

Table 1: Child Preventive Services That Providers and Care Systems *Must* Assess the Need for and Offer to Each Patient. These Have the Highest Priority Value (Level I)

Level I preventive services are worthy of attention at every opportunity. Busy clinicians cannot deliver this many services in any single encounter. 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 Immunizations Series

Routine Immunization Schedule for Infants, Children and Adolescents

Recommended Immunization Schedule for Persons Aged 0 Through 6 Years—United States • 2009

For those who fall behind or start late, see the catch-up schedule

Vaccine ▼	Age ►	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	19–23 months	2–3 years	4–6 years
Hepatitis B ¹		HepB	HepB	see footnote 1		HepB						
Rotavirus ²				RV	RV	RV ³						
Diphtheria, Tetanus, Pertussis ³			DTaP	DTaP	DTaP	see footnote 3	DTaP					DTaP
<i>Haemophilus influenzae</i> type b ⁴			Hib	Hib	Hib ⁴		Hib					
Pneumococcal ⁵			PCV	PCV	PCV		PCV				PPSV	
Inactivated Poliovirus			IPV	IPV		IPV						IPV
Influenza ⁶							Influenza (Yearly)					
Measles, Mumps, Rubella ⁷							MMR		see footnote 7			MMR
Varicella ⁸							Varicella		see footnote 8			Varicella
Hepatitis A ⁹							HepA (2 doses)				HepA Series	
Meningococcal ¹⁰												MCV

Range of recommended ages

Certain high-risk groups

This schedule indicates the recommended ages for routine administration of currently licensed vaccines, as of December 1, 2008, for children aged 0 through 6 years. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. Licensed combination vaccines may be used whenever any component of the combination is indicated and other components are not contraindicated and if approved by the Food and Drug Administration for that dose of

the series. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations, including high-risk conditions: <http://www.cdc.gov/vaccines/pubs/acip-list.htm>. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967.

1. Hepatitis B vaccine (HepB). (Minimum age: birth)

At birth:

- Administer monovalent HepB to all newborns before hospital discharge.
- If mother is hepatitis B surface antigen (HBsAg)-positive, administer HepB and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth.
- If mother's HBsAg status is unknown, administer HepB within 12 hours of birth. Determine mother's HBsAg status as soon as possible and, if HBsAg-positive, administer HBIG (no later than age 1 week).

After the birth dose:

- The HepB series should be completed with either monovalent HepB or a combination vaccine containing HepB. The second dose should be administered at age 1 or 2 months. The final dose should be administered no earlier than age 24 weeks.
- Infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg (anti-HBs) after completion of at least 3 doses of the HepB series, at age 9 through 18 months (generally at the next well-child visit).

4-month dose:

- Administration of 4 doses of HepB to infants is permissible when combination vaccines containing HepB are administered after the birth dose.

2. Rotavirus vaccine (RV). (Minimum age: 6 weeks)

- Administer the first dose at age 6 through 14 weeks (maximum age: 14 weeks 6 days). Vaccination should not be initiated for infants aged 15 weeks or older (i.e., 15 weeks 0 days or older).
- Administer the final dose in the series by age 8 months 0 days.
- If Rotarix[®] is administered at ages 2 and 4 months, a dose at 6 months is not indicated.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP). (Minimum age: 6 weeks)

- The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose.
- Administer the final dose in the series at age 4 through 6 years.

4. *Haemophilus influenzae* type b conjugate vaccine (Hib). (Minimum age: 6 weeks)

- If PRP-OMP (PedvaxHib[®] or Comvax[®] [HepB-Hib]) is administered at ages 2 and 4 months, a dose at age 6 months is not indicated.
- TriHibit[®] (DTaP/Hib) should not be used for doses at ages 2, 4, or 6 months but can be used as the final dose in children aged 12 months or older.

5. Pneumococcal vaccine. (Minimum age: 6 weeks for pneumococcal conjugate vaccine [PCV]; 2 years for pneumococcal polysaccharide vaccine [PPSV])

- PCV is recommended for all children aged younger than 5 years.
- Administer 1 dose of PCV to all healthy children aged 24 through 59 months who are not completely vaccinated for their age.

- Administer PPSV to children aged 2 years or older with certain underlying medical conditions (see *MMWR* 2000;49[No. RR-9]), including a cochlear implant.

6. Influenza vaccine. (Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 2 years for live, attenuated influenza vaccine [LAIV])

- Administer annually to children aged 6 months through 18 years.
- For healthy nonpregnant persons (i.e., those who do not have underlying medical conditions that predispose them to influenza complications) aged 2 through 49 years, either LAIV or TIV may be used.
- Children receiving TIV should receive 0.25 mL if aged 6 through 35 months or 0.5 mL if aged 3 years or older.
- Administer 2 doses (separated by at least 4 weeks) to children aged younger than 9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time during the previous influenza season but only received 1 dose.

7. Measles, mumps, and rubella vaccine (MMR). (Minimum age: 12 months)

- Administer the second dose at age 4 through 6 years. However, the second dose may be administered before age 4, provided at least 28 days have elapsed since the first dose.

8. Varicella vaccine. (Minimum age: 12 months)

- Administer the second dose at age 4 through 6 years. However, the second dose may be administered before age 4, provided at least 3 months have elapsed since the first dose.
- For children aged 12 months through 12 years the minimum interval between doses is 3 months. However, if the second dose was administered at least 28 days after the first dose, it can be accepted as valid.

9. Hepatitis A vaccine (HepA). (Minimum age: 12 months)

- Administer to all children aged 1 year (i.e., aged 12 through 23 months). Administer 2 doses at least 6 months apart.
- Children not fully vaccinated by age 2 years can be vaccinated at subsequent visits.
- HepA also is recommended for children older than 1 year who live in areas where vaccination programs target older children or who are at increased risk of infection. See *MMWR* 2006;55(No. RR-7).

10. Meningococcal vaccine. (Minimum age: 2 years for meningococcal conjugate vaccine [MCV] and for meningococcal polysaccharide vaccine [MPSV])

- Administer MCV to children aged 2 through 10 years with terminal complement component deficiency, anatomic or functional asplenia, and certain other high-risk groups. See *MMWR* 2005;54(No. RR-7).
- Persons who received MPSV 3 or more years previously and who remain at increased risk for meningococcal disease should be revaccinated with MCV.

The Recommended Immunization Schedules for Persons Aged 0 Through 18 Years are approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip/), the American Academy of Pediatrics (<http://www.aap.org/>), and the American Academy of Family Physicians (<http://www.aafp.org/>).
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Recommended Immunization Schedule for Persons Aged 7 Through 18 Years—United States • 2009
For those who fall behind or start late, see the schedule below and the catch-up schedule

Vaccine ▼	Age ►	7–10 years	11–12 years	13–18 years
Tetanus, Diphtheria, Pertussis ¹	<i>see footnote 1</i>		Tdap	Tdap
Human Papillomavirus ²	<i>see footnote 2</i>		HPV (3 doses)	HPV Series
Meningococcal ³		MCV	MCV	MCV
Influenza ⁴		Influenza (Yearly)		
Pneumococcal ⁵		PPSV		
Hepatitis A ⁶		HepA Series		
Hepatitis B ⁷		HepB Series		
Inactivated Poliovirus ⁸		IPV Series		
Measles, Mumps, Rubella ⁹		MMR Series		
Varicella ¹⁰		Varicella Series		

Range of recommended ages

Catch-up immunization

Certain high-risk groups

This schedule indicates the recommended ages for routine administration of currently licensed vaccines, as of December 1, 2008, for children aged 7 through 18 years. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. Licensed combination vaccines may be used whenever any component of the combination is indicated and other components are not contraindicated and if approved by the Food and Drug Administration for that dose of

the series. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations, including high-risk conditions: <http://www.cdc.gov/vaccines/pubs/acip-list.htm>. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967.

1. Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap). (*Minimum age: 10 years for BOOSTRIX® and 11 years for ADACEL®*)

- Administer at age 11 or 12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a tetanus and diphtheria toxoid (Td) booster dose.
- Persons aged 13 through 18 years who have not received Tdap should receive a dose.
- A 5-year interval from the last Td dose is encouraged when Tdap is used as a booster dose; however, a shorter interval may be used if pertussis immunity is needed.

2. Human papillomavirus vaccine (HPV). (*Minimum age: 9 years*)

- Administer the first dose to females at age 11 or 12 years.
- Administer the second dose 2 months after the first dose and the third dose 6 months after the first dose (at least 24 weeks after the first dose).
- Administer the series to females at age 13 through 18 years if not previously vaccinated.

3. Meningococcal conjugate vaccine (MCV).

- Administer at age 11 or 12 years, or at age 13 through 18 years if not previously vaccinated.
- Administer to previously unvaccinated college freshmen living in a dormitory.
- MCV is recommended for children aged 2 through 10 years with terminal complement component deficiency, anatomic or functional asplenia, and certain other groups at high risk. See *MMWR* 2005;54(No. RR-7).
- Persons who received MPSV 5 or more years previously and remain at increased risk for meningococcal disease should be revaccinated with MCV.

4. Influenza vaccine.

- Administer annually to children aged 6 months through 18 years.
- For healthy nonpregnant persons (i.e., those who do not have underlying medical conditions that predispose them to influenza complications) aged 2 through 49 years, either LAIV or TIV may be used.
- Administer 2 doses (separated by at least 4 weeks) to children aged younger than 9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time during the previous influenza season but only received 1 dose.

5. Pneumococcal polysaccharide vaccine (PPSV).

- Administer to children with certain underlying medical conditions (see *MMWR* 1997;46[No. RR-8]), including a cochlear implant. A single revaccination should be administered to children with functional or anatomic asplenia or other immunocompromising condition after 5 years.

6. Hepatitis A vaccine (HepA).

- Administer 2 doses at least 6 months apart.
- HepA is recommended for children older than 1 year who live in areas where vaccination programs target older children or who are at increased risk of infection. See *MMWR* 2006;55(No. RR-7).

7. Hepatitis B vaccine (HepB).

- Administer the 3-dose series to those not previously vaccinated.
- A 2-dose series (separated by at least 4 months) of adult formulation Recombivax HB® is licensed for children aged 11 through 15 years.

8. Inactivated poliovirus vaccine (IPV).

- For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if the third dose was administered at age 4 years or older.
- If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age.

9. Measles, mumps, and rubella vaccine (MMR).

- If not previously vaccinated, administer 2 doses or the second dose for those who have received only 1 dose, with at least 28 days between doses.

10. Varicella vaccine.

- For persons aged 7 through 18 years without evidence of immunity (see *MMWR* 2007;56[No. RR-4]), administer 2 doses if not previously vaccinated or the second dose if they have received only 1 dose.
- For persons aged 7 through 12 years, the minimum interval between doses is 3 months. However, if the second dose was administered at least 28 days after the first dose, it can be accepted as valid.
- For persons aged 13 years and older, the minimum interval between doses is 28 days.

The Recommended Immunization Schedules for Persons Aged 0 Through 18 Years are approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip), the American Academy of Pediatrics (<http://www.aap.org>), and the American Academy of Family Physicians (<http://www.aafp.org>).

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Table I: Child Preventive Services that Providers and Care Systems Must Assess the Need for and Offer to Each Patient *Preventive Services for Children and Adolescents*
Fifteenth Edition/October 2009

Catch-up Immunization Schedule for Persons Aged 4 Months Through 18 Years Who Start Late or Who Are More Than 1 Month Behind—United States • 2009

The table below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age.

CATCH-UP SCHEDULE FOR PERSONS AGED 4 MONTHS THROUGH 6 YEARS					
Vaccine	Minimum Age for Dose 1	Minimum Interval Between Doses			
		Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
Hepatitis B ¹	Birth	4 weeks	8 weeks (and at least 16 weeks after first dose)		
Rotavirus ²	6 wks	4 weeks	4 weeks ²		
Diphtheria, Tetanus, Pertussis ³	6 wks	4 weeks	4 weeks	6 months	6 months ³
<i>Haemophilus influenzae</i> type b ⁴	6 wks	4 weeks if first dose administered at younger than age 12 months 8 weeks (as final dose) if first dose administered at age 12–14 months No further doses needed if first dose administered at age 15 months or older	4 weeks ⁴ if current age is younger than 12 months 8 weeks (as final dose) ⁴ if current age is 12 months or older and second dose administered at younger than age 15 months No further doses needed if previous dose administered at age 15 months or older	8 weeks (as final dose) This dose only necessary for children aged 12 months through 59 months who received 3 doses before age 12 months	
Pneumococcal ⁵	6 wks	4 weeks if first dose administered at younger than age 12 months 8 weeks (as final dose for healthy children) if first dose administered at age 12 months or older or current age 24 through 59 months No further doses needed for healthy children if first dose administered at age 24 months or older	4 weeks if current age is younger than 12 months 8 weeks (as final dose for healthy children) if current age is 12 months or older No further doses needed for healthy children if previous dose administered at age 24 months or older	8 weeks (as final dose) This dose only necessary for children aged 12 months through 59 months who received 3 doses before age 12 months or for high-risk children who received 3 doses at any age	
Inactivated Poliovirus ⁶	6 wks	4 weeks	4 weeks	4 weeks ⁶	
Measles, Mumps, Rubella ⁷	12 mos	4 weeks			
Varicella ⁸	12 mos	3 months			
Hepatitis A ⁹	12 mos	6 months			
CATCH-UP SCHEDULE FOR PERSONS AGED 7 THROUGH 18 YEARS					
Tetanus, Diphtheria/ Tetanus, Diphtheria, Pertussis ¹⁰	7 yrs ¹⁰	4 weeks	4 weeks if first dose administered at younger than age 12 months 6 months if first dose administered at age 12 months or older	6 months if first dose administered at younger than age 12 months	
Human Papillomavirus ¹¹	9 yrs	Routine dosing intervals are recommended ¹¹			
Hepatitis A ⁹	12 mos	6 months			
Hepatitis B ¹	Birth	4 weeks	8 weeks (and at least 16 weeks after first dose)		
Inactivated Poliovirus ⁶	6 wks	4 weeks	4 weeks	4 weeks ⁶	
Measles, Mumps, Rubella ⁷	12 mos	4 weeks			
Varicella ⁸	12 mos	3 months if the person is younger than age 13 years 4 weeks if the person is aged 13 years or older			

1. Hepatitis B vaccine (HepB).

- Administer the 3-dose series to those not previously vaccinated.
- A 2-dose series (separated by at least 4 months) of adult formulation Recombivax HB[®] is licensed for children aged 11 through 15 years.

2. Rotavirus vaccine (RV).

- The maximum age for the first dose is 14 weeks 6 days. Vaccination should not be initiated for infants aged 15 weeks or older (i.e., 15 weeks 0 days or older).
- Administer the final dose in the series by age 8 months 0 days.
- If Rotarix[®] was administered for the first and second doses, a third dose is not indicated.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP).

- The fifth dose is not necessary if the fourth dose was administered at age 4 years or older.

4. *Haemophilus influenzae* type b conjugate vaccine (Hib).

- Hib vaccine is not generally recommended for persons aged 5 years or older. No efficacy data are available on which to base a recommendation concerning use of Hib vaccine for older children and adults. However, studies suggest good immunogenicity in persons who have sickle cell disease, leukemia, or HIV infection, or who have had a splenectomy; administering 1 dose of Hib vaccine to these persons is not contraindicated.
- If the first 2 doses were PRP-OMP (PedvaxHIB[®] or Comvax[®]), and administered at age 11 months or younger, the third (and final) dose should be administered at age 12 through 15 months and at least 8 weeks after the second dose.
- If the first dose was administered at age 7 through 11 months, administer 2 doses separated by 4 weeks and a final dose at age 12 through 15 months.

5. Pneumococcal vaccine.

- Administer 1 dose of pneumococcal conjugate vaccine (PCV) to all healthy children aged 24 through 59 months who have not received at least 1 dose of PCV on or after age 12 months.
- For children aged 24 through 59 months with underlying medical conditions, administer 1 dose of PCV if 3 doses were received previously or administer 2 doses of PCV at least 8 weeks apart if fewer than 3 doses were received previously.
- Administer pneumococcal polysaccharide vaccine (PPSV) to children aged 2 years or older with certain underlying medical conditions (see *MMWR* 2000;49[No. RR-9]), including a cochlear implant, at least 8 weeks after the last dose of PCV.

6. Inactivated poliovirus vaccine (IPV).

- For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if the third dose was administered at age 4 years or older.
- If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age.

7. Measles, mumps, and rubella vaccine (MMR).

- Administer the second dose at age 4 through 6 years. However, the second dose may be administered before age 4, provided at least 28 days have elapsed since the first dose.
- If not previously vaccinated, administer 2 doses with at least 28 days between doses.

8. Varicella vaccine.

- Administer the second dose at age 4 through 6 years. However, the second dose may be administered before age 4, provided at least 3 months have elapsed since the first dose.
- For persons aged 12 months through 12 years, the minimum interval between doses is 3 months. However, if the second dose was administered at least 28 days after the first dose, it can be accepted as valid.
- For persons aged 13 years and older, the minimum interval between doses is 28 days.

9. Hepatitis A vaccine (HepA).

- HepA is recommended for children older than 1 year who live in areas where vaccination programs target older children or who are at increased risk of infection. See *MMWR* 2006;55[No. RR-7].

10. Tetanus and diphtheria toxoids vaccine (Td) and tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap).

- Doses of DTaP are counted as part of the Td/Tdap series.
- Tdap should be substituted for a single dose of Td in the catch-up series or as a booster for children aged 10 through 18 years; use Td for other doses.

11. Human papillomavirus vaccine (HPV).

- Administer the series to females at age 13 through 18 years if not previously vaccinated.
- Use recommended routine dosing intervals for series catch-up (i.e., the second and third doses should be administered at 2 and 6 months after the first dose). However, the minimum interval between the first and second doses is 4 weeks. The minimum interval between the second and third doses is 12 weeks, and the third dose should be given at least 24 weeks after the first dose.

Information about reporting reactions after immunization is available online at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967. Suspected cases of vaccine-preventable diseases should be reported to the state or local health department. Additional information, including precautions and contraindications for immunization, is available from the National Center for Immunization and Respiratory Diseases at <http://www.cdc.gov/vaccines> or telephone, 800-CDC-INFO (800-232-4636).

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Table I: Child Preventive Services that Providers and Care Systems *Must* Assess the Need for and Offer to Each Patient *Preventive Services for Children and Adolescents*
Fifteenth Edition/October 2009

Service	0-2 years	2-6 years	7-12 years	13-18 years
Chlamydia Screening (sexually active age 25 years and younger)				All sexually active women aged 25 years and younger
Neonatal Screening	Screen for hemoglobinopathies, phenylketonuria, hypothyroidism in the first week of life.			
Vision Impairment Screening (four years and younger)		Recommended for children four years old and younger. By age five, should be performed as part of preschool screening.		

Table 2: Child Preventive Services That Providers and Care Systems *Should* Assess the Need for and Offer to Each Patient. These Have Value but Less Than Those in Level I. (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.

Service	0-2 years	2-6 years	7-12 years	13-18 years
Breastfeeding Counseling	Promote and support breastfeeding.			
Depression Screening		Screen adolescents 12-18 for major depressive disorder when systems are in place for accurate diagnosis, treatment and follow-up.		
Folic Acid Chemoprophylaxis Counseling				Counsel women of reproductive age to consume 400-800 micrograms of folid acid per day from food sources or supplements.
Hearing Screening	Screen for congenital hearing loss before one month.			
Infant Sleep Positioning and SIDS Counseling	Ask about the child’s sleep environment. Inform parents to place infants to sleep on their back.			
Motor Vehicle Safety Screening and Counseling	Ask about the use of car seats, booster seats and seat belts in the family. Ask about helmet use in recreational activities.			
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.			

Preventive Services for Which the Evidence Is Currently Incomplete and/or High Burden of Disease and Low Cost of Delivering Care. Providing These Services Is Left to the Judgment of Individual Medical Groups, Clinicians and Their Patients (Level III)

Level III 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 based on shared decision-making. 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.

- Alcohol use screening and counseling
- Blood lead screening
- Cervical cancer screening
- Clinical breast exam screening
- Dental and periodontal disease counseling
- Developmental/behavioral assessment screening
- Domestic violence and abuse screening and counseling
- Dyslipidemia screening
- Dysplasia of the hip screening
- Household and recreational injury prevention screening
- Infectious disease prevention counseling
- Iron deficiency screening
- Nutritional counseling
- Preconception counseling
- Pregnancy prevention counseling
- Scoliosis screening
- Secondhand smoke exposure counseling
- Sexually transmitted infection counseling
- Sexually transmitted infection screening (other than chlamydia)
- Skin cancer screening and counseling
- Undescended testicle screening

Preventive Services That Are Not Supported by Evidence and Not Recommended (Level IV)

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

- Blood chemistry screening
- Child maltreatment screening
- Hemoglobin (for anemia screening five years and older)
- Tuberculin skin screening (for average risk)
- Urinalysis

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Foreword

Scope and Target Population

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

This guideline targets asymptomatic children seeking health care who would benefit from preventive services. 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 (such as the ICSI Prevention and Management of Obesity [Mature Adolescents and Adults] guideline) will take precedence during any further diagnosis and management.

Clinical Highlights and Recommendations

- All clinic contacts – whether acute, chronic or for preventive service – are opportunities for prevention. Incorporate appropriate preventive services at every opportunity. (*Annotation #1*)
- Address or initiate child preventive services that providers and care systems *must* assess the need for and offer to each patient. These have the highest priority value. (Level I). (*Annotation #2; Aims #1, 4, 6*)
 - Childhood Immunization Series
 - Chlamydia Screening (sexually active age 25 years and younger)
 - Neonatal Screening
 - Vision Impairment Screening (four years and younger)
- Provide timely feedback, appropriate interventions and optimal follow-up. (*Annotation #6*)

Priority Aims

1. Increase the percentage of patients (children and adolescents) who are on time with recommended immunizations. Level I childhood immunizations series are those that *must* be assessed for and offered to each patient. (*Annotation #2*)
2. Reduce missed opportunities for administering immunizations. (*Annotation #2*)
3. Decrease the percentage of patients who are behind with recommended immunizations by creating a catch-up plan. (*See the ICSI Immunization guideline*)
4. Increase the percentage of sexually active female patients 25 and younger who are screened for chlamydia. (*Annotation #2*)
5. Increase the percentage of newborn patients who have had neonatal screening and has been reviewed. (*Annotation #2*)
6. Increase percentage of children age four years and younger who have had vision screening. (*Annotation #2*)

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. The results of the health risk assessment questionnaire are used to identify needs for counseling and other preventive services.
2. Prioritization and implementation of preventive services should be part of the overall system and should include the following:
 - Practice preventive services at every clinic opportunity while addressing high-priority services.
 - Individualize preventive services; regularly assess patient risk factors.
 - Provide education to patients/parents/guardians.
3. Develop a plan for staff and provider education around preventive services and organizational goals for implementation of preventive services (should also include education around "level" of service and the rationale behind each level).
4. Develop decision support processes in electronic medical record or for paper medical records to support physicians and staff in delivery of specific components of Level 1 services.
5. For those organizations with a paper medical record, create a "tickler" system that will generate reminders for preventive services in order to support completion of recommended Level I services.
6. Develop a "catch-up" plan for those patients who are on time with services by creating a tracking system that allows for periodic medical record audits to identify patient gaps in preventive services.
7. Develop a collaborative relationship with patients/parents/guardians in order to activate/motivate them to practice preventive health while staying on time.
8. Place throughout the facility patient education materials that focus on preventive services and the importance of each. Materials may include, but are not limited to, posters, pamphlets, videos and available Web sites, as well as services available in the community.

Related ICSI Scientific Documents

Guidelines

- Diagnosis of Breast Disease
- Diagnosis and Treatment of Otitis Media in Children
- Diagnosis and Treatment of Respiratory Illness in Children and Adults
- Immunizations
- Initial Management of Abnormal Cervical Cytology (Pap Smear) and HPV Testing
- Prevention and Management of Obesity (Mature Adolescents and Adults)
- Preventive Services for Adults
- Routine Prenatal Care

Disclosure of Potential Conflict of Interest

ICSI has adopted a policy of transparency, disclosing potential conflict and competing interests of all individuals who participate in the development, revision and approval of ICSI documents (guidelines, order sets and protocols). This applies to all work groups (guidelines, order sets and protocols) and committees (Committee on Evidence-Based Practice, Cardiovascular Steering Committee, Women's Health Steering Committee, Preventive & Health Maintenance Steering Committee and Respiratory Steering Committee).

Participants must disclose any potential conflict and competing interests they or their dependents (spouse, dependent children, or others claimed as dependents) may have with any organization with commercial, proprietary, or political interests relevant to the topics covered by ICSI documents. Such disclosures will be shared with all individuals who prepare, review and approve ICSI documents.

Pam Stultz, RN has a spouse previously employed by Enteromedics.

Larry Morrissey, MD declared that Stillwater Medical Group received funding for shared decision-making implementation from The Foundation for Informed Medical Decision-making.

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

Introduction to ICSI Document Development

This document was developed and/or revised by a multidisciplinary work group utilizing a defined process for literature search and review, document development and revision, as well as obtaining input from and responding to ICSI members.

For a description of ICSI's development and revision process, please see the Development and Revision Process for Guidelines, Order Sets and Protocols at <http://www.icsi.org>.

Evidence Grading System

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

Citations are listed in the guideline utilizing the format of (*Author, YYYY [report class]*). A full explanation of ICSI's Evidence Grading System can be found at <http://www.icsi.org>.

Algorithm Annotations

Introduction

This guideline encompasses preventive services including screening maneuvers, health behavior counseling and disease screening for average-risk asymptomatic children. It represents a synthesis of recommendations from other ICSI guidelines, primary evidence through literature reviews, recommendations from other organizations (particularly the U.S. Preventive Services Task Force) and work group consensus.

Insofar as possible, the work group have relied on their judgment of the best scientific evidence, but when the scientific data are lacking or the evidence is equivocal, the work group has provided a preference-based approach, allowing patients/parents and providers to use shared decision-making about specific preventive interventions.

For pediatric care, the majority of preventive services are often centered around well-child visits. While these visits can serve as a framework for recommended interventions, it is important to recognize that any encounter can be used as an opportunity for initiating preventive services. Because there is limited evidence for many interventions in pediatrics, those services that have direct evidence should be given highest priority. Other interventions and counseling should be done on a discretionary basis, determined by the risks and needs identified for that individual.

Organizing a Practice for Delivery of Preventive Services

It is our 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, we do not expect that to be common; 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.

Prioritization Among Preventive Services

Virtually all clinical preventive services that are known to be effective address diseases of high health and financial burden. However, it may not be feasible to deliver all effective preventive services in the current health care system. It has been estimated that providing all clinical preventive services recommended by The U.S. Preventive Services Task Force would require 7.4 hours of primary care clinician time each day (Yarnall, 2003 [M]). Therefore, health systems, large medical groups and small primary care practices must decide which of the effective preventive services to emphasize. To assist in the decision-making, the work group has prioritized the services, which are ranked by evidence of effectiveness, based upon the sum of their clinically preventable burden and cost effectiveness.

Although most preventive services target high-burden conditions, not all are equally effective in reducing disease, and each service has its own cost. A 2006 study ranked the 25 clinical preventive services and groups of services recommended by the U.S. Preventive Services Task Force or the Advisory Committee on Immunization Practices for the U.S. general population based on the services' health impact and cost effectiveness (Maciosek, 2006 [M]).

By focusing on services with relatively high health impact and favorable cost effectiveness, health care decision-makers can direct limited resources to a set of preventive services that produce the largest health improvements. The services in this guideline are organized alphabetically into four groups, based on their evidence of effectiveness and their priority ranking, as follows:

- | | |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Level I | Preventive Services that providers and care systems <i>must</i> assess the need for and offer to each patient. These have the highest priority value. (Annotation #2) |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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Level II	Preventive Services that providers and care systems <i>should</i> assess the need for and offer to each patient. These have value but less than those in Level I. (<i>Annotation #3</i>)
Level III	Preventive Services for which the evidence is currently incomplete and/or high burden of disease and low cost of delivering the care. Providing these services is left to the judgment of individual medical groups, clinicians and their patients. (<i>Annotation #4</i>)
Level IV	Preventive services that are not supported by evidence and not recommended. (<i>Annotation #5</i>)

Level I preventive services are worthy of attention at every opportunity. Busy clinicians may not be able to deliver this many services in any single encounter. 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.

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 up to date with high-priority services during illness and disease management visits, preventive services in the second group can be delivered at any opportunity once Level I services are complete.

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 based on shared decision-making. 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.

Level IV services are those with low predictive value and/or uncertain beneficial action for true positives. They may also be a combination of insufficient evidence, potential for harm in treatment, no defined benefit and/or overuse.

Patients and families should have the opportunity to have knowledge of the risks and benefits of the available preventive services. There is good evidence that well designed decision aids can improve patient knowledge (*O'Connor, 2006 [MJ]*). Patients and families should be encouraged to actively participate in the process of decision-making to the extent that they desire (*Institute of Medicine, 2001 [NA]*). The extent to which a preventive service is supported by the medical evidence should be clearly communicated to all patients.

Opportunity for Prevention

Nearly every patient contact for any reason should be used as a possible prevention opportunity. Relying upon routine "checkup" appointments for the delivery of these services will clearly miss many patients, especially those who may need them the most. It is also important to consider ways to remind patients of the need for these services at times other than during office visits.

Counseling 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,

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- specific recommendation that risk assessment and counseling about lifestyle not be considered suitable parameters for systematic implementation measures, and
- counseling messages for those clinicians who want to provide such counseling or whose patients express an interest in receiving this information.

Nevertheless, there is no question that the elimination of the unhealthy behaviors addressed in this document would significantly reduce morbidity and mortality in the general population. Modifiable health behaviors account for up to 50% of premature deaths in this country (*Flegal, 2005 [C]*). Furthermore, the main problem is the lack of good controlled trials of such counseling, not that there are trials showing mixed or no effects. Therefore, clinicians may choose to provide such counseling, even though we do not yet have a solid evidentiary basis for it.

See also Appendix A, "Counseling Messages."

Systematic Delivery of Care

Achieving the goal of most effectively providing preventive services requires a coordinated effort of the patient and all individuals providing care to that patient. Standing orders, task delegation, reminders and other automated systems are essential to ensuring the consistent delivery of preventive services. This guide should help support awareness of the needed preventive services for providers and can be a valuable resource for understanding the evidence behind the services offered. We encourage all providers of health care to be aware of the services needed at each visit. Reliance on the individual clinician alone to recall services that are needed is not sufficient to provide consistent delivery of these needed interventions. It is not advisable to rely solely on any one individual to deliver preventive services. Continuity of care has been shown to improve the consistency with which services are delivered (*Flores, 2008 [B]*).

Physical Exam

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. We have begun to break out individual components of the exam into a separate section of this document. We plan to expand that section in future revisions to more completely visit all of the components of physical examination. We recognize that changing these elements will be difficult for some providers and some patients. Therefore, we leave the inclusion of specific components to the desires of individual medical groups. We encourage medical groups to focus on the provision of services that clearly have strongest evidence supporting their delivery.

Prevention Visit Schedules

The work group acknowledges that there are many visit schedules offered by both national (i.e., American Academy of Pediatrics [AAP]) and local advisory bodies, such as the Minnesota Cover All Kids Coalition. It is important to note that there is a paucity of data to support any particular visit schedule. The federal government requires individual states to provide preventive services as part of their participation in federally funded health care programs. Each state is responsible for setting up its own recommended schedule. Most states use the American Academy of Pediatrics Recommendations for preventive pediatric health care as the basis for their requirements. Providers should take into consideration the frequency of required visits by their own individual state for this population as they design their system of care.

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There is insufficient evidence to recommend one 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.

There have been no studies comparing the efficacy of various scheduled frequencies of preventive services visits. All existing schedules are attempts to combine various medical opinions with the frequency required for certain preventive services, especially immunizations.

Please see Appendix B, "Visit Schedule," for a sample of well-child visits.

1. System Support/Alerts for Preventive Services

In order to provide consistent, high-quality care, the identification and delivery of preventive services needed by each patient requires a systematic care team-based approach rather than relying solely on the memory and actions of individual clinicians. Components of system support include not only standing orders, task delegation, and automatic reminders, but also concepts such as previsit planning, postvisit or between-visit outreach, decision support, system alerts, shared decision-making, patient activation, and care management (*Bodenheimer, 2003 [R]*).

In order to provide preventive services, it is first necessary to know which services are needed for individual patients. This includes both knowing when the last services were provided and an evaluation of individual risk factors. The ICSI guideline Primary Prevention of Chronic Disease can be a helpful starting point. As the dates of latest service and risk factors are identified, they should be recorded in the medical record in a way that facilitates visualization and action during visits.

Nearly every patient contact for any reason should be used to identify and address preventive service needs. Involve patients in all decisions and document service was offered and if patient refused. A system that supports preventive care should include both the patient and the whole care team. However, the work group recognizes that urgent or emergent visits or even routine visits may not always present preventive service opportunities. In order to facilitate the necessary prioritization of services when time is limited, we have separated effective services into two groups so that those services that have the largest impact and are most cost effective can be addressed first. The "must" versus "should" wording is meant to separate Level I and II services in terms of clinical actions and level of evidence. This prioritization can be used during individual patient visits, as well as by the clinic or medical group in developing or improving practice systems for addressing the needs of whole clinic populations.

Shared decision-making, a process where the patient and the provider discuss options and try to ensure that the decision made is consistent with a patient's values and preference, is a key element of implementing preventive care.

2. Preventive Services That Providers and Care Systems *Must* Assess the Need for and Offer to Each Patient. These have the Highest Priority Value. (Level I)

Level I preventive services are worthy of attention at every opportunity. Busy clinicians cannot deliver this many services in any single encounter. 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.

Algorithm Annotations

Childhood Immunizations Series (Level I)

Service

Providers must screen and immunize infants, children and adolescents for age-appropriate vaccines.

Recommended Immunization Schedule for Persons Aged 0 Through 6 Years—United States • 2009

For those who fall behind or start late, see the catch-up schedule

Vaccine ▼	Age ►	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	19–23 months	2–3 years	4–6 years
Hepatitis B ¹		HepB	HepB	see footnote 1		HepB						
Rotavirus ²				RV	RV	RV ²						
Diphtheria, Tetanus, Pertussis ³				DTaP	DTaP	DTaP	see footnote 3	DTaP				DTaP
Haemophilus influenzae type b ⁴				Hib	Hib	Hib ⁴		Hib				
Pneumococcal ⁵				PCV	PCV	PCV		PCV				PPSV
Inactivated Poliovirus				IPV	IPV			IPV				IPV
Influenza ⁶								Influenza (Yearly)				
Measles, Mumps, Rubella ⁷							MMR		see footnote 7			MMR
Varicella ⁸							Varicella		see footnote 8			Varicella
Hepatitis A ⁹								HepA (2 doses)				HepA Series
Meningococcal ¹⁰												MCV

Range of recommended ages

Certain high-risk groups

This schedule indicates the recommended ages for routine administration of currently licensed vaccines, as of December 1, 2008, for children aged 0 through 6 years. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. Licensed combination vaccines may be used whenever any component of the combination is indicated and other components are not contraindicated and if approved by the Food and Drug Administration for that dose of

the series. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations, including high-risk conditions: <http://www.cdc.gov/vaccines/pubs/acip-list.htm>. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967.

1. Hepatitis B vaccine (HepB). (Minimum age: birth)

At birth:

- Administer monovalent HepB to all newborns before hospital discharge.
- If mother is hepatitis B surface antigen (HBsAg)-positive, administer HepB and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth.
- If mother's HBsAg status is unknown, administer HepB within 12 hours of birth. Determine mother's HBsAg status as soon as possible and, if HBsAg-positive, administer HBIG (no later than age 1 week).

After the birth dose:

- The HepB series should be completed with either monovalent HepB or a combination vaccine containing HepB. The second dose should be administered at age 1 or 2 months. The final dose should be administered no earlier than age 24 weeks.
- Infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg (anti-HBs) after completion of at least 3 doses of the HepB series, at age 9 through 18 months (generally at the next well-child visit).

4-month dose:

- Administration of 4 doses of HepB to infants is permissible when combination vaccines containing HepB are administered after the birth dose.

2. Rotavirus vaccine (RV). (Minimum age: 6 weeks)

- Administer the first dose at age 6 through 14 weeks (maximum age: 14 weeks 6 days). Vaccination should not be initiated for infants aged 15 weeks or older (i.e., 15 weeks 0 days or older).
- Administer the final dose in the series by age 8 months 0 days.
- If Rotarix[®] is administered at ages 2 and 4 months, a dose at 6 months is not indicated.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP). (Minimum age: 6 weeks)

- The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose.
- Administer the final dose in the series at age 4 through 6 years.

4. Haemophilus influenzae type b conjugate vaccine (Hib). (Minimum age: 6 weeks)

- If PRP-OMP (PedvaxHIB[®] or Comvax[®] [HepB-Hib]) is administered at ages 2 and 4 months, a dose at age 6 months is not indicated.
- TriHibit[®] (DTaP/Hib) should not be used for doses at ages 2, 4, or 6 months but can be used as the final dose in children aged 12 months or older.

5. Pneumococcal vaccine. (Minimum age: 6 weeks for pneumococcal conjugate vaccine [PCV]; 2 years for pneumococcal polysaccharide vaccine [PPSV])

- PCV is recommended for all children aged younger than 5 years. Administer 1 dose of PCV to all healthy children aged 24 through 59 months who are not completely vaccinated for their age.

- Administer PPSV to children aged 2 years or older with certain underlying medical conditions (see *MMWR* 2000;49[No. RR-9]), including a cochlear implant.

6. Influenza vaccine. (Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 2 years for live, attenuated influenza vaccine [LAIV])

- Administer annually to children aged 6 months through 18 years.
- For healthy nonpregnant persons (i.e., those who do not have underlying medical conditions that predispose them to influenza complications) aged 2 through 49 years, either LAIV or TIV may be used.
- Children receiving TIV should receive 0.25 mL if aged 6 through 35 months or 0.5 mL if aged 3 years or older.
- Administer 2 doses (separated by at least 4 weeks) to children aged younger than 9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time during the previous influenza season but only received 1 dose.

7. Measles, mumps, and rubella vaccine (MMR). (Minimum age: 12 months)

- Administer the second dose at age 4 through 6 years. However, the second dose may be administered before age 4, provided at least 28 days have elapsed since the first dose.

8. Varicella vaccine. (Minimum age: 12 months)

- Administer the second dose at age 4 through 6 years. However, the second dose may be administered before age 4, provided at least 3 months have elapsed since the first dose.
- For children aged 12 months through 12 years the minimum interval between doses is 3 months. However, if the second dose was administered at least 28 days after the first dose, it can be accepted as valid.

9. Hepatitis A vaccine (HepA). (Minimum age: 12 months)

- Administer to all children aged 1 year (i.e., aged 12 through 23 months). Administer 2 doses at least 6 months apart.
- Children not fully vaccinated by age 2 years can be vaccinated at subsequent visits.
- HepA also is recommended for children older than 1 year who live in areas where vaccination programs target older children or who are at increased risk of infection. See *MMWR* 2006;55(No. RR-7).

10. Meningococcal vaccine. (Minimum age: 2 years for meningococcal conjugate vaccine [MCV] and for meningococcal polysaccharide vaccine [MPSV])

- Administer MCV to children aged 2 through 10 years with terminal complement component deficiency, anatomic or functional asplenia, and certain other high-risk groups. See *MMWR* 2005;54(No. RR-7).
- Persons who received MPSV 3 or more years previously and who remain at increased risk for meningococcal disease should be revaccinated with MCV.

The Recommended Immunization Schedules for Persons Aged 0 Through 18 Years are approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip), the American Academy of Pediatrics (<http://www.aap.org>), and the American Academy of Family Physicians (<http://www.aafp.org>).

DEPARTMENT OF HEALTH AND HUMAN SERVICES • CENTERS FOR DISEASE CONTROL AND PREVENTION

CS103164

Algorithm Annotations

Counseling messages

Educate parents to immunize children according to age-appropriate schedule.

Related guidelines

See the ICSI Immunizations guideline.

Chlamydia Screening (Sexually Active Age 25 Years and Younger) (Level I)

Services

Routine screening for chlamydia must be performed for all sexually active women aged 25 years and younger (*Centers for Disease Control and Prevention, 2002 [R]; Meyers, 2007 [M]*).

Risk factors include:

- having new or multiple sex partners,
- having a prior history of a sexually transmitted infection (STI), and
- not using condoms consistently and correctly.

Burden of suffering

Chlamydia is the most common bacterial sexually transmitted infection in the United States. An estimated three million new cases occur annually, with the majority being asymptomatic when initially infected. If left untreated, chlamydia infections can lead to serious complications, including pelvic inflammatory disease (PID), infertility and increased risk of human immunodeficiency virus (HIV) infection. It has been shown that having a process to identify, test and treat women at risk for cervical chlamydia infections is associated with a decreased incidence of pelvic inflammatory disease (*Scholes, 1996 [A]*).

Efficacy

The sensitivity of available screening tests for chlamydia infection is 80% and higher (*Cook, 2005 [M]*). The U.S. Preventive Service Task Force does not recommend a specific screening test as studies have generally been performed in ideal circumstances in small populations with high prevalence rates. However, they concluded that nucleic acid amplification tests had higher sensitivities and specificities than older antigen detection tests and better sensitivities than culture (*Meyers, 2007 [M]*). Following detection, treatment with antibiotics approaches 100% efficacy. Two randomized studies have observed a decrease in pelvic inflammatory disease following chlamydia screening (*Østergaard, 2000 [C]; Scholes, 1996 [A]*).

Neonatal Screening (Level I)

Service

Screening in the first week of life for conditions that are initially asymptomatic but that result in serious health issues in the first month of life must be performed for hemoglobinopathies (*Lin, 2007 [M]*), phenylketonuria (*Mabry-Hernandez, 2008 [M]*) and hypothyroidism (*Meyers, 2008 [M]*) and other conditions according to state law.

Efficacy

Newborn screening for metabolic and other disorders is designed to detect infants with serious health conditions that are initially asymptomatic like inborn errors of metabolism and hypothyroidism. Early identification in many cases can avert a poor outcome for a child with various interventions, depending on the condition. There is strong evidence to support screening for hemoglobinopathies (*Lin, 2007 [M]*), phenylketonuria (*Mabry-Hernandez, 2008 [M]*) and hypothyroidism (*Meyers, 2008 [M]*). Approximately 4,000 infants per

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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 various national groups (<http://www.mchb.hrsa.gov/screening>). There is fair evidence that false positive results are not a burden for parents (Prosser, 2008 [DJ]). There is fair evidence that screening appears to be cost effective (Insigna, 2002 [M]; Norman, 2009 [M]).

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 life.

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

Vision Impairment Screening (Four Years and Younger) (Level I)**Service**

Vision screening must be performed for children four years old and younger. Screening should be used to detect amblyopia, strabismus and defects in visual acuity. By age five, vision screening should be performed in the clinic or school as part of preschool screening (Kemper, 2004 [M]).

Efficacy

No direct evidence demonstrates that vision screening and early treatment in children lead 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 (Kemper, 2004 [M]). 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 (Williams, 2001 [A]).

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% (Feldman, 1980 [B]). 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 (Williams, 2001 [A]).

3. Preventive Services That Providers and Care Systems Should Assess the Need for and Offer to Each Patient. These have Value but Less than Those in Level I. (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.

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Breastfeeding Counseling (Level II)

Service

Interventions to promote and support breastfeeding should be encouraged (*U.S. Preventive Services Task Force, 2008 [R]*).

Efficacy

Breastfeeding has been shown to decrease the number of ear and gastrointestinal infections. The incidence of asthma, type 2 diabetes and obesity has also been shown to decrease with breastfeeding (*U.S. Preventive Services Task Force, 2008 [R]*). In the first study to look at the duration of breastfeeding and child maltreatment, the results found the odds ratio for maternal maltreatment decreases as breastfeeding duration increases (*Strathearn, 2009 [B]*).

Counseling messages

Birth-2 years

- Encourage:**
- Breastfeeding exclusively for the first six months
 - Supplementing breastfed infants with iron no later than age six months with iron-fortified cereals
 - Breastfeeding or formula up to one year
 - Supplementing for breastfeeding with 400 IU/day vitamin D within two months (*Wagner, 2008 [R]*)
 - Pacifier use has not shown to affect breastfeeding duration or exclusivity (*O'Connor, 2009, [M]*)

Depression Screening (Level II)

Service

Adolescents (age 12-18) should be screened for major depressive disorder (MDD), but only when systems are in place in their organization to ensure accurate diagnosis, treatment and follow-up. These systems include evaluation, registry, regular severity score assessment, tracking, treatment intensification, care manager, prearranged routine psychiatry consultation and relapse prevention counseling. Unless these systems are functioning well, benefits from screening are unlikely to be realized. There is insufficient evidence to recommend such screening for children age 7-11.

At least two instruments have been validated for use in screening and monitoring adolescents: the PHQ9 and the Beck Depression Index (BDI), although Minnesota has largely adopted the PHQ9 (*Johnson, 2002 [C]; Winter, 1999 [C]*).

Efficacy

There are at least 10 good quality randomized trials demonstrating efficacy in adolescents who have been identified with major depressive disorder, including psychotherapy, antidepressants, and the combination of both (*Treatment for Adolescents with Depression Study [Treatment for Adolescents with Depression Study Team, 2004 [A]; Mufson, 2004 [A]*). However, nearly all of these trials have taken place outside a primary care setting, so we are relying on the assumption that the very good evidence for efficacy in primary care in adults (see Gilbody and Williams meta-analyses) should apply to adolescents, as well. There is no evidence of harms from screening or psychotherapy, but there is some evidence for a small risk of increased suicidality from antidepressant treatments and an increased risk of conversion from a unipolar depressive disorder to a bipolar disorder.

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Counseling messages

There is no evidence that simple brief messages have any effect.

Related guidelines

ICSI Preventive Services for Adults guideline

ICSI Major Depression in Adults in Primary Care guideline

See the "Resources Available" section of the guideline for example of screening instruments.

Folic Acid Chemoprophylaxis Counseling (Level II)

Services

Providers could counsel women of reproductive age to consume 400-800 micrograms of folic acid per day from food sources and/or supplements (*Wolff, 2009b [M]*).

Efficacy

Neural tube defects (NTDs) are common birth defects that affect approximately 3,000 pregnancies each year (*Centers for Disease Control and Prevention, 2004 [R]*). The occurrence of neural tube defects is reduced by 50%-70% with the daily periconceptional consumption of 400-800 micrograms of folic acid (*Medical Research Council Vitamin Study Research Group, 1991 [A]*). Not all women receive adequate levels of folic acid in their diets, and the 2005 March of Dimes Gallup survey indicated the number taking daily supplements is declining. When asked what would motivate them to take a supplement, the most common reported needs were being sick or a doctor's recommendation (*Centers for Disease Control and Prevention, 2005 [R]*).

Counseling messages

- Eat folic acid-rich foods and fortified foods such as dark green leafy vegetables; dried beans and peas; whole grain, fortified enriched grain products and breakfast cereals; and citrus fruits and berries.
- Take a vitamin supplement containing folic acid.

Related guidelines

See the ICSI Routine Prenatal Care guideline.

Hearing Screening (Level II)

Service

Universal screening of infants for congenital hearing loss should be performed before one month of age (*Nelson, 2008 [M]*).

Efficacy

There is good evidence to recommend newborn hearing screening by otoacoustic emissions (OAE) and/or auditory brainstem response (ABR) prior to one month of age (*Nelson, 2008 [M]*). Screening for asymptomatic hearing impairment beyond age three is not recommended, although thorough follow-up should be provided for potential cases identified by symptoms or through school-based screening programs (*Nelson, 2008 [M]*).

The U.S. Preventive Services Task Force found good evidence to recommend universal newborn hearing screening. The testing methodology of a one- or two-step validated protocol showed high sensitivity (0.92)

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and specificity (0.98) for the two-step protocol (otoacoustic emissions followed by auditory brainstem response for those who failed otoacoustic emissions) (*Kennedy, 2005 [C]*). There is good evidence that screening improves outcomes (*Wessex Universal Neonatal Hearing Screening Trial Group, 1998 [C]*). Harms of screening in this age group were felt to be minimal.

After age three, undetected hearing problems are rare, and the majority of cases can be identified by thorough examination of children with otitis media with effusion. There is insufficient evidence on the effectiveness of early detection in asymptomatic children (*Nelson, 2008 [M]*).

Infant Sleep Positioning and Sudden Infant Death Syndrome (SIDS) Counseling (Level II)**Service**

Providers should ask about the child's sleep environment. Inform parents of importance of backsleeping position. Demonstrate the appropriate sleeping position when the patient is under medical care.

Efficacy

Stomach and side sleeping have been identified as a major risk factor for sudden infant death syndrome in various studies (*Taylor, 1996 [C]*). Since 1992, the frequency of stomach sleeping has decreased from over 70% to 20% in U.S. infants and in that time, the sudden infant death syndrome rate has decreased by over 50% (*American Academy of Pediatrics, 2005b [R]*). Sudden infant death syndrome does continue to occur, and there is evidence that some populations of patients (*Schlaud, 1999 [D]*) and some health care providers (*Bullock, 2004 [D]*) have not received adequate information about proper sleeping position. There is good evidence that counseling about sleeping position and demonstration of appropriate sleeping position by health care providers increase the percentage of parents who choose to place their child in a backsleeping position (*Colson, 2002 [D]*; *Moon, 2008 [D]*; *Schlaud, 1999 [D]*). There is fair evidence that exclusive breastfeeding decreases the rate of sudden infant death syndrome (*Vennemann, 2009a [C]*). Other modifiable environmental risk factors have been identified. This has led to further recommendations, including sleeping in the same room with parents but not in the same bed, avoiding head covering and loose soft objects around the infant, and the offering of pacifiers during sleep (*American Academy of Pediatrics, 2005b [R]*; *Mitchell, 2008 [C]*; *Vennemann, 2009b [C]*). There has been evidence to support that pacifier use has not shown to have an affect on breastfeeding duration or exclusivity (*O'Connor, 2009 [M]*).

Burden of suffering

According to the annual summary of Vital Statistics: 2004, sudden infant death syndrome is one of five causes attributing to more than half of all infant deaths in 2002 (*Hoyert, 2006 [M]*). In 1993 an estimated 58% of infants in the United States were placed to sleep on their stomachs (*Taylor, 1996 [C]*). Infants who sleep on their stomachs or side are at increased risk for sudden infant death syndrome. There has been a noted rise in the number of children who experience accidental suffocation and strangulation in bed. This mechanism continues to be a major contributor to death in infancy (*Shapiro-Mendoza, 2009 [C]*).

Counseling message

Infants should be placed on their back for sleep. Side sleeping is no longer recognized as an alternative position.

Sleep position education should start 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.

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Improved room ventilation by use of a fan may be an effective intervention for decreasing sudden infant death syndrome (*Coleman-Phox, 2008 [C]*).

Parents should be encouraged not to smoke, as a no-smoking environment has many important health benefits. Smoking during pregnancy has been shown to be associated with increased risk of sudden infant death syndrome (*American Academy of Pediatrics, 2005b [R]*).

Approximate but separate sleeping environment and the use of pacifiers have been recommended (*American Academy of Pediatrics, 2005b [R]*).

Exclusive breastfeeding may decrease the risk of sudden infant death syndrome, and given all of its other health benefits, should be strongly encouraged. Pacifier use has not been shown to affect breastfeeding duration or exclusivity (*O'Connor, 2009 [M]*). O'Connor performed a systematic review of four randomized control trials, 20 cohort studies and five cross-sectional studies to support this.

Motor Vehicle Safety Screening and Counseling (Level II)**Service**

Providers should ask the following:

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

Ask about helmet use in recreational activities.

Efficacy

An updated review of the effectiveness of counseling for the U.S. Preventive Services Task Force found a small number of poor to fair studies of counseling to promote child safety seats that were conducted in years prior to the current environment of legislative and community interventions that have improved child seat use. Therefore, the U.S. Preventive Services Task Force found insufficient evidence to issue a recommendation for or against counseling to promote proper safety and booster seat use (*Williams, 2007 [M]*). In the absence of better evidence, a choice to provide counseling can be supported by indirect evidence of counseling effectiveness (short-term effects reported in earlier studies), the high relative burden of motor vehicle injuries in young children, and the low cost of counseling.

Although the effectiveness of counseling is unclear, studies have found child seats to be effective. A recent study found that child safety seats are more effective than lap-shoulder safety belts for children ages two to three years, when seated in the rear. The study also concluded that laws requiring child safety seats for children younger than four years have a sound basis and recommend they remain in force (*Zaloshnja, 2007 [B]*). Another study on children ages two through six years was conducted for effectiveness on child restraint systems over seat belt use alone. The study's data indicated a 21% reduction in mortality risk for children two years through six years when a child restraint system was used over seat belts. The study recommends continued promotion of child restraint systems through laws and with education and disbursement programs (*Elliott, 2006 [B]*).

Unrestrained children are over 10 times as likely to die in a motor vehicle crash than are restrained children, although these data come from studies with important design limitations. Other studies suggest that child safety seats can reduce serious injury by 67% and mortality by 71%. Child restraints may also reduce non-crash injuries to child passengers by preventing falls both within and out of the vehicle (*Williams, 2007 [M]*). Belt-positioning booster seats have been shown to decrease the risk of injury by 59% in children ages 4-7 years (*Durbin, 2003 [C]*).

Persons who wear safety helmets while operating or riding on motorcycles can reduce their risk of injury or death from head trauma in the event of a crash. Head injury rates are reduced by about 75% in motorcyclists who wear safety helmets.

Algorithm Annotations

Counseling messages

Age Group Counseling Messages

- Birth-9 years**
- Install and use federally approved child safety seats.
 - Provide resources on using car seats appropriately, such as advising the patient to have a demonstration or check of proper seat installation.
 - Use a rear-facing car seat until height/weight are achieved as recommended by car seat manufacturer and according to state law (*Bull, 2008 [R]; Henary, 2007 [C]*).
 - Children ages 12 years and younger should not be placed in any seat with an air bag. (Best: middle rear seat)
 - Expect that a rear-facing child may, over time, need to bend his/her legs but this poses less risk than turning a child front facing too early. Loosening belts poses a safety risk, as well.
 - All children under four years of age must ride in five-point restraint car seat (*AAP, 2002 [R]*).
 - Discuss the fact that children between four and nine years and weighing less than 80 pounds and having height less than four feet nine inches should be in a belt-positioning booster seat (*American Academy of Pediatrics, 2002 [R]*). Refer to local state laws.

All individuals, including older children and drivers of motor vehicles with child passengers

- Discuss always wearing a safety belt when driving or riding in a car (Minnesota Statute 169.686). Discuss the fact that 50% of death and disability from motor vehicle accidents can be prevented when passengers routinely wear seat belts.
- Discuss the importance of properly installing child safety seats.
- 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.
- Discuss that car seat restraints were not designed to be fastened over heavy winter clothing, but over indoor clothing.
- 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.
- Front passenger seats should be moved as far back as possible (Minnesota Department of Public Safety).
- Motorcycle riders should always wear helmets to reduce the risk of head injury.

Obesity Screening (Level II)

Service

Height, weight and body mass index should be recorded annually beginning at age two as part of a normal visit schedule.

Efficacy

The U.S. Preventive Services Task Force concluded there was "insufficient evidence to recommend for or against routine screening for overweight in children and adolescents." However, in a separate summary article they noted, "Because existing trials report modest short- to medium-term improvements (~10-20% decrease in percentage of overweight), overweight improvements among children and adolescents seem possible." They found "fair" evidence that body mass index is a reasonable measure for identifying those who are overweight (*Whitlock, 2005 [R]*). See Appendix C, "Body Mass Index-for-Age Percentiles."

The ICSI Prevention and Management of Obesity (Mature Adolescents and Adults) guideline recommends measuring height, weight and body mass index annually. This guideline also recommends addressing weight

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maintenance for those with body mass index in the normal range (18.5-24.9) because a substantial proportion may become overweight in the future. Children with body mass indexes in the overweight range were about 5 times more likely to become overweight as adults. Those in the obese range were up to 20 times more likely to be overweight. Among boys, an elevated body mass index was also a predictor of hypertension in young adulthood (*Field, 2005 [B]*). Overweight and obesity during childhood were found to be strong predictors of obesity and coronary heart disease risks in young adults who were part of the Bogalusa Heart Study (*Janssen, 2005 [B]*).

Plotting body mass index to note trends in weight change above or below the growth chart is recommended by the U.S. Department of Health and Human Services (2005) and could be started at two years. For children below the 85th percentile, encourage wholesome eating and activity and reevaluate annually. Those between the 85th and 95th percentiles are considered overweight (rather than obese; however, obesity is a billable code, overweight is not). Further medical screening and behavioral management should be considered (*Himes, 1994 [R]*); body mass index is not a precise indicator of the proportion of fat and lean tissue (*Demerath, 2006 [M]*).

There is general consensus that energy expended in physical activity has the potential to affect energy balance and weight regulation. There is some evidence that physical activity can minimize weight gain (*Jakicic, 2002 [R]*) and it reduces obesity-associated comorbidities, especially glucose intolerance and hyperlipidemia (*Kang, 2002 [A]*; *Roberts, 2003 [R]*). However, physical activity alone cannot be expected to overcome unwholesome eating habits. Both must be balanced to prevent excessive weight gain.

Additional topics receiving notice include soft drinks, portion sizes and television viewing or other sedentary activities. Decreasing caloric soft drink consumption can have a beneficial effect on body weight (*Ebbeling, 2006 [A]*), and adolescents still obtain about half of their beverages at home (*French, 2003 [M]*), where there could be parental oversight. Television viewing not only affects lack of activity, but it also communicates behaviors related to food and diet that may not be wholesome (*Eisenmann, 2002 [D]*).

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 30-60 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

(*U.S. Department of Health and Human Services, 2005 [R]*)

Related guidelines

ICSI's Prevention and Management of Obesity (Mature Adolescents and Adults)

Algorithm Annotations**Tobacco Use Screening, Prevention and Intervention in Adolescents (Level II)****Service**

Providers should establish tobacco use status for all patients and reassess at every opportunity. (See section on "Secondhand Smoke Exposure Counseling [Level III].") All forms of tobacco should be included. Provide ongoing cessation services to all tobacco users at every opportunity (*Fiore, 2008 [R]; U.S. Preventive Services Task Force, 2009 [R]*).

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.)

Establish secondhand smoke exposure status for all patients. Advise all patients exposed to secondhand smoke that exposure is harmful. Encourage a smoke-free living and working environment for patients, and assist the exposed patient to communicate with other household members about decreasing smoke in their house. Encourage the patient to support smoking cessation efforts among other household members who use tobacco (*Fiore, 2008 [R]*).

Efficacy

Tobacco use is the single most preventable cause of death and disease in our society. There is good evidence that tobacco cessation interventions are best carried out when the entire clinical staff is organized to provide these services (*Fiore, 2008 [R]; U.S. Preventive Services Task Force, 2009 [R]*).

Structured physician clinical-based smoking cessation counseling is more effective than usual care in reducing smoking rates (*Katz, 2004 [A]*). The addition of telephone-based counseling may result in further improvements in cessation (*Zhu, 2002 [A]*). The success of this approach in the adult population has led to the adoption of the same approach in the pediatric population. Numerous effective pharmacotherapies for smoking cessation now exist. Except in the presence of contraindications, these should be used with all patients attempting to quit smoking.

While readiness-stage intervention is commonly used, evidence does not strongly support it (*Riemsma, 2003 [M]*).

Two treatment elements are effective for tobacco cessation intervention: social support for cessation and skills training/problem-solving. The more intense the treatment, the more effective it is in achieving long-term abstinence from tobacco.

The U.S. Public Health Service guideline cites a review of adolescent cessation programs in a variety of settings and concluded that such programs produce quit rates that exceed naturally occurring quit rates. In contrast, the U.S. Preventive Services Task Force found "little evidence addressing the effectiveness of screening and counseling children and adolescents to prevent the initiation of tobacco use and to promote its cessation in a primary care setting, but clinicians may use their discretion in conducting tobacco-related discussions with this population, since the majority of adult smokers begin tobacco use as a child."

(*Fiore, 2008 [R]; Prochaska, 1992 [R]*)

Counseling message

For children and adolescents age 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.

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- Provide a motivational intervention if the user is not ready to make a quit effort (*Fiore, 2008 [R]*).
- 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.

4. Preventive Services for Which the Evidence Is Currently Incomplete and/or High Burden of Disease and Low Cost of Delivering Care. Providing These Services Is Left to the Judgment of Individual Medical Groups, Clinicians and Their Patients (Level III)

Level III 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 based on shared decision-making. 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.

Alcohol Use Screening and Counseling (Level III)

Service

Screening for risky or hazardous drinking could be performed.

Efficacy

The goal is to identify those with risky or hazardous drinking, as well as those who have carried that behavior to the point of meeting criteria for dependence, and then to provide a brief intervention. In the U.S., risk/hazardous drinking is defined as the number of standard drinks (12 oz. beer, 1 glass of wine or mixed drink) in a given time period:

- Healthy women (and healthy men over 65): no more than 7 drinks per week and no more than 3 drinks per occasion
- Healthy men (less than 65 years): No more than 14 drinks per week and no more than 4 drinks per occasion

(*U.S. Department of Health and Human Services, 2007 [R]*)

A brief intervention can be done by having the clinician, or preferably the rooming nurse, simply ask about the quantity drunk, using a simple questionnaire with the same questions on it, or using a formal validated screening questionnaire, of which the AUDIT is best (10 questions, created by the WHO, extensively validated). Other questionnaires, especially the four-question CAGE, are primarily designed to identify those with dependence, so they don't include questions about the quantity/frequency. These tools have not been validated in the children/adolescent population.

Algorithm Annotations

The U.S. Preventive Services Task Force in 2004 "found good evidence that screening in primary care settings can accurately identify patients whose levels or patterns of alcohol consumption do not meet criteria for alcohol dependence, but place them at risk for increased morbidity and mortality." It also "found good evidence that brief behavioral counseling interventions with follow-up produce small to moderate reductions in alcohol consumption that are sustained over 6- to 12-month periods or longer" (*Whitlock, 2004 [M]*). In a standardized review of the clinically preventable burden and cost effectiveness of 25 preventive services recommended by the U.S. Preventive Services Task Force, Solberg et al. found this service to have the fourth-highest priority score and one of only six services that were actually cost-saving from a societal perspective. Additionally, the authors demonstrated that problem drinking screening and brief interventions in primary care are two of the most effective and cost-effective clinical preventive services. They rank very close to tobacco cessation counseling, yet are two of the least commonly delivered (*Solberg, 2008 [M]*).

Counseling messages

Reinforce do not drink and drive.

Age Group	Counseling and Education Messages
7-12 Years	<ul style="list-style-type: none"> • Reinforce alcohol abuse prevention and education.
13+ Years	<ul style="list-style-type: none"> • Don't ride with someone who is under the influence of alcohol. • Prevent others from driving in this condition: "Friends don't let friends drive drunk." • Reinforce not drinking and driving, and the dangers of it. <ul style="list-style-type: none"> - Abstinence if driving - Have a designated driver • Discuss characteristics of dependency. • Assess current use of alcohol (by history and/or use of standardized screening questionnaire). • Advise all females of the harm of alcohol on a fetus, and advise them to limit or cease alcohol intake.

Counseling method

Brief counseling should follow the 5A model (a variation on tobacco intervention guideline):

- Assess current and historical use of alcohol.
- Advise patients to stop drinking.
- Agree on individual goals for reduction or abstinence.
- Assist with motivation, skills and supports.
- Arrange follow-up support and repeated counseling, including referral if needed.

Other messages that may be of value include:

- Advise all females of childbearing age of the harmful effects of alcohol on a fetus and the need for cessation during pregnancy.
- Reinforce not drinking and driving.
- Advise patients to not ride with someone under the influence of alcohol and to prevent him or her from driving.

Algorithm Annotations

Blood Lead Screening (Level III)

Service

Providers could screen for elevated blood lead levels between the ages of one and five.

Efficacy

The work group does not recommend blood lead screening for average-risk children. It does recognize federal requirements made on providers to screen patients who are covered by federally funded health programs (www.cms.hhs.gov/medicaid/epsdt/default.asp). The rate of screening has increased to 33.3% as measured in an analysis from data from 1988 to 2004 (*Jones, 2009 [D]*).

The U.S. Preventive Services Task Force recommends against routine screening for elevated blood lead levels in asymptomatic children ages one to five who are at average risk. The U.S. Preventive Services Task Force found insufficient evidence to recommend for or against screening in asymptomatic children ages one to five who are at increased risk (*Rischitelli, 2006 [R]*).

The guideline from the Centers for Disease Control and Prevention (1997) endorses screening at ages one and two years and children 36-72 months of age who have not been previously screened, if they meet one of the following criteria:

- Child resides in areas with greater than 27% of the housing built before 1950
- In populations where the percentage of one and two year olds with elevated blood lead levels is greater than 12%
- Child receives services from public assistance for the poor, such as Medicaid or the Supplemental Food Program for Women, Infants and Children (WIC)
- For children in other areas, the Centers for Disease Control and Prevention recommends targeted screening based on risk assessment. See counseling message below.

The Centers for Disease Control and Prevention recommends that each state develop a statewide plan that would supersede the Centers for Disease Control and Prevention's general recommendation. Contact the state department of health or local public health agency for more information on screening recommendations for your area and follow-up on positive results.

Two cost-effectiveness analyses have been published that support the switch from targeted to universal blood lead testing at a community prevalence of 12%-14% (children with elevated blood lead level greater than 12%) (*Briss, 1997 [M]*; *Kemper, 1998 [M]*). Target lead screening approaches have not decreased the effectiveness of screening high-risk populations (*Jones, 2009 [D]*).

Burden of suffering

Childhood lead poisoning is a serious preventable environmental health problem in the U.S. It is currently estimated that some 310,000 children are at risk for lead exposure. The prevalence of elevated lead levels (greater than 10 mcg/dL) was 1.4% when the period 1999-2004 was studied. This prevalence has been steadily declining over the past 20 years primarily to measures taken to reduce the level of lead in the environment (*Centers for Disease Control and Prevention, 2007 [M]*). There is higher prevalence of elevated blood lead levels in non-Hispanic African-American children and in children of lower socioeconomic status (*Jones, 2009 [D]*).

Blood levels below 10 ug/dL have been associated with harmful effects on a child's ability to learn (*Binns, 2007 [R]*). The Centers for Disease Control and Prevention continues to support a threshold of 10 ug/dl for consideration of intervention at this time, while research continues in this area. Very high levels greater than 70 ug/dL can lead to seizures, coma and death.

Algorithm Annotations

Because the risk for childhood lead exposure varies widely, the recommendation for screening efforts should be targeted to children at elevated risk for exposure.

Counseling message

Blood lead screening is specific to each state. This section contains information specific to the state plan for Minnesota. Screening can consist of a capillary blood lead test, but if this is elevated, a venous test is recommended. Federal law requires screening to be done at around one and two years of age and for children up to six years of age who have not previously been screened or if parent or guardian has concern about lead poisoning or answers "yes" or "don't know" to any of the following questions:

- During the past six months, has the child lived in or regularly visited a home, child care or other building built before 1950? This question could apply to a facility such as a home day care center or the home of a babysitter or relative.
- During the past six months has the child lived in or regularly visited a home, child care or other building built before 1978 with recent or ongoing repair, remodeling or damage (such as water damage or chipped paint)?
- Has the child or his/her sibling, playmate or housemate had an elevated blood lead levels?
- Does your child currently receive services from Minnesota Care (MnCare); the Supplemental Food Program for Women, Infants, and Children (WIC); or Medical Assistance (MA), which includes the Prepaid Medical Assistance Program (PMAP)?
- Does your child live within the city limits of Minneapolis or St. Paul?

Reference (<http://www.cdc.gov/nceh/lead/grants/Minnesota/MN%20Screening%20Plan.PDF>)

Cervical Cancer Screening (Level III)

Cervical cancer screening is considered a high-priority service for the general population of sexually active women, and thus it has been assigned to Level I for the adult population (see the ICSI Preventive Services for Adults guideline). However, cervical cancer mortality is extremely low in adolescents and young women (less than 1 per 1,000,000) (*Centers for Disease Control and Prevention, 2006 [R]*), and there is no direct evidence that cervical cancer screening for adolescents is effective in preventing cancer. Therefore, screening has been assigned to Level III for adolescents, based upon indirect evidence of effectiveness and an expected small health benefit.

Service

All women could be screened for cervical cancer beginning at age 21 or three years after initiating sexual intercourse, whichever is earlier (*Saslow, 2002 [R]*). Screening could be performed every three years after three consecutive normal Pap smears over five years (*Hartmann, 2002 [M]*; *Sawaya, 2003 [M]*).

Human papillomavirus (HPV) testing may be used as an adjunct to Pap smear screening to help minimize unnecessary colposcopies and other interventions (*Solomon, 2001 [C]*). The role of human papillomavirus testing will be expanding (*Mayrand, 2007 [C]*; *Nalucler, 2007 [A]*). The work group will continue to review new evidence.

Related guidelines

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

Algorithm Annotations

Clinical Breast Exam Screening (Level III)

Service

Clinical Breast Exam Screening could be performed during an office visit.

Efficacy

Evidence is insufficient to recommend for or against routine clinical breast exam alone to screen for breast cancer (*Humphrey, 2002 [M]*).

Related guideline

See the ICSI Diagnosis of Breast Disease guideline.

Dental and Periodontal Disease Counseling (Level III)

Service

Providers could ask about dental hygiene practices in the home.

Efficacy

The effectiveness of clinician counseling in affecting dental outcomes has not been adequately evaluated (*Moyer, 2004 [R]*). Fluoride supplementation is recommended, but outcome evidence is limited (*Moyer, 2004 [R]*).

Counseling messages

Age Group

Counseling and Education Messages

Birth-2 years

- Discourage the practice of putting infants and children to bed with a bottle.
- Encourage women to breast-feed.
- Encourage healthy eating habits to reduce the risk of dental caries.
- Supplement with .25 mg/dl fluoride starting at six months if water source is less than .3ppm.

2-18 years

- Encourage regular dental visits.
- Encourage brushing teeth daily with fluoridated toothpaste and flossing.
- Encourage healthy eating habits to reduce the risk of dental caries.

Children at high risk for dental caries should be referred to the appropriate health care source.

Developmental/Behavioral Assessment Screening (Level III)

Service

Providers could perform developmental and behavioral assessment of infants and children. The periodic evaluation of children who are at great risk for developmental delay is mandated by federal statute (Individuals with Disabilities Education Act [IDEA] [Pub L No. 101-476]).

Efficacy

Individual states are required to develop processes to provide screening for delayed development as part of providing federally funded health care services. Health care providers are considered to be part of a coordinated system to provide this evaluation. The payment for services can be contingent on completion of this screening in selected populations. There have been recommendations by national societies on the provision of these services (*Council on Children with Disabilities, 2007 [R]*). State specific recommendations for Minnesota are provided in the resource table.

Algorithm Annotations

Developmental assessment can be broken into several major categories including motor skills, language development and social development. Analysis of these different areas has been limited in the past.

Language development

The U.S. Preventive Services Task Force has recently completed an analysis of the data surrounding screening for speech and language disorders for children under five years of age (*Nelson, 2006 [M]*). The evidence analysis showed that there were many screening instruments available, but that there was insufficient evidence to show which instrument was the best to use. There was not evidence to support the strategy of identifying any specific risk factors to target intervention. There was fair to good evidence that intervention can be helpful in the short term in both the two- to three-year and the three- to five-year age groups (*Nelson, 2006 [M]*). A recent large cluster randomized study from the Netherlands showed that screening at 15 months and two years of age showed significant decreases in the need for specialized schooling and in difficulties in spelling among the screened population at eight years of age. Other areas of educational progress were not affected. Those within the screened population who were identified with delay were given a structured intervention. This is the first study to show a long-term impact of screening under two years of age on educational outcomes (*van Agt, 2007 [A]*). There were not any studies to look at the potential harms of screening (*Nelson, 2006 [M]*).

Social development

Among health care providers and the public, there is increasing concern with disorders of social development (autistic spectrum disorders) (*Barbarese, 2006 [R]*). There has been recent research into screening for these disorders because of the general consensus and fair evidence that early intervention, particularly with behavioral therapy, leads to improved outcomes (*Barbarese, 2006 [R]*; *Eikeseth, 2002 [C]*; *Myers, 2007 [R]*). There is still a lack of higher-quality research studies to support this conclusion (*Rogers, 1998 [R]*). The result of the research done on screening has shown a variability of specificity and sensitivity of screening instruments and questions. There have not been enough high-quality studies to support the use of a particular methodology (*Mawle, 2006 [M]*; *Rydz, 2005 [R]*; *Rydz, 2006 [R]*). There is expert opinion that longitudinal surveillance with some structured methodology of assessment is the best tool available at this time to detect this problem based on current evidence (*Rydz, 2005 [R]*; *Rydz, 2006 [R]*). This approach, however, has not been well studied. Studies have shown that specific screening for disorders of social development may not occur as often as other forms of screening (*Dosreis, 2006 [A]*). Many experts have raised concerns that there may need to be more encounters with patients between 9 and 36 months of age to provide assessment for these issues than are currently included in various preventive services schedules. The nature and type of encounter are subject to much debate. Some studies have pointed to evaluation by individuals of different levels of training other than physicians may be able to be part of the developmental screening process (*Johnson, 2006 [R]*). But these studies are not adequate to make a particular recommendation. Research into these areas continues and hopefully will lead to the clearer definition of a more precise and effective screening or surveillance strategy. Research into intervention should continue, as well, to better define the optimal treatment strategy. The work group suggests considering that longitudinal surveillance by a health care provider with some structured screening methodology is the best available approach at this time, though the available research does not support the use of any specific screening tool or question at this point. The American Academy of Pediatrics has recently published a recommended screening strategy and management strategy (*Johnson, 2007 [R]*; *Myers, 2007 [R]*).

Burden of suffering

Speech and language delay has been shown to affect 5%-8% of preschool age children (*Nelson, 2006 [M]*). Developmental delay or behavioral disorders have estimated to affect 12%-16% of children (*American Academy of Pediatrics, 2001a [R]*). The frequency of autistic spectrum disorders is 6 per 1,000 (*Hirtz, 2007 [R]*).

Algorithm Annotations

Counseling message

Routine screening for problems with development can allow for early identification of developmental issues. Early intervention has been proposed by multiple authors as important to supporting children with developmental delay. The components of developmental surveillance include eliciting and addressing parental concerns, obtaining a relevant developmental history, observation of the child in the office and proper referrals when necessary. Specific developmental and behavioral screening tools should be administered at the discretion of the provider to identify children who need more comprehensive evaluation. There have been no specific studies as to the frequency of evaluation for developmental concerns, although several groups support frequent screening on various schedules (*American Academy of Pediatrics, 2006 [R]; American Academy of Pediatrics, 2007 [R]*).

Domestic Violence and Abuse Screening and Counseling (Level III)

Service

Screening and counseling for domestic violence and abuse could be performed. No single tool has been identified as the gold standard for screening of domestic violence or abuse (*Basile, 2007 [R]*). It may be necessary to tailor domestic violence messages when providing care to various ethnic and racial groups in the area.

An example of two questions that are commonly used in assessment are:

- Does your partner put you down or try to control what you can do?
- In the past year have you ever been hit, pushed, restrained or choked during an argument?

Efficacy

Studies show that patients favor inquiries about abuse. Methods used to screen for domestic violence can include self-administered questionnaire, medical staff interview and physician interview. There is some evidence that self-administered questionnaires are as effective as medical or physician interviews (*Chen, 2007 [A]; Macmillan, 2006 [A]*).

Counseling messages

Clinicians should also be alert for symptoms and signs of drug abuse and dependence, various presentations of family violence, and suicidal ideation in persons with established risk factors. It may be necessary to tailor domestic violence messages when providing care to various ethnic and racial groups in the area.

- Discuss awareness of potential violence in dating and relationships, emphasizing the need to set boundaries and clearly communicate them to others.
- Discuss ways to stop potentially violent arguments.
- Discuss sexual orientation and associated potential risk of violence exposure.
- Discuss the fact that experiencing anger and conflict is normal.
- Discuss the fact that dealing with conflict violently is a learned behavior that has dire consequences. Violent behavior can also be unlearned. Reinforce non-violent discipline and conflict resolution. Reinforce the fact that no person should fear violence or abuse in any relationship.
- Discuss safe storage of firearms when appropriate.
- Ask about weapons in the home and how they are stored.

Algorithm Annotations

Dyslipidemia Screening (Level III)**Service**

Dyslipidemia screening could be performed for children over the age of two years at increased risk for the genetic forms of hypercholesterolemia (familial hyperlipidemia and others) and for overweight and obese children (*McCrindle, 2007 [R]*). Routine cholesterol screening in low-risk children and adolescents has not been shown to be an effective way of identifying individuals at risk for cardiovascular disease.

Efficacy

There is insufficient evidence to recommend for or against routine dyslipidemia screening in children and adolescents. Screening has not been shown to be effective in delaying the onset or reducing the incidence of cardiovascular disease (*Haney, 2007 [M]*). However, several professional organizations including the American Academy of Pediatrics and the American Heart Association have recommended selective screening based on current evidence. These expert panels have recommended cholesterol testing for children over the age of two years at increased risk for the genetic forms of hypercholesterolemia (familial hyperlipidemia and others). Additionally, both organizations recommend screening children with other cardiovascular risk factors including overweight, hypertension or diabetes mellitus (*Daniels, 2008 [R]*; *McCrindle, 2007 [R]*). Measurement of a fasting lipid profile has been recommended for children and young adults who have a parent or grandparent with a history of cardiovascular disease (CVD), peripheral vascular disease, or cerebrovascular disease prior to the age of 55 in men and prior to age 65 in women, or a parent with a cholesterol level greater than 240 mg/dL. For children whose parental history is unobtainable, particularly for those with other risk factors (including high-fat diet, obesity or diabetes), physicians may choose to measure cholesterol levels (*Daniels, 2008 [R]*; *National Cholesterol Education Program, 1991 [R]*).

A total fasting cholesterol of 200 mg/dL or greater or an LDL greater than 130 mg/dL is the general cutoff to signify individuals with dyslipidemia. Individuals with a fasting low-density lipoprotein greater than or equal to 164 may have familial hyperlipidemia and require further evaluation (*Gillman, 1992 [C]*; *Kwiterovich, 1989 [R]*). Monitoring and possible intervention of children and young adults with cardiovascular risk factors with borderline high total cholesterol levels (170 to 199 mg/dL) or borderline LDL levels (110-129 mg/dL) are also recommended (*Daniels, 2008 [R]*; *National Cholesterol Education Program, 1991 [R]*). Cutoffs for elevated cholesterol may vary based on age, gender and ethnicity (*Friedman, 2006 [C]*; *Hickman, 1998 [D]*).

The appropriate screening test, age at which to perform screening, frequency of testing and long-term beneficial or adverse effects of screening are unclear as adequate studies have not been performed (*Haney, 2007 [M]*). Familial hyperlipidemia is amenable to screening. Nearly all children with familial hyperlipidemia have a first-degree relative with either a history of a cardiovascular disease event at an early age or a history of a serum total cholesterol greater than or equal to 240 mg/dL (*Starck, 1991 [D]*). Children with familial hyperlipidemia have been shown to have blood vessel changes consistent with early atherosclerosis at a young age, and treatment with statins causes regression in affected children. Other studies have also demonstrated that statin therapy is safe and effective in children with familial hyperlipidemia (*Wiegman, 2004 [A]*).

Children and young adults with elevated cholesterol who do not meet the criteria for familial hyperlipidemia do require further testing and possible intervention (*Daniels, 2008 [R]*). However, beneficial and adverse effects on health outcomes from treatment with medications, diet, exercise and combination therapies have been inadequately evaluated in children with other forms of hyperlipidemia (*Haney, 2007 [M]*). A healthy diet and regular exercise could be recommended for all children with risk factors for cardiovascular disease regardless of their screening results. There is good evidence that more than half of all children with elevated lipid levels will continue to have elevated lipids as adults (*Freedman, 1985 [B]*; *Haney, 2007 [M]*; *Lauer 1988 [B]*).

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There have been several studies that have determined that the parent history screening criteria are ineffective in identifying all children at risk for hypercholesterolemia because of variability in definitions and unreliable information (*Haney, 2007 [M]; O'Loughlin, 2004 [D]; Resnicow, 1993 [D]; Starc, 1991 [D]*). However, there are newer studies that support that adding overweight as an indicator for screening may increase the identification of individuals who are at risk for dyslipidemia (*Eissa, 2009 [C]*).

Burden of suffering

Hypercholesterolemia is one of the most frequently identified cardiovascular disease risk factors in childhood, with 14%-25% of children in the United States reported to have borderline or high levels (*Dennison, 1990 [C]; National Cholesterol Education Program, 1991 [R]*). Most cases of elevated cholesterol in childhood are the result of environmental factors (dietary excess of saturated fat and cholesterol, inactivity, obesity, cigarette smoking, medication), expressed within a framework of genetic susceptibility (*Williams, 1995 [R]*). A smaller number of these children have secondary hypercholesterolemia (liver, kidney or thyroid disorders) or a genetic hypercholesterolemia condition, such as familial hyperlipidemia. Familial hyperlipidemia has an autosomal dominant pattern of inheritance and can be diagnosed at any age. Patients with this condition have total cholesterol levels greater than 240 mg/dL (average 300 mg/dL) and low-density lipoprotein levels greater than 160 mg/dL (average 240 mg/dL). Familial hyperlipidemia occurs in about 0.2% of the population, and people with this condition have a 50% risk for a major coronary event by age 50 (*Kwiterovich, 1989 [R]*).

There is growing evidence that the atherosclerotic process begins in childhood. Increased atherosclerotic lesions have been noted in autopsies of younger individuals with dyslipidemia and obesity (*Berenson, 1998 [D]*). Noninvasive studies measuring the intimal medial thickness have seemed to correlate with the atherosclerotic process in adults (*Davis, 2001 [B]*). Studies have shown that increases in intimal medial thickness have been associated with childhood dyslipidemia and other cardiovascular risk factors (*Dawson, 2009 [B]*).

Dysplasia of the Hip Screening (Level III)**Service**

Screening for disorders of the hip could be performed by physical examination or radiologic tests.

Efficacy of screening

Developmental dysplasia of the hip describes an abnormal relationship between the head of the femur and the acetabulum of variable degrees of severity. The proper relationship between these two structures allows normal hip development. Screening for disorders of the hip can be performed by physical examination or radiologic tests. The recommendations for screening vary among different sources. In 2000, a clinical practice guideline was produced by the American Academy of Pediatrics supporting universal physical exam screening of the hip by "a properly trained health care provider," with follow-up by an orthopedic surgeon if there was clinical suspicion of developmental dysplasia of the hip. They specifically recommended against the use of ultrasound as a screening tool in otherwise normal infants. High-risk patient populations were defined (*American Academy of Pediatrics, 2000a [R]*). In 2006, the U.S. Preventive Services Task Force stated the "evidence is insufficient to recommend routine screening for developmental dysplasia of the hip as a means to prevent adverse outcomes" (*Shipman, 2006 [M]*).

Screening of the hip for dysplasia consists of two physical examination techniques: the Ortolani and Barlow tests. These tests attempt to determine instability of the hip by provocative maneuvers. Details of these tests are outlined in the American Academy of Pediatrics guideline. They are more sensitive at a young age. Later in infancy, other physical exam findings can show evidence of abnormal hip position, including limited abduction of the hip and asymmetry of thigh folds and leg length discrepancy. The presence of these later signs is variable. A child may not present with abnormality until he or she begins to walk. There is

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concern expressed on the part of the U.S. Preventive Services Task Force that there is a lack of data on the sensitivity and specificity of these tests (*Shipman, 2006 [M]*). Ultrasound has been shown to be very sensitive in detecting abnormalities of the hip. Both parties agree that routine screening with ultrasound is not supported by the evidence because it may identify patients who do not need treatment. The U.S. Preventive Services Task Force raised specific concerns about the lack of evidence surrounding the natural course of the disease process. They felt that it may be likely that hip abnormalities will resolve on their own over time. They cited some evidence supporting this; however, the studies in question were somewhat flawed as they excluded patients who subsequently developed frank dislocation, which is the most severe manifestation of the disease process, and the age at which they were assessed was variable (*Shipman, 2006 [M]*).

The difficulty in the analysis of the natural course of the disease is that though there is no direct evidence that screening improves outcomes, there is fair quality evidence that late-presenting disease has been shown to have worse outcomes (*Shipman, 2006 [M]*). Thus, leaving the population unscreened could leave those patients with disease who are not detected based on clinical presentation at risk for more complications.

Efficacy of intervention

There are two main interventions for the hip with developmental dysplasia. A non-operative intervention is the Pavlik Harness, which holds the hip in a position of stable abduction and flexion. More severe disease and disease that does not resolve with non-operative intervention may require surgery. In the era of routine screening, there have been studies to show decreased incidence of operative intervention. The U.S. Preventive Services Task Force states that the evidence is unclear as to whether this decrease is due to early detection or other factors. The evidence review states that the evidence of effectiveness of non-surgical interventions is limited because of a lack of comparison to no intervention (*Shipman, 2006 [M]*). They also raised concerns about the occurrence of avascular necrosis of the femoral head (AVN) as a consequence of both surgical and non-surgical interventions. There was a high variability of the occurrence of this complication in the studies cited. There was limited and weak evidence showing that avascular necrosis of the femoral head would not occur in the natural course of the disease if left untreated. There were several other possible adverse outcomes of screening listed, but evidence supporting these as actual problems was weak or not found at all (*Shipman, 2006 [M]*).

Recommendation

The previous American Academy of Pediatrics recommendation was for universal screening of all infants using serial physical examination, with further evaluation by an orthopedic surgeon if abnormalities were discovered. The U.S. Preventive Services Task Force made a specific alteration to their rating, stating "that evidence is insufficient to recommend routine screening for developmental dysplasia of the hip in infants as a means to prevent adverse outcomes." It is the feeling of our committee that the evidence of potential harm is less conclusive than was expressed in the U.S. Preventive Services Task Force report. We also feel that the evidence for screening is not of high enough quality to recommend for universal screening. Therefore, we would leave this recommendation in the Level III category and allow individual providers to determine the value of screening on the basis of personal skill and risk factors. We would encourage better quality studies to more clearly establish the efficacy of treatment and the value of universal screening.

Household and Recreational Injury Prevention Screening (Level III)**Service**

Providers could ask about the following:

- Helmet use when riding a bicycle
- Smoke detector use, cigarette smoking and fire prevention in the home
- Temperature of water heater set no higher than 120°F

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- Possible choking hazards in the home
- Training for choking treatment and cardiopulmonary resuscitation
- Safety measures to prevent falls in the home
- Firearms in the home and how they are stored
- Water safety in the home and around swimming pools
- Encourage swimming lessons for children to decrease the risk of accidental drowning (*Brenner, 2009 [C]*)
- The availability of the poison control number in the home and safety measures to prevent accidental poisonings

Efficacy

Bicycle safety

Data on effectiveness of bicycle helmet safety from two case-controlled studies provide evidence that the risk of head injury among bicyclists is reduced as much as 69%-80% (*Thompson, 1989 [C]*). Counseling bicyclists to avoid riding near motor vehicle traffic is based on evidence that nearly 95% of bicycle fatalities occur as a result of a collision with a motor vehicle.

Families that recalled being counseled about wearing helmets while biking reported 44% compliance, compared to 19% helmet use by families that did not receive counseling (*Quinlan, 1998 [D]*). Other studies have also shown a positive effect from counseling (*Moyer, 2004 [R]*).

Burns

Several studies have shown that counseling patients to install smoke detectors has been successful (*Bass, 1993 [M]*; *Moyer, 2004 [R]*). However, smoke detectors often fail to operate due to incorrect installation or inadequate testing, and some occupants may be unable to hear or respond to the alarm signal. For these reasons, it is important that smoke alarm counseling emphasize the importance of correct installation and biannual testing to ensure proper operation. Evidence is lacking regarding frequency of smoke detector testing, but the work group feels biannual testing is prudent. Several studies have documented compliance when parents are instructed to turn down their hot water heater (*Bass, 1993 [M]*). It has also been shown to be beneficial to discuss avoiding scald injuries from microwaves.

Falls

Parents report that walker-related injuries occur in 12%-40% of infants who use walkers. Studies have shown that a walker-related injury does not prevent parents from using the walker again for the injured child or siblings (*American Academy of Pediatrics, 2001b, Reaffirmed 2005 [R]*).

Falls in children are often from stairs or furniture; collapsible gates have been advocated as a means of protecting children from stairways. Although the efficacy of stairway gates has not been studied, there is evidence that window guards can reduce child falls from apartment windows. Counseling parents to prevent falls has been somewhat effective (*American Academy of Pediatrics, 2001b; Reaffirmed 2005 [R]*).

Firearm safety

Most unintentional injuries from firearms involve adolescent and young adult males, and about 65%-78% of these injuries occur in or around the home. Over 90% of firearm accidents involving children occur at home; a study in children ages 0-14 found that 40% involved a firearm stored in the room where the shooting occurred.

Algorithm Annotations**Poisoning**

Childhood poisoning can be reduced by placing medications in child-resistant containers (*American Academy of Pediatrics, 2003, Reaffirmed 2007 [R]*). Carbon monoxide detector use could prevent many of the 2,100 U.S. deaths from CO poisoning each year (*Yoon, 1998 [D]*).

Education has been shown to motivate parents to display poison control center telephone numbers (*Quinlan, 1998*). Other studies have found counseling to be ineffective in promoting safety (*Moyer, 2004*).

Infectious Disease Prevention Counseling (Level III)**Service**

Providers could educate on good hand-washing technique.

Efficacy

Jefferson et al. conducted a systematic review on the effectiveness of physical interventions to reduce the spread of respiratory viruses. The paper concluded that hand-washing is effective (*Jefferson, 2008 [M]*).

Two randomized control trials showed that education is effective and can reduce medical visits (*Roberts, 1983 [A]; Vickery, 1983 [A]*).

Counseling messages

Hand-washing is the most effective way to prevent the spread of the common cold. Viral upper respiratory infection is most contagious at the onset of symptoms and while febrile. Educate good hand-washing at a well-child visit, preferably just before or sometime during the cold and flu season (November through April).

For infants and toddlers:

- Discourage visitors who have an acute illness, a fever or contagious disease.
- Prevent child with viral upper respiratory infection from sharing toys and pacifiers with other children.
- Clean these items with soap and hot water, as feasible, to reduce opportunities for viral transmission.
- Use and teach good hand-washing.
- Ask visitors to wash their hands before handling baby.
- Check day care hand-washing and infection control measures.
- Consider day care options that reduce exposure to other children.
- Encourage and support mothers to continue breastfeeding.

Related guidelines

See the ICSI Diagnosis and Treatment of Respiratory Illness in Adults and Children guideline.

Iron Deficiency Screening (Level III)**Service**

Screening for iron deficiency and/or anemia for asymptomatic children could be performed.

Algorithm Annotations**Efficacy**

Evidence is insufficient to recommend for or against routine screening for iron deficiency anemia in asymptomatic children (*Oregon Evidence-Based Practice Center, 2006 [M]*).

Routine iron supplementation for asymptomatic children ages 6 to 12 months who are at increased risk for iron deficiency anemia is recommended. High-risk groups would include recent immigrants, children with a history of prematurity or low birth weight and adolescent females who are fad dieters or who are obese. Evidence is insufficient to recommend for or against routine iron supplementation for asymptomatic children ages 6 to 12 months who are at average risk for iron deficiency anemia (*Oregon Evidence-Based Practice Center, 2006 [M]*).

Inadequate intake of dietary iron in infants and young children is the most common nutritional deficiency for this age group in the United States. It continues to raise concern because it has been linked to health problems and developmental issues. Iron deficiency anemia is one more severe manifestation of iron deficiency. There has been considerable ongoing debate as to the best approach to this problem. Screening for iron deficiency, and in particular iron deficiency anemia, has been recommended in the past utilizing measurement of hemoglobin or hematocrit at 6-12 months of age. Further study has raised a number of concerns about this screening methodology. The method of screening hemoglobin or hematocrit alone is not sensitive to discovering iron deficiency because a significant percentage of patients are iron deficient but not anemic (*White, 2005 [R]*). It also suffers from a lack of specificity because there are other causes of anemia that are not related to iron deficiency. Other testing methods for iron deficiency have been studied. These have not been shown to adequately meet the criteria of an ideal screening test (*Biondich, 2006 [B]*; *Crowell, 2006 [D]*). These issues are also complicated by the possibility that iron deficiency at a level which does not cause anemia may still have an adverse effect on developmental outcomes (*Chaparro, 2008 [R]*; *Shafir, 2007 [D]*). Consideration should be given to several factors when deciding what to do for screening, including risk assessment for iron deficiency, evaluation for other types of anemia and testing at later ages.

Nutritional Counseling (Level III)**Service**

Providers could ask what children typically eat and drink and about daily activity.

Efficacy

Despite the lack of demonstrated effectiveness, intervention is encouraged, due to the numerous benefits associated with consumption of a healthy diet and prevention of obesity. Parents play a direct role in children's eating patterns through their behaviors, attitudes and feeding styles (*Patrick, 2005 [R]*).

Counseling messages**Birth-2 years****Encourage:**

- Breastfeeding exclusively for the first six months
- Supplementing breastfed infants with iron no later than age six months with iron-fortified cereals
- Breastfeeding or formula up to one year
- Use of iron-fortified formula. Use iron-fortified cereals through two years and older.
- Supplementing for breastfeeding with 400 IU/day vitamin D within two months (*Wagner, 2008 [R]*)
- Introduction of solid foods when developmentally ready, about 4-6 months; juices after 6 months. Use 100% juices and limit to 4-6 ounces daily.

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- Wean from the bottle by end of first year.
(*American Academy of Pediatrics, 2005a [R]; American Academy of Pediatrics, 2001c, Reaffirmed 2007 [R]*)
- Discourage:**
 - Cow's milk during first 12 months (*American Academy of Pediatrics, 1992 [R]; Ziegler, 1999 [C]*)
 - Reduced-fat milk before two years; use whole milk (*American Academy of Pediatrics, 2005a [R]*)
 - Foods with added sugars and sweetened beverages (*U.S. Department of Health and Human Services, 2005 [R]*)
 - Excessive intake of any beverage (*Skinner, 2004 [D]*)
- 2-18 years**
 - Encourage consumption of fruits, vegetables, whole grains and low-fat dairy products
 - Limit total fat, especially saturated fat, trans fats and cholesterol
 - Discourage foods with added sugars and caloric carbonated beverages
 - Encourage regular meals

(*U.S. Department of Health and Human Services, 2005 [R]*)

Related guideline

Also see ICSI's Prevention and Management of Obesity (Mature Adolescents and Adults) guideline.

Preconception Counseling (Level III)

Service

Preconception counseling could be performed during a visit. (Due to time constraints during a routine health maintenance visit, however, it may be more practical to provide comprehensive preconception counseling during a separate preconception counseling visit.)

Counseling messages

- 13-18 years**
 - Inform all women of childbearing age of the deleterious effects of teratogens in early pregnancy, often before the pregnancy is diagnosed.
 - Encourage women who are seeking to become pregnant to schedule a preconception counseling visit.

Related guideline

See the ICSI Routine Prenatal Care guideline for more information.

Pregnancy Prevention Counseling (Level III)

Services

Preventive counseling could be given at preventive care visits beginning at puberty, preferably before onset of sexual activity. These visits could include education and counseling regarding contraception and unintended pregnancy. Other messages could also be given as indicated (e.g., prevention and symptoms of sexual transmitted infections, association between sexual activity and use of drugs, preconception counseling).

Efficacy

Though the exact efficacy of contraceptive counseling is unknown, making sure teens know what is available to prevent pregnancy is important.

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Counseling messages

When to counsel and educate

There is some evidence that adolescents with a stronger relationship with their parents have a lower risk of pregnancy. Supporting parents in talking with their adolescents with these issues has been shown in some small, poor-quality studies to have an impact (*Lederman, 2008 [A]*). However, larger literature reviews have not shown any well-designed studies to describe an effective counseling approach on these issues (*Bennett, 2005 [M]*; *DiCenso, 2002 [M]*).

- Obtain a sexual history from all adolescents.
- Inform adolescents that abstinence is the most effective way to prevent pregnancy and sexually transmitted infections.
- Provide detailed education and written information regarding all contraceptive methods including barrier contraceptives, birth control pills, injectables, implantables, tubal sterilization and vasectomy. Longer-duration methods may improve compliance and efficacy.
- To enhance acceptance of contraceptive methods, health benefits should be discussed:
 - Use of oral contraceptives will reduce lifetime risks of ovarian and uterine cancer.
 - Use of barrier contraceptives and spermicides will reduce the risk of developing cervical cancer and sexually transmitted infections.

Scoliosis Screening (Level III)

Service

Physical examination of the back for signs of scoliosis has been a long-standing practice. The screening test involves the patient bending forward with arms placed together and observing for asymmetry of the back with or without a measurement tool. This screening is often done outside the medical practice setting. Patients with abnormal physical exams are evaluated with plain films of the spine. This allows a determination of the degree of curvature of the spine. Patients with more advanced curvature may then be referred on for intervention, including bracing and possible surgery. This screening recommendation specifically excludes patients with other medical conditions that can lead to scoliosis, including neuromuscular problems and congenital deformities. It also excludes those patients who develop scoliosis before adolescence.

Efficacy

There was no evidence discovered to show that screening programs have a significant impact to reduce burden of disease, compared to detection of disease without screening. In particular, school screening programs were found to be ineffective and may cause an increase in unnecessary testing. There are some mixed-quality studies to show that extensive bracing (23 hours per day) can be more effective than short-term bracing or no intervention. The patients who benefited from this intervention were those with more severe disease who likely would have been detected without screening.

Burden of suffering

The U.S. Preventive Services Task Force found that there was fair evidence that detection of patients by screening may result in moderate harms related to unnecessary brace wear and referral to specialists.

Recommendation

The U.S. Preventive Services Task Force recommends against routine screening for scoliosis. The American Academy of Orthopedic Surgeons recently responded to the U.S. Preventive Services Task Force recom-

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mentation with their own position statement, which supports continued screening. This statement has been endorsed by The American Academy of Pediatrics, as well (*Richards, 2008 [R]*).

Secondhand Smoke Exposure Counseling (Level III)

Service

Establish tobacco use and secondhand smoke exposure and reassess at every opportunity. (See "Tobacco Use Screening, Prevention and Brief Intervention in Adolescents" section for a patient who is using tobacco.) Advise all patients/parents that secondhand smoke exposure is harmful for the patient. Encourage a smoke-free living and working environment for patients, and assist the exposed patient/parent to communicate to other household members about decreasing smoke in their house. Encourage the patient/parent to support smoking cessation efforts among other household members who use tobacco.

Offer tobacco cessation services on a regular basis to all household members who use tobacco.

Efficacy

Tobacco use is the single most preventable cause of death and disease in our society. In this guideline, all of the attention devoted to encouraging cessation by smokers in the child's environment is because:

it is important for the person's health to quit smoking,

we know that children whose parents smoke are much more likely to begin smoking as they grow older, and

intensive efforts to reduce environmental smoke by encouraging avoidance of smoking in the infants' vicinity have been unsuccessful.

The U.S. Public Health Service guideline concluded that advising parents to stop smoking reduces childhood secondhand smoke exposure and may reduce parental smoking rates. In contrast, the U.S. Preventive Services Task Force found limited studies with mixed results that address the effect of parental counseling on reducing secondhand exposure of children and reducing parental smoking rates.

(*Fiore, 2008 [R]*; *Prochaska, 1992 [R]*; *U.S. Preventive Services Task Force, 2003 [R]*)

Counseling message

For infants and children from birth to 10 years old:

- If child is exposed to smoke, counsel adult accompanying the child about harmful effect of secondhand smoke, and promote a smoke-free household.

For children and adolescents ages 10 years and above and the child or adolescent is not using tobacco, but a parent, sibling or friend is using tobacco:

- Counsel child or adolescent and the accompanying adult about the harmful effect of secondhand smoke, and promote a smoke-free household.
- Assist patient in developing refusal skills.

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.

Sexually Transmitted Infection Counseling (Level III)

Please note that this guideline discusses primary prevention of sexually transmitted infections through the adoption of safer sexual practices. It does not address patient education messages after a sexually transmitted infection is diagnosed.

Service

Counseling regarding sexual behaviors to prevent sexually transmitted infection could be done beginning at age 12.

Efficacy

There is good evidence that behavioral counseling involving multiple visit interventions is effective in reducing the incidence of sexually transmitted infection for sexually active adolescents. There is insufficient evidence to show efficacy for less intense interventions and low-risk patients (*Lin, 2008 [M]*).

Burden of suffering

Sexually transmitted infection continue to increase in incidence resulting in significant morbidity and health care costs in the United States. According to the 2007 Sexually Transmitted Diseases Surveillance by the Centers for Disease Control and Prevention, there are an estimated 19 million new sexually transmitted infections each year, with almost half of those in individuals between the ages of 15 and 24.

Counseling message

Empathy, confidentiality and a nonjudgmental, supportive attitude are important when discussing issues of sexuality. Messages should be delivered both verbally and in the form of educational materials. Clinicians can play an important role by reinforcing and clarifying educational messages, providing literature and community resource references and dispelling misconceptions about unproven modes of transmission.

Some messages might include:

- Abstinence is the most effective means to decrease sexually transmitted infections risk, and there is increased risk of contracting sexually transmitted infections associated with multiple partners.
- A mutually monogamous relationship with a partner known not to be infected is effective in decreasing sexually transmitted infections risk.
- Avoid sexual contact with high-risk partners (e.g., intravenous drug users, commercial sex workers, and persons with numerous sexual partners).
- Emphasize that alcohol/drug use is associated with high-risk sexual behavior.
- Inform women at risk that female barrier contraceptive methods (e.g., diaphragm or cervical cap) can reduce the risk of sexually transmitted infection.
- Encourage safer sexual practices, including regular use of latex condoms. Even under optimal conditions, however, condoms are not always efficacious in preventing transmission.

Sexually Transmitted Infection Screening (Other than Chlamydia) (Level III)

Service

Screening for sexually transmitted infections other than chlamydia could be performed.

The Centers for Disease Control and Prevention revised their recommendation for human immunodeficiency virus screening, recommending patients 13 to 64 years in all health care settings be screened after informing the patient that testing will be performed unless the patient declines (*Centers for Disease Control and Prevention, 2006 [R]*).

Algorithm Annotations

The work group reviewed the evidence and because of a continuing lack of trials of the benefits of screening average-risk patients, consensus is to retain human immunodeficiency virus screening as a Level III service at this time.

Efficacy

There is insufficient evidence to recommend universal screening of average-risk persons for human immunodeficiency virus (*Chou, 2005 [M]*), gonorrhea (*Glass, 2005 [M]*; *Potterat, 1987 [C]*).

Benefits versus harms are unknown for genital herpes simplex and syphilis, but with the increasing prevalence of these infections, work group consensus is also to place these as Level III services.

Skin Cancer Screening and Counseling (Level III)

Service

Screening and counseling to prevent skin cancer could be performed.

Efficacy of counseling

There is insufficient evidence to recommend for or against routine screening for skin cancer in the primary care setting. Evidence is lacking on reduction of morbidity and mortality for whole body examination by a primary care provider, and accuracy of screening is limited and inconsistent (*Wolff, 2009a [M]*). Evidence-based reviews do not show sufficient evidence that physician counseling prevents skin cancer. The use of sunscreen may show modest benefit in preventing squamous cell cancer noted in one trial. However, another trial showed sunscreen was associated with a higher incidence of sunburn as users may not apply correctly and have a false sense of security about the degree of protectiveness. There is evidence that some community-based interventions show the most effectiveness in reducing sun exposure (*Helfand, 2003 [M]*).

Burden of suffering

Skin cancer is the most common type of cancer in the U.S., and sun exposure is a known strong risk factor for skin cancer. Excess sun exposure, including intermittent sunburn in childhood, should be a preventable risk factor.

Counseling message

Although there is not sufficient evidence to recommend routine total body exams, it is prudent for clinicians to examine the skin when the opportunity arises during a physical examination. While the effectiveness of counseling has not been established, the U.S. Preventive Services Task Force has recommended counseling patients at increased risk for skin cancer to avoid excess sun exposure.

The recommended counseling messages include:

- Avoidance of sun between the hours of 10 a.m. and 4 p.m.
- Use of protective clothing when outdoors
- Use of sunscreen that blocks both ultraviolet A (UVA) and ultraviolet B (UVB)
- Avoidance of sunlamps and tanning equipment
- Practice of skin self-examination

Undescended Testicle Screening (Level III)

Service

Providers could perform an assessment by physical exam of the descent of testicles in males.

Burden of suffering

Undescended testicle occurs in 2% to 5% of boys born at term. It can spontaneously resolve, but 1% to 2% can have a persistent undescended testicle (*Toppari, 1999 [R]*). Descended testes can be pulled back into the inguinal canal at a later age if the spermatic cord does not lengthen adequately as a boy grows (*Hutson, 2005 [R]*).

Efficacy

The efficacy of screening for undescended testes has not been studied. There is good-quality evidence that early treatment of undescended testicle by surgical intervention results in a significant decrease in the frequency of testicular cancer in adults (*Petterson, 2007 [B]*). There is also some evidence that early intervention with surgery reduces the risk of fertility problems in adult males (*Hutson, 2005 [R]*). The straightforward nature of the exam for this problem and the efficacy of treatment warrant periodic screening for undescended testicles at routine preventive services checkups. The age of intervention has been a point of discussion. It is clear that intervention before puberty is very important. Generally, most recommendations are for intervention before one year of age (*Hutson, 2005 [R]*).

5. Preventive Services That Are Not Supported by Evidence and Not Recommended (Level IV)

Level IV services are those with low predictive value and/or uncertain beneficial action for true positives. They may also be a combination of insufficient evidence, potential for harm in treatment, no defined benefit and/or overuse.

Blood Chemistry Screening (Level IV)

Service

The guideline recommends against multiple chemistry tests.

This recommendation refers to multiple chemistry tests, often grouped in a 6-18 test group or panel, collected without indication, in hopes of identifying diseases unsuspected on clinical grounds. Most evaluations of benefits have concluded that in a well population, multiple chemical screens find few unsuspected conditions and create considerable worry, as well as subsequent diagnosis testing with its own costs and hazards. These screens may be useful for patients suspected of having serious illness, but even for those patients, the selection of specific tests is usually more efficacious (*Romm, 1986 [R]*).

Child Maltreatment Screening (Level IV)

Service

The guideline recommends against screening for the physical abuse and neglect of children.

Efficacy

Insufficient evidence exists to recommend for or against screening of parents or guardians for the physical abuse or neglect of children (*Nygren, 2004 [M]*).

Effectiveness of screening

There has been intensive investigation over the past 20 years toward identifying people at risk of committing physical child abuse or neglect. Methods of screening include self-administered checklists or questionnaires and standardized interviews (e.g., Family Stress Checklist; Dunedin Family Services Indicator; Child Abuse Potential Inventory; Michigan Screening Profile of Parenting). The major problems with these instruments are the high false-positive rate and the potential harm of mislabeling people as child abusers. For this reason

Algorithm Annotations

most advocate that efforts at predicting high-risk individuals be abandoned in favor of identifying high-risk communities (*Dubowitz, 1990 [R]; MacMillan, 1993 [R]*).

Research into risk indicators has been conducted primarily in the area of physical abuse and sexual abuse. Limited information is available about neglect (*MacMillan, 1993 [R]*).

Research has shown that home visitation during infancy has led to decreased reports of abuse and neglect, fewer emergency room visits, fewer accidents and fewer hospital admissions. This decrease was particularly noted to be of benefit among teenage, unmarried and poor parents. For this reason, the Canadian Task Force included home visitation referrals for selected populations in their 1993 recommendations for primary prevention of child maltreatment (*Olds, 1986 [A]*).

Hemoglobin (for Anemia Screening Ages Five Years and Older) Level IV**Service**

The guideline recommends against routine testing for anemia.

Routine testing for anemia is not recommended for asymptomatic children or adolescents in the absence of clinical indications. The burden of suffering and the low benefits of detection of anemia do not warrant the cost of routine testing. Hemoglobin screenings requested by schools, camps or other organizations for asymptomatic older children are unnecessary and should not be performed (*Helfand 2006 [M]*).

Tuberculin Skin Screening (for Average Risk) (Level IV)**Service**

The guideline recommends against screening for tuberculosis for average risk.

Efficacy

The work group consensus is that tuberculin skin testing is not recommended for populations at average risk for infection with *M. tuberculosis* (TB).

High-risk groups for developing tuberculosis should be tested using 5 tuberculin units (TU) of purified protein derivative (PPD) injected intradermally by standard "mantoux" technique. Repeat screening should be determined by the likelihood of continued exposure to infectious tuberculosis. There is not good evidence to recommend screening persons in average-risk groups, which are in the primary scope of this guideline; however, there is good evidence to support screening of high-risk groups (*U.S. Department of Health and Human Services, 1995 [R]*).

Urinalysis (Level IV)**Service**

The guideline recommends against urinalysis screening as part of the routine well-child care.

The efficacy of screening children for asymptomatic bacteriuria to prevent pyelonephritis and renal scarring has not been established. This screening strategy is costly, fails to prevent subsequent complications and should not be included as a part of well-child care. Other findings (proteinuria, hematuria) are rarely significant in asymptomatic children but often lead to anxiety and unnecessary testing (*Kemper, 1992 [R]*).

6. Care Coordination

Although some individuals, following health risk assessments and screening tests, will initiate and sustain lifestyle changes on their own, most will require some degree of structured feedback and follow-up to achieve even modest improvements. Patient-centered health care systems should implement evidence-based changes to ensure consistent follow-up of conditions and risk factors, and support for healthier lifestyles.

Timely feedback

- Clear, strong personal message
- Include documentation of "lifestyle vital signs"

Appropriate interventions

- Integrate into clinical decision support to assist the care team with knowledge of evidence-based preventive services to offer at a given time
- Decision aids can help patients increase knowledge and collaborate with choices and options
- If screening and/or counseling results warrant treatment, see treatment guidelines

Optimal follow-up

- Plan for and anticipate upcoming preventive service needs. Electronic systems may be particularly beneficial for advanced ordering of services
- Providing preventive screening and counseling services
- If screening and/or counseling results warrant additional follow-up, proceed as indicated. See also treatment guidelines, as noted in the specific topic sections

Appendix A – Counseling Messages

Behavioral counseling interventions in clinical settings are a potential important means of addressing prevalent health-related behaviors – such as lack of physical activity, poor diet, substance (tobacco, alcohol and illicit drugs) use and dependence and risky sexual behavior – that underlie a substantial proportion of preventable morbidity and mortality in the United States (*Whitlock, 2002 [M]*).

Appropriate Counseling Approaches

The work group recommends that implementation of the preventive services guideline be tied to a system to perform risk assessment of patients, so that counseling can be individualized to a patient's risks and needs.

WHO is to Counsel and Educate

Counseling and educational messages are to be provided by the primary care physician, clinician nurse or other health professional or educator. About 80% of the population identifies a health care provider as a source of care. Thus, physicians have a special opportunity to take advantage of teachable moments to provide health advice. Given physicians' time constraints, they may be limited to stressing the need to meet with another health care professional for more detailed information.

HOW to Effectively Deliver Messages

Parents and older children

A wide variety of counseling and education messages is recommended for various services. Delivering them all in one visit or setting may be overwhelming; therefore, it is desirable to spread out the messages across several visits whenever possible. Once compliance has been attained, intermittent reinforcement messages may be desirable for some behaviors.

Especially for younger children, the parent is the one who needs to understand the risk and be ready to make changes. Multiple factors and perceptions may be associated with a parent's readiness to help his or her child lose weight (*Rhee, 2005 [D]*), and the same may be true for other risks. Whether working with a parent or older child, communicating in a direct manner and making clear recommendations are encouraged. Recognition of health risks and physician's concerns may heighten the parent/older child's awareness.

- For the parent/older child considering change, assess perception of importance and build on this in a nonjudgmental way. "How important is it for you to..." or "How confident are you that you can..." may help assess motivation and determine strategies for further counseling.
- For the parent/older child who doesn't perceive there is a problem or isn't ready to change, provide new information or indicate a willingness to help when they are ready.

Another goal is to communicate that the parent/older child can contact the provider and other health care professionals for resources whenever he or she is interested in more information.

The Five A's

The U.S. Preventive Services Task Force Counseling and Behavioral Interventions Work Group has recommended a construct known as the "Five A's" as a way to structure health behavior interventions in the health care setting.

- **Assess:** Ask about/assess behavioral health risk(s) and factors affecting choice of behavior change goals/methods.

Appendix A – Counseling Messages

- **Advise:** Give clear, specific and personalized behavior change advice, including information about personal health harms/benefits.
- **Agree:** Collaboratively select appropriate treatment goals and methods based on the patient's interest in and willingness to change the behavior.
- **Assist:** Using behavior change techniques (self-help and/or counseling), aid the patient in achieving agreed-upon goals by acquiring the skills, confidence, and social/environmental supports for behavior change, supplemented with adjunctive medical treatments when appropriate (e.g., pharmacotherapy for tobacco dependence, contraceptive drugs/devices).
- **Arrange:** Schedule follow-up contacts (in person or by telephone) to provide ongoing assistance/support and to adjust the treatment plan as needed, including referral to more intensive or specialized treatment.

(Whitlock, 2002 [M])

Interviewing younger children using the five-stage model.

In communicating with younger children, you may find the following helpful:

- Establish a rapport.
- Gather data emphasizing strengths. Paraphrase, reflect the child's feelings, summarize frequently. Keep questions and concepts concrete, and avoid abstract talk. Identify positive aspects.
- Determine goals. Ask what the child wants to happen. Accept a child's goals but focus on concrete, short-term goals.
- Generate alternative solutions and actions.
- Allow time to try new behaviors and ideas.

Adapted from Handbook of Pediatric Nutrition, 3rd ed., Samour PQ, King K., who adapted from Ivey AE, Ivey MB and Simek-Morgan L. Counseling and Psychotherapy: A Multicultural Perspective, 4th ed. 1997.

Appendix B – Visit Schedule

The schedule of visits will largely be determined by completion of necessary preventive services and screening maneuvers listed for each age group. The schedule recommended within this guideline is a synthesis of the recommendations of various groups, including the U.S. Preventive Services Task Force, Bright Futures, American Academy of Pediatrics and AAFP (*Bright Futures, 1993 [R]*; *U.S. Preventive Services Task Force, 1996 [R]*). There is insufficient evidence to recommend one visit schedule over another in terms of lowering child mortality and morbidity, recognizing disability, promoting optimal growth and development or helping children achieve longer, more productive lives. Some visit schedules, such as the child and teen checkup schedules, are designed to serve a possibly higher-risk population of children. For the purposes of this guideline, a reasonable schedule to allow for the needed preventive services and screening maneuvers is as follows.

Birth to 24 months

Preventive service visits are recommended within the first two weeks after birth and at 2, 4, 6-9, 12 and 15 months of age.

2 to 6 years

Preventive service visits are recommended at age 2 and between ages 4 and 6.

The visit at two years of age is primarily a counseling visit. The discretion of both the clinician and the parent or guardian should be used in determining whether to schedule this visit.

7 to 12 years

Preventive service visits are recommended between the ages of 7 and 9 and at age 12.

Patients in the preteen years who are seen in the clinic for an acute or preventive visit should be informed of the health risks for the upcoming teen years and encouraged to visit in the future to discuss these risks.

13 to 18 years

One to two preventive care visits are recommended between the ages of 13 and 18 years. (The second visit is at the preference of clinician and parent/guardian.) Adolescent preventive visits are primarily for counseling. Visits are dependent upon the child's developmental stage and behaviors and other factors. The discretion of both the clinician and the parent or guardian should be used in determining whether to schedule a second adolescent visit.

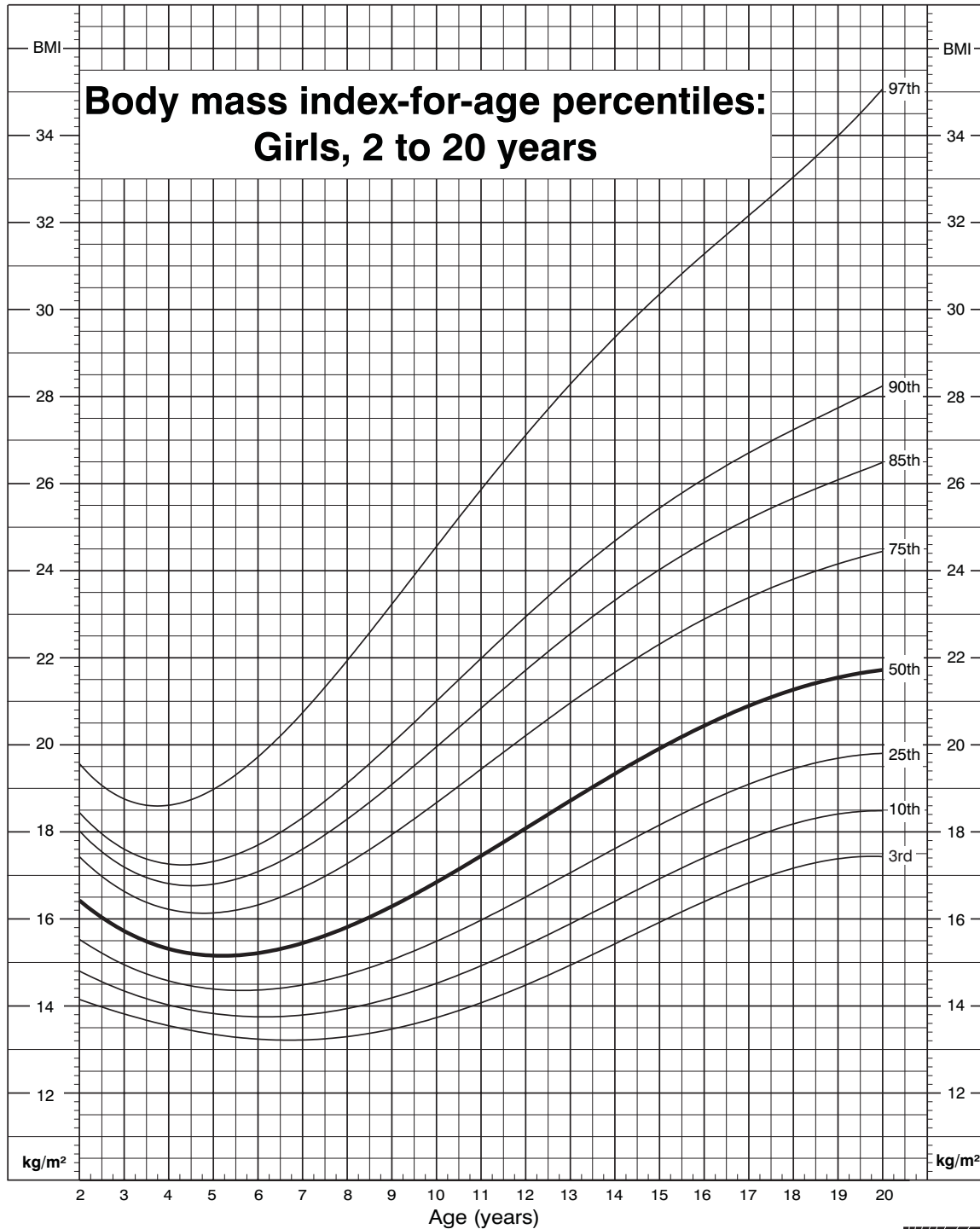
Additional visits may be useful if there has been a significant change in an adolescent's behavior or environment.

Related guidelines/references

ICSI Immunization guideline

Appendix C – Body Mass Index-for-Age Percentiles

CDC Growth Charts: United States



Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

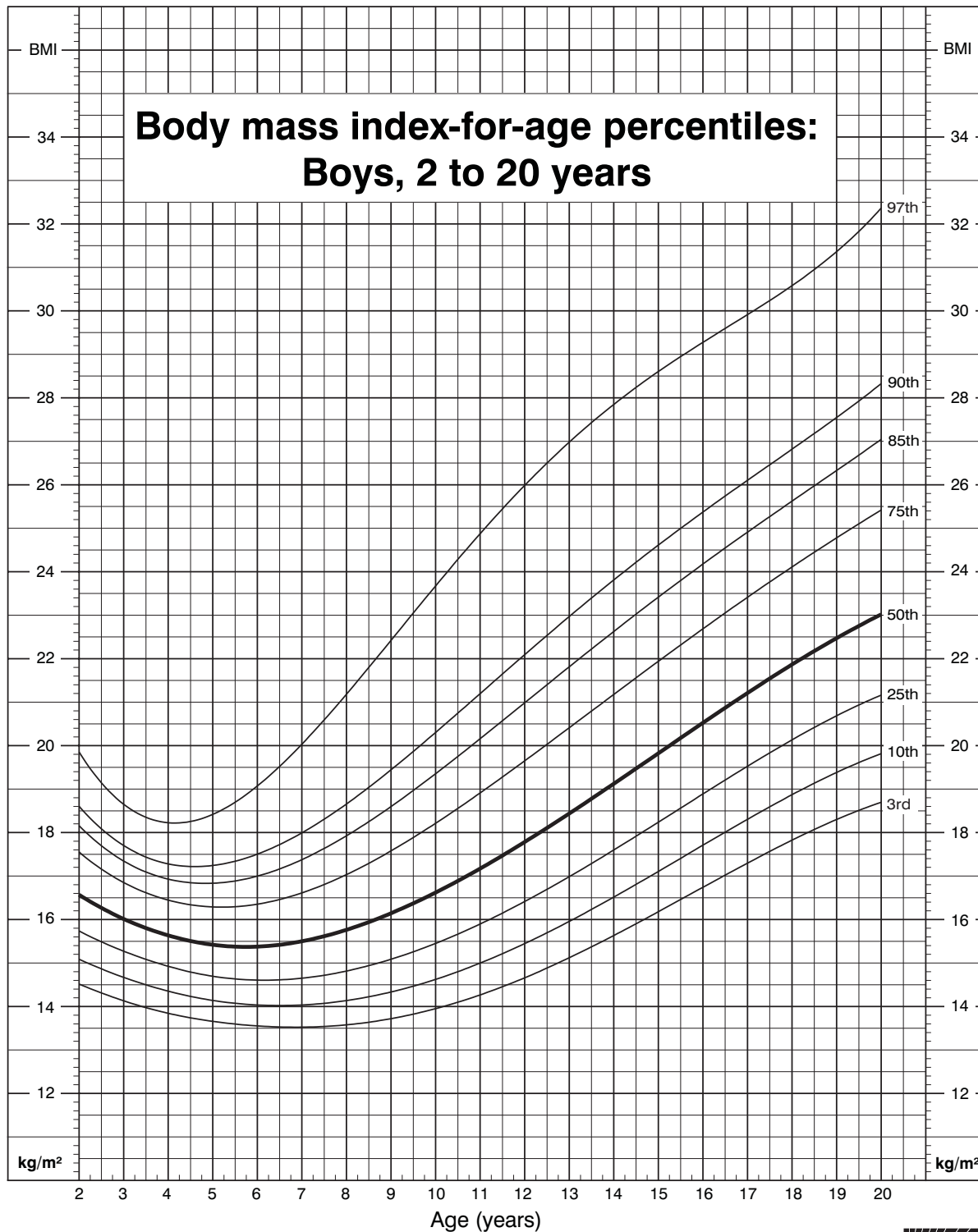


The body mass index for age percentiles for girls 2 -20 can be found at: <http://www.cdc.gov/growthcharts/data/set3/chart%2016.pdf>

www.icsi.org

Appendix C – Body Mass for Index-for-Age Percentiles

CDC Growth Charts: United States



Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).



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The body mass index for age percentiles for boys 2-20 can be found at: <http://www.cdc.gov/growthcharts/data/set3/chart%2015.pdf>www.icsi.org

Appendix D – Injury Prevention Counseling Messages

Counseling Message: Bicycle Safety

- Reinforce always wearing an approved safety helmet when riding a bicycle. Please check on your state law for helmet recommendations.
- Enhance safety, follow safety rules (look carefully for traffic, signal turns, etc.), avoid riding in heavy motor vehicle traffic, wear light-colored and reflective clothing, and install a light on your bicycle.

Counseling Message: Poisoning

Birth-12 years

- Reinforce having the national poison control phone number readily accessible (1-800-222-1222).
- Use child-resistant containers for medications, toxic substances and matches.
- Dispose of expired or unused portions of medications.
- Syrup of ipecac is no longer recommended in households.

Counseling Message: Burns

Birth-12 years

- Encourage the use of flame-resistant sleepwear.
- Reinforce setting the household hot water heater at or below 120° F.

All individuals

- Install smoke detectors and test them biannually.
- Install carbon monoxide detectors.
- Discuss the use of "911" for fire emergencies.
- Cigarettes used by adults are the leading cause of ignition in fatal house fires; avoid smoking near bedding or upholstery.
- Discuss the fact that residential fires occur more frequently in the winter due to the use of portable heaters, fireplaces and Christmas trees.
- Matches, lighters and smoking materials should be handled safely and shouldn't be available to children.
- Discuss the importance of a family fire escape plan with a predesignated meeting location outside of home.

Counseling Message: Choking

Teach back blows and chest thrusts to parents of infants; teach Heimlich maneuver to parents of children greater than one year of age. Encourage CPR training.

Birth-3 years

- Discuss avoiding foods that children commonly choke on (hot dogs, peanuts, popcorn, hard candy, raw carrots, whole grapes).
- Discuss avoiding other nonfood items that children commonly choke on (balloons, age-inappropriate items such as small toys).
- Discuss avoiding eating while walking or running.

Appendix D – Injury Prevention Counseling Messages

Counseling Message: Falls

Birth-2 years

- Use window and stairway guards/gates to prevent falls from stairways, balconies and windows.
- Discourage walker use.
- Prevent falls from changing tables by never leaving child unattended.

2-6 years

- Assess and control environment to reduce likelihood of falls from stairs, balconies, windows, etc.

Counseling Message: Firearm Safety

13-18 years

- Teach firearm safety (proper handling, hunting practices including wearing orange fluorescent clothing).

All individuals

- Ask about firearms in the home.
- Discuss storing unloaded firearms in a locked place.
- Keep ammunition in a safe/locked place separate from the firearm.

Counseling Message: Water Safety

Never leave children alone near water.

Birth-6 years

- Reinforce never leaving infants or young children alone in a bath or near standing water.
- Install isolation fences around swimming pools.
- Encourage cardiopulmonary resuscitation training.

7-12 years

- Discuss the fact that swimming lessons are not a substitute for adult supervision.
- Encourage cardiopulmonary resuscitation training.

Please see Annotation #3, "Preventive Services that Providers and Care Systems *Should* Assess the Need for and Offer to Each Patient. These have Value but Less than Those in Level I," for information on motor vehicle safety counseling.

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Brief Description of Evidence Grading

Individual research reports are assigned a letter indicating the class of report based on design type: A, B, C, D, M, R, X.

A full explanation of these designators is found in the Foreword of the guideline.

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This section provides resources, strategies and measurement specifications for use in closing the gap between current clinical practice and the recommendations set forth in the guideline.

The subdivisions of this section are:

- Priority Aims and Suggested Measures
 - Measurement Specifications
- Key Implementation Recommendations
- Knowledge Resources
- Resources Available

Priority Aims and Suggested Measures

1. Increase the percentage of patients who are on time with recommended immunizations. Level I childhood immunization series are those that *must* be assessed for and offered to each patient.

Possible measure for accomplishing this aim:

- a. Percentage of two year olds on time with their primary series of immunizations:
 - DtaP – diphtheria, tetanus toxoids and acellular pertussis vaccine
 - IPV – inactivated poliovirus
 - MMR – measles, mumps and rubella (Please see the ICSI Immunization guideline for MMRV detail.)
 - PCV7 – pneumococcal
 - VZV – varicella vaccine
 - Hib – haemophilus influenza type b conjugate vaccine
 - Hep B – Hepatitis B vaccine – schedule 1
 - Hep B – Hepatitis B vaccine – schedule 2
 - Hep A – Hepatitis A vaccine
 - Rota – rotavirus vaccine

(2009 HEDIS measure: The percentage of children two years of age who had four diphtheria, tetanus and acellular pertussis [DTaP]; three polio [IPV]; one measles, mumps and rubella [MMR]; three H influenza type B [HIB]; three hepatitis B, one chicken pox [VZV]; four pneumococcal conjugate by their second birthday)

*(2009 HEDIS proposed change to measure: **Add three vaccines:** percentage of children two years of age who have hepatitis A, rotavirus and influenza by their second birthday.)*

- b. Percentage of adolescents on time with recommended immunizations:
 - Hep B – Hepatitis B vaccine
 - HPV – human papillomavirus vaccine
 - MMR – measles, mumps and rubella
 - MCV4 – meningococcal
 - Tdap – tetanus, diphtheria toxoids and acellular pertussis vaccine
 - To persons without evidence of immunity: VZV – Varicella vaccine

(2009 HEDIS proposed NEW measure: The measure calculates a rate for each vaccine and one combination rate.)

Priority Aims and Suggested Measures

Percentage of adolescents 13 years of age who have had:

- 1- dose of meningococcal conjugate vaccine
- 1- tetanus, diphtheria toxoids, and acellular pertussis vaccine (Tdap)

OR

- 1- tetanus, diphtheria toxoids vaccine (Td) by their 13th birthday
- c. Percentage of children age 6-59 months and older who are on time with recommended influenza vaccine.

2. Reduce missed opportunities for administering immunizations.

Possible measure for accomplishing this aim:

- a. Percentage of patients not on time with immunizations and without contraindication who had an encounter and received immunizations.

3. Decrease the percentage of patients who are behind with recommended immunizations by creating a catch-up plan.

Possible measure for accomplishing this aim:

- a. Percentage for patients not on time with immunizations who have a catch-up plan documented in the medical record.

4. Increase the percentage of sexually active female patients 25 or younger who are screened for chlamydia.

Possible measure for accomplishing this aim:

- a. Percentage of sexually active female patients age 25 or younger with documentation of chlamydia screening in the medical record. (See Child Preventive Services That Providers and Care Systems *Must Deliver* [Level I].) (2008 HEDIS: women age 16-25 and sexually active)

5. Increase the percentage of newborn patients who have had neonatal screening and has been reviewed.

Possible measure for accomplishing this aim:

- a. Percentage of newborns with documentation (sign-off) in the medical record, indicating neonatal screening was done and included the following three screening components: hemoglobinopathies, phenylketonuria and hypothyroidism. (*Mandated by Minnesota State Law. Organizations should be aware of their state's mandates.*)

6. Increase percentage of children age four years and younger who have had vision impairment screening.

Possible measure for accomplishing this aim:

- a. Percentage of children age four years and younger with documentation of vision impairment screening in the medical record.

Priority Aims and Suggested Measures**Measurement Specifications****Possible Success Measure #1a, b, c**

Increase the percentage of patients who are on time with recommended immunizations.

Population Definition

Medical groups may choose to specify age parameters to simplify measurement.

- Two year olds on time with their primary series of immunizations
- Adolescents on time with recommended immunizations
- Children age 6-59 months and older on time with recommended influenza vaccine

Data of Interest

of patients on time with recommended immunizations

Total # of patients who present in the clinic for a non-emergent primary care visit

Numerator/Denominator Definitions

Numerator: A patient must be on time with all applicable immunizations to meet the criteria. For an immunization to be counted as administered, it should be documented with a date of service.

Medical record documentation should indicate if the service was:

- Completed
- Offered and refused
- Not done

Denominator: Patients who present in the clinic for a non-emergent primary care visit. Some medical groups may choose to calculate a measurement on the entire clinic population.

Method/Source of Data Collection

Patients who have had an office visit of any kind within the preceding month can be randomly sampled to produce a sample of at least 20 records for review. Selected records are audited using the checklist tool to determine a patient's status on each of the preventive services listed.

Time Frame Pertaining to Data Collection

Data can be collected monthly.

Other Options for Measurement

Use the same approach with the following age-appropriate preventive services delivered by the care system based Level II services:

- Breastfeeding counseling
- Depression screening

Priority Aims and Suggested Measures

- Folic acid chemoprophylaxis counseling
- Hearing screening
- Infant sleep positioning and sudden infant death syndrome counseling
- Motor vehicle safety screening and counseling
- Obesity screening
- Tobacco use screening prevention and intervention in adolescents

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. The results of the health risk assessment questionnaire are used to identify needs for counseling and other preventive services.
2. Prioritization and implementation of preventive services should be part of the overall system and should include the following:
 - Practice preventive services at every clinic opportunity while addressing high-priority services.
 - Individualize preventive services; regularly assess patient risk factors.
 - Provide education to patients/parents/guardians.
3. Develop a plan for staff and provider education around preventive services and organizational goals for implementation of preventive services (should also include education around "level" of service and the rationale behind each level).
4. Develop decision support processes in electronic medical record or for paper medical records to support physicians and staff in delivery of specific components of Level 1 services.
5. For those organizations with a paper medical record, create a "tickler" system that will generate reminders for preventive services in order to support completion of recommended Level I services.
6. Develop a "catch-up" plan for those patients who are not on time with services by creating a tracking system that allows for periodic medical record audits to identify patient gaps in preventive services.
7. Develop a collaborative relationship with patients/parents/guardians in order to activate/motivate them to practice preventive health while staying on time.
8. Place throughout the facility patient education materials that focus on preventive services and the importance of each. Materials may include, but are not limited to, posters, pamphlets, videos, available Web sites, as well as services available in the community.

Knowledge Resources

Criteria for Selecting Resources

The following resources were selected by the Preventive Services for Children and Adolescents guideline work group as additional resources for providers and/or patients. The following criteria were considered in selecting these resources.

- The site contains information specific to the topic of the guideline.
- The content is supported by evidence-based research.
- The content includes the source/author and contact information.
- The content clearly states revision dates or the date the information was published.
- The content is clear about potential biases, noting conflict of interest and/or disclaimers as appropriate.

Resources Available to ICSI Members Only

ICSI has a wide variety of knowledge resources that are *only* available to ICSI members (these are indicated with an asterisk in far left-hand column of the Resources Available table). In addition to the resources listed in the table, ICSI members have access to a broad range of materials including tool kits on CQI processes and Rapid Cycling that can be helpful. To obtain copies of these or other Knowledge Resources, go to http://www.icsi.org/improvement_resources. To access these materials on the Web site, you must be logged in as an ICSI member.

The resources in the table on the next page that are not reserved for ICSI members are available to the public free-of-charge.

Resources Available

*	Author/Organization	Title/Description	Audience	Web Sites/Order Information
	Agency for Health Research and Quality	The Guide to Clinical Preventive Services provides the latest available recommendations on preventive interventions – screening tests, counseling and immunizations for more than 80 conditions. The 3rd Edition, 2000-2002, updates recommendations from the 2nd Edition and evaluates new topics. Reviews and recommendations will be released as they are completed. These recommendations are made by the U.S. Preventive Services Task Force.	Patients and Families; Health Care Professionals	http://www.ahrq.gov/clinic/prevnew.htm
	American Academy of Family Physicians	Professional information on clinical care research, practice management and policy.	Health Care Professionals	http://www.aafp.org
	American Academy of Pediatrics	This site provides both professional literature and patient-based information.	Patients and Families; Health Care Professionals	http://www.aap.org
	American Academy Pediatrics	Provides information on safety issues, advocacy and research.	Patients and Families; Health Care Professionals	http://www.aap.org
	American Dental Association	Provides fact sheets and frequently asked questions on the topic of oral health.	Patients and Families; Health Care Professionals	http://www.ada.org
	American Dietetic Association	This site sponsored by the American Dietetic Association provides food and nutrition information that is reliable and useful. Registered Dietitians prepare the site.	Patients and Families; Health Care Professionals	http://www.eatright.org
	American Medical Association	The Guidelines for Adolescent Preventive Services (GAPS) approach is a model that uses a systematic strategy for screening and health guidance by primary care physicians.	Health Care Professionals	http://www.ama-assn.org/ama/pub/physician-resources/public-health/promoting-healthy-lifestyles/adolescent-health/guidelines-adolescent-preventive-services/screening-health-guidance-suicide-depression.shtml
	Centers for Disease Control and Prevention	Healthy Youth	Health Care Professionals	http://www.cdc.gov/nccdphp/publications/aag/dash.htm

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Resources Available

*	Author/Organization	Title/Description	Audience	Web Sites/Order Information
	Centers for Disease Control and Prevention	Comprehensive site provides information on immunizations and CDC prevention guidelines.	Patients and Families; Health Care Professionals	http://www.cdc.gov
	Centers for Disease Control and Prevention	Immunization Contraindications: A guide designed to help immunization providers determine what common symptoms and conditions should contraindicate vaccination and which ones should not. It supersedes the 2000 Guide to Contraindications to Childhood Vaccination and, unlike that and previous guides, contains information on all licensed U.S. vaccines, not just pediatric vaccines.	Health Care Professionals	http://www.cdc.gov/vaccines/recs/vac-admin/contraindications.htm
	Department of Health and Human Services	The 2005 Dietary Guidelines for Americans provides advice for people > 2 years on dietary habits that promote health and reduce risk of major chronic disease.	Patients and Families	http://www.healthierus.gov/dietaryguidelines
	HealthFinder	A-Z health information organizations and health care topics.	Patients and Families	http://www.healthfinder.gov
*	Institute for Clinical Systems Improvement	Summary Reports Tobacco Prevention and Cessation Family Health Services Minnesota (2003)	Health Care Professionals	http://www.icsi.org
*	Institute for Clinical Systems Improvement	Summary Reports Pediatric Immunization Rate Improvement at Park Nicollet Health Services (2003)	Health Care Professionals	http://www.icsi.org
*	Institute for Clinical Systems Improvement	Summary Reports Preventive Services, Sustaining Improvement at Three Medical Groups (2002)	Health Care Professionals	http://www.icsi.org
*	Institute for Clinical Systems Improvement	Summary Report: Preventive Services Focus Group (2002)	Health Care Professionals	http://www.icsi.org
*	Institute for Clinical Systems Improvement	Summary Report: Preventive Services Improvement at HealthPartners (2002)	Health Care Professionals	Go to: http://www.icsi.org for order information, or call: 952-814-7060
*	Institute for Clinical Systems Improvement	Summary Report: Primary Care Delivery System at Quello Clinic (2002)	Health Care Professionals	Go to: http://www.icsi.org for order information, or call: 952-814-7060
*	Institute for Clinical Systems Improvement	Tool kit Tobacco Cessation Program at North Clinic (2002)	Health Care Professionals	Go to: http://www.icsi.org for order information, or call: 952-814-7060
*	Institute for Clinical Systems Improvement	Tool kits Preventive Risk Assessment Forms	Health Care Professionals	Go to: http://www.icsi.org for order information, or call: 952-814-7060

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*	Institute for Clinical Systems Improvement	Summary Report: Tobacco Prevention and Cessation Family Health Services Minnesota (2003)	Health Care Professionals	http://www.icsi.org
*	Institute for Clinical Systems Improvement	Recorded Presentation: Preventive Services Focus Group (2002)	Health Care Professionals	http://www.icsi.org
	March of Dimes	Provides fact sheets for preconception counseling to prevent birth defects.	Patients and Families; Health Care Professionals	http://www.modimes.org
	Mayo Clinic	Provides information on current hot topics and provides the opportunity to ask a Mayo specialist your questions.	Patients and Families; Health Care Professionals	http://www.mayoclinic.org
	National Institute of Health	A pocket guide for alcohol screening and brief intervention.	Health Care Professionals	http://www.niaaa.nih.gov
	National Institute on Media and Family	Provides tools to help families evaluate their media use ratings on video games, videos and television programs.	Patients and Families; Health Care Professionals	http://www.mediafamily.org
	National Institutes of Health	This user-friendly site helps you start a search for health information by directing you to some credible databases.	Patients and Families; Health Care Professionals	http://www.nih.gov
	National SAFEKIDS Campaign	Provides safety information regarding bikes, car seats, product recalls and other injury prevention information.	Patients and Families	http://www.safekids.org
	Park Nicollet Health Services	"Guidelines for Preventive Health Care"	Health Care Professionals	http://www.icsi.org
*	Park Nicollet Health Services	Summary Report: Pediatric Immunization Rate Improvement at Park Nicollet Health Services (2003)	Health Care Professionals	http://www.icsi.org
	Patient Health Questionnaire (PHQ) Screeners	A diagnostic tool for mental health disorders used by health care professionals that is quick and easy for patients to complete. Created by Robert L. Spitzer, MD, Kurt Kroenke, MD, and colleagues at Columbia University.	Health Care Professionals	http://www.phqscreeners.com
	Quitnet	Provides fact sheets on all aspects of tobacco cessation, including motivational e-mails, chat rooms and links to local organizations that provide support to individuals.	Patients and Families	http://www.quitnet.org

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	Quitplan	Provides free tobacco cessation services.	Patients and Families	https://www.quitnow.net/quit-plan/
	Shape-Up America	Provides self-assessment tools, information about the benefits of becoming more active, suggestions about different ways to approach adding physical activity, and assistance with overcoming barriers.	Patients and Families/ Health Care Professionals	http://www.shapeup.org
	Substance Abuse and Mental Health Services Administration	Information on programs and publications for improving the quality and availability of substance abuse prevention, alcohol and drug addiction treatment, and mental health services. Includes information on the CAGE-AID screening tool.	Health Care Professionals	http://www.samhsa.gov
	The Food and Nutrition Information Center	This site is sponsored by the United States Department of Agriculture (USDA). It is very user friendly and filled with current information on almost any nutrition topic.	Patients and Families/ Health Care Professionals	http://www.nal.usda.gov/fnic/
	U.S. Department of Agriculture	Food Pyramid: Games and posters about good nutrition and activities for kids. My Pyramid Plan and Inside the Pyramid provide development of individual personal nutrition and activity plans.	Patients and Families/ Health Care Professionals	http://www.mypyramid.gov
	U.S. Department of Health and Human Services	Comprehensive site provides information on Healthy People 2010. Leading health indicators, guidelines, data and health information are given.	Patients and Families/ Health Care Professionals	http://www.healthypeople.gov

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