2021 Clinical Practice Guidelines on Periodic Health Examination

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ABSTRACT

Background and Objective. The first Philippine Guidelines on Periodic Health Examination (PHEX) provided evidence-based recommendations for prevention strategies in the Philippines, published in 2004. This 2021 clinical practice guideline (CPG) on PHEX aimed to update the previous PHEX recommendations to align with the implementation of the Universal Health Care Act. This CPG aimed to guide primary care providers, specialists, patients, and the general public and provide recommendations for safe, accessible, and cost-effective screening practices.

Methods. We followed the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach, including the GRADE Adolopment and Evidence-to-Decision framework (EtD). A multisectoral panel developed the recommendations by a formal consensus method upon evaluation of the evidence on benefits and harms, cost-effectiveness, patient values and preferences, acceptability, feasibility, and impact on equity. A conflicts of interest (COI) committee reviewed, evaluated, and managed the potential or declared conflicts of interest of this CPG's Task Force members.

Results. The 2020 PHEX CPG had 23 recommendation statements. Strong recommendations were made to screen for the following conditions 1) Hypertension, 2) Type 2 Diabetes Mellitus using fasting blood sugar, 3) Adult obesity using Body Mass Index (BMI), 4) Unhealthy alcohol use in adults, 5) Tobacco smoking, 6) Colorectal cancer, and 7) Cervical cancer.

Weak recommendations were developed to screen for the following: 1) Lipid disorder among adults with cardiovascular risk factors, 2) Type 2 DM using HBA1C, 3) Acute malnutrition in children, 4) Unhealthy alcohol use in adolescents, 5) High-risk sexual behavior, 6) Depression, and 7) Pulmonary Tuberculosis using chest X-ray.

On the other hand, strong recommendations were also made AGAINST screening for the following: 1) Developmental delay using developmental screening tools, 2) Coronary artery disease using ECG, and 3) Chronic Kidney Disease (CKD) using serum creatinine.

Weak recommendations were also formulated AGAINST screening for the following: 1) Anemia using hemoglobin and/or hematocrit, 2) CKD using urinalysis, and 3) Lung cancer using chest X-ray.

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Full copy of the Philippine Clinical Practice Guidelines on Periodic Health Examination can be found on this link – https://drive.google.com/file/d/1l40vBXcNcte6J4m19hw6OOsfyfFOCORp/view

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Conclusion. This guideline encourages adherence without restricting clinical judgment or patient-specific considerations. It also informs payers and policymakers without serving as the sole basis for financial or legal decisions. The strong recommendations in this CPG can be used as quality-of-care indicators when evaluating primary care programs. The recommendation statements will be updated at least every three years or as new evidence emerges.

Keywords: guidelines, periodic health examination, screening, prevention

INTRODUCTION

The first Philippine Guidelines on Periodic Health Examination (PHEX) were published in 2004. This document provided evidence-based recommendations for prevention strategies in the Philippines, and was inspired by similar initiatives in Canada and the US, but tailored to the local context.[1] Given the advancements in science and technology, changes in health policies, and the need to align with the Universal Health Care Act's objective to ensure that all Filipinos have access to quality, affordable medical services, the PHEX guidelines were updated in the 2020 clinical practice guidelines (CPG) on PHEX. This 2020 CPG for the Konsultasyong Sulit at Tama (Konsulta) Package by PhilHealth for quality primary care covers selected health screening tests.[2,3] This CPG aimed to guide primary care providers, specialists, patients, and the general public and provide recommendations for safe, accessible, and cost-effective screening practices.

This document summarizes the first series of recommendations formulated for the updated Philippine PHEX guidelines. The recommendations covered screening tests for specific priority diseases and risk factors. These diseases were prioritized based on their burden, potential benefits of screening, and availability of evidence.

METHODS

The Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach to CPG development recommended in the Department of Health (DOH) Manual on Practice Guideline Development was utilized.[4] The GRADE Adolopment and Evidence-to-decision (EtD) framework was utilized in developing the recommendations (Figure 1).

Preparation

The Task Force Steering Committee set the CPG objectives, scope, target audience, and clinical questions. The steering committee consisted of primary care practitioners, including a family medicine physician, a pediatrician, and an internist; a public health policy maker; a nurse; and a hospital administrator. Some members also functioned as methodologists.

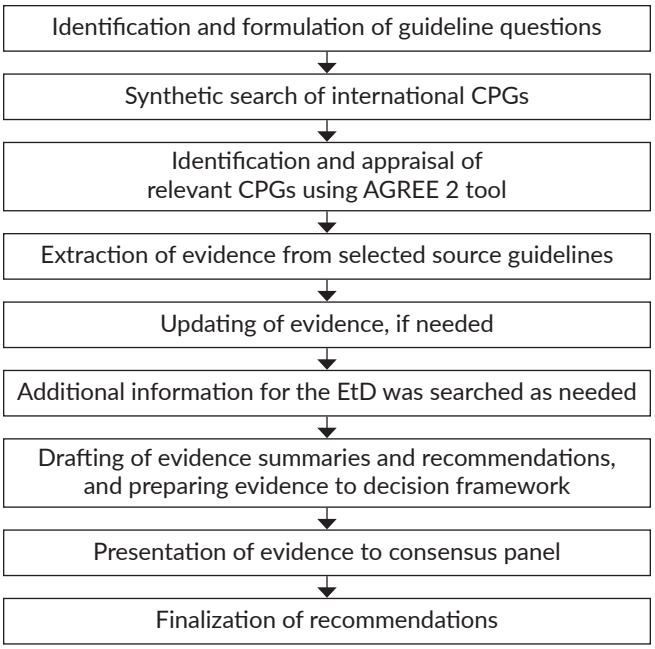

Figure 1. Summary of methodology.

The questions were prioritized using the criteria set by the DOH.[4] The Task Force Steering Committee convened the technical working group involved in creating the evidence base, and the consensus panel involved in formulating the recommendations for each clinical question.

The consensus panel (CP) were comprised of multi-sectoral representatives from the Philippine Medical Association, Philippine Academy of Family Physicians, Philippine Pediatric Society, Inc., Philippine Nurses Association, Inc, Philippine Obstetrical and Gynecological Society Foundation, Inc., Association of Municipal Health Officers of the Philippines, Philippine Society of General Internal Medicine, Philippine Society of Public Health Physicians, Philippine College of Physicians, Philippine College of Occupational Medicine, and DOH. A patient advocate who is also a health economist was also part of the panel. Criteria used in choosing the panel were healthcare providers involved in the implementation or provision of screening tests, and a patient representative with experience in having screening tests performed.

COI Management

All task force members and consensus panel members submitted their declaration of conflict of interest (COI) and curriculum vitae. The declaration included a 4-year period of personal potential intellectual and/or financial conflicts of interest. A COI committee reviewed and evaluated the potential conflicts of interest and gave its recommendation on how to manage them. In general, those with financial COI were not allowed to join. Those with non-financial

COIs (such as authorship related to the CPG topic) were allowed to participate, but COIs were declared during the panel meeting and the final manuscript.

Evidence Synthesis

The clinical questions were developed using the PICO (population, intervention, comparator, and outcome) format. Screening interventions already included in the Konsulta Package, as well as screening interventions for topics deemed by the Screening Committee to be a priority, were included. The criteria for prioritization included diseases with high disease burden in the Philippines, risk factors that were deemed to have a significant impact on society, and wide practice variation in disease conditions. The evidence review experts searched and appraised international practice guidelines related to periodic health screening, including but not limited to those of the Canadian Task Force on Preventive Health Care, the U.S. Preventive Services Task Force, and the National Institute for Health and Care Excellence. The evidence summaries of relevant, good quality CPGs done within five years were adapted using the GRADE Adolopment approach and updated. The AGREE II tool was used to appraise the CPGs, and CPGs with an overall score of >75% across all domains were considered good quality.

If no updated, relevant, and trustworthy CPG was found, a systematic literature search of MEDLINE (via PubMed), The Cochrane Library, and Herdin was performed. Systematic reviews that met the inclusion criteria to answer the clinical questions were used directly to identify relevant articles and a summary of findings. If no related reviews were found, *de novo* systematic reviews were conducted. Each of the studies was critically appraised, noting the methodological quality of the included studies using the standard tools such as the Cochrane Risk of Bias tool (ROB 1.0) for randomized controlled trials (RCTs), Painless EBM appraisal criteria, the Quality Assessment of Diagnostic Accuracy Studies-2 (QUADAS-2) for diagnostic accuracy studies, and the Newcastle–Ottawa Scale (NOS) for observational studies. The GRADE approach rates the certainty of evidence and the strength of recommendations (Table 1).

Formulation of the Recommendations

The multisectoral consensus panel (CP) was tasked to review the evidence summaries and develop recommendations during the *en banc* meeting. Prior to the meeting, the CP prioritized critical and important outcomes (Appendix).

Each CP member was asked to complete an evidence to decision (EtD) questionnaire. The purpose of this questionnaire survey was to allow each CP member to explicitly incorporate other important factors, such as cost-effectiveness, patient values and preferences, applicability, feasibility, appropriateness, equity, and resources in their decision-making.

The direction and strength of each recommendation were determined by a formal consensus method. A consensus was reached when 75% or more of the voters agreed on the proposed recommendation. If a consensus was not reached initially, two further rounds of voting were allowed. A modified Delphi methodology was planned in case no consensus was reached after three rounds of voting. On the rare occasion that no consensus is reached, no recommendation would be indicated in the final CPG manuscript.

A strong recommendation for screening was made when the panel was confident that the benefits of screening outweighed the harms, and that it is valued by patients, feasible, applicable, and has a positive impact on health equity. A weak recommendation for screening meant that the benefits probably outweighed the harms. Strong or weak recommendations against screening were made when the undesirable effects of screening intervention either definitely or probably outweighed its desirable effects. (Table 1)

Finalization of Document

The steering committee reviewed the manuscript for completeness and relevance of the evidence, processes, recommendations, planned methods of dissemination, and the manuscript itself.

Table 1. Grading of Certainty of Evidence and Strength of Recommendations

Certainty of Evidence	Description
High	We are very confident that the true effect lies close to that of the estimated effect
Moderate	We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low	Our confidence in the effect estimate is limited: The true effect maybe substantially different from the estimate of the effect
Very low	We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect
Strength of Recommendation	**Description**
Strong	Advantages of the intervention significantly outweigh disadvantages or disadvantage of the intervention significantly outweigh advantages
Weak	Advantages of the intervention may outweigh disadvantages, disadvantages of the intervention may outweigh advantages, or the relationship between advantages and disadvantages is not clear

**According to the GRADE Working Group*

Dissemination, Implementation, Monitoring, and Updating

The CPG was sent to the DOH for transmittal and publication. The recommendations and the evidence summaries were posted in a web-based application (https://phex.ph). The DOH planned to develop a simplified version of this CPG and make it available in a format that would be ready for reproduction and dissemination to patients in different healthcare settings. It will also be available for interested parties who might visit the DOH website.

Strong recommendations in this guideline can be used as quality-of-care indicators when reviewing and evaluating programs such as primary care programs. Updates will be done at least every three years or if new evidence requires changing the recommendations.

RESULTS

There were 23 recommendations in this CPG, as shown in Table 2.

Recommendation 1: **Among asymptomatic, apparently healthy adults aged 40 to 75 with one or more CV risk factors*, we suggest screening for lipid disorder using a lipid profile test.** *(Low certainty of evidence, weak recommendation).*

**CV risk factors include the following:*
- *Diabetes Mellitus*
- *Hypertension*
- *Smoking history*

Key findings: No studies were found that evaluated the effect of screening versus no lipid screening on mortality and other patient-important outcomes among apparently healthy, asymptomatic adults.

A systematic review of 19 RCTs among adults aged 40 to 75 years with no prior CVD events but with increased cardiovascular risk (presence of dyslipidemia, diabetes mellitus, or hypertension) showed that statin use was associated with a reduced risk for all-cause mortality (RR 0.86, 95% CI 0.80 to 0.93), cardiovascular mortality (RR 0.82, 95% CI 0.71 to 0.94), ischemic stroke (RR 0.71, 95% CI 0.62 to 0.82), and myocardial infarction (RR 0.64, 95% CI 0.57 to 0.71). There was also significantly reduced risk for the composite cardiovascular outcome of death from cardiovascular causes, nonfatal myocardial infarction, or nonfatal stroke (RR 0.70, 95% CI 0.63 to 0.78) compared to placebo.[5] Subgroup analysis showed that the benefit of reducing the risk of CVD events was similar across age, sex, race, lipid level, and other risk factors.[6]

Statin therapy did not lead to an increased risk of serious adverse events compared to placebo (RR 0.99, 95% CI 0.94 to 1.04). There was also no statistically significant increased risk for cancer (RR 1.02, 95% CI 0.90 to 1.16) or elevated aminotransferase levels (RR 1.10, 95% CI 0.90 to 1.35) using statins.[6]

Justification: Despite the low certainty of evidence, the CP recommended screening for lipid disorders among adults 40 to 75 years old with a high risk for CVD because of the benefits associated with the use of lipid-lowering agents among those with lipid disorders.

Recommendation 2: Among asymptomatic, apparently healthy adults aged 18 to 39 years, we suggest AGAINST screening for lipid disorder. (*No evidence found, weak recommendation*)

Key findings: There were no studies evaluating the effects of screening for lipid disorders versus no screening, treating versus not treating those with lipid disorders, or starting statin treatment early versus later in this age group.[5]

Justification: The CP voted AGAINST screening for lipid disorders among asymptomatic, apparently healthy adults aged 18 to 39 years due to insufficient direct evidence. Even though early screening may facilitate early identification of those at risk for heart disease or atherosclerosis, there is no evidence to support screening in this age group.

Table 2. Summary of Recommendations

	Recommendation	Certainty of Evidence	Strength of Recommendation
1.	Among asymptomatic, apparently healthy adults 40 to 75 years with one or more CV risk factors, we suggest screening for lipid disorder using a lipid profile test.	Low	Weak
2.	Among asymptomatic, apparently healthy adults aged 18 to 39 years, we suggest AGAINST screening for lipid disorder.	No evidence	Weak
3.	Among asymptomatic, apparently healthy adults, we recommend screening for hypertension using blood pressure measurement.	Moderate	Strong
4.	Among apparently healthy adults aged 40 years above, or younger if with risk factors, we recommend screening for type 2 diabetes mellitus using fasting blood sugar.	Moderate	Strong
5.	Among apparently healthy adults aged 40 years above, or younger if with risk factors, we suggest screening for type 2 diabetes mellitus using hemoglobin A1c.	Moderate	Weak

Table 2. Summary of Recommendations *(continued)*

	Recommendation	Certainty of Evidence	Strength of Recommendation
6.	Among asymptomatic, apparently healthy adults, we recommend using body mass index (BMI) in screening for obesity.	Moderate	Strong
7.	Among asymptomatic, apparently healthy children (6-59 months), we suggest screening for acute malnutrition using mid-upper arm circumference (MUAC) or weight-for-height z-scores.	Low	Weak
8.	Among asymptomatic, apparently healthy adults, we recommend screening for unhealthy alcohol use using brief screening instruments and providing persons identified with high risk for unhealthy alcohol use with brief behavioral counseling intervention.	Moderate	Strong
9.	Among asymptomatic, apparently healthy adolescents, we suggest screening for unhealthy alcohol use with brief screening instruments and providing persons identified with high risk for unhealthy alcohol use with brief behavioral counseling intervention.	Low	Weak
10.	Among asymptomatic, apparently healthy adolescents and adults, we suggest screening for high-risk sexual behavior.	Low	Weak
11.	Among all adults, we recommend that healthcare providers screen for tobacco smoking.	Low	Strong
12.	Among all adolescents, we recommend that healthcare providers screen for tobacco smoking.	Very Low	Strong
13.	Among asymptomatic, apparently healthy adolescents and adults, we suggest screening for depression using PHQ-9.[a]	Low	Weak
14.	Among asymptomatic, apparently healthy children ages 0-4 years, we recommend AGAINST screening of developmental delay using developmental screening tools.[b]	Low	Strong
15.	Among asymptomatic, apparently healthy adults aged at least 50, we recommend screening for colorectal cancer using annual Fecal Occult Blood Test (FOBT) or Fecal Immunochemical Test (FIT) followed by colonoscopy, when indicated.	High	Strong
16.	Among asymptomatic women aged 21 to 65, we recommend screening for cervical cancer every three years using a Pap smear.[c]	Moderate	Strong
17.	Among asymptomatic women aged 21 to 65, we recommend screening for cervical cancer every three years using visual inspection with acetic acid (VIA) as an alternative to Pap smear.[c]	Moderate	Strong
18.	Among asymptomatic, apparently healthy adults, we recommend AGAINST the use of resting or exercise ECG to screen for coronary artery disease.	Low	Strong
19.	Among asymptomatic, apparently healthy non-pregnant adults, we suggest AGAINST routine screening of anemia using hemoglobin and/or hematocrit.[d]	Very Low	Weak
20.	Among asymptomatic, apparently healthy adults, we suggest AGAINST screening for chronic kidney disease using urinalysis.	Low	Weak
21.	Among asymptomatic, apparently healthy adults, we recommend AGAINST screening for chronic kidney disease using serum creatinine.	No evidence	Strong
22.	Among asymptomatic, apparently healthy adults, we suggest screening for pulmonary tuberculosis using a chest X-ray.	Very Low	Weak
23.	Among asymptomatic, apparently healthy adults, we suggest AGAINST screening for lung cancer using a chest X-ray.	Low	Weak

[a] *This recommendation has been updated in the second series of the PHEX guidelines: Clinical Practice Guidelines on Screening for Mental Health and Addiction.*

[b] *This recommendation has been updated in the second series of the PHEX guidelines: Clinical Practice Guidelines on Screening for Congenital and Developmental Disorders.*

[c] *This recommendation has been updated in the second series of the PHEX guidelines: Clinical Practice Guidelines on Periodic Health Examination Task Force on Neoplastic Diseases 2021.*

[d] *This recommendation has been updated in the third series of the PHEX guidelines: Executive Summary of the Philippines Clinical Practice Guidelines on Periodic Health Examination: Screening for Renal, Metabolic, Nutrition, and Endocrine Disorders.*

Recommendation 3: Among asymptomatic, apparently healthy adults, we recommend screening for hypertension using blood pressure measurement. *(Moderate certainty of evidence, strong recommendation)*

Key findings: Hypertension is a major cause of premature deaths worldwide. It is the leading cause of mortality and morbidity related to cardiovascular disease in the Philippines.[7] Hypertension accounts for an estimated 54 percent of all strokes and 47 percent of all ischemic heart disease events globally.[8]

There were no studies that investigated the effects of screening versus no screening for hypertension among apparently healthy, asymptomatic individuals. Forty-six clinical trials (N=248 887) reported the benefit of pharmacologic treatment among hypertensive patients compared to placebo in reducing stroke, myocardial infarction, and cardiovascular death.[9]

Using various quality of life tools, a study involving 468 participants showed that the quality of life did not significantly change after being labeled with hypertension. The quality of life domains evaluated in the study included 1) state of inner well-being, 2) physical state, 3) sexual function, 4) sleep dysfunction, and 5) performance.[10] Two studies reported that hypertension labeling led to a trend towards an increased number of days absent at work (MD 3.05 days, 95% CI -2.14 to 8.24).[11,12] Most of the reported patient concerns involved the discomfort of ambulatory blood pressure monitoring (ABPM), pain, skin irritation, bruising, and sleep disturbance.[13-17]

Four studies reported that hypertension screening among asymptomatic adults is more cost-effective than no screening or usual care, mainly if hypertension screening is conducted among those aged 45 years and older.[18-21]

Justification: Because of the high burden of disease of hypertension and the evidence supporting the benefit of treating hypertension, the CP strongly recommended screening for hypertension.

Recommendation 4: Among apparently healthy adults aged 40 years above, or younger if with risk factors*, we recommend screening for type 2 diabetes mellitus using fasting blood sugar. *(Moderate certainty of evidence, strong recommendation)*

Recommendation 5: Among apparently healthy adults aged 40 years above, or younger if with risk factors*, we suggest screening for type 2 diabetes mellitus using hemoglobin A1c. *(Moderate certainty of evidence, weak recommendation)*

* *Risk factors: Overweight or obese; maternal history of diabetes or gestational diabetes mellitus; family history of type 2 diabetes in first- or second-degree relative, signs of insulin resistance or conditions associated with insulin resistance (acanthosis nigricans, hypertension, dyslipidemia, polycystic ovary syndrome, or small-for-gestational-age birth weight)*

Key findings: According to the 2017 International Diabetes Federation report, the prevalence of diabetes in the Philippines among adults aged 20 to 79 years was 6.3% (3.99 million individuals, or 1 in 16 adults). However, 66.7% of adults with diabetes remain undiagnosed.[22] Every year, almost four million deaths are directly due to diabetes, comprising 6.8% of the total global mortality. Diabetes is the fourth leading cause of disease-related death, and almost 80% of diabetes-related deaths occur in developing countries.[23] In a 2008 Philippine survey, almost all diagnosed diabetic patients (99%) had cardiovascular complications. Other common complications involved foot complications (82%), nephropathy (81%), neuropathy (67%), and eye complications (62%).[24] IDF reported that the mean overall diabetes-related expenditure per person with diabetes in the Philippines increased from PhP 2,938.37 in 2010 to PhP 11,271.78 in 2017.[25]

One cluster randomized clinical trial (n=20,184) reported no difference in all-cause mortality (HR 1.06, 95% CI 0.90 to 1.25) among those screened for diabetes compared to those who were not screened.[26] There was an inconclusive effect on diabetes-related mortality (HR 1.26, 95% CI 0.75 to 2.10), cardiovascular mortality (HR 1.02, 95% CI 0.75 to 1.38), and cancer mortality (HR 1.08, 95% CI 0.90 to 1.30)

A recent network meta-analysis compared the effects of the different glucose-lowering treatments among diabetic patients.[27] Compared to placebo, SGLT-2 inhibitor and GLP-1 receptor agonist reduced the risk of all-cause mortality (SGLT-2 inhibitor OR 0.77, 95% CI 0.71 to 0.83; GLP-1 receptor agonist OR 0.88, 95% CI 0.83 to 0.94), CV mortality (SGLT-2 inhibitor OR 0.84, 95% CI 0.76 to 0.92; GLP-1 receptor agonist OR 0.88, 95% CI 0.80 to 0.96), and nonfatal MI (SGLT-2 inhibitor OR 0.87 95% CI 0.79 to 0.97; GLP-1 receptor agonist OR 0.92 95% CI 0.85 to 0.99). Compared to placebo, alpha-glucosidase reduced the risk of nonfatal MI (OR 0.19, 95% CI 0.04 to 0.87). On the other hand, sulfonylureas and basal insulin increased the risk for severe hypoglycemia compared to placebo (sulfonylurea OR 6.18, 95% CI 4.11 to 9.29; basal insulin 2.31, 95% CI 1.62 to 3.3).

FBS testing has a pooled sensitivity of 59.4% (95% CI 41.7% to 58.8%) and a pooled specificity of 97.3% (95% CI 95.3% to 98.4%) when compared to the 75-gram oral glucose tolerance test. HbA1c (using a threshold of 6.5%) has a pooled sensitivity of 50.2% (95% CI 41.7% to 58.8%) and a pooled specificity of 97.3% (95% CI 95.3% to 98.4%) compared to the 75-gram oral glucose tolerance test.

There are no local cost-effectiveness studies on screening for type 2 DM. Studies in Asian countries showed that screening adults with diabetes using FBS compared with no screening is cost-effective.[20,28,29]

Justification: Despite the results from a cluster randomized trial, the panel decided to recommend screening for diabetes among high-risk patients because of the burden of diabetes and the benefits of treating diabetes. HbA1c,

however, was only weakly recommended because of its unavailability in remote areas in the country and the lack of standardization of the test. Different laboratories in the country performing the HbA1c test may provide various ranges of normal or reference values.

Recommendation 6: Among asymptomatic, apparently healthy adults, we recommend using body mass index in screening for obesity *(Moderate certainty of evidence, strong recommendation)*

Key findings: The Philippines has an increasing trend of overnutrition from 8.4% in 2015 to 11.7% in 2018. Almost 40% of Filipino adults aged 20 years old to 50 years old are overweight or obese based on their body mass index (BMI) in the 2018 survey.[30] Elevated body mass index is a significant risk factor for cardiovascular diseases, metabolic disorders, and musculoskeletal disorders.[31]

There were no studies that evaluated the effectiveness of screening for obesity. Available studies focused on the management of obesity. Pooled results of 34 RCTs that investigated the effect of diet change with or without exercise among adults who are obese showed a significant decrease in the risk of all-cause mortality (RR 0.82, 95% CI 0.71 to 0.95) compared to no management. However, there was no conclusive effect on the risk of cardiovascular events and cancer incidence.[32]

The pooled sensitivity of BMI with a threshold of 25 to 30 kg/m^2 to detect overnutrition was 54.1% (95% CI 38.5 to 64.2%), and the pooled specificity was 95.4% (95% CI 90.7 to 97.8%) from data on 14,008 women. From data on 11,320 men, the pooled sensitivity was slightly lower (49.6%; 95% CI 34.8 to 64.5%) while the specificity was higher (97.3%; 95% CI 92.1 to 99.1%).

Justification: The panel considered the high diagnostic accuracy of BMI in detecting overnutrition. Though the studies presented used the WHO classification for interpreting BMI results, the panel decided to use the cut-off score based on the Asia-Pacific Classification (BMI kg/m^2) to detect obesity, since this was deemed more appropriate for the local setting.

Recommendation 7: Among asymptomatic, apparently healthy children (6-59 months), we suggest screening for acute malnutrition using mid-upper arm circumference or weight-for-height z-scores. *(Low certainty of evidence, weak recommendation*

Key findings: There is a high prevalence of stunting (30.3%), underweight (19.1%), and wasting (5.6%) among Filipino children 0-59 months based on the Food and Nutrition Research Institute survey in 2018. Among older children 6 to 10 years old, stunting and underweight are also important concerns.[33]

There are no studies found that evaluated the effect of screening compared to no screening for malnutrition among asymptomatic, apparently healthy children.

A regional study revealed that productivity loss and education loss from child undernutrition cost PhP 328 billion in 2013. Repeating grade level requirements, reduced workforce, and premature deaths secondary to undernutrition cost the country 2.8% of our gross domestic product. If the total loss from mortality among those who would supposedly be productive members of the workforce had been prevented, the nation would have increased its productivity by PhP 160 billion.[34]

The sensitivity of mid-upper arm circumference (MUAC) using a cut-off score at 115mm to diagnose severe acute malnutrition (SAM) was 17% (95% CI 8 to 32%), while the specificity was 99% (95% CI 99% to 100%). BMI had a sensitivity of 73.9% (95% CI 64.2 to 81.8%) but a specificity of 94.7% (95% CI 92.2 to 96.4%) in detecting overweight or obesity in children.[35]

Justification: Despite the lack of direct evidence in screening malnutrition in children, the panel still suggested screening for undernutrition because of its high burden and the consequential effect of management.

Recommendation 8: Among asymptomatic, apparently healthy adults, we recommend screening for unhealthy alcohol use using brief screening instruments and providing persons identified with high risk for unhealthy alcohol use with brief behavioral counseling intervention *(Moderate certainty of evidence, strong recommendation).*

Recommendation 9: Among asymptomatic, apparently healthy adolescents, we suggest screening for unhealthy alcohol use using brief screening instruments and providing persons identified with high risk for unhealthy alcohol use with brief behavioral counseling intervention *(Low certainty of evidence, weak recommendation).*

Key findings: In the Philippines, the prevalence of heavy episodic drinking is more than 8 million or 12.1% of the population (15 years old and above). The prevalence of alcohol use disorders and alcohol dependence in the country is at 5.3% and 2.9%, respectively.[36] Out of every 100,000 Filipinos with alcohol addiction, 4,431 deaths would occur due to liver cirrhosis; 2,714 deaths would occur from mouth, colorectal, and breast cancers; 16,418 deaths would occur from hypertensive diseases, and 8,526 deaths would occur from tuberculosis, based on a 2019 report.[37] Social consequences associated with alcohol use include workplace problems, family problems, poverty, and violence.[38] Studies have shown an association of alcohol use with impaired work performance, inability to function well as a household member, and consequent neglect of children, partner violence, murder, and physical injury.[39-43] People who binge drink are more likely to engage in unprotected sex and have multiple

sex partners, increasing the risk of unintended pregnancy and sexually transmitted infections, including HIV.[44,45]

No studies evaluated the direct effect of screening for unhealthy alcohol on reducing alcohol use or improving health outcomes such as morbidity or mortality. Numerous brief screening instruments (one- or two- item questions, AUDIT-C, AUDIT, ASSIST) can detect unhealthy alcohol use with acceptable sensitivity and specificity. Among adolescents (12-18 years old), the sensitivity of the AUDIT-C and AUDIT to identify unhealthy alcohol use ranges from 73 to 79%, and a specificity of 79 to 81%.[46]

Among adults (18 years old and above), brief screening instruments (1-3 items) have sensitivity values ranging from 65 to 92% and specificity values ranging from 66 to 100% of assessing unhealthy alcohol use. A subgroup analysis among young adults (18-25 years old) showed that AUDIT and AUDIT-C have sensitivity values ranging from 80 to 88% and specificity values ranging from 70 to 97% for unhealthy alcohol use. Among the older adult subgroup (≥65 years old), these screening tools have sensitivity values ranging from 64 to 97% and specificity values ranging from 70 to 100%.[46]

Justification: The CP considered unhealthy alcohol use as a priority, with benefits outweighing undesirable effects. Screening with the use of tools was deemed cost-effective, but it must include a brief behavioral counseling intervention.

Recommendation 10: Among asymptomatic, apparently healthy adolescents and adults, we suggest screening for high-risk sexual behavior *(Low certainty of evidence, weak recommendation).*

Key findings: High-risk sexual behavior, which includes unprotected sexual intercourse, unprotected mouth-to-genital contact, anal sex, multiple sex partners, and sex with a partner who injects drugs, is a risk factor for many diseases.[47] Based on a national survey, only 1 in 10 sexually active Filipinos consistently use contraceptives to avoid sexually transmitted diseases.[48] Among young Filipino adults, only 2 of 10 always used protection.[49]

A study has shown that screening for sexual risk behavior compared to no screening resulted in a statistically significant increase in detection for gonorrhea/chlamydia (RR 1.27, 95% CI 1.05 to 1.53) and syphilis (RR 1.21, 95% CI 1.06 to 1.38).[50] Early diagnosis allows for prompt treatment of the involved patients and their sexual partners. Gonorrhea, chlamydia, and syphilis are easily managed using appropriate antibiotics.[51] Early treatment prevents serious complications that may worsen infections and lead to death.[52,53]

When high-risk sexual behaviors are screened, individuals who can benefit from voluntary counseling and testing (VCT) can be identified. Behavioral counseling interventions were found to be effective in preventing sexually transmitted infections, reducing risky behaviors, and promoting higher condom use compared to no intervention or usual care.[54]

There were two questionnaire-type assessment tools for risky behavior in large-population settings, namely, the National Survey of Sexual Attitudes and Lifestyle (NATSAL) from the United Kingdom (UK) and the Youth Risk Behavior Surveillance Survey (YRBSS) from the United States (US).[55]

Justification: The CP considered that the benefits of screening for high-risk sexual behavior outweigh the harmful effects. The CP deemed this to be a priority problem, especially in light of the rising cases of HIV infection. The screening was perceived to be inexpensive, although there may be other related expenses.

Recommendations 11: Among all adults, we recommend that healthcare providers screen for tobacco smoking. *(Low certainty of evidence, strong recommendation).*

Recommendations 12: Among all adolescents, we recommend that healthcare providers screen for tobacco smoking. *(Very low certainty of evidence, strong recommendation).*

Key findings: Smoking is a major risk factor for NCDs. In 2019, smoking caused more than 7 million deaths worldwide, or 20.2% of all deaths in males and 5.8% in females.[56] Despite the stronger push for tobacco control strategies, particularly the tobacco excise tax in recent years, the latest WHO data still show a high age-standardized prevalence of smoking among Filipinos aged 15 years and older at 24.3% overall (41.6% in males, 7.0% in females).[57] The Philippines spent PhP 177 billion to treat just four of over 30 tobacco-related diseases, while tobacco excise tax collections for that year were inadequate to cover this deficit.[58]

There were no studies found that reported the effectiveness of screening for tobacco smoking compared to no screening. A study on the effect of an intensive physician-based behavioral intervention among 1,445 male smokers reported no significant effect on all-cause mortality (RR 0.93, 95% CI 0.80 to 1.09). There was an inconclusive effect on fatal coronary artery disease (RR 0.87, 95% CI 0.67 to 1.13) and lung cancer (RR 0.89, 95% CI 0.59 to 1.38).[59]

Systematic reviews on the effectiveness of behavioral and pharmacological interventions, alone or in combination, in increasing quit rates showed a robust increase in long-term (at least six months) smoking cessation in the general adult population compared to no intervention or usual care (RR 1.83, 95% CI 1.68 to 1.98).[59] Another systematic review that included 24 randomized controlled trials on 13,141 adult participants from 11 low- to middle-income countries (LMICs) reported that brief advice, behavioral counseling, combination bupropion and counseling, and nicotine replacement therapy were effective in promoting abstinence from smoking for at least six months in these settings (OR 6.87, 95% CI 4.18 to 11.29).[60]

Among children, one observational study with a long-term follow-up of 16 years reported that a brief 2 to 3-minute intervention, which included asking about smoking status

and counseling, administered during routine dental visits, showed a trend towards benefit in reducing the likelihood of smoking in adulthood (OR 0.78, 95% CI 0.56 to 1.09).[61]

A systematic review of 67 studies compared self-reported smoking with direct measurement of cotinine levels from biological fluids.[62] Pooling of results was not done because of substantial heterogeneity. In most studies, self-reported smoking prevalence was lower compared to direct measurement of cotinine levels by a range of 1% to 47%, possibly indicating underreporting of smoking status.

Justification: The panel gave a strong recommendation to screen for tobacco use despite the low and very low certainty of evidence because of the high burden of the diseases associated with smoking.

Recommendation 13: Among apparently healthy adolescents and adults, we suggest screening for depression using PHQ-9. *(Low certainty of evidence, weak recommendation)**

* *This recommendation has been updated in the second series of the PHEX guidelines (Clinical Practice Guidelines on Screening for Mental Health and Addiction).*

Key findings: The WHO estimated that 3.3 million Filipinos had a depressive disorder in 2017.[63] During the COVID-19 pandemic, the prevalence of depressive disorder increased from 3.4% to 25% (95% CI 18 to 33%).[64] Major depression is a common illness that severely limits psychosocial functioning and diminishes the quality of life, contributing to approximately 6.2% of years lived with disability (YLD).[65] Major depression also leads to three times higher rates of suicide attempts and deaths.[66,67]

Studies have shown that screening for depression is beneficial in adults living in areas with adequate health systems that can ensure accurate confirmatory diagnosis. Pooled results from nine trials (n=3,814) revealed a higher likelihood of disease remission among those screened versus those not screened (RR 1.23, 95% CI 1.12 to 1.36).[68]

There were no trials that evaluated the impact of screening for depression on suicide-related outcomes.[68] One study (n=1,356) reported significant improvement in the mental component scale (MCS) scores of patients who underwent a 12-month quality improvement program for depression in a managed primary care setting compared to usual care.[69] There were no adverse events reported attributed to screening for depression in adults.[68,69]

Screening for depression may be performed using the Patient Health Questionnaire (PHQ-9). This questionnaire scores each of the nine DSM-IV criteria for depression and can be used for both screening and monitoring of the disease. A Filipino version of the PHQ-9 was recently validated in a study on Filipino migrant domestic workers in Macao.[70] The pooled sensitivity for PHQ-9 for detecting depression is 65.2% (95% CI 64% to 67%), and the pooled specificity is 87.3% (95% CI 87%- 88%).[71-73]

Justification: The CP's decision to suggest screening for depression was based on the alarming increase in the incidence of depression in the Philippines and the perceived net benefit of screening. However, the panel also recognized certain barriers to effective implementation, including possible stigma, diagnostic accuracy of PHQ-9, the lack of specialists who can provide related interventions, and the costs of training non-specialists. Screening with PHQ-9 was seen as an acceptable and feasible recommendation, but the accessibility of depression management should be improved for it to be equitable.

Recommendation 14: Among asymptomatic, apparently healthy children, we recommend AGAINST screening for developmental delay using developmental screening tools. *(Low certainty of evidence, strong recommendation)**

* *This recommendation has been updated in the second series of the PHEX guidelines (Clinical Practice Guidelines on Screening for Congenital and Developmental Disorders).*

Key findings: In the Philippines, the prevalence of developmental delay ranged from 9.0 to 15.1% among children between 0 and 96 months.[74] There were no studies that evaluated the effect of screening for developmental delay in children with no known developmental concerns on health outcomes.

The diagnostic accuracy of commonly used tools for screening developmental delay, such as the Ages and Stages Questionnaire (ASQ) and the Parents' Evaluation of Developmental Status (PEDS), was poor. Sensitivity ranged from 41% to 55%, while sensitivity ranged from 86% to 89%. The low specificity of these tools would lead to a high proportion of false positives.[75,76]

Universal screening for developmental delay leads to early referral (RR 1.95, 95% CI 1.49-2.54) based on one RCT involving 2103 children.[77] Universal screening for language delay using a screening tool did not show significant improvement in academic performance based on one RCT (n=11,440). Some of these academic performance measures were attendance at a special school (RR 0.71, 95% CI 0.48-1.04), repeating a grade (RR 0.99, 95% CI 0.81-1.21), or repeating a grade because of language problems (RR 1.26, 95% CI 0.89-1.80).

Justification: *T*he panel agreed that developmental delay should be a priority concern in periodic health examinations. The consensus panel decided to recommend AGAINST developmental screening for the general population due to uncertainty on the accuracy of available screening tests and their benefits. Although the CP does not recommend the use of standardized screening tools, practitioners are encouraged to consider caregivers' reports and perform routine history taking and physical examination, which may include questions relevant to detecting possible delays in developmental milestones.

Recommendation 15: Among asymptomatic, apparently healthy adults aged at least 50, we recommend screening for colorectal cancer using annual Fecal Occult Blood Test (FOBT) or Fecal Immunochemical Test (FIT) followed by colonoscopy, when indicated. *(High certainty of evidence, strong recommendation)*

Key findings: In the Philippines, colorectal cancer (CRC) is the second most common cancer in Filipino men (23.7 per 100,000) and the third most common cancer in Filipino women (15.1 per 100,000). In 2020, CRC was the third-leading cause of cancer-related deaths for both Filipino men and women, with an age-standardized mortality rate of 10.1 per 100,000.[78] The five-year relative survival rate of Filipino CRC patients was 40.2% from data gathered in 1993 to 2002.[79,80] Globally, the five-year overall survival (OS) ranges from 92% in stage I to 11% in stage IV.[79] CRC is costly, and families face financial catastrophe within the first year of treatment. In the Philippines, it was reported that 40.6% of Filipino households struggle financially after a cancer diagnosis.[81]

Screening with FOBT (Hemoccult II) resulted in a reduction of CRC-specific mortality compared to no screening for both annual and biennial screening (RR 0.82, 95% CI 0.76 to 0.89), and for biennial screening alone (RR 0.87, 95% CI 0.82 to 0.91). One study involving annual FOBT also showed a marked reduction of CRC-related mortality (RR 0.67, 95% CI 0.56 to 0.80). These studies involved 2 to 9 rounds of screening with a range of 11 to 30 years of follow-up.[82-86]

One prospective cohort study in Taiwan with 5,417,699 participants aged 50 to 69 years showed that biennial screening with FIT was associated with lower CRC mortality than no screening (adjusted RR 0.90, 95% CI 0.84 to 0.95).[87] There were no harms directly related to testing for fecal occult blood. However, several studies presented complications arising from diagnostic colonoscopies following an abnormal stool test. The pooled estimate was 17.5 serious bleeding per 10,000 procedures (95% CI 7.6 to 27.5) and 5.7 perforations per 10,000 procedures (95% CI 2.8 to 9.7).[88]

In resource-limited countries, FOBT is the first choice for screening.[89] Since sensitivity is increased by repeated testing, a complete FOBT consists of three separate bowel movement samples, with two samples from each stool.[90] FIT is a newer type of FOBT that uses antibodies to detect the globin portion of human hemoglobin with the added benefit of increased sensitivity and specificity.[91-93] Sensitivity and specificity vary greatly for FIT due to the wide variety of manufacturers, test cutoffs, analysis methods, and test kits available.[87,93-105] Both tests, when positive, require further testing, often in the form of direct visualization tests such as colonoscopy or flexible sigmoidoscopy (FS).

Cost-effectiveness studies from different countries showed that screening strategies for colorectal cancer (i.e., annual FOBT, FOBT followed by colonoscopy, FOBT combined with HRFQ, annual FIT, colonoscopy, and FIT followed by colonoscopy) were cost-effective compared with no screening.[106-108]

Justification: CRC was considered by the CP as a priority health problem. The CP deemed that screening for CRC has net benefits, and the screening tests are accurate. There were concerns about the cost of screening and treatment; however, the panelists agreed that FOBT, FIT, and colonoscopy are acceptable and feasible. Although there were more studies on FOBT, FIT was considered by the CP to be more accurate than FOBT.

Recommendation 16: Among asymptomatic women aged 21 to 65, we recommend screening for cervical cancer every three years using a Pap smear. *(Moderate certainty of evidence, strong recommendation)**

Recommendation 17: Among asymptomatic women aged 21 to 65, we recommend screening for cervical cancer every three years using visual inspection with acetic acid as an alternative to the Pap smear. *(Moderate certainty of evidence, strong recommendation).**

** This recommendation has been updated in the second series of the PHEX guidelines (Clinical Practice Guidelines on Periodic Health Examination Task Force on Neoplastic Diseases 2021).*

Key findings: A cluster randomized trial in India evaluated the effect of screening using visual inspection with acetic acid (VIA) or cytology testing compared to routine care with advice to seek screening at local hospitals.[109] Colposcopy was done for women with positive results on screening. Women with colposcopic findings of low-grade or high-grade lesions received treatment, which included immediate cryotherapy, loop electrosurgical excision procedure (LEEP), or conization. Women with suspected invasive cancer were referred to a hospital for surgery, radiotherapy, or both. Cervical cancer screening with cytology testing had a significant benefit in reducing the incidence of stage 2+ cervical cancer (RR 0.69, 95% CI 0.50 to 0.97) compared to no screening. There was inconclusive evidence on the effect of screening on the incidence of stage 2+ cervical cancer among asymptomatic women (RR 0.97; 95% CI 0.71 to 1.31). There was also inconclusive evidence on mortality, both for screening with cytology testing (RR 0.83, 95% CI 0.58 to 1.19) and screening with VIA (RR 0.81, 95% CI 0.57 to 1.16).

A decision analysis conducted for the 2018 cervical cancer screening guidelines of the USPSTF reported the benefits of cytology testing compared to no screening.[110] Starting cytology testing at age 21 and adhering to a triennial screening interval yielded reductions in both cervical cancer cases (2.34 per 1000 women) and cervical cancer deaths (0.76 per 1000 women). In the absence of screening, the incidence of cervical cancer was 18.86 cases per 1000 women, while cervical cancer mortality affected 8.34 per 1000 women.

A systematic review evaluated the diagnostic accuracy of visual inspection with acetic acid (VIA) and cervical cytology (Pap smear) compared to colposcopy with or without biopsy.[111] The pooled sensitivity for VIA was 77% (95% CI 66 to 85%), while the pooled specificity was 82% (95% CI 67 to 91%). The pooled sensitivity for Pap smear was 84% (95% CI 76, 90%), while the pooled specificity was 88% (95% CI 79 to 93%).

Justification: The CP unanimously agreed to recommend cervical cancer screening due to its benefits. The majority concurred on the high diagnostic accuracy of available screening tools. Despite the expense associated with confirmatory tests, they deemed cervical cancer screening to be cost-effective.

Recommendation 18: Among asymptomatic apparently healthy adults, we recommend AGAINST the use of resting or exercise ECG to screen for coronary artery disease. *(Low certainty of evidence, strong recommendation)*

Key findings: No trials were found for resting ECG, but two RCTs, on exercise ECG involving 1,151 asymptomatic adults with diabetes showed an inconclusive effect in mortality (RR 1.18, 95% CI 0.72 to 1.93) or non-fatal myocardial infarction (RR 0.96, 95% CI 0.57 to 1.64) with screening compared to no screening.[112,113] In one trial, 20 participants had exercise ECG abnormalities that led to unnecessary invasive treatment procedures like coronary angiography and subsequent revascularization, with one case resulting in a non-fatal myocardial infarction. Harms of ECG screening include unnecessary invasive tests, overtreatment, radiation exposure, contrast-induced complications, medication side effects, and economic burden, with up to 3% of asymptomatic individuals undergoing coronary angiography and 0.5% undergoing revascularization despite the lack of evidence on benefit.[114]

No studies provided sensitivity and specificity data for resting ECG in detecting coronary artery disease (CAD). The pooled sensitivity of exercise ECG for detecting CAD in asymptomatic adults was 75% (95% CI 67 to 81%), and the pooled specificity was 56% (95% CI 32 to 78%).[115-120]

Justification: The CP unanimously agreed to recommend AGAINST ECG screening for CAD among healthy adults. The majority perceived that the benefits of ECG screening are minimal compared to potential harms, such as undergoing invasive procedures, and the cost. The CP also highlighted the poor diagnostic performance of exercise ECG in detecting CAD, and concerns about the lack of studies on resting ECG and the cost of exercise ECG. Some panel members raised a concern about NOT recommending exercise ECG since this is commonly used to assess fitness for work, citing that other screening strategies, such as history-taking and physical examination, may not be accurate for cardiovascular clearance.

Recommendation 19: Among asymptomatic, apparently healthy non-pregnant adults, we suggest AGAINST routine screening of anemia using hemoglobin and/or hematocrit. *(Very low certainty of evidence, weak recommendation)**

* *This recommendation has been updated in the third series of the PHEX guidelines (Executive Summary of the Philippines Clinical Practice Guidelines on Periodic Health Examination: Screening for Renal, Metabolic, Nutrition, and Endocrine Disorders).*

Key findings: In the Philippines, iron deficiency anemia (IDA) is highly prevalent among infants (40.5%), pregnant women (26.4%), lactating women (16.7%), and elderly males (23.0%).[121] According to the 2018 National Nutritional Survey, anemia affects 8.3% of Filipino adults aged 20-59 years and 20.2% of adults aged 60 years and older.[122]

There were no studies that evaluated the effectiveness of screening for anemia using hemoglobin and hematocrit. The gold standard diagnostic test for iron-deficiency anemia is a Prussian blue stain of a bone marrow aspirate smear), but this is rarely done.[123] A systematic review reported no significant benefit of iron therapy compared to placebo in patients with anemia on mortality (RR 0.95 95% CI 0.68 to 1.61), length of hospital stay (MD -2.5 days, 95% CI -6.8 to 1.8), hemoglobin (MD 11.4 g/dL, 95% CI -0.30 to 3.1), and quality of life (MD 0.13 points, 95 % CI -0.37 to 0.10). Iron therapy led to a reduced risk for the need for blood transfusion (RR 0.74 95% CI 0.55 to 0.99).[124]

Justification: Although the CP acknowledged the utility, safety, and accessibility of routine blood tests for detecting certain diseases, there is inadequate evidence on the benefit of screening for anemia in the general population. Complete blood count (CBC) is not mandated by law to be part of health screening, but is often done in clinical practice. The CP discussed that CBC may be requested mainly for surveillance of workers at risk for occupational diseases, such as lead toxicity among employees of battery manufacturing companies, and anemia among jeepney drivers.

Recommendation 20: Among asymptomatic apparently healthy adults, we suggest AGAINST screening for chronic kidney disease using urinalysis. *(Low certainty of evidence, weak recommendation)*

Recommendation 21: Among asymptomatic apparently healthy adults, we recommend AGAINST screening for chronic kidney disease using serum creatinine. *(No evidence, strong recommendation)*

Key findings: The prevalence of CKD among Filipino adults in 2013 was 3.2% (95% CI 2.9-3.6%).[125] The quality of life (QoL) of patients with CKD progressively decreases with advancing stages of CKD.[126]

There are no studies evaluating the effect of screening for CKD using urinary dipsticks in the general population and hospitalized patients.[127] One study screened for albuminuria

in the general population. Patients with urinary albumin excretion rate between 15 and 300 mg/d, blood pressure <160/100 mm Hg, and plasma cholesterol <8.0 mmol/L were treated with fosinopril and pravastatin. The effect on CV events was inconclusive for patients treated with fosinopril compared to placebo (RR 0.60, 95% CI 0.21 to 1.74), pravastatin versus placebo (RR 0.92, 95% CI 0.45 to 1.89), and fosinopril plus pravastatin versus placebo (RR 0.53, 95% CI 0.18 to 1.58).[128]

Pooled sensitivity of urine dipstick protein compared to urine albumin to creatinine ratio (UACR) in detecting urine protein was 82% (95% CI 42 to 97%), using a cut-off of 1+ or higher for the urine dipstick protein. The sensitivity of urine dipstick protein using a cutoff of 1+ or higher in detecting CKD is low (Sn 28.6%, 95% CI 28.3 to 28.9), but there is high specificity at 100%.[129] Another study reported that the sensitivity of urine dipstick protein compared to eGFR<60 ml/min/1.73 sqm in detecting CKD was only 6.9% (95% CI 6.4 to 7.4), while the specificity was 97%(95% CI 96.9 to 97.1).[130] There were no diagnostic accuracy studies that evaluated serum creatinine compared to any reference standard to detect CKD in asymptomatic, apparently healthy individuals.

Justification: The CP recommended AGAINST screening for CKD due to the low diagnostic accuracy of urine dipstick and the lack of diagnostic accuracy studies for serum creatinine. Although these screening tests are not expensive and widely available, further diagnostic work-up to ascertain the cause of CKD and subsequent treatment is costly. Access to treatment services for CKD also remains a challenge.

Recommendation 22: Among asymptomatic apparently healthy adults, we suggest screening for pulmonary tuberculosis using a chest X-ray. *(Very low certainty evidence, weak recommendation)*

Key findings: Based on the 2021 WHO guidelines on tuberculosis screening, there was no conclusive effect between active and passive screening approaches on treatment success rates (OR 1.02, 95% CI 0.69 to 1.50) and case mortality (OR 0.91, 95% CI 0.57 to 1.46).[131]

Fewer severe TB cases (smear grade 2+ and 3+) were actually detected using active screening compared to passive screening (OR 0.41, 95% CI 0.30 to 0.56).[132-134] One cluster RCT among children that evaluated active screening through community mobilization and open laboratory access at health centers compared to passive screening showed an inconclusive effect in TB incidence (OR 1.09, 95% CI 0.86 to 1.40) and latent TB prevalence (OR 1.36, 95% CI 0.59 to 3.14).[135] One cluster RCT among adults reported that active screening using a door-to-door approach significantly reduced TB incidence (OR 0.55, 95% CI 0.39 to 0.77) and latent TB prevalence (OR 0.50, 95% CI 0.32 to 0.78).[136]

The pooled sensitivity of chest X-ray (CXR) for detecting TB was 94% (95% CI 92 to 96%, while the pooled specificity was 89% (95% CI 85 to 92%).[131] Screening at-risk asymptomatic patients, including healthcare workers, contacts of TB patients, and those with comorbidities, resulted in higher sensitivity values (100%) but lower specificity values (65.7%). CXR screening enabled identification of 98.2% of TB cases compared to symptom screening alone, which identified only 32.2% of cases.[137] Based on the pooled sensitivity and specificity data for CXR (131) and TB prevalence in the Philippines, an estimated 12,849 out of 100,000 people may receive false-positive tuberculosis diagnoses, while around 70 cases per 100,000 may be missed if chest X-ray screening is used.[137]

Justification: The CP emphasized prioritizing pulmonary tuberculosis (PTB) screening in periodic health examinations due to the large burden of disease of PTB. While screening for PTB was viewed as potentially beneficial, the CP expressed uncertainty on the magnitude of benefit due to the absence of RCTs investigating its impact on critical outcomes. CXR was deemed accurate in detecting PTB, but concerns were raised about its accessibility compared to sputum microscopy, especially in rural areas. The high false-positive rate in CXR and the negative social stigma linked with PTB were also discussed. Some panel members preferred screening to be conducted through symptom assessment rather than CXR, but acknowledged the current use of CXRs in various settings, like school enrollment and employment.

Recommendation 23: Among asymptomatic apparently healthy adults, we suggest AGAINST screening for lung cancer using a chest X-ray. *(Low certainty of evidence, weak recommendation).*

Key findings: Two RCTs showed no significant difference in lung cancer mortality between individuals who underwent annual CXR screening compared to those with no screening (RR 0.99, 95% CI 0.92 to 1.07).[138-143] A 13-year follow-up study showed similar findings (RR 0.99, 95% CI 0.87 to 1.22). Studies also showed no significant benefit in lung cancer mortality for CXR screening done every six months compared to CXR conducted every one to two years (RR 0.85, 95% CI 0.63 to 1.14), and a trend towards harm when frequent CXR screening was combined with sputum cytology compared to no screening (RR 1.12, 95% CI 1.00 to 1.26).

Annual CXR screening increased early-stage NSCLC detection (RR 1.14; 95% CI 1.03 to 1.25) and decreased late-stage lung cancer detection compared to no screening (RR 0.93, 95% CI 0.87 to 0.98).[138,139]

There was no significant difference in all-cause mortality for groups screened annually with CXR versus those not screened (RR 0.98, 95% CI 0.96 to 1.00), those screened more frequently versus less frequently with CXR (RR 0.96, 95% CI 0.93 to 1.00), and groups with CXR combined with sputum cytology versus no screening (RR 1.08, 95% CI 0.96 to 1.22).[138,144] Approximately 40 deaths per 1,000 patients (95% CI 2.0 to 6.0) occurred among those who underwent invasive follow-up procedures following CXR screening.

Complications such as pneumothorax and atelectasis resulting from CXR screening were observed in large trials, with rates ranging from 0.4% to 23.3%.[139,145] Infection rates post-invasive procedures ranged from 0.001% to 5.6%.[139] Overdiagnosis rates were estimated between 2.3% to 16.3%.[146,147] Invasive procedures following false positive results were reported at rates ranging from 0.17% to 0.23%. Quality-of-life assessments showed mixed results, with some studies indicating no significant differences post-screening and others showing a decline in mental health scores.[138,139,148] Results for quality of life assessments could not be pooled due to substantial heterogeneity.

Justification: The consensus panel concluded that despite lung cancer being a screening priority, the majority did NOT find chest X-rays to have a convincing net effect for screening healthy adults due to high cost and lack of cost-effectiveness, particularly among asymptomatic populations, and concerns about affordability and accessibility for marginalized communities.

DISCUSSION

This CPG provides evidence-based recommendations for screening of various disorders among Filipino children and adults. The guideline considered various health outcomes, including all-cause mortality, disease-specific mortality, cardiovascular diseases, pregnancy-related outcomes, congenital disorders, and quality of life.

Most recommendations in this CPG align with international guidelines, such as the USPSTF and the Canadian Task Force for Preventive Health Care (CTFPHC).[46,149-153] Notable deviations include screening for lipid disorders using lipid profile tests, screening for depression with the PHQ-9, and screening for colorectal cancer. USPSTF has no specific screening guidelines for lipid disorders, but recommends initiating low- to moderate-dose statins for the primary prevention of CVD events and mortality in adults aged 40 to 75 years old without a history of cardiovascular disease but have at least one traditional CVD risk factor.[6] This CPG also suggests screening for depression using PHQ-9 among apparently healthy adolescents and adults. The USPSTF and American College of Physicians (ACP, 2009) support depression screening in the general adult population, including pregnant and postpartum women, in settings with adequate health systems that can ensure accurate diagnosis, effective treatment, and appropriate follow-up.[89,154] The CTFPHC does NOT recommend routine screening for depression in adults with average risk or increased risk of depression due to the very low certainty of evidence on the benefits and harms. The CTFPHC raised concerns about the potential harms of screening (e.g., false positives, unnecessary treatment, stigma and labeling, and appropriate use of limited resources).

Multiple organizations, including the American Cancer Society, USPSTF, US Multi-Society Task Force of Colorectal Cancer, and the American College of Gastroenterology, recommend screening for CRC through colonoscopy every ten years, annual high-sensitivity guaiac FOBT or FIT, or FS every 5 to 10 years. However, there are certain differences among the international guidelines, including 1) an earlier onset of screening at 45 years as a conditional recommendation by the ACS, 2) screening tools, and 3) age to stop screening, which spans from 75 to 85 years of age. There were no guidelines found on screening for anemia and chronic kidney disease.

CP members formulated the recommendations for asymptomatic, apparently healthy individuals in different age groups, considering the evidence on net benefit or harm, feasibility, equity, and costs of the screening intervention. Challenges that were raised during the CP discussion include the availability of resources, actual screening procedures, and insufficient evidence. For instance, the panel recommended screening for diabetes among high-risk patients despite the limited evidence due to the burden of diabetes and the benefits of its management. HbA1c, however, was only weakly recommended because of its unavailability in remote areas in the country and lack of test standardization. The CP also raised concerns regarding using CXR for TB screening rather than sputum microscopy, which is more commonly available in rural health units. The cost of training non-specialists was anticipated due to the lack of specialists who can provide services to screen for depression. Accessibility of depression management should also be improved. In screening for CRC, the availability of trained practitioners in remote areas and the cost of performing colonoscopy were raised as concerns.

Issues in performing screening procedures include patient privacy and confidentiality, labeling, stigma, and acceptance of results. These should be carefully considered, particularly when screening for high-risk sexual behaviors. Panel members also considered the challenge in screening using FOBT, which requires three FOBTs to be performed. A single FOBT may result in high false-positive rates because of interaction with the patient's diet. Panelists also agreed NOT to formulate a specific recommendation for using colposcopy following Pap smear or VIA in screening for cervical cancer because not all abnormalities found in these screening tools will require subsequent testing with colposcopy. Lastly, although standardized screening tools are NOT recommended for developmental delays, practitioners are encouraged to use caregivers' reports and perform routine physical examination and history taking, which may include questions relevant to detecting possible delays in developmental milestones.

Strengths and Limitations

The development of this CPG involved a rigorous process to produce recommendations grounded in evidence and suitable for implementation in the local context. Key stakeholders, including patient representatives, were actively engaged throughout the process.

Evidence summaries are based on the best available scientific evidence at the time of formulation. However, certain outcomes relevant to screening may not have been reported by the available studies. The evaluation of evidence was conducted in 2021, and this CPG will be updated to incorporate and evaluate new evidence.

Research Gaps

Many research questions arising from the clinical questions identified in this CPG remain unanswered. Specifically, there is a lack of information regarding the benefits and potential harms of screening, as well as issues related to equity, applicability, and feasibility. There is still insufficient evidence to make definitive recommendations for screening certain conditions, including screening for anemia using hemoglobin and hematocrit, screening for lipid disorders, and screening for PTB using chest x-ray.

In the absence of studies that directly evaluated the effect of screening on health outcomes, the diagnostic performance of tests was considered as indirect evidence to answer the clinical question. However, the accuracy of certain tests in the early detection of particular disease conditions has still not been investigated. For example, there are no studies evaluating the diagnostic accuracy of 1) routine CBC in diagnosing iron deficiency anemia, 2) resting ECG in apparently healthy individuals or those with risk factors for CAD, and 3) serum creatinine in identifying CKD. Psychometric properties of some standardized tools used to detect developmental delays have not been established, such as the Early Childhood Development Checklist (ECCD), among apparently healthy children, even if these tools are currently used in the primary care setting.

Conducting studies for certain conditions is challenging, such as studies on screening for high-risk sexual behavior among adults and adolescents. Thus, studies may not always be available for certain clinical questions. There are cost-effectiveness studies on screening the disease conditions included in this CPG, but most are conducted in Western countries. Cost-effectiveness studies in LMICs are still lacking, particularly for conditions where the disease burden has recently increased, such as depression and developmental delays.

Few qualitative studies were found to provide a holistic view of the impact of screening for some conditions. For example, although there have been studies on suicide rates due to the negative impact of being labeled as obese among women of reproductive age, no studies have been conducted in the Philippines. Qualitative studies can also provide information on motivators or determinants among the general population in participating in a screening program despite the probable harm of stigma and mislabeling.

CONCLUSION

This guideline encourages adherence without restricting clinical judgment or patient-specific considerations. It also informs payers and policymakers without serving as the sole basis for financial or legal decisions. The strong recommendations in this CPG can be used as quality-of-care indicators when examining and evaluating primary care programs. The recommendation statements will be updated at least every three years or as new evidence emerges.

Disclaimer

This guideline is intended to be used by general practitioners, specialists, and health professionals who are primary care providers. Although adherence to this guideline is encouraged, it should not restrict primary care providers from using their sound clinical judgment in handling individual cases. Payors and policymakers, including hospital administrators and employers, can also utilize this CPG, but this document should not be the sole basis for evaluating insurance claims. Recommendations from the PHEX app and the guidelines therein should also not be treated as strict rules on which to base legal action.

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APPENDIX

Critical Outcomes

Question	Critical Outcomes	Average Rating
Should lipid profile test be used to screen for lipid disorders among apparently healthy adults?	All-cause mortality	7
	Cardiovascular mortality	8
	Incidence of MI	8
	Incidence of stroke	8
	Incidence of revascularization	8
	Cardiovascular outcomes	8
Should blood pressure measurement be used to screen for hypertension among asymptomatic, apparently healthy individuals?	All-cause mortality	7
	Cardiovascular mortality	8
	Incidence of coronary heart disease	8
	Incidence of stroke	8
	Incidence of revascularization	8
	Incidence of overall cardiovascular events	8
	Quality of life	7
	Absenteeism	7
Should hemoglobin A1c or fasting blood sugar be used to screen for type 2 diabetes mellitus in apparently healthy adults?	All-cause mortality	7
	Cardiovascular mortality	7
	Hospitalization	7
	Diabetes related end-organ damage	8
	Incidence of MI	8
	Incidence of stroke	7
	Incidence of severe hypoglycemia	7
Should anthropometric measurements (e.g., BMI, MUAC, WHR) be used to screen malnutrition (obesity and undernutrition) among asymptomatic, apparently healthy individuals?	All-cause mortality	7
	Incidence of cardiovascular disease (for overnutrition)	8
	Incidence of cancer (for overnutrition)	7
	Weight gain (for undernutrition)	8
Should we screen for unhealthy alcohol use among asymptomatic, apparently healthy adolescents and adults?	All-cause mortality	7
	Incidence of cardiovascular disease	7
	Incidence of liver disease	8
	Hospitalization	7
	Incidence of drinking	7
	Adverse events of management	7
Should screening tools for high-risk sexual behavior be used among asymptomatic, apparently healthy adolescents and adults?	Incidence of sexually transmitted infections	7
	Incidence of HIV infection	8
	Incidence of unwanted pregnancy and abortion	8
	Incidence of genital cancers	8
	Incidence of high-risk sexual behavior	7
Should apparently healthy adults (excluding pregnant women) and adolescents be screened for tobacco smoking?	All-cause mortality	7
	Cardiovascular outcomes	7
	Incidence of lung cancer	8
	Smoking cessation	8
	Smoking prevention	8
	Adverse events of management	7

Question	Critical Outcomes	Average Rating
Should depression screening and assessment tools be used to screen asymptomatic, apparently healthy adolescents and adults?	All-cause mortality	7
	Suicide rate	7
	Incidence of depression	7
	Remission of depression	7
	Adverse events of treatment	7
Should developmental screening tools be used in screening for developmental delay in children ages 0-4?	Referral rates for early intervention	8
	Cognitive function	8
	Academic performance	7
	Incidence of mental health condition	8
	Quality of life	9
	Survival	8
	Functionality	8
Should the fecal occult blood test be used to screen for CRC in asymptomatic, apparently healthy adults?	CRC-related mortality	7
	Prevalence and incidence of CRC	7
Should visual inspection with acetic acid (VIA) or pap smear, followed by colposcopy, be used to screen for cervical cancer in asymptomatic adult women?	All-cause mortality	7
	Cervical cancer mortality	8
	Incidence of cervical cancer	8
	Adverse events of screening	7
Should ECG be used to screen for coronary artery disease among asymptomatic, apparently healthy adults?	Cardiovascular outcomes	7
Should hemoglobin and hematocrit be used in screening for anemia in apparently healthy adults?	Anemia-related mortality and morbidity	8
	Adverse events of treatment	7
Should serum creatinine and/or urinalysis be used to screen for chronic kidney disease among asymptomatic, apparently healthy adults?	All-cause mortality	8
	Cardiovascular mortality	8
	Cardiovascular outcomes	8
	Renal-related mortality	8
	Adverse events of screening	7
	Adverse events of management	7
Should chest X-ray be used to screen for pulmonary TB among asymptomatic, apparently healthy adults	All-cause mortality	8
	TB mortality	8
	Prevalence of tuberculosis	8
	TB cure rate	8
	Adverse events of screening	7
	Prevalence of latent tuberculosis in children	8
	Severity of tuberculosis at time of diagnosis	8
Should chest X-ray be used to screen for lung cancer among asymptomatic, apparently healthy adults?	All-cause mortality	8
	Lung cancer mortality	8
	Detection of lung cancer	8
	Harm from invasive follow-up procedures	7
	Quality of life	7
	Overdiagnosis	7
	Invasive procedure following a false positive result	7