Certifying Independent Laboratories Under Medicare

PEARL BIERMAN, M.A., BEVERLEE A. MYERS, M.P.H., JOHN RODAK, M.S., and JAY. S. REIBEL, M.D.

Medicare's Effects on Medical Care

INDEPENDENT laboratories as defined for purposes of Medicare are those laboratories engaged in performing diagnostic tests for patients and which are independent of both attending or consulting physicians' offices and of hospitals. Until recently little information was available nationally on independent laboratories as to numbers, distribution, services offered, background of personnel, equipment and facilities, and the quality of tests performed. Many reports have pointed up the lack of official standards for these agencies.

In most States anyone, regardless of training or experience, can operate or direct a clinical laboratory. Except for the few States that have licensure requirements for such laboratories or their personnel, there has been virtually no control or regulation over independent laboratories.

A nationwide shortage exists of properly educated, trained, and experienced laboratory personnel at all levels of skill. Indeed, there is little incentive for persons to acquire the necessary education and training, for there are few restrictions to prevent them from operating laboratories without the appropriate training or experience. Also, programs to recruit young people to enter the laboratory field have been minimal. The shortage of qualified persons would be even greater if it were not for the efforts of such organizations as the National Committee for Careers in Medical Technology and the American Society of Clinical Pathologists.

The lack of State regulations and consulting services has deprived some laboratory directors of incentives to continually improve the performance of their laboratories. Little effort is made to exploit and use new procedures and techniques. Thus in some laboratories there is an unfortunate differential between technological advances and their practical application. Also, there are few established performance standards and little evaluation of performance. Though several professional groups are currently conducting performance evaluation programs, these evaluations are voluntary, and participation is far from widespread. In fact, many small laboratories attempt to perform tests beyond the capabilities of their personnel, facilities, and equipment.

Medicare, the health insurance for the aged program, was introduced into this situation in 1966, providing, among other benefits, diagnostic laboratory tests performed by independent

The authors are with the Division of Medical Care Administration, Health Services and Mental Health Administration, Public Health Service. Miss Bierman is chief, Policy and Standards Branch. Mr. Rodak is assistant chief, and Dr. Reibel is medical officer, of the Standards Section of the branch. Mrs. Myers is special assistant to the chief, Health Services Organization Branch.

laboratories. This legislation authorized the first regulatory activity of health services by the Federal Government. This legislation contains the authority, derived from title XVIII of the Social Security Act, which enables the Secretary of Health, Education, and Welfare to set standards necessary to assure the health and safety of patients for whom these laboratory tests are performed. Accordingly, the "Conditions for Coverage of Services of Independent Laboratories" were formulated. These list the specific requirements to be met by an independent laboratory to qualify for reimbursement under part B of the program.

Medicare's Conditions for Coverage

Each Governor has designated the State health department, or another appropriate State agency, to assist the Department of Health, Education, and Welfare in determining whether there is compliance with the requirements of Medicare. Thus a State agency surveys laboratories in its jurisdiction which apply for Medicare participation and certifies whether or not they are in substantial compliance with the conditions for coverage. The department, on the basis of such surveys and recommended certifications from the State agency, makes the final determination as to whether a laboratory is eligible to participate.

The State surveyors are provided with survey report forms by the Department of Health, Education, and Welfare and appropriate guidelines for use nationally. These forms are based on the conditions for coverage and directly relate to the standards specified in the conditions, thus assuring a minimum level of national standardization in the evaluation of independent laboratories. The data derived from these State surveys for Medicare provide baseline information that can be used to characterize the current status of independent laboratories in this country.

The conditions for coverage are concerned primarily with the educational background and experience of laboratory personnel. Generally, the amount of formal education required is titrated against the years of experience—the more education, the less experience required. Standards have been developed for laboratory directors, supervisors, technologists, and technicians. Specific requirements are also enumerated for personnel actually performing or immediately supervising tests in the various specialties and subspecialties listed in table 1. Other standards relate to laboratory management—including space, facilities, equipment and safety, as well as for reports of findings and recordkeeping.

Educational requirements. Several grandfather clauses in the conditions enable those persons who otherwise lack the specified education, but who have been performing clinical laboratory work for a certain number of years before the inception of Medicare and who meet other requirements, to participate in the program. Initially, the conditions required that the laboratory director possess, as a minimum, a baccalaureate degree in a pertinent laboratory science and that directors without doctorates could only participate in Medicare until June 30, 1971.

However, because many persons and organizations in the laboratory field objected to this requirement, the regulations were revised to permit directors without degrees to qualify their laboratories to participate if they passed a Public Health Service-sponsored examination. A further revision in the regulations, effective February 1968, permits all laboratory directors, as well as supervisory personnel, technologists, and technicians, who had qualified under the grandfather clauses before June 30, 1971, to be covered indefinitely after that date, providing the laboratory participates in performance evaluation and proficiency testing programs.

During the first 9½ months of Medicare, all independent laboratories that submitted bills for services performed for Medicare beneficiaries received reimbursement, whether or not the laboratory had been surveyed and found to be in compliance with the conditions for coverage. This blanket reimbursement ended April 15, 1967, and, except for one class of laboratories, only those laboratories that had been surveyed and found to be in substantial compliance with the conditions were then eligible for payment. The single exception applied to laboratories with directors without a bachelor's degree, who had agreed to participate in the Public Health Service-sponsored examination.

Table 1. Training and experience requirements for directors and technical supervisors of independent laboratories

Qualification of directors and technical supervisors	Tests laboratory is qualified to perform					
	Microbiology	Immunohematology	Hematology [1]	Clinical chemistry	Tissue pathology	Exfoliative cytology
Pathologist, board certified in clinical and anatomical pathology or meets equivalency.	Yes	Yes	Yes	Yes	Yes	Yes.
Doctorate in microbiology and 4 years' experience.	Yes	No	Yes	[2]	No	No.
Doctorate in chemistry and 4 years' experience.	[2]	No	[2]	Yes	No	No.
Physician and 4 years' experience in microbiology.	Yes	[2]	[2]	No	No	No.
Physician and 4 years' experience in clinical chemistry.	No	[2]	[2]	Yes	No	No.
Physician and 2 years' experience in clinical hematology.	No	Yes	Yes	No	No	No.
Physician, board certified in pertinent laboratory speciality.	Yes	Yes	Yes	Yes	Yes	Yes.
Doctorate, board certified in pertinent laboratory specialty.	Yes	No	Yes	Yes	No	No.
Master's degree in microbiology and 4 years' experience.	Yes	No	Yes	No	No	No.
Master's degree in chemistry and 4 years' experience.	No	No	[2]	Yes	No	No.
Bachelor's degree in biology and 4 years' experience.	No	No	Yes	No	No	No.
Bachelor's degree in microbiology and 4 years' experience.	No	No	Yes	No	No	No.
Bachelor's degree in immunology and 4 years' experience.	No	No	Yes	No	No	No.
Master's degree in science [3] and 4 years' pertinent laboratory experience.	Yes	No	Yes	Yes	No	No.
Bachelor's degree in science [3] and 6 years' pertinent laboratory experience.	Yes	No	Yes	Yes	No	No.
No degree in the sciences,[3] satisfactory grade in Public Health Service examination.	Yes	No	Yes	Yes	No	No.

[1] Includes blood grouping and Rh typing.

[2] Laboratory qualified to perform tests and procedures in the speciality indicated if the training and experience requirements prescribed for that specialty are met by director or technical supervisor.

[3] Degree in science is based on having a chemical, physical, or biological science as major subject.

Interim approval through July 31, 1967, was granted, but continued coverage after that date was dependent upon the director's performance in the examination. Similarly, laboratories could not be reimbursed for tests performed outside the specialty covered by the degrees of their directors, or those of their supervisory staff, unless they passed the Public Health Service examination.

Performance evaluation. To assure continuing good-quality services of independent laboratories once they are approved for coverage under Medicare, and with particular reference to those laboratory directors admitted under the grandfather clause, the National Communicable Disease Center has assisted the Division of Medical Care Administration to develop guidelines for a performance evaluation program. This evaluation will consist of three separate, though related, divisions—proficiency testing, onsite inspection, and internal quality control. Beginning in July 1968, all States with nondoctoral-directed laboratories should have in operation a State-operated or approved proficiency testing program covering the full range of clinical laboratory specialties.

The conditions for coverage provide that, to be eligible for continued coverage after July 1968, those directors without doctorates must successfully pass a proficiency test in all specialties in which their laboratories perform tests. Doctoral-directed laboratories as well as all others are required to participate in applicable proficiency testing programs when the testing

is conducted by the State and when the service is specifically made available to one or more classes of laboratories.

Medicare appears to be exerting considerable influence, both directly and indirectly, on clinical laboratories. The collection of basic data as part of the annual State surveys for Medicare will enable more exact definition of the characteristics of independent laboratories. Thus, as better understanding is acquired of the problems and deficiencies of these laboratories, including the training and experience of their staffs, more appropriate remedial and improvement programs can be instituted.

State licensure to improve laboratories. Medicare also appears to be serving as an impetus to States to pass clinical laboratory licensure laws. When the health insurance for the aged program began in July 1966 only six States, New York City, and Puerto Rico required some form of licensure. Since that time additional States have passed licensure laws for laboratories and more are in the process of formulating such legislation. The Federal Government recognizes the value of State licensure laws and is encouraging their enactment. Indeed, the Medicare law provides that if a State has licensure requirements, laboratories in that State must obtain a license in addition to meeting other Medicare standards for participation.

A concurrent and significantly related development is the concept of Federal licensure of those clinical laboratories engaged in interstate commerce. Legislation requiring such licensure has been enacted by the Congress and will be administered by the National Communicable Disease Center, Public Health Service, when it becomes effective in 1969.

The Service-Sponsored Examination

As previously mentioned, arrangements were made for a Public Health Service-sponsored examination to give nondegree directors of independent clinical laboratories the opportunity to demonstrate their knowledge of tests and procedures in several specialty areas as well as principles of laboratory operation and management. This examination was prepared under contract by the American Public Health Association's Professional Examination Service, with the assistance of an advisory committee composed of nationally recognized authorities in the clinical laboratory field. As of the date of publication of this paper, the examination has been repeated several times. The data reported here, however, relate only to the examinations given in 1967.

The examination contained six sections: a general section and sections on the following five specialties; microbiology, clinical chemistry, hematology, blood grouping and Rh typing, and serology. The general section covers topics such as organization, administration, records, facilities and equipment, safety, ethics, and quality control. The examination also emphasizes laboratory principles and procedures which are basic to the operation of clinical laboratories, and it is designed to test the person's comprehension of procedures performed.

In the initial examination all questions and answers were multiple choice, and all questions had only one correct answer. Examinees were given 2½ hours to complete the general section, which consisted of 84 questions. Examinations in each of the specialty sections lasted 1½ hours and included 60 questions, with the exception of the blood grouping and Rh typing section, which contained 40 questions.

The criteria for grading the examination were recommended by the advisory committee after the results of the series of examinations administered on June 1–2, 1967, were made available by the professional examination service (table 2).

The committee advised that for the microbiology, blood grouping and Rh typing, and serology sections, where the person's work might be in limited areas, 55 percent of the questions

Table 2. Criteria for grading sections of the 1967 Public Health Service-sponsored examination for laboratory directors

Examination section	Number of questions	Passed	
		Raw score	Percent of questions
General	84	55	65
Microbiology	60	33	55
Clinical chemistry	60	36	60
Hematology	60	36	60
Blood grouping and Rh typing	40	22	55
Serology	60	33	55

Table 3. Results of Public Health Service-sponsored examination for 457 directors of independent laboratories

Test section	Examinees		Passed		Failed to qualify laboratory for coverage	
	Number	Percent	Number	Percent	Number	Percent
General	344	75.3	287	83.4	57	16.6
Microbiology	303	66.3	228	75.2	75	24.8
Clinical chemistry	414	90.6	351	84.8	63	15.2
Hematology	377	82.5	315	83.6	62	16.4
Blood grouping and Rh typing	299	65.4	237	79.3	62	20.7
Serology	346	75.7	299	86.4	47	13.6

NOTE: 70 directors, or 15.3 percent of the directors who took the examination, failed to qualify their laboratories for coverage; 57, or 12.5 percent, failed the general section; 9 directors, or 2.0 percent, were not required to take the general section but failed to pass any specialty section; 4 directors, or 0.8 percent, passed the general section but failed to pass any specialty section.

must be answered correctly to pass (table 2). In clinical chemistry and hematology, where most laboratory work is performed, the committee recommended that 60 percent of the questions must be answered correctly. For the general section, 65 percent of the questions must be answered correctly, because this section included information that should be familiar to all laboratory directors.

Examination Results

Of more than 2,500 independent laboratories initially surveyed for Medicare, State agencies determined it was necessary for more than 500 laboratory directors to take at least one section of the Public Health Service examination. However, only 457 directors actually took the examination, which was given three times in 1967. The examination was usually given by the State health department, although in some parts of the country examinations were given in Public Health Service regional offices.

Approximately 90 percent of the examinees took the first series of examinations on June 1–2, 1967. Makeup examinations were given in late June and late July for those applicants who were unable to participate in the first series of examinations because of illness or other reasons.

In addition to the 344 directors who took the general section and at least one specialty section, 113 directors having degrees and pertinent experience in a particular specialty participated in one or more tests to qualify their laboratories to perform tests and procedures in another specialty.

As shown in table 3, of the 457 directors who participated in the examination, nearly 91 percent took the clinical chemistry section. The other sections of the examination, in order of their popularity were hematology, serology, the general section, microbiology, and blood grouping and Rh typing. Of the 457 examinees, a total of 70 failed to qualify their laboratories for coverage under Medicare. The data in table 3 give the reasons for disqualification. Examinees who failed to pass a particular section had the opportunity to take two reexaminations.

A total of 198 examinees took all six sections of the examination (table 4). Five examinees took only the five specialty sections. Three passed all five specialties; the remaining two failed microbiology.

Table 4 also shows the performance of 344 examinees who took the general section and at least one specialty section and the performance of the 113 examinees who did not take the general section but took one or more of the specialty sections. The data suggest that directors who had at least a bachelor's degree generally did better in the specialty sections.

Facts About Independent Laboratories

As of October 20, 1967, 2,527 independent laboratories had been approved and 200 were denied coverage. At this time, however, we are able to provide only a limited report on the general characteristics of independent laboratories certified under Medicare. With subsequent changes in the initial regulations for laboratories, it became necessary for State agencies to

review and, where necessary, amend their initial recommendations. Consequently, there has been some delay in fully processing the statistical data from survey reports and related forms used in certification procedures. The following data, therefore, do not cover all surveyed laboratories.

Data relating to 2,087 independent laboratories approved early in the program, based upon information taken from application forms and State agency certification forms, show that approximately 97 percent of the approved facilities are privately owned, the remainder being controlled by public or nonprofit organizations. More than 80 percent of the private laboratories were certified as being in substantial compliance with the conditions for coverage with no significant deficiencies; the remainder of the participating private laboratories were in substantial compliance with significant but correctable deficiencies.

Table 4. Number and performance of examinees taking Public Health Service-sponsored examination

Examination section	Number taking	Passed		Failed	
		Number	Percent	Number	Percent
All 6 sections (198 examinees):					
General	198	174	87. 9	24	12. 1
Microbiology	198	145	73. 2	53	26. 8
Clinical chemistry	198	173	87. 4	25	12. 6
Hematology	198	171	86. 4	27	13. 6
Blood grouping and Rh typing	198	156	78. 8	42	21. 2
Serology	198	169	85. 3	29	14. 7
General and at least 1 specialty section [1] (344 examinees):					
General	344	287	83. 4	57	16. 6
Microbiology	251	187	74. 5	64	25. 5
Clinical chemistry	336	280	83. 3	56	16. 7
Hematology	340	286	84. 1	54	15. 9
Blood grouping and Rh typing	261	203	77. 8	58	22. 2
Serology	294	251	85. 4	43	14. 6
Only 1 or more specialty sections [2] (113 examinees):					
Microbiology	52	41	78. 8	11	21. 2
Clinical chemistry	78	71	91. 0	7	9. 0
Hematology	37	29	78. 4	8	21. 6
Blood grouping and Rh typing	38	34	89. 5	4	11. 5
Serology	52	48	92. 3	4	7. 7

[1] 5 examinees took only 1 specialty section.
[2] 51 examinees took only 1 specialty section; 90 percent of these took the clinical chemistry section.

Table 5. Compliance with Medicare's conditions of coverage by 2,087 approved independent laboratories by education of supervisor other than director

Education of supervisor	Laboratories reporting		Laboratories with no significant deficiencies		Laboratories with correctable deficiencies	
	Number	Percent	Number	Percent	Number	Percent
Pathologists	541	32. 7	460	27. 8	81	4. 9
Clinical	70	4. 2	61	3. 7	9	. 5
Anatomical	113	6. 8	100	6. 0	13	. 8
Clinical and anatomical	358	21. 6	299	18. 1	59	3. 6
Other physicians	1	----------	0	----------	1	----------
Doctorate	150	9. 1	129	7. 8	21	1. 3
Master's degree in science or arts	155	9. 4	136	8. 2	19	1. 1
Bachelor's degree in science or arts	545	32. 9	462	27. 9	83	5. 0
Other	263	15. 9	215	13. 0	48	2. 9
Total	1, 655	100. 0	1, 402	84. 7	253	15. 2

Table 5 shows the highest level of supervisory personnel, other than the director, reported by approved laboratories. Approximately 80 percent of the 2,087 approved laboratories reported the availability of supervisors other than the director. One-third of these laboratories reported the availability of pathologists, 66 percent of whom were either board certified or board eligible in both anatomical and clinical pathology. Another third reported having supervisors qualified by at least a bachelor's degree or some graduate study (but not a master's degree), and some 16 percent had supervisors without a bachelor's degree.

Approximately 80 percent of the approved laboratories had a laboratory technologist. Of these laboratories, approximately 60 percent reported technologists with at least a bachelor's degree; the remaining 40 percent had technologists with less than a bachelor's degree. Nearly 74 percent of the approved laboratories had laboratory technicians. One-third of this group claimed that their technicians had 60 or more semester hours of college education; some 23 percent had technicians with less than 60 semester hours of college or related education; one-third reported technicians with high school diplomas; and approximately 10 percent indicated their technicians did not have a high school education.

Of the approved laboratories, 95 percent reported performing tests and procedures in clinical chemistry. The percentages of laboratories performing tests in other specialties were as follows: serology, 85; microbiology, 81; immunohematology, 64; exfoliative cytology, 41; and tissue pathology, 35.

The previously mentioned data are based on what the laboratories reported in their applications. Analysis of data from State survey report forms for 2,074 laboratories shows that approximately 35 percent of the laboratories are directed by pathologists; nearly 15 percent have physicians other than a pathologist serving as a director; slightly more than 3 percent have directors qualified by doctorates in laboratory sciences, and approximately 47 percent have directors with less than a doctorate. On the basis of the number of directors who were required to take the general section of the Public Health Service examination, it can be estimated that more than 10 percent of all directors of independent laboratories participating in Medicare do not hold a bachelor's degree in a laboratory science.

Data from report forms indicate that slightly more than 50 percent of the laboratory directors are employed full time, and the remainder are serving part time. Approximately 60 percent of the full-time directors have less than a doctorate, although some 20 percent of the full-time directors are pathologists. Of the part-time directors, nearly 50 percent are pathologists and approximately 26 percent are directors with less than a doctorate.

An analysis of the requirements relating to maintenance of records, equipment, and facilities reflects deficiencies in internal quality control, including calibrating standards and routine checking of equipment; procedures for numbering and identifying specimens; use of a recognized system of disease nomenclature in reports of tissue pathology; and use of notebooks of approved laboratory procedures.

State agency surveyors also reported problems related to fundamental sterilization techniques and procedures, such as failure to sterilize syringes, needles, and other devices before each use; inadequate wrapping or covering of sterilized supplies; and not using indicator devices for each sterilizing cycle to assure proper sterilization.

Table 6 shows the tests actually being performed by laboratories, in relation to the qualifications of their directors, at the time State agency onsite inspections were made and before the Public Health Service examination was given. Laboratories that engage the services of a qualified technical supervisor in a particular specialty can be qualified to perform tests and procedures in that specialty, even though the director himself does not meet the qualifications prescribed for it. Further, a director who initially could not qualify his laboratory for a particular specialty could later have qualified for that specialty if he passed the appropriate section of the Public Health Service examination.

The significance of table 6, however, is apparent. Many laboratories with directors who had less than a doctorate were performing tests that, based on educational and experience requirements, they were not fully qualified to per-

form. This situation will be corrected in the future, through the use of proficiency testing and performance evaluation standards.

Admittedly, the preceding discussion concerning the characteristics of independent laboratories is limited, because of incomplete information for all laboratories certified by October 1967 and, further, because the data are confined to initial certification processes. Information obtained through continuing surveys should facilitate more specific identification of the issues and trends among independent laboratories and identify activities that might upgrade laboratory performance.

Summary

When Medicare began in July 1966 only six States, New York City, and Puerto Rico required independent laboratories to have some form of licensure. Since then additional States have passed licensure laws and more are formulating such legislation.

Table 6. Tests being performed by independent laboratories at time of State survey, by qualifications of director

Qualification of director and tests performed	Laboratories qualified for specialty to perform test				Laboratories not qualified for specialty to perform test			
	Number qualified	Percent of total group qualified	Number performing	Percent of qualified group performing	Number not qualified	Percent of total group not qualified	Number performing	Percent of nonqualified group performing
734 laboratories directed by pathologists:								
All specialties	670	91.3	421	62.8	64	8.7	0	----------
Microbiology	699	95.2	699	100.0	35	4.8	1	2.9
Clinical chemistry	712	97.0	661	92.8	22	3.0	0	----------
Hematology	714	97.3	663	92.9	20	2.7	0	----------
Immunohematology	697	95.0	567	81.3	37	5.0	0	----------
Tissue pathology	694	94.6	508	73.2	40	5.4	0	----------
Exfoliative cytology	707	96.3	562	79.4	27	3.7	0	----------
305 laboratories directed by physicians other than pathologists: [1]								
All specialties	14	4.6	9	64.2	291	95.9	5	1.7
Microbiology	257	84.3	245	95.3	48	15.7	9	18.7
Clinical chemistry	287	94.1	280	97.6	18	5.9	2	11.1
Hematology	287	94.1	283	98.6	18	5.9	3	16.6
Immunohematology	233	76.4	192	82.4	71	23.3	11	15.5
Tissue pathology	19	6.2	13	68.4	285	93.4	5	1.8
Exfoliative cytology	33	10.8	28	84.8	270	88.5	8	3.0
71 laboratories directed by holders of nonmedical doctorates:								
All specialties	3	4.2	3	100.0	68	95.8	0	----------
Microbiology	61	85.9	60	98.3	10	14.1	1	10.0
Clinical chemistry	66	93.0	66	100.0	5	7.0	1	20.0
Hematology	62	87.3	62	100.0	9	12.7	0	----------
Immunohematology	21	29.6	21	100.0	50	70.4	13	26.5
Tissue pathology	4	5.6	4	100.0	67	94.4	1	1.5
Exfoliative cytology	5	7.0	5	100.0	66	93.0	3	4.5
964 laboratories directed by persons with less than a doctorate: [2]								
All specialties	7	.7	3	42.8	956	99.3	2	.2
Microbiology	751	77.9	724	96.4	209	22.1	113	54.1
Clinical chemistry	830	86.1	822	99.0	129	13.9	113	86.7
Hematology	832	86.3	817	98.2	129	13.7	109	84.5
Immunohematology	246	25.5	193	78.5	711	74.5	330	46.4
Tissue pathology	11	1.1	8	72.7	952	98.9	3	.3
Exfoliative cytology	17	1.8	14	82.4	946	98.2	9	.9

[1] For immunohematology, tissue pathology, and exfoliative cytology, the number does not total 305 because 1 or more forms were incomplete.

[2] Number of laboratories does not total 964 because 1 or more forms were incomplete.

An initial requirement for participation in Medicare was that a laboratory director could not possess less than a bachelor's degree in a pertinent laboratory science and that directors with less than a doctorate could participate only until June 30, 1971.

However, the regulations were revised to permit nondegree directors to qualify their laboratories for coverage under Medicare if they passed a Public Health Service-sponsored examination. The examination contains a general section and sections on microbiology, clinical chemistry, hematology, blood grouping and Rh typing, and serology.

Of more than 2,500 independent laboratories initially surveyed for Medicare, more than 500 laboratory directors could qualify only by taking at least one section of the examination. Of the 457 directors who actually took the initial examination, nearly 91 percent took the clinical chemistry section. A total of 70 failed to qualify their laboratories for coverage.

As of October 20, 1967, a total of 2,527 laboratories had been approved and 200 denied coverage. Of the laboratories approved, 95 percent reported performing tests and procedures in clinical chemistry. The percentages of laboratories performing tests in other specialties were serology, 85; microbiology, 81; immunohematology, 64; exfoliative cytology, 41; and tissue pathology, 35.

Data available for 2,087 of the approved laboratories indicated that about 80 percent had supervisors other than the director. One-third of these had pathologists, 66 percent of whom were either board certified or board eligible in both anatomical and clinical pathology. Another third reported having supervisors qualified by at least a bachelor's degree with some graduate study (but not a master's degree), and some 16 percent had supervisors without a bachelor's degree.

To assure continuing good-quality services of independent laboratories after they are approved for coverage under Medicare, Federal guidelines for evaluation of performance are being developed and States are being assisted in establishing proficiency testing programs. To be eligible for continued coverage under Medicare after that date, all laboratories will be required to participate in these State programs.

Disposal of Junked Autos

A new approach to that familiar eyesore and health hazard—junked automobiles—is being investigated by E. J. Wren of the Gulf South Research Institute, Baton Rouge, La. The automobiles will be filled with wornout tires and squashed with special compacting equipment.

The Office of Grants Administration of the Public Health Service's National Center for Urban and Industrial Health in Cincinnati, Ohio, has awarded Wren a $44,374 grant to support the 1-year research project.

The flat steel masses will be interlocked, through a special die developed by the research project, and placed along a riverbank to protect the levee slopes and prevent erosion by wave action.

Under Wren's plan, the compacting equipment could be installed on a Mississippi River barge which would travel up and down the river, stopping at collection points to flatten out the junked cars and tires. The interlocking junk will be concealed from view by willow trees which grow along the levees.

The Army's Corps of Engineers will be consulted on the problems of installing the metal shapes along a river bank. The method, according to Wren, might be used on other navigable rivers and lakes.