

II. Recommended Respiratory Disease Questionnaires for Use with Adults and Children in Epidemiological Research

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A. Introduction

The Questionnaire Subsection of the Epidemiological Standardization Project evaluated the existing state of respiratory disease questionnaires for epidemiological research as a preliminary objective. This objective necessitated both an historical review of how the standardized questionnaire came about and a consideration of the epidemiologic principles necessary to develop an objective instrument. Samet (1) has reviewed this subject.

The standardized questionnaire was devised in the early 1950s in Great Britain after the realization that the clinical assessment of subjects in epidemiologic studies was plagued by uncontrollable biases (2, 3). After several years of developmental work, the MRC approved a standard questionnaire in 1960 (4). This questionnaire was reviewed and published as part of a statement by the ATS in 1969 (5). This statement, entitled "Standards for Epidemiologic Surveys in Chronic Respiratory Disease," presented the MRC 1966 revisions of the questionnaire (along with detailed instructions for the use of the questionnaire); it also detailed a series of recommendations on design of studies, size and selection of samples, methods for estimating bias resulting from nonresponse, and data processing. In addition, there were brief discussions of basic pulmonary function testing techniques, sputum collection, and aerometric measurements.

The MRC questionnaire underwent modest revision between 1960 and 1976, and a slightly modified version was approved again in 1976 by the MRC.¹ On a worldwide basis, the

¹ The revision of the Standardized Questionnaire on Respiratory Symptoms can be obtained from the British Medical Research Council, 20 Park Crescent, London W1N 4AL, England.

MRC questionnaire, either as originally designed or as slightly modified (generally in unspecified ways), has had the widest use.

In 1971, NHLI-DLD produced a new questionnaire that was to be used as a minimal standard for all new epidemiologic work supported under the Division's SCOR or contract program (6). This questionnaire was another modification of the MRC questionnaire in use at that time. Although problems with the questionnaire soon became apparent, there was no organized effort to evaluate the nature of the problems. This contract was established, in part, to complete such an evaluation.

The second major component of this contract was to develop and test a standardized instrument in such a way that information obtained in the recent past with the NHLI questionnaire would not be lost. Because of the constraint that we build on both the NHLI and the MRC experience, the new ATS-DLD-78 questionnaire was designed to utilize the strengths of the previously designed questionnaires and to be field tested in such a way as to allow between-questionnaire comparisons. This procedure is discussed in the body of the report.

We can report that most of the questions that have been left in the final version of the new ATS-DLD-78 questionnaire have been documented, in terms of the field test, to meet most of the criteria set out by Samet (1) and in the 1969 statement by the Committee on Standards for Epidemiology Surveys in Chronic Respiratory Diseases of the ATS (5). The questions are reproducible by self-completion techniques versus interviewer-administered techniques. They are as valid and as free from bias as could possibly be determined by the procedures undertaken.

The third goal for this contract was the development of additional questions related to asthma, smoking history, occupational history, family history, and evaluation of pediatric respiratory diseases. Each of these topics is dealt with as part of the questionnaire development under separate headings.

Finally, the importance of having standardized procedures to assess chronic respiratory disease for epidemiologic studies is a given need that requires no justification. We must realize, however, that as hypotheses about the nature and risk of developing chronic respiratory disease change, some questions considered as standard and essential at the present time will become obsolete and useless, whereas others not currently considered as part of the required standard may become more important. For example, the British MRC questionnaire has been a useful instrument to assess the symptomatic effects of cigarette smoking, almost to the detriment of finding effects of other exposures. As long as cigarette smoking remains an important exposure, questions concerning tobacco use are necessary.

B. Recommendations

The ATS-DLD-78 questionnaire presented and discussed in the following pages is recommended for use in epidemiologic studies of all respondents 13 or more years of age. The questionnaire is divided into 2 components. The initial component is recommended as a minimal set of questions to be asked in every survey; these are followed by a group of optional questions that are left up to the discretion of the individual investigator to consider for inclusion at the end of the appropriate section of the questionnaire.

We believe that the use of this questionnaire should be required in any new study designed to assess the prevalence of chronic respiratory symptoms and disease. In addition, new prospective studies designed to determine changes in symptom rates, or incidence of the development of respiratory disease, also must use at least this minimal standard approach. The advantage of the new ATS-DLD-78 questionnaire is that it has undergone extensive testing and has been reviewed by a large body of experts (see *Appendix 11*). Sufficient in-

¹ A limited number of copies of each *Appendix* are available from the Division of Lung Diseases, National Heart, Lung and Blood Institute, Bethesda, Maryland 20014. Additional copies can be obtained by ordering the NAPS Document number from ASIS/NAPS c/o Microfiche Publications,

formation is available to allow comparisons with the MRC and the NHLI questionnaires and comparisons between self-completed and interviewer-administered questionnaires.

The nature of the population being studied and the judgment of the individual investigator will determine whether the questionnaire is administered by self-completion or by interview and which of the supplementary questions are included. Our only suggestion in this regard is that only supplementary questions from the tested group of questions be inserted at the designated places in the questionnaire and that any additional questions be inserted at the end of the entire questionnaire.

Instructions concerning training and administration of the Adult Questionnaire by interviewers are given in C.1.a of this section.

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C. Questionnaires

1. *Adult Questionnaire*

ATS-DLD-78-A

A. ADULT QUESTIONNAIRE — SELF-COMPLETION
(for those 13 years of age and older)

Thank you for your willingness to participate. You were selected by a scientific sampling procedure, and your cooperation is very important to the success of the study.

This is a questionnaire you are asked to fill out. Please answer the questions as frankly and accurately as possible. ALL INFORMATION OBTAINED IN THE STUDY WILL BE KEPT CONFIDENTIAL AND USED FOR MEDICAL RESEARCH ONLY. Your personal physician will be informed about the test results if you desire.

The questions can be answered by checking the best answer or by filling in a blank with a number or word.

Example: Do you live in the United States 1. Yes
2. No

If you desire help in answering a question, please put a check (✓) in *front* of the question number. You will be helped with these questions at the time of your appointment.

ATS-DLD-78-A

1

ALL QUESTIONNAIRES

IDENTIFICATION NUMBER

1 2 3 4 5

Card Number

1
6

NAME: _____

ADDRESS: _____

(Zip Code)

7 8 9 10 11

TELEPHONE NUMBER: _____

INTERVIEWER: _____

12

DATE: _____

13 14 15 16 17 18
MO DAY YR

	For Office Use	
1. Date of Birth: _____ Month Day Year		(19-24)
2. Place of Birth: _____		(25-26)
3. Sex:	1. Male _____ 2. Female _____	(27)
4. What is your marital status?	1. Single _____ 2. Married _____ 3. Widowed _____ 4. Separated/Divorced _____	(28)
5. Race:	1. White _____ 2. Black _____ 3. Oriental _____ 4. Other _____	(29)
6. What is the highest grade completed in school? _____ (For example: 12 years is completion of high school)		(30-31)

ATS-DLD-78-A

3

These questions pertain mainly to your chest. Please answer *yes* or *no* if possible. If a question does not appear to be applicable to you, check the *does not apply* space. If you are in doubt about whether your answer is *yes* or *no*, record *no*.

For Office Use
ID Dup 1-5

Card Number

2

COUGH

6

- 7A. Do you usually have a cough? (Count a cough with first smoke or on first going out-of-doors. Exclude clearing of throat.) [If *no*, skip to Question 7C.] 1. Yes ____ 2. No ____ (21)
- B. Do you usually cough as much as 4 to 6 times a day, 4 or more days out of the week? 1. Yes ____ 2. No ____ (22)
- C. Do you usually cough at all on getting up, or first thing in the morning? 1. Yes ____ 2. No ____ (23)
- D. Do you usually cough at all during the rest of the day or at night? 1. Yes ____ 2. No ____ (24)

IF YES TO ANY OF ABOVE (7A, B, C, OR D), ANSWER THE FOLLOWING:
IF NO TO ALL, CHECK *DOES NOT APPLY* AND SKIP TO NEXT PAGE.

- E. Do you usually cough like this on most days for 3 consecutive months or more during the year? 1. Yes ____ 2. No ____ (25)
8. Does not apply ____
- F. For how many years have you had this cough? _____ (26-27)
Number of years
88. Does not apply ____

For Office Use

PHLEGM

- 8A. Do you usually bring up phlegm from your chest? 1. Yes ___ 2. No ___ (28)
 (Count phlegm with the first smoke or on first going out-of-doors. Exclude phlegm from the nose. Count swallowed phlegm.)
 [If *no*, skip to 8C.]
- B. Do you usually bring up phlegm like this as much as twice a day, 4 or more days out of the week? 1. Yes ___ 2. No ___ (29)
- C. Do you usually bring up phlegm at all on getting up, or first thing in the morning? 1. Yes ___ 2. No ___ (30)
- D. Do you usually bring up phlegm at all during the rest of the day or at night? 1. Yes ___ 2. No ___ (31)

IF YES TO ANY OF THE ABOVE (8A, B, C, OR D),
 ANSWER THE FOLLOWING:

IF NO TO ALL, CHECK *DOES NOT APPLY* AND SKIP TO NEXT PAGE.

- E. Do you bring up phlegm like this on most days for 3 consecutive months or more during the year? 1. Yes ___ 2. No ___
 8. Does not apply ___ (32)
- F. For how many years have you had trouble with phlegm? _____
 Number of years
 88. Does not apply ___ (33-34)

ATS-DLD-78-A

5

For Office Use

EPISODES OF COUGH AND PHLEGM

9A. Have you had periods or episodes of (increased*) cough and phlegm lasting for 3 weeks or more each year? 1. Yes ___ 2. No ___ (35)
 *(For persons who usually have cough and/or phlegm)

IF YES TO 9A: _____
 B. For how long have you had at least 1 such episode per year? _____ Number of years (36-37)
 88. Does not apply _____

WHEEZING

10A. Does your chest ever sound wheezy or whistling:
 1. When you have a cold? 1. Yes ___ 2. No ___ (38)
 2. Occasionally apart from colds? 1. Yes ___ 2. No ___ (39)
 3. Most days or nights? 1. Yes ___ 2. No ___ (40)

IF YES TO 1, 2, OR 3 IN 10A: _____
 B. For how many years has this been present? _____ Number of years (41-42)
 88. Does not apply _____

11A. Have you ever had an attack of wheezing that has made you feel short of breath? 1. Yes ___ 2. No ___ (43)

IF YES TO 11A: _____
 B. How old were you when you had your first such attack? _____ Age in years (44-45)
 88. Does not apply _____
 C. Have you had 2 or more such episodes? 1. Yes ___ 2. No ___ (46)
 8. Does not apply _____
 D. Have you ever required medicine or treatment for the(se) attack(s)? 1. Yes ___ 2. No ___ (47)
 8. Does not apply _____

For Office Use

BREATHLESSNESS

12. If disabled from walking by any condition other than heart or lung disease, please describe and proceed to Question 14A.

Nature of condition(s): _____ (48)

- 13A. Are you troubled by shortness of breath when hurrying on the level or walking up a slight hill? 1. Yes ____ 2. No ____ (49)

IF YES TO 13A: _____

- B. Do you have to walk slower than people of your age on the level because of breathlessness? 1. Yes ____ 2. No ____ 8. Does not apply ____ (50)
- C. Do you ever have to stop for breath when walking at your own pace on the level? 1. Yes ____ 2. No ____ 8. Does not apply ____ (51)
- D. Do you ever have to stop for breath after walking about 100 yards (or after a few minutes) on the level? 1. Yes ____ 2. No ____ 8. Does not apply ____ (52)
- E. Are you too breathless to leave the house or breathless on dressing or undressing? 1. Yes ____ 2. No ____ 8. Does not apply ____ (53)

ATS-DLD-78-A

7

For Office Use

CHEST COLDS AND CHEST ILLNESSES

14A. If you get a cold, does it usually go to your chest? (Usually means more than 1/2 the time.) 1. Yes ___ 2. No ___ (54)
3. Don't get colds ___

15A. During the past 3 years, have you had any chest illnesses that have kept you off work, indoors at home, or in bed? 1. Yes ___ 2. No ___ (55)

IF YES TO 15A: _____

B. Did you produce phlegm with any of these chest illnesses? 1. Yes ___ 2. No ___ (56)
8. Does not apply ___

C. In the last 3 years, how many such illnesses, with (increased) phlegm, did you have which lasted a week or more? ___ Number of illnesses (57)
___ No such illnesses
8. Does not apply ___

PAST ILLNESSES

16. Did you have any lung trouble before the age of 16? 1. Yes ___ 2. No ___ (58)

17. Have you ever had any of the following?
1A. Attacks of bronchitis? 1. Yes ___ 2. No ___ (59)

IF YES TO 1A: _____

B. Was it confirmed by a doctor? 1. Yes ___ 2. No ___ (60)
8. Does not apply ___

C. At what age was your first attack? ___ Age in years (61-62)
88. Does not apply ___

For Office Use

2A. Pneumonia (include bronchopneumonia)? 1. Yes ____ 2. No ____ (63)

IF YES TO 2A: _____
 B. Was it confirmed by a doctor? 1. Yes ____ 2. No ____ (64)

8. Does not apply ____

C. At what age did you first have it? ____ Age in years (65-66)

88. Does not apply ____

3A. Hay fever? 1. Yes ____ 2. No ____ (67)

IF YES TO 3A: _____
 B. Was it confirmed by a doctor? 1. Yes ____ 2. No ____ (68)

8. Does not apply ____

C. At what age did it start? ____ Age in years (69-70)

88. Does not apply ____

18A. Have you ever had chronic bronchitis? 1. Yes ____ 2. No ____ (71)

IF YES TO 18A: _____
 B. Do you still have it? 1. Yes ____ 2. No ____ (72)

8. Does not apply ____

C. Was it confirmed by a doctor? 1. Yes ____ 2. No ____ (73)

8. Does not apply ____

D. At what age did it start? ____ Age in years (74-75)

88. Does not apply ____

19A. Have you ever had emphysema? 1. Yes ____ 2. No ____ (76)

IF YES TO 19A: _____
 B. Do you still have it? 1. Yes ____ 2. No ____ (77)

8. Does not apply ____

C. Was it confirmed by a doctor? 1. Yes ____ 2. No ____ (78)

8. Does not apply ____

D. At what age did it start? ____ Age in years (79-80)

88. Does not apply ____

ATS-DLD-78-A

9

For Office Use
ID Dup 1-5

Card Number

	<u>3</u>	
	6	
20A. Have you ever had asthma?	1. Yes ___ 2. No ___	(7)
___ IF YES TO 20A: _____		
B. Do you still have it?	1. Yes ___ 2. No ___	(8)
	8. Does not apply _____	
C. Was it confirmed by a doctor?	1. Yes ___ 2. No ___	(9)
	8. Does not apply _____	
D. At what age did it start?	___ Age in years	(10-11)
	88. Does not apply _____	
E. If you no longer have it, at what age did it stop?	___ Age stopped	(12-13)
	88. Does not apply _____	
21. Have you ever had:		
A. Any other chest illness?	1. Yes ___ 2. No ___	(14)
If yes, please specify _____		
B. Any chest operations?	1. Yes ___ 2. No ___	(15)
If yes, please specify _____		
C. Any chest injuries?	1. Yes ___ 2. No ___	(16)
If yes, please specify _____		
22A. Has a doctor ever told you that you had heart trouble?	1. Yes ___ 2. No ___	(17)
___ IF YES to 22A: _____		
B. Have you ever had treatment for heart trouble in the past 10 years?	1. Yes ___ 2. No ___	(18)
	8. Does not apply _____	
23A. Has a doctor ever told you that you had high blood pressure?	1. Yes ___ 2. No ___	(19)
___ IF YES TO 23A: _____		
B. Have you had any treatment for high blood pressure (hypertension) in the past 10 years?	1. Yes ___ 2. No ___	(20)
	8. Does not apply _____	

For Office use

OCCUPATIONAL HISTORY

24A. Have you ever worked full time (30 hours per week or more) for 6 months or more? 1. Yes ____ 2. No ____ (21)

IF YES TO 24A: _____

B. Have you ever worked for a year or more in any dusty job? 1. Yes ____ 2. No ____ 8. Does not apply ____ (22)

Specify job/industry _____ Total years worked _____ (23-24)

Was dust exposure: 1. Mild ____ 2. Moderate ____ 3. Severe ____? (25)

C. Have you ever been exposed to gas or chemical fumes in your work? 1. Yes ____ 2. No ____ (26)

Specify job/industry _____ Total years worked _____ (27-28)

Was exposure: 1. Mild ____ 2. Moderate ____ 3. Severe ____? (29)

D. What has been your usual occupation or job—the one you have worked at the longest?

1. Job-occupation: _____ (30-31)

2. Number of years employed in this occupation: _____

3. Position-job title: _____

4. Business, field, or industry: _____

ATS-DLD-78-A

11

For Office Use

TOBACCO SMOKING

25A. Have you ever smoked cigarettes? (*No* means less than 20 packs of cigarettes or 12 oz of tobacco in a lifetime or less than 1 cigarette a day for 1 year. 1. Yes ____ 2. No ____ (32)

IF YES TO 25A:

B. Do you now smoke cigarettes (as of 1 month ago)? 1. Yes ____ 2. No ____ (33)
88. Does not apply ____

C. How old were you when you first started regular cigarette smoking? ____ Age in years (34-35)
88. Does not apply ____

D. If you have stopped smoking cigarettes completely, how old were you when you stopped? ____ Age stopped (36-37)
Check if still smoking ____
88. Does not apply ____

E. How many cigarettes do you smoke per day now? ____ Cigarettes per day (38-39)
88. Does not apply ____

F. On the average of the entire time you smoked, how many cigarettes did you smoke per day? ____ Cigarettes per day (40-41)
88. Does not apply ____

G. Do or did you inhale the cigarette smoke? 1. Does not apply ____ (42)
2. Not at all ____
3. Slightly ____
4. Moderately ____
5. Deeply ____

For Office Use

- 26A. Have you ever smoked a pipe regularly? 1. Yes ___ 2. No ___ (43)
 (Yes means more than 12 oz of tobacco in a lifetime.)

IF YES TO 26A: _____

FOR PERSONS WHO HAVE EVER SMOKED A PIPE:

- B. 1. How old were you when you started to smoke a pipe regularly? _____ Age (44-45)
 2. If you have stopped smoking a pipe completely, how old were you when you stopped? _____ Age stopped (46-47)
 Check if still smoking pipe _____
 88. Does not apply _____
- C. On the average over the entire time you smoked a pipe, how much pipe tobacco did you smoke per week? _____ oz per week (a standard pouch of tobacco contains 1½ oz) (48-49)
 88. Does not apply _____
- D. How much pipe tobacco are you smoking now? _____ oz per week. (50-51)
 88. Not currently smoking a pipe _____ (52)
- E. Do you or did you inhale the pipe smoke? 1. Never smoked _____
 2. Not at all _____
 3. Slightly _____
 4. Moderately _____
 5. Deeply _____

- 27A. Have you ever smoked cigars regularly? 1. Yes ___ 2. No ___ (53)
 (Yes means more than 1 cigar a week for a year.)

IF YES TO 27A: _____

FOR PERSONS WHO HAVE EVER SMOKED CIGARS:

- B. 1. How old were you when you started smoking cigars regularly? _____ Age (54-55)
 2. If you have stopped smoking cigars completely, how old were you when you stopped? _____ Age stopped (56-57)
 Check if still smoking cigars _____
 88. Does not apply _____
- C. On the average, over the entire time you smoked cigars, how many cigars did you smoke per week? _____ Cigars per week (58-59)
 88. Does not apply _____
- D. How many cigars are you smoking per week now? _____ Cigars per week (60-61)
 88. Check if not smoking cigars currently _____
- E. Do or did you inhale the cigar smoke? 1. Never smoked _____ (62)
 2. Not at all _____
 3. Slightly _____
 4. Moderately _____
 5. Deeply _____

ATS-DLD-78-A

13

For Office Use

FAMILY HISTORY

28. Were either of your natural parents ever told by a doctor that they had a chronic lung condition such as:

	FATHER			MOTHER			
	1. YES	2. NO	3. DON'T KNOW	1. YES	2. NO	3. DON'T KNOW	
A. Chronic bronchitis?	_____	_____	_____	_____	_____	_____	(63) (64)
B. Emphysema?	_____	_____	_____	_____	_____	_____	(65) (66)
C. Asthma?	_____	_____	_____	_____	_____	_____	(67) (68)
D. Lung cancer?	_____	_____	_____	_____	_____	_____	(69) (70)
E. Other chest conditions?	_____	_____	_____	_____	_____	_____	(71) (72)
29A. Is parent currently alive?	_____	_____	_____	_____	_____	_____	(73) (74)
B. Please Specify	_____ Age if living			_____ Age if living			(75) (76)
	_____ Age at death			_____ Age at death			(77) (78)
	8. Don't know _____			8. Don't know _____			
C. Please specify cause of death.	_____			_____			(79) (80)

a) Instructions for Use of the Adult Questionnaire

The format of this new ATS-DLD-78 Questionnaire is such that it can be used with little modification of the covering page as a self-completion form or as a personal interview form of questionnaire. The instructions, therefore, are set out in 2 parts. Part I refers to the general training of interviewers and procedures to be employed. Part II refers specifically to the questions on the questionnaire, both the methods for asking them (in terms of specific probes) and the coding of the responses as they apply to both the self-completed and interviewer-completed versions.

(1) *Part I. Interviewer Training*

In the past interviewers have ranged from physicians specifically trained and identified as pulmonary disease experts to lay persons with little formal training beyond high school graduation. For the most part interviewers should be articulate, able to read the questions out loud easily, and able to follow the instructions. Although the data are only suggestive, the physician expert may be the worst choice to be the interviewer. There are 2 reasons for this: (1) the subject's desire to please the physician, which is a well-recognized phenomenon, and (2) the physician's inability to keep his/her "clinical judgment" out of assessing the subject's responses. If the physician can force himself/herself to act as a lay interviewer, an excess reporting of symptoms can be minimized.

Training of the interviewers requires that they be given the questionnaire and instructions to study for several days. They must become familiar with the flow of questions. Then, they must observe trained interviewers in the process of interviewing both normal and symptomatic subjects. They must practice the interviewing among themselves, and then observe or participate in interviews in which several observers code the responses. Discrepancies in coding must be reviewed and discussed. Recordings of interviews can be useful in allowing trainees to review the same interview several times. The process of practicing and becoming accustomed to the questionnaire takes from 1 week to 10 days before interviewers can conduct independent interviews. If multiple interviewers are used in any study, subjects should be assigned randomly to each interviewer and the interviewer identification should be recorded on the questionnaire along with the time required to conduct the interview. Analyses of completed interviews should include analyses of several sets of questions between interviewers to exclude the possibility of bias in assessment.

(2) *Part II. Specific Instructions on the Use of the Required Questions*

This new form is precoded and the codes appear on the questionnaire for almost all the questions. This means that shortly after completing each interview, the interviewer can complete the coding, thereby automatically checking for completeness. This coding must be checked by another person to ensure completeness and accuracy before being given to a keypuncher, where it is to be punched and must be verified.

The preamble printed on the questionnaire should be read to the subject.

Use the exact wording of each question. If the respondent expresses doubt as to the meaning of the question, repeat it exactly. Emphasizing individual words or phrases often makes the meaning clear. Further explanation may be needed, but do not cross-examine the respondent. When after brief explanation doubt remains as to whether the answer should be *yes* or *no*, the answer should be recorded as *no*.

Some questions may need additional clarification as follows:

7. COUGH (Col 21):

If respondent answers *no* to 7A, skip 7B, but 7C and 7D must be asked of all respondents. Do not ask questions 7E and 7F, unless there is a positive response to 1 of the previous questions. For question 7F, record actual number of years. (use 9 or 99 where appropriate if answer to question is unknown.)

8. PHLEGM (Col 28):

If respondent answers *no* to 8A, skip 8B, but ask 8C and 8D of all respondents. Emphasis should be placed upon phlegm as coming up from the chest and post-nasal discharge is discounted. This may be determined by: "Do you raise it up from your lungs, or do you merely clear it from your throat?" Some subjects admit to bringing up phlegm without admitting to cough. This claim should be accepted without changing the replies to "cough." Phlegm coughed up from the chest but swallowed counts as positive. Include, if volunteered, phlegm with first smoke or "on first going out-of-doors." Do not ask questions 8E and 8F unless there is a positive response to 1 of the previous questions. For question 8F, record actual number of years.

DEFINITIONS:

3 months ("E" under cough and phlegm) means 3 consecutive months. "On getting up" ("C" under cough and phlegm) may be at night for night workers.

9. EPISODES OF COUGH AND PHLEGM (Col 35):

This question is to identify persons with exacerbations of their symptoms. They may or may not have lost time from work or been confined to their homes (see question 15). For question 9B, record actual number of years.

10. WHEEZING (Col 38):

This question is intended to identify subjects who have occasional and/or frequent wheezing. Those questions pertaining to asthma are asked in questions 11 and 20, but these questions may check that diagnosis. Subjects may confuse wheezing with snoring or bubbling sounds in the chest; a demonstration "wheeze" will help if further clarification is requested. Can ask, "Does your husband (or wife) regularly complain of your wheezing (not snoring) at night?" Ask 2 parts of question A of everyone; do not ask 10A3 or 10B if answers to 10A1 and 10A2 are *no*.

12, 13. BREATHLESSNESS (Col 48-49):

If a subject volunteers that he is disabled from walking by any condition other than heart or lung disease, or obviously is confined to a wheelchair or uses crutches continuously, then the code "8" in column 48 is to be used and the sequence of questions (13 A-E) is not to be asked. If asked, the questions refer to the average condition during the preceding winters. No attempt is to be made to separate out cardiac breathlessness. If question 13A is *no*, skip remaining questions B-E. Ask through E if any A-D are positive.

14. CHEST COLDS (Col 54):

This refers only to colds in the head being followed by or occurring simultaneously with (increased) cough and sputum. Disregard "occasionally" and regard "usually" as more than half of the colds. This question may be modified on inquiry by the respondent: "That is, do colds usually settle in your chest before they leave you?" Force the respondent to decide whether more than half go to his chest. If he is in doubt, the answer should be coded *no*.

15. CHEST ILLNESSES (Col 55):

A chest illness is defined as one with cough or phlegm (or increased cough or phlegm in the case of those respondents who regularly have cough or phlegm). Do not ask B or C if answer to A is *no*. The 3-year time period (in question C) refers to any illness within 3 years prior to the day of interview. Record 7 for 7 or more illnesses, 8 for not applicable, and 9 for answer unknown.

PAST ILLNESSES (Col 58-80):

16 Question is self-explanatory.

17.1A Bronchitis (Col 59): This diagnosis may be confused with pneumonia or bronchial asthma. The prominent feature is rapid onset of cough and phlegm

that completely changes in character for those who have cough and phlegm always and then returns to its former state or comes and goes over a relatively short period of time. Do not ask B and C if 1A is *no*, and similarly for each condition if Part A is *no*, do not go on to B and C.

20A Bronchial Asthma (*Card 3, Col 7*) is to be considered "still present" if the respondent has visited a physician for it during the preceding 12 months or is on medication or has had an "attack" within the past 12 months.

21 Other chest illnesses or operations (*Col 14-16*) are inquired about to identify restrictive lung disease that might impair pulmonary function test response. Pleurisy, fibrosis, and surgery on the lung are recorded here; fractured ribs may be ignored if healed.

22 (*Col 17-20*) Treatment for heart disease or hypertension discontinued more than 10 years before the date of present interview is to be recorded as *no*. Treated hypertension with pregnancy during the past 10 years is to be recorded as *yes*.

24. OCCUPATION (*Col 21-31*):

The purpose of these questions is to obtain a coarse estimate of exposure to dust, chemical irritants, or other occupational exposures associated with lung diseases. If worked more than 1 job, determine total years worked at all jobs and on average if exposure was mild, moderate, or severe. For some individuals, question D may repeat answers contained in B and C. Columns 23-24 and 27-28 are for recording total years worked. Specific job is not coded in question B and C. Column 30-31 uses a simple classification that characterizes the population into broad categories and corresponds to the U.S. Census Code of Occupational Classification as follows:
Occupational Code Corresponding to the U.S. Census Code of Occupational Classification

Code no.

01. Professional, technical, and kindred workers
02. Managers and administrators, except farm
03. Sales workers
04. Clerical and kindred workers
05. Craftsmen and kindred workers
06. Operatives, except transport
07. Transport equipment operatives
08. Laborers, except farm
09. Farmers and farm managers
10. Farm laborers and farm foremen
11. Service workers, except private household
12. Private household workers
13. Not in work force

25. TOBACCO SMOKING (*Col 32-62*):

25A A cigarette smoker is defined as a person who has smoked at least 20 packs of cigarettes or at least 1 cigarette per day for at least 1 year (or cigarettes rolled from 12 oz of tobacco) in a lifetime. For subject who has not smoked that many cigarettes, skip to question 26A.

25B A current cigarette smoker is a person who was a regular cigarette smoker up to a month ago.

25D Is asked only if the respondent answered *no* to 25B, "Do you now smoke cigarettes?"

25E Some persons may respond that they buy cigarettes by the carton. Must know the number of packages per carton (usually 10 packages) and the number of cigarettes per package (usually 20 cigarettes per package in the United States). The

interviewer can then convert the answer to this question and question 25F to cigarettes per day.

The balance of the questions are self-explanatory.

28. FAMILY HISTORY (Col 63-78):

The subject may raise some question about why family history is included. It is fair to say that some respiratory disease "runs in families" and it is important in any consideration of the kind of data being collected that a brief family history be obtained. The reason for knowing mother's and father's age and whether alive is to estimate risks of disease (for example, risk of getting emphysema). Cause of death in parents can be roughly coded in broad categories using a single digit. One code useful for this questionnaire is to consider the listed conditions as separate codes 1-5, heart disease as 6, other cancers as 7, 8 as not applicable, and 9 as unknown.

(3) *Supplementary Questions*

Several additional questions have been pretested and are to be considered as supplementary questions to be added to the end of each sequence of questions or at the end of the questionnaire. These are not recommended as part of the minimum questionnaire, but can be used to obtain additional details, or they may have specific usefulness in different population groups.

For the most part, the occasions for when to add these questions are obvious. For example, in regions of the United States that do not have distinctly definable winters, it may be useful to use the questions that identify the specific months in which the symptoms occur (7G, 8G, 11E, 13G). Similarly, if an investigator is interested in studying the effects of indoor pollution, it would be useful to use the census questions on home heating, cooking, and fuel sources. Finally, in parts of the country or in specific population groups in which tuberculosis is suspected to be an important factor, it would be useful to include as part of the past history the question on tuberculosis (17.5A).

ADDITIONAL QUESTIONS THAT HAVE BEEN TESTED
AND ARE SUGGESTED FOR VARIOUS KINDS OF STUDIES AND
IN PARTICULAR ENVIRONMENTS

GENERAL DEMOGRAPHIC QUESTIONS

5. Race

Category 4 can be added to in various ways particular to the area being studied, e.g.,

American Indian
Mexican-American
Italian-American
Etc.

RESIDENCE

How long have you lived in the same part of town?

_____ Number of years

How many residence changes (changes of town) have you had in the last 10 years?

_____ Number of changes

ATS-DLD-78-A

2

HOME HEATING AND FUEL

How is your home heated?

- 1. Steam or hot water
- 2. Warm air furnace
- 3. Floor, wall, or pipeless furnace
- 4. Built-in electric units
- 5. Other means — with flue
- 6. Other means — without flue
- 7. Not heated

What fuel is used most for heating your home?

- 1. Coal or coke
- 2. Wood
- 3. Utility gas
- 4. Bottled, tank or LP gas
- 5. Electricity
- 6. Fuel oil, kerosene, etc.
- 7. Other
- 8. No fuel

What fuel is used most for cooking in your home?

- 1. Coal or coke
- 2. Wood
- 3. Utility gas
- 4. Bottled, tank, or LP gas
- 5. Electricity
- 6. Fuel oil, kerosene

(7G.) During which months does your cough give you the most trouble? (Check months troubled) OR: Check here if no relation to time of year _____ 1
 8 Does not apply _____

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

(8G.) During which months does your phlegm give you the most trouble? (Check months troubled) OR: Check here if no relation to time of year _____ 1
 8 Does not apply _____

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

(11E.) During which months does your wheezing give you the most trouble? (Check months troubled) OR: Check here if no relation to time of year _____ 1
 8 Does not apply _____

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

(13F.) For how long have you been this short of breath?
 _____ Number of years
 88. Does not apply _____

(13G.) During which months do you have the most trouble with your shortness of breath? (Check months troubled) OR: Check here if no relation to time of year _____ 1
 8 Does not apply _____

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

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4

17-4A. Sinus trouble?

1. Yes ____ 2. No ____

IF YES TO 4A: _____

B. Was it confirmed by a doctor?

1. Yes ____ 2. No ____

8. Does not apply ____

C. At what age did it start?

_____ Age in years

88. Does not apply ____

17-5A. Pulmonary Tuberculosis?

1. Yes ____ 2. No ____

IF YES TO 5A: _____

B. Was it confirmed by a doctor?

1. Yes ____ 2. No ____

8. Does not apply ____

C. At what age did it start?

_____ Age in years

88. Does not apply ____

20-A. Have you ever had asthma?

1. Yes ____ 2. No ____

IF YES to 20A: _____

Do you currently require medicine or treatment for asthma?

1. Yes ____ 2. No ____

8. Does not apply ____

(24E.) What is your most recent job?

1. Job-occupation: _____

2. Position-job title: _____

3. Business, field, or industry: _____

4. Are you still employed at this job: No _____

Yes, full time _____

5. If not working at this job, at what age did you last work at it? _____

Yes, part time _____

(25I.) During all the time you have smoked cigarettes, would you say you smoked filter tips:

0. Never _____

1. Less than 1/2 the time _____

2. About 1/2 the time _____

3. More than 1/2 the time _____

4. Always _____

Have you ever chewed tobacco regularly?

1. Yes ____

2. No ____

Have you ever used snuff regularly?

1. Yes ____

2. No ____

Have you ever smoked nontobacco products regularly?

1. Yes ____

2. No ____

b) Rationale and Justification of the Components of the Recommended
ATS-DLD-78 Adult Questionnaire

(1) *General Population Studies*

Most of the components of the questionnaire have been extensively field tested in a comparative study of matched samples of adults who completed the questionnaire either in a self-administered form or by telephone interview (7). In addition, similar samples and comparisons were made for the NHLI questionnaire and the 1976 version of the MRC questionnaire. The details of these comparisons are contained in the report of Comstock et al. (8) on their Hagerstown Project and *Appendix 1*.

The purpose and reasons for the format being recommended are described for each section of the questionnaire. Those questions considered as self-explanatory will not be discussed.

PAGE 1:¹

Generally, for reasons of confidentiality, it is not appropriate to include specific name and address material in the same computer file in which detailed medical information is recorded. One can consider separate files for names and addresses that might be useful for follow-up procedures. The zip code is recorded as a separate variable because it may be useful, particularly in larger studies, as a means for dividing the population regionally in a somewhat predictable fashion.

PAGE 2: Demographic data.

For every investigation, the minimal amount of demographic information recommended will be needed. Highest grade completed in school can be used as a social class variable.

PAGES 3-4: Cough and Phlegm.

An initial part of this project was to review the existing documents from the Second Workshop on Epidemiology held by NHLI in November 1973. Before this workshop, each of the existing contractors or grantees received a request from NHLI to provide for the meeting a summary statement of their use of the questionnaire and pulmonary function approaches and what problems they found in using the existing NHLI questionnaire. Contractees and grantees responded with rather lengthy letters and, in general, with copies of the various questionnaires they were using. Initial evaluation of these letters suggested that there was a fair amount of information that could be obtained about the experience with the NHLI questionnaire.

Nineteen different groups had responded to the DLD's request for comments. These represented a variety of investigators, some with extensive epidemiologic experience and some with very little. There was general conformity as to which parts of the questionnaire caused the most difficulty. In general, the specific wording of the cough and phlegm questions caused the most confusion. This was confirmed when we requested specific suggestions for the development of a new questionnaire from some 16 groups of investigators who had used the NHLI questionnaire. Lebowitz and Burrows (9) showed that significant departure from the standard questions resulted in significantly different response rates. In addition, in the Hagerstown Project (8), the ATS-DLD-78 series of questions on cough and phlegm produced the least differences when asked in the self-completed questionnaire compared with the interviewer-administered questionnaire, thus allowing for the greatest likelihood of comparability between the 2 approaches.

PAGE 5: Wheezing.

These questions are designed to obtain information on bronchoreactivity without specifying the word "asthma." Several investigators have shown that the persistent

¹ Page numbers refer to those of the questionnaire itself.

wheeze has a relationship to pulmonary function that is independent of the presence or absence of asthma (10, 11). Thus, wheeze becomes an important predictor about which information is required. The NHLI questionnaire did not distinguish between occasional wheeze with colds from what might be termed more significant grades of wheeze. In the ATS-DLD-78, the second series of questions, in fact, identifies those subjects who have asthma. Response to this series of questions can be validated with data obtained in question 20.

PAGE 6: Breathlessness.

This series of questions is essentially unchanged from the series included in the MRC questionnaire and carried over into the NHLI questionnaire. The series of questions produced a direct relationship with cigarette smoking and pulmonary function level (in the Hagerstown Project [8]), although this finding has not consistently been found in other studies.

PAGE 7: Chest colds and chest illnesses.

A history of colds going to the chest has been reported to be an early manifestation in the development of chronic respiratory disease (12). There also appears to be a clear distinction between chest episodes reported as chest colds and those reported as chest illnesses with phlegm lasting for 1 or more weeks (13). The NHLI questions on chest episodes obscured these differences and proved difficult to code as originally written. In addition, the NHLI question did not allow for an answer of *none* in its original version. This led to excessive reporting of chest episodes in all studies that used the original question.

PAGES 7-9: Past illnesses.

A history of childhood respiratory illness appears to be an important predictor for respiratory disease (12, 14). General population data suggest that 7 per cent of the population have been told by a physician that they have suffered from bronchitis, emphysema, or asthma in the previous 12 months (15). Most respiratory surveys that have used the MRC or NHLI questionnaire have found even higher reporting rates for these conditions. Because previous history is a strong predictor of current disease, a uniform approach to obtaining past history of respiratory disease is an important component of the questionnaire. Lebowitz (16) has made similar observations.

PAGE 10: Occupational history.

In evaluating the usefulness of obtaining detailed occupational histories in general population surveys, we sought and considered opinions from a wide variety of people who had experience in this area. In general, the conclusion has been that whether or not a detailed checklist of an open-ended, detailed, chronologic employment history was obtained, little if any use had been made or could be made of the data except to characterize the subjects as generally exposed or not exposed to either dusts or irritating chemicals. The study by Samet and co-workers (17) suggested that employees were able to characterize their exposure into broad degrees of intensity. Therefore, we elected to test the general questions on dust and fume exposure as indicated in the ATS-DLD-78 questionnaire. The inclusion of detailed data on the usual occupation cannot be used directly to evaluate exposure. Question 24D, which comes from the U. S. Census questionnaire, is readily answerable by subjects and can generally be used for purposes of comparing samples of subjects in any given study to census data for the community from which the subjects come to determine the representativeness of the sample in the study. It can also be used crudely for formulating socioeconomic gradients determined by occupational classes among a sample of subjects. To require the use of more detailed occupational history questions in general populations would be inappropriate, and if specified occupational exposure hypotheses are being tested, it would be up to the investigator to consider the specific exposures of concern.

PAGES 11-12: Smoking history.

There is no question that the variable most associated with the presence and development of chronic obstructive respiratory disease is cigarette smoking. Although the mechanism of how and why some smokers are affected and others are not has not been worked out, we believe that no study involving respiratory disease would be valid without at least a minimal assessment of smoking status that included both current status and amount and some estimate of lifetime consumption. Current status and amount are readily demonstrated to be reproducible variables (9). Evaluation of several attempts to produce lifetime consumption estimates indicate that this is not an easily determined variable. For example, age of starting smoking and age of stopping for a group of ex-smokers asked the same question on several occasions over a 5-year period produced accuracy only within 2 to 3 years. Lifetime consumption figures for this same group varied by as much as 5 to 20 pack years on repeated assessment. Two forms to obtain lifetime cigarette consumption were tested in the Hagerstown Project (8). One form of the questionnaire could only be administered by personal interview techniques (long form). The other form could be completed by personal interview and by self-completion (short form). Except for the youngest age group, the long form consistently yielded higher lifetime consumption estimates than did the short form. However, because of the inability to use the long form in a self-completion format, we have selected the short form to recommend for the minimum questionnaire. Questions similar to those used for cigarette smoking are used to assess pipe and cigar smoking.

PAGE 13: Family history.

To assess family history properly in a way that is useful in epidemiologic studies requires considerably more data on the total population of relatives at risk than may be practical to collect. For example, it is not useful epidemiologically to discover that a subject has a brother with lung cancer without knowing the number and ages of all the brothers of subjects in the population. Several attempts to design questions that would assess total first-order relative respiratory disease status were made. None proved satisfactory, and the conclusion was to evaluate only that portion of the family history for which the total denominator at risk could be known—that is, the natural parents of the subject in the study. By limiting the minimal standard questionnaire to data on the natural parents we are clearly not collecting enough data to explain the familial aggregation of disease in households (20). We are only identifying one component (albeit, likely the most important component) of the aggregation and suggest that investigators interested in exploring further details of the familial aggregation phenomena consider development of additional questions on family history.

(2) *Occupational Study Populations*

For occupational groups, we recommend that prior to development of a specific questionnaire, the principal investigator and/or his/her representative who will be developing the questionnaire and an industrial hygienist visit the particular site where the workers are exposed. Efforts should be made to obtain historical information about process changes that have taken place over the working lifetime of the subjects to be studied (probably the previous 40 years). The industrial hygienist's report should be used in the development of specific questions related to the exposure(s) being studied. Samet and associates (17) and Lebowitz (16) suggest that, in general, workers are able to judge accurately the duration of exposure and at least crudely the intensity of exposure. Thus, duration (years of exposure) and intensity (mild, moderate, heavy) should be included. In some industries it may be possible to obtain reports of past levels of exposure that were measured. Complete chronologic work histories starting with the current job and including information on materials handled can be obtained. This information, however, represents a difficult coding and analytic problem if one wants to use all the data. The data can be summarized to include a matrix of total

years of dust or chemical irritant exposure by intensity. Although this value correlates with calculated dust exposures in 1 study, its usefulness has not been fully evaluated (18). The alternative procedure is to use a checklist of exposures that relate specifically to the occupation in question and record duration and intensity. This procedure proved useful in evaluating a group of insulation workers with varying (mostly) short-term exposure to asbestos (17). The validity of the procedure was determined by the significant correlations found between duration-intensity of exposure and level of FVC. When such a procedure is used, we recommend the additional use of the occupational questions contained in the general population questionnaire.

One advantage of the checklist of exposures is that it is easily self-completed by subjects or workers. The chronologic history method requires a trained interviewer. The training includes the usual instructions for interview administration. However, the interviewer should also have read and understood the industrial hygienist's report on the work process. The interviewer also should be familiar with the various job categories and the likelihood of toxic materials being handled in different processes in the factory or plant. This information is imperative to assure that appropriate probing on the chronologic history is carried out.

2. Children's Questionnaire

ATS-DLD-78-C

1

CHILDREN'S QUESTIONNAIRE
(for those under 13 years of age)

This is the questionnaire you have been asked to fill out for your child. Please answer the questions as frankly and accurately as possible about your child. ALL INFORMATION OBTAINED IN THE STUDY WILL BE KEPT CONFIDENTIAL. His/her personal physician will be informed about the test results if you desire.

The questions can be answered by checking the best answer or by filling in a blank with a number or word.

Example: Do you live in the United States? 1. Yes
 2. No

NAME _____

ADDRESS _____

_____ (Zip Code)

(7-11)

TELEPHONE NUMBER: _____

DATE QUESTIONNAIRE COMPLETED: _____

(12-16)

PERSON COMPLETING THE QUESTIONNAIRE: 1. Child's mother _____
 2. Child's father _____
 3. Female guardian _____
 4. Male guardian _____
 5. Other female _____
 Specify relation _____
 6. Other male _____
 Specify relation _____

(17)

ATS-DLD-78-C

2

For Office Use

1. Sex of child? 1. Male _____ 2. Female _____ (18)

2. What is the racial-ethnic group of this child? 1. White _____ 2. Black _____ 3. Oriental _____ 4. American Indian _____ 5. Mexican-American _____ 6. Other _____ Specify _____ (19)

3. Date of birth: _____ (Month) (Day) (Year) (20-23)

4. In what city or town was this child's mother living when this child was born? Please Specify: _____ (24-26)

5. Please list all places where he or she lived for 6 months or longer, from birth to the present (and the number of years at current address)

Birth year (_____): _____

Current Year

Number of years at current address: _____ (27-28)

For Office Use

6A. Does he/she attend day care, nursery school, or regular school?

- 1. No _____
- 2. Day care only _____
- 3. Nursery school only _____
- 4. Regular school only _____
- 5. Day care and nursery school _____
- 6. Day care and regular school _____
- 7. Nursery and regular school _____
- 8. Day care, nursery and regular school _____

(29)

B. If day care or nursery school, how many children are in his/her class or group?

(30-31)

Number of children
(88. Does not apply)

C. If regular school, what grade is he/she in?

Grade

(32-33)

- (00. Kindergarten
- 09. Ninth grade
- 88. Does not apply)

7. What is the age of the youngest child living in this child's home?

- 0. If less than 6 months _____
- 1. 6-17 months _____
- 2. 18-29 months _____
- 3. 30 months- < 5 years _____
- 4. 5-9 years _____
- 5. 10+ years _____
- 6. No children younger _____

(34)

8A. How many people share his/her bedroom?

- 1. Own room _____
- 2. 1 person _____
- 3. 2 persons _____
- 4. 3 or more persons _____

(35)

IF OTHER THAN OWN ROOM:

B. Does this person or any of those people smoke cigarettes?

- 1. Yes _____ 2. No _____ 8. Does not apply _____

(36)

C. Does this child have his/her own bed?

- 1. Yes _____
- 2. No, shared with 1 _____
- 3. No, shared with 2 _____
- 4. No, shared with 3+ _____
- 8. Does not apply _____

(37)

ATS-DLD-78-C

4

For Office Use

- 9A. How many rooms (not counting bathrooms) are there in your house/apartment? _____ (38-39)
 Number of rooms
- 9B. How many people live in your home? _____ (40-41)
 Number of people
10. How is your home heated? (42)
1. Steam or hot water _____
 2. Warm air furnace _____
 3. Floor, wall, or pipeless furnace _____
 4. Built-in electric units _____
 5. Other means—with flue _____
 6. Other means—without flue _____
 7. Not heated _____
11. What fuel is used most for cooking in your home? (43)
1. Coal or coke _____
 2. Wood _____
 3. Utility gas _____
 4. Bottled, tank or LP gas _____
 5. Electricity _____
 6. Fuel oil, kerosene _____
12. Do you have any air conditioner(s), humidifier(s), or air filter(s) in your home? (44)
0. None _____
 1. Air conditioner(s) _____
 2. Humidifier(s) _____
 3. Air filter(s) _____
 4. Air conditioner(s) + humidifier(s) _____
 5. Air conditioner(s) + air filter(s) _____
 6. Humidifier(s) + air filter(s) _____
 7. Air conditioner(s) + humidifier(s) + filter(s) _____
13. Do you have a cat, dog, or bird living in your home? (45)
0. No _____
 1. Cat _____
 2. Dog _____
 3. Bird _____
 4. Cat + dog _____
 5. Cat + bird _____
 6. Dog + bird _____
 7. Cat + dog + bird _____

For Office Use

These questions pertain mainly to your child's chest. Please answer *yes* or *no* if possible. If a question does not appear to be applicable to your child, check the *does not apply* space.

COUGH

14A. Does he/she usually have a cough with colds? 1. Yes ___ 2. No ___ (46)

B. Does he/she usually have a cough apart from colds? 1. Yes ___ 2. No ___ (47)

IF YES TO 14A OR 14B: _____

C. Does he/she cough on most days (4 or more days per week) for as much as 3 months of the year? 1. Yes ___ 2. No ___ (48)
8. Does not apply _____

D. For how many years has he/she had this cough? _____ (49)
Number of years
8. Does not apply _____

CONGESTION AND/OR PHLEGM

15A. Does this child usually seem congested in the chest or bring up phlegm with colds? 1. Yes ___ 2. No ___ (50)

B. Does this child usually seem congested in the chest or bring up phlegm apart from colds? 1. Yes ___ 2. No ___ (51)

IF YES TO 15A OR 15B: _____

C. Does this child seem congested or bring up phlegm, sputum, or mucus from his/her chest on most days (4 or more days per week) for as much as 3 months a year? 1. Yes ___ 2. No ___ (52)
8. Does not apply _____

D. For how many years has he/she seemed congested or raised phlegm, sputum, or mucus from his/her chest? _____ (53)
Number of years
8. Does not apply _____

ATS-DLD-78-C

6

For Office Use

16A. Does this child get attacks of (increased) cough, chest congestion, or phlegm lasting for 1 week or more each year? 1. Yes ___ 2. No ___ (54)

IF YES TO 16A: _____

B. For how many years?	_____ Number of years	(55)
	8. Does not apply _____	
C. On average, how many chest colds per year does he/she get?	_____ Average number per year	(56)
	8. Does not apply _____	

WHEEZING

17. Does this child's chest ever sound wheezy or whistling:
 A. When (he/she) has a cold? 1. Yes ___ 2. No ___ (57)
 B. Occasionally apart from colds? 1. Yes ___ 2. No ___ (58)
 C. Most days or nights? 1. Yes ___ 2. No ___ (59)

IF YES TO 17B OR 17C: _____

D. For how many years has wheezing or whistling in the chest been present?	_____ Number of years	(60)
	8. Does not apply _____	

18A. Has this child ever had an attack of wheezing that has caused him/her to be short of breath? 1. Yes ___ 2. No ___ (61)

IF YES TO 18A: _____

B. Has he/she had 2 or more such episodes?	1. Yes ___ 2. No ___	(62)
C. Has he/she ever required medicine or treatment for the(se) attack(s)?	1. Yes ___ 2. No ___	(63)
D. How old was this child when he/she had his/her first such attack?	_____ Age in years	(64-65)
	8. Does not apply _____	
E. Is or was his/her breathing completely normal between attacks?	1. Yes ___ 2. No ___	(66)
	8. Does not apply _____	

19. Does this child ever get attacks of wheezing after he/she has been playing hard or exercising? 1. Yes ___ 2. No ___ (67)

For Office Use

CHEST ILLNESSES

- 20A. During the past 3 years has this child had any chest illness that has kept him/her from his/her usual activities for as much as 3 days? 1. Yes ____ 2. No ____ (68)

IF YES TO 20A:

- B. Did he/she bring up more phlegm or seem more congested than usual with any of these illnesses? 1. Yes ____ 2. No ____ 8. Does not apply ____ (69)

- C. How many illnesses like this has he/she had in the past 3 years? (70)
- 1. Less than 1 illness per year ____
 - 2. 1 illness per year ____
 - 3. 2-5 illnesses per year ____
 - 4. More than 5 illnesses per year ____
 - 8. Does not apply ____

- D. How many of these illnesses have lasted for as long as 7 days? ____ Number of illnesses 8. Does not apply ____ (71)

21. Was he/she ever hospitalized for a severe chest illness or chest cold before the age of 2 years? (72)
- 1. Yes, only once ____
 - 2. Yes, 2 times ____
 - 3. Yes, 3 or more times ____
 - 4. No ____

22. Did this child have any other severe chest illness or chest cold before the age of 2 years? 1. Yes ____ 2. No ____ (73)

ATS-DLD-78-C

8

For Office Use

OTHER ILLNESSES

23. Has this child had any of the following illnesses, and if *yes*, at what age?
- | | | First Diagnosed | |
|--|---------------------------|-----------------|---------|
| A. Measles (not German) | Yes ___ No ___ At age ___ | | (74-75) |
| B. Sinus trouble | Yes ___ No ___ At age ___ | | (76-77) |
| C. Bronchiolitis | Yes ___ No ___ At age ___ | | (78-79) |
| D. Bronchitis | Yes ___ No ___ At age ___ | | (7-8) |
| E. Asthmatic bronchitis | Yes ___ No ___ At age ___ | | (9-10) |
| F. Pneumonia | Yes ___ No ___ At age ___ | | (11-12) |
| G. Whooping cough | Yes ___ No ___ At age ___ | | (13-14) |
| H. Croup | Yes ___ No ___ At age ___ | | (15-16) |
| I. Cystic fibrosis | Yes ___ No ___ At age ___ | | (17-18) |
| 24. Did the doctor ever say that this child had eczema before the age of 2 years? | 1. Yes ___ 2. No ___ | | (19) |
| 25. Does or did this child have external ear (ear canal) infections (swimmer's ear)? | 1. Yes ___ 2. No ___ | | (20) |
| 26. Does or did this child have frequent ear infections (middle ear): | | | |
| A. Between the age of 0 and 2? | 1. Yes ___ 2. No ___ | | (21) |
| B. Between the ages of 2 and 5? | 1. Yes ___ 2. No ___ | | (22) |
| C. Over age 5? | 1. Yes ___ 2. No ___ | | (23) |
| 27. Did this child ever require tubes to be placed in his/her ears to drain them? | 1. Yes ___ 2. No ___ | | (24) |
| 28. Did this child ever have an operation on his/her tonsils or adenoids? | 1. Yes ___ 2. No ___ | | (25) |

ID Dup 1-5 $\frac{2}{6}$

For Office Use

29A. Has a doctor ever said that this child had asthma? 1. Yes ___ 2. No ___ (26)

IF YES TO 29A: _____

B. At what age did his/her asthma begin? ___ Age in years (27-28)

C. Does he/she still have asthma? 1. Yes ___ 2. No ___ (29)

D. Does he/she currently take medicine or treatment for asthma? 1. Yes ___ 2. No ___ (30)

If no to 29C: _____

E. At what age did his/her asthma stop? ___ Age in years (31-32)

30. Has this child ever had an operation on his/her chest? 1. Yes ___ 2. No ___ (33)

If yes, specify: _____

31. Has a doctor ever said that this child ever had heart disease? 1. Yes ___ 2. No ___ (34)

If yes, what did the doctor say it was: _____

32. When this child was born was he/she kept in the hospital after the mother went home? 1. Yes ___ 2. No ___ (35)

If yes, specify reason: _____

ALLERGY

33A. Has a doctor ever said that this child had an allergic reaction to food or medicine. (36)

1. Yes, food only ___ 2. Yes, medicine only ___

3. Yes, both food and medicine ___ 4. No ___

33B. Has a doctor ever said that this child had an allergic reaction to pollen or dust? 1. Yes ___ 2. No ___ (37)

33C. Has a doctor ever said that this child had an allergic skin reaction to detergents or other chemicals? (Do not include poison oak or poison ivy.) 1. Yes ___ 2. No ___ (38)

33D. Did this child ever receive allergy shots? 1. Yes ___ 2. No ___ (39)

For Office Use

39. Has a doctor ever said he had:

- A. Bronchitis? 1. Yes ___ 2. No ___ 3. Don't know ___ (47)
- B. Emphysema? 1. Yes ___ 2. No ___ 3. Don't know ___ (48)
- C. Asthma? 1. Yes ___ 2. No ___ 3. Don't know ___ (49)
- D. Hay fever? 1. Yes ___ 2. No ___ 3. Don't know ___ (50)
- E. Other respiratory conditions?

Please specify: _____ (51)

B. FEMALE PARENT OR GUARDIAN

40. Please indicate whether the female adult is: 1. Natural mother ___ (52)
2. Stepmother ___
3. Other ___

41. What is the highest grade of school completed? _____ Total years (53-54)

42. What is her present job (title)/industry? _____ (55-56)

43. Does she now smoke regularly (at least 1 cigarette per day or 1 oz tobacco per month)?

1. No ___ (57)
- If yes:
2. Cigarettes ___
3. Cigars ___
4. Pipe ___
5. Cigarettes plus pipe
and/or cigars ___
6. Pipe and cigar ___
7. Don't know ___

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12

For Office Use

44. Has she ever smoked regularly (at least 20 packs of cigarettes or 12 oz of tobacco in a lifetime) while living in the home with this child? (58)
1. No _____
- If yes:
2. Cigarettes _____
3. Cigars _____
4. Pipe _____
5. Cigarettes plus pipe and/or cigar _____
6. Pipe and cigar _____
7. Don't know _____
45. Has a doctor ever said she had:
- A. Bronchitis? 1. Yes _____ 2. No _____ 3. Don't know _____ (59)
- B. Emphysema? 1. Yes _____ 2. No _____ 3. Don't know _____ (60)
- C. Asthma? 1. Yes _____ 2. No _____ 3. Don't know _____ (61)
- D. Hay fever? 1. Yes _____ 2. No _____ 3. Don't know _____ (62)
- E. Other respiratory conditions? (63)
- Please specify: _____
- C. OTHER HOUSEHOLD MEMBERS**
46. Are there other members of the household who currently smoke regularly (not counting persons mentioned above)? 1. Yes _____ 2. No _____ (64)
- If yes, specify number _____ (65)

a) Development of the Children's Questionnaire

Our basic premise was to try to make such a questionnaire as comparable as possible to the Adult Questionnaire, while at the same time keeping in mind the uniqueness of studying children. We have generally agreed that children 13 years of age and older could answer the adult questionnaire. The questionnaire to be developed would be for completion by the parent or guardian of children below 13 years of age.

The Committee's first task was to delineate the areas of questioning that needed to be explored. An initial draft was then extensively discussed with several pediatricians specializing in pulmonary diseases and persons actively involved in epidemiologic studies of pediatric respiratory disease. The questionnaire underwent several revisions and was then sent to nearly 200 members of the Pediatric Assembly of the ATS, as well as to a number of epidemiologists interested and experienced in respiratory disease research. Some 32 people responded with useful suggestions to modify the questionnaire (listed in Section V). These suggestions were then discussed with the full Executive Committee.

b) Field testing

Following the incorporation of many of the suggestions reviewed, the format of the questionnaire was developed and the first pretest for self-completion and interviews was conducted in a small group of pediatric outpatients. It was then tested on a population of normal subjects whose parents were randomly assigned to receive the questionnaire by mail, to complete it by self-administration, and return it via mail or to receive a telephone call to have the questionnaire administered by a trained interviewer over the telephone.

The field testing was carried out on a relatively small sample of subjects ($N = 159$). Also, we have no way of validating the responses to the questions, because we do not have a previous standard with which to compare nor do we have an exposure variable, such as cigarette smoking, with which to grade responses (both present for our testing of the adult version of the questionnaire). Thus, we can only tentatively recommend the questionnaire at this point.

c) Recommendation

The ATS-DLD-78-C version of the Children's Questionnaire is tentatively recommended as a standard questionnaire for studies of children below 13 years of age in epidemiologic investigations designed to assess respiratory symptoms of children by questioning responsible adults. The recommendation is tentative because the Committee believes that considerable further field testing of the questionnaire is required and that this field testing could lead to further modification of the questionnaire.

The currently tested version of the questionnaire and instructions for use are presented.

d) Instructions for Administering the Children's Questionnaire

The questionnaire is designed for both self-completion by a responsible adult or by personal interview of that responsible adult by a trained interviewer. The following instructions are for interviewers. In general, the questions are to be read as written. The interviewer will be required to substitute the appropriate name of the child, or the appropriate he or she or him or her throughout the interview. If a particular question is not understood, it should be repeated as written. If further probing is required, it should be noted. In general, the answer to questions requiring significant probing and explanation should be recorded as *no* or *don't know*.

Specific instructions for each possibly troublesome item are given below.

PREAMBLE:

I am going to ask you some questions about [child's name], the home he/she lives in and briefly about other members of [child's name] family. Please try to

answer the questions as frankly and accurately as is possible. All information will be kept confidential. [Child's name] personal physician will be informed about the results if you desire.

Please start by giving me [child's name] full name.

PAGE 1:¹

Read Preamble to subject. Remind subject that the questions relate to the specific child mentioned.

Record interviewer's number (name) after telephone number.

PAGE 2:

1. Sex of child; ask if name is not obviously boy or girl.
2. Racial-ethnic group; ask only if not obvious or known.
5. Ask: "Starting with where [child's name] was born, can you tell me where he/she has lived for 6 months or longer?" Record from birth onward, by year, each place by city and state. Finally ask: "How long at your current address?" and record in years.

PAGE 3:

- 6B. Ask only if positive to day care or nursery school: "How many children are in his/her class?"
- 6C. Ask only if positive to regular school: "What grade is he/she in?"

PAGE 4:

11. Many people have difficulty separating the kind of fuel (gas, oil, electric) for how their home is heated. We are interested in the heating technique. Radiators generally mean steam or hot water. If someone responds with words other than those listed, read the entire list to them slowly.
12. Only one answer is possible.
13. Same.

PAGE 5:

Read Preamble as written.

- 14C. "4 or more days per week" should be read as part of the sentence.
- 14D. For 7 or more years, record 7; if not applicable, record 8; if unknown, record 9.
- 15C. "4 or more days per week" should read as part of the sentence.
- 15D. For 7 or more years, record 7; if not applicable, record 8; if unknown, record 9.

PAGE 6:

- 16A. The word "increased" is added only if previous questions were positive for cough or phlegm.
- 16B. For 7 or more years, record 7; if not applicable, record 8; if unknown, record 9.
- 17A. The question should be read to the end of each sub part, with a pause for a *yes/no* answer at A, B, or C.
- 17D. For 7 or more years, record 7; if not applicable, record 8; if unknown, record 9.

PAGE 7:

- 20D. For 7 or more illnesses, record 7; if not applicable, record 8; if unknown record 9.
22. This question applies to illnesses other than those mentioned in question 21.

¹ Page numbers refer to those of the questionnaire itself.

PAGE 8:

23. If subject does not recognize the illness or asks "what's that?", record as *no*. Read through the entire list. For any positive response, ask: "At what age did [child's name] first have" the particular illness. For:
- A. Measles
 - G. Whooping cough
 - I. Cystic fibrosis

There should be only 1 age at which illness occurred. For other illnesses, they could have occurred on multiple occasions. Record earliest age.

24. Eczema generally occurs before age 2. Most parents who have a child with this condition are familiar with the word. If subject asks "what's that?", give simple explanation as above, and record as *no*.

PAGE 9:

30. If *yes*, record actual words used by respondent.
31. If *yes*, record actual words used by respondent.
32. Use respondent's words.
- 33A, 33B, 33C, are asking respectively about:
- A. Substances taken by mouth
 - B. Substances inhaled
 - C. Substances that contact skin.
- 33D. Respondents who have had a child who has had allergy shots know what they are. If subject says "what's that?", or otherwise does not seem to know what allergy shots are, record as *no*.

PAGE 10:

Read first section of Preamble as written. Generally, the interview is conducted with a female. For those cases in which a male is interviewed, the instruction below should be as written for the female (question 40).

34. Read as a 2-part question.
- 34A. Is there a male adult living in the house with this child? If *no*, record *none* at the top of Section A. If *yes*: Is this male adult the child's natural father, stepfather, or does he have some other relationship to this child? Natural father means biologic father.

Complete the remainder of the section only for those with a male adult in the household.

PAGE 11:

- 39E. Use respondent's words.

FAMILY HISTORY, SECTION B

Generally, the interview is conducted with a female. For those cases in which a male is interviewed, the instructions for this section should be written as for the male (question 34).

40. This question should be phrased as follows:
"Are you [child's name] natural mother, stepmother, or do you have some other relationship to [child's name]?"

Natural mother means mother to whom the child was born.

- 45E. Use respondent's words.

For both Sections A and B, the respondents may raise questions as to why years of schooling and occupational information is being requested. The interviewer can tell the respondent that the purpose of these questions is to determine how similar or different the various families are in terms of backgrounds. If any respondent refuses to answer, do not press the issue, but merely go on to the next question.

e) Rationale for the Children's Questionnaire

Historical factors that were considered important in the development of chronic respiratory diseases were included in the questionnaire. A number of these factors are considered as risk factors in themselves; a number are confounding variables that conceivably could be associated with other factors being tested as well as with the development of disease. Some of these risk factors are similar to those found in adult studies and, therefore, have been included in the questionnaire in a similar format. Furthermore, the questionnaire is designed for use at all ages below 13 years. Thus, a number of the questions are more applicable to younger (below age 5) children than to older children.

An initial study of 159 subjects 5 to 9 years of age for whom the questionnaire was completed was used in determining whether the questions could be answered in the format used for this age group (see *Appendix 21*). Although the questionnaire looks quite formidable, it is, in fact, easily completed in both the self-administered and the interviewer-administered modes. Additional testing of the format with parents of younger children is still required.

PAGE 1 + Questions 1-13: Demographic Data.

For reasons of confidentiality, the subject's name and address should be kept in a file separate from the medical information. The zip code may be a useful means of dividing up groups of subjects, particularly in studies carried out in large urban areas. The racial-ethnic group question is specifically included because black children have been found to have smaller lungs than white children, after correcting for height and age (19). The chronologic residence history provides information on both places of residence and the number of years at the current address. Both may be useful indices of environmental exposure. Risk of exposure to infectious agents varies with contact with other children. Therefore, knowledge about exposure to other children, particularly for younger children, and the number of persons in a household may be useful variables. Exposure to animal hair and feathers may be related to an allergic diathesis. However, one must keep in mind that a family may not have an animal because of the presence of an allergic child.

PAGES 5-6: Questions 14-16: Cough and Congestion and/or Phlegm.

These questions are designed to determine the presence of cough and/or phlegm and to obtain a measure of its chronicity. Acute bronchitis is a relatively common childhood complaint. However, very little data on chronic symptomatology exist. In spite of this, childhood illness is considered a risk factor for adult disease (12). Therefore, data collected in a uniform manner may prove useful in sorting out the importance of a "reactive airway" in the development of respiratory disease.

PAGE 6: Questions 17-19: Wheezing.

Wheezing independent of the diagnosis of asthma appears to be an important predictor of poorer pulmonary function (12).

PAGE 7: Questions 23-32: Other Illnesses.

Each illness is included with a particular rationale in mind. Depending on the age range of children being studied, some of these illnesses may be more pertinent than others. Investigators should consider reducing the list depending on the particular age group being studied and/or hypotheses being tested. A history of eczema before age 2 is commonly associated with subsequent development of asthma. This question is, therefore, more useful in predicting asthma in younger (less than 8 years old) than in older children, who are likely to have already developed their asthma and in whom preferential recall would be more strongly exhibited. Similarly, the significance of middle ear infections is very different for different aged children. The question on external ear infections is included to lessen the confusion about what is considered a middle ear infection. The question regarding

¹ For information on obtaining copies of *Appendix 2*, (NAPS #03378), see footnote on pages 8-9.

leaving the hospital with the mother is designed to obtain information on prematurity and other neonatal events.

PAGES 10-12: Questions 34-46: Family History.

Social class, as defined by occupational class and educational level, cigarette smoking in the household, and familial history of respiratory disease are all considered as risk factors for developing respiratory disease (20-22).

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