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Should Patients Have Periodic Health Examinations?

Grand Rounds Discussion From Beth Israel Deaconess Medical Center

Eileen E. Reynolds, MD; James Heffernan, MD, MPH; Ateev Mehrotra, MD, MPH; and Howard Libman, MD

Physicians and patients have come to expect that periodic health examinations (PHEs) are a standard part of comprehensive ongoing medical care. However, considerable research has not demonstrated a substantial benefit of the PHE. Given this lack of benefit and the high total cost of PHE to the health care system, the American Board of Internal Medicine (ABIM) Foundation and the Society of General Internal Medicine (SGIM) have identified "routine health checks in asymptomatic patients" as something of low value that physicians and patients should question, as a part of the Choosing Wisely campaign. Two discussants review the debate about PHE and consider the value of PHE for a healthy 70-year-old woman who appreciates seeing her physician annually.

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Ms. M is a healthy 70-year-old woman who sees her primary care physician (PCP) once a year for a periodic health examination (PHE). She has a history of a mild atypical neuropathy and osteoarthritis, including left hip replacement. She has a strong family history of breast cancer. She works providing health care for the elderly. Her only current medication is exemestane (an aromatase inhibitor used for breast cancer risk reduction). In the past 5 years, she has been seen 6 times in her primary care practice: 5 times for PHEs and once for self-limited abdominal pain. Her physical examination has been unremarkable each year, with stable weight and blood pressure and findings consistent with her osteoarthritis. Table 1 summarizes her care for the past 5 years.

Ms. M has not seen any other providers regularly, although she now plans regular follow-up in the breast cancer genetics clinic.

Ms. M's Story

My last physical was a couple weeks ago, and I made an appointment to see my doctor next year.

I treasure my relationship with him. I look to him to be watchful of anything I can't see is wrong with me. After I get done with a visit with him and he says I am in great health, then I feel great. I have had some issues. I have a lot of breast cancer in my family, and last year he made a decision, after reading articles, that I needed to see a specialist about some new medication for cancer prevention. And I did, and I am on this new medication. I don't know how many doctors would have been thinking that way. He is very careful in looking at my chart and knowing me, and he knows what is appropriate. I value that a lot about him.

About Beyond the Guidelines

Beyond the Guidelines is an educational feature based on recent guidelines. Each considers a patient who "falls between the cracks" of available evidence and for whom the optimal clinical course is unclear. Presented at Beth Israel Deaconess Medical Center (BIDMC) Grand Rounds, each conference reviews the background evidence and two experts then discuss the patient and field audience questions. Videos of the patient and conference, the slide presentation, and a CME/MOC activity accompany each article. For more information, visit www.annals.org/GrandRounds.

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Table 1. Summary of Ms. M's Primary Care Medical Visits From 2011 to 2015

Year	Examination/Test	Result	Outcome
2011	Pap/HPV	Normal	–
	Pneumococcal polysaccharide vaccine	–	–
	BMD	Osteopenia	–
2012	Symptoms: varicose vein pain	Referred to vascular surgery	Had procedure
	Referred to genetic counseling for breast cancer risk	Gail Model: 8% 5-y risk	Deferred medication; plan annual MRI and mammogram
2013	Atypical skin finding	Referred to dermatology	Cryotherapy for 8 lesions
Interval	Abnormal mammogram and MRI	Biopsy benign	Routine follow-up; all handled by phone
2014	Again discussed breast cancer risk in light of biopsy and re-referred	Gail Model: risk now 10.2%	Started exemestane, 25 mg daily; annual follow-up planned
	Hepatitis C and lipids checked	Normal/negative	–
2015	Repeated BMD	Osteopenia stable	–
	Pneumococcal conjugate vaccine	–	–
	Fall, cognition, and depression screenings	Negative	–

BMD = bone mineral density; HPV = human papillomavirus; MRI = magnetic resonance imaging; Pap = Papanicolaou.

Insurance companies should absolutely include the annual physical. The annual physical, I just think, is imperative. I don't know if my heart rate is wrong or if my blood is off and I can't do these tests at home, and they can be indicative of something very serious.

My husband went through a stem cell transplant, and he does not even have cancer on a molecular level. He is 100% cured; his doctors are over the moon over him. My husband is always a little nervous when he gets sick, so he is always going to see his PCP [primary care provider], but then every year he does have an annual physical. He is going in for specific things, and remember those are quick visits, those are not long visits and no one is writing up tests or checking on his blood levels or urine or what. So I think, for him, he gets that once a year overview of all the systems.

I think your state of mind is really important in life. I go out of my way, coming in here to my physical; it can be anywhere from 3 to 5 hours total driving, depending on traffic. When I leave and I think everything is fine, that makes me feel great. It's for my mental health. I think that's important.

See the **patient interview video** (available at www.annals.org) to view the patient telling her story.

CONTEXT, EVIDENCE, AND GUIDELINES

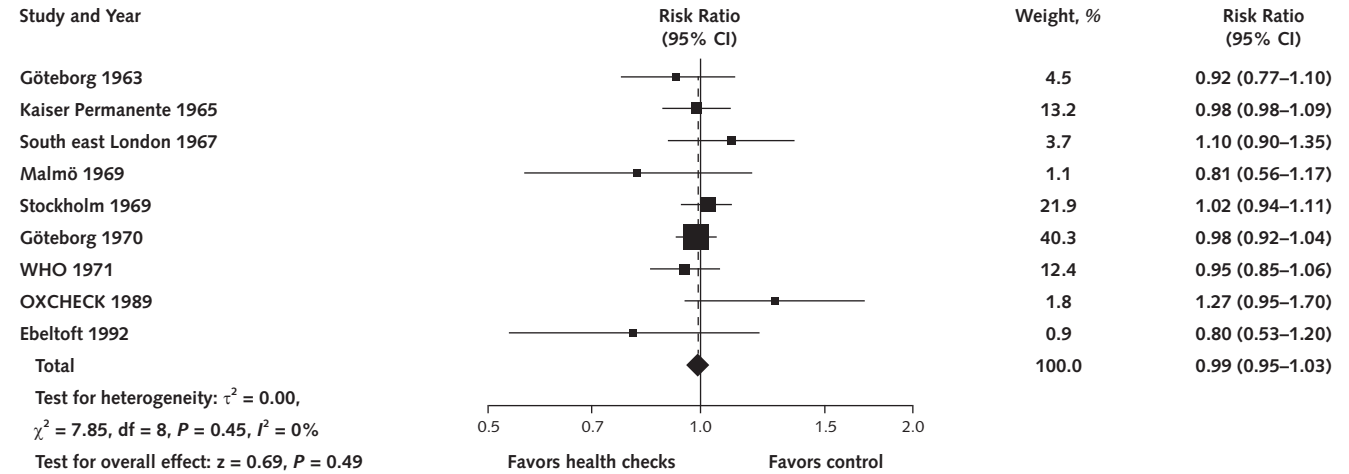
Periodic health examinations (PHE) are routine visits with physicians to discover asymptomatic illness; there are many terms for these visits, such as annual physical, general health check-up, routine physical, and health check. Patients value having regular visits with physicians; in the United States, the PHE represents one of the most common reasons that patients visit physicians (1). Most private insurance plans cover "annual check-ups," and as a preventive service under the Affordable Care Act, patients do not have a copayment for such visits. Insurance plans often cover a comprehensive history, systems review, health and lifestyle review, and laboratory testing based on age and risk profile. In January 2011, Medicare began to cover an annual "wellness" visit, which includes a PHE plus screening for vision, fall risk, depression, and cognitive decline.

However, the cost to the health care system of the PHE is high and the benefits have not been convincingly shown. Studying the value of what has become a standard health care offering has been challenging. Definitions of the PHE vary from study to study; study sizes have often been small; and study design has often been observational and bias is common. Many of the primary studies were done decades ago when counseling and screening recommendations were different. Two relatively recent reviews have pulled together the often heterogeneous attempts to look at the potential benefit of the PHE.

The first is a systematic review done for the Evidence-Based Practice Center Program of the Agency for Healthcare Research and Quality (2). The authors reviewed 7039 articles for eligibility and ultimately included 50 publications based on 33 studies: 10 randomized, controlled trials and 23 observational studies. They noted that the literature is complex and heterogeneous and that "overall the strength and consistency of the evidence varied widely among outcomes, as did the magnitude and direction of the results." The authors concluded that the PHE had a beneficial effect on receipt of cervical cancer screening, lipid profile determination, and fecal occult blood testing, as well as reducing patient worry, but they could not find effects on costs, proximal or distal clinical outcomes, or mortality. The authors concluded that their findings "provide health care providers and payers with justification for the continued implementation of the PHE."

A 2012 Cochrane systematic review and meta-analysis (3) sought to more narrowly evaluate the benefit of the PHE by looking at morbidity and mortality reduction in randomized trials of PHE. Review authors identified 14 trials that met criteria and had outcome data published, with a total of 182 880 participants (although they excluded studies of geriatric patients). Using primary end points of total mortality and disease-specific mortality (from cancer and cardiac conditions) and secondary end points of morbidity (myocardial infarction, cancer diagnoses), costs, and use (for example, hospital admission, disability, referral to specialists,

Figure. Forest plot showing the effect of general health checks on total mortality.



Reproduced from Krogsbøll LT, Jørgensen KJ, Larsen CG, Gøtzsche PC. General health checks in adults for reducing morbidity and mortality from disease: Cochrane systematic review and meta-analysis. BMJ. 2012;345:e7191.

additional diagnostic procedures, absence from work), investigators found no benefit to PHE in any outcome of interest (Figure). The main result was based on 9 trials of nearly 156 000 participants and showed no significant effect of the PHE on all-cause mortality (risk ratio [RR], 0.99 [95% CI, 0.95 to 1.03]). There was no heterogeneity in mortality results across the 9 trials, and subgroup and sensitivity analyses did not alter the results. Important limitations of the Cochrane analysis are the age of the studies (10 of 14 studies were published before 1973), that outcomes other than mortality were often not reported in the trials, and concern about potential bias in the study populations.

In September 2013, based primarily on those 2 reviews suggesting little or no benefit to PHE and increasing concerns about health care costs and access, the Society of General Internal Medicine (SGIM) and the American Board of Internal Medicine (ABIM) Foundation jointly recommended to physicians as part of the ABIM's Choosing Wisely campaign that they not perform routine general health checks for asymptomatic adult patients (4). The campaign aims to raise awareness among providers and patients about the high cost of low-benefit tests and interventions. This 2013 recommendation aligned with older recommendations from the U.S. Preventive Services Task Force (from 1989) (5) and the Canadian Task Force on the Periodic Health Examination (from 1979) (6) suggesting that PHEs be replaced by more targeted approaches to screening for specific diseases. In the discussion that follows, we highlight issues surrounding the Choosing Wisely recommendation on no longer performing PHEs as applied to an actual patient from a primary care practice.

CLINICAL QUESTIONS

To structure a debate between our 2 discussants, we mutually agreed on the following key questions to consider when applying this guideline to clinical practice and to Ms. M in particular:

Question 1: What are the potential benefits, harms, and costs of the periodic health examination?

Question 2: Which patients should have a periodic health examination?

Question 3: What do you recommend for Ms. M?

DISCUSSION

A Perspective in Agreement With the Guideline/Against the Periodic Health Examination (Dr. Ateev Mehrotra)

There is great variability in what a PHE encompasses (1), which makes it difficult to discuss the PHE's potential benefits and costs. I define the PHE as a specialized visit on some periodic basis for *all adults* with the purpose of identifying asymptomatic illness or unrecognized risk factors. This definition builds on the PHE's historical foundation as a multiphasic screening examination that includes a complete history and physical examination, as well as routine testing (for example, electrocardiography, complete blood count) (1, 7). This definition does not include visits by patients for coordination of chronic illness, to discuss the merits of a specific preventive service, or to address lifestyle modifications (such as weight loss or smoking cessation). These are all helpful aspects of primary care and can and should be provided even if we eliminate the PHE. The key distinction between these visits and the PHE is the nontargeted nature of the PHE, which focuses on all adults regardless of symptoms or risk.

Question 1: What are the potential benefits, harms, and costs of the periodic health examination?

As Ms. M describes, most of the American public (and their physicians) view the PHE as a key method for

remaining healthy (8, 9). The logic of "making sure I am OK" clearly has intuitive appeal. However, we must remain skeptical given that, historically, medical practice has included interventions, such as hormone replacement therapy, where evidence ultimately undermined a long-standing practice despite its intuitive appeal.

All interventions in health care have harm and cost. As clinicians, we must assess whether harms and costs are outweighed by benefits as measured by improvements in morbidity and mortality. Here the evidence is clear. Both of the systematic reviews discussed above found that PHEs do not improve morbidity and mortality. The studies analyzed cover a variety of screening interventions, settings (including primary care), and patient populations (including several trials focused on those in the Medicare population).

The debate then is about other surrogate outcomes, such as improving preventive care and strengthening the patient–PCP relationship. Only recently have PCPs identified these as key goals of the physical; the annual physical's purpose has historically been a mechanism to identify asymptomatic illness (7). Boulware and colleagues' review (2) noted that the PHE may increase rates of preventive care. However, the PHE is an inefficient mechanism to improve delivery of preventive care as evidenced by continuing low rates of many preventive services in the United States (10, 11). Instead of passively waiting for people to come for a PHE, primary care practices should proactively identify gaps in care and directly contact patients to deliver these services. Why is a PHE necessary for Ms. M to obtain a hepatitis C test or lipid panel?

One argument in favor of the PHE relates to the patient–PCP relationship, the bedrock of primary care. The underlying assumption is that PHEs are critical to establish such relationships. This assumption has never been tested, and it is important to question it. In one study, three quarters of all adults who had a PHE had already been seen in their primary care practice in the prior 12 months (1). This is particularly true of older adults. Ms. M is relatively unique in that she reports only 1 visit per year. In 2010, the average adult older than 65 years had 6.5 visits per year with a physician (12). In this context, whether an additional visit for a PHE is necessary for relationship building is unclear.

Often lost in the conversation about the PHE are its potential harms, including the risk for overdiagnosis through overtesting leading to false-positive results that require further interventions, which may themselves confer harm. More easily quantified are the financial costs of the PHE and related testing. The PHE is relatively low in cost on a per-visit basis, but because it is so common, cumulative costs are approximately $10 billion annually. If the entire adult population had a PHE each year, the costs would be 3-fold higher or approximately $30 billion annually. There are also opportunity costs. Ms. M describes that her annual PHE takes 3 to 5 hours of her time. Given the typical travel and wait time associated with a physician visit, the PHE would bring an additional $9.8 billion in opportunity costs if all adults had a yearly PHE (13).

Just as important is the effect of PHEs on PCP time. Other appointments may be displaced by PHEs, and patients who are ill may not receive timely care. Instead of an appointment with Ms. M, her PCP's wonderful bedside manner and diagnostic acumen could have been focused on someone who was ill or had an untreated chronic illness. Even in Massachusetts, with one of the highest rate of PCPs per capita (14), many patients cannot receive a timely new-patient appointment (15).

Given the limited benefits of PHE and its clear harms and costs, I believe the PHE has no net benefit. Even if the PHE as currently practiced is sufficiently different from the PHE assessed in prior studies or has a different focus, then this is an argument for a new randomized trial, not for the current practice of encouraging PHEs for all 245 million adults in the United States.

Question 2: Which patients should have a periodic health examination?

For the minority of patients who have not been seen in the practice for several years or are new to the practice, a visit is probably justified, but at a decreased interval—perhaps every 3 years. The goal of such a visit would be on relationship building and not nonspecific screening through a physical examination or routine testing. Given the lack of data, I again emphasize the need for new trials to ensure such an intervention is helpful.

Question 3: What do you recommend for Ms. M?

I recommend that Ms. M visit her doctor if she feels ill or has any medical concerns. If she has no visits to the practice for 2 to 3 years, she should then come for a PHE.

Primary care physician time is a valuable national resource. We should be devoting less of that time to people who are asymptomatic in the vain hope of early identification of illness and focus more of that time on patients who are actually ill and will benefit from that care.

A Perspective Against the Guideline/For the Periodic Health Examination (Dr. James Heffernan)

In 1963, sociologist William Bruce Cameron wrote "not everything that can be counted counts, and not everything that counts can be counted" (16).

This observation is particularly apt for the Choosing Wisely recommendation: "Don't perform routine general health checks for asymptomatic adults."

So what's wrong with the evidence, especially the Cochrane review? (3) The "health checks" included have nothing in common with primary care as we currently understand and practice it. The health screenings were performed without connection to the patients' PCPs and occurred through usual care sites for only 15% of total patients studied. The number of health checks per patient varied from 1 to 4, with half of studies limited to 1 check over a median follow-up of 9

Table 2. Valued Components of the Periodic Health Examination

Continuity relationship
Evidence-based screening/counseling
Identification of new clinical issues
Care coordination
Education around emerging health information
Opportunity to focus attention on family and social issues and goals of care
Provide a haven for patients to discuss sensitive issues; embarrassing concerns; and, most important, matters of safety

years. Most studies were initiated in the 1960s and 1970s, and none later than the 1990s.

Primary care practice has shifted enormously in the past decade with the embrace of the patient-centered medical home (PCMH); none of the studies included such care models. Many of the "screening tests" included have long been known to be ineffective: spirometry, chest radiography, urine analyses, electrocardiography, and various blood tests. Lifestyle interventions were included in only half of studies. There was considerable loss to follow-up.

What was "counted" here is largely irrelevant in the context of current primary care practice. In their systematic review, Boulware and colleagues actually concluded that "evidence of benefits in this study *justifies implementation* of the PHE in clinical practice" [emphasis added] (2).

Question 1: What are the potential benefits, harms, and costs of the periodic health examination?

So what does count and what are the potential benefits of the PHE? Valued components of the PHE are listed in Table 2. The studies cited in support of the Choosing Wisely recommendation captured few, if any, of these elements.

A core tenet of primary care is the creation and nurturing of continuous care relationships between patients and PCPs. Where better might one establish this relationship than through regularly scheduled visits? As with Ms. M's relationship with her PCP, this is an iterative and cumulative process, a critical point missed in the Choosing Wisely admonition against PHEs.

Ms. M has received outstanding care, adding age-appropriate preventive measures over time—pneumococcal conjugate vaccination and referral for consideration of pharmacologic breast cancer risk reduction, both based on evolving evidence and recent recommendations. She has had referrals for actinic skin lesions and varicose veins. Equally important, she has developed an abiding and trusting relationship with her PCP, which is of great value now and an asset for major health issues in the future.

A rising tide of evidence supports the value of interpersonal continuity. Systematic reviews and analyses of large databases have demonstrated significant and important improvements in outcomes and costs of care, decreases in preventable admissions, and decreases in potentially overused procedures all associated with modest increases in indices of continuity (17–19). Higher levels of continuity are associated with lower odds of inpatient hospitalization for congestive heart failure, chronic obstructive pulmonary disease, and diabetes; lower odds of emergency department visits for these 3 conditions; and lower odds of complications among Medicare beneficiaries, as well as lower costs in all of these domains (20) (Table 3).

Continuity and the PHE are not synonymous, but the PHE remains the anchor of the continuity relationship, and studies of the value of continuity are far better evidence of the PHE's worth than are the outdated and off-point reviews cited by SGIM. Continuity matters more than what was assessed in generating the Choosing Wisely recommendation. Also, and of great importance, with 46 U.S. Preventive Services Task Force grade A and B recommended interventions for adults, there is no better venue for review, implementation, and counseling than the PHE (21, 22). Finally, as anyone who provides primary care knows, there is "always something" that arises in a PHE, such as an important

Table 3. ORs and Percentage of Change in Costs With 0.1-Unit Increase in the COC Index*

Variable	OR With 0.1-Unit Increase in COC Index†		
	CHF	COPD	DM
Inpatient hospitalization	0.94	0.95	0.95
ED visits	0.92	0.93	0.94
Complications related to CHF/COPD/DM, comorbidities, and patient safety		0.92–0.96	
	Percentage of Change in Costs With 0.1-Unit Increase in COC Index‡		
Total costs		4.7%–6.3% lower	
Inpatient hospitalization		4.6%–6.1% lower	
ED visits		5.8%–6.2% lower	
Complications related to CHF/COPD/DM, comorbidities, and patient safety		4.1%–9.8% lower	

CHF = congestive heart failure; COC = continuity of care; COPD = chronic obstructive pulmonary disease; DM = diabetes mellitus; ED = emergency department; OR = odds ratio.
* Data from reference 20.
† ORs for incidence, all $P < 0.001$.
‡ Cost reductions, all $P < 0.01$.

Table 4. Elements of a Patient-Centered Medical Home

Team-based care
Proactive population management
Preventive and wellness services for all patients
Chronic disease management
Increased use of technology (directories, dashboards, e-portals, etc.)
Care management of patients at highest risk
Patient engagement
Timely access through aggressive panel/roster/schedule management
Periodic health examination as an ongoing hub of care, oversight, and coordination

point in the history, a patient question, or an unanticipated physical finding.

The PHE is a vital element in the organization of care within a PCMH (Table 4). GroupHealth of Seattle, among the most successful PCMHs nationally, highlights the "well-care visit," a modern PHE, as a cornerstone of the care package offered (23) (Table 5).

The cost of an individual PHE is modest. Concern over total cost arises from the large number of PHEs performed at an estimated annual cost of $10 billion. But where does this fit in the spectrum of overall health care costs? Periodic health examinations account for only 1.7% of the $586.7 billion spent annually on physician and clinical services and only 0.3% of the $2.9 trillion in total U.S. health expenditures (22). Reductions in utilization potentially achievable with modest increases in the continuity of care can result in huge savings, especially by potentially preventing some of the $936 billion annual expenditure for hospital care (17–20, 24). The cost of the PHE is money well spent. Of note, no data support the effectiveness of any other visit type by any other provider group. It is reasonable to question the follow-up interval for any visit type, but singling out the PHE for abandonment sends an incorrect and poorly supported message (22). The argument that PHEs take up visits at the expense of more important activities is poorly supported in the context of evolving practice models with active panel and population management and enhanced access. The second source of cost cited by Dr. Mehrotra is the testing done related to PHEs but, as already noted, there is growing evidence that continuity relationships, and the implicit care management that goes with continuity in current care models, results in reduced use of diagnostic tests and therapeutic procedures with potentially large savings.

Question 2: Which patients should have a periodic health examination?

I believe everyone should have periodic visits with a PCP for age, condition, and risk profile appropriate review; screening; and counseling. The PHE is a multifaceted, high-level care encounter, especially in the context of modern care models, such as the PCMH, where the PHE is a capstone venue for discussion, review, and counseling. The PHE should not include an undirected comprehensive review of systems or physical examination elements for which there is little evidence of benefit.

Question 3: What do you recommend for Ms. M?

This is easy. Ms. M has received outstanding care and has a wonderful partnership with her PCP. Happily, she has no chronic conditions for which she needs to be seen routinely. I would encourage her to continue PHEs on a schedule that works for her and her PCP. As is true with us all, she will have future health issues. But she and her PCP are well-positioned to face these together.

SUMMARY

The Choosing Wisely campaign suggests that PCPs should not perform PHEs for asymptomatic adult patients, based primarily on 2 systematic reviews of older, limited studies and trials and based on concerns about total cost. Neither systematic review concluded that there is a benefit of PHE in morbidity or mortality reduction. Periodic health examinations are estimated to cost $10 billion annually in the United States and would cost much more if all adults participated.

Dr. Mehrotra supports the guideline because of the lack of benefit seen in the studies, because of the high cost, and because PHE visits prevent physicians from using those appointment times to see ill patients; he also notes high cost in patient time traveling to and waiting for a PHE. Dr. Mehrotra believes that primary care practices should reach out to patients for screening tests and preventive interventions, and that patients should be seen regularly only for chronic medical conditions or acute illnesses. For Ms. M, our healthy 70-year-old woman who sees her physician annually, he recommends that she see her PCP only when ill or if she has not had a visit in some years.

Dr. Heffernan disagrees with the guideline. In part, he disagrees because the PHEs and health checks in the trials bear little resemblance to modern-day PHEs, which are a cornerstone of highly functional PCMH practices. He objects to losing the PHE over a poor evidence base, and he notes that $10 billion is only 0.3% of total U.S. health expenditures. He cites recent evidence that continuity of care can improve outcomes, decrease hospitalizations for chronic illnesses, and decrease costs of care (although he acknowledges that PHE and continuity, while related, are not the same). He believes that Ms. M should continue to see her PCP regularly.

Drs. Mehrotra and Heffernan may not be as far apart as they seem, however. Both agree that the quality of the studies is not adequate to fully assess the value and cost of the current-day PHE. Dr. Mehrotra

Table 5. Recommended Interval for Well-Care Visits at GroupHealth*

Age	Interval for Women	Interval for Men
18–21 y	1 y	1 y
22–49 y	4 y	4 y
50–64 y	2 y	2 y
≥65 y	1 y	1 y

* Data from reference 23.

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believes that we should not perform PHE, at least until further study suggests value. He does believe that Ms. M should see her physician at some interval if she has not required a visit for an illness in some time. Dr. Heffernan believes that newer evidence implies value and that we should continue with the PHE in a setting that values continuity. He believes that Ms. M should continue to see her PCP regularly—but that the interval need not be annual and should be determined by Ms. M and her PCP.

A transcript of the audience question-and-answer period is available in the **Appendix** (available at www.annals.org). To view the entire **conference video**, including the question-and-answer session, go to www.annals.org.

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Appendix: Questions and Comments

Dr. Howard Libman: I'll direct the first question to Ateev. Given that patients nowadays feel comfortable asking physicians to do a wide variety of things that we may not think are medically necessary–there was just a circulated e-mail yesterday about what to do about a patient who wants a Lyme serology who is asymptomatic–how would you explain to the patient who wants a periodic health exam (PHE) why you're not doing it?

Dr. Mehrotra: The history of the PHE is instructive. In the mid- to late 20th century, many patients and physicians felt the PHE was a foolish idea. Physicians were saying, "I should be spending my time on patients who are actually sick." The American Medical Association and others encouraged doctors, and there were also national advertising campaigns, to encourage patients to have the PHE. It took generations to get to the point where most physicians and patients believed the PHE is critical. It's going to take time to flip back, and in the interim I see no reason to create conflict between physicians and patients. What I would probably do is tell the clinical community to stop encouraging the PHE, and over the next 10 to 20 years patients will stop expecting it or demanding it. But in the interim, why have that fight if it's not necessary?

Dr. Libman: I'd like to invite questions from the audience.

Dr. Thomas Delbanco: I want to focus on what you alluded to as a compromise position. I think that in the future the shape of care will change, and I think patients can be more involved in their care and do more of the work to prepare for the PHE and maybe conduct it from the home in the way that GroupHealth does using video techniques so it will be more efficient, shorter, and equally satisfying to both the doctor and the patient.

Dr. Mehrotra: I think what you're asking is whether the services included in the PHE have to be with the physician, or can they be delivered by other members of the patient-centered medical home? And also, do they need to be in person, or can they be delivered remotely? I believe much of what is done in the PHE could be provided outside of a physician visit. It is an important point. In general as we move forward with clinical medicine, much of the care that is currently provided in person can be delivered by other means.

Dr. Heffernan: I think, as Ateev has shown, there are risks and benefits from everything we do, and I agree the technology improvements should be integrated into what we do, but there is also a risk for increasing entropy, and care has become increasingly fragmented. I have been in practice for 35 years; I was a physician of record on all of my inpatients for the first 30 of those years, and I still round on them, but changes in care models have fractured some of the traditional relationships that people had with their doctor, and there are other depredations, even within the fabric of the patient-centered medical home. You need a core, high-level interaction, and I think the PHE can play that role as it does at GroupHealth (23) and Healthcare Associates here at the Beth Israel Deaconess Medical Center. We need to recast the PHE such that we retain the valuable pieces but not add time and bulk to the visit by doing things that are not of value.

Dr. Libman: Other questions or comments?

Dr. Jonathan Darer: I'm curious if you would think that maybe the answer is somewhere in between. There are probably some patients who derive very little value from the PHE, and there are probably some who derive a lot of value. Instead of saying it is for all or none, perhaps having more of a targeted approach, where you identify patients who are most likely to benefit from the PHE, is needed.

Dr. Mehrotra: I am 100% with you. If we could take a targeted approach and identify patients, such as those with chronic and/or complex illnesses or those who are at risk for them, so that we could devote more primary care time to these individuals, I think we are going to be better off.

Dr. Heffernan: I agree. It's a patient-centered world, and it should be a negotiation and a partnership as to how we come up with this. Most 24-year-old men don't need an annual exam by any stretch of the imagination, but there is the occasional 24-year-old guy who is obese or who has risky behaviors or who has a mother who had an MI at age 52, who needs more attention, and that patient probably does need a PHE. So there's an optimal interval between examinations based on the evidence and an optimal interval based on the interaction between the provider and patient, and I think we should have flexibility in choosing which approach we take. I think the knee-jerk response that everyone gets the same package when you book your PHE is outdated. A PHE does make sense for many patients and is endorsed by most our faculty, but there should be flexibility in how we negotiate the needs.

Dr. Reynolds: Thank you for a really engaging session. I have a question for Ateev. So Ms. M is at high risk for breast cancer and had a series of discussions with her primary care provider that ultimately led to her being treated with an aromatase inhibitor to lower her risk. If she wasn't having PHEs, how would this conversation have taken place? Because if you're going to tell me that she shouldn't have a regular PHE and that her risk for breast cancer is 10% in the next 5 years, it's possible that the aromatase inhibitor would not be offered until too late.

Dr. Mehrotra: With Ms. M, based on her background and risks that her PCP obtained about her breast cancer risk, get her in, have that conversation, and if necessary, schedule subsequent visits focused on this particular issue. The distinction is that this would be a visit to discuss a specific issue. A general problem with the PHE is that it has become a catch-all and is not necessary for every adult every year.

Dr. Libman: Jim, I have a question for you. In the age of defensive medicine and the tendency to work everything up, how would you practically address the issue of overdiagnosis and overtreatment, which are potential risks of the PHE?

Dr. Heffernan: I think, once again, it depends. In a practice like ours, which is really driven by evidence, I think we spend far more time trying to protect against unnecessary tests requested by patients than we do excessive testing. If you look at the profile of what gets ordered related to our visits, it's far less than it was 10 years ago. Clearly we are driven by evidence and the need to do what's right for the patient.

Dr. Mehrotra: I think we should be very thoughtful about the issue of inadvertent harm. Michael Rothberg, a physician at Cleveland Clinic, wrote a nice piece in *JAMA* (25) about the "fifty thousand dollar physical." He described the story of his father who came in for a PHE with his PCP, had an abdominal exam, and there was concern of an abdominal aortic aneurysm. To follow-up, he had an ultrasound, which actually didn't show an aneurysm, but something in the liver, had a CT scan, which then showed a mass lesion concerning for hepatocellular carcinoma, and went in for a biopsy. It turned out to be hemangioma, but he almost died, all for something that was benign. This harmful care cascade reminds us that a routine physical examination can have unintended negative consequences.

Dr. Heffernan: I think that person would be much more likely to have that cascade develop in a noncontinuity setting. Witness what happens in the emergency room versus the primary care office. I do think a primary care doctor is willing to wait and watch far more often about findings of questionable significance.

Dr. Mark Aronson: I have a question for Ateev. About 3 or 4 years ago, I was precepting a pelvic exam on a young woman and incidentally we saw a mole on her thigh, and it turned out to be melanoma. How do you measure that potential benefit of the PHE?

Dr. Mehrotra: That is a clear example of where the patient probably benefited, but we also have to consider the risk of incidental false-positive findings, and the best way we judge these issues in the area of evidence-based medicine is through clinical trials. When we randomize patients in large trials to get a PHE, we see that the risks generally exceed the benefits.

Dr. Russell Phillips: I have concerns about our patients who have limited health literacy, are poor, may have difficulty accessing our systems when they don't feel well, and may not even be able to recognize which symptoms are important. Jim, I know you have a lot of experience caring for these patients, and I wonder if those are patients you would think should be considered for PHEs, and Ateev, whether your admonition not to do PHEs would extend to those individuals.

Dr. Heffernan: Thanks for touching on a really important point. The case I had in mind from my practice under "there's always something" is a woman who is on the fringe, and it really took 3 years' worth of visits before she was willing to share her history of childhood physical and sexual abuse, which altered my whole understanding of the dynamic of her life. I think also that a visit in a PCP's office is often the only safe haven that patients have for an unbiased discussion of what's going on in their lives. Given the disparities in outcomes and in health services for such indigent and challenged patients, the PHE is one way to try to bring them into the fold and maintain regular frequency of follow-up. I would really endorse that as a valid and very important thing to continue to do.

Dr. Mehrotra: It is important to recognize that only one third of the U.S. population have PHEs. Generally, these are the patients we don't need to have come in, who are well plugged into the system, who are coming in regularly for other reasons, and who are often up to date with their preventive care. So it is interesting that the PHE may focus on patients who may benefit least.

Dr. Nisha Basu: I disagree with the estimate of the harms. I don't advocate that we do anything that harms our patients or that doesn't have a clear benefit, but I didn't see, in any of the information displayed, attention to the potential benefits to PCPs in reduction of burnout or satisfaction in the workplace. Also, if the PHE were to disappear, I'm not sure that could be replaced with an increase in patient panel size or a complexity of patient panels with the current staffing at the vast majority of medical practices.

Dr. Heffernan: GroupHealth has shown that in doing the full court press around the PCMH that there is better physician retention, better work experience, and longer patient visits (26). We need to preserve the PHE to keep primary care roles attractive based on the continuity relationships we build with patients.