



REPORTED MORBIDITY
JANUARY, 1980

MONTHLY MORBIDITY REPORT

Provisional Statistics

from

EPIDEMIOLOGY UNIT AND PUBLIC HEALTH STATISTICS

Neonatal Hypothyroidism Screening Now Available

Where neonatal hypothyroidism screening has been carried out, it has been possible to diagnose cretinism considerably earlier than was formerly the case. Combining the results of 700,000 screenings carried out in Quebec, Oregon, Massachusetts, Pittsburgh and Toronto, the incidence of primary and secondary hypothyroidism was found to be 1 in 4,589 births. A more benign condition, Thyroid Binding Globulin Deficiency, was found to occur about half as often as congenital hypothyroidism. Of the primary cases 91% exhibited aplastic or hypoplastic glands with only 9% having normal or enlarged thyroid glands.¹

With screening programs in place, it has been possible to diagnose cretinism before two months on the average, considerably earlier than is usually possible from clinical signs, thereby greatly improving the prognosis. For example, in the Quebec study one year IQ testing shows psychological and neuromuscular development to be normal as assessed by the Griffith test in 14 infants in whom treatment was begun at an average age of 6 weeks. Growth and bone maturation are also normal.¹

As of January 1, 1980 the Central Laboratory in New Orleans under Offices of Health Services and Environmental Quality (OHSEQ), has begun neonatal hypothyroidism screening in accordance with the amendment to the PKU law of 1978. A pilot study was carried out in 1979 to establish normal limits for Louisiana and to identify potential problems that may be encountered in a large-scale, state-wide program. An awareness of these problems can prevent undue anxiety and inconvenience to both patient and physician. Therefore, we wish to acquaint you with some of the areas for concern and enlist your assistance in improving and maintaining the quality of the state hypothyroidism screening program.

Preferred Age

The ideal time for collection of specimens for hypothyroidism screening is 3 - 7 days after birth in order to permit earliest possible diagnosis and treatment, though this is not always practical. Nevertheless,

since in newborns thyroxine (T4) concentration is a function of both age and weight, the time of collection is important. Therefore, two normal ranges based on age were established in the pilot program (Table 1). One normal T4 range includes newborns from 3 - 7 days of age. At this time, T4 concentration is well above normal adult levels. The second range embraces newborns over 7 days of age. During this time, the T4 concentration is gradually decreasing to adult levels. Therefore, to insure that results are correctly evaluated within the proper range, it is vital that both date of birth and date of collection of specimen, as well as infants weight at time of collection be correctly recorded on the form accompanying the specimen.

N.B.: SINCE BLOOD SPECIMEN IS THE SAME AS THAT USED FOR P.K.U. TESTING, IT SHOULD BE OBTAINED NO EARLIER THAN 72 HOURS AFTER MILK FEEDING IS BEGUN.

Specimen Collection

The greatest problem lies in inadequately collected specimens. The hypothyroidism screening specimens will be collected in conjunction with the filter paper blood "spots" already being collected for the Guthrie PKU blood test. It is of the utmost importance that all filter paper circles be uniformly and completely saturated by holding the back side of the filter paper against the heel-prick and allowing the blood to soak through until the circle is completely filled. It is important also that the specimen be air-dried at ambient temperature and forwarded as soon as possible to the State Central laboratory. In addition, since humidity appears to have a detrimental effect on the quality of the blood spot, the specimens should be stored in a sealed container under refrigeration, preferably with a desiccant, if specimens are not to be mailed promptly. Any specimen which has been improperly collected or handled will be marked unsatisfactory and a new specimen requested.

A new request form (LAB 10) that combines both

Table 1

HYPOTHYROID SCREENING PROGRAM: SUGGESTED NORMAL RANGES *

AGE	TYPE OF SPECIMEN	T4		TSH		T3U	
		\bar{X}	RANGE	\bar{X}	RANGE	\bar{X}	RANGE
3 - 7 days	Filter paper blood spot	16.27	6 - 25	4.2	0 - 20	-	-
3 - 7 days	Serum	16.27	6 - 25	3.7	0 - 20	23.32	20 - 35
> 7 days	Filter paper blood spot	11.72	6 - 15	3.7	0 - 20	-	-
> 7 days	Serum	11.72	6 - 15	3.7	0 - 20	23.32	20 - 35
ADULT	Serum	7.8	4 - 12	3.5	1 - 10	23.32	20 - 35

* Normal ranges are based on daily statistical analysis of a standard curve. Cut-off concentrations will vary accordingly. Therefore, these values are not absolute and are subject to statistical variation.

PKU and Hypothyroidism testing is now available through your local Parish Health Unit and should accompany all requests, initial or repeat.

**PREFERRED AGE FOR SCREENING:
THREE-SEVEN DAYS,
BUT NO EARLIER THAN 72 HOURS
AFTER MILK FEEDING HAS BEGUN.
FILL THE FILTER PAPER CIRCLES COMPLETELY.
NECESSARY INFORMATION:
DATE OF BIRTH
DATE OF SPECIMEN COLLECTION
WEIGHT OF INFANT (AT TIME OF SCREENING)**

Screening Methodology

Recent development of a sensitive radioimmunoassay for detection of throxine (T4) and thyroid stimulating hormone (TSH) on filter paper blood specimens led to the development of techniques applicable to neonatal screening for congenital hypothyroidism. The initial filter paper test performed is a T4 test. The reference range for a low or below normal T4 is < 6 - 8 ug/dl at age 3 to 7 days. All specimens falling in the normal T4 range will be reported as "normal" and will not be reported quantitatively. Those specimen with low values will be tested further.

The second test performed only on those with low T4 is Thyroid Stimulating Hormone (TSH). An elevated TSH value lies above 20 uU/ml (micro-units per milliliter) at 3 - 7 days of age with those values in the 20 uU/ml - 40 uU/ml range indicating a border-line elevation. If a newborn specimen indicates a below normal T4 but a normal or border-line TSH, the diagnosis of primary hypothyroidism is less likely. However, to rule out other possibilities, including secondary or tertiary hypothyroidism, Thyroid Binding Globulin (TBG) deficiency, improper specimen handling, and laboratory error, the laboratory will request a second blood spot specimen when the patient is 4 - 6 weeks of age. If the child is in this age range at the time the first specimen was drawn, an immediate repeat of the filter paper specimen will be requested.

GENETIC COUNSELLING is available to families of infants with hypothyroidism through the Maternal and Child Health Section. Ask for the MCH Genetic Disease Program Coordinator at (504) 568-5080.

Quantitative tests for T4, Triiodothyronine resin uptake (T3 U) and TSH will be available for infants who have low T4 and elevated TSH on initial screen as well as for infants rechecked at 4 - 6 weeks who continue to have low T4 and normal or borderline TSH. The referring physician or clinic in these instances will be notified by mail, requesting 2.5 ml of serum or 6 ml of clotted blood.

A routine TSH testing of the lower 10% of each day's T4 assay will be carried out in the laboratory.

Premature Infants

Premature infants may require special monitoring by the Congenital Hypothyroidism Screening Program as studies indicate that they will frequently exhibit lower T4 and TSH concentrations at birth than full term infants. In order to evaluate premature infants it is suggested that they be tested every two weeks with a filter paper blood spot specimen until body weight increases to 2,500 grams. In this way, it can be ascertained more confidently if low T4 concentration is indeed indicative of hypothyroidism or is merely a "false positive". Figure 1 depicts the screening program sequence.

The Office of Health Services and Environmental Quality (OHSEQ) wishes to thank you in advance for your cooperation. The Congenital Hypothyroidism Screening Program will be a valuable diagnostic tool and will improve the developmental outcome in congenital hypothyroidism infants by allowing early diagnosis and adequate therapy.² If expected rates are found in Louisiana, neonatal screening for hypothyroidism will provide early identification of approximately 16 cases of hypothyroidism annually.

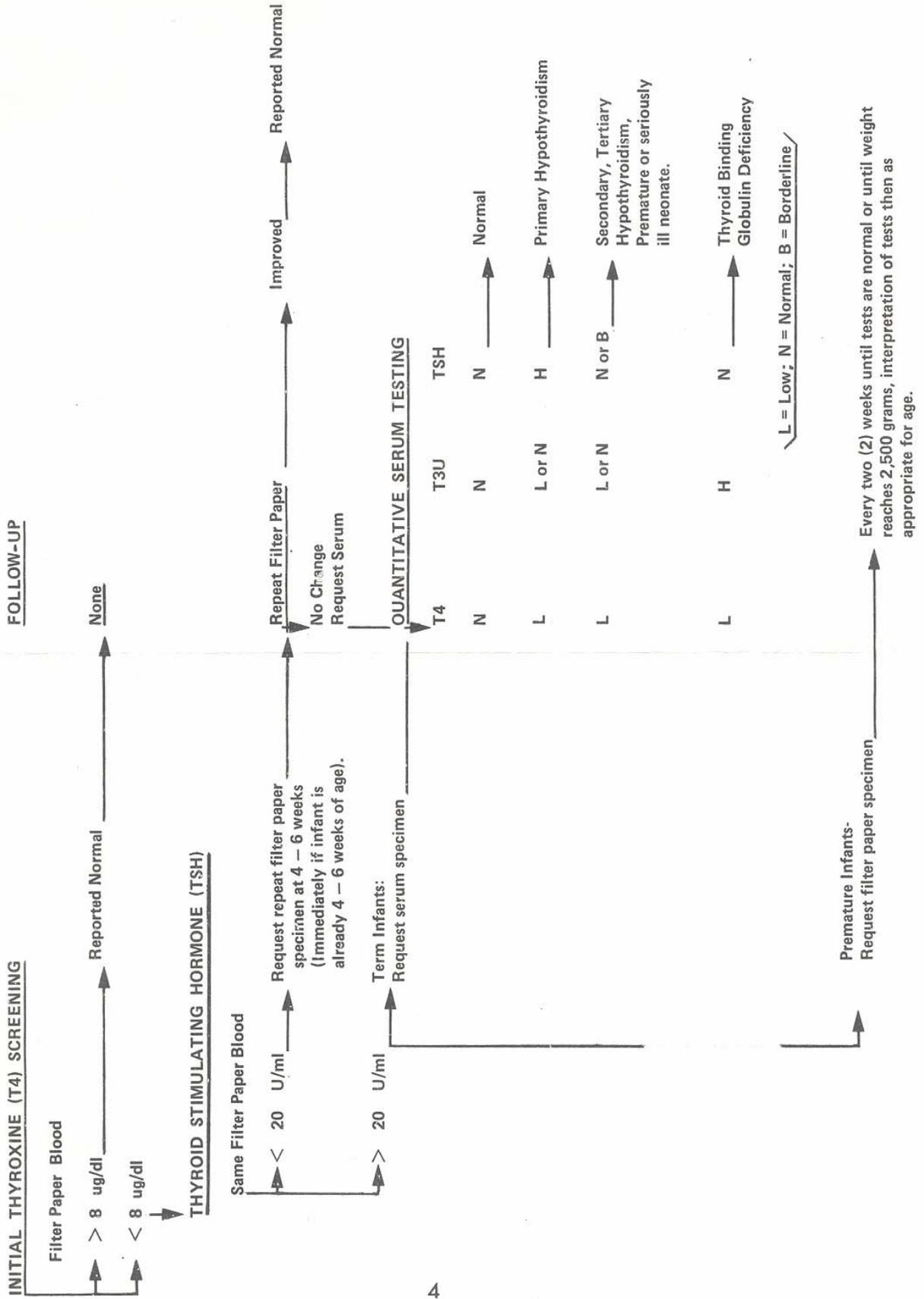
OHSEQ wishes to thank Dr. Johnette Frenz of Tulane University School of Medicine and Dr. Curtis Johnson of Louisiana State University School of Medicine for their cooperation in setting up the program. Should questions arise regarding interpretation of test results, please telephone the office of the Section of Maternal and Child Health, OHSEQ, in New Orleans at (504) 568-5070 for assistance. Drs. Frenz and Johnson will continue to serve as consultants to this screening program.

REFERENCES

1. Fisher, Delbert A., Neonatal Thyroid Screening, Ped. Clin. of N.A.
2. Committee on Drugs, American Academy of Pediatrics, Treatment of Congenital Hypothyroidism, Pediatrics 62:413, 1978.

CONGENITAL HYPOTHYROIDISM SCREENING PROGRAM SEQUENCE

Figure 1



SELECTED REPORTABLE DISEASES (By Place of Residence)

STATE AND PARISH TOTALS	VACCINE PREVENTABLE DISEASES					ASEPTIC MENINGITIS	HEPATITIS A AND UNSPECIFIED	HEPATITIS B	LEGIONNAIRES DISEASE	MALARIA**	MENINGOCOCCAL INFECTIONS	SHIGELLOSIS	TUBERCULOSIS, PULMONARY	TYPHOID FEVER	OTHER SALMONELLOSIS	UNDERNUTRITION SEVERE	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY	RABIES IN ANIMALS (PARISH TOTALS CUMULATIVE, 1979)
	MEASLES	RUBELLA*	MUMPS	PERTUSSIS	TETANUS														
Reported Morbidity January, 1980																			
TOTAL TO DATE 1979	6	0	7	0	0	4	37	12	0	0	5	3	48	0	7	0	1994	60	0
TOTAL TO DATE 1980	0	0	1	0	0	1	55	11	0	0	4	6	32	0	5	0	1560	101	1
TOTAL THIS MONTH	0	0	1	0	0	1	55	11	0	0	4	6	32	0	5	0	1560	101	1
ACADIA							4										10	1	
ALLEN							1						1				6		
ASCENSION																	1	1	
ASSUMPTION																	2		
AVOYELLES																			
BEAUREGARD							1						1				3	1	
BIENVILLE																	1		
BOSSIER													2				19		
CADDO			1				2					1	3				154	1	
CALCASIEU							2				1	1					77		
CALDWELL																			
CAMERON							1	1										1	
CATAHOULA																			
CLAIBORNE													1				4		
CONCORDIA							1				1								
DESOTO																	1		
EAST BATON ROUGE												1	5				120	9	
EAST CARROLL																		2	
EAST FELICIANA																		1	
EVANGELINE																	1		
FRANKLIN																	10		
GRANT													1						
IBERIA							1						2				10		
IBERVILLE																	11		
JACKSON																			
JEFFERSON							9	1					2				95	7	
JEFFERSON DAVIS																	4		
LAFAYETTE						1	1	1					2		1		15	3	
LAFOURCHE															1		17		
LASALLE																			
LINCOLN																	5		
LIVINGSTON							1										3		
MADISON																	12	1	
MOREHOUSE																	26		
NATCHITOCHE													1				6		
ORLEANS							17	5					5		1		674	46	
OUACHITA							6						1				71	5	
PLAQUEMINES																	4		
POINTE COUPEE																	1		
RAPIDES																	33	5	
RED RIVER																	1		
RICHLAND																	2		
SABINE															1		5		
ST. BERNARD							1						1				5		
ST. CHARLES																	7		
ST. HELENA																	1		
ST. JAMES																	4		
ST. JOHN							2										3	1	
ST. LANDRY							1	1					2				9		
ST. MARTIN													1				4	2	
ST. MARY								1										1	
ST. TAMMANY							1					3			1		12		
TANGIPAHOA							1				1						15		
TENSAS																			
TERREBONNE								1									18	1	
UNION																	23		
VERMILION												1					10		
VERNON																	5		
WASHINGTON																	3	1	
WEBSTER							1										13		1
WEST BATON ROUGE																	6		
WEST CARROLL							1										1	3	
WEST FELICIANA																		9	
WINN													1				2		
OUT OF STATE																	14		

* Includes Rubella, Congenital Syndrome.
** Acquired outside United States unless otherwise stated.

From January 1, 1980, through January 31, 1980, the following case was also reported:
1 - Leptospirosis

SELECTED REPORTABLE DISEASES (By Place of Residence)

1979 SUPPLEMENT

STATE AND PARISH TOTALS	VACCINE PREVENTABLE DISEASES					ASEPTIC MENINGITIS	HEPATITIS A AND UNSPECIFIED	HEPATITIS B	LEGIONNAIRES DISEASE	MALARIA**	MENINGOCOCCAL INFECTIONS	SHIGELLOSIS	TUBERCULOSIS, PULMONARY	TYPHOID FEVER	OTHER SALMONELLOSIS	UNDERNUTRITION SEVERE	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY	RABIES IN ANIMALS (PARISH TOTALS CUMULATIVE, 1979)	
	MEASLES	RUBELLA*	MUMPS	PERTUSSIS	TETANUS															
Reported Morbidity 1979 Supplement																				
TOTAL TO DATE 1978	385	494	68	4	2	97	743	212	10	4	149	122	538	4	178	9	22768	732	17	
TOTAL TO DATE 1979	268	32	32	18	4	105	884	307	7	6	155	126	508	5	199	10	24019	1132	43	
Total in Supplement	5	0	0	0	0	3	68	26	0	0	24	3	0	0	6	0	651	10	5	
ACADIA																	3			
ALLEN																	1			
ASCENSION																	2			
ASSUMPTION																	1			
AVOUELLES																	1			
BEAUREGARD							5										4		1	
BIENVILLE											1						1		1	
BOSSIER											1						19		7	
CADDO								3							1		61		11	
CALCASIEU											1						53			
CALDWELL											1									
CAMERON							2	1												
CATAHOULA																		4		
CLAIBORNE																		2		
CONCORDIA																		4		
CONCORDIA																		1		4
DESOTO																		44	1	1
EAST BATON ROUGE												1						9		
EAST CARROLL							4											1		
EAST FELICIANA																		1		
EVANGELINE																		9		
FRANKLIN																		1		
GRANT																		5		
IBERIA																		3		
IBERVILLE																		3		1
JACKSON																		2		
JEFFERSON						1	18	10										7	1	
JEFFERSON DAVIS							1											12		
LAFAYETTE							1	4										5		
LAFOURCHE																		2	12	3
LASALLE																		8		
LINCOLN																		25		
LIVINGSTON																				
MADISON																		1	1	
MOREHOUSE																		8		1
NATCHITOCHE																		6		
ORLEANS	4					1	2	4			1							3	2	
ORLEANS							15				3	2						1	150	3
OUACHITA							4											24		
PLAQUEMINES							2											1		
POINTE COUPEE																				
RAPIDES								1	1									36		12
RED RIVER																				1
RICHLAND																		6		
SABINE																				
ST. BERNARD		1						2												
ST. CHARLES																				
ST. HELENA																			1	
ST. JAMES																			3	
ST. JOHN																				
ST. LANDRY						1														
ST. MARTIN									1										8	
ST. MARY																			3	1
ST. MARY							1												4	
ST. TAMMANY							3					2							4	
TANGIPAHOA							3	1											11	
TENSAS																			5	
TERREBONNE								2				3							7	
UNION																			5	
VERMILION																				
VERNON								1											55	
WASHINGTON								1											1	
WASHINGTON																			9	2
WEBSTER																			2	
WEST BATON ROUGE																			3	
WEST CARROLL																				
WEST FELICIANA																			6	
WINN																			3	1
OUT OF STATE												1								

* Includes Rubella, Congenital Syndrome.

** Acquired outside United States unless otherwise stated.

From January 1, 1979, through the December Supplement of 1979, the following cases were also reported:

2 - Typhus Fever, Endemic	9 - Leptospirosis	1 - Blastomycosis
21 - Trichinosis	2 - Rocky Mountain Spotted Fever	1 - Q-Fever
1 - Psittacosis	4 - Brucellosis	