

**The Pacific Northwest Laboratory Medicine Sentinel Monitoring Network
Final Report of the Findings of Questionnaire 2
Access to Laboratory Testing**

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The Pacific Northwest Laboratory Medicine Sentinel Monitoring Network was created in January 1995 to gather ongoing information about practices in hospital, physician office and independent laboratories. By soliciting information from participant laboratories that reflect actual practices and experiences, we will gain a clearer understanding of: the quality assurance practices that are most beneficial; the scope and severity of laboratory-related problems and errors; and the most significant factors that create barriers to access to laboratory services.

The second in a series of data gathering devices was mailed to all of the 257 network participants in November 1995. The focus of questionnaire 2 was centered upon issues related to access to laboratory testing. The intent of this questionnaire was to characterize trends in laboratory usage, factors determining where laboratory testing is performed and perceptions of the consequences of not being able to perform testing on-site. Questionnaire 3, which is targeted for release in March 1996, has been designed to complement the general information gathered from questionnaire 2, by asking participants about specific laboratory tests that have been added or deleted and those deemed essential for optimal patient care. With the analysis of questionnaires 2 and 3, issues of access to laboratory testing will be better understood.

Questionnaire 2

Two hundred and sixteen completed questionnaires were received in time for analysis, an 84% response. The laboratories responding to questionnaire 2 were categorized as follows: 124 (57%) physician office laboratories (POL), 53 (25%) hospital laboratories and 39 (18%) independent laboratories. Using 1990 United States Census Bureau designations, 151 (70%) of the respondents were categorized as urban and 65 (30%) as rural.

Proximity to Other Laboratory Testing Sites

Laboratories were asked for "the proximity of the closest laboratory that performs the same regulated (moderate or high complexity) tests as you do on-site". Ninety-six percent of all laboratories responded that they knew the distance of the next closest laboratory doing the same testing as they perform on-site. Sixty-seven percent of these respondents have a laboratory doing the same testing within 10 miles, and 81 % have such a laboratory within 25 miles. Eighty-nine percent of urban laboratories and 63% of rural laboratories were aware of a laboratory doing the same testing within 25 miles of their testing site. Table 1 summarizes this information about distances between facilities with duplicate testing capabilities.

Table 1 - Proximity to Nearest Laboratory Doing the Same Testing

Distance (miles)	Percentage of Laboratories					
	All N=212	Urban N=148	Rural N=64	POL N=121	Hospital N=53	Independent N=38
< 10	67	75	50	78	38	74
10 to 25	14	14	13	10	26	8
26 to 50	8	3	22	4	23	2
51 to 100	4	0	13	1	11	2
> 100	3	3	3	1	2	11
Don't know	4	5	0	6	0	2

Participants were asked for "the proximity of the reference laboratory that you use for the majority of your send out testing". Forty-six percent of all laboratories send reference work to a laboratory that is less than 25 miles away, with 30% sending to a laboratory more than 100 miles away. Sixty-six percent of POLs in the network send to a reference laboratory that is within 25 miles. Only 14% of hospital laboratories and 28% of independent laboratories claimed to use a reference laboratory within that distance. Table 2 summarizes the information about the distances of references laboratories used by various categories of testing sites.

Table 2 - Proximity of Reference Laboratory

Distance (miles)	Percentage of Laboratories					
	All N=209	Urban N=146	Rural N=63	POL N=121	Hospital N=52	Independent N=36
< 10	33	43	11	46	10	25
10 to 25	13	17	3	20	4	3
26 to 50	11	11	10	10	11	11
51 to 100	12	6	25	8	19	11
> 100	30	22	49	14	56	47
Don't know	1	1	2	2	0	3

Payment for Laboratory Testing

Participants were asked to "check any of the following that constitute more than 25% of the patient population served by your laboratory". The choices given were: Medicaid or other

Government (State or Federal) Assisted Health Care Plans, excluding Medicare; Health

Maintenance Organization (HMO), Preferred Provider Organizations (PPO), or other private capitated health care plans; Medicare patients; Migrant farm worker patients; Indian Health Service (IHS) patients; Private pay patients; or Do Not Know. Of the 216 respondents, 193 laboratory responses were evaluated, with the remaining 23 laboratories responding "Do Not Know". Participant responses showed the following percentages of laboratories that had more than one fourth of their patients' laboratory testing reimbursed or paid by one of these methods: 69% Medicare; 54% HMO/PPO; 49% Medicaid; 45% private pay; 4% migrant farm workers; 1% IHS. Thirty seven percent of all laboratories indicated that they received payment for more than 25% of their patients by both Medicare and HMO/PPO, and 37% indicated that they received payment for more than 25% of all patients by both Medicare and Medicaid.

Table 3 - Payment for Laboratory Testing

Type of reimbursement or payment for lab testing	Number of labs with > 25 % of patients	Percent of all labs
Medicare	133	69
HMO/PPO	105	54
Medicaid	95	49
Private Pay	87	45
Migrant Farm Workers	8	4
Indian Health Service	2	1

Medicare & HMO/PPO	72	37
Medicare & Medicaid	71	37
Medicaid & HMO/PPO	56	29
Medicare & Private Pay	55	29
HMO/PPO & Private Pay	51	26
Medicaid & Private Pay	41	21
Medicaid & Medicare & HMO/PPO	40	21

Numbers and Types of Physicians

Laboratories, except hospital and independent, were asked for the number of physicians at their location that order laboratory work from their laboratory and for the medical specialties practiced

by those physicians. One hundred-thirty laboratories responded to these questions. Tables 4 and 5 demonstrate the size of the practices and the medical specialties represented by the network respondents.

Table 4 - Number of Physicians Ordering Laboratory Testing

Number of physicians	Number of labs	Percent
1	18	14
2 to 3	31	24
4 to 5	19	15
6 to 10	30	23
10 to 20	16	12
> 20	16	12

Table 5 - Medical Specialties of Physicians Ordering Laboratory Testing

Medical Specialties Represented	Number of Labs
Family Practice	74
General Practice	52
Pediatrics	41
Internal Medicine	37
OB/GYN	33
Surgery	20
Dermatology	19
Gastroenterology	17
Allergy	16
ENT	12
Neurology	7
Dentistry	2
Pathology	2
Other: Orthopedics, Psychiatry, Radiology, Infectious Disease, Endocrinology, Adolescent Medicine, Rheumatology, Nephrology, Urology, Occupational Medicine, Urgent/Emergency Care, Cardiology, Asthma, Infertility, Pulmonology	22

Personnel Completing Questionnaire 2

There were 212 respondents that indicated their background and role in the testing site. The vast majority of respondents, 150 (71%), were Medical Technologists or Medical Laboratory Technicians. Registered Nurses (16%), Medical Assistants (6%) and Medical Doctors (5%) accounted for the next most common backgrounds of the respondents. Table 6 shows the various categories of personnel who completed this questionnaire.

Table 6 - Background and Roles of Respondents

Background	Total Number	Supervisor Consultant	Director	Lab Manager	Testing Personnel	Other
Medical Technologist / Technician	150	91	20	25	11	3
Registered Nurse	13	3	1	1	8	
Medical Assistant	12	4			7	1
Medical Doctor	11		11			
Ph.D.	6	1	3	1	1	
Licensed Practical Nurse	4	1			3	
Physician Assistant	2		1			1
Master Degree in Science	2		1			1
Cytotechnologist	2	1			1	
Other	9	2	2	1	2	2
On the Job Trained	1	1				

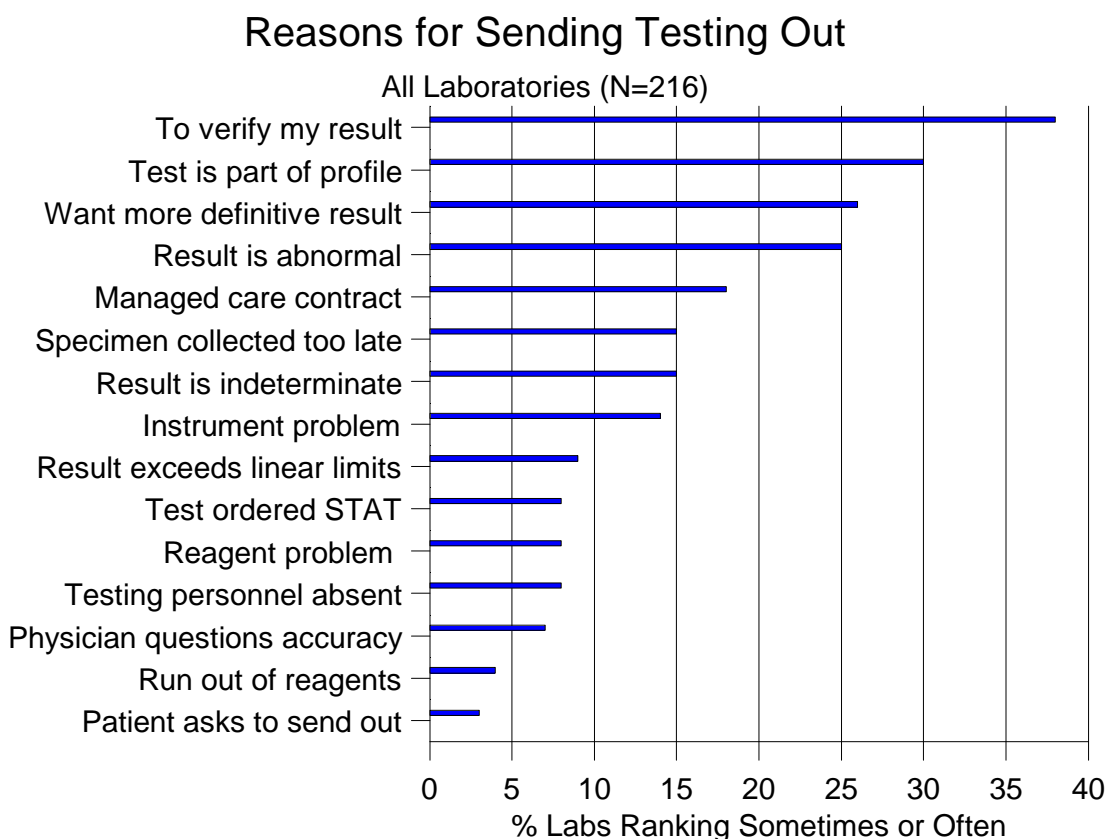
Reasons for Sending Specimens to Reference Laboratories

Participants were asked to indicate "how frequently you send patient specimens to your reference laboratory or laboratories, for testing that you normally perform on-site". Using a list of 15 possible reasons, participants were asked to "rank each reason from 0 to 3, with 0 = never, 1 = rarely, 2 = sometimes, 3 = often or frequently".

The intent of this question was to determine how frequently various testing sites utilize other laboratories to support their on-site testing. In addition, this question investigates factors, outside

the control of the testing site, that dictate where testing is performed. For each reason, the percent of laboratories that ranked their frequency as sometimes or often (2 or 3) were calculated.

When looking at all laboratories, three of the top five reasons for sending specimens out were related to the testing site or physician wanting to verify a result: *To verify our test result* (38%); *Physician wants a more definitive result than possible on-site* (26%); and *Result is abnormal, physician wants confirmation of result* (25%). The remaining reasons in the top five were for: *Test is part of a less expensive profile or panel which physician has ordered* (30%) and



Mandated by managed care provider or insurance contract agreement (18%).

Figure 1

Overall, POLs demonstrated higher frequencies than hospital or independent laboratories for every reason, with a few exceptions. Hospital laboratories demonstrated higher frequencies than POLs or independent laboratories for the following reasons: *Instrument problem or failure; Reagent problem or failure; and Run out of reagents.*

For POLs, sending tests out that are *Part of a less expensive profile or panel which the physician has ordered* ranked second, with 41% ranking the frequency sometimes or often, and 59% if rural. This reflects the profiling capabilities of POLs, with a lower capacity in the rural areas.

Frequencies for *Regular testing personnel absent* and *Specimen collected too late to complete test on-site before work shift ends* were higher in POLs than in hospital or independent laboratories, demonstrating their degree of reliance on other facilities for staffing issues.

Table 7 - Reasons for Sending Specimens to Reference Laboratories

Reason	Percent of Labs That Ranked Frequency as "Sometimes" or "Often" (2 or 3)				
	Urban (n=151)	Rural (n=65)	POL (n=124)	Hospital (n=53)	Independent (n=39)
To verify our test result	37	40	52	16	24
Test is part of a less expensive profile or panel	24	45	41	17	16
Result is abnormal, physician wants confirmation	24	28	31	15	18
Physician wants a more definitive result than possible on-site	28	20	30	21	18
Mandated by a managed care provider or insurance contract agreement	20	14	21	19	8
Specimen collected too late to complete on-site	15	12	20	6	8
Result is indeterminate or difficult to interpret	16	14	20	12	8
Instrument problem or failure	13	17	14	19	8
Regular testing personnel absent	8	9	14	2	0
Result exceeds linear limit of my method	8	9	12	6	2
Test is requested stat and we do not perform on that basis	8	8	9	8	5
Physician questions the accuracy of my result	8	5	7	6	8

Reagent problem or failure	7	8	6	13	5
Run out of reagents	3	8	2	11	0
Patient asks that test be performed at different lab	3	4	4	4	0

There has been focused attention recently on the effects of managed care on access to laboratory testing. A Department of Health and Human Services, Office of the Inspector General report: "CLIA's Impact on the Availability of Laboratory Services", released June 1995 cited managed care as one of many reasons for changes in laboratory testing patterns. In addition, in meetings held throughout Washington state with network participants in September 1995, the influence of managed care and insurance contracts was a recurrent topic of concern. The general consensus of the network participants (based on perceptions and actual experiences) was that insurance companies and managed care organizations were playing an ever-increasing role in determining where laboratory testing was performed. Based on this pervasive concern, we included this concept as one of the choices of reasons for sending testing to a reference laboratory. Among all laboratory types, *Mandated by managed care provider or insurance contract agreement* ranked 5th in frequency with 39% of laboratories demonstrating that it had some effect on their practices (those ranking 1, 2 or 3), 18% ranking sometimes or often (2 or 3) and 5% ranking often (3). Managed care or insurance contract agreements affected urban POLs and hospitals at a higher rate than rural POLs, hospitals and independent laboratories. Urban independent laboratories had the lowest frequency of ranking this as sometimes or often. Presumably, the urban independent laboratories are the ones that are obtaining the managed care or insurance company contract work.

The frequency of sending testing out due to a managed care contract correlates with the proximity of the reference laboratory used. Twenty-five percent of POLs that are within ten miles of their reference laboratory ranked *Mandated by managed care provider or insurance contract agreement* as a 2 or 3, compared to 12% of POLs that use a reference laboratory greater than 100 miles away. There were 11 laboratories that gave the ranking of 3 (often). One hundred percent of those were POLs, of which 64% were low volume laboratories, performing less than 10,000 tests per year.

Table 8 - Sending Specimens to Reference Laboratories Due to Managed Care Provider Agreement

Type of Lab	Number of Labs	Percent of Labs Ranking Sometimes or Often (2 or 3)
Urban POL & Hospital	119	23
Rural POL, Hospital & Independent	64	14
Urban Independent	28	7
POLs using reference lab within 10 miles	56	25
POLs with reference lab > 100 miles away	17	12

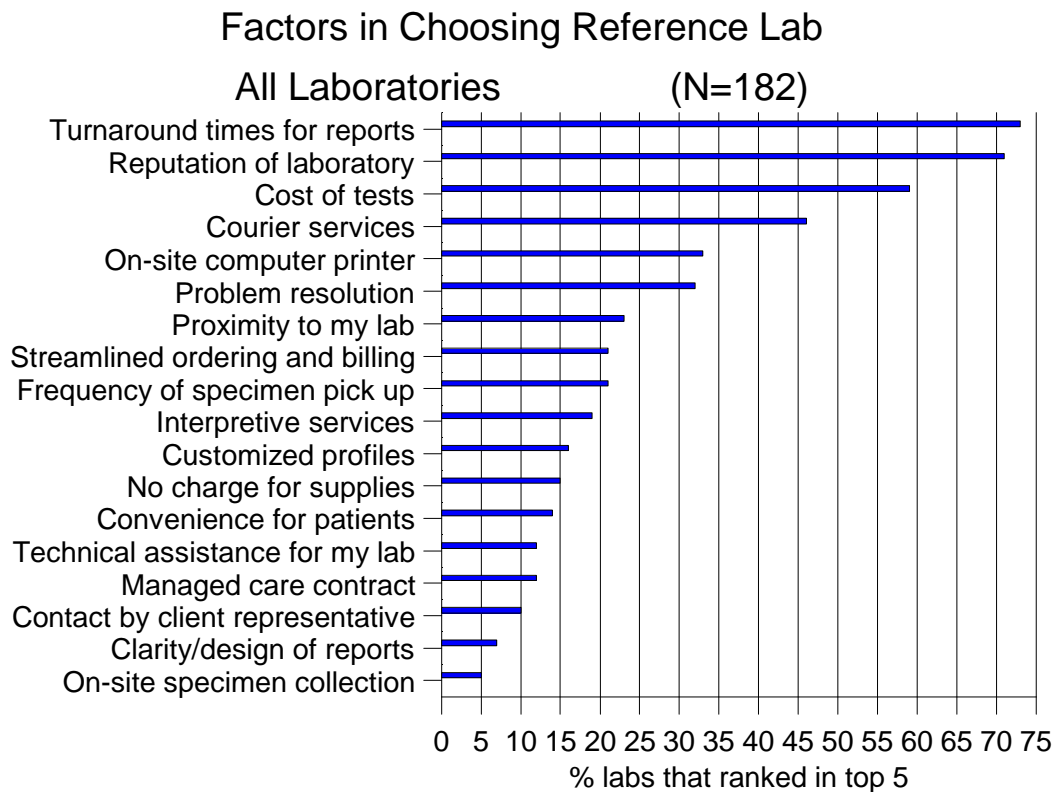
Factors in Choosing a Reference Laboratory

Participants were asked "What were the most important factors in choosing your reference laboratory. Rank your top five factors, with 1=the most important, 2= second most important, 3=third most important, 4=fourth most important, and 5=fifth most important factor". For each of 18 possible factors, the percent of laboratories that gave a ranking of 1, 2, 3, 4 or 5 was calculated.

One hundred eighty-two laboratories answered this question according to the instructions. When looking at all laboratories, factors with the highest percentage of laboratories ranking in the top five were: *Turnaround times for test reports* (73%); *Reputation of the laboratory* (71%); *Cost of tests* (59%); *Courier services* (46%); and *On-site computer printer for test results* (33%).

Ranking among the lowest percentages for all laboratories were: *Availability of technical assistance for testing done in my laboratory* (12%); *Mandated by managed care provider or insurance company contract* (12%); *Frequent contact by client representative* (10%); *Clarity or design of test reports* (7%); and *On-site specimen collection at no charge* (5%).

Figure 2 .



Cost of tests and *On-site computer printer for test results* were factors that were ranked in the top five by a higher percentage of hospital laboratories than by POLs or independent laboratories. For *Proximity to my facility*, the opposite was found, with a lower percentage of hospital laboratories ranking this in the top five, compared with POL or independent laboratories.

Reputation was ranked in the top five by a higher percentage of independent or hospital laboratories than by POLs. *Customized profiles to suit the needs of my practice*, *No charge for supplies*, and *Mandated by managed care provider or insurance company contract* were factors ranked in the top five by a higher percentage of POLs than independent or hospital laboratories.

Higher percentages of independent laboratories ranked *Availability of staff for problem resolution* and *Availability of interpretive services* in the top five than did POLs or hospital laboratories.

Table 9 - Factors In Choosing a Reference Laboratory - POL, Hospital and Independent Laboratories

Factor	Percent of Labs that Ranked Factor in Top 5		
	POL N=109	Hospital N=48	Independent N=25
Turnaround times for test reports	70	77	76
Reputation of the laboratory	62	85	84
Cost of tests	50	83	52
Courier services	46	52	32
On-site computer printer for test results	29	48	20
Availability of staff for problem resolution	30	29	48
Proximity to my facility	28	8	24
Streamlined systems for ordering and billing	17	31	20
Frequency of specimen pick up	22	21	16
Availability of interpretive services	17	17	28
Customized profiles to suit the needs of my practice	24	2	12
No charge for supplies	23	4	4
Convenience for patients	18	4	12
Availability of technical assistance for testing done in my lab	13	10	12
Mandated by managed care or insurance company contract	18	0	8
Frequent visits by client representative	11	10	4
Clarity or design of test reports	9	2	8

On-site specimen collection services at no charge	6	4	4
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Five factors (*Proximity to my facility; Courier services; Frequency of specimen pick up; On-site computer printer for test results; and Mandated by managed care provider or insurance contract agreement*) were predicted to demonstrate higher or lower percentages, based on the location of the participant laboratory.

It was found that *Courier services* and *On-site computer printer for test results* were ranked in the top 5 by a higher percentage of rural laboratories than urban laboratories. These factors would be more critical for specimen integrity and report turnaround times due to the remote or isolated location. *Proximity to my laboratory* and *Frequency of specimen pick up* were ranked by a lower percentage of rural laboratories than urban laboratories. For remote laboratories, these factors are less likely to be realistic choices. Managed care appears to affect laboratories in rural locations at a lower frequency than those in urban locations.

In this questionnaire, participants were asked to "describe their location". It was found that 23 respondents perceived their location as rural, even though they are technically categorized as urban, by Census Bureau designations. This group was compared to all urban laboratories and all rural laboratories, for these same five factors that relate to participant laboratory location.

For this group, it was found that the percentages were more like rural laboratories for *Proximity to my laboratory* and *Courier services* and more like urban laboratories for *Mandated by managed care provider or insurance contract agreement*. The percentages for *Frequency of specimen pick up* and *On-site computer printer for test results* fell in between those of urban and rural locations, for this group.

Table 10 - Factors in Choosing a Reference Laboratory - Urban and Rural Locations

Factors	Percent of Labs that Ranked Factor in Top 5		
	Urban Labs N=129	Rural Labs N=53	Labs that are urban but perceive their location as rural N=21
Proximity to my facility	28	9	14
Courier services	43	53	67
Frequency of specimen pick up	25	11	19
On-site computer printer for test results	27	47	38
Mandated by managed care or insurance company contract	14	8	14

Forty-one laboratories listed *Proximity to my laboratory* as one of the their top five factors in

choosing a reference laboratory. Of those, 33 (80%) indicated that their reference laboratory was located within 25 miles of their facility.

Mandated by managed care provider or insurance contract agreement was a top five factor for 12 percent of laboratories. Eighteen percent of POLs ranked this in the top five, with 10 percent calling this their number one factor. No hospital laboratories (0%) ranked this as a top five factor and only 8% of independent laboratories did so.

Consequences of Not Being Able to Perform Testing On-Site

Participants were asked "What do you see as the general consequences of not doing a particular test on-site?". Using a list of nine possible consequences, participants were asked to judge the severity of each, for laboratory testing in general.

As expected, we received a few comments from respondents who demonstrated their difficulty in answering this question for testing in general, rather than for specific laboratory tests. We intentionally wanted to probe general feelings and perceptions and to determine which types of consequences (for the patient, for the facility, for the specimen integrity/quality) were more or less tolerable. With so much attention paid to "access" to laboratory testing, we hoped to illuminate how laboratories categorize this broad concept. In questionnaire 3, we will again be investigating access-related issues, but in relation to specific laboratory tests. Participants will be asked to share information about specific on-site testing they have added or deleted and deem essential for optimal patient care.

For each general consequence listed, laboratories ranked their perception of the severity from 0 to 3, with 0 = very little or no consequence and 3 = severe consequence. If a particular consequence did not apply to a participant laboratory, they were instructed to respond "Not applicable for my type of laboratory". For each consequence, the percent of laboratories ranking the severity as a 2 or 3 was calculated.

The number of responses, where laboratories felt the consequence was applicable for their facility, ranged from 134 to 184. For all laboratory types, *A delay in patient treatment* was ranked as the highest degree of severity, with 75% ranking this a 2 or 3. This was followed by consequences that caused inconvenience for patients: *Patient would have to go to another lab to submit specimen* (57%) and *Patient would have to return for another office call* (53%). Consequences for specimen integrity/quality were ranked lower in severity: *Result accuracy may be compromised* (49%) and *Patient specimen may be compromised* (46%).

Perceived to be of lowest severity were consequences for the facility: *Reimbursement for test may be lower* (32%); *A phone call follow up would be necessary* (20%); and *There would be extra paper work to chart and evaluate laboratory results* (18%).

Table 11 - Consequences of Not Being Able to Perform Testing On-Site - All Laboratories

Consequence	Percent of labs ranking severity as 2 or 3	Number of labs where consequence was applicable
A delay in patient treatment would occur	75	184
Patient would have to go to another lab to submit specimen	57	134
Patient would have to return for another office call	53	142
Cost to patient may be higher	49	171
Result accuracy may be compromised	49	165
Patient specimen may be compromised due to the distance of reference lab or infrequent specimen pick up times	46	167
Reimbursement for test may be lower	32	151
A phone call follow up would be necessary	20	153
There would be extra paper work to chart and evaluate results	18	177

For urban laboratories, consequences related to patient inconvenience were ranked higher in severity than those related to specimen integrity/quality. For rural laboratories, the opposite pattern was true - the consequences related to specimen integrity/quality were found to be more severe than those for patient inconvenience. The consequences related to patient inconvenience were judged to be more severe than those related to specimen integrity/quality for POLs and independent laboratories. This pattern was reversed for hospital laboratories.

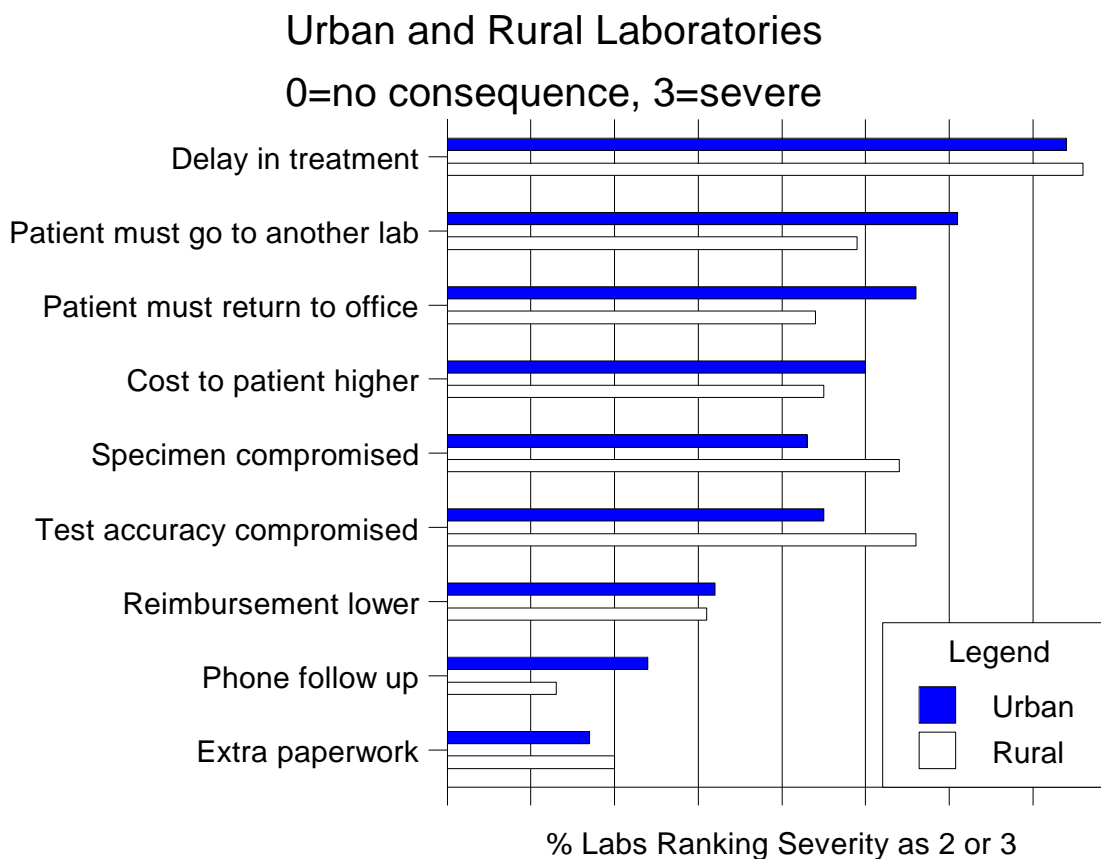
Figure 3 Consequences of Not Being Able to Perform Testing On-Site

Table 12-Consequences of Not Being Able to Perform Testing On-Site-POL, Hospital and Independent Labs

Consequence	Percent of Labs Ranking Severity as 2 or 3*		
	POL	Hospital	Independent
Delay in treatment	72	80	80
Patient would have to go to another lab	58	51	60
Patient would have to return for another office call	55	44	56
Cost to patient may be higher	52	41	48
Result accuracy may be compromised	44	61	45
Patient specimen may be compromised	41	61	46
Reimbursement for test may be lower	29	36	35
Extra paper work to chart and evaluate results	20	13	20
Phone call follow up would be necessary	22	3	33
* On a scale where 0 = little or no consequence and 3 = severe consequence			

Discussion

In this questionnaire, the availability and utilization of laboratory testing services from outside sources was explored in several ways. For testing that participant laboratories perform on-site, we investigated: the availability of duplicate testing; the utilization of reference laboratories to support their on-site testing; and the role of managed care contracts in the shift of testing (for which the laboratory has on-site capabilities) to outside sources.

For testing referred to another laboratory (that participant laboratories do not perform on-site) we investigated: the proximity of reference laboratories used; the expectations that participant laboratories have of their reference laboratory; and the role of managed care contacts in deciding where referral work is sent.

Lastly, we gained an insight into the perceived consequences of not being able to perform testing on site.

Access Issues for All Laboratories

For testing they perform on-site, participants use reference laboratories primarily for quality

assurance reasons and when the test is part of a less expensive profile.

Thirty-nine percent of all laboratories recognize some influence from managed care provider or insurance company contract agreements in shifting their on-site testing to an outside laboratory. Eighteen percent of laboratories ranked this influence as occurring "sometimes" or "often" and 5 % ranked it as "often".

Participants select laboratories for their referral work based on turnaround times, reputation and cost. Next in priority were courier services and on-site computer printers, making proximity to the reference laboratory a less important concern. Forty-two percent of participants send their referral testing to a laboratory that is more than 50 miles away and 30 % send to one more than 100 miles away.

Twelve percent of laboratories selected managed care provider or insurance contract agreements as one of their top five factors in determining where their referral work is sent. Eighteen percent of POLs ranked this as one of their top five factors, with 10% calling it their number one factor. No hospital laboratories and only 8% of independent laboratories selected this factor among the top five. Presumably, this is where the managed care reference work is going.

All laboratories agreed that a delay in patient treatment was the most intolerable consequence of not being able to perform testing on-site. Consequences related to convenience for the facility were recognized as the least severe.

Differences in Access Between Urban and Rural Laboratories

It is expected that rural participants are separated by greater distances from other laboratory testing sites than those in urban facilities. Even so, the majority of rural participants (63%) have a laboratory within 25 miles that performs the same testing as they do on-site.

While 60% of urban participants use a reference laboratory within 25 miles only 14% of rural laboratories do. When compared to urban participants, a much lower percentage of rural participants ranked proximity as a top factor in choosing a reference laboratory. Courier services and on-site computer printers featured much higher with rural participants.

Urban participants are the most affected by managed care contracts shifting their on-site testing and referral work to another laboratory, with participants in rural areas less so.

With respect to the perceived consequences of not being able to perform testing on-site, rural laboratories ranked issues related to specimen integrity/quality as more severe than did urban laboratories. With 74% of rural laboratories sending specimens more than 50 miles away, this is an understandable concern. Only 28 % of urban laboratories send specimens more than 50 miles away, so it is expected that issues related to patient convenience were seen as more severe than those related to specimen integrity/quality.

Conclusions

Based on the results of this questionnaire, we did not see any surprising trends in the availability and utilization of laboratory testing services by outside sources. Differences in expectations and perceptions between POL, hospital and independent laboratories were generally predictable, given the unique aspects of testing capabilities in each of these settings. Other than the subtle differences already mentioned, the overall trends in choosing and using reference laboratories and in perceiving access to testing were the same for participants in urban and rural locations.

Despite the recent attention focused on the effects of managed care on access to laboratory testing, this did not appear to have as much of an impact as predicted. While laboratories in urban areas recognize the effects of managed care to a higher degree than those in rural areas, the numbers of laboratories affected in either location are not high.