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Strategies to prioritize prevention in the Greek primary healthcare system

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Abstract

The present study presents financial incentives for General Practitioners(GPs) to engage in specific preventive care services and describes new roles for nurses to provide recommendations regarding brief nutrition counseling. To calculate the total number of personnel required to provide nutrition counseling, we considered 4 elements: (1) published and estimated time required to deliver nutrition counseling (2) the number of the maximum patients seen per day (3) the annual workload of the provider and (4) the number of people requiring those services. We annualize the frequency of performing specific preventive care services by GPs based on the official recommendations by the American Cancer Society. One exclusive nurse could provide a plan of care, designed to help almost 20.000 individuals either maintain the assessed status or attain a healthier status. Screening tests for cervical, colon and breast cancer should be performed by GPs to at least 3.537.810 individuals of the total Greek population for the year 2018.

Keywords: Health Workforce Requirements, preventive services, primary healthcare, Greece.

JEL Classification: I10, I18, J22.

Introduction

Greece is in the phase of reforming its primary healthcare system and decision makers should emphasize on health promotion and disease prevention. Any proposed resource allocation system must take into account the requirements to provide recommended preventive services for every member of the population. The Greek healthcare system lacks characteristics of strong primary care, such as disease prevention and health promotion¹.

Preventive health means screening for illness or disease before you have signs or feel sick. Preventive health screenings may find diseases early when they are easier to treat and stop some diseases from occurring. One of the highest challenges for public health is to provide essential preventive facilities to all the population, so as to postpone disability and to maintain the health of the ageing population². Preventive primary care involves an initial comprehensive assessment and individualized follow-up³.

At this point, we describe how some health care systems address certain preventive health care needs as part of a focus on primary care. Many countries emphasize on preventive services and case studies serve as excellent sources of knowledge.

In USA, a program was designed to prevent cigarette use among middle and high school students and it was found that for every dollar invested in school tobacco prevention programs, almost \$20 in future medical care costs would be saved⁴. Trust for America's Health estimates that an investment of \$10 per person per year in community-based programs tackling physical inactivity,

¹ Groenewegen P, Jurgutis A. A future for primary care for the Greek population. *Quality in Primary Care*. 2013;21(6):369-78.

² World Health Organization. *World Health Report 1998, Life in the 21st century: a vision for all*. Geneva;1998. Available at: http://www.who.int/whr/1998/en/whr98_en.pdf?ua=1.

³ Ploeg J, Brazil K, Hutchinson B, Kaczorowski J, Dalby D, Goldsmith C, Furlong W. Effect of preventive primary care outreach on health related quality of life among older adults at risk of functional decline: randomized controlled trial. *British Medical Journal*. 2010;340:1480. doi: 10.1136/bmj.c1480.

⁴ Wang LY, Crossett LS, Lowery R, Sussman S, Dent CW. Cost-effectiveness of a school-based tobacco-use prevention program. *Archives of Pediatrics and Adolescent Medicine* 2001;155:1043-1050.

poor nutrition, and smoking could yield more than \$16 billion in medical cost savings annually within 5 years⁵. The American Heart Association recommends motivational interviewing as an effective approach for interventions to promote health outcomes such as weight loss⁶. A Danish study reported that preventive health screening and consultation in primary care produce significantly better life expectancy without extra direct and total costs over a six-year follow-up period⁷.

Nutritional guidance letters have been developed by the Dutch Nutrition Center and are an explanation of the diagnosis, relevant investigations, and pharmacologic treatment, given in comprehensible language. Australian general practice guidelines encourage the use of nutrition leaflets as they provide a simple, time-saving method to provide information to patients⁸. A New Zealand survey of GPs found pamphlets and information kits to be the two most preferred options for relaying nutrition information to patients.

In a study conducted in Spain on physical activity promotion by general practitioners indicates that general practitioners were effective at increasing the level of physical activity among their inactive patients during the initial six months of an intervention but the effect leveled off at 12 and 24 months⁹.

Despite the fact that several studies demonstrate the delivery of preventive services and its contribution to overall health, the portion of physician visits allocated to prevention is very short¹⁰.

Many theories have attempted to explain why physicians do not offer preventive services to their patients, and this range from lack of motivation on the part of users and the lack of time and reimbursement appear to be the main obstacles linked to physicians^{11,12,13}. The reimbursement must be addressed if physicians are expected to provide this service¹⁴. In addition, there is the lack of training, especially in nutrition and in counseling techniques¹⁵.

As a further consideration, we should examine the effectiveness of nutrition counseling. The literature shows that medium-to-high intensity nutrition counseling of unselected patients by primary care providers appears to produce medium or large changes in dietary behavior¹⁶. A high-intensity (more than 360 minutes/year) or medium-intensity (more than 30 minutes/year) dietary counseling¹⁷ require resources that may not be available in most primary care settings. In the present study, by involving nurse practitioners we intend to emphasize on health promotion and

⁵ Prevention for a healthier America: investments in disease prevention yield significant savings, stronger communities [Internet]. Washington, D.C.: Trust for America's Health; 2008. Available at: [http:// healthyamericans.org/reports/prevention08/](http://healthyamericans.org/reports/prevention08/).

⁶ Artinian NT, Fletcher GF, Mozaffarian D, Kris-Etherton P, Van Horn L, Lichtenstein AH, Kumanyika S, Kraus WE, Fleg JL, Burke LE. Interventions to Promote Physical Activity and Dietary Lifestyle Changes for Cardiovascular Risk Factor Reduction in Adults: A Scientific Statement from the American Heart Association. *Circulation*. 2010;122:406–441. doi: 10.1161/CIR.0b013e3181e8edf1.

⁷ Rasmussen SR, Thomsen JL, Kilsmark J, Hvenegaard A, Engberg M, Lauritzen T, Sogaard J. Preventive health screenings and health consultations in primary care increase life expectancy without increasing costs. *Scandinavian Journal of Public Health*. 2007;35:365-372. doi: 10.1080/14034940701219642.

⁸ Nickolas L, PonD, Roberts D. The effectiveness of nutrition counselling by Australian General Practitioners. *European Journal of Clinical Nutrition*. 2005;59(1):140-146. doi:10.1038/sj.ejcn.1602187.

⁹ Grandes G, Sanchez A, Montoya I, Sanchez-Pinilla R, Torcal J. Two-year longitudinal analysis of a cluster randomized trial of physical activity promotion by general practitioners. *PLoS One*. 2011; 6(3).doi: 10.1371/journal.pone.0018363.

¹⁰ Chen LM, Farwell WR, Jha AK. Primary care visit duration and quality: does good care take longer? *Arch Intern Med*. 2009;169(20): 1866–1872.

¹¹ Kottke TE, Brekke ML, Solberg LI. Making time for preventive services. *Mayo Clinic Proceedings*. 1993;68(8):785-91.

¹² Walter U, Flick U, Neuber A, Fischer C, Hussein R, Schwartz F. Putting prevention into practice: qualitative study of factors that inhibit and promote preventive care by general practitioners, with a focus on elderly patients. *BMC Family Practice*. 2010;11:68.doi: 10.1186/1471-2296-11-68.

¹³ Wynn K, Trudeau JD, Taunton K, Gowans M, Scott I. Nutrition in primary care: Current practices, attitudes, and barriers. *Canadian Family Physician*. 2010;56(3):109-116.

¹⁴ Nicholas L, Roberts D, Pond D. The role of the general practitioner and the dietitian in patient nutrition management. *Asia Pacific Journal of Clinical Nutrition*. 2003;12(1):3-8.

¹⁵ Hudon E, Beaulieu MD, Roberge D. Integration of the recommendations of the Canadian Task Force on Preventive Health Care: Obstacles perceived by a group of family physicians. *Family Practice*. 2004;21(1):11-17. doi: 10.1093/fampra/cmh104.

¹⁶ Pignone M, Ammerman A, Fernandez L et al. Counseling to promote a healthy diet in adults: A summary of the evidence for the U.S. Preventive Services Task Force. *American Journal of Preventive Medicine*. 2003;24(1):75-92. doi:10.1016/S0749-3797(02)00580-9.

¹⁷ U.S. Preventive Services Task Force. Behavioral Counseling in Primary Care to Promote a Healthy Diet in Adults at Increased Risk for Cardiovascular Disease, Topic Page. 2011. Available at: <http://www.uspreventiveservicestaskforce.org/uspstf/uspstdiet.htm>.

disease prevention. Therefore, nurses will assess the nutritional status of patients and will provide them nutritional counseling. The nurses must be educated, certified and licensed to assess the nutritional status of patients and to provide them nutritional counseling¹⁸.

On the basis of the studies reviewed in this article, we believe that health for the Greek population will improve through financial incentives given to GPs, in order to promote higher screening coverage. Many countries emphasize on promotion of health screening tests.

Incentive payments are used for preventive health activities in primary care in Australia and the UK including asthma management, cervical cancer screening and cardiovascular risk assessment, but it consists a significant cost to the Australian government¹⁹. Greene examined the impact of a subset of Pay for Performance incentives on Australian GPs²⁰. In particular, this study focused on the payment of AUS\$35 for screening women for cervical cancer who had not been screened in the last four years and the result was a five percent increase in the number of screens.

Hurley et al. study illustrated that the provision of incentives to Ontario primary care physicians for colorectal cancer screening, among 11 preventive services, increased the provision of this particular preventive service (56.7%)²¹. The service enhancement payments for preventive care include two components, one that rewards Primary Care Practices for contacting patients to schedule an appointment to receive a targeted preventive service and a second that rewards Primary Care Practices for achieving high rates of coverage for the preventive service in the target populations.

In France, the nationwide Pay for Performance scheme on cervical cancer screening for general practitioners implemented in 2012, had a modest positive effect on recommended screening participation²². The payment bonuses are made if a certain level of screening participation is attained.

Despite the pay for performance, screening rates have been declined in countries such as Luxembourg and the United States²³. Population-based screening programs have been implemented in most countries of the European Union (Greece is not included on the list)²⁴. In these countries, written invitation letters are sent to all eligible men and women to participate in the screening program through screening registries. However, there is little evidence that financial incentives for preventive care are effective²⁵. Dahrouge et al. examined the impact of remuneration and organizational factors on completing preventive activities in primary care settings and found that no funding model was clearly associated with superior preventive care²⁶.

Method

To calculate the total number of personnel required to provide nutrition counseling, we

¹⁸ Kris-Etherton PM, Akabas SR, Bales CW, et al. The need to advance nutrition education in the training of health care professionals and recommended research to evaluate implementation and effectiveness. *The American Journal of Clinical Nutrition*. 2014;99(5):1153S-1166S. doi:10.3945/ajcn.113.073502.

¹⁹ Hocking J, Temple-Smith M, et al. Can preventive care activities in general practice be sustained when financial incentives and external audit plus feedback are removed? Accept-able: a cluster randomised controlled trial protocol. *Implementation Science*. 2016;11:122. doi:10.1186/s13012-016-0489-0.

²⁰ Greene J. An Examination of Pay-for-Performance in General Practice in Australia. *Health Services Research*. 2013;48(4):1415-1432. doi:10.1111/1475-6773.12033.

²¹ Hurley J, Decicca P, Li J, Buckley G. The response of Ontario primary care physicians to pay-for-performance incentives. Centre for Health Economics and Policy Analysis. Ontario; 2011. Available at: <https://macsphere.mcmaster.ca/bitstream/11375/16898/1/229350.pdf>.

²² Constantinou P, Sicsic J, Franc C. Effect of pay-for-performance on cervical cancer screening participation in France. *International Journal of Health Economics and Management*. 2016. doi: 10.1007/s10754-016-9207-3.

²³ OECD. Cancer Care: Assuring Quality to Improve Survival. *OECD Health Policy Studies*, OECD Publishing. doi:10.1787/9789264181052.

²⁴ International Agency for Research on Cancer. Cancer Screening in the European Union: Report on the implementation of the Council Recommendation on cancer screening. European Commission;2017. Available at: https://ec.europa.eu/health/sites/health/files/major_chronic_diseases/docs/2017_cancerscreening_2ndreportimplementation_en.pdf.

²⁵ Kane RL, Johnson PE, Town RJ, et al. Economic Incentives for Preventive Care: Summary. 2004 Aug. In: *AHRQ Evidence Report Summaries*. Rockville (MD): Agency for Healthcare Research and Quality (US); 1998-2005. 101. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK11845>.

²⁶ Dahrouge S, Hogg WE, Russell G, Tuna M, Geneau R, Muldoon LK, Kristjansson E, Fletcher J. Impact of remuneration and organizational factors on completing preventive manoeuvres in primary care practices. *Can Med Assoc J*. 2012;184:2.

multiply the number of visits per hour for medical counseling, the total number of annual workload hours and we divide it by the number of eligible patients. In general, the total number of personnel required for the total population for 1 year can be expressed:

$$\sum_{s=1,2} (v \cdot w/n)$$

where $s=1$ for tobacco cessation counseling and $s=2$ for nutrition counseling and where v is the number of visits per provider per hour, w is the total number of annual workload hours and n is the number of individuals who are due for this service.

We annualize the frequency of performing preventive screening test, based on the official recommendations by the American Cancer Society²⁷. Papanicolaou tests are recommended every 1 to 3 years, so the annual frequency of service for the women between the ages 21 and 65 is 0.33. Likewise, mammography in women aged 40 and older is recommended almost every year. Additionally, the frequency of performing for men and women aged 50 and older is approximately every 5 years, so the annual frequency of service is 0.20. We take account of the age structure of the population for the year 2018, using survey data collected by the World Bank²⁸. In general, the total number of referrals for screening required for the total population for 1 year can be expressed:

$$\sum 0.33w_{21-39} + w_{40+} + 0.20m_{50+}$$

where w_{21-39} is for women in the age range of 21 to 39, w_{40+} is for women aged 40 and older, and m_{50+} is for men aged 50 and older.

Results

This study is based on a hypothetical scenario, where are exclusive nurses for providing nutrition counseling services to the majority population. The purpose of the scenario study is to develop models which could help guide the debate on the future organization of primary care²⁹.

A dietary intervention at work place is designed to take at most 8 to 10 minutes, but it can be carried out in less time³⁰. We could explore the option of other forms of communication such as email and postal services, which are not time and cost intensive³¹.

We examine the availability of provider and we assume that the annual workload of a nurse is 1645 hours (47 weeks x 5 days/week x 7 hours/day). Each nurse must have four holiday weeks per year and one week for training. All citizens could fill out and submit a Nutrition Questionnaire, therefore time will be saved and the nurse will need approximately 5 minutes to assess the nutrient requirements and nutritional status of an individual. Subsequently, one exclusive nurse could provide a plan of care, designed to help almost 20,000 individuals either maintain the assessed status or attain a healthier status.

The frequency of performing preventive screening tests is based on the official recommendations by the American Cancer Society³². Therefore for the forecasted population of

²⁷ American Cancer Society Guidelines for the Early Detection of Cancer. Available at: <https://www.cancer.org/healthy/find-cancer-early/cancer-screening-guidelines/american-cancer-society-guidelines-for-the-early-detection-of-cancer.html>.

²⁸ World Bank. Population Estimates and Projections. World Bank Group;2016. Available at: <http://databank.worldbank.org/data/reports.aspx?source=Health%20Nutrition%20and%20Population%20Statistics:%20Population%20estimates%20and%20projections>.

²⁹ Steering Committee on Future Health Scenarios: Primary care and home care scenarios 1990-2005. Dordrecht: Kluwer Publishers, 1993.

³⁰ Ockene IS, Hebert JR, Ockene JK, Saperia GM, Stanek E, Nicolosi R, Merriam PA, Hurley TG. Effect of Physician-Delivered Nutrition Counseling Training and an Office-Support Program on Saturated Fat Intake, Weight, and Serum Lipid Measurements in a Hyperlipidemic Population Worcester Area Trial for Counseling in Hyperlipidemia (WATCH). Arch Intern Med. 1999;159(7):725-731. doi:10.1001/archinte.159.7.725.

³¹ Markert J, Herget S, Marschke S, Lehnert T, Falkenberg C, Blüher S. Case management via telephone counseling and SMS for weight maintenance in adolescent obesity: study concept of the TeAM program. BMC obesity. 2014;1:8. doi:10.1186/2052-9538-1-8.

³² American Cancer Society Guidelines for the Early Detection of Cancer. Available at: <https://www.cancer.org/healthy/find-cancer-early/cancer-screening-guidelines/american-cancer-society-guidelines-for-the-early-detection-of-cancer.html>.

Greece in 2018 (10.737.000 residents), screening tests should be performed to at least 4.074.810 individuals, 37.95 % of the total population.

Discussion

Yarnall et al. estimated that a primary care physician would need to spend 7.4 hours per working day to deliver recommended preventive services to a panel of patients, which leads to frustrated clinicians and dissatisfied patients³³. Therefore, we must have broader policy about setting priorities in prevention.

It is reported that physicians deliver preventive care during clinical visits, a fact that produces disappointing results because patients are reluctant to commit to preventive services when they are ill and time constraints prevent adequate discussion of preventive care³⁴. Therefore, in order to facilitate an effective prevention program in primary healthcare, interventions need to be on an annual visit dedicated to the task of delivering preventive care by exclusive personnel. Furthermore, many physicians reported that 50% of their time do not perform functions that require a medical degree³⁵. Therefore, GPs should concentrate their time on clinical diagnosis of patients and on care coordination of patients with chronic conditions.

A comparison of type provider in primary care showed that the cost per consultation with a nurse was lower than with a GP^{36,37}. By delegating certain tasks from more expensive doctors to less expensive nurses, it may be possible to deliver the same (or more) services at a lower cost. There are studies, which have shown that appropriately trained nurses can produce a high quality care as primary care doctors and achieve as good health outcomes for patients^{38,39}. Numerous studies show that the intervention delivered by nurse facilitators was effective in producing significant improvements in preventive and chronic care^{40,41,42}. However in the past, the Oxcheck study reported that general health checks by nurses are ineffective in helping smokers to stop smoking, but they help patients to modify their diet and total cholesterol concentration⁴³. In addition, another study suggest to reinvest in nurse-led health promotion and disease prevention interventions in home care⁴⁴.

While nurses greatly outnumber physicians in most OECD countries, in Greece there is a doctor-nurse imbalance. In 2013, the nurse-to-doctor ratio among OECD countries is the lowest in

³³ Yarnall KSH, Pollak KI, Østbye T, Krause KM, Michener JL. Primary Care: Is There Enough Time for Prevention? *American Journal of Public Health*. 2003;93(4):635-641.

³⁴ Garrison GM, Traverso CR, Fish RG. A Case Study of Visit-Driven Preventive Care Screening Using Clinical Decision Support: The Need to Redesign Preventive Care Screening. *Health services research and managerial epidemiology*. 2016;3:2333392816650344. doi:10.1177/2333392816650344.

³⁵ Margolius D, Bodenheimer T. Transforming Primary Care: From Past Practice to the Practice of the Future. *Health Affairs*. 2010;29(5):779-784. doi:10.1377/hlthaff.2010.0045.

³⁶ Van Der Biezen M, Adang E, Van Der Burgt R, Wensing M, Laurant M. The impact of substituting general practitioners with nurse practitioners on resource use, production and health-care costs during out-of-hours: a quasi-experimental study. *BMC Family Practice*. 2016;17(1):132. doi:10.1186/s12875-016-0528-6.

³⁷ Dierick-van Daele AT, Steuten LM, Metsemakers JF, Derckx EW, Spreeunwenberg C, Vrijhoef HJ. Economic evaluation of nurse practitioners versus GPs in treating common conditions. *British Journal for General Practice*. 2010;60(570):28-35. doi:10.3399/bjgp10X482077.

³⁸ Laurant M, Reeves D, Hermens R, Braspenning J, Grol R, Sibbald B. Substitution of doctors by nurses in primary care. *Cochrane Database Syst Rev*. 2005;14:CD001271. doi:10.1002/14651858.CD001271.pub2.

³⁹ Horrocks S, Anderson E, Salisbury C. Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors. *BMJ*. 2002;14:819–823. doi:10.1136/bmj.324.7341.819.

⁴⁰ Hogg W, Lemelin J, Moroz I, Soto E, Russell G. Improving prevention in primary care: Evaluating the sustainability of outreach facilitation. *Canadian Family Physician*. 2008;54(5):712-720.

⁴¹ Bodenheimer T, MacGregor K, Stothart N. Nurses as leaders in chronic care: Their role is pivotal in improving care for chronic diseases. *British Medical Journal*. 2005;330(7492):612-613.

⁴² Frich LM. Nursing interventions for patients with chronic conditions. *Journal of Advanced Nursing*. 2003;44(2):137-53.

⁴³ Imperial Cancer Research Fund Oxcheck Study Group. Effectiveness of health checks conducted by nurses in primary care: results of the OXCHECK study after one year. OXCHECK Study Group. *British Medical Journal*. 1994;308(6924):308-312.

⁴⁴ Markle-Reid M, Browne G, Gafni A. Nurse-led health promotion interventions improve quality of life in frail older home care clients: Lessons learned from three randomized trials in Ontario. *Journal of Evaluation in Clinical Practice*. 2011; 19(1). doi:10.1111/j.1365-2753.2011.01782.

Greece (with only about half a nurse per doctor)⁴⁵. In Greece, general practitioners do not have nursing support. According to the latest available information, the 2009 nursing numbers per 1000 population is 3.3 and is ranked 32 among 34 OECD countries⁴⁶.

It is noted that the adult obesity rates in Greece are around the OECD average. The percentage of the population aged 15 and over, who defined as overweight or obese is 56.3% of the total population for the year 2014⁴⁷. Obesity's growing prevalence foreshadows increases in the occurrence of health problems (such as diabetes and cardiovascular diseases), and higher health care costs in the future. Apparently, nutrition counseling should be among the highest priorities in prevention.

The findings of a systematic review reports that the nutritional screening interventions could improve clinical outcomes, but the evidence was limited⁴⁸. There is no evidence that delivery of nutrition counseling by a nurse, following brief training, affects outcomes differently compared to delivery by a dietitian⁴⁹.

As outlined in a previous review, there are more than seventy nutritional screening and assessment tools available for use by nurses to enable them to identify adults who are malnourished or at risk of malnutrition⁵⁰. It is typically used a questionnaire-type format, which allow the information obtained to be recorded promptly. Each question examines known risk factor for malnutrition, and the score may lead to identification of an appropriate course of action.

In the new Greek healthcare system, all citizens are required to register with a particular Family Physician. The registration procedure could be accomplished by completing and submitting a Nutrition Questionnaire. It should identify the patient's dietary habits and attitudes in order to provide them the appropriate nutritional counseling. Dietary assessment enables to identify both poor and desirable food habits, and thus is fundamental in determining possible inadequate intakes of specific nutrients⁵¹. Additionally, the assessment of the weight status through the Body Mass Index(BMI) for age and gender is recognized as a preferred measure for detecting overweight in children and adolescents⁵². Studies have shown that by implementing routine comprehensive health risk assessments in primary care, it can be easily identified a high number of behavioral and psychosocial health risks^{53,54}.

Except personal contacts, other forms of communication should be explored such as e-mail contact. There is as limited data are available regarding the effect of e-mail approach for weight maintenance both in adults and in adolescents⁵⁵. A recent study has showed that television-based health promotion in a General Practice waiting room may be an effective medium to improve

⁴⁵ OECD. Ratio of nurses to physicians: 2013 or latest available year, in OECD Factbook 2015-2016. OECD Publishing. Paris;2016. doi: 10.1787/factbook-2015-graph199-en.

⁴⁶ OECD. How does Greece compare? OECD Health Statistics 2014. Available at: <http://www.oecd.org/els/health-systems/Briefing-Note-GREECE-2014.pdf>.

⁴⁷ OECD. Overweight or obese population (indicator). OECD Publishing;2017. doi: 10.1787/86583552-en.

⁴⁸ Elia M, Zellipour L, Stratton RJ. To screen or not to screen for adult malnutrition?. *Clinical Nutrition*. 2005;24(6):867-884. doi:10.1016/j.clnu.2005.03.004.

⁴⁹ Sargent GM, Forrest LE, Parker RM. Nurse delivered lifestyle interventions in primary health care to treat chronic disease risk factors associated with obesity: a systematic review. *Obesity Reviews*. 2012;13(12):1148-1171. doi:10.1111/j.1467-789X.2012.01029.x.

⁵⁰ Green S, Watson R. Nutritional screening and assessment tools for older adults: Literature review. *Journal of Advanced Nursing*. 2016;54(4):477-490. doi: 10.1111/j.1365-2648.2006.03841.x.

⁵¹ Institute of Medicine (US) Committee on Nutritional Status During Pregnancy and Lactation. *Nutrition During Pregnancy: Part I Weight Gain: Part II Nutrient Supplements*. Washington (DC): National Academies Press (US); 1990. 12, Assessment of Nutrient Needs. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK235239/>.

⁵² Barton M. Screening for obesity in children and adolescents: US preventive services task force recommendation statement. *Pediatrics*. 2010;125(2):361-367. doi: 10.1542/peds.2009-2037.

⁵³ Phillips SM, Glasgow RE, Bello G, et al. Frequency and Prioritization of Patient Health Risks from a Structured Health Risk Assessment. *Annals of Family Medicine*. 2014;12(6):505-513. doi:10.1370/afm.1717.

⁵⁴ Glasgow RE, Kaplan RM, Ockene JK, Fisher EB, Emmons KM. Patient-reported measures of psychosocial issues and health behavior should be added to electronic health records. *Health Aff (Millwood)*. 2012;31(3):497-504.

⁵⁵ Markert J, Herget S, Marschke S, Lehnert T, Falkenberg C, Blüher S. Case management via telephone counseling and SMS for weight maintenance in adolescent obesity: study concept of the TeAM program. *BMC obesity*. 2014;1:8. doi:10.1186/2052-9538-1-8.

patient's knowledge in health services⁵⁶. However, Färnkvist et al. concluded that screening provided by nurses with a structured, motivational health dialogue is more effective than screening without this dialogue⁵⁷. By using digital communication such as e-mail contact, there are no idle hours, since there is no cancellation of appointments.

Furthermore, studies indicate that intervention for malnutrition will not take place unless it is considered an integral part of nursing assessment that is required by policy and resourced appropriately⁵⁸. Performance based incentives and bundled payments should be structured to recognize nurses as eligible providers⁵⁹.

Many patients will decline the nutrition counseling, but we must respect the patient's preferences and remember that patient treatment preferences and readiness to change vary with time⁶⁰.

It is widely believed that payment schemes have an effect on physician's professional behavior and especially in terms of the quantity of activity they undertake⁶¹. An adequate financial reimbursement can overcome the barriers to preventive care, but it must be based on things that can be measured. It is much easier to count something that does occur than to estimate the number of events that might have occurred but did not⁶². Additional reimbursement should be provided to GPs for cancer prevention counseling services. For example in the United Kingdom, a bonus payment was applied of £100 per 1000 patients on the practice list was applied if the practice screened 10% of the practice target population⁶³.

The use of financial incentives to reward primary care physicians for improving the quality of primary healthcare services is growing. Studies show that different types of financial incentives show positive but modest effects on quality of care for some primary outcome measures⁶⁴. However, other studies have reported that the pay-for-performance scheme for primary care physicians was associated with little or no improvement in screening rates despite substantial expenditure⁶⁵.

The remuneration of GPs varies substantially across countries. Measured in relation to the average wage in the country, the relative remuneration of GPs is the highest in Iceland, the United States and Germany⁶⁶. On the other hand, in Finland, it is only about twice as high as the average wage. In the Greek health system, the maximum doctor's salary is equal to the average national salary⁶⁷. We need considerable financial incentives, such as pay-for-performance associated with cancer screening rates, in order both increase the income of all General Practitioners in Greece and promote higher screening coverage. The government can orient its incentive policy to determine the

⁵⁶ Jawad M, Ingram S, Choudhury I, Airebamen A, Christodoulou K, Wilson Sharma A. Television-based health promotion in general practice waiting rooms in London: a cross-sectional study evaluating patients' knowledge and intentions to access dental services. *BMC Oral Health*. 2017;17:24. doi:10.1186/s12903-016-0252-6.

⁵⁷ Färnkvist L, Olofsson N, Weinehall L. Did a health dialogue matter? Self-reported cardiovascular disease and diabetes 11 years after health screening. *Scand J Prim Health Care* 2008;26:135–9.

⁵⁸ Greene SM, James EP. Barriers and facilitators to undertaking nutritional screening of patients: a systematic review. *Journal of Human Nutrition and Dietetics*. 2013;26(3):211-21. doi:10.1111/jhn.12011.

⁵⁹ Naylor M, Kurtzman E. The role of Nurse Practitioners in Reinventing Primary Care. *Health Affairs*. 2010;29(5):893-899. doi:10.1377/hlthaff.2010.0440.

⁶⁰ O'Connor P, Sperl-Hillen JA, Margolis K, Kottke T. Strategies to Prioritize Clinical Options in Primary Care. *Annals of Family Medicine*. 2017;15:10-13. doi: 10.1370/afm.2027.

⁶¹ Peckham S, Gousia K. GP Payment schemes review. Policy Research Unit in Commissioning and the Healthcare System. Centre for Health Services Studies, University of Kent; 2014. doi: 10.13140/2.1.4497.4405.

⁶² Kane RL, Johnson PE, Town RJ, et al. Economic Incentives for Preventive Care. *AHRQ Evidence Report Summaries*. Rockville; 2004. Available at: <http://www.ahrq.gov/clinic/epcsums/ecincsum.htm>.

⁶³ Marks L, Cave S, Wallace A, Mason A, Hunter DJ, Mason JM, Peckham S. Incentivizing preventive services in primary care: perspectives on Local Enhanced Services. *J Public Health (Oxf)*. 2011; 33 (4):556-564. doi: 10.1093/pubmed/fdr016.

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⁶⁵ Kiran T, Wilton AS, Moineddin R, Paszat L, Glazier RH. Effect of Payment Incentives on Cancer Screening in Ontario Primary Care. *Annals of Family Medicine*. 2014;12(4):317-323. doi:10.1370/afm.1664.

⁶⁶ Fujisawa R., Lafortune G., (2008), The Remuneration of general practitioners and specialists in 14 OECD countries: what are the factors influencing variations across countries?, Paris, Organization for Economic Co-operation and Development, OECD Health Working Papers, no.41.

⁶⁷ Reginato E, Grosso R. European Hospital Doctor's Salaries. European Federation of Salaried Doctors. Available at: http://www.liganet.hu/news/6205/F11-071_EN_European_Hospital_Doctors_Salaries.pdf.

size of the new payment as a percentage of total revenue of general practitioners.