

# Effectiveness of General Health Checks

## A Report and Inventory of Studies

### KEY MESSAGE

This review found only one study on annual health examination (AHE), for which the recommendation was negative. Furthermore, this review found contrasting evidence on the benefits of periodic health examinations (PHE). While PHEs improve surrogate\* outcomes (e.g. results of tests), they do not improve overall health outcomes (e.g. reducing morbidity and mortality). Additional long-term studies may be conducted to validate and strengthen the findings of available studies.

### CONTEXT

- **General health checks** involve a contact between an *asymptomatic* person and a healthcare professional to identify signs, symptoms, or risk factors for disease that were previously unrecognized. They are combinations of screening tests, few of which have been adequately studied in randomized trials<sup>1,2</sup>.
  - General health checks may be performed annually (annual health exams or AHE) or periodically (periodic health exams or PHE), the periodicity of which may be determined based on risk factors of the patient (e.g. occupation, age).
  - General health checks are often performed independent of (i.e. not embedded) in usual care (i.e. primary care provider visits), and as such are usually performed by an unfamiliar health care provider.
- AHEs have been prevalent in North America. It is less common in other countries where primary and preventive health is customarily accessed<sup>3,4</sup>.
- In the Philippines, the more commonly used terms related to AHEs are annual physical examinations (APEs) or Executive Check-Ups (ECUs)<sup>4,5</sup>.
  - The "Philippine Guidelines on Periodic Health Examination (PHEX): Effective Screening for Diseases among Apparently Healthy Filipinos" was published and has served as a guide for PHEs in 2004<sup>6</sup>.
  - The Department of Labor and Employment (DOLE) states that the employer shall require pre-employment medical examination of all prospective employees and provide periodic medical examination to employees who are exposed to occupational diseases<sup>7</sup>.
  - The emergence of Health Maintenance Organizations (HMO) in the country made available health benefits, including routine annual medical examination at accredited medical clinics, to beneficiaries<sup>5</sup>.

\*Surrogate end points, such as tumor shrinkage or changes in cholesterol level, blood pressure, CD4 cell count, or other laboratory measures, have been proposed as proxies for outcomes. In theory, for a surrogate end point to be an effective substitute for the clinical outcome, effects of the intervention on the surrogate must reliably predict the overall effect on the clinical outcome. However, in practice, this requirement frequently fails as there are multiple pathways to the clinical outcome that cannot be mediated through the surrogate (i.e. the test used).



## INVENTORY OF STUDIES ON ANNUAL PERIODIC EXAMINATIONS

### Search strategy and Selection Criteria

Electronic databases including Cochrane Central Register of Controlled Trials (CENTRAL), EMBASE via OVID, PubMed, and Herdin were searched for systematic reviews and meta-analyses using the keywords “general health check”, “health check”, “health checks”, “periodic health”, “periodic health examination”, and “annual periodic examination”. The search was limited to English language with no restriction on the publication dates. Hand search and cross referencing were also performed. This brief only included studies that investigated general health check, periodic health examination, or annual periodic examination as an intervention applied to general adult population to examine patient related outcomes. Interventions such as screening for a specific disease, condition, or population were excluded. Table 2 summarizes the results of the electronic database search.

Table 2. Results of the electronic database search

<u>Search terms</u>	<u>Number of hits</u>	<u>Included studies after removal of duplicates</u>
("General health check" OR "annual periodic examination" OR "health check" OR "health checks" OR "periodic health" OR "annual health") <i>Limit to systematic reviews and meta-analyses</i>	Central = 55 PubMed= 218 EMBASE via Ovid = 778 Herdin = 0	5

### Studies

The summary of the results of 5 studies (4 systematic reviews and 1 evidence brief) are discussed below. Brief descriptions on the results on patient outcomes are also included. See Appendix I for the definition of terms of the studies and Appendix II for the details of the results of the studies.

1. An evidence brief was written to evaluate the value of the **routine annual physical examination (APE)** in asymptomatic average-risk adults. Specifically, it aimed to determine the components of routine physical examination that are currently recommended by high-quality evidence-based guidelines or reports<sup>9</sup>.
  - The review updated the systematic reviews published by Oboler and Laforce in 1989 and Boulware et al. in 2007<sup>10,11</sup>.
  - Results stated that only some components of the routine physical examinations (i.e., blood pressure monitoring, BMI measurement, Papanicolaou smear) are recommended for an asymptomatic adult. These components, however, have specific prerequisites that are not applicable to the general population. These recommendations were made by the U.S. Preventive Services Task Force (USPSTF). For the updated list of USPSTF recommendations, see Appendix C<sup>12,13</sup>.
  - The review concluded that **comprehensive routine physical examinations are not recommended for the asymptomatic adult**.
2. A systematic review was performed to evaluate the benefits and harms of **PHEs** versus receiving usual care in terms of the delivery of preventive services, clinical outcomes, and costs<sup>10</sup>.
  - The review included 50 articles representing 33 studies, but only evaluated 21 published studies (i.e., 10 randomized controlled trials [RCTs], 2 cohort studies, and 9 cross-sectional studies) that were identified by the authors as the “best available evidence”.
    - The study defined periodic health examination as one or more visits with a healthcare provider for the primary purpose of assessing patients’ overall health and risk factors for

disease that may be prevented by early intervention. It **did not differentiate annual health examinations and periodic health examinations** and treated both terms synonymous in the search.

- According to the review, observational studies deemed to contribute more biased estimates were excluded from the “best available evidence”.
  - Findings of this study include the following:
    - Greater rates of delivery of gynecological examinations and Papanicolaou smears, cholesterol screening, and fecal occult blood testing were achieved for patients who received PHEs versus patients who received usual care.
    - One RCT noted less worry or concern regarding illnesses among patients who received PHEs compared to those who received usual care.
    - Studies included as "best available evidence" had contrasting results on the effect of PHEs on costs and other clinical outcomes such as disease detection, health habits, body mass index (BMI), mortality, etc.
    - The set of studies included in the review were very heterogeneous, particularly due to variations in PHE practices and outcome measures. This is seen as a limitation of the systematic review. Inferences made on the effects of PHE should be interpreted with caution, and further analysis should be done.
  - The authors suggested that further research is needed to clarify the long-term benefits, harms, and costs of undergoing annual PHE.
3. A Cochrane systematic review and meta-analysis was performed to quantify the benefits and harms of general health checks in adults on mortality and morbidity compared to those who have not received general health checks<sup>14</sup>.
- A total of 16 published RCTs were included in the analysis.
    - The RCTs that were included performed general health checks in **varying time intervals** (i.e. 1 to 3-year interval, performed at least once)
    - Results showed that **general health checks did not reduce morbidity** or mortality, neither overall nor cardiovascular or cancer causes.
    - The planned subgroup analyses were consistent with the overall result.
    - No beneficial effects of general health checks were observed on morbidity, hospitalization, disability, worry, additional physician visits, or absence from work.
    - Results showed that lack of effect in total mortality is not a chance finding or due to low power, rather, there is no, or only minimal, effect of the intervention on mortality in the general adult population.
    - Major limitations of the review included risk of bias, and clinical and methodological heterogeneity among the included trials. Moreover, most trials used treatments that are different from the present practice.
  - The author recommended that future research directed to individual components of the general health checks be done. Lastly, a large randomized trial with long follow-up are recommended.
4. A systematic review with meta-analyses updating and reanalyzing the study conducted by Krogsboll et al. The review differentiated **practice-based and non-practice based PHEs** and aimed to determine their effects on both surrogate and final outcomes, compared to no health screening or usual care<sup>15</sup>.
- A total of 17 RCTs (6 general practice-based and 11 non-practice-based) were included in the analysis.
    - The RCTs that were included performed **general health checks in varying time intervals**.

- Meta-analyses showed that practice-based health checks significantly improved surrogate outcomes, particularly total cholesterol, blood pressure (systolic and diastolic), and BMI. On the other hand, general practice-based health checks significantly reduced the proportion of patients at high risk.
  - The group who had health check has significantly higher CVD mortality rate compared with the comparison group. On the other hand, no significant difference was observed on the total mortality between the 2 groups.
  - Meta-regression on surrogate and final outcomes showed **no significant difference between general practice-based and non-general practice-based health check.**
  - The limitations of the review included risk of performance and detection bias, methodological difficulties in investigating surrogate outcomes, methodological heterogeneity resulting to increased difficulty in data interpretation, and the small number of studies included in the systematic review resulting to insufficient statistical power of the meta-regression.
5. A systematic review was performed to review quantitative evidence on coverage, uptake, and impact of NHS Health Checks, which are considered PHEs<sup>16</sup>.
- The UK NHS provides health checks to patients aged 40-74 **every 5 years** to reduce risk factors associated to CVDs, stroke, type 2 diabetes, kidney disease and some types of dementia.
  - The review included 26 studies but only evaluated 12 observational studies for assessing impact. Among the 12 studies included, 5 studies have a comparison group, while the remaining 7 studies were before-and-after studies without comparison groups.
  - Small increases in disease detection, an increased likelihood of statin and antihypertensive prescribing, and small decreases in CVD risk were observed to the population receiving health checks compared to those not receiving health checks.

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651-7800 loc 1326

Research Division - Health Policy Development and Planning  
Bureau Department of Health Building 3 2/F San Lazaro  
Compound, Rizal Avenue, Sta. Cruz, Manila

## APPENDICES

### Appendix I. Definition of terms of the studies

<u>Author</u>	<u>Verbatim definitions of the intervention</u>
Bloomfield and Wilt, 2011	<ul style="list-style-type: none"><li>● PHE was defined as “one or more visits with a health care provider for the primary purpose of assessing patients’ overall health and risk factors for disease that may be prevented by early intervention... [The] definition specified the PHE as consisting only of the history, risk assessment and a tailored physical examination”</li></ul>
Boulware et al. 2007	<ul style="list-style-type: none"><li>● PHE was defined as “consisting only of the history, risk assessment, and a tailored physical examination that could lead to the delivery of preventive services. It did not include the delivery of clinical preventive services that patients could receive during or after their visit for the PHE.”</li></ul>
Krogsboll et al, 2012	<ul style="list-style-type: none"><li>● General health checks were defined as “involvement of a contact between a person and a healthcare professional to identify signs, symptoms, or risk factors for disease that were previously unrecognized (or asymptomatic) which involves combinations of screening tests. Screening for single diseases in isolation are not included.”</li></ul>
Si et al, 2014	<ul style="list-style-type: none"><li>● Health checks were defined as “a comprehensive assessment to detect and manage risk factors and chronic disease, mostly cardiovascular diseases.”</li><li>● General practice-based health checks were defined as “health checks conducted in general practice or its equivalent and managed by either practice staff or training personnel.”</li></ul>

## Appendix II. Summary of results of included studies

### **Study 1: Systematic Review: The Value of the Periodic Health Evaluation by Boulware et.al., 2007.**

Table 3. Summary of Results from Best Available Evidence to Assess Each Outcome (9)

Outcome	Type of Evidence (studies, n)	GRADE classification	Effect of PHE on outcomes
Delivery of clinical preventive services			
Gynecologic examination/ Papanicolaou smear	RCTs (2)	High	Beneficial
Counseling	RCTs (1), Observational (6)	Low	Mixed
Immunizations	RCTs (3)	Medium	Mixed
Cholesterol screening	RCTs (1), Observational (4)	Medium	Beneficial
Colon cancer screening (fecal occult blood testing)	RCTs (2)	High	Beneficial
Mammography	RCTs (1), Observational (1)	Low	Mixed
Proximal clinical outcomes			
Disease detection	RCTs (2)	Medium	Mixed
Health habits	RCTs (5)	Medium	Mixed
Patient attitudes (worry)	RCTs (1)	Medium	Beneficial
Health status	RCTs (2)	Medium	Mixed
Blood pressure	RCTs (2)	High	Mixed
Serum cholesterol	RCTs (1), Observational (1)	Low	Mixed
Body mass index	RCTs (3)	Medium	Mixed
Distal economic and clinical outcomes			
Costs	RCTs (4)	Medium	Mixed
Disability	RCTs (2)	Medium	Mixed
Hospitalization	RCTs (3)	High	Mixed
Mortality	RCTs (5)	Medium	Mixed

GRADE=Grading of Recommendations Assessment, Development and Evaluation

PHE=periodic health examination

RCT=randomized controlled trial

### **Study 3: General health checks in adults for reducing morbidity and mortality from disease: Cochrane systematic review and meta-analysis by Krogsboll et al., 2012.**

Table 4. Results of patient relevant outcomes (14)

Patient relevant outcomes	Number of RCTs (out of 16)	Pooled Risk Ratio
Total mortality	9	0.99 (0.95 to 1.03)
Cardiovascular mortality	8	1.03 (0.91 to 1.07)
Cancer mortality	8	1.01 (0.92 to 1.12)

**Study 4: Effectiveness of general practice-based health checks: a systematic review and meta-analysis by Si et al., 2014**

Table 5. Summary of results of patient relevant outcomes (15)

Patient relevant outcomes	Meta-analysis of surrogate outcomes		Meta-analysis of odds of patients remaining at high risk	
	Number of RCTs	Mean difference	Number of RCTs	Odds ratio
<i>General practice-based health check</i>				
Total Cholesterol	4	-0.13 (-0.19 to -0.07)	4	0.63 (0.50 to 0.79)
Systolic Blood Pressure	4	-3.65 (-6.50 to -0.81)	2	0.59 (0.28 to 1.23)
Diastolic Blood Pressure	4	-1.79 (-2.93 to -0.64)	4	0.63 (0.53 to 0.74)
Body mass index	3	-0.45 (-0.66 to -0.24)	4	0.89 (0.81 to 0.98)
Total mortality	N/A	N/A	4	1.03 (0.90 to 1.18)
CVD mortality	N/A	N/A	3	1.30 (1.02 to 1.66)
<i>Non-general practice-based health check</i>				
Total Cholesterol	3	-0.01 (-0.07 to 0.04)	N/A	N/A
Systolic Blood Pressure	3	-0.95 (-1.98 to 0.08)	N/A	N/A
Diastolic Blood Pressure	3	-0.72 (-1.36 to -0.08)	N/A	N/A
Body mass index	1	-0.10 (-0.69 to 0.49)	N/A	N/A
Total mortality	N/A	N/A	6	1.00 (0.93 to 1.08)
CVD mortality	N/A	N/A	6	1.02 (0.92 to 1.13)

Table 6. Meta-regression with practice and non-practice-based studies (15)

Patient relevant outcomes	Number of RCTs		P-value
	Practice-based	Non-practice-based	
Total Cholesterol	4	3	0.056
Systolic Blood Pressure	4	3	0.213
Diastolic Blood Pressure	4	3	0.282
Body mass index	3	1	0.386
Total mortality	4	6	0.712
CVD mortality	3	6	0.087

**Study 5: Delivery and impact of the NHS Health Check in the first 8 years: a systematic review by Martin et.al., 2018.**

Table 7. Summary of results of included studies with comparison group (16)

	Results, OR (95% CI)			
Author, year	Disease detection	Health-related behaviors	Individual risk factors/ CVD risk reduction	Prescribing
Chang, 2016	AF: 0.02 (-0.02 to 0.06) CKD: 0.17 (0.11 to 0.23) CAD: 0.02 (-0.04 to 0.08) FH: 0.09 (0.07 to 0.11) Heart failure: 0.01 (-0.01 to 0.03) Hypertension: 2.99 (2.77 to 3.21) PVD: 0.03 (0.01 to 0.05) Stroke: -0.03 (-0.05 to -0.01) TIA: 0.008 (-0.01 to 0.03) T2DM: 1.31 (1.17 to 1.45)	Smoking prevalence: -0.11 (-0.35 to 0.13)	CVD risk: -0.21% (-0.24 to -0.19) SBP: -2.51 mmHg (-2.77 to -2.25) DBP: -1.46 mmHg (-1.62 to -1.29) BMI: -0.27 (-0.34 to -0.20) Cholesterol: -0.15 mmol/L (-0.18 to -0.13)	Increase in statin prescribing: 3.83 (3.52 to 4.14) Increase in antihypertensive prescribing: 1.37 (1.08 to 1.66)
Forster, 2015	Hypertension: Male: +5% Female: NS Hypercholesterolemia: Male: +33% Female +32%	-	-	New statin prescribing: HR 1.58 (1.53 to 1.63) New antihypertensive drug prescribing: HR 1.06 (1.03 to 1.10)
Caley, 2014	Observed change in prevalence of T2DM, hypertension, CHD, CKD, AF was not statistically significant	-	-	-
Jamet, 2014	-	-	-	Prescriptions of high-dose statins:

				<p>regression coefficient 0.094 Prescriptions of low-dose statins: NS</p>
Lambert, 2016	The number of health checks performed explained almost none ( $\leq 1\%$ ) of the growth in hypertension or diabetes registers, and 6–60% of incident cases of hypertension	-	77–92% of variance between practices in numbers of the of incident high risk of cardiovascular disease was explained by the number of health checks performed	-

### Appendix III. U.S. Preventive Services Task Force (USPSTF)

- The U.S. Preventive Services Task Force (USPSTF) is an independent, volunteer panel of national experts in disease prevention and evidence-based medicine. The main focus of this task force is to improve the health of all Americans through making evidence-based recommendations about clinical preventive services. (12,13)
- Definitions of the USPSTF recommendations are illustrated in Table 7. Positive recommendations only include Grade A and Grade B. The updated list of positive recommendations is shown in Table 8. (13)

Table 8. USPSTF A and B recommendations updated as of August 2018. (12)

Grade	Definition	Suggestion for practice
<b>A</b>	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer or provide this service.
<b>B</b>	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.	Offer or provide this service.
<b>C</b>	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer or provide this service for selected patients depending on individual circumstances.
<b>D</b>	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
<b>I</b>	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.	Read the clinical considerations section of USPSTF Recommendation Statement. If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

Table 9. USPSTF Grade A and Grade B recommendations (13)

Topic	Description	Grade
Abdominal aortic aneurysm screening: men	The USPSTF recommends one-time screening for abdominal aortic aneurysm by ultrasonography in men ages 65 to 75 years who have ever smoked.	B

Alcohol misuse: screening and counseling	The USPSTF recommends that clinicians screen adults age 18 years or older for alcohol misuse and provide persons engaged in risky or hazardous drinking with brief behavioral counseling interventions to reduce alcohol misuse.	B
Aspirin preventive medication: adults aged 50 to 59 years with a $\geq 10\%$ 10-year cardiovascular risk	The USPSTF recommends initiating low-dose aspirin use for the primary prevention of cardiovascular disease and colorectal cancer in adults aged 50 to 59 years who have a 10% or greater 10-year cardiovascular risk, are not at increased risk for bleeding, have a life expectancy of at least 10 years, and are willing to take low-dose aspirin daily for at least 10 years.	B
Bacteriuria screening: pregnant women	The USPSTF recommends screening for asymptomatic bacteriuria with urine culture in pregnant women at 12 to 16 weeks' gestation or at the first prenatal visit, if later.	A
Blood pressure screening: adults	The USPSTF recommends screening for high blood pressure in adults aged 18 years or older. The USPSTF recommends obtaining measurements outside of the clinical setting for diagnostic confirmation before starting treatment.	A
BRCA risk assessment and genetic counseling/testing	The USPSTF recommends that primary care providers screen women who have family members with breast, ovarian, tubal, or peritoneal cancer with one of several screening tools designed to identify a family history that may be associated with an increased risk for potentially harmful mutations in breast cancer susceptibility genes ( <i>BRCA1</i> or <i>BRCA2</i> ). Women with positive screening results should receive genetic counseling and, if indicated after counseling, BRCA testing.	B
Breast cancer preventive medications	The USPSTF recommends that clinicians engage in shared, informed decision making with women who are at increased risk for breast cancer about medications to reduce their risk. For women who are at increased risk for breast cancer and at low risk for adverse medication effects, clinicians should offer to prescribe risk-reducing medications, such as tamoxifen or raloxifene.	B
Breast cancer screening	The USPSTF recommends screening mammography for women, with or without clinical breast examination, every 1 to 2 years for women age 40 years and older.	B
Breastfeeding interventions	The USPSTF recommends providing interventions during pregnancy and after birth to support breastfeeding.	B

Cervical cancer screening	The USPSTF recommends screening for cervical cancer in women ages 21 to 65 years with cytology (Pap smear) every 3 years or, for women ages 30 to 65 years who want to lengthen the screening interval, screening with a combination of cytology and human papillomavirus (HPV) testing every 5 years.	A
Chlamydia screening: women	The USPSTF recommends screening for chlamydia in sexually active women age 24 years or younger and in older women who are at increased risk for infection.	B
Colorectal cancer screening	The USPSTF recommends screening for colorectal cancer starting at age 50 years and continuing until age 75 years.	A
Dental caries prevention: infants and children up to age 5 years	The USPSTF recommends the application of fluoride varnish to the primary teeth of all infants and children starting at the age of primary tooth eruption in primary care practices. The USPSTF recommends primary care clinicians prescribe oral fluoride supplementation starting at age 6 months for children whose water supply is fluoride deficient.	B
Depression screening: adolescents	The USPSTF recommends screening for major depressive disorder (MDD) in adolescents aged 12 to 18 years. Screening should be implemented with adequate systems in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up.	B
Depression screening: adults	The USPSTF recommends screening for depression in the general adult population, including pregnant and postpartum women. Screening should be implemented with adequate systems in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up.	B
Diabetes screening	The USPSTF recommends screening for abnormal blood glucose as part of cardiovascular risk assessment in adults aged 40 to 70 years who are overweight or obese. Clinicians should offer or refer patients with abnormal blood glucose to intensive behavioral counseling interventions to promote a healthful diet and physical activity.	B
Falls prevention: older adults	The USPSTF recommends exercise interventions to prevent falls in community-dwelling adults 65 years or older who are at increased risk for falls.	B
Folic acid supplementation	The USPSTF recommends that all women who are planning or capable of pregnancy take a daily supplement containing 0.4 to 0.8 mg (400 to 800 µg) of folic acid.	A

Gestational diabetes mellitus screening	The USPSTF recommends screening for gestational diabetes mellitus in asymptomatic pregnant women after 24 weeks of gestation.	B
Gonorrhea prophylactic medication: newborns	The USPSTF recommends prophylactic ocular topical medication for all newborns for the prevention of gonococcal ophthalmia neonatorum.	A
Gonorrhea screening: women	The USPSTF recommends screening for gonorrhea in sexually active women age 24 years or younger and in older women who are at increased risk for infection.	B
Healthy diet and physical activity counseling to prevent cardiovascular disease: adults with cardiovascular risk factors	The USPSTF recommends offering or referring adults who are overweight or obese and have additional cardiovascular disease (CVD) risk factors to intensive behavioral counseling interventions to promote a healthful diet and physical activity for CVD prevention.	B
Hemoglobinopathies screening: newborns	The USPSTF recommends screening for sickle cell disease in newborns.	A
Hepatitis B screening: nonpregnant adolescents and adults	The USPSTF recommends screening for hepatitis B virus infection in persons at high risk for infection.	B
Hepatitis B screening: pregnant women	The USPSTF strongly recommends screening for hepatitis B virus infection in pregnant women at their first prenatal visit.	A
Hepatitis C virus infection screening: adults	The USPSTF recommends screening for hepatitis C virus (HCV) infection in persons at high risk for infection. The USPSTF also recommends offering one-time screening for HCV infection to adults born between 1945 and 1965.	B
HIV screening: non-pregnant adolescents and adults	The USPSTF recommends that clinicians screen for HIV infection in adolescents and adults ages 15 to 65 years. Younger adolescents and older adults who are at increased risk should also be screened.	A
HIV screening: pregnant women	The USPSTF recommends that clinicians screen all pregnant women for HIV, including those who present in labor who are untested and whose HIV status is unknown.	A
Hypothyroidism screening: newborns	The USPSTF recommends screening for congenital hypothyroidism in newborns.	A
Intimate partner violence screening: women of childbearing age	The USPSTF recommends that clinicians screen women of childbearing age for intimate partner violence, such as domestic violence, and provide or refer women who screen positive to intervention services. This recommendation applies to women who do not have signs or symptoms of abuse.	B

Lung cancer screening	The USPSTF recommends annual screening for lung cancer with low-dose computed tomography in adults ages 55 to 80 years who have a 30 pack-year smoking history and currently smoke or have quit within the past 15 years. Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery.	B
Obesity screening and counseling: adults	The USPSTF recommends screening all adults for obesity. Clinicians should offer or refer patients with a body mass index of 30 kg/m <sup>2</sup> or higher to intensive, multicomponent behavioral interventions.	B
Obesity screening: children and adolescents	The USPSTF recommends that clinicians screen for obesity in children and adolescents 6 years and older and offer or refer them to comprehensive, intensive behavioral interventions to promote improvements in weight status.	B
Osteoporosis screening: postmenopausal women younger than 65 years at increased risk of osteoporosis	The USPSTF recommends screening for osteoporosis with bone measurement testing to prevent osteoporotic fractures in postmenopausal women younger than 65 years who are at increased risk of osteoporosis, as determined by a formal clinical risk assessment tool.	B
Osteoporosis screening: women 65 years and older	The USPSTF recommends screening for osteoporosis with bone measurement testing to prevent osteoporotic fractures in women 65 years and older.	B
Phenylketonuria screening: newborns	The USPSTF recommends screening for phenylketonuria in newborns.	B
Preeclampsia prevention: aspirin	The USPSTF recommends the use of low-dose aspirin (81 mg/d) as preventive medication after 12 weeks of gestation in women who are at high risk for preeclampsia.	B
Preeclampsia: screening	The USPSTF recommends screening for preeclampsia in pregnant women with blood pressure measurements throughout pregnancy.	B
Rh incompatibility screening: first pregnancy visit	The USPSTF strongly recommends Rh (D) blood typing and antibody testing for all pregnant women during their first visit for pregnancy-related care.	A
Rh incompatibility screening: 24–28 weeks' gestation	The USPSTF recommends repeated Rh (D) antibody testing for all unsensitized Rh (D)-negative women at 24 to 28 weeks' gestation, unless the biological father is known to be Rh (D)-negative.	B
Sexually transmitted infections counseling	The USPSTF recommends intensive behavioral counseling for all sexually active adolescents and for adults who are at increased risk for sexually transmitted infections.	B

Skin cancer behavioral counseling	The USPSTF recommends counseling young adults, adolescents, children, and parents of young children about minimizing exposure to ultraviolet (UV) radiation for persons aged 6 months to 24 years with fair skin types to reduce their risk of skin cancer.	B
Statin preventive medication: adults ages 40–75 years with no history of CVD, 1 or more CVD risk factors, and a calculated 10-year CVD event risk of 10% or greater	The USPSTF recommends that adults without a history of cardiovascular disease (CVD) (i.e., symptomatic coronary artery disease or ischemic stroke) use a low- to moderate-dose statin for the prevention of CVD events and mortality when all of the following criteria are met: 1) they are ages 40 to 75 years; 2) they have 1 or more CVD risk factors (i.e., dyslipidemia, diabetes, hypertension, or smoking); and 3) they have a calculated 10-year risk of a cardiovascular event of 10% or greater. Identification of dyslipidemia and calculation of 10-year CVD event risk requires universal lipids screening in adults ages 40 to 75 years.	B
Tobacco use counseling and interventions: nonpregnant adults	The USPSTF recommends that clinicians ask all adults about tobacco use, advise them to stop using tobacco, and provide behavioral interventions and U.S. Food and Drug Administration (FDA)–approved pharmacotherapy for cessation to adults who use tobacco.	A
Tobacco use counseling: pregnant women	The USPSTF recommends that clinicians ask all pregnant women about tobacco use, advise them to stop using tobacco, and provide behavioral interventions for cessation to pregnant women who use tobacco.	A
Tobacco use interventions: children and adolescents	The USPSTF recommends that clinicians provide interventions, including education or brief counseling, to prevent initiation of tobacco use in school-aged children and adolescents.	B
Tuberculosis screening: adults	The USPSTF recommends screening for latent tuberculosis infection in populations at increased risk.	B
Syphilis screening: nonpregnant persons	The USPSTF recommends screening for syphilis infection in persons who are at increased risk for infection.	A
Syphilis screening: pregnant women	The USPSTF recommends that clinicians screen all pregnant women for syphilis infection.	A
Vision screening: children	The USPSTF recommends vision screening at least once in all children ages 3 to 5 years to detect amblyopia or its risk factors.	B