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- **Endorsers:** American Academy of Pediatrics
- **Sponsors:** Centers for Disease Control and Prevention, Division of Tuberculosis Elimination and New York City Department of Health, Tuberculosis Control Program

2. Project/Product Goals

The objectives of the proposed Consensus Statement are:

- To analyze and compare studies of risk factors and targeted screening of latent tuberculosis infection (LTBI) in children
- To make practical recommendations for pediatric healthcare providers for risk factor screening for LTBI
- To develop a risk factor questionnaire that will facilitate targeted tuberculin skin testing (TST)
- To provide health departments and other providers with recommendations for conducting associate investigations for children with LTBI
- To summarize current treatment recommendations for LTBI including improving adherence
- To identify effective strategies to disseminate the conclusions of the panel to pediatric healthcare providers and other professional groups
- To write and disseminate a report of the deliberations and conclusions that will be endorsed by the American Academy of Pediatrics (AAP)
- To identify future areas of research for children with LTBI

3. Target Audience

Pediatric health care providers; their educators, trainers, employers, supervisors, and professional organizations; health departments; managed care organizations.

4. Needs Assessment (why the project/product is being developed)

In the past year, recommendations for improving the screening and treatment of LTBI have been addressed in a consensus document endorsed by the ATS, CDC, and AAP. This document mainly addressed adults and did not include some recent studies that specifically address children as will be described below. In addition, the American Academy of Pediatrics Committee on Infectious Diseases made recommendations for managing LTBI in children in the 2000 Red Book. Most pediatric healthcare providers find the Red Book invaluable, but it is not referenced and the screening strategy for LTBI has not been recently updated. Furthermore, recommendations include the use of rifampin for management of children from areas in which the rates of isoniazid resistance exceed 4%. This recommendation is not based on clinical data and is proving very confusing for practitioners.

During the past few years several studies, including some funded by the CDC, have been conducted to address risk factors for LTBI in pediatric populations. While local epidemiology varies, these studies have provided valuable insight into targeted screening. The results of these studies need wider dissemination as many pediatric healthcare providers continue to perform annual tuberculin skin testing based on perceived regional risk factors rather than an individual patient's risk factors. Furthermore, some day care centers and schools require universal tuberculin skin testing prior to entry.

Some healthcare providers, including health departments, continue to screen the household contacts of children with LTBI for active TB (associate investigation). Recent studies have addressed the yield of this practice and have generally concluded that it is costly and not useful.

Optimal treatment strategies for children are generally similar to those of adults and have been the subject of a recent Consensus Statement. Despite this effort, the rationale for the length of treatment has been a source of confusion for pediatric care providers. Interpretation of TSTs in the face of prior BCG immunization continues to be an issue for healthcare professionals, patients and their families. While rates of completion for treatment of LTBI are suboptimal, programs developed for adults may not be suitable for improving rates in children and adolescents.

Thus, primary care providers for children, pediatricians, family practitioners and nurse clinicians, need improved, evidence-based guidelines to continue to optimize the screening and management of LTBI.

We propose to assemble Pediatric TB experts to develop a Consensus Statement for LTBI in children. The panel will only discuss existing studies. No additional studies will be performed, although recommendations for further research in children will be made.

5. Product/Project Formats or Media Types

- **Published Consensus Statement** on LTBI in Children, endorsed by The American Academy of Pediatrics
- **Questionnaire** for determining risk for LTBI, to be administered by pediatric health care providers
- **Slide set** for educating pediatric health care providers
- **Booklet** of frequently asked questions and answers
- **CME Curriculum** for replicating content in local courses for pediatricians

6. Brief Content Outline of the Project/Product

- Rationale for targeted tuberculin testing and treatment of LTBI in children
- Questionnaire for screening children who should get tuberculin skin test
- Current treatment recommendations for children with LTBI
- Effective strategies for ensuring adherence to treatment for LTBI in children

- Recommendations for associate investigations of persons in contact with a child who has LTBI

7. Utilization

Pediatric health care providers will use the consensus statement for overall guidance and the questionnaire to determine which individual children should receive TST. Educators, employers, and TB programs will use the slide set and booklet as well to orient staff to more effectively target TST efforts in children, ensure adherence to therapy, and conduct (or refrain from conducting) associate investigations.

8. Formative Evaluation

We have already reviewed several key documents (i.e. CDC/ATS Statement Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection, the Red Book, attached list of journal articles) to highlight pediatric issues and identify gaps. A full literature review will be done to prepare packets of materials for symposium participants.

9. Duplicate Projects/Products (Is anyone else doing the same thing? Explain how this project/product is different)

The recent ATS/CDC statement on “Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection” focused primarily on adults. The SF Model Center developed a “Pediatric Tuberculosis” audiotape and booklet; the latter includes a Tuberculosis Exposure Assessment tool adapted from the AAP 2000 Red Book. The Harlem Model Center developed a pocket reference card on “Treatment of Latent Tuberculosis Infection in Children and Adolescents.” In 1995 New York City Department of Health published “Prevention and Control of Pediatric Tuberculosis in New York City: Recommendations of the Expert Advisory Panel.” Six or eight additional groups in the US have studied risk factors for LTBI in children and some have developed screening questionnaires; however, to the best of our knowledge, no one else is drawing together an expert panel to develop a consensus statement for pediatric LTBI. We will bring all of these experienced parties into the discussion to develop evidence-based recommendations for pediatric health care providers.

10. Timeline for Development

Date	Task	Resources Needed
Month 0-3	Assemble panel, finalize agenda, conduct literature review, prepare packet of materials for participants	
Month 3	Hold 2-day symposium	
Month 3-5	First draft developed by writing group; writing group meeting	
Month 5	First draft completed by writing group and reviewed by panel	
Month 6	Conference call to discuss finalizing Consensus Statement	

Month 7	Final draft completed	
Month 7-10	Obtain AAP Endorsement	
Month 7-12	Develop educational materials: questionnaire, slide set, frequently asked questions and answers	
Month 11-12	Submit Consensus Statement for publication	

11. Estimated Costs and Funding

Supplemental funds will be requested from CDC.

12. Marketing Plan for Distribution

The consensus statement will be published in “Pediatrics” the Journal of the American Academy of Pediatrics. A complete curriculum will be developed so symposium participants and others can replicate a CME course for pediatric providers. Other products will be distributed at local CME courses and professional conferences. Targeted mailing of products will go to a list of professionals and organizations interested in tuberculosis, especially those who have ordered pediatric TB materials from Model Centers in the past. All products will be available on the website www.harlemtbcenter.org. More will be printed when the supply gets low. Two panel members will lead a “hot topic” session at the 2002 Pediatric Research Conference. The expert panel will identify additional dissemination strategies, as appropriate.

13. Process and Impact Evaluation

We will ensure that all panel members’ and reviewers’ suggestions are adequately addressed in the final versions of products. An evaluation form will be sent to all known recipients 3 months after products are distributed.

14. Continuing Education Credit Availability (explain what type will be available)

A full CME curriculum package will be developed to enable workshop participants and others to replicate the content in local courses for pediatricians.

15. Additional Information

REFERENCES

JOURNAL ARTICLES

Cantwell MF, McKenna MT, McCray E, Onorato IM. Tuberculosis and race/ethnicity in the United States. *Am J Respir Crit Care Med* 1997;157:1016-1020.

Drucker E, Alcabes P, Bosworth W, Sckell B. Childhood tuberculosis in the Bronx, New York. *Lancet* 1994;343:1482-1485.

Friedland IR. The booster effect with repeat tuberculin skin testing in children and its relationship to BCG vaccination. *S Afr Med J* 1990; 77:387-389.

Gesser BD, Weiss NS, Nolan CM. Risk factors for pediatric infection and disease after household exposure to adult index cases in Alaska. *J Pediatr* 1998;132:509-513.

Lobato MN, Hopewell PC. *Mycobacteria tuberculosis* infection after travel to or contact with visitors from countries with a high prevalence of tuberculosis. *Am J Respir Crit Care Med* 1998;158:1871-1875.

McKenna MT, McCray E, Onorato I. The epidemiology of tuberculosis among foreign-born persons in the United States, 1986-1993. *N Eng J Med* 1995;331:1071-1076.

New York City Department of Health. Prevention and Control of Pediatric Tuberculosis in New York City: Recommendations of the Expert Advisory Panel. 1995.

Ozuah PO, Ozuah TP, Stein REK, Burton W, Mulvihill M. Evaluation of a risk assessment questionnaire used to target tuberculin skin testing in children. *JAMA* 2001;285:451-453.

Reinhard C, Paul WS, McCauley JB. Epidemiology of pediatric tuberculosis in Chicago, 1974-1994: a continuing public health problem. *Am J Med Sci* 1997; 313:336-340.

Soren K, Saiman L, Irigoyen M, Gomez-Duarte C, Levison MJ, McMahon DJ. Evaluation of household contacts of children with positive tuberculin skin tests. *Pediatr Inf Dis J* Nov 1999;18:945-955.

Starke JR, Jacobs RF, Jerb J. Resurgence of tuberculosis in children. *J Pediatr* 1992;22:839-855.

Starke JR. Universal screening for tuberculosis infection: school's out! *JAMA* 1995;274:652-653.

Sullam PM, Slutkin G, Hopewell PC. The benefits of evaluating close associates of child tuberculin reactors from a high prevalence group. *Am J Public Health* 1986;76:1109-11.

ABSTRACTS

Besser RE, Pakiz B, Schulte JZ, Alvarado S, Onorato I. Risk factors for pediatric tuberculosis infections in San Diego: re-emergence of foodborne TB. Infectious Diseases Society of America, November 1999.

Froelich H, Ackerson LM, Morozumi P. Targeted screening of children for tuberculosis (TB): Validation of a Risk-Assessment Questionnaire. International Conference on Emerging Infectious Diseases, 2000.

Saiman L, San Gabriel P, Schulte J, Vargas MP, Kenyon T, Onorato I. Risk factors for latent tuberculosis infection among children in New York City. Infectious Diseases Society of America, November 1999.

Saiman L, Aronson JE, Gomez-Duarte C, San Gabriel P, Alonso M, Zhou J, Maloney S, Schulte JZ. Prevalence of infection with *Mycobacteria tuberculosis* and other infectious diseases among internationally adopted children. Society of Pediatric Research, May 2000.