians/ Trainers	FM/2.5 FM/5	On-site training in FP clinics, Norway NIH, Armenia	7
NIH/YSMU fellows	FM/10	NIH/SMU, Yerevan	10
Newly graduated YSMU residents	FM/24	SMU, Yerevan	4
Vanadzor PC1 and PC4 Physicians	FM, PC/2.5	In-service training, Vanadzor	8
PC 17 staff actively participated to ASTP seminars*	PC/10	In-service training, PC 17, Yerevan	15
Total			44

- ASTP medical seminars were provided as in-service training, once a week for 1-1,5 hours. In summary, pure medical seminars and training lasted about 68 hours. Active participants were defined physicians who participated to more than 50 % of all ASTP seminars in PC 17 (The data are kindly provided by ASTP office).

Appendix 3

Table 2: Budget calculations

Materials and supplies	Number of items	Value of one item	Total value in \$
Questionnaires	50	50 cents	\$ 25
Pencils	100	10 cents	\$ 10
Erasers	50	10 cents	\$ 5
Personnel salary			
Data entry	44 questionnaires	\$ 3	\$ 132 *2=264 (double entry)
Database creating	1	\$ 220	\$ 220
Travel and room expenses of physicians coming from Vanadzor	8 physicians	\$ 40	\$ 320
Clocks	4	\$ 20	\$ 80
Miscellaneous	5 % of the grand subtotal		\$ 46.2
Total			\$ 970.2

Appendix 4

QUESTIONNAIRE

This inquiry is aimed at assessing the newly implemented family medicine program in order to introduce changes for its best organization and is designed for the physicians who participate in the program. Your sincere answer will contribute to the achievement of this goal and thus to the high quality of family medicine training. The confidentiality of your personal score is guaranteed.

Thank you for your cooperation.

General data

Name-----

Date-----

Specialty----- Polyclinic -----

Professional experience (years) -----, From which at polyclinic -----

1. When, where and in which specialty have you undergone a refreshment / internship course for the past 5 years? -----

2. Do you have publications in your professional field? -----
3. How many hours a day do you work on average? -----

4. How many patients a day do you see on average? -----
--
5. How many home calls a week do you have on average? -----
--
6. What is the average number of the population you provide services for? -----

7. You provide services for (mark one of the options)
 - a. Only children
 - b. Only adults
 - c. Both children and adults
8. Do you feel confident and ready in clinical terms to provide high quality care to the whole population (family) ?
 - a. Yes
 - b. No
9. Approximately which percent of your patients do you refer to the narrow specialists? -----

10. Which are the causes of such referrals? (You can mark several)

- a. The case does not fit the limits of my professional abilities / authority
 - b. Serious cases
 - c. Prolonged cases
 - d. Diagnostic procedures are needed
 - e. Other _____
11. Do you collect statistical data to find out the main health problems of your patients?
- a. Yes
 - b. No
12. Which is the best way to improve the quality of primary health care in your opinion (mark one of the answers)
- a. Supervision of the head of the polyclinic
 - b. Revisions of the health agencies (sanitarian-hygiene, SHA, MOH)
 - c. Continuous education of the health care specialists, regular refreshment courses
 - d. Internal peer processing (revision of the colleagues' records, quality assurance committee formed from the medical specialists)
 - e. Correct collecting, analysis and transparency of the health care data for all the specialists
13. Do you find the informal payments done by the patients acceptable?
- a. Yes
 - b. No

PROFESSIONAL QUESTIONNAIRE ON PRIMARY HEALTH CARE PROBLEMS

The tests below have only one correct answer.

Please mark the option that you think is the most appropriate.

1. Which one of the following is preferred for the prevention of gout in a patient with a history of uric acid renal stones and a history of tophi?
 - A) Allopurinol (Zyloprim)
 - B) Colchicine
 - C) Indomethacin (Indocin)
 - D) Probenecid (Benemid)
 - E) Prednisone
2. During a routine preparticipation examination, a 13-year-old white male admits to having had two episodes of exertional syncope. A physical examination reveals a hyperdynamic apical impulse and a widespread 3/6 mid- to late systolic murmur that seems to increase when he stands. The pulses are normal and there is no cyanosis or

clubbing.

Which one of the following statements is true regarding this patient?

- A) All strenuous exercise should be absolutely forbidden pending further evaluation
 - B) This condition is frequently associated with pectus excavatum and a high, arched palate
 - C) An ECG is likely to show an increased QT interval
 - D) An exercise stress test under proper supervision is the test most likely to confirm the diagnosis
 - E) Digoxin (Lanoxin) may be appropriate therapy to reduce the likelihood of exercise-induced symptoms
3. A 60-year-old right-handed white male arrives in the emergency department with symptoms and signs consistent with a stroke. His past medical history is significant for tobacco abuse and chronic treated hypertension. He is alert and afebrile. His pulse is 100/min, respirations 20/min, and blood pressure 190/95 mm Hg. He has a moderate right-sided hemiparesis and is aphasic. There are no other significant physical findings.
- While appropriate tests are being ordered, immediate management in the emergency department should include which one of the following?
- A) Monitoring oxygenation status with pulse oximetry
 - B) Prompt lowering of systolic blood pressure to < 140 mm Hg
 - C) Beginning an intravenous heparin infusion
 - D) Restricting fluid intake to 75 cc/hr
 - E) Giving parenteral corticosteroids
4. Deaths have been associated with the concomitant use of sildenafil (Viagra) and which class of agents?
- A) Sulfonylureas
 - B) Nitrates
 - C) β -Adrenergic blockers
 - D) Proton pump inhibitors
 - E) Leukotriene formation inhibitors
5. One of your female patients is taking a combined estrogen/progesterone contraceptive pill. Which one of the following would suggest the need to increase the relative amount of estrogen in the pill?
- A) Weight gain
 - B) Patient age > 35
 - C) Severe acne
 - D) Persistent bleeding in the first half of the cycle
 - E) A history of deep venous thrombosis
6. In working up a 48-year-old white male for impotence, you find that he has a serum

prolactin level of 160 ng/mL (N 2-15) and a serum testosterone level of 300 ng/mL (N 300-1100). It would now be appropriate to order

- A) a testicular biopsy
 - B) a glucose tolerance test
 - C) a 24-hour urine for 17-ketosteroids
 - D) an MRI scan of the head
 - E) a buccal smear
7. A 40-year-old white male house painter comes to your office with complaints of headache, fatigue, and muscle pain. He has recently been working extensively in a nineteenth-century farmhouse, removing layers of paint and repainting.
- Inexpensive laboratory tests which you can order to help make the diagnosis of lead poisoning include which one of the following?
- A) A CBC with a peripheral smear
 - B) Liver transaminase levels
 - C) A fasting blood glucose level
 - D) An erythrocyte sedimentation rate
 - E) Long bone films
8. A 44-year-old white male comes to your office for a follow-up visit to monitor his hypertension. He has been taking hydrochlorothiazide (HydroDIURIL), 25 mg/day, and sustained-release diltiazem (Cardizem CD), 360 mg/day, but has been out of medication for 2 weeks. His blood pressure is 210/110 mm Hg and his fundi reveal arteriolar narrowing. He has a mild headache, although his neurologic examination is unremarkable.
- Appropriate management at this time would be to
- A) admit the patient to the hospital and begin intravenous nitroprusside (Nipride)
 - B) give nifedipine (Procardia), 20 mg sublingually
 - C) order a CT scan of the head
 - D) order a captopril renal scan
 - E) restart his same medications
9. A 46-year-old white female complains of a 3-month history of hoarseness and nocturnal wheezing. On further questioning, she tells you that she has to clear her throat repeatedly and feels like she has something stuck in her throat.
- These symptoms are most likely related to
- A) thyroid disease
 - B) gastroesophageal reflux disease
 - C) sinusitis
 - D) tracheal stenosis
10. A 2-year-old Hispanic male with a 3-day history of nasal congestion presents with a barking cough and hoarseness. He is afebrile. The examination reveals tachypnea,

inspiratory and expiratory stridor, noticeable intercostal retractions, and good color. Which one of the following is indicated?

- A) Albuterol syrup (Proventil, Ventolin) and the use of a humidifier
- B) Inhaled albuterol
- C) Aerosolized epinephrine and intramuscular dexamethasone (Decadron)
- D) Visualization of the epiglottis, and ceftriaxone (Rocephin)

11. A healthy 68-year-old white female presents to your office with a several-month history of vaginal itching; a thin, yellow discharge; and burning with urination. She is not sexually active and denies the use of any new perfumes or soaps. Your physical examination reveals a sparsity of pubic hair and slightly erythematous, shiny, smooth vaginal mucosa. A wet mount and KOH prep are both negative.

Effective therapy for these symptoms would include which one of the following?

- A) Testosterone propionate cream
- B) Topical steroid cream
- C) Estrogen vaginal cream
- D) Metronidazole vaginal inserts (MetroGel)
- E) Clotrimazole vaginal cream (Gyne-Lotrimin)

12. Which one of the following is increased in women who use oral contraceptives?

- A) Ovarian cancer
- B) Endometrial cancer
- C) Benign breast disease
- D) Venous thromboembolism
- E) Osteoporosis

13. A 4-week-old white male is brought to your office with a 2-week history of increasing dyspnea, cough, and poor feeding. The child appears nontoxic and is afebrile. On examination you note conjunctivitis, and a chest examination reveals tachypnea and rales. A chest film shows hyperinflation and diffuse interstitial infiltrates. A WBC count reveals eosinophilia.

What is the most likely etiologic agent?

- A) *Staphylococcus* species
- B) *Chlamydia trachomatis*
- C) Respiratory syncytial virus
- D) Parainfluenza virus

14. A 21-year-old college student complains of severe diarrhea which developed toward the end of her spring break vacation. As part of a diagnostic evaluation, you find a large number of WBCs on fecal examination.

Of the following, which one is the most likely cause of her diarrhea?

- A) *Shigella*

- B) Toxigenic *Escherichia coli*
 - C) Rotavirus
 - D) *Giardia lamblia*
15. Which one of the following should be done annually in a female who has a history of breast cancer that was diagnosed 3 years ago with no evidence of recurrence?
- A) Liver function tests
 - B) A CBC
 - C) A chest radiograph
 - D) A bone scan
 - E) A mammogram
16. A 27-year-old white female at 12 weeks gestation comes to your office complaining of a vaginal discharge. On speculum examination you note a purulent cervical discharge with a friable cervix. A gonorrhea culture is negative. You make the diagnosis of Chlamydia trachomatis cervicitis.
- Which one of the following is the appropriate treatment?
- A) Metronidazole (Flagyl)
 - B) Tetracycline
 - C) Erythromycin
 - D) Miconazole (Monistat) cream
17. Which one of the following drugs is the most appropriate treatment for giardiasis?
- A) Sulfadoxine/pyrimethamine (Fansidar)
 - B) Mebendazole (Vermox)
 - C) Trimethoprim/sulfamethoxazole (Bactrim, Septra)
 - D) Metronidazole (Flagyl)
 - E) Amoxicillin
18. A 45-year-old female has an alkaline phosphatase level which is twice normal levels on a chemistry panel ordered for evaluation of pruritus. Other liver tests are within normal limits, including bilirubin and ALT, and repeat testing 2 months later shows no change. A γ -glutamyltransferase level is also significantly elevated, as is an antimitochondrial antibody titer. Hepatic ultrasonography is unremarkable.
- Which one of the following diagnoses is most likely?
- A) Primary biliary cirrhosis
 - B) Paget's disease of the bone
 - C) Sarcoidosis
 - D) Choledocholithiasis
 - E) Drug-induced cholestasis
19. Adult patients with infectious mononucleosis (Epstein-Barr virus infection)

- A) should receive corticosteroids only
 - B) should receive acyclovir (Zovirax) only
 - C) should receive corticosteroids and acyclovir
 - D) usually require no treatment
20. Which one of the following is most sensitive for detecting left ventricular hypertrophy in a patient with hypertension?
- A) A physical examination
 - B) A chest radiograph
 - C) A serum atrial natriuretic peptide level
 - D) Echocardiography
 - E) An ECG
21. A 35-year-old white female with a history of headaches complains of joint pains. A review of systems reveals that she also has intolerance to multiple different foods, stomach bloating, rectal pain with defecation, dysmenorrhea, chronic irregular periods, and difficulty swallowing. She denies depressive symptoms or drug abuse. She regularly takes several vitamins and acetaminophen. Her physical examination, CBC, erythrocyte sedimentation rate, and kidney and liver function tests are normal.
- The most likely diagnosis is
- A) systemic lupus erythematosus
 - B) Lyme disease
 - C) ulcerative colitis
 - D) somatization disorder
 - E) depression with melancholia
22. A 40-year-old white male comes to you with a 5-year history of periodic episodes of severe right-sided headaches. During the most recent episode the headaches occurred most days during January and February and lasted about 1 hour.
- The most likely diagnosis is which one of the following?
- A) Migraine headache
 - B) Cluster headache
 - C) Temporal arteritis
 - D) Trigeminal neuralgia
23. You are examining a 3-month-old white male who has been brought to your office because of a 2-day history of mild rhinitis which developed into an increasing cough associated with wheezing. On examination, the child appears ill with nasal flaring, cyanosis, and diffuse wheezing. Cardiac examination reveals a heart rate of 120/min without a murmur. His temperature is 39.1° C (102.4° F) rectally.
- The most likely diagnosis is
- A)foreign body aspiration
 - B)bronchiolitis

- C) congenital heart disease
D) bronchiectasis
E) epiglottitis
24. Which one of the following is a risk factor for endometrial adenocarcinoma?
- A) Obesity
B) Multiple sexual partners
C) Early menopause
D) Multiparity
E) Cyclic therapy with estrogen and progesterone
25. A 23-year-old male presents to your office with a 2-week history of dysuria. He also complains of pain and swelling in his left knee and right ankle. You note that his conjunctivae are injected and there is a rash on his feet that resembles psoriasis.
- What is the most likely diagnosis?
- A) Systemic lupus erythematosus
B) Ankylosing spondylitis
C) Rheumatoid arthritis
D) Reiter's syndrome
26. A 34-year-old white female who works as an engineer for a major corporation comes to the office complaining of fatigue, low energy, and a depressed mood. She states that she has felt this way for most of her life. She feels depressed most of the time but denies any recent stresses or significant losses in her life. She reports that she is doing well at work and that she recently received a promotion. She has no interests other than her job and states that she has no happy thoughts and that her self-esteem is very low. She denies suicidal thoughts but states that she does not care if she dies. She has had no sleep disturbance, change in appetite, or difficulty concentrating. She is taking no medications and denies substance abuse. Results of a recent diagnostic evaluation at work were all normal, including a physical examination, ECG, multiple chemical profile, CBC, urinalysis, and thyroid-stimulating hormone (TSH) level.
- Which one of the following is the most likely diagnosis?
- A) Major depression
B) Dysthymic disorder
C) Bipolar disorder

- D) Cyclothymia
 - E) Adjustment disorder with depressed mood
27. Chronic therapy with which one of the following commonly used drugs is most likely to increase / the risk for osteoporosis?
- A) Antihypertensives
 - B) Oral hypoglycemics
 - C) NSAIDs
 - D) Thyroid hormone
28. Which one of the following is true regarding accommodative esotropia (strabismus) and amblyopia in children?
- A) Strabismus is caused by dysfunction of the ocular muscles, which pull the eye out of alignment
 - B) Treatment for accommodative esotropia usually consists of miotic eye drops
 - C) The earlier amblyopia is detected and treated, the better the outcome
 - D) Stereopsis and binocular vision develop independently of eye alignment
29. A 35-year-old white male who has had diabetes for 20 years begins having episodes of hypoglycemia. He was previously stable and well controlled and has not recently changed his diet or insulin regimen.
- Which one of the following is the most likely cause of the hypoglycemia?
- A) Spontaneous improvement of β -cell function
 - B) Renal disease
 - C) Reduced physical activity
 - D) Insulin antibodies
30. Current practice is to introduce normal term infants to solid foods in their diet at what age?
- A) 2-4 weeks
 - B) 2-3 months
 - C) 4-6 months
 - D) 7-9 months
 - E) 1 year
31. The preferred initial volume replacement for hypovolemic shock due to hemorrhage is the rapid infusion of
- A) hypertonic saline
 - B) normal saline
 - C) plasma
 - D) albumin (human)
 - E) packed RBCs

32. A patient with end-stage metastatic cancer is having continued significant pain despite regular use of 60 mg of long-acting morphine sulfate every 12 hours. What is the maximum 24-hour dose of morphine sulfate that you may safely titrate this patient up to in order to relieve her pain?

- A) 240 mg
- B) 360 mg
- C) 480 mg
- D) 600 mg
- E) No limit

33. Which one of the following is true concerning body weight in adults?

- A) A weight gain of as little as 4.5 kg (10 lb) in an adult can increase the risk for diabetes mellitus and hypertension
- B) Excess weight is a more significant predictor of mortality in patients over age 75 than in younger adults
- C) Weight gain around the hips is more predictive of coronary artery disease risk than abdominal weight gain
- D) If weight remains stable after age 50, the percentage of body fat also remains stable
- E) A higher body mass index is more predictive of coronary artery disease in females than in males

34. Which one of the following is contraindicated in the treatment of urinary tract infections (UTIs) during a first-trimester pregnancy?

- A) Cephalexin (Keflex)
- B) Ciprofloxacin (Cipro)
- C) Amoxicillin/clavulanate (Augmentin)
- D) Nitrofurantoin (Macrodantin)
- E) Sulfisoxazole (Gantrisin)

35. A 34-year-old white female consults you about hair loss. It has been several years since she noted her hair was becoming much thinner, particularly in the vertex area. Except for some generalized thinning of her hair and the presence of a number of fine hairs, your examination is unremarkable.

She is on no medication and has been in generally good health. She has had two normal pregnancies; after her youngest child was born 2 years ago she had a bilateral tubal ligation. Her menses are regular and not particularly heavy. She has no acne. A pelvic examination reveals a normal clitoris, and no ovarian masses are palpable. Her weight has been stable at 134 lb for several years, and she has had no recent illnesses.

The most likely diagnosis is

- A) androgenetic alopecia

- B) Gushing's syndrome
 - C) hypothyroidism
 - D) iron deficiency anemia
 - E) chronic protein malnutrition
36. A 15-year-old white male athlete complains of wheezing and dyspnea about 5 minutes after vigorous exercise. Which one of the following is most appropriate as first-line treatment?
- A) Oral theophylline on a regular basis
 - B) Inhaled anticholinergic medication (Atrovent) on an as-needed basis
 - C) Inhaled β -adrenergic agonists (Ventolin, Proventil) before exercise
 - D) Cromolyn sodium (Intal) on a regular basis
 - E) Intermittent use of nedocromil sodium (Tilade)
37. A 68-year-old African-American male is found to have an asymmetric, hard, 1-cm nodule of the prostate gland on routine examination. He denies symptoms of urinary outlet obstruction or constitutional symptoms such as weight loss or sweating. The remainder of his physical examination is normal and his serum prostate-specific antigen (PSA) level is normal.
- Appropriate management at this point includes which one of the following?
- A) Referral for biopsy of the nodule
 - B) A repeat digital rectal examination in 1 year
 - C) A repeat PSA level in 3 months
 - D) Terazosin (Hytrin)
 - E) Finasteride (Proscar)
38. Over the last 6 months a developmentally normal 12-year-old white female has experienced intermittent abdominal pain, which has made her quite irritable. She describes joint pain and general malaise. She has lost 5 kg (11 lb) and has developed an anal fissure.
- Which one of the following is the most likely cause of these symptoms?
- A) Celiac disease (gluten enteropathy)
 - B) Irritable bowel syndrome
 - C) Hepatitis A
 - D) Crohn's disease
 - E) Giardiasis
39. In the development of clinical guidelines, which one of the following is rated as the strongest and highest quality evidence?
- A) Evidence from randomized, placebo-controlled studies
 - B) Evidence from non-randomized, double-blind, placebo-controlled studies

- C) Evidence from non-randomized, double-blind, crossover, placebo washout controlled studies
 - D) Evidence obtained from well-designed cohort or case-control analytical studies from more than one center or research group
 - E) Evidence based on reports of expert committees or opinions of respected authorities in the appropriate specialty area
40. A 36-year-old African-American female presents with a left-sided headache of 6 months' duration. She was in the army when she was younger, and her best friend from that time died of a malignant brain tumor a few years ago. The patient is concerned that she also has a brain tumor.
- Your physical examination, including thorough HEENT and neurologic examinations, is completely normal. You order an MRI of the head, which is also normal. Upon receiving and reviewing her old records, you find that she has been evaluated for a brain tumor by two other physicians in the past 3 years. All of her previous examinations, including laboratory and imaging studies, have been normal. Despite your reassurance, she remains convinced that she has a malignant brain tumor.
- This patient most likely has which one of the following?
- A) Post-traumatic stress disorder
 - B) Somatization disorder
 - C) Hypochondriasis
 - D) Conversion disorder
 - E) Factitious illness (e.g., Munchausen's syndrome)
41. A 45-year-old female schedules a visit with you to evaluate a tremor that is becoming more bothersome. She thinks it began about 10 years ago, and was very mild at first. It affects her hands mostly, but now has also begun to involve her head. She notes that the tremor is more rapid in her hands than in her head, and that it usually occurs when she moves her extremities. She drinks 1 or 2 alcoholic beverages a day and thinks that alcohol actually seems to diminish the tremor. She also notes that her mother suffered from a similar disorder. Other than the observed tremor of her hands and head with movement, the remainder of her neurologic examination is normal.
- Which one of the following movement disorders does this patient most likely have?
- A) Parkinsonian tremor
 - B) Cerebellar tremor
 - C) Psychogenic tremor
 - D) Essential tremor
 - E) Alcohol withdrawal tremor
42. You examine a 2-week-old infant and find a dense congenital cataract in the left eye. By what age should the patient be referred for surgical evaluation?
- A) 2 weeks

- B) 6 months
 - C) 12 months
 - D) 24 months
 - E) 36 months
43. An 18-year-old male comes to your office because of the recent onset of recurrent, unpredictable episodes of palpitations, sweating, dyspnea, gastrointestinal distress, dizziness, and paresthesias. His physical examination is unremarkable except for moderate obesity. Laboratory findings, including a CBC, blood chemistry profile, and thyroid-stimulating hormone (TSH) level, reveal no abnormalities.
- The most likely diagnosis is
- A) mitral valve prolapse
 - B) paroxysmal supraventricular tachycardia
 - C) pheochromocytoma
 - D) generalized anxiety disorder
 - E) panic disorder
44. A 6-year-old white female, who is visiting her grandparents, develops scleral icterus. She has been otherwise well and denies fever, vomiting, diarrhea, or rash. Her appetite and activity level have been good. Her birth history and past medical history are unremarkable. Family history includes an aunt with gallstones. On physical examination she has obvious jaundice and a spleen palpable to 5 cm below the left costal margin.

Laboratory Findings

WBCs	8500/mm ³ (N 5500-15,500)
Hemoglobin	10 g/dL (N 11.5-15.5)
Hematocrit	30% (N 35-45)
Platelets	250,000/mm ³ (N 150,000-400,000)
Mean corpuscular volume	
(MCV)	82 fL (N 77-95)
Reticulocyte count	6% (NO.5-1.5)
Coombs test	negative
Bilirubin	
Direct	0.9 mg/dL (N 0.1-0.4)
Total	5.8 mg/dL (N 0.3-1.1)

The diagnosis that you suspect is confirmed on the peripheral blood smear. Which one of the following is the preferred treatment for this child?

- A) Reassurance
- B) Splenectomy
- C) Hydroxyurea (Hydrea)

D) Phototherapy

E) Bone marrow transplantation

45. An asymptomatic 24-year-old white female comes to your office for a refill of oral contraceptive pills. A speculum examination is normal with the exception of a slightly friable, well-demarcated, 1.4-cm raised lesion involving a portion of the cervix. All previous Papanicolaou (Pap) tests have been normal and she has no history of abnormal bleeding or leukorrhea.

Appropriate management at this time would be

- A) a Pap test, including a scraping of the erosion, with routine follow-up unless the patient becomes symptomatic
- B) a Pap test; recheck in 3 months if normal
- C) a Pap test and a colposcopically directed biopsy
- D) a cone biopsy
- E) topical antibiotic cream

46. A male infant is noted at birth to have a unilateral undescended testis. Orchiopexy is recommended if the testis has not descended by what age?

- A) 2 weeks
- B) 3 months
- C) 12 months
- D) 2 years
- E) 4 years

47. Of the following antianginal medications, which one has been shown to decrease mortality after myocardial infarction?

- A) β -Blockers
- B) Calcium channel blockers
- C) α -Blockers
- D) Diuretics
- E) Oral nitrates

48. A patient complaining of unilateral decreased vision is noted to have equal pupils in dim light. When you shine a bright penlight into the unaffected eye both pupils constrict briskly, but when you swing the light into the affected eye both pupils dilate.

This is a sensitive diagnostic indicator of which one of the following?

- A) Macular degeneration
- B) Malingering
- C) Early glaucoma
- D) Anisometropia
- E) Optic nerve lesion

49. In a study to evaluate a test (T) as a screen for the presence of a disease (D), 235 of

the 250 people with D had a positive T and 600 of die 680 people without D had a negative T. Based on this data, the specificity of T for D is

- A) $235/250 = 94\%$
- B) $15/250 = 6\%$
- C) $600/680 = 88\%$
- D) $80/680 = 12\%$
- E) $15/80 = 19\%$

50. A 2-year-old white male who has not received any immunizations is diagnosed with pertussis. His babysitter should

- A) receive a DTP booster
- B) allow him to return to day care within 48 hours of treatment initiation.
- C) receive erythromycin prophylaxis
- D) be reassured that she will not develop pertussis, because she has been immunized

51. An 8-year-old African-American male has a presumptive diagnosis of meningococcal meningitis, based on clinical findings and the presence of gram-negative diplococci in the cerebrospinal fluid. Cultures are pending.

Which one of the following would be the most appropriate intervention for other members of his household?

- A) Isolation until the incubation period is past
- B) Immediate administration of meningococcal vaccine
- C) Immediate administration of oral rifampin (Rifadin)
- D) No intervention unless symptoms develop

52. Which two classes of antihypertensives should be considered first-line agents for treating isolated systolic hypertension in the elderly?

- A) β -Blockers and ACE inhibitors
- B) β -Blockers and calcium antagonists
- C) α -Blockers and vasodilators
- D) Diuretics and β -blockers
- E) Diuretics and calcium antagonists

53. The ECG shown in Figure 2 reveals

- A) sinus tachycardia
- B) paroxysmal atrial tachycardia
- C) multifocal atrial tachycardia
- D) atrial fibrillation
- E) atrial flutter

54. A 28-year-old white female is seen because of a 3-week illness characterized by low-grade fever, malaise, moderate headache, and a 15-cm erythematous lesion on her left leg, shown in Figure 6. The patient enjoys good health and takes no medications, and her physical examination is entirely normal except for the skin lesion.

The most likely diagnosis is

- A) acute rheumatic fever
- B) dermatitis herpetiformis
- C) pityriasis rosea
- D) erythema nodosum
- E) Lyme disease

55. A 60-year-old African-American male is found to have type 2 diabetes mellitus.

Which one of the following should be ordered before initiating treatment with metformin (Glucophage)?

- A) Serum electrolytes
- B) A serum creatinine level
- C) A CBC
- D) A lipid panel
- E) A thyroid panel

56. A 23-year-old African-American female with chronic depression has been treated with fluoxetine (Prozac) with good results over the past year. She presents with a pregnancy of 6 weeks' duration. In the past, she has relapsed into severe depression when her medication has been stopped.

Which one of the following would be most appropriate at this time?

- A) Continue fluoxetine as prescribed
- B) Discontinue fluoxetine for the remainder of the first trimester, and resume it during the last two trimesters
- C) Discontinue fluoxetine for the remainder of the pregnancy
- D) Discontinue fluoxetine and switch to nortriptyline (Pamelor) now
- E) Discontinue fluoxetine and switch to nortriptyline after the first trimester

57. A 68-year-old African-American female with primary hypothyroidism is taking L-thyroxine (Synthroid), 125 µg/day. Her thyroid-stimulating hormone (TSH) level is 0.2 µU/mL (N 0.5-5.0). She has no symptoms of either hypothyroidism or hyperthyroidism.

Which one of the following is true regarding her management?

- A) The E-thyroxine dosage should not be changed
- B) The E-thyroxine dosage should be increased
- C) The E-thyroxine dosage should be decreased
- D) The E-thyroxine should be discontinued
- E) A free thyroxine index (FTI) is needed to determine her thyroid hormone status more accurately

58. A 50-year-old white male with elevated cholesterol requires medication for

hypertension. Which one of the following adversely affects the lipid profile?

- A) ACE inhibitors
- B) Calcium channel blockers
- C) α -Blockers
- D) β -Blockers

59. The daughter of an 80-year-old woman is concerned because her mother has fallen

several times recently at home. When advising her on this issue, which one of the

following would you point to as the most frequent cause of falls among elderly patients?

- A) Acute illnesses
- B) Gait disorders
- C) Lower extremity weakness
- D) Accidents related to environmental hazards
- E) Medication side effects

60. Which one of the following is true regarding laboratory findings in the elderly?

- A) Elevation of serum alkaline phosphatase almost always indicates a pathologic condition
- B) Fasting blood glucose levels decrease 1 mg/dL each decade
- C) BUN levels increase with age

- D) Serum creatinine levels are usually normal even though renal function is decreased
- E) The incidence of false-positive screening tests for syphilis decreases with age

61. A 29-year-old happily married heterosexual female presents to your office complaining of the recent onset of a vaginal discharge. She has not had any similar complaints in the past. On pelvic examination, you note a grayish-white vaginal discharge. The vagina and cervix are otherwise normal in appearance, and there is no cervical motion tenderness. You perform a saline wet prep, which reveals abundant clue cells, no lactobacilli, and no white cells. A KOH prep reveals an obvious fishy odor, and no other abnormalities. The pH of the vaginal discharge is 5.5.

On the basis of this evaluation, you would recommend which one of the following?

- A) Metronidazole (Flagyl), 2 g single oral dose for both the patient and her husband
- B) Metronidazole, 500 mg orally twice a day for 7 days for the patient only
- C) Fluconazole (Diflucan), 200 mg single oral dose for the patient only
- D) Doxycycline (Vibramycin), 100 mg orally twice a day for 10 days for both the patient and her husband
- E) Yogurt douche

62. A 60-year-old African-American female is being dismissed from the hospital 2 weeks after a posterior myocardial infarction. An echocardiogram performed prior to discharge was normal except for some mild hypokinesis of the posterior wall.

To reduce the risk of sudden death and/or nonfatal myocardial infarction, she should be given which one of the following?

- A) Digoxin (Lanoxin)
- B) Warfarin (Coumadin)
- C) Verapamil (Calan, Isoptin)
- D) Amiodarone (Cordarone)
- E) Aspirin

63. A 45-year-old white female has had a rash on her left flank for 5 days. She comes to your office because of moderate pain, and you diagnose herpes zoster.

Which one of the following would be most appropriate at this point?

- A) High-dose corticosteroids
- B) Acyclovir (Zovirax), 5 times a day
- C) Oral analgesics
- D) Topical lidocaine gel

64. Routine fecal stool guaiac testing in a 60-year-old male is positive. The patient is asymptomatic and has been in good health.

Which one of the following should be done next?

- A) Repeat occult blood testing in 6 months
- B) An upper gastrointestinal contrast barium study
- C) An upper gastrointestinal contrast barium study plus flexible sigmoidoscopy
- D) Colonoscopy

65. A 52-year-old female presents with the chief complaints of hot flushes and painful intercourse. It has been approximately 6 months since her last menses. Her past medical history is unremarkable. Her family history is positive for myocardial infarction in her father at the age of 50 and a hip fracture in her mother at the age of 75. She is a nonsmoker.

Physical examination, including a breast examination, is within normal limits with the exception of atrophic vaginal mucosa. Laboratory results include a total cholesterol of 220 mg/dL, high-density lipoprotein (HDL) of 35 mg/dL, and low-density lipoprotein (LDL) of 160 mg/dL. A recent mammogram was normal. She would prefer not to have further menstrual periods.

Which is the most appropriate therapy at this time?

- A) Daily oral estrogen
- B) Daily combined estrogen and progesterone
- C) Cyclical estrogen/progesterone (estrogen for 25 days/month; progesterone for 14 days/month)
- D) Continuous transdermal estrogen
- E) Topical vaginal estrogen

66. A 63-year-old secretary comes to your office because she has had pain radiating down her thumb and up her forearm for the past several days. She denies trauma. On physical examination she is afebrile, with tenderness and slight swelling on the radial side of the wrist. There is full range of motion of the wrist, with no warmth or redness, but pain results when extension and abduction of the thumb is resisted and when the wrist is passively deviated toward the ulnar side while the fingers are flexed over the palm.

The most likely diagnosis is

- A) acute wrist sprain
- B) osteoarthritis of the first metacarpal joint
- C) de Quervain's tenosynovitis
- D) Colic's fracture
- E) carpal tunnel syndrome

67. A 59-year-old white male is being evaluated for hypertension. His blood pressure is 150/105 mm Hg. His medical history includes impotence, asthma, gout, first degree heart block, diet-controlled diabetes mellitus, and depression. He is on no medications at the present time.

Which one of the following would be the best choice for INITIAL therapy of his hypertension?

- A) Propranolol (Inderal)
- B) Verapamil (Calan, Isoptin)
- C) Clonidine (Catapres)
- D) Hydrochlorothiazide/triamterene (Dyazide)
- E) Enalapril (Vasotec)

68. A 65-year-old white female complains of increased exertional dyspnea. Your workup includes a 2-D echocardiogram, which reveals an ejection fraction of 37%.

Which one of the following regimens will retard the development of more significant heart failure?

- A) ACE inhibitors
- B) Diuretics alone
- C) Digitalis alone
- D) Diuretics and digitalis
- E) Nitrates and diuretics

69. A 35-year-old white gravida 2 para] sees you for her initial prenatal visit. Since delivering her first child 10 years ago, she has developed type 2 diabetes mellitus. She has kept her disease under excellent control by taking metformin (Glucophage). A recent hemoglobin A_{1c} level was 6.5%.

You should now treat her diabetes with

- A) metformin
- B) acarbose (Precose)
- C) pioglitazone (Actos)
- D) insulin (Humulin)

70. On a routine medical examination of the schoolchildren a 12-year-old otherwise healthy girl was found to have spinal curvature. The X-ray revealed 20° lateral curvature.

Which of the following is the MOST PROBABLE cause of scoliosis in this child?

- A) congenital
- B) incorrect sitting position
- C) unknown cause
- D) neuromuscular
- E) bearing

71. The child that you are examining has recently learned to eat with a spoon without spilling the food, to dress and undress under her parents' supervision but without their help, to play with the other children, and she also realizes that she is a girl.

The above-mentioned skills are acquired at the age of:

- A) 1 - 2 years
- B) 2 - 3 years
- C) 3 - 4 years
- D) 4 - 5 years
- E) 5 - 6 years

72. A 10-year-old child has growing painless solid masses on the right posterior surface of the neck. The present condition started 3 weeks ago. The child also has low-grade fever and lack of appetite. Prior to the disease the child's growth and development were within the normal limits but now the weight curve is 2 lines lower than the previous one.

Which of the following is the appropriate treatment procedure?

- A) incision biopsy
- B) incision and drainage
- C) needle biopsy
- D) a course of initial treatment with dicloxacillin
- E) a course of initial treatment with penicillin V

73. All the following is true for the constitutional delay in a child's growth and puberty, EXCEPT FOR:

- A) normal height and weight at birth
- B) increase in the weight – height ratio

C) delayed puberty

D) height is within the normal limits in the adulthood

74. You are examining a newborn infant when suddenly someone slams the door. The noise frightens the baby and when the latter starts to cry you notice tremor of the jaw.

What would you advise the parents?

A) the baby should be examined by a neurologist

B) the baby should be prescribed potassium bromide 1% solution as mild sedative for two weeks

C) the baby's hearing is good and the "sudden fear" is a reflex to the noise

D) they should take care that the noise doesn't hinder the baby's sleep at home

75. Pneumatic otoscopy allows:

A) to determine the auditory threshold

B) to assess the tympanic membrane and its mobility

C) to assess the degree of hearing loss

D) to assess the volume of the middle ear space