

The Adult Screening Physical Examination: What Physicians Do

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ABSTRACT

Background: Patients expect a thorough physical examination. However, there is debate on the utility of the physical examination, and students are deficient in many common maneuvers.

Purposes: (1) To estimate physician perceived utility of physical examination maneuvers in a routine adult screening examination. (2) To promote teaching of core physical examination competencies in student and resident education.

Methods: Primary care physicians at 2 academic medical centers were surveyed. Using a 5-category frequency scale, physicians estimated how often they perform and document 90 common physical examination maneuvers in a routine adult screening examination.

Results: Survey response rate was 56%. Physicians reported significant variation in frequency of use for individual physical examination maneuvers. Both common (blood pressure) and rarely performed (visual acuity) maneuvers were identified.

Conclusion: This study helps define the adult screening physical examination by estimating which individual physical examination maneuvers physicians typically utilize. Educational resources and clinical research should focus on identifying an evidence-based approach to the physical examination

PURPOSE AND REVIEW OF THE LITERATURE

The physical examination combined with a thorough history is a useful diagnostic test.¹ Furthermore, the public desires and expects this from its physicians.²

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Despite this, the physical examination skills of medical students and residents are deficient,³⁻⁵ the amount of time devoted to bedside teaching has declined in recent years,⁶ and physicians are pressured to spend less time with patients in the current health care environment and may be relying more on laboratory testing than the physical examination for making diagnoses.

Peterson et al found that in 88% of studied cases in an outpatient clinic, the correct diagnosis was derived after only the history and physical, without the need for further testing.¹ Laboratory tests often will not rival the cost-effectiveness of a focused physical examination.⁷

Despite its traditional role in medical care, the physical examination is currently under thorough review. Sackett initiated the Rational Clinical Examination article series, which evaluates diagnostic maneuvers within the physical examination through the application of sensitivity and specificity measures, subjecting these maneuvers to the same guidelines expected from laboratory screening tests.⁸ This series now includes over 40 articles studying the validity of individual components of the physical examination. The American Medical Association's (AMA) Current Procedural Terminology (CPT) panel and the Centers for Medicare and Medicaid Services continue to evaluate Medicare Evaluation and Management (E&M) guidelines concerning documentation and billing for physical examination maneuvers, a charged issue that has a daily effect on the practices of many physicians.

The approach to the screening physical examination is passed from teacher to trainee and perpetuated in our clinical practice. While some authors have openly questioned the utility of the physical examination^{9,10} given that specific components have been found to be non-sensitive or non-specific, such as their use in diagnosing pneumonia,¹¹ many other physical examination maneuvers have not been evaluated objectively. Thus, there is a need to study what physicians actually are doing in their practice of medicine.

The purpose of this study is to estimate the fre-

quency with which primary care physicians utilize individual physical diagnosis maneuvers in a screening physical examination, as well as how often physicians use maneuvers from each section of the examination as defined by the E&M documentation guidelines. By knowing how frequently physicians actually use maneuvers in their screening physical examinations, medical student and resident educators can compare core physical examination skills that serve as focus areas in introduction to physical examination courses and identify those physical diagnosis areas where, through physician role modeling, students and residents are getting the most and least exposure. The validity that physicians associate with these maneuvers as screening tools will be estimated. This information will help in the appropriate focus of physical diagnosis training.

METHODS

A 4-page survey was distributed to the general internal medicine (GIM) and family medicine (FM) departments at 2 freestanding and separate academic medical centers, the Medical College of Wisconsin (MCW) and University of Wisconsin-Madison (UW-Madison). Each department handled distribution and collection of the questionnaire at their individual institution. Distribution occurred at faculty meetings and by mail. Mailings and e-mail prompting were used for non-responders. Family practice physicians were primarily in community-based practices and general internal medicine practice physicians were primarily in hospital-based practices. All data were collected from April to July 1999.

The survey had 2 major sections: Section 1 was a 4-item demographic portion with items for physician gender, specialty (GI or FP), and the number of years since the physician completed residency. The fourth item asked physicians whether they teach residents or medical students at least once a week. Section 2 asked each physician to estimate the frequency they perform and document 90 common physical examination maneuvers in the context of a routine screening physical examination for a 50-year-old asymptomatic patient. The physician was asked to check the frequency with which they perform and document each listed physical examination maneuver using the following scale: 1=always (>90%), 2=frequently (75%-90%), 3=sometimes (50%-74%), 4=rarely (30%-49%), or 5=never (<30%). These maneuvers were organized to be consistent with the 14-section AMA E&M coding guidelines format (constitutional; eyes; ears, nose, mouth and throat; neck; respiratory; cardiovascular; chest; gastrointestinal; genitourinary; lym-

phatic; musculoskeletal; skin; neurologic; psychiatric). The number of maneuvers listed within each section ranged from 2 (skin) to 14 (gastrointestinal).

Average frequency-of-use scores were prepared for each of the 90 examination maneuvers, treating the reported frequency of maneuver use as a continuous variable. These calculated scores, as well as the modal response for each maneuver and the number of physicians responding with "always" or "never" to each maneuver, were used to compare the reported usage of the 90 maneuvers.

To facilitate physician-to-physician comparison, the individual maneuver scores for each physician were averaged, yielding an overall frequency of examination maneuver use score for each physician. Two-way t-tests were performed in Stata for Windows using these scores to compare maneuver usage between demographic groupings of physicians.

RESULTS

The overall response rate for the survey was 155/279 (56%). The response rate from each department was 32/45 (71%) from MCW GIM, 22/41 (54%) from MCW FM, 41/84 (49%) from UW-Madison GIM, and 60/109 (55%) from UW-Madison FM. The overall response rates for GIM physicians and FM physicians were 57% and 55%, and the difference was not statistically significant. Of the 155 returned surveys, 11 were excluded from analysis because 1 or more of the 4 demographic items were incomplete.

Following exclusion of incomplete surveys, the frequencies of the remaining 144 physicians surveyed were: 31% male GIM physicians, 17% female GIM physicians, 33% male FM physicians, and 19% female FM physicians. These proportions differed significantly from the national proportions for male and female primary care internal medicine and family practice physicians with our survey having more female responders than national proportions.¹² The average number of years of post-residency practice was 11 years with a range of 1 to 35. Sixty nine percent reported that they teach residents or students at least once per week. For the 90-item physical examination maneuver checklist, incomplete or missing individual items were not included in the data analysis.

The overall results for frequency of use of the 90 individual maneuvers are detailed in Table 1. The data include the percentage of physicians "always" and "never" performing each maneuver and the calculated average response as described in the Methods. The most frequent response overall was "always," which accounted for

Table 1. Frequencies of Use for the 90 Examination Maneuvers

n=135-144*	Percent Responding Always	Percent Responding Never	Average Response**
Constitutional			
Pain, discomfort, restlessness	64%	1%	1.7
Body habitus, nutrition, grooming, odor	46%	3%	2.0
Heart rate and regularity	94%	0%	1.1
Blood pressure	99%	0%	1.0
Orthostatic blood pressure	1%	36%	4.1
Respiratory rate	40%	11%	2.4
Temperature	49%	11%	2.2
Weight	94%	0%	1.1
Height	57%	5%	1.9
Body mass index	4%	53%	4.2
Eyes			
Visual acuity	3%	24%	3.8
Appearance of conjunctivae and lids	39%	8%	2.4
Iris	28%	24%	3.0
Reactivity of pupil	55%	6%	1.9
Visual Fields	8%	28%	3.6
Fundoscopy exam	47%	4%	2.0
ENT			
Assess hearing	12%	14%	3.1
External inspection of ears	64%	6%	1.8
Otoscopic exam	75%	1%	1.3
Inspection of nasal mucosa, septum, turbinates	39%	4%	2.2
Inspection of lips, teeth, gums	69%	2%	1.5
Sinuses (paranasal, maxillary, frontal)	20%	14%	2.9
Oropharynx: oral mucosa, tongue, tonsils, posterior pharynx	78%	1%	1.3
Oropharynx: hard and soft palates	64%	6%	1.7
Oropharynx: salivary glands	25%	24%	3.0
Neck			
Inspection: masses, symmetry	82%	2%	1.3
Palpation: trachea	46%	18%	2.4
Palpation: thyroid	78%	1%	1.3
Respiratory			
Inspection: configuration, respiratory effort	51%	8%	2.0
Palpation: respiratory excursion	17%	32%	3.5
Palpation: tenderness	18%	26%	3.3
Palpation: percussion	29%	16%	2.9
Auscultation: breath sounds	99%	0%	1.0
Auscultation: crackles, wheezes rubs	94%	1%	1.1
Auscultation: voice sounds	8%	39%	3.8
Cardiovascular			
Jugular venous distention and pulse	35%	6%	2.4
Precordial inspection and palpation	42%	8%	2.3
Auscultation: S1, S2, S3, S4, murmurs, clicks, rubs	99%	0%	1.0
Peripheral arterial pulses: carotid	70%	0%	1.5
Peripheral arterial pulses: femoral	38%	7%	2.4
Peripheral arterial pulses: pedal	62%	0%	1.6
Edema or varicosities of lower extremities	89%	0%	1.1
Chest			
Inspection: symmetry, nipple discharge, skin	79%	1%	1.4
Palpation: masses or lumps, tenderness, consistency	84%	1%	1.2
Gastrointestinal			
Inspection: contour, veins, hernia	67%	3%	1.6

Table 1. Frequencies of Use for the 90 Examination Maneuvers (*continued*)

n=135-144*	Percent Responding Always	Percent Responding Never	Average Response**
Gastrointestinal (<i>continued</i>)			
Auscultation: bowel sounds	76%	2%	1.4
Auscultation: bruits	52%	3%	2.0
Percussion: liver	51%	11%	2.3
Percussion: spleen	37%	24%	2.8
Percussion: ascites	22%	25%	3.2
Palpation: liver	92%	1%	1.1
Palpation: spleen	82%	1%	1.4
Palpation: masses, tenderness, guarding	94%	0%	1.1
Palpation: rebound	39%	18%	2.6
Palpation: abdominal aorta	41%	6%	2.2
Palpation: perianal area, hemorrhoids	49%	8%	2.0
Palpation: rectal exam, sphincter tone, masses	61%	1%	1.6
Palpation: Guaiac	46%	12%	2.3
Genitourinary			
Male: penis	65%	3%	1.6
Male: scrotal contents	71%	0%	1.5
Male: prostate gland (males >50)	74%	0%	1.4
Female: vulva and perineum, vagina, urethra	78%	0%	1.3
Female: cervix	79%	0%	1.3
Female: uterus, bladder, adnexae/parametria	75%	0%	1.4
Lymphatic			
Neck nodes	88%	0%	1.1
Supraclavicular nodes	60%	1%	1.7
Axillary nodes	48%	2%	2.0
Inguinal nodes	32%	6%	2.4
Musculosk			
Gait and posture	41%	6%	2.2
Inspection/palpation of digits and nails	57%	6%	1.9
Inspection/palpation of joints	32%	6%	2.3
Range of motion; stability of joints	23%	13%	2.6
Skin			
Inspection of skin and subcutaneous tissue	73%	0%	1.4
Palpation of skin and subcutaneous tissue	44%	6%	2.2
Neurologic			
Cranial nerves	37%	9%	2.4
Muscle strength of upper extremities	26%	11%	2.6
Muscle strength of lower extremities	27%	11%	2.6
Deep tendon reflexes: knees	53%	8%	2.0
Deep tendon reflexes: ankles	44%	9%	2.2
Deep tendon reflexes: biceps	39%	10%	2.3
Deep tendon reflexes: brachioradialis	28%	13%	2.7
Sensory: light touch	19%	19%	3.1
Sensory: pinprick	6%	32%	3.7
Sensory: vibration	5%	31%	3.8
Sensory proprioception	3%	35%	3.9
Cerebellar	17%	21%	3.2
Psychiatric			
Patient's judgement and insight	35%	12%	2.5
Mental status: orientation to time, place, person	39%	11%	2.5
Mental status: memory	18%	16%	3.0
Mood and affect	46%	7%	2.0

* n=135 to 144 (missing survey items were not included in analysis)

** The average score using frequency of use as a continuous variable where: 1=always (>90%), 2=frequently (75-90%), 3=sometimes (50-74%), 4=rarely (30-49%), and 5=never (<30%).

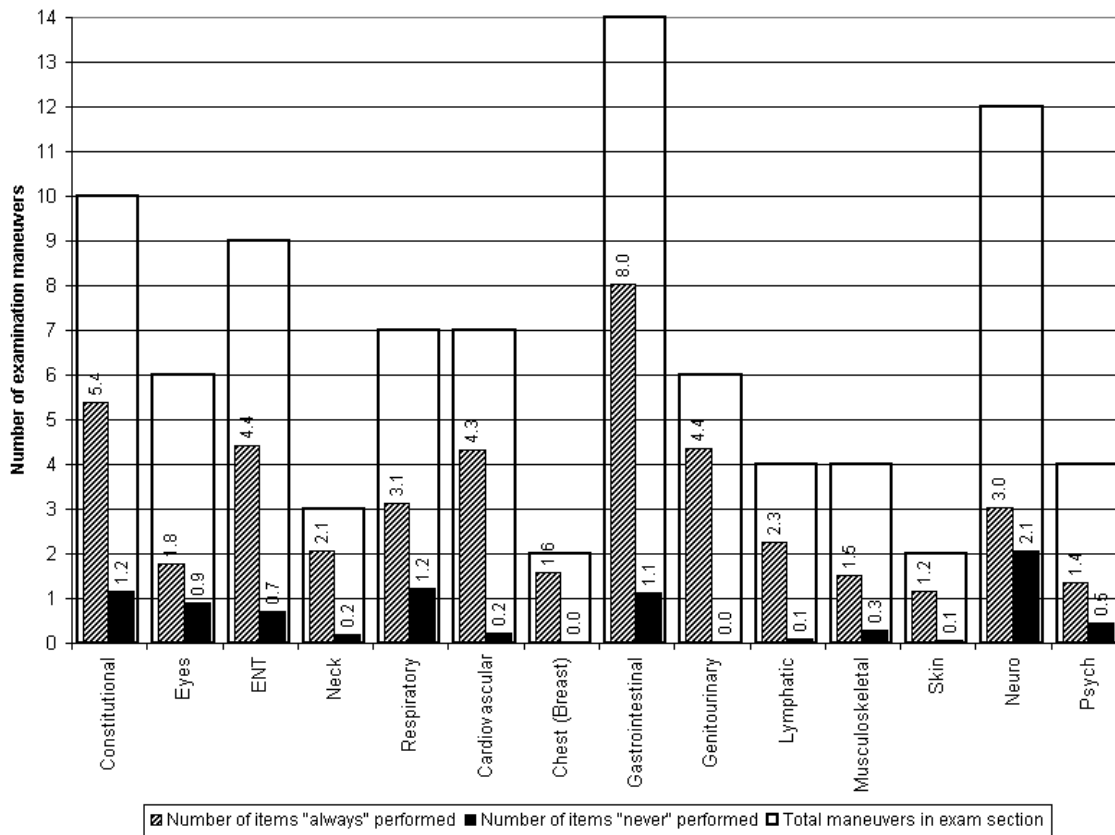


Figure 1. Average number of physical exam maneuvers “always” or “never” performed within each examination section. *Physicians were instructed to respond with “always” if they used the examination item greater than 90% of the time, and “never” if they used the item less than 30% of the time.

50% of all checklist responses. The total “always” responses per survey was normally distributed, while all other response distributions (“frequently” through “never”) were not normally distributed.

The 10 individual maneuvers most frequently (“always”) utilized in the adult screening physical examination were blood pressure; auscultation of breath sounds; auscultation of cardiac sounds (S1, S2, S3, S4, murmurs, clicks); weight; palpation of the abdomen for masses, tenderness, or guarding; heart rate and regularity; palpation of the liver; edema or varicosities of lower extremities; palpation for neck nodes; auscultation for crackles, wheezes, or rubs in the lungs.

The 10 individual maneuvers least frequently (“never”) utilized on the screening adult physical examination were body mass index; orthostatic blood pressure; sensory proprioception; visual acuity; auscultation of lung voice sounds; sensory vibration; sensory pinprick; visual fields; palpation of respiratory excursion; palpation for chest wall tenderness.

Figure 1 compares, by examination section, the average number of items “always” or “never” performed with the total number of items within each examination section. In some sections, physicians tended to “always” perform a high proportion of the available maneuvers (cardiovascular: 4.3 out of 7, gastrointestinal: 8 out of 14, and genitourinary: 4.4 out of 6). In other sections, physicians “always” performed a much smaller proportion of the available maneuvers (eyes: 1.8 out of 6, neurologic: 3 out of 12, and psychiatric: 1.4 out of 4).

No significant differences were found between female and male physicians in their average utilization by examination section, with the exception of the female patient genitourinary examination. Female physicians performed significantly more genitourinary maneuvers in female patient examinations than did male physicians. In the male patient genitourinary examination, there was no significant difference. There was no correlation between the number of years post-residency and use of examination maneuvers.

DISCUSSION

Identification of the maneuvers appropriate for a routine screening physical is a logical objective in consideration of current medical education, research, and policy trends. The physical examination is an integral component of medical practice and an important tool in the diagnostic process.

Continued assessments of both medical students and residents show deficiencies in physical examination skills. Medical students show decay in physical examination skills following their second year of training, a problem that is often not addressed in third-year clerkships or at any point after the second year.⁴ In their study of pulmonary auscultatory skills, Mangione and Nieman found that 627 trainees from internal medicine and family practice residencies were able to recognize an average of only 40% of 10 common respiratory events, and exhibited little improvement compared to medical students' scores.³ Advanced physical diagnosis courses are being designed to meet needs in training,¹³ while standardized patients and objective structured clinical examinations are being designed and studied as an objective measure of physical examination skills.

A physician's daily experience with the diagnostic utility of a given maneuver will provide a unique measure of a maneuver's perceived utility. Ease of performance, time constraints, and patient expectations also may affect physician utilization of examination maneuvers. Our results show that several individual maneuvers, including blood pressure, weight, respiratory auscultation, and cardiac auscultation, are almost always performed. On the other hand, body mass index, visual acuity, and many of the neurologic examination maneuvers (cerebellar testing, sensory testing) are performed quite rarely in comparison to other maneuvers. Physicians scored many other maneuvers with "sometimes" or other intermediate scores, demonstrating lack of certainty of the utility of these maneuvers, selective use for individual patients, or intermittent omission of maneuvers for other reasons.

The relative use of physical examination sections is also variable. In particular, neurologic, psychiatric, and eye maneuvers appear to be less important to the primary care physician to always include in his or her routine screening physical examination.

In summary, it is the job of the medical educator to identify a consistent set of useful physical diagnosis maneuvers and focus training on those maneuvers using an evidence-based medicine approach. This study identifies what physicians typically do in the adult screening physical examination based on physician-re-

ported utilization of individual physical examination maneuvers. Future research should focus on further defining the validity of these individual physical examination maneuvers.

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