Complete Summary

GUIDELINE TITLE

Preventive services for children and adolescents.

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Preventive services for children and adolescents. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2007 Oct. 80 p. [152 references]

GUIDELINE STATUS

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary.

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- June 15, 2007, RotaTeq (Rotavirus, Live, Oral, Pentavalent Vaccine): Changes to the ADVERSE REACTIONS and POST-MARKETING sections of the product's prescribing information. The ADVERSE REACTIONS section was updated to include six cases of Kawasaki disease that were observed during the Phase 3 clinical trial.
- February 13, 2007, Rotavirus, Live, Oral, Pentavalent Vaccine (RotaTeq): FDA Public Health Notification regarding 28 post-marketing reports of intussusception following administration of Rotavirus, Live, Oral, Pentavalent vaccine (RotaTeq).

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Preventable diseases or conditions such as:

- Infectious diseases such as diphtheria, tetanus, pertussis, poliomyelitis, measles, mumps, rubella, meningitis, hepatitis B, varicella, influenza, pneumococcal pneumonia, hepatitis A, rotavirus infection
- Vision loss
- Chlamydia infection
- Cervical cancer
- Sudden infant death syndrome (SIDS)
- Injuries due to motor vehicles
- Disorders resulting from inborn errors of metabolism
- Obesity
- Tobacco use

The guideline developers also discuss, but make no specific recommendations for, preventive services related to the following conditions:

- Elevated blood lead levels
- Breast cancer
- Dental and periodontal disease
- Developmental and behavioral disorders
- Domestic violence and abuse
- Dyslipidemia
- Dysplasia of the hip
- Hearing loss
- Injuries due to bicycles, burns, choking, falls, firearms, poisoning, and water
- Iron deficiency
- Pregnancy
- Scoliosis
- Second-hand smoke exposure
- Sexually transmitted infection (STI) (other than chlamydia)
- Skin cancer
- Alcohol and other substance use/abuse
- Undescended testicles
- Viral upper respiratory infection
- Child maltreatment
- Anemia
- Tuberculosis

GUIDELINE CATEGORY

Counseling
Evaluation
Prevention

Risk Assessment
Screening

CLINICAL SPECIALTY

Family Practice
Internal Medicine
Obstetrics and Gynecology
Pediatrics
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Health Plans
Hospitals
Managed Care Organizations
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To provide a comprehensive approach to the provision of preventive services, counseling, education, and disease screening for average-risk, asymptomatic individuals from birth through age 18
- To increase regular use of health-risk assessments
- To increase the percentage of patients who are on time with recommended immunizations
- To reduce missed opportunities for administering immunizations
- To decrease the percent of patients who are behind with recommended immunizations by creating a catch-up plan
- To increase the percent of sexually active female patients under the age of 25 who are screened for chlamydia
- To increase percentage of children age four years and younger who have had vision screening

TARGET POPULATION

Average-risk, asymptomatic individuals from birth through age 18

There are occasional exceptions to this for high-risk populations where noted.

INTERVENTIONS AND PRACTICES CONSIDERED

Risk Assessment/Prevention

1. Risk stratification and health assessment

2. Using nearly every patient contact to identify and address preventive service needs
3. Immunizations, including:
    - Diphtheria, tetanus, acellular pertussis (DTaP) vaccine
    - Tetanus-diphtheria (Tdap) booster
    - Inactivated poliovirus (IPV) vaccine
    - Measles, mumps, rubella (MMR) or combined measles, mumps, rubella and varicella (MMRV) vaccine
    - Pneumococcal vaccine (PCV7)
    - Varicella vaccine
    - *Haemophilus influenzae* type b (Hib) vaccine
    - Rotavirus vaccine
    - Hepatitis B vaccine
    - Influenza vaccine
    - Hepatitis A vaccine
    - Meningococcal vaccine
    - Human papilloma virus (HPV) vaccine

Screening

Screening maneuvers, including:

- Chlamydia screening
- Vision screening
- Cervical cancer screening
- Neonatal metabolic screening
- Obesity screening
- Tobacco use screening and intervention in adolescents

Counseling

Counseling and education on the following topics:

- Injury prevention: motor vehicle
- Sudden infant death syndrome (SIDS)

Additionally, the following preventive services are discussed, but do not have sufficient evidence of effectiveness to warrant a recommendation:

- Blood lead testing
- Clinical breast exams
- Counseling about dental and periodontal disease
- Assessment of developmental and behavioral disorders
- Domestic violence and abuse screening and counseling
- Screening for dyslipidemia
- Hip dysplasia screening
- Hearing screening
- Injury prevention screening: bicycle, poisoning, burns, choking, falls, firearms, water
- Iron deficiency screening
- Nutritional counseling
- Preconception counseling

- Pregnancy prevention counseling
- Scoliosis screening
- Secondhand smoke exposure counseling
- Sexually transmitted infection (STI) (other than chlamydia) counseling and screening
- Skin cancer prevention counseling
- Alcohol use screening and counseling
- Undescended testicle screening
- Viral upper respiratory infection prevention counseling

The following preventive services are discussed, but not supported by evidence:

- Blood chemistry panels
- Child maltreatment screening
- Hemoglobin (for anemia screening)
- Tuberculin skin test (routine)
- Urinalysis

MAJOR OUTCOMES CONSIDERED

- Effectiveness of preventive screening
- Effectiveness of preventive counseling and education
- Effectiveness of immunizations
- Predictive value of screening tests

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A literature search of clinical trials, meta-analysis, and systematic reviews is performed.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Key conclusions (as determined by the work group) are supported by a conclusion grading worksheet that summarizes the important studies pertaining to the conclusion. Individual studies are classed according to the system presented

below, and are designated as positive, negative, or neutral to reflect the study quality.

Conclusion Grades:

Grade I: The evidence consists of results from studies of strong design for answering the question addressed. The results are both clinically important and consistent with minor exceptions at most. The results are free of any significant doubts about generalizability, bias, and flaws in research design. Studies with negative results have sufficiently large samples to have adequate statistical power.

Grade II: The evidence consists of results from studies of strong design for answering the question addressed, but there is some uncertainty attached to the conclusion because of inconsistencies among the results from the studies or because of minor doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from weaker designs for the question addressed, but the results have been confirmed in separate studies and are consistent with minor exceptions at most.

Grade III: The evidence consists of results from studies of strong design for answering the question addressed, but there is substantial uncertainty attached to the conclusion because of inconsistencies among the results of different studies or because of serious doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from a limited number of studies of weak design for answering the question addressed.

Grade Not Assignable: There is no evidence available that directly supports or refutes the conclusion.

Study Quality Designations:

The quality of the primary research reports and systematic reviews are designated in the following ways on the conclusion grading worksheets:

Positive: indicates that the report or review has clearly addressed issues of inclusion/exclusion, bias, generalizability, and data collection and analysis.

Negative: indicates that these issues (inclusion/exclusion, bias, generalizability, and data collection and analysis) have not been adequately addressed.

Neutral: indicates that the report or review is neither exceptionally strong nor exceptionally weak.

Not Applicable: indicates that the report is not a primary reference or a systematic review and therefore the quality has not been assessed.

Classes of Research Reports:

A. Primary Reports of New Data Collection:

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Non-randomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Each guideline, order set, and protocol is developed by a 6- to 12-member work group that includes physicians, nurses, pharmacists, other healthcare professionals relevant to the topic, along with an Institute for Clinical Systems Improvement (ICSI) staff facilitator. Ordinarily, one of the physicians will be the leader. Most work group members are recruited from ICSI member organizations, but if there is expertise not represented by ICSI members, one or two members may be recruited from medical groups or hospitals outside of ICSI.

The work group meets for seven to eight three-hour meetings to develop the guideline. A literature search and review is performed and the work group members, under the coordination of the ICSI staff facilitator, develop the algorithm and write the annotations and footnotes and literature citations.

Once the final draft copy of the guideline is developed, the guideline goes to the ICSI members for critical review.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

The guideline developers reviewed published cost analyses.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Critical Review Process

Every newly developed guideline or a guideline with significant change is sent to Institute for Clinical Systems Improvement (ICSI) members for Critical Review. The purpose of critical review is to provide an opportunity for the clinicians in the member groups to review the science behind the recommendations and focus on the content of the guideline. Critical review also provides an opportunity for clinicians in each group to come to consensus on feedback they wish to give the work group and to consider changes necessary across systems in their organization to implement the guideline.

All member organizations are expected to respond to critical review guidelines. Critical review of guidelines is a criterion for continued membership within ICSI.

After the critical review period, the guideline work group reconvenes to review the comments and make changes, as appropriate. The work group prepares a written response to all comments.

Approval

Each guideline, order set, and protocol is approved by the appropriate steering committee. There is one steering committee each for Respiratory, Cardiovascular, Women's Health, and Preventive Services. The Committee for Evidence-based Practice approves guidelines, order sets, and protocols not associated with a particular category. The steering committees review and approve each guideline based on the following:

- Member comments have been addressed reasonably.
- There is consensus among all ICSI member organizations on the content of the document.
- To the extent of the knowledge of the reviewer, the scientific recommendations within the document are current.
- Either a critical review has been carried out, or to the extent of the knowledge of the reviewer, the changes proposed are sufficiently familiar and sufficiently agreed upon by the users that a new round of critical review is not needed.

Once the guideline, order set, or protocol has been approved, it is posted on the ICSI Web site and released to members for use. Guidelines, order sets, and protocols are reviewed regularly and revised, if warranted.

Revision Process of Existing Guidelines

ICSI scientific documents are revised every 12 to 36 months as indicated by changes in clinical practice and literature. Every 6 months, ICSI checks with the work group to determine if there have been changes in the literature significant enough to cause the document to be revised earlier than scheduled.

Prior to the work group convening to revise the document, ICSI members are asked to review the document and submit comments. During revision, a literature search of clinical trials, meta-analysis, and systematic reviews is performed and reviewed by the work group. The work group meets for 1-2 three-hour meetings to review the literature, respond to member organization comments, and revise the document as appropriate.

If there are changes or additions to the document that would be unfamiliar or unacceptable to member organizations, it is sent to members to review prior to going to the appropriate steering committee for approval.

Review and Comment Process

ICSI members are asked to review and submit comments for every guideline, order set, and protocol prior to the work group convening to revise the document.

The purpose of the Review and Comment process is to provide an opportunity for the clinicians in the member groups to review the science behind the

recommendations and focus on the content of the order set and protocol. Review and Comment also provides an opportunity for clinicians in each group to come to consensus on feedback they wish to give the work group and to consider changes needed across systems in their organization to implement the guideline.

All member organizations are encouraged to provide feedback on order sets and protocol, however responding to Review and Comment is not a criterion for continued membership within ICSI.

After the Review and Comment period, the work group reconvenes to review the comments and make changes as appropriate. The work group prepares a written response to all comments.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary. The recommendations that follow are based on the previous version of the guideline.

Note from the National Guideline Clearinghouse (NGC) and the Institute for Clinical Systems Improvement (ICSI): For a description of what has changed since the previous version of this guidance, refer to Summary of Changes Report -- October 2007.

This guideline is intended to assist in the prioritization of screening maneuvers, tests and counseling opportunities. It is not intended to diagnose or treat any condition. Consequently, once a health issue or condition has been uncovered, other ICSI guidelines (such as prevention and management of Obesity [Mature Adolescents and Adults] guideline) will take precedence during any further diagnosis and management.

Recommendations for preventive services for children and adolescents are presented in the form of an algorithm with 6 components, accompanied by detailed annotations. An algorithm is provided for Preventive Services for Children and Adolescents. Clinical highlights follow.

Class of evidence (A-D, M, R, X) and conclusion grade (I-III, Not Assignable) definitions are provided at the end of the "Major Recommendations" field.

Preventive services in this guideline are grouped into four groups, based on their evidence of effectiveness and their priority ranking, as follows:

Level I Preventive Services that providers and care systems *must* deliver (based on best evidence). *(Annotation #4)*

Level II Preventive Services that providers and care systems *should* deliver (based on good evidence). *(Annotation #5)*

Level III Preventive Services for which the evidence is currently incomplete. *(Annotation #5a)*

Level IV Screening maneuvers that are not supported by evidence. *(Annotation #5b)*

Table 1: Child Preventive Services That Providers and Care Systems *Must* Deliver (Based on Best Evidence) (Level I)

Childhood Immunization Series

Routine Immunization Schedule for Infants, Children, and Adolescents

Vaccine	Birth	1 mo	2 mo	4 mo	6 mo	12 mo	15 mo	18 mo	24 mo	4-6 yr	11-12 yr	15-18 yr
DTaP			X	X	X	X				X	Tdap	
IPV			X	X	X					X		
MMR (MMRV)	Combined measles, mumps, rubella and varicella vaccine (MMRV) is preferred for children 12 months through 12 years of age over separate injection of equivalent component vaccines.					X				X		
Varicella						X				X		X, verify second dose completed
Pneumococcal (PCV7)			X	X	X	X						
Hib			X	X	X	X						
Rotavirus			X	X	X							
Hep B Schedule 1	X	X			X							
Hep B Schedule 2		X		X	X							
Influenza					X 6-59 months annually-tiv						X annually	X annually
Hep A						X	X					
Meningococcal											X	X if previously not received
Human Papillomavirus											X 3-dose series	X catch up if appropriate; 3-dose series

Please check manufacturer for specifications for dosing, as all intervals may not be needed.

Service	0-2 yrs	2-6 yrs	7-12 yrs	13-18 yrs
Chlamydia Screening				All sexually active women aged 25 years and younger
Vision Screening		Recommended for children 4 years old and younger. By age 5, should be performed as part of preschool screening.		

Abbreviations: DTaP, diphtheria, tetanus, acellular pertussis; IPV, inactivated poliovirus vaccine; MMR, measles, mumps, and rubella; MMRV, measles, mumps, rubella and varicella vaccine; Hib, *Haemophilus influenzae* type b; Hep B, hepatitis B; Hep A, hepatitis A; Tdap, tetanus-diphtheria toxoid; tiv, trivalent influenza vaccine

Table 2: Child Preventive Services That Providers and Care Systems *Should* Deliver (Based on Good Evidence) (Level II)

Service	0-2 years	2-6 years	7-12 years	13-18 years
Cervical Cancer Screening				Beginning at age 21 or three years after first sexual intercourse, whichever is earlier; every 3 years after 3 consecutive normal Pap smears over 5 years.
Infant Sleep Positioning and SIDS Counseling	Place infants to sleep on their back.			
Injury Prevention: Motor Vehicle Safety Screening and Counseling	Car seat when riding in a motor vehicle. Rear facing until 1 year and 20 pounds.	Car seat/booster seat/seat belt when riding in a motor vehicle.		
Neonatal Screening	Newborn metabolic screening performed prior to hospital discharge >24 hours of age.			
Obesity Screening		Record height, weight and BMI annually		
Tobacco Use Screening. Prevention and Intervention in Adolescents	Establish tobacco use and secondhand exposure, offer tobacco cessation on a regular basis.			

Abbreviations: BMI, body mass index; SIDS, sudden infant death syndrome

Preventive Services for Which the Evidence Is Currently Incomplete (Level III)

- Blood lead testing
- Clinical breast exam screening
- Dental and periodontal disease counseling
- Developmental/behavioral assessment testing
- Domestic violence and abuse screening and counseling
- Dyslipidemia screening
- Dysplasia of the hip screening
- Hearing screening
- Injury prevention screening
- Iron deficiency screening
- Nutritional counseling
- Preconception counseling
- Pregnancy prevention counseling
- Scoliosis screening
- Secondhand smoke exposure counseling
- Sexually transmitted infection (other than Chlamydia) counseling
- Sexually transmitted infection (other than Chlamydia) screening
- Skin cancer screening and counseling
- Substance abuse: alcohol use screening and counseling
- Undescended testicles screening
- Viral upper respiratory infection prevention counseling

Screening Maneuvers Which Are Not Supported by Evidence (Level IV)

Level IV services are those with low predictive value and/or uncertain beneficial action for true positives.

- Blood chemistry panels
- Child maltreatment screening
- Hemoglobin (for anemia screening)
- Tuberculin skin testing (routine)
- Urinalysis

Clinical Highlights

- All clinic visits—whether acute, chronic, or for preventive service visit—are opportunities for prevention. Incorporate appropriate preventive services at every opportunity. *(Annotation #3)*
- Assess patients for risk factors at periodic intervals. *(Annotation #2)*
- Address or initiate child preventive services that providers and care systems *must* deliver (based on best evidence) (Level 1). *(Annotation #4)*
    - Childhood immunization series
    - Chlamydia screening
    - Vision screening

Preventive Services for Children and Adolescents Algorithm Annotations

1. **System Alerts Patient/Parent or Provider of Needed Preventive Services**

Clinics must determine some way of communicating what has been done, what needs to be done, etc. This may be a paper face sheet in the patient's chart, electronic postcard reminders, or pop-ups on computer screen, for example. The ideal system at a minimum alerts providers, the appointment desk, and others at each contact, and even better if it alerts patient and the health team independent of patient-initiated contact.

The advent of the electronic health record has supported the trend of providing appropriate preventive services exactly when indicated, therefore lessening the need for the periodic exam as an organizing construct.

2. **Perform Risk Stratification and Health Assessment**

In order to provide these services, it is first necessary to know which services are needed by individual patients. This includes both knowing when the last services were provided and what risk factors are present. This information may be most efficiently collected through the use of questionnaires or automated means of combining information from the medical record with patient-collected information. Nursing or reception staff can collect this information, or increasingly it may be collectible through Internet and Web-based technologies. As important as collecting data thoroughly once, though, is having some way to update the information at regular intervals. One-on-one interviews by clinicians are the least efficient way to obtain or update this information.

See the Support for Implementation section, 'Knowledge Resources: Preventive Risk Assessment Forms' in the original guideline document for sample forms.

3. **Use Every Opportunity for Prevention**

Nearly every patient contact for any reason should be used to identify and address preventive service needs.

Possible examples might include the following:

- A mother of a 15-month-old patient calls, requesting an appointment for a sore throat; if not contraindicated, this would trigger the scheduler to ask patient about need for immunizations.
- A father of a five-year-old year patient calls to schedule a routine visit during the fourth quarter of the year. The scheduler/receptionist could ask patient about flu shot status and facilitate the process for completion of this service.
- A new patient accesses the Internet to schedule a preventive service visit. The interactive system reminds patient to bring or arrange to have mailed his/her medical records. The system also presents an option to complete an automated health-risk assessment form.

The work group recognizes that urgent or emergent visits may not always present preventive service opportunities.

4. **Preventive Services That Providers and Care Systems Must Deliver (Based on Best Evidence). (Level I)**

Level I preventive services are worthy of attention at every visit. Busy clinicians cannot deliver this many services in any single visit. However, with systems in place to track whether or not patients are up-to-date with the high-priority preventive services recommended for their age group, clinicians can offer the high-priority services as opportunities present.

Childhood Immunization Series

Refer to Table 1 above for routine immunization schedule for infants, children, and adolescents.

Counseling Messages

Educate parents to immunize children according to age appropriate schedule.

References/Related Guidelines

See the NGC summary of the ICSI Immunizations guideline for current immunization schedules and annotations to the basic schedule above.

Chlamydia Screening

Services

Routine screening for chlamydia is recommended for all sexually active women aged 25 years and younger.

Risk factors include:

- Having new or multiple sex partners
- Having a prior history of a sexually transmitted infection (STI)
- Not using condoms consistently and correctly

Refer to the original guideline document for information on burden of suffering.

Efficacy

The most efficacious means of reducing the risk of acquiring sexually transmitted infections through sexual contact is either abstinence from sexual relations or maintenance of a mutually monogamous sexual relationship with an uninfected partner. Condoms have been shown in the laboratory to prevent transmission of chlamydia trachomatis, herpes simplex virus, trichomonas, cytomegalovirus, and human immunodeficiency virus. Even under optimal conditions, however, condoms are not always efficacious in preventing transmission. Condom failures occur at an estimated rate of 10% to 15% either as a result of product failure or as a result of incorrect or inconsistent use.

Evidence supporting this recommendation is of class: A, R

Vision Screening

Service

Vision screening is recommended for children four years old and younger. Screening should be used to detect amblyopia, atrabismus, and defects in visual activity. By age five, vision screening should be performed in the clinic or school as part of preschool screening.

Efficacy

No direct evidence demonstrates that vision screening and early treatment in children leads to improved visual acuity and or other outcomes such as school performance. The U.S. Preventive Services Task Force concluded that effectiveness of screening in preschool children is supported by indirect evidence that screening is effective in identifying strabismus and amblyopia, treatment of strabismus and amblyopia is effective, and more intensive screening leads to improved visual acuity compared to usual screening. A single randomized control trial demonstrated that children randomized to more intensive screening between 8 and 37 months of age had a lower prevalence of severe amblyopia, and at 7.5 years of age lower prevalence of amblyopia after treatment.

A prospective study of two matched cohorts of over 700 preschool children each in Ontario found that 3% of children screened before entry to school had moderate to severe vision impairment (visual acuity 20/50 or greater) compared to 6% of children in the matched cohort screened 6-12 months later, indicating that effectiveness of treatment is approximately 50%. Those found to have vision problems using the illiterate E screening instrument were referred to their family doctor.

Counseling Messages

Normal objective vision screening performed at schools need not be repeated by clinics for average-risk, asymptomatic children.

Evidence supporting this recommendation is of classes: A, B, R

5. **Preventive Services That Providers and Care Systems *Should* Deliver (Based on Good Evidence (Level II)**

Level II services have been shown to be effective and should be provided whenever possible. If systems/care management teams are successful in keeping patients on time with high-priority services during illness and disease management visits, preventive services in the second group can be delivered.

Refer to Table 2 above for information on Level II preventive services.

Cervical Cancer Screening

Service

All women should be screened for cervical cancer beginning at age 21 or three years after initiating sexual intercourse, whichever is earlier. Screening should be performed every three years after three consecutive normal Pap smears over five years.

Human papillomavirus (HPV) testing may be used as an adjunct to Papanicolaou (Pap) smear screening to help minimize unnecessary colposcopies and other interventions.

Women who have had dysplasia on prior Pap smears should continue with annual screening for five years after the last dysplastic Pap smear; after that, they need only every-three-year screening.

References/Related Guidelines

See the NGC summary of the ICSI Initial Management of Abnormal Cervical Cytology (Pap Smear) and HPV Testing guideline.

Evidence supporting this recommendation is of classes: C, M, R

Infant Sleep Positioning and Sudden Infant Death Syndrome (SIDS) Counseling

Service

Ask how child is positioned for sleep. Inform parents of importance of back-sleeping position. Demonstrate the appropriate sleeping position when the patient is under medical care.

Refer to the original guideline document for information on efficacy of SIDS counseling and burden of suffering.

Counseling Message

Infants should be placed on their back for sleep. Side sleeping is no longer recognized as an alternative position. Parents should be advised about the appropriate sleeping position starting in the newborn nursery. Health care workers should be careful to place babies on their back to demonstrate to parents the appropriate sleeping position. Continued work to educate all potential caregivers of infants should be supported.

Infant sleep surfaces should be firm and there should be no loose bedding or soft objects around the infant.

Parents should be encouraged not to smoke, as this has many important health benefits. Smoking during pregnancy has been shown to be associated with increased risk of SIDS.

A proximate but separate sleeping environment and the use of pacifiers have been recommended. These should be discussed with parents in the context of fully supporting breastfeeding.

Supporting evidence is of classes: C, D, M, R

Injury Prevention Counseling: Motor Vehicle Safety Screening and Counseling

Service

Ask about the use of car seats, booster seats, and seat belts in the family.

Ask about helmet use in motorcycle riders.

Refer to the original guideline document for information on the efficacy of counseling and burden of suffering from motor vehicle injuries.

Counseling Messages

Age Group - Birth to 9 Years

- Install and use federally approved child safety seats.
- Discuss the fact that infants should face the rear of the vehicle until they are both 1 year of age and 20 lbs, and should not be placed in any seat with an air bag. (Best - middle rear seat).
- All children under 4 years of age must ride in appropriate car seat.
- Discuss the fact that children between 4 to 9 years and weighing less than 80 pounds should be in a belt positioning booster seat.

All Individuals

- Discuss always wearing a safety belt when driving or riding in a car. Discuss the fact that 50% of death and disability from motor vehicle accidents can be prevented when passengers routinely wear seat belts.
- Do not drive or ride in a motor vehicle when the driver is under the influence of alcohol or drugs.
- Discuss the fact that passengers should not ride in cargo areas of any vehicle.
- The safest way to travel is to ensure that EVERYONE in the vehicle is correctly buckled up and that all children under age 13 ride in the back seat.
- For air bag safety, drivers should try to maintain at least 10 inches between themselves and the steering wheel. Front passenger seats should be moved as far back as possible.
- Motorcycle riders should always wear helmets to reduce the risk of head injury.

Evidence supporting this recommendation is of classes: B, C, M, R

Neonatal Screening

Service

Metabolic screens and other interventions in the first week of life should be performed according to state law.

Efficacy

Newborn metabolic screening is designed to detect infants with inborn errors of metabolism. Early identification in many cases can avert a poor outcome for a child with various interventions depending on the condition. Approximately 4,000 infants per year are identified with a condition through the newborn metabolic screening program. Each state varies on the test required to be done by law, but a uniform approach with all states using mass spectrometry is being promoted by a variety national groups (www.mchb.hrsa.gov/screening).

Counseling Message

All infants should receive a newborn metabolic screening test prior to hospital discharge, ideally when greater than 24 hours of age. Infants who receive screening before 24 hours of age should receive a repeat test before the second week of age.

System alerts should provide notice of positive results. Appropriate follow-up services must be provided for any child with a positive test.

Evidence supporting this recommendation is of class: R

Obesity Screening

Service

Record height, weight, and body mass index (BMI) annually beginning at age two as part of a normal visit schedule. Monitor BMI.

Refer to the original guideline document for information on efficacy of obesity screening.

Counseling Messages

Encourage wholesome eating and physical activity.

2-18 years

Encourage:

- Consumption of fruits, vegetables, whole grains, and low-fat dairy products
- Limiting total fat, especially saturated, trans fats, and cholesterol

- Daily participation of 30 to 60 minutes of moderate to vigorous physical activity appropriate for age
- Regular meals

Discourage:

- Foods with added sugars
- Sweetened beverages
- Television and video games; limit to one hour per day

References/Related Guidelines

http://www.healthierus.gov/

http://www.mypyramid.gov

See Knowledge Resources section, "Resources Available" in the original guideline document; ICSI's Technology Assessment Report on Treatment of Obesity in Children and Adolescents; and the NGC summary of ICSI guideline Prevention and Management of Obesity (Mature Adolescents and Adults).

Evidence supporting this recommendation is of classes: A, B, D, M, R

Tobacco Use Screening, Prevention, and Intervention in Adolescents

Service

Establish tobacco use and secondhand smoke exposure and reassess at every opportunity. (See section on Secondhand Smoke Exposure in the original guideline document).

Reinforce non-users to continue non-use of tobacco products.

Offer tobacco cessation services on a regular basis to all patients who use tobacco. (All forms of tobacco should be considered.)

The key components of successful office tobacco cessation interventions are:

- Ask about tobacco use and smoke exposure at every opportunity.
- Advise all users to quit.
- Assess willingness to make a quit effort.
- Assist users' willingness to make a quit attempt.
- Arrange follow-up.

Refer to the original guideline document for information on efficacy of tobacco use screening.

Counseling Messages

For children and adolescents aged 10 years and above and the child or adolescent is using tobacco:

- Emphasize short-term negative effects of tobacco use.
- Advise tobacco users to quit.
- Assess user's willingness to make a quit attempt.
- Provide counseling depending on readiness-to-quit stage. Provide a motivational intervention if the user is not ready to make a quit effort.
- Assist in quitting if ready to make a quit effort. Negotiate a quit date. Counsel to support cessation and build abstinence skills. Offer phone line for more assistance.
- Arrange follow-up to occur soon after the quit date.

For All Ages

- If accompanying household member uses tobacco, encourage member to quit. If the member user is interested in quitting, encourage a visit at his or her clinic for more cessation assistance.
- Provide educational and self-help materials.

Evidence supporting this recommendation is of class: R

5a. **Preventive Services for Which the Evidence Is Currently Incomplete (Level III)**

Level III services could be left to the judgment of individual medical groups, clinicians and their patients. These services either have insufficient evidence to prove their effectiveness and/or have important harms. For these preventive services in particular, decisions about offering the service should be made on a patient-by-patient basis. It is important to remember that insufficient evidence does not mean the service is not effective, but rather that the current literature is not sufficient to say whether or not the service is effective.

Please refer to the beginning of the "Major Recommendations" field and to the original guideline document for information on Level III preventive services.

5b. **Screening Maneuvers That Are Not Supported by Evidence (Level IV)**

Level IV services are those with low predictive value and/or uncertain beneficial action for true positives.

The list of Level IV preventive services is provided at the beginning of "Major Recommendations" field. Please refer to the original guideline document for detailed information on Level IV preventive services.

Definitions:

Classes of Research Reports:

A. Primary Reports of New Data Collection:

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Non-randomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

Conclusion Grades:

Grade I: The evidence consists of results from studies of strong design for answering the question addressed. The results are both clinically important and consistent with minor exceptions at most. The results are free of any significant doubts about generalizability, bias, and flaws in research design. Studies with negative results have sufficiently large samples to have adequate statistical power.

Grade II: The evidence consists of results from studies of strong design for answering the question addressed, but there is some uncertainty attached to the conclusion because of inconsistencies among the results from the studies or because of minor doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from weaker designs for the question addressed, but the results have been confirmed in separate studies and are consistent with minor exceptions at most.

Grade III: The evidence consists of results from studies of strong design for answering the question addressed, but there is substantial uncertainty attached to the conclusion because of inconsistencies among the results of different studies or because of serious doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from a limited number of studies of weak design for answering the question addressed.

Grade Not Assignable: There is no evidence available that directly supports or refutes the conclusion.

CLINICAL ALGORITHM(S)

A detailed and annotated clinical algorithm is provided for Preventive Services for Children and Adolescents.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is classified for selected recommendations (see "Major Recommendations").

In addition, key conclusions contained in the Work Group's algorithm are supported by a grading worksheet that summarizes the important studies pertaining to the conclusion. The type and quality of the evidence supporting these key recommendations is graded for each study.

This guideline is a synthesis of recommendations from other Institute for Clinical Systems Improvement (ICSI) guidelines, primary evidence through literature reviews, other professional groups, particularly United States Preventive Services Task Force (USPSTF), and workgroup consensus.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Improved use of a comprehensive approach to the provision of preventive services, counseling, education, and disease screening for average-risk, asymptomatic children and adolescents as demonstrated by:

- Increased regular assessment of health risks

- Increased percentage of patients who are up-to-date on immunizations
- Reduction in missed opportunities for administering immunization
- Decreased percentage of patients who are behind with recommended immunizations
- Increased percentage of female patients being screened for cervical cancer
- Increased percentage of sexually active female patients under the age of 25 who are screened for chlamydia
- Increased percentage of children age four and younger who have had vision screening

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- This clinical guideline is designed to assist clinicians by providing an analytical framework for the evaluation and treatment of patients, and is not intended either to replace a clinician's judgment or to establish a protocol for all patients with a particular condition. A guideline will rarely establish the only approach to a problem.
- This clinical guideline should not be construed as medical advice or medical opinion related to any specific facts or circumstances. Patients are urged to consult a health care professional regarding their own situation and any specific medical questions they may have.
- This resource is intended to assist in the prioritization of screening maneuvers, testing, and counseling opportunities. It is not intended to diagnose or treat any condition. Consequently, once a health issue or condition has been uncovered, other guidelines will take precedence during any further diagnosis and management.
- It is the guideline development group's assumption that this guideline will primarily serve as a guide for medical groups to develop practice systems for their delivery. While individual clinicians are welcome to refer to this guide, the group does not expect that to be common and it certainly is not the best way to provide important services at high rates. Such an achievement clearly requires the establishment of systems that rely on standing orders, task delegation, reminders, and other automatic ways to identify needs and provide the services.
- While there is good evidence that modifying certain behaviors has positive health benefits (unsafe sex, accidents and safety, nutrition, physical activity), there is minimal evidence at present that screening for these conditions or asking about them in the context of a risk assessment, even if followed by advice from a physician or other provider, will result in a change in behavior or positive outcomes. Therefore, this guideline includes:
    - Minimal recommendations for risk assessment to drive counseling for what are largely lifestyle issues
    - Specific recommendation that risk assessment and counseling about lifestyle not be considered suitable parameters for systematic implementation measures

    - Counseling messages for those clinicians who want to provide such counseling or whose patients express an interest in receiving this information
- The Preventive Services work group has begun a more thorough analysis of the evidence surrounding the use of the physical exam during the provision of preventive services for children. In many areas, there is insufficient evidence surrounding individual components of the physical exam. There are expert recommendations supporting individual components, but study of these elements has been limited by several factors, including the technical difficulty of consistent performance of some exam components, the relative low frequency of the diseases that screening is searching for and lacking, inconclusive or inadequate evidence of the effectiveness of intervention. The work group has begun to break out individual components of the exam into a separate section of this document. The group plans to expand that section in future revisions to more completely visit all of the components of physical examination. The group recognizes that changing these elements will be difficult for some providers and some patients. Therefore, the work group leaves the inclusion of specific components to the desires of individual medical groups. The Preventive Service work group encourages medical groups to focus on the provision of services that clearly have strongest evidence supporting their delivery.
- There is insufficient evidence to recommend one prevention visit schedule over another in terms of lowering mortality and morbidity, recognizing disability, promoting optimal growth and development, or helping patients achieve longer, more productive lives. Many services can be provided during routine visits. Similarly, an assessment of preventive services needs can be incorporated into any visit. The visit schedules recommended in these guidelines may augment a clinic's ability to assure provision of preventive services, but this may be unnecessary over time as effective clinic systems allow the services to be incorporated into other clinic visits.
- Evidence is insufficient to warrant ranking of recommendations for a number of preventive services. Refer to the "Major Recommendations" field and the original guideline document for more information.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Once a guideline is approved for general implementation, a medical group can choose to concentrate on the implementation of that guideline. When four or more groups choose the same guideline to implement and they wish to collaborate with others, they may form an action group.

In the action group, each medical group sets specific goals they plan to achieve in improving patient care based on the particular guideline(s). Each medical group shares its experiences and supporting measurement results within the action group. This sharing facilitates a collaborative learning environment. Action group learnings are also documented and shared with interested medical groups within the collaborative.

Currently, action groups may focus on one guideline or a set of guidelines such as hypertension, lipid treatment, and tobacco cessation.

Detailed measurement strategies are presented to help close the gap between clinical practice and the guideline recommendations. Summaries of the measures are provided in the National Quality Measures Clearinghouse (NQMC).

Key Implementation Recommendations

The following system changes were identified by the guideline work group as key strategies for health care systems to incorporate in support of the implementation of this guideline.

1. Develop a process that allows parents/guardians to complete a risk assessment questionnaire prior to periodic well-child visits and update as necessary. This questionnaire then becomes part of the medical record.
2. The results of the health risk assessment questionnaire are used to identify needs for counseling and other preventive services.
3. The provision of needed preventive services are documented in the medical record and monitored.
4. Develop a process that identifies patients (routine office visits) behind in their preventive visit schedule and create a catch-up plan.
5. Develop a risk-assessment questionnaire that allows for easy identification and monitoring of counseling needs.
6. Risk-assessment questionnaires should be in a consistent and easily accessible place in the patient's chart.
7. Develop electronic data systems to track the immunization status of patients under the provider's care, with the capability to produce reminders and recalls of upcoming or overdue immunizations.
8. Remove barriers to immunization services.

IMPLEMENTATION TOOLS

Chart Documentation/Checklists/Forms
Clinical Algorithm
Pocket Guide/Reference Cards
Quality Measures
Resources

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

RELATED NQMC MEASURES

- Preventive services for children and adolescents: the percentage of patients who are on time with recommended immunizations.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Preventive services for children and adolescents. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2007 Oct. 80 p. [152 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1995 Jun (revised 2007 Oct)

GUIDELINE DEVELOPER(S)

Institute for Clinical Systems Improvement - Private Nonprofit Organization

GUIDELINE DEVELOPER COMMENT

Organizations participating in the Institute for Clinical Systems Improvement (ICSI): Affiliated Organizations participating in the Institute for Clinical Systems Improvement (ICSI): Affiliated Community Medical Centers, Allina Medical Clinic, Altru Health System, Aspen Medical Group, Avera Health, CentraCare, Columbia Park Medical Group, Community-University Health Care Center, Dakota Clinic, ENT Specialty Care, Fairview Health Services, Family HealthServices Minnesota, Family Practice Medical Center, Gateway Family Health Clinic, Gillette Children's Specialty Healthcare, Grand Itasca Clinic and Hospital, HealthEast Care System, HealthPartners Central Minnesota Clinics, HealthPartners Medical Group and Clinics, Hutchinson Area Health Care, Hutchinson Medical Center, Lakeview Clinic, Mayo Clinic, Mercy Hospital and Health Care Center, MeritCare, Mille Lacs Health System, Minnesota Gastroenterology, Montevideo Clinic, North Clinic, North Memorial Care System, North Suburban Family Physicians, Northwest Family Physicians, Olmsted Medical Center, Park Nicollet Health Services, Pilot City Health Center, Quello Clinic, Ridgeview Medical Center, River Falls Medical Clinic, Saint Mary's/Duluth Clinic Health System, St. Paul Heart Clinic, Sioux Valley Hospitals and Health System, Southside Community Health Services, Stillwater Medical Group, SuperiorHealth Medical Group, University of Minnesota Physicians, Winona Clinic, Ltd., Winona Health

ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; e-mail: icsi.info@icsi.org; Web site: www.icsi.org.

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GUIDELINE COMMITTEE

Preventive Services Steering Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Work Group Members: Lawrence Morrissey, MD (Work Group Leader) (Stillwater Medical Group) (Pediatrics); Jacquelyn Bartz, MS, RD, CD (Mayo Clinic) (Dietitian); Karla Grenz, MD (Allina Medical Clinic) (Family Practice); Roy Mortinsen, MD (Sanford Health) (Family Practice); Don Pine, MD (Park Nicollet Health Services) (Family Practice); Leif Solberg, MD (HealthPartners Medical Group) (Family Practice); John M. Wilkinson, MD (Mayo Clinic) (Family Practice); Lisa Harvey, RD, MPH (Park Nicollet Health Services) (Health Education); Peter Rothe, MD (HealthPartners Medical Group) (Internal Medicine); Judy Branstad, RN (Fairview Health Services) (Nursing); Sheila Goodman, MD (Obstetrics and Gynecology Associates, PA) (OB/GYN); Amy Hentges, MD (Allina Medical Clinic) (Pediatrics); Sharnell Valentine, MD, FAAP (St. Mary's/Duluth Clinic Health System) (Pediatrics); Michael Maciosek, PhD (HealthPartners Medical Group) (Resarch); Penny Fredrickson (Institute for Clinical Systems Improvement) (Measurement and Implementation Advisor); Melissa Marshall, MBA (Institute for Clinical Systems Improvement) (Facilitator); Pam Pietruszewski, MA (Institute for Clinical Systems Improvement) (Facilitator)

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

In the interest of full disclosure, Institute for Clinical Systems Improvement (ICSI) has adopted the policy of revealing relationships work group members have with companies that sell products or services that are relevant to this guideline topic. The reader should not assume that these financial interests will have an adverse impact on the content of the guideline, but they are noted here to fully inform readers. Readers of the guideline may assume that only work group members listed below have potential conflicts of interest to disclose.

Leif Solberg, MD receives grant support from Novartis and the Robert Wood Johnson Foundation.

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No other work group members have potential conflicts of interest to disclose.

ICSI's conflict of interest policy and procedures are available for review on ICSI's website at www.icsi.org.

GUIDELINE STATUS

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary.

GUIDELINE AVAILABILITY

Electronic copies of the updated guideline: Available from the Institute for Clinical Systems Improvement (ICSI) Web site.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Preventive services for children and adolescents. Executive summary. Bloomington (MN): Institute for Clinical Systems Improvement, 2006 Oct. 1 p. Electronic copies: Available in Portable Document Format (PDF) from the Institute for Clinical Systems Improvement (ICSI) Web site.
- Appendices A-E of the original guideline document provide various counseling and educational tools, including body mass index (BMI) charts.
- ICSI pocket guidelines. April 2006 edition. Bloomington (MN): Institute for Clinical Systems Improvement, 2006. 298 p.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on July 10, 2000. The information was verified by the guideline developer on April 25, 2001. This summary was updated by ECRI on April 15, 2002 and most recently on March 14, 2003. The updated information was verified by the guideline developer on May 15, 2003. This summary was updated again by ECRI on March 22, 2004, November 10, 2004, December 7, 2004, December 29, 2005, and on January 25, 2007. This summary was updated by ECRI Institute on July 9, 2007 following the FDA advisory on RotaTeq (Rotavirus, Live, Oral, Pentavalent) vaccine. This NGC summary was updated by ECRI Institute on December 21, 2007.

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