



Complete Summary

GUIDELINE TITLE

Preventive health care, 2001 update: Screening and management of developmental dysplasia of the hip in newborns.

BIBLIOGRAPHIC SOURCE(S)

Patel H. Preventive health care, 2001 update: screening and management of developmental dysplasia of the hip in newborns. CMAJ 2001 Jun 12; 164(12):1669-77. [69 references]

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SCOPE

DISEASE/CONDITION(S)

Developmental dysplasia of the hip in newborns

GUIDELINE CATEGORY

Management
Prevention
Screening
Treatment

CLINICAL SPECIALTY

Family Practice
Orthopedic Surgery
Pediatrics
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Nurses
Patients
Physician Assistants
Physicians
Students

GUIDELINE OBJECTIVE(S)

- To review the effectiveness of, and make practice recommendations for, serial clinical examination and ultrasound screening for developmental dysplasia of the hip (DDH) in newborns.
- The effectiveness of selective screening of high-risk infants with hip and pelvic radiographs and treatment with abduction therapy are also examined.

TARGET POPULATION

Newborns and infants at risk for developmental dysplasia of the hip

INTERVENTIONS AND PRACTICES CONSIDERED

Screening

1. Serial clinical examination of the hips by a trained clinician in the periodic health examination of all infants until they are walking independently (Ortolani and Barlow tests in younger infants and surveillance for limitation in abduction, leg length discrepancy in older infants).
2. General ultrasound screening (static or dynamic methods) for developmental dysplasia of the hip in the periodic health examination of infants.
3. Selective screening for developmental dysplasia of the hip in the periodic health examination of infants.
4. Routine radiographic screening for developmental dysplasia of the hip in the periodic health examination of infants.

Management

1. Abduction therapy (Pavlik harness or other abduction devices).
2. Supervised period of observation of newborns with clinically detected developmental dysplasia of the hip (no therapy).

MAJOR OUTCOMES CONSIDERED

- Rates of operative intervention
- Abduction splinting
- Delayed diagnosis of developmental dysplasia of the hip
- Treatment complications and false diagnostic labeling
- Long-term functional outcomes

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

MEDLINE was searched for relevant English-language articles published from 1966 to November 2000 using the key words "screening," "hip," "dislocation," "dysplasia," "congenital" and "ultrasound."

Comparative and descriptive studies and key reviews were retrieved, and their bibliographies were manually searched for further studies.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Quality of evidence was rated according to 5 levels:

I - Evidence from at least 1 properly randomized controlled trial (RCT).

II-1 - Evidence from well-designed controlled trials without randomization.

II-2 - Evidence from well-designed cohort or case-control analytic studies, preferably from more than 1 centre or research group.

II-3 - Evidence from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments could also be included here.

III - Opinions of respected authorities, based on clinical experience, descriptive studies or reports of expert committees.

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not applicable

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The 13-member Task Force of experts in family medicine, geriatric medicine, paediatrics, psychiatry and epidemiology used an evidence-based method for evaluating the effectiveness of preventive health care interventions. Recommendations were not based on cost-effectiveness of options. Patient preferences were not discussed.

Background papers providing critical appraisal of the evidence and tentative recommendations prepared by the chapter author were pre-circulated to the members. Evidence for this topic was presented and deliberated upon during 2 meetings (October 1998 and January 1999). Consensus was reached on final recommendations.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grades of Recommendation:

- A. Good evidence to support the recommendation that the condition or maneuver be specifically considered in a periodic health examination (PHE).
- B. Fair evidence to support the recommendation that the condition or maneuver be specifically considered in a PHE.
- C. Poor evidence regarding inclusion or exclusion of the condition or maneuver in a PHE, but recommendations may be made on other grounds.
- D. Fair evidence to support the recommendation that the condition or maneuver be specifically excluded from consideration in a PHE.
- E. Good evidence to support the recommendation that the condition or maneuver be specifically excluded from consideration in a PHE.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The members of the Canadian Task Force on Preventive Health Care reviewed the findings of this analysis through an iterative process. The Task Force sent the final review and recommendations to two selected external expert reviewers, and their

feedback was incorporated. It was then peer-reviewed as part of the journal publication process.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Recommendation grades [A, B, C, D, E] and levels of evidence [I, II-1, II-2, II-3, III] are indicated after each recommendation. Definitions of these grades and levels are repeated following the recommendations.

- There is fair evidence to include serial clinical examination of the hips by a trained clinician in the periodic health examination of all infants until they are walking independently (Walker, 1977; Jones, 1989; Poul et al., 1992; Tredwell & Bell, 1981; Lennox, McLauchlan, & Murali, 1993; Fulton & Barer, 1984; Dunn et al., 1985; Lehmann & Street, 1981; Macnicol, 1990; Krikler & Dwyer, 1992; Godward & Dezateux, 1998; Place, Parkin, & Fritton, 1978). (B, III, II-1)
- There is fair evidence to exclude general ultrasound screening for developmental dysplasia of the hip from the periodic health examination of infants (Rosendahl, Markestad, & Lie, 1994; Boeree & Clark, 1994; Castelein & Sauter, 1988; Holen et al., 1994; Marks, Clegg, & Al-Chalabi, 1994; Jones & Powell, 1990; Sochart & Paton, 1996; Hernandez, Cornell, Hensinger, 1994; Burger et al., 1990; Anderson & Funnemark, 1995; Clarke, Clegg, & Al-Chalabi, 1989; Bradley, Wetherill, & Benson, 1987; Berman & Klenerman, 1986; Boere-Boonekampe, 1998; Poul et al., 1998). (D, II-1, III)
- There is fair evidence to exclude selective screening for developmental dysplasia of the hip from the periodic health examination of high-risk infants (Rosendahl, Markestad, & Lie, 1994; Macnicol, 1990; Clarke, Clegg, & Al-Chalabi, 1994; Moore, 1989). (D, II-1, III)
- There is fair evidence to exclude routine radiographic screening for developmental dysplasia of the hip from the periodic health examination of high-risk infants (Weinstein, 1996; Garvey et al., 1992; Broughton & Brougham, 1989). (D, III)
- There is insufficient evidence to evaluate the effectiveness of abduction therapy (Lennox, McLauchlan, & Murali, 1993; Krikler & Dwyer, 1992; Godward & Dezateux, 1998; Bradley, Wetherill, & Benson, 1987; Suzuki, 1993; Burger et al., 1990; Bradley, Wetherill, & Benson, 1987; Kalamchi & MacEwen, 1980; Langkamer, Clarke, & Witherow, 1991) (C, III), but good evidence to support a period of close observation for newborns with clinically detected developmental dysplasia of the hip (Gardiner & Dunn, 1990; Bialik et al., 1999; Burger et al., 1990) (A, I, III). However, there is insufficient evidence to determine the optimal duration of observation (C).

Definitions:

Recommendation Grades:

- A. Good evidence to support the recommendation that the condition or maneuver be specifically considered in a periodic health examination (PHE).

- B. Fair evidence to support the recommendation that the condition or maneuver be specifically considered in a PHE.
- C. Poor evidence regarding inclusion or exclusion of the condition or maneuver in a PHE, but recommendations may be made on other grounds.
- D. Fair evidence to support the recommendation that the condition or maneuver be specifically excluded from consideration in a PHE.
- E. Good evidence to support the recommendation that the condition or maneuver be specifically excluded from consideration in a PHE.

Levels of Evidence:

I - Evidence from at least 1 properly randomized controlled trial (RCT).

II-1 - Evidence from well-designed controlled trials without randomization.

II-2 - Evidence from well-designed cohort or case-control analytic studies, preferably from more than 1 centre or research group.

II-3 - Evidence from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments could also be included here.

III - Opinions of respected authorities, based on clinical experience, descriptive studies or reports of expert committees.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

[References open in a new window](#)

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

Screening

Infants at Normal Risk

Maneuver: Repeated serial clinical examination by trained examiners

Level of Evidence: Level III, Level II-1

Maneuver: Ultrasound screening (static or dynamic method)

Level of Evidence: Level II-1 and Level III

Infants at High Risk

Maneuver: Selective screening

Level of Evidence: Level II-1 and Level III

Maneuver: Radiographic examination of hips and pelvis in infants aged 3 to 5 months
Level of Evidence: Level III

Treatment

Maneuver: Abduction therapy
Level of Evidence: Level III
Maneuver: Timing of abduction therapy
Level of Evidence: Level I and Level III

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Screening

Serial clinical examinations (include the Ortolani and Barlow tests during the first several months of life) have decreased the operative rate more than 50% -- from 1 to 2 per 1000 infants to 0.2 to 0.7 per 1000.

POTENTIAL HARMS

Because most infants will have spontaneous resolution of nonteratologic developmental dysplasia of the hip, early identification and intervention results in unnecessary labeling of newborns as having the problem and unnecessary treatment. Ultrasound screening is a highly sensitive but poorly specific measure of clinically relevant developmental dysplasia of the hip. Abduction splinting is associated with a variety of problems, and its effectiveness in treating developmental dysplasia of the hip is not clearly known. At least 20% of infants requiring operative intervention have had splint therapy. The harms of labelling, repetitive investigations, unnecessary splinting and resource consumption associated with screening are substantial.

Serial clinical examinations have increased the abduction splinting rate to 4 to 19 per 1000 infants.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- The effectiveness of screening is highly dependent on the skill of the evaluator. Clinicians should be adequately trained, with opportunities for reassessment of skills. The limited availability of appropriate ultrasound equipment and adequately trained ultrasonographers further limits the use of ultrasound screening for developmental dysplasia of the hip in many areas of Canada.
- Until proposed risk factors for developmental dysplasia of the hip have been validated, physicians may opt to examine more frequently infant girls born in the breach position and infants with a family history of developmental

dysplasia of the hip. Although robust evidence is lacking, clinicians may opt to follow the recommendations of the American Academy of Pediatrics (Clinical practice guideline: early detection of developmental dysplasia of the hip. Pediatrics 2000 Apr; 105[4 Pt 1]:896-905; see related [NGC summary](#)) for these infants.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Implementation of preventive activities in clinical practice continues to be a challenge. To address this issue, Health Canada established a National Coalition of Health Professional Organizations in 1989. The purpose was to develop a strategy to enhance the preventive practices of health professionals. Two national workshops were held. The first focused on strengthening the provision of preventive services by Canadian physicians. The second addressed the need for collaboration among all health professionals.

This process led to the development of a framework or "blueprint for action" for strengthening the delivery of preventive services in Canada (Supply and Services Canada: an Inventory of Quality Initiatives in Canada: Towards Quality and Effectiveness. Health and Welfare Canada, Ottawa, 1993). It is a milestone for professional associations and one that will have a major impact on the development of preventive policies in this country.

In 1991 the Canadian Medical Association spearheaded the creation of a National Partnership for Quality in Health to coordinate the development and implementation of practice guidelines in Canada. This partnership includes the following: the Association of Canadian Medical Colleges, the College of Family Physicians of Canada, the Federation of Medical Licensing Authorities of Canada, the Royal College of Physicians and Surgeons of Canada, the Canadian Council on Health Facilities Accreditation, and the Canadian Medical Association.

The existence of guidelines is no guarantee they will be used. The dissemination and diffusion of guidelines is a critical task and requires innovative approaches and concerted effort on the part of professional associations and health care professionals. Continuing education is one avenue for the dissemination of guidelines. Local physician leaders, educational outreach programs, and computerized reminder systems may complement more traditional methods such as lectures and written materials. Public education programs should also support the process of guideline dissemination. In this context, rapidly expanding information technology, such as interactive video or computerized information systems with telephone voice output, presents opportunities for innovative patient education. The media may also be allies in the communication of some relevant aspects of guidelines to the public. All of these technologies should be evaluated.

The implementation of multiple strategies for promoting the use of practice guidelines requires marshaling the efforts of governments, administrators, and health professionals at national, provincial and local levels. It is up to physicians and other health professionals to adopt approaches for the implementation of guidelines in clinical practice and to support research efforts in this direction.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Patel H. Preventive health care, 2001 update: screening and management of developmental dysplasia of the hip in newborns. CMAJ 2001 Jun 12;164(12):1669-77. [69 references]

ADAPTATION

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

DATE RELEASED

2001 Jun

GUIDELINE DEVELOPER(S)

Canadian Task Force on Preventive Health Care - National Government Agency
[Non-U.S.]

SOURCE(S) OF FUNDING

The Canadian Task Force on Preventive Health Care is funded through a partnership between the Provincial and Territorial Ministries of Health and Health Canada.

GUIDELINE COMMITTEE

Canadian Task Force on Preventive Health Care (CTFPHC)

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

A complete list of planned reviews, updates and revisions is available under the What's New section at the [Canadian Task Force on Preventive Health Care \(CTFPHC\) Web site](#).

GUIDELINE AVAILABILITY

Electronic copies: Available from the [Canadian Task Force on Preventive Health Care Web site](#).

Also available from the Canadian Medical Association Journal (CMAJ) Web site in [Portable Document Format \(PDF\)](#) and [HTML format](#).

Print copies: Available from Canadian Task Force on Preventive Health Care, 100 Collip Circle, Suite 117, London, Ontario N6G 4X8, Canada.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Stachenko S. Preventive guidelines: their role in clinical prevention and health promotion. Ottawa: Health Canada, 1994. Available from the [Canadian Task Force on Preventive Health Care \(CTFPHC\) Web site](#).
- CTFPHC history/methodology. Ottawa: Health Canada, 1997. Available from the [CTFPHC Web site](#).
- Quick tables of current recommendations. Ottawa: Health Canada, 2000. Available from the [CTFPHC Web site](#).

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on September 25, 2001. The information was verified by the guideline developer as of October 9, 2001.

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