Philippine Clinical Practice Guidelines for Periodic Health Examination: Screening for Infectious Diseases

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ABSTRACT

Background. The persistent burden of communicable diseases, coupled with the risk of asymptomatic transmission, underscores the importance of a structured and evidence-based screening approach in the Philippines.

Objective. This CPG provides evidence-based recommendations for the screening of asymptomatic, apparently healthy adolescent and adult Filipinos for infectious diseases and those with high-risk conditions.

Methods. We followed the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach to CPG development recommended in the Department of Health Manual, including GRADE Adolopment, a systematic process of adapting evidence summaries, and the GRADE Evidence to Decision (EtD) framework. The guideline development process had four general steps: 1) identification of priority research questions; 2) evidence synthesis and analysis; 3) formulation of the recommendations based on the balance of benefit, harm, values, and preferences; and 4) implementation and evaluation. The infectious diseases covered in this CPG are syphilis, chlamydia and gonorrhea, asymptomatic bacteriuria, Hepatitis A, Hepatitis C, HIV, dental infections, COVID-19, latent tuberculosis, and intestinal parasitism.

Results. The task force developed 18 recommendations (10 strong recommendations, 8 weak recommendations) on screening asymptomatic, apparently healthy children and adults for infectious diseases.

Conclusion. This Philippine Clinical Practice Guideline provides evidence-based recommendations for screening infectious diseases among asymptomatic, apparently healthy adolescent and adult Filipinos and those with high-risk conditions, emphasizing a risk-based rather than universal screening approach. The guideline highlights that targeted screening of high-risk populations for infections such as syphilis, HIV, hepatitis C, chlamydia/gonorrhea, and latent tuberculosis can improve early detection, reduce transmission, and prevent compli-

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cations, while avoiding unnecessary costs and harms associated with indiscriminate screening. Overall, the recommendations reinforce the critical role of primary care and preventive health strategies in reducing the burden of infectious diseases in the Philippines.

Keywords: practice guideline, screening, infections

INTRODUCTION

The Philippine Guidelines on Periodic Health Examination (PHEX) were a clinical practice guideline (CPG) published in 2004.[1] It was a comprehensive guide to screening interventions committed to providing early prevention services for apparently healthy Filipinos. It was inspired by the Canadian and the US Preventive Services Task Forces (USPSTF) but tailored to the Philippine setting. This CPG is an update of the recommendations on screening for infectious diseases.

Infectious diseases are illnesses caused by pathogens (i.e., bacteria, viruses, fungi, parasites) or their toxic products, which can be transmitted from an infected host or the environment to a susceptible host.[2] Individuals with infectious diseases may face prolonged hospital stays, repeated clinic visits, and the need for expensive or lengthy treatments, which can deplete personal and family resources. Thus, screening for infectious diseases is an essential public health strategy in countries with a substantial burden of communicable illness, such as the Philippines. The Philippines continues to face challenges with several high-burden infections, such as tuberculosis, HIV, hepatitis B, and various neglected tropical diseases, many of which can be asymptomatic in early stages. These asymptomatic or mildly symptomatic phases enable silent transmission within communities, leading to disease progression in individuals and contributing to population-level spread in the population. Infectious diseases can also inflict considerable economic strain, including healthcare costs, lost productivity, stigma, and social marginalization, as early and systematic screening reduces the likelihood of advanced disease complications, necessitating more intensive and expensive treatment and hospitalization.[3]

This CPG provides evidence-based recommendations for the screening of asymptomatic, apparently healthy adolescent and adult Filipinos for infectious diseases, based on a systematic review of scientific evidence and considering the economic implications of diagnostic tests and treatment, feasibility, accessibility, equity, and patient values and preferences. The recommendations are critical for early detection, prompt treatment, and effective control of infectious diseases. The following infectious diseases covered are syphilis, chlamydia and gonorrhea, asymptomatic bacteriuria, hepatitis A, hepatitis C, human immunodeficiency virus (HIV), dental infections, COVID-19, latent tuberculosis infection (LTBI), and intestinal parasitism. It is intended as a guide for primary health care providers (general physicians and specialists, other healthcare providers), academic medical institutions, labor force administrators, patients, regulatory agencies, policy makers in the Philippine government, and private financial and healthcare delivery institutions in the healthcare industry. Integrating infectious disease screening into routine adult check-ups reinforces the role of primary care in preventive health, reducing the overall burden on tertiary facilities.

METHODS

Guideline Development Methodology

We followed 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.[4] The guideline development process was divided into four phases: 1) Preparation and prioritization of questions, 2) Evidence synthesis, 3) Formulation of Recommendations, and 4) External review with CPG Appraisal. The GRADE Adolopment and Evidence-to-decision (EtD) framework was utilized in finalizing the recommendations.[5,6]

Guideline Preparation

The Task Force Steering Committee set the CPG objectives, scope, target audience, and clinical questions (Table 1). The Task Force Steering Committee convened (1) the technical working group involved in creating the evidence base and (2) the consensus panel (CP) involved in finalizing the recommendations for each clinical question. Questions were prioritized using the criteria set by DOH.

Table 1. List of Guideline Questions

1.	Should screening for latent syphilis be routinely done among asymptomatic, apparently healthy adolescents and adults?
2.	Should screening for gonorrhea and Chlamydia be routinely done among asymptomatic, apparently healthy adolescents and adults?
3.	Should urinalysis be done annually for screening for UTI among asymptomatic, apparently healthy adults? (Screening for asymptomatic bacteriuria)
4.	Should screening for hepatitis A be routinely done among asymptomatic, apparently healthy adults?
5.	Should hepatitis C screening be routinely done among asymptomatic, apparently healthy adults?
6.	Should screening for HIV be routinely done among asymptomatic, apparently healthy adolescents and adults?
7.	Should screening for dental infection (dental caries or periodontal diseases) be done for apparently healthy adults?
8.	Should COVID-19 screening tests be done among asymptomatic, apparently healthy adults?
9.	Should screening for latent TB be done among asymptomatic, apparently healthy children and adults?
10.	Should screening for intestinal parasitism be done among asymptomatic, apparently healthy children and adults?

Management of Conflicts of Interest

All task force members submitted their declaration of conflicts of interest (COI) and curriculum vitae. 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 vote on questions related to the COI. 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. The evidence review experts (ERE) searched and appraised, using the AGREE tool, international practice guidelines related to periodic health screening, including but not limited to those of the Canadian Task Force on Preventive Health Care, U.S. Preventive Services Task Force, and National Institute for Health and Care Excellence. If a guideline was of good quality and had been developed within the last five years, the evidence summaries of the CPG were adopted.

If no recent, relevant, and trustworthy CPG was found, we performed a systematic medical literature search of MEDLINE (via PubMed), The Cochrane Library, CINAHL via EBSCOhost, Google Scholar, and HERDIN PH. Systematic reviews that met our inclusion criteria to answer our clinical questions were used directly to identify relevant articles and a summary of findings. If no related reviews were found, we conducted *de novo* systematic reviews. We critically appraised 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. We used the GRADE approach to rate the certainty of evidence and the strength of recommendations (Table 2).

The EREs generated evidence summaries for each clinical question. Each evidence summary covered direct evidence that highlighted the overall benefits of screening for relevant clinical outcomes. When direct evidence was not available, the approach shifted to evaluating the accuracy of screening tests and presenting the benefits and harms of initiating early treatment for individuals already affected by the condition. This process aligns with the multi-dimensional nature of health screening, which includes conducting screening tests on seemingly healthy populations, utilizing confirmatory tests for positive screening results, and proactively introducing early therapeutic measures to prevent the progression of clinical issues.

Evidence to Decision Consensus Approach

The multisectoral 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).

The CP was provided with the evidence summaries for all the clinical questions and a draft recommendation solely based on the trade-offs between benefit and harm and the certainty of evidence. Each CP member was then asked to complete an EtD questionnaire. The purpose of this questionnaire survey is for 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. Consensus was considered reach when 75% or more of the CP 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

Table 2. 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 estimate of the 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 may be 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 disadvantages 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*

reached during the en banc meetings. On the rare occasion that no consensus was reached, no recommendation was indicated in the final CPG manuscript.

In general, a strong recommendation means that the panel is confident that the desirable effects of adherence to a recommendation outweigh the undesirable effects, while a weak recommendation means that the desirable effects of adherence to a recommendation probably outweigh the undesirable effects, but the panel is not confident (Table 2).

Planning for Dissemination, Implementation, and Update

The SC discussed with relevant stakeholders, such as DOH and PhilHealth, to prepare a dissemination plan including copyright considerations. All recommendations will be incorporated into a web-based and mobile application accessible to the public. The evidence summaries and the full CPG manuscript will be posted online on the DOH website and on https://phex.ph. This will also be published on the official websites of the participating organizations. Copies will also be provided to agencies that handle key populations identified in the document (such as, but not limited to: DOH, Philippine National AIDS Council, National Coordinating Committee for TB, Department of Labor and Employment, National Youth Council, Department of Education, Commission on Higher Education).

Monitoring the implementation of this guideline is crucial to ensure that primary care providers are following evidence-based recommendations for patient care. The strong recommendations in this CPG may be used as key performance indicators (KPIs) to assess adherence to the CPG. The recommendations in this CPG will remain valid until updated after three years or when new evidence emerges.

External Review

Upon completion of the final recommendations and the CPG manuscript, three independent external reviewers (2 Infectious Disease Specialists, and 1 from a government agency primary care provider) were invited to share their insights on the processes, the output, and the planned methods of dissemination of the CPG. AGREE-Recommendation EXcellence (AGREE-REX) tool was used to guide the external reviewers in their review process. The SC considered the comments of the external reviewers and kept a written record of the rationale for modifying or not modifying the CPG in response to the reviewers' comments.

RESULTS

The task force formulated a total of 18 recommendations. The summary of recommendations for screening of infectious diseases is shown in Table 3.

Screening for Syphilis

Recommendation 1: Among asymptomatic, apparently healthy non-pregnant adolescents and adults, we suggest AGAINST routine screening for syphilis. *(Very low certainty of evidence, weak recommendation)*

Key findings: In 2016, there were an estimated 19.9 million prevalent cases of syphilis worldwide among individuals aged 15 to 49, with 6.3 million new cases reported. The highest prevalence was observed in the WHO Western Pacific region. The cases are on the rise globally, particularly among adolescents and men who have sex with men (MSM). In 2016, approximately one million pregnant women were estimated to be infected with syphilis, resulting in over 350,000 adverse

Table 3. Summary of Recommendations on Screening for Infectious Diseases

	Recommendations	Strength of Recommendations	Certainty of Evidence
Syphilis			
1.	Among asymptomatic, apparently healthy non-pregnant adolescents and adults, we suggest AGAINST routine screening for syphilis.	Weak	Very low
2.	Among high-risk[a] asymptomatic, apparently healthy non-pregnant adolescents and adults, we recommend screening for syphilis every 6 to 12 months using rapid plasma reagin (RPR) or venereal disease research laboratory (VDRL) tests.	Strong	Moderate
3.	Among asymptomatic, apparently healthy **pregnant** adolescents and adults, we recommend screening for syphilis as early as possible during pregnancy using rapid plasma reagin (RPR) or venereal disease research laboratory (VDRL) tests.	Strong	Low
4.	Among high-risk[b] asymptomatic, apparently healthy **pregnant** adolescents and adults, we recommend screening for syphilis as early as possible during pregnancy, at 28 weeks, and at delivery using rapid plasma reagin (RPR) or venereal disease research laboratory (VDRL) tests.	Strong	Low
Chlamydia trachomatis* and *Neisseria gonorrheae			
5.	Among asymptomatic, apparently healthy non-pregnant adolescents and adults, we suggest AGAINST routine *Chlamydia trachomatis* and *Neisseria gonorrhoeae* screening.	Weak	Very low
6.	Among high-risk[c] asymptomatic, apparently healthy non-pregnant adolescents and adults, we recommend *Chlamydia trachomatis* and *Neisseria gonorrhoeae* screening using nucleic acid amplification test.	Strong	Low

Table 3. Summary of Recommendations on Screening for Infectious Diseases *(continued)*

Recommendations	Strength of Recommendations	Certainty of Evidence
Asymptomatic Bacteriuria		
7. Among asymptomatic, apparently healthy adults, we suggest AGAINST screening for asymptomatic bacteriuria.	Weak	Very low
8. Among asymptomatic, apparently healthy **pregnant** women, we suggest screening for asymptomatic bacteriuria using urine culture.	Weak	Very low
Hepatitis A		
9. Among asymptomatic, apparently healthy adults, we suggest AGAINST screening for Hepatitis A.	Weak	Very low
Hepatitis C		
10. Among asymptomatic, apparently healthy adults, we recommend AGAINST routine screening for Hepatitis C.	Strong	Very low
11. Among high-risk[d] asymptomatic, apparently healthy adults, we recommend screening for Hepatitis C using serum anti-HCV.	Strong	Very low
Human Immunodeficiency Virus (HIV)		
12. Among asymptomatic, apparently healthy adolescents and adults, we recommend AGAINST routine screening for HIV.	Strong	Very low
13. Among high-risk[e] asymptomatic, apparently healthy adolescents and adults, we recommend HIV screening using a rapid diagnostic test.	Strong	Very low
Dental Infections		
14. Among asymptomatic, apparently healthy adults, we recommend annual screening for dental infections through visual inspection.	Strong	Very low
COVID-19 Infection		
15. Among asymptomatic, apparently healthy adults, we recommend AGAINST universal COVID-19 screening.	Strong	Very low
Latent Tuberculosis (TB) Infection		
16. Among asymptomatic, apparently healthy adults, we suggest AGAINST screening for latent TB.	Weak	Very low
17. Among asymptomatic, apparently healthy adults who are at high-risk for TB infection (i.e., close contacts), we suggest screening for latent TB using TST or IGRA.	Weak	Very low
Intestinal Parasitism		
18. Among asymptomatic, apparently healthy children and adults, we suggest AGAINST routine screening for intestinal parasitism.	Weak	Very low

[a] *Men having sex with men, unprotected sex, persons living with HIV (PLHIV), sexual contact with known cases of syphilis, commercial sex workers, sexual contact with persons from countries or communities with high prevalence of syphilis and syphilis-related morbidity, prior syphilis, born to a person diagnosed with syphilis in pregnancy, multiple sexual partners, and a history of sex in conjunction with illicit drug use.*

[b] *Lives in a community with high syphilis morbidity or is at risk for syphilis acquisition during pregnancy (drug misuse, STIs during pregnancy, multiple partners, a new partner, partner with STIs)*

[c] *Men with HIV infection, non-monogamous relationships without condom use, age<25 years with 2 or more sexual partners in the past year, sex partners with active or previous STI, with previous or coexisting STI, douching within the past year, commercial sex workers, cervical ectopy*

[d] *People with HIV, people who injected drugs and shared needles, people with selected medical conditions including people receiving maintenance hemodialysis and/or people with persistently elevated alanine transaminase (ALT) levels, recipients of transfusions and organ transplants (prior to 1992), health care, emergency medical, and public safety personnel after a needle stick injury or mucosal exposure to Hepatitis C virus-positive blood, and children born to mothers with Hepatitis C infection*

[e] *Key populations (men who have sex with men [MSM], people in prisons and other closed settings, people who use injection drugs, sex workers, and transgender men and women) including adolescents; partners, infants and children of people living with HIV; patients showing signs and symptoms consistent with AIDS defining illness; patients with sexually transmitted infections; patients with Hepatitis B and C; patients with undernutrition not responsive to interventions; all confirmed tuberculosis patients; all pregnant women regardless of risk*

birth outcomes. Cases of congenital syphilis are increasing. Congenital syphilis, transmitted from untreated pregnant women to their babies, can lead to various complications in neonates, including nasal cartilage destruction, seizures, and cranial nerve palsies.[7] Local data from the Philippines in 2022 indicated that among adolescents and adults who had sex, 10.3% had sexually transmitted infections (STIs) or symptoms of STIs within the last 12 months.[8] Among this population, 2.9% reported having genital sores or ulcers.[8]

No studies were found investigating the effectiveness and safety of syphilis screening programs among asymptomatic, apparently healthy populations. There were no available studies comparing the incidence of syphilis between individuals who underwent screening and those who did not.

Justification: A recommendation AGAINST routine screening for syphilis among apparently healthy asymptomatic non-pregnant adolescents and adults was made based on the lack of benefit, feasibility issues, and high cost of screening for this target population.

Recommendation 2: Among high-risk* asymptomatic, apparently healthy non-pregnant adolescents and adults, we recommend screening for syphilis every 6 to 12 months using rapid plasma reagin (RPR) or venereal disease research laboratory (VDRL) tests. *(Moderate certainty of evidence, strong recommendation)*

** High risk: men having sex with men, unprotected sex, persons living with HIV (PLHIV), sexual contact with known case of syphilis, commercial sex workers, sexual contact with persons from countries or communities with high prevalence of syphilis and syphilis-related morbidity, prior syphilis, born to a person diagnosed with syphilis in pregnancy, multiple sexual partners, and history of sex in conjunction with illicit drug use.*[9-12]

Key findings: Based on one trial involving HIV-positive men in an urban HIV clinic that provided opt-out clinic-based interventions (Enhanced Syphilis Screening Among HIV-positive Men) involving syphilis testing in addition to scheduled viral load monitoring, there was a trend towards increased detection of syphilis among those who received the intervention compared to those who opted out (OR 1.44, 95% CI 0.90 to 2.31).[13]

Nontreponemal tests like VDRL and RPR are quantitative but non-specific tests for syphilis and are primarily used for monitoring disease severity. Treponemal tests, such as the fluorescent treponemal antibody absorption test (FTA-ABS) and the *Treponema pallidum* particle agglutination assay (TPPA), are qualitative and are used as confirmatory tests. Treponemal tests cannot monitor disease severity. Both treponemal and nontreponemal tests need to be positive for a syphilis diagnosis. Syphilis screening can follow two algorithms: the traditional method using non-treponemal tests first (which studies report to be the more cost-effective approach), or the reverse algorithm method starting with treponemal tests, which can detect early disease but has a higher false positive rate in low-prevalence populations (which some studies report to be the more efficient approach). Nontreponemal tests like VDRL and RPR showed sensitivities of approximately 81.6% to 83.9% and high specificity (100%).[14] Treponemal tests, including TPPA, FTA-ABS, and others, demonstrated sensitivities ranging from 96.9% to 98.5% and high specificity (96.7 to 100%), establishing their reliability for syphilis diagnosis.[15]

Justification: Screening for asymptomatic non-pregnant adolescents and adults at increased risk for syphilis was strongly recommended based on the benefits and cost-effectiveness of screening in the target population. The definition of individuals at increased risk for syphilis was adopted from Burchell 2022 and from other recommending groups, such as the US Centers for Disease Control, the Public Health Agency of Canada, the British Association for Sexual Health and HIV, and the HIV Medicine Association of the Infectious Disease Society of America.[9,10,12,13] The recommended frequency of testing at 6 to 12 months was based on one randomized controlled trial.[13] Repeat testing every 6 to 12 months was strongly recommended as long as the individual remains at high-risk of having the infection (i.e., high-risk exposure or high-risk sexual behavior).

Recommendation 3: Among asymptomatic, apparently healthy pregnant adolescents and adults, we recommend screening for syphilis as early as possible during pregnancy using rapid plasma reagin (RPR) or venereal disease research laboratory (VDRL) tests. *(Low certainty of evidence, strong recommendation)*

Key findings: In an observational study conducted in China, the implementation of a comprehensive medical model for syphilis prevention and treatment among pregnant women led to increased syphilis screening among pregnant women and decreased adverse outcomes associated with syphilis infection during pregnancy such as premature birth and low birth weight (reduction from 42.7% to 19.2%) and incidence of stillbirth and fetal loss (reduction from 19% to 3.3%).[16] Potential harms of screening include inconsistencies with the results of the screening tests, as well as false-positive results on treponemal tests and false-negative results on a non-treponemal test. Notably, there are no studies on the direct harms associated with the treatment of syphilis with penicillin in pregnant women.

Inadequate or delayed treatment for maternal syphilis was associated with significantly increased risks of adverse pregnancy outcomes compared to early and adequate treatment. These included stillbirth (aOR 3.68, 95% CI 1.62, 8.34), preterm birth (aOR 2.26, 95% CI 1.71, 3.00), low birth weight (aOR 2.23, 95% CI 1.59, 3.14), and congenital syphilis (aOR 3.63, 95% CI 1.80, 7.31), compared to inadequate treatment. Adequate treatment for maternal syphilis was defined as two completed courses of penicillin administered at least 2 weeks apart and more than 28 days before delivery.[17]

Treatment during the first trimester yielded better outcomes compared to treatment during the third trimester. Treatment in the third trimester was associated with increased stillbirth (OR 4.48, 95% CI 1.31-15.30), preterm birth (OR 2.34, 95% CI 1.61, 3.40), and low birth weight (OR 3.25, 95% CI 1.97, 5.37) compared to treatment in the first trimester.

Justification: Despite the low certainty of evidence, screening for syphilis among pregnant adolescents and adults regardless of risk was strongly recommended by the CP. This recommendation was based on the large benefit of early treatment in terms of reduction in pregnancy-related adverse outcomes, and the cost-effectiveness of screening in this target population.

Recommendation 4: Among high-risk* asymptomatic, apparently healthy pregnant adolescents and adults, we recommend screening for syphilis as early as possible during pregnancy, at 28 weeks, and at delivery using rapid plasma reagin (RPR) or venereal disease research laboratory (VDRL) tests. *(Low certainty of evidence, strong recommendation)*

** High-risk: lives in a community with high syphilis morbidity or is at risk for syphilis acquisition during pregnancy (drug misuse, STIs during pregnancy, multiple partners, a new partner, partner with STIs).*[18]

Key findings: There were no studies found investigating the harms and benefits of syphilis screening among high-risk, pregnant women. The Centers for Disease Control (CDC), American Academy of Pediatrics (AAP), and the American College of Obstetricians and Gynecologists (ACOG) recommend that all pregnant women be screened for syphilis during the first prenatal visit, at 28 weeks age of gestation, and at delivery if at high risk for syphilis.[19]

Justification: Screening for syphilis in pregnant adolescents and adults regardless of risk was strongly recommended based on the large benefit of early treatment in terms of reduction in pregnancy-related adverse outcomes, and the cost-effectiveness of screening in this target population. The definition of pregnant adolescents and adults at increased risk for syphilis infection was adopted from the US Centers for Disease Control. Despite the low certainty of evidence, testing as early as possible during pregnancy and repeat testing at 28 weeks and at delivery was strongly recommended due to potential continuous exposure of pregnant adolescents and adults who remained negative for syphilis. The panel further emphasized that pregnant adolescents and adults who tested positive for syphilis should receive adequate treatment, and that repeat testing is no longer necessary after treatment unless there is continuous high-risk exposure.

Screening for Chlamydia and Gonorrhea

Recommendation 5: Among asymptomatic, apparently healthy non-pregnant adolescents and adults, we suggest AGAINST routine *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (NG) screening. *(Very low certainty of evidence, weak recommendation)*

Key findings: Globally, *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (NG) infection accounted for 2.1% and 2.2% of disability-adjusted life years (DALYs) from all STIs excluding HIV in 2019.[20] Based on the Global burden of disease study, chlamydia infection led to 3.39 DALYs per 100,000 among 15- to 49-year-old individuals while gonorrhea infection led to 3.05 DALYs per 100,000 in the Philippines.[21] The prevalence of chlamydia in that year was 1,871.8 per 100,000 for both sexes, while gonococcal infection had a prevalence of 516.8 per 100,000.[20]

Based on six clinical trials that compared screening for CT infection compared to no screening or usual care (which is usually diagnosis and treatment of CT as per local practice), there was inconclusive effect of universal screening for CT on the risk for pelvic inflammatory disease (PID) (RR 1.05, 95% CI 0.66, 1.66), ectopic pregnancy (RR 1.03, 95% CI 0.67, 1.60), epididymitis (RR 0.91, 95% CI 0.72, 1.17) and transmission of CT (RR 0.90 95% CI 0.50, 1.60).[22-25] There was a trend towards harm for universal screening for CT on the risk for infertility (RR 1.15, 95% CI 0.94-1.40).[22-25] No studies investigating screening for NG were found.

Seven observational studies investigated psychological harm from screening or from receiving a positive diagnosis after screening for CT or NG infection.[24-30] Screening for CT had no clinically significant effect on general anxiety scores compared to no screening (change in HADS score MD -0.66 points, 95% CI -1.23, -0.09).[24-30] CT screening did not have a significant effect on overall self-esteem levels before and after the invitation for testing (MD 0.12, 95% CI -0.26-0.50).[24-30] Some individuals may experience emotions related to stigmatization, such as embarrassment or disapproval of social circles, but the severity and duration of these symptoms are unknown. There was a significant increase in anxiety regarding infertility among individuals who tested positive for CT compared to those who tested negative (women RR 3.01, 95% CI 1.49, 6.08; men RR 2.79, 95% CI 1.09, 7.18).[24-30]

Justification: A recommendation AGAINST routine screening for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* among apparently healthy asymptomatic non-pregnant adolescents and adults was based on the lack of evidence on the benefits of screening and the high cost of screening in this target population.

Recommendation 6: Among high-risk* asymptomatic, apparently healthy non-pregnant adolescents and adults, we recommend *Chlamydia trachomatis* and *Neisseria gonorrhoeae* screening using nucleic acid amplification test. *(Low certainty of evidence, strong recommendation)*

** High-risk: men with HIV infection, non-monogamous relationship without condom use, age <25 years with 2 or more sexual partners in the past year, sex partner with active or previous STI, with previous or coexisting STI, douching within the past year, commercial sex workers, cervical ectopy.[31]*

Key findings: One RCT showed that screening for CT in high-risk women decreased the incidence of PID compared to no screening (RR 0.43, 95% CI 0.21-0.90).[32] Women with a risk score of at least 3 were considered high-risk using the following risk scoring: age <24 = 1, black race = 2, nulligravidity = 1, douching in the preceding 12 months = 1, two or more sexual partners in the preceding 12 months = 1.

The CDC recommends nucleic acid amplification tests (NAATs) in screening and detecting chlamydia and gonorrhea infection.[33] In a recent meta-analysis that determined the accuracy of point-of-care tests (POCTs) in detecting Chlamydia infections, NAAT-based POCTs had a pooled sensitivity of 94%, a pooled specificity of 99%, and a diagnostic odds ratio of 1933. In contrast, antigen-based tests had lower diagnostic accuracy (pooled sensitivity 56%, pooled specificity 99%, diagnostic odds ratio 86).[34]

No evidence was available on the frequency of testing, which was a common limitation in the included studies.

Justification: Despite the low certainty of evidence, screening for asymptomatic non-pregnant adolescents and adults at increased risk for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* was strongly recommended based on the large benefits, which were deemed to outweigh the small harms. The panel highlighted that infections in women may be asymptomatic and may often be left untreated without screening. This may result in transmission to others and may lead to serious complications (i.e., infertility). The panel also expressed the need to screen sexual partners.

Chlamydia trachomatis and *Neisseria gonorrhoeae* infections have short incubation periods of less than 14 days. A fixed screening schedule may miss asymptomatic patients with recent exposures. The panel recommended that the decision to screen for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* will be based on the physician's risk assessment at the time of examination. If an asymptomatic individual is considered at high-risk for infection, then screening should be done.

Screening for Asymptomatic Bacteriuria (ASB)

Recommendation 7: Among asymptomatic, apparently healthy adults, we suggest AGAINST screening for asymptomatic bacteriuria. *(Very low certainty of evidence, weak recommendation)*

Key findings: Asymptomatic bacteriuria (ASB) involves the presence of at least 100,000 colony-forming units (CFU)/mL of a single organism in symptom-free patients' clean-catch urine samples. For the general adult population, no direct evidence was found regarding the benefits and harms of screening using urinalysis or urine culture. Antimicrobial treatment for ASB in the general population reduced the incidence of bacteriuria at 0-3 months (RR 0.21, 95% CI 0.11, 0.80) and at 4-6 months (RR 0.60, 95% CI 0.43, 0.84).[35] The risk of adverse events from antimicrobial treatment appears to be low (1.6%). There was higher antimicrobial resistance among those given treatment for ASB (RR 12.14, 95% CI 1.74, 84.70).[35]

Justification: A recommendation AGAINST routine screening for asymptomatic bacteriuria among apparently healthy asymptomatic non-pregnant adults was based on the lack of substantial benefit to support screening in this population.

Recommendation 8: Among asymptomatic, apparently healthy pregnant women, we suggest screening for asymptomatic bacteriuria using urine culture. *(Very low certainty of evidence, weak recommendation)*

Key findings: In a Filipino study, ASB prevalence was 2.5% among pregnant patients.[36] In pregnant patients, ASB is linked to antepartum pyelonephritis, preterm birth, and low neonatal birth weight.[37] Treatment involves short-course antibiotics based on urine culture sensitivity and local resistance patterns.

For pregnant women, evidence suggests potential benefits of ASB screening in pregnant women in terms of reducing UTI incidence compared to no screening (RR 0.28, 95% CI 0.15-0.54). Evidence was inconclusive for premature rupture of membranes (RR 0.84, 95% CI 0.29, 2.50), low birth weight (RR 0.20, 95% CI 0.02, 1.70), and preterm delivery (RR 1.57, 95% CI 0.78, 3.13).

Urine culture is the preferred method for diagnosing urinary tract infections (UTIs) since it provides information on the responsible microorganisms and their antibiotic susceptibility. A study in elderly asymptomatic men (age >65 years) found that pyuria (over 10 white blood cells per high-power field) had a low sensitivity of 68%, specificity of 99%, positive predictive value of 88%, and negative predictive value of 97% in detecting bacteriuria (defined as ≥100,000 CFU/mL), with a prevalence of around 10% in this population.[38]

Justification: Screening for asymptomatic bacteriuria in pregnant adults was recommended based on its benefit in

terms of reduction in the incidence of urinary tract infection. The panel also highlighted that there may be potential benefit in screening to prevent peripartum and congenital infections.

Screening for Hepatitis A

Recommendation 9: Among asymptomatic, apparently healthy adults, we suggest AGAINST screening for Hepatitis A. *(Very low certainty of evidence, weak recommendation)*

Key findings: Hepatitis A is a highly contagious liver infection that is prevalent worldwide. The World Health Organization (WHO) estimates that 1.59 million cases occur each year, resulting in 39,000 deaths and 2.3 million disability-adjusted life years.[39] In the Philippines, the crude incidence rate in 2022 is 1.01 per 1,000,000 population, with a case fatality rate of 5.8%.[40]

The clinical diagnostic accuracy of using IgM anti-HAV antibodies in diagnosing hepatitis A is generally high, with a 1982 study demonstrating 100% sensitivity, 99% specificity, and a positive predictive value of 88% during an epidemiologic outbreak investigation in a US university.[41] A recent study demonstrated that anti-HAV IgM antibody titer levels measuring 4.0 or above correlated with a 100% positive predictive value. Low-level reactive (1.20-4.00) or equivocal (0.8-1.20) anti-HAV IgM results were associated with an alternative diagnosis other than Hepatitis A.[42] The results of the two studies were not pooled due to heterogeneity.

There was no direct evidence on the effect of screening compared to no screening for Hepatitis A among healthy adults on outcomes such as early detection of asymptomatic disease, morbidity, hospitalization, or mortality.

Indirect evidence on secondary attack rates for hepatitis A was considered. Two observational studies on food handlers reported that food handlers had secondary attack rates ranging from 4.8 to 56%.[43,44] A systematic review of 23 studies on healthcare workers reported secondary attack rates of 15 to 41% for nurses and 3 to 4% for physicians.[45] One observational study on travelers reported seroprevalence of 82.7% from non-industrialized countries and 16.6% from industrialized countries.[46] An observational study on daycare workers reported higher HAV markers (prevalence 48% 95% CI 44.2, 52.5%) compared to blood donors (prevalence 42.9%, 95% CI 38.7, 47.0%).[47]

Justification: The panel did not recommend routine screening for Hepatitis A in the general population, including food handlers, based on the unclear benefit of screening. Moreover, the panel deemed that screening the general population was not cost-effective. Adherence to basic food safety practices and vaccination for individuals at increased risk are important measures to prevent the transmission of the Hepatitis A virus. The panel enumerated the following as increased risk for Hepatitis A infection: international travelers (from endemic areas), men having sex with men, persons who inject drugs (PWIDs), persons who use drugs (PWUDs), occupational risk for exposure, close personal contact with an international adoptee, people experiencing homelessness, chronic liver disease, and people living with HIV (PLHIV). The panel also highlighted that risk assessment for workers should be according to the job description and job process. The panel likewise emphasized giving the Hepatitis A vaccine to apparently healthy adults.

Screening for Hepatitis C

Recommendation 10: Among asymptomatic, apparently healthy adults, we recommend AGAINST routine screening for Hepatitis C. *(Very low certainty of evidence, strong recommendation)*

Key findings: Hepatitis C virus (HCV) infection is a growing global health concern, affecting 58 million people annually with a prevalence of 0.7%.[48] In the Philippines, HCV was detected at rates of 0.3% among blood donors and 0.9% among overseas worker candidates.[49] HCV often leads to chronic infection (70% of cases) and can progress to liver cirrhosis (20%) and liver cancer (1-5%).[48,50] High-risk groups include those with HIV, drug users, individuals with certain medical conditions, transfusion/organ recipients, healthcare workers, and children born to HCV-infected mothers. Medical waste handlers are also at risk.

Key findings: There was no direct evidence comparing HCV screening versus no screening. However, two systematic reviews evaluating different diagnostic approaches demonstrated high diagnostic accuracy for detecting HCV antibodies. A systematic review and meta-analysis of 21 studies found that dried blood samples from the general population had a sensitivity of 96.1%, specificity of 99.2%, positive likelihood ratio (PLR) of 105, negative likelihood ratio (NLR) of 0.04, and a diagnostic odds ratio (DOR) of 2692.9 for detecting HCV antibodies.[51] Similarly, another meta-analysis involving five studies showed that HCV antibody rapid diagnostic tests had a high sensitivity (98%) and specificity (100%) when compared to enzyme immunoassay (EIA) as the reference standard.[52]

Justification: The panel strongly recommended against routine screening for Hepatitis C because of the lack of evidence on its benefit. Moreover, the panel deemed that screening the general population was not cost-effective.

Recommendation 11: Among high-risk* asymptomatic, apparently healthy adults, we recommend screening for Hepatitis C using serum anti-HCV. *(Very low certainty of evidence, strong recommendation)*

* *High-risk: people who use injection drugs (PWID), healthcare workers (i.e., after a needle stick injury).*[53,54]

No direct studies were found on the benefits and harms of early HCV screening on mortality, liver cancer, and harms or adverse events.

The US Preventive Services Task Force (USPSTF) reported that risk-based screening, defined as screening individuals with identified risk factors, had a sensitivity of 90% and a number needed to screen of less than 20 to identify one case of HCV.[55] Based on a hypothetical birth cohort screening model, risk-based screening would require testing approximately 25% of the population to identify 82% of HCV cases, compared to a birth cohort screening strategy, which would identify 76% of HCV cases. Potential screening harms include alcohol misuse, misconceptions about infections, psychological impacts, and insurance difficulties.

Early treatment with direct-acting antiviral (DAA) medications can achieve over 99% of sustained virologic response (SVR). Compared to placebo, early treatment led to lower all-cause mortality rates (HR 0.40, 95% CI 0.28, 0.56) and a lower rate of hepatocellular carcinoma (HR 0.29, 95% CI 0.23, 0.38).[54] There was a slightly increased risk (RR 1.12, 95% CI 1.02-1.24) for any adverse event (such as headache, fatigue, gastrointestinal side effects) with DAA treatment compared to placebo.

Justification: Despite the very low certainty of evidence, the panel strongly recommended screening for Hepatitis C using serum anti-HCV among high-risk asymptomatic adults based on large benefits with minimal harms, and acceptable cost-effectiveness. The panel further highlighted that once an individual tests positive for Hepatitis C, referral to a specialist should be made for prompt treatment. Identified high-risk individuals were: people with HIV, people who injected drugs and shared needles, people with selected medical conditions including people receiving maintenance hemodialysis and/or people with persistently elevated alanine transaminase (ALT) levels, recipients of transfusions and organ transplants (prior to 1992), health care, emergency medical, and public safety personnel after a needle stick injury or mucosal exposure to Hepatitis C virus-positive blood, and children born to mothers with Hepatitis C infection. Routine periodic testing was recommended for people with ongoing risk factors while risk factors persist. Frequency of testing, from at least a one-time testing (based on IDSA guidance) to more frequent testing (i.e., annually based on US CDC guidance) for those with high-risk exposure, was likewise suggested.

Screening for Human Immunodeficiency Virus (HIV)

Recommendation 12: Among asymptomatic, apparently healthy adolescents and adults, we recommend AGAINST routine screening for HIV. *(Very low certainty of evidence, strong recommendation)*

Key findings: Over the years, HIV cases in the Philippines have risen dramatically. The incidence of annual new HIV infections increased 237% from 2010 to 2020.[56] Although the Philippine prevalence remains less than 1%, the HIV / Acquired Immunodeficiency Syndrome (AIDS) and Anti-Retroviral Therapy (ART) Registry of the Philippines reported a total of 105,794 confirmed HIV cases in the country-wide registry as of September 2022.[57]

We found no direct studies on the benefits and harms of HIV screening compared with no screening among asymptomatic, apparently healthy adolescents and adults.

Justification: The panel strongly recommended AGAINST routine screening for HIV among asymptomatic, apparently healthy adolescents and adults. The panel maintained that HIV screening is multidimensional. Psychological harm of screening should be considered, especially among individuals who are at low risk for HIV infection. The panel further emphasized that physicians should identify a compelling reason to request HIV screening among low-risk individuals. The panel likewise cited that routine screening will also be costly for individuals without an indication for testing.

Recommendation 13: Among high-risk* asymptomatic, apparently healthy adolescents and adults, we recommend HIV screening using a rapid diagnostic test. *(Very low certainty of evidence, strong recommendation)*

** Population Characteristics from included trials: Men who have sex with men (MSM), history of injection drug use, individuals diagnosed with tuberculosis, individuals diagnosed with Hepatitis B, multiple sexual partners in the past month, engaged in transactional sex in the past month, partners of people living with HIV (PLHIV), individuals positive for sexually transmitted disease such as Chlamydia trachomatis, Neisseria gonorrhea, and syphilis.*

Philippine DOH Definition of high-risk: key populations (MSM, people in prisons and other closed settings, people who use injection drugs (PWIDs), sex workers, and transgender men and women) including adolescents; partners, infants and children of PLHIV; patients showing signs and symptoms consistent with AIDS defining illness; patients with sexually transmitted infections; patients with Hepatitis B and C; patients with undernutrition not responsive to interventions; all confirmed tuberculosis patients; all pregnant women regardless of risk.

Key findings: Indirect evidence for the benefits of screening was derived from one systematic review of observational studies, which compared the prevalence of high-risk sexual behaviors among HIV-positive individuals and one modelling study, which estimated the relative contribution of HIV-positive individuals who were aware compared with those who were unaware of their HIV status in sexually transmitting new HIV infections to at-risk partners in the US.[58,59]

The systematic review found that the prevalence of unprotected anal and vaginal intercourse with any partner was lower by 68% (95% CI 59% to 76%) among HIV-positive individuals aware of their serostatus when compared with HIV-positive individuals unaware of their serostatus. Findings in the study emphasized the importance of HIV testing to reduce exposure to and potential transmission of HIV from HIV-positive individuals unaware that they are infected.[59]

The modeling study found that the proportion of sexually transmitted HIV infection from individuals unaware of their

HIV status ranged from 0.54 to 0.70, translating to a transmission rate of 6.9%. In contrast, the transmission rate is only 2.0% for HIV-positive individuals aware of their serostatus.[60]

We found four RCTs that investigated the efficacy and safety of early versus deferred (or delayed) initiation of antiretroviral therapy (ART).[60-63] Early ART initiation significantly reduced primary composite outcomes (including all-cause mortality, AIDS-related and non-AIDS-related events, incidence of tuberculosis and other opportunistic diseases) (RR 0.53, 95% CI 0.44, 0.64).[60-63]

A 2018 diagnostic accuracy systematic review compared rapid diagnostic tests (RDTs) for HIV to the Western Blot (as gold standard) for screening of HIV.[64] In the pooled analysis, RDTs showed a sensitivity of 99.8% (95% CI 99.1% to 100%) and specificity of 99.8% (95% CI 99.4% to 99.9%). The WHO recommends that all HIV testing algorithms achieve at least 99% positive predictive value and use a combination of tests with >99% sensitivity and >98% specificity.[65-67]

Justification: Despite the very low certainty of evidence, the panel strongly recommended routine screening for HIV among high-risk individuals based on (1) the large benefit in terms of early detection and prevention of transmission, which was deemed to outweigh the small harms of screening, and (2) the clear benefits of early treatment. The panel further recommended that individuals who will undergo testing should receive pre-testing counselling.

Screening for Dental Infections

Recommendation 14: Among asymptomatic, apparently healthy adults, we recommend annual screening for dental infections through visual inspection. *(Very low certainty of evidence, strong recommendation)*

Key findings: Oral diseases, including dental caries and periodontal disease, are significant global health issues affecting billions of people, particularly in low- and middle-income countries.[68,69] In the Philippines, high rates of dental caries and periodontal diseases have been reported, especially among children.[70] Untreated oral diseases can lead to complications and affect overall health and quality of life.[68] The economic burden of oral diseases is substantial, with significant direct and indirect costs.

Various studies evaluated different dental recall interval periods (e.g., every 6, 12, or 24 months) on dental outcomes usually measured by the Decayed, Missing, and Filled Surfaces (DMFS) index. A small RCT showed that there is no statistically significant difference in caries rates between 12 and 24 month recall intervals (MD in DMFS 1.80, 95% CI -2.09, 5.69).[71] In another study, there is no clear benefit of a 6-monthly screening over 24-month intervals (MD 0.6, 95% CI -1.32, 2.5).[72] Thus, no screening interval (6,12 or 24 months) showed superiority in preventing dental infection. In risk-based dental screening recall, there is no clinically significant difference between 6-month (MD 0.15, 95% CI -0.77, 1.07) and 24-month screening MD 1.4, 95% CI -3.49, 3.3).[72] Thus, risk-based screening also did not show any clinical benefit over timed intervals.

Another systematic review of 7 studies examined the evidence behind the rationale of a "one-recall-interval-fits-all" protocol, specifically a six-month recall interval (intervention) on caries incidence (outcome). The studies notably differed in outcome and outcome measurements. One randomized controlled trial showed no significant differences in oral health between patients recalled every 12 months and those recalled every 24 months. One nonrandomized controlled trial found that a 2- to 3-month recall interval significantly reduced the incidence and recurrence of caries, while another nonrandomized trial compared caries increments from 3-, 6-, and 12-month recall intervals with no significant differences. The mean difference (MD) in DMFS increment was 1.8 (95% CI -2.09 to 5.69; 49 participants). Two retrospective studies showed that a specific recall interval did not alter caries incidence significantly, while a cross-sectional study determined that a 6-month recall interval was associated with more restored teeth but less active caries. The differing recall intervals observed with varying outcomes led the authors of this review to conclude that there is weak evidence for using a one-recall-interval-fits-all protocol to reduce caries.[73]

Prophylactic dental treatments done every 6 months showed no difference compared to no prophylactic treatment on the incidence of gingivitis measured as mean proportion of bleeding sites per patient (MD -0.24, 95% CI -3.16, 2.68), calculus formation measured as mean amount (millimeters) of calculus (MD -0.29, 95% CI -0.56, 0.02) and plaque formation measured as mean proportion of plaque per patient (MD 0.04, 95% CI -0.05, 0.13).[74,75]

Justification: Despite the very low certainty of evidence, the panel strongly recommended annual screening for dental infections. This was due to the high burden of dental infections, the need to emphasize the importance of oral health, and the negative impact of poor oral health on an individual's overall well-being, including its effect on one's productivity at school and at work. The panel likewise raised that there is legislation in Occupational Health and Safety in relation to dental health in support of this recommendation. The Rules and Regulations and Standards Requirements for Occupational Dental Health Services prescribed under the Philippine Labor Code of 1974 and the Philippine Department of Health Administrative Orders No. 7 and 306 signed December 9, 1976 and August 21, 1978, and Administrative Order No. 3 signed February 4, 1998 as amended mandate the conduct of complete and thorough oral examination of workers for pre-employment physical examination and certification whether the worker is "orally fit or not", and the conduct of oral examination of employees in non-hazardous workplaces at least once a year and periodic oral examination as may be deemed necessary.

The consensus panel agreed on an annual interval for screening to detect asymptomatic dental infections. The current recommendation on screening for dental infection

through visual inspection is expected to be performed by primary care providers with appropriate referral to dentists, as necessary, for further evaluation and management.

Screening for COVID-19

Recommendation 15: Among asymptomatic, apparently healthy adults, we recommend AGAINST universal COVID-19 screening. *(Very low certainty of evidence, strong recommendation)*

Key findings: In 2020, COVID-19 was included in the list of top causes of death in the Philippines. In 2021, the Philippines was considered to have the highest cumulative COVID-19 cases and deaths in Southeast Asia.[76,77] As of 25 Mar 2023, the total confirmed cases of COVID-19 were reported as 4,079,992, with 66,322 deaths and a 13.7% cumulative positivity rate.[78]

A study was conducted in the UK to assess the impact of rapid antigen testing of asymptomatic individuals on COVID-19 hospital admissions. Community antigen testing was conducted using the systematic meaningful asymptomatic repeated testing (SMART) approach. The COVID-SMART had three components: one is to 'test-to-protect' vulnerable people and settings; second is 'test-to-release', which is the release contacts of confiremd infected individuals from quarantine sooner; and third, the 'test-to-enable' careful return to restricted activities to improve public health, social fabric, and the economy. The study tested 668,243 residents aged five years and older using the SARS-CoV-2 rapid antigen lateral flow test. The study used synthetic controls from other regions of the UK where COVID-SMART was not yet implemented, as the comparator. Results showed implementation of community testing significantly reduced the hospital admission rates (MD -32%, 95% CI -39, -22).[79]

We did not find direct evidence that compared screening using RT-PCR with no screening in asymptomatic, apparently healthy individuals. Instead, we found an interim analysis of a cohort study that compared screening using the RT-PCR test vs non-screening in asymptomatic cancer patients. The interim analysis of the study showed that the patients who were not screened in the hospital had higher odds of requiring oxygen (OR 16.2, 95% CI 2.2-117.1), hospital admission (OR 31.5, 95% CI 3.1-317.8), need for ICU (OR 23, 95% CI 2.4-223.8) and mortality (OR 8.8, 95% CI 1.2-65.5) as compared to those who were screened in the institution.[80]

No direct evidence was found that reported the safety outcomes of using rapid antigen test or RT-PCR test for screening for COVID-19. Instead, we found a review that reported complications of nasopharyngeal testing. The complications reported were 16 cases of retained swabs due to swab fracture during the examination, 10 cases of epistaxis, 10 cases of cerebrospinal fluid (CSF) leakage, 3 cases of nasal septal or pharyngeal abscess, and 1 case of ethmoidal silent sinus syndrome.[81]

From the Infectious Diseases Society of America (IDSA) guidelines, rapid antigen tests compared to the reference standard Nucleic Acid Amplification Tests (NAAT) had a pooled sensitivity of 63% (95% CI 56% to 69%) and a pooled specificity of 100% (95% CI 100% to 100%), based on 59 studies.[82]

Also, from the IDSA guidelines, they did not find diagnostic test accuracy studies for SARS-CoV-2 NAATs in asymptomatic individuals. Instead, they based their evidence on symptomatic patients, since asymptomatic and pre-symptomatic patients may have viral loads and shedding similar to those of symptomatic patients. The sensitivity of NAAT was 75% (95% CI 55% to 95%) while the specificity was 99% (95% CI 99% to 100%).[83]

Justification: The panel strongly recommended against universal screening based on increased harms in the form of anxiety and stigma, and the negative economic impact, which includes the cost of testing, loss of productivity, and loss of income. The panel agreed on implementing risk-based screening instead of universal screening.

Screening for Latent Tuberculosis (Latent TB)

Recommendation 16: Among asymptomatic, apparently healthy adults, we suggest AGAINST screening for latent TB. *(Very low certainty of evidence, weak recommendation)*

Key findings: WHO defines latent tuberculosis infection (LTBI) as "a state of persistent immune response to stimulation by Mycobacterium tuberculosis antigens with no evidence of clinically manifest active TB".[84] Importance is given to preventive management and government-led control strategies for this disease because people with LTBI can progress to active TB or undergo reactivation, and subsequently, transmission to others.[85] The Philippines is one of the countries in the world with the highest burden of LTBI, with an increasing annual average percentage of 0.9% and crude prevalence of 37.1% as of 2021.[86]

There was no direct evidence found on the benefit of LTBI screening in terms of incidence of TB, TB-related mortality and/or morbidity, and other preventive outcomes. A modeling cohort study assessed the benefits of screening population groups with unknown tuberculin status and providing preventive therapy for persons with positive tuberculin skin test results.[87] A Markov model for hypothetical 30-year-old persons was used for calculation. The modeling study showed that the general population with no risk factors for tuberculosis has a relatively low number of cases per cohort and a high number needed to screen (NNS) to prevent cases (1,669 - 6,837) and deaths (132,690 - 606,797).[87]

Justification: A weak recommendation AGAINST screening for latent TB among asymptomatic apparently healthy adults was based on the perceived lack of cost-effectiveness of screening in the general population. The panel further reasoned that screening the general population would be inaccessible and costly.

Recommendation 17: Among asymptomatic, apparently healthy adults who are at high-risk for TB infection (i.e., close contacts), we suggest screening for latent TB using the tuberculin skin test (TST) or interferon-gamma release assay (IGRA). *(Very low certainty of evidence, weak recommendation)*

Key findings: No direct studies were found on the effect of screening versus no screening for LTBI on the incidence of TB, TB-related mortality and/or morbidity, and other preventive outcomes. The modeling study showed beneficial results for screening recent household contacts. The NNS to identify 1 person with latent *M. tuberculosis* infection is 2 to 4; to prevent 1 tuberculosis case is 10 to 126; and to prevent 1 tuberculosis death is 2,675 to 39,743, if all persons with positive tuberculin test results initiated preventive therapy.[87]

One RCT (n=27,380) found a reduced risk for progression to active TB at 5 years among those treated with 24 weeks of isoniazid compared with placebo (RR: 0.35, 95% CI 0.24, 0.52).[88] A network meta-analysis of 53 studies showed that the following LTBI treatment regimens significantly reduced the risk of developing active TB when compared with placebo or no treatment: INH regimen of 6 months or longer (OR: 0.65, 95% credible interval [CrI] 0.50, 0.83); Rifampicin-Isoniazid (RIF-INH) combination therapy of 3-4 months (OR 0.53, 95% CrI 0.36, 0.78); weekly Rifapentin-Isoniazid (RPT-INH) regimen of 3 months (OR 0.36, 95% CrI 0.18, 0.73).[89]

LTBI is a clinical diagnosis established by demonstrating prior TB infection and excluding active TB disease.[85] To demonstrate prior TB infection, available tests include the tuberculin skin test (TST) and interferon-gamma release assay (IGRA). Recent WHO recommendations state that either TST or IGRA can be used to test for LTBI.[84]

The USPSTF found 113 publications (N=69,009 participants) with 101 studies that evaluated the accuracy and reliability of LTBI tests.[90] Pooled results for TST show that for the 5 mm induration threshold, the pooled sensitivity is 80% (95% CI 74%, 87%) and the pooled specificity is 95% (95% CI 94%, 97%). For the 10 mm induration threshold, the pooled sensitivity is 81% (95% CI 76%, 87%) and the pooled specificity is 98% (95% CI 97%, 99%). Lower sensitivity was found for the 15 mm induration threshold (Sn 60%, 95% CI 46%, 74%; Sp 99%, 95% CI 98%, 99%).

IGRA had an overall better accuracy estimate compared to TST, with the following results: TSPOT.TB (Sn 90%, 95% CI 87%, 92%; Sp 95%, 95% CI 91%, 97%), QFT-GIT (Sn 81%, 95% CI 79%, 84%; Sp 99%, 95% CI 98%, 99%), and QFT-Plus (Sn 89%, 95% CI 84%, 94%; Sp 98%, 95% CI, 95%, 99%).[90]

Justification: A weak recommendation for LTBI screening among high-risk individuals, particularly close contacts, was made due to the higher probability of TB transmission among close and household contacts. The definition of close contacts was based on the US CDC and the Philippine Department of Health National TB Control Program Manual of Operations. Risk classification (as close contact) of an individual and subsequent need for LTBI screening should be based on physician's assessment and recommendation.

Screening for Intestinal Parasitism

Recommendation 18: Among asymptomatic, apparently healthy children and adults, we suggest AGAINST routine screening for intestinal parasitism. *(Very low certainty of evidence, weak recommendation)*

Key findings: Intestinal parasitism, primarily caused by soil-transmitted helminths (STHs) such as *Ascaris lumbricoides*, *Trichuris trichiura*, and hookworms, is a neglected tropical disease that poses challenges for control and elimination. A national survey from 2013-2015 among school-age children found an overall prevalence of 28.4%.[91] A 2021 study reported prevalence rates of 23.8% for *Ascaris lumbricoides*, 32.0% for *Trichuris trichiura*, and 7.3% for hookworm locally.[92] Parasitic infections, especially in children with high worm burdens, are linked to malnutrition and anemia.

There were no studies on the effect of screening compared to no screening on intestinal parasitism-related morbidity or mortality among asymptomatic, apparently healthy adults. Instead, studies evaluating interventions such as mass drug administration, health education, and sanitation improvements to reduce infection prevalence were reviewed.

A 2020 meta-analysis reported that at a 33.6% intestinal parasite prevalence, factors that reduced the risk of infection included food preparation training (OR 0.71; 95% CI 0.53, 0.94) and handwashing after toilet use (OR 0.46; 95% CI 0.23, 0.94).[93]

Early anti-helminthic treatments were effective, with a 93% cure rate for *Ascaris lumbricoides* infection.[94] Repeated rounds of preventive chemotherapy also decreased worm burden from 14% to 2% (i.e., 85% reduction; p <0.005).[95] Mass deworming, however, did not have a significant effect on decreasing anemia prevalence (RR 0.82 (95% CI 0.60, 1.11).[96] Notably, there is a lack of studies assessing the benefits of early intervention among food handlers.

The sensitivities of the different diagnostic tests are as follows: fecalysis (Sn 52%, 95% CI 47, 57%); formalin ether concentration technique (FECT) (Sn 68%, 95% CI 43, 85%); and Kato-Katz smear for ascariasis (Sn 58%, 95% CI 50, 66%), for trichiuriasis (Sn 67%; 95% CI 49, 81%), and for hookworm infection (Sn 62%, 95% CI 34, 85%).

Justification: The panel gave a weak recommendation AGAINST routine screening for intestinal parasitism due to very low certainty of evidence on the benefits of screening. In addition, the panel justified that mass deworming is an effective intervention with good outcomes. The panel suggested that children and adults at high-risk for intestinal parasitism undergo screening even in the absence of symptoms.

DISCUSSION

A total of 18 recommendation statements were made to answer the 10 key questions prioritized in this CPG. This CPG was developed to identify individuals with latent or early-stage infections or those who are at risk for these diseases to facilitate treatment, to implement preventive measures, and to improve overall outcomes for individuals and society as a whole.

Implementing effective screening programs is essential due to the significant impact of infectious diseases on community health, with outbreaks capable of spreading rapidly and affecting many individuals. Primary care providers have a unique opportunity to consider individual risk factors, demographics, and local epidemiologic data; thus, they can tailor screening efforts, identify infections early, initiate timely intervention, and prevent further transmission within the community.

Strengths and Limitations

The CP involved multisectoral stakeholders, thus providing different perspectives and allowing various factors to be considered in formulating the recommendations. However, this CPG only covers a limited number of infectious diseases and does not provide recommendations on the treatment of infectious diseases. No direct evidence was found for most of the clinical questions in this guideline.

Research Gaps

Many research questions from the identified clinical questions in this CPG were not answered directly due to paucity in the literature. Therefore, indirect evidence based on the screening cascade was presented.

No direct evidence was found on the benefits and harms of screening for syphilis, asymptomatic bacteriuria, Hepatitis A, Hepatitis C, HIV, COVID-19, LTBI, and intestinal parasitism, among asymptomatic, apparently healthy populations. There is also a lack of local data on the cost-effectiveness of screening for syphilis, asymptomatic bacteriuria, and COVID-19 in the asymptomatic, apparently healthy population. These data are necessary to inform proper resource allocation, especially in a resource-constrained setting like the Philippines.

No studies were found regarding the patients' values and preferences, equity, acceptability, and feasibility of screening for syphilis, chlamydia and gonorrhea, asymptomatic bacteriuria, and hepatitis A in the general population. Social science research could help determine the facilitators and barriers that could affect the implementation of this guideline.

Filling in the research gaps can provide answers to the identified clinical questions, which can influence the recommendations for updating this guideline.

CONCLUSION

This Philippine Clinical Practice Guideline provides evidence-based recommendations for screening infectious diseases among asymptomatic, apparently healthy adolescent and adult Filipinos and those with high-risk conditions, emphasizing a risk-based rather than universal screening approach. The guideline highlights that targeted screening of high-risk populations for infections such as syphilis, HIV, hepatitis C, chlamydia/gonorrhea, and latent tuberculosis can improve early detection, reduce transmission, and prevent complications, while avoiding unnecessary costs and harms associated with indiscriminate screening. Overall, the recommendations reinforce the critical role of primary care and preventive health strategies in reducing the burden of infectious diseases in the Philippines.

Disclaimer

This guideline is intended to be used by general practitioners, specialists, and health professionals who are primary care providers. Through these recommendations, we aim to identify individuals with latent or early-stage infections or those who are at risk for these diseases to facilitate treatment, implement preventive measures, and improve overall outcomes for individuals and society as a whole.

Although adherence to this guideline is encouraged, it should not preclude 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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Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

Members of the steering committee were from different medical societies with backgrounds in infectious diseases, family physicians, and internists. Most of the contributors declared no conflict of interest, indicating no financial or non-financial interest. However, one member of the consensus panel disclosed a non-financial COI related to their role as an occupational and environmental health and safety system consultant and as a member of the Hepatitis B Clinical Practice Guideline Consensus Panel.

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PHILIPPINE PERIODIC HEALTH EXAMINATION TASK FORCE ON SCREENING FOR INFECTIOUS DISEASES

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APPENDIX

Rating of Outcomes

Disease topic	Outcomes
Syphilis	Important outcomes: • incidence of syphilis, syphilis-related morbidity, syphilis-related mortality, reduction of stigma, prevention of transmission, cost of early treatment
Chlamydia and Gonorrhea	Important outcomes: • incidence of gonorrhea or chlamydia infection, infection-related morbidity, infection-related mortality, adverse events of testing, reduction of stigma, prevention of transmission, cost of early treatment
Asymptomatic Bacteriuria	Critical outcomes: • rational use of antibiotics, antimicrobial resistance, incidence of UTI in pregnant women, fetal outcomes in pregnant women Important outcome: • incidence of UTI
Hepatitis A	Important outcomes: • incidence of Hepatitis A, Hepatitis A-related morbidity, Hepatitis A-related mortality, hospitalization, adverse events of testing, impact on vaccination rates, cost of screening
Hepatitis C	Critical outcomes: • Hepatitis C-related morbidity, Hepatitis C-related mortality, incidence of liver cancer, cost of early treatment Important outcomes: • incidence of Hepatitis C, adverse events of testing, cost of screening
HIV	Critical outcome: • reduction of stigma Important outcomes: • incidence of HIV, HIV-related morbidity, HIV-related mortality, incidence of opportunistic infections, adverse events of testing, cost of screening, cost of early treatment
Dental Infections	Critical outcomes: • incidence of dental caries, incidence of periodontal disease Important outcome: • incidence of dental infection
COVID-19	Critical outcomes: • COVID-19-related mortality, cost of screening, cost of early treatment Important outcomes: • COVID-19-related morbidity, hospitalization, incidence of COVID-19, COVID-19 outbreak, adverse events of testing, stigma of testing, prevention of transmission, quarantine, and isolation rates
Latent Tuberculosis	Critical outcomes: • incidence of TB, TB-related morbidity, TB-related mortality, TB prevention and control, prevention of transmission, early initiation of treatment Important outcomes: • adverse events of testing, isolation rate, cost of screening, cost of early treatment
Intestinal Parasitism	Critical outcomes: • incidence of parasitism, prevention of malnutrition, prevention of transmission Important outcomes: • adverse events of testing, intestinal parasitism-related morbidity, intestinal parasitism-related mortality, and cost of early treatment