The Pacific Northwest Laboratory Medicine Sentinel Monitoring Network
Final Report of the Findings of Questionnaire 3
Access to Laboratory Testing

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Questionnaire 3 was mailed to all 257 network participants in March 1996. This questionnaire represents the second of two data-gathering devices that focused upon issues related to access to laboratory testing. In questionnaire 2, we characterized general trends in the availability and utilization of laboratory testing services from outside sources. We also gained an insight into the consequences perceived by laboratories of not being able to perform testing on-site. Questionnaire 3 was designed to learn about specific laboratory tests that have been added or deleted and those deemed essential for optimal patient care. In addition, we hoped to recognize the various influences that are creating changes in on-site testing menus for clinical laboratories.

Questionnaire 3

One hundred ninety three completed questionnaires were received in time for analysis, a 75% response. The laboratories responding to questionnaire 3 were categorized as follows: 115 (60%) physician office laboratories (POLs); 44 (23%) hospital laboratories and 34 (17%) independent laboratories. Using 1990 United States Census Bureau designations, 135 (70%) were categorized as urban and 58 (30%) as rural. One hundred ninety-two respondents indicated their background and role in laboratory testing. The majority (72%) were medical technologists or medical laboratory technicians. Medical doctors accounted for 5% of the individuals responding to questionnaire 3.

Changes in Total Test Volume

Network laboratories were asked "In the past two years, has the total number of patient tests performed on-site increased, decreased or remained the same?" In this question, the total patient test volume was considered essentially the same if it remained within 10%.

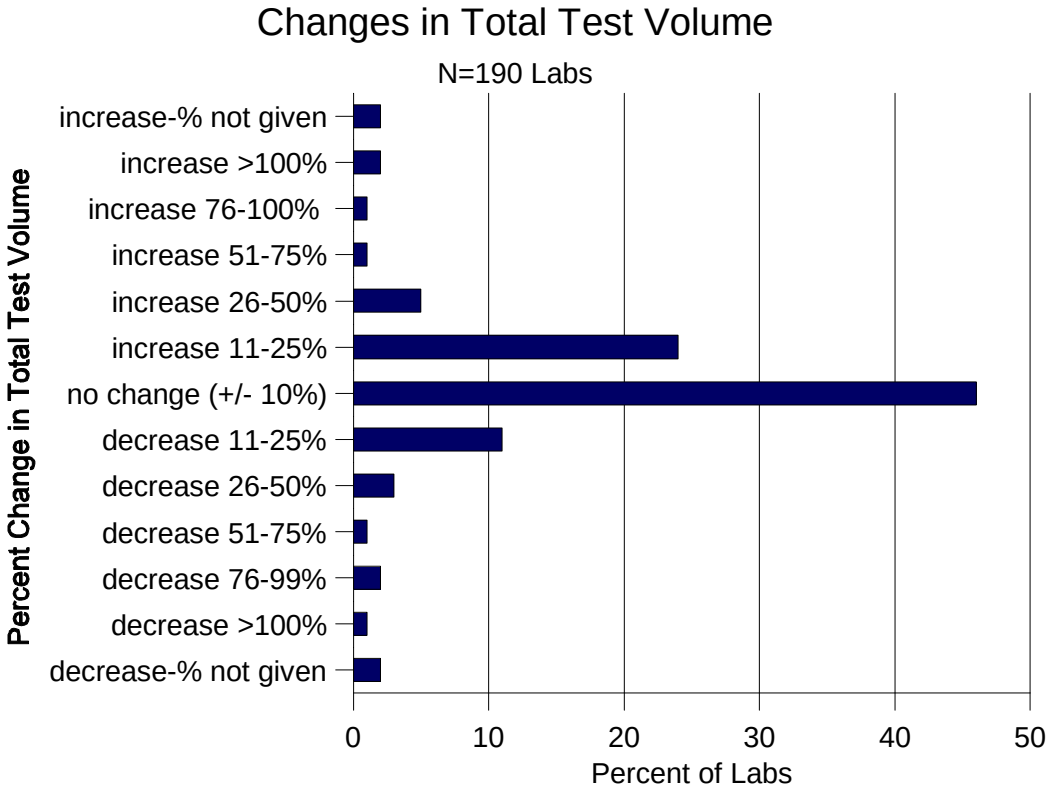
One hundred ninety laboratories answered this question as intended. For 88 respondents (46%), the total patient test volume remained essentially the same. Sixty-seven respondents (35%) indicated an increase in total test volume and 35 (18%) a decrease. One hundred eighteen laboratories (63%) based their response on the review of actual records, 70 laboratories (37%) based it on an estimate. There were no significant differences in the patterns of test volume change between POL, hospital, and independent laboratories or between urban and rural laboratories.

Table 1 - Changes in Total Test Volume

		Change in Total Test Volume - Number of Labs (%)		
		No Change	**Increase**	**Decrease**
All Labs	(N=190)	88 (46%)	67 (35%)	35 (18%)
POL	(N=112)	50 (45%)	39 (35 %)	23 (20%)
Hospital	(N= 44)	22 (50%)	16 (36%)	6 (14%)
Independent	(N= 34)	16 (47%)	12 (35%)	6 (18%)
Urban	(N=132)	63 (48%)	46 (35%)	23 (17%)
Rural	(N= 58)	25 (43%)	21 (36%)	12 (21%)
Test Volume <10,000/year	(N= 89)	44 (49%)	27 (30%)	18 (20%)
Test Volume >10,000/year	(N=101)	44 (44%)	40 (40%)	17 (17%)

Of the 102 laboratories that had a change in total patient test volume, the most common percent change was found to be within 11 to 25% for laboratories that experienced a total volume increase or decrease. Figure 1 summarizes the patterns of total volume changes among all respondents.

Figure 1



Reasons For Changes in Total Test Volume

Laboratories that recorded an increase or decrease in total test volumes were asked "what were the reasons for the change in total test volume?" Using a list of 18 possible reasons, respondents were asked to choose one primary reason and up to three secondary reasons.

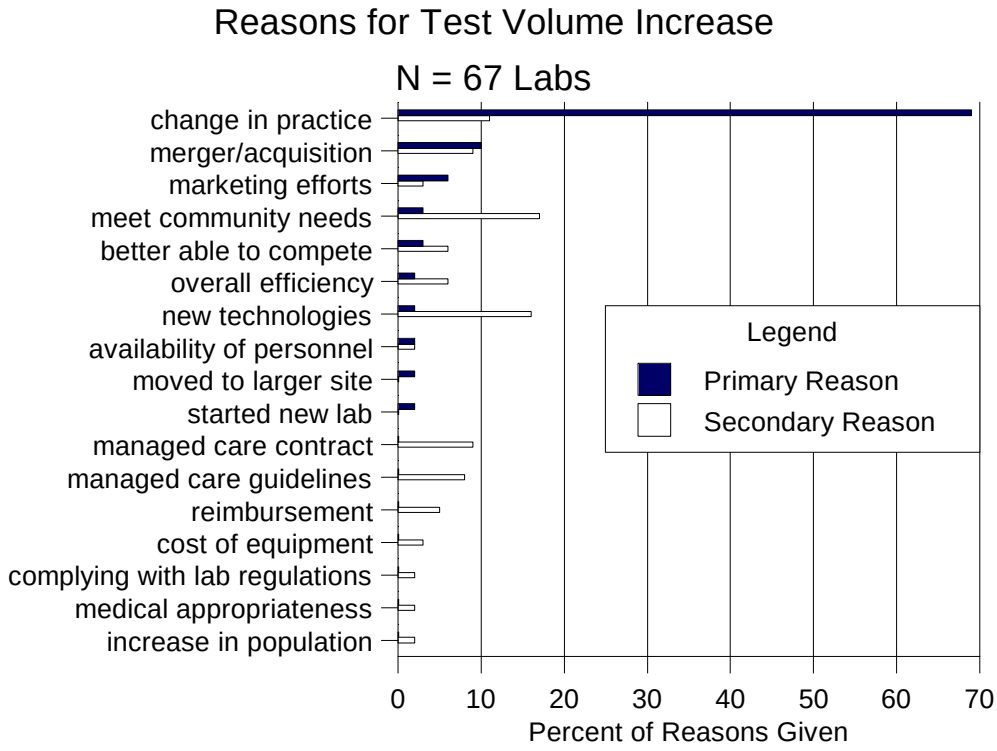
Laboratories with a Total Volume Increase

Of the 67 laboratories that recorded an increase in total test volume, the top primary reasons given were: *Changes in practice - # providers, # patients seen, case mix of patients seen (*69%) and *Result of mergers/acquisitions (*10%). The secondary reasons given most frequently were: *Changes to meet community or client needs* (17%) and *Availability of new testing technologies* (16%).

When individual reasons are grouped into categories of interest, those related to practice changes and marketplace issues (*To meet community or client needs; Result of mergers or acquisitions; Better able to compete in marketplace; Change in marketing efforts*) accounted for 95% of the primary reasons given. When all secondary reasons given are grouped, marketplace issues comprised 36% of the responses, technology-related issues (*Availability of new testing technologies; Changes in costs of equipment, reagents, supplies)* accounted for 19% of the reasons and practice changes for 13%. *Testing performed on-site due to managed care or insurance contract agreement* accounted for 9% of all secondary reasons given. None of the respondents gave this as a primary reason for their increase in total test volume.

Figure 2 shows a summary of the individual primary and secondary reasons given by all respondents that experienced an increase in total test volume within the past two years.

Figure 2


Reasons for Test Volume Increase
N = 67 Labs
change in practice
merger/acquisition
marketing efforts
meet community needs
better able to compete
overall efficiency
new technologies
availability of personnel
moved to larger site
started new lab
managed care contract
managed care guidelines
reimbursement
cost of equipment
complying with lab regulations
medical appropriateness
increase in population
Legend
Primary Reason
Secondary Reason
0
10
20
30
40
50
60
70
Percent of Reasons Given

For POLs, the most common reasons (primary or secondary) given for the increase in total test volume were related to changes in practice. The most common reasons given by hospital and independent laboratories were related to marketplace issues. Table 2 summarizes the reasons given by laboratories categorized as POL, hospital, or independent; and as urban or rural.

Table 2 - Reasons for Increase in Total Test Volume
POL, Hospital, Independent, Urban and Rural Laboratories

Reasons Related to:	Percent of all reasons given (primary and secondary) by each of the following types of laboratories:				
	POLs 39 labs 66 reasons	**Hospital** 16 labs 38 reasons	**Independent** 12 labs 21 reasons	**Urban** 46 labs 84 reasons	**Rural** 21 labs 41 reasons
Practice Changes (#providers, #patients seen, case mix of patients)	55	29	24	44	37
Marketplace Issues (meet community needs; mergers/acquisitions; better able to compete; marketing efforts)	14	47	48	29	32
Technology (cost of testing equipment; availability of new technologies)	12	5	14	10	12
Managed Care or Insurance Contract Agreement	5	3	10	6	2

Laboratories with a Total Volume Decrease

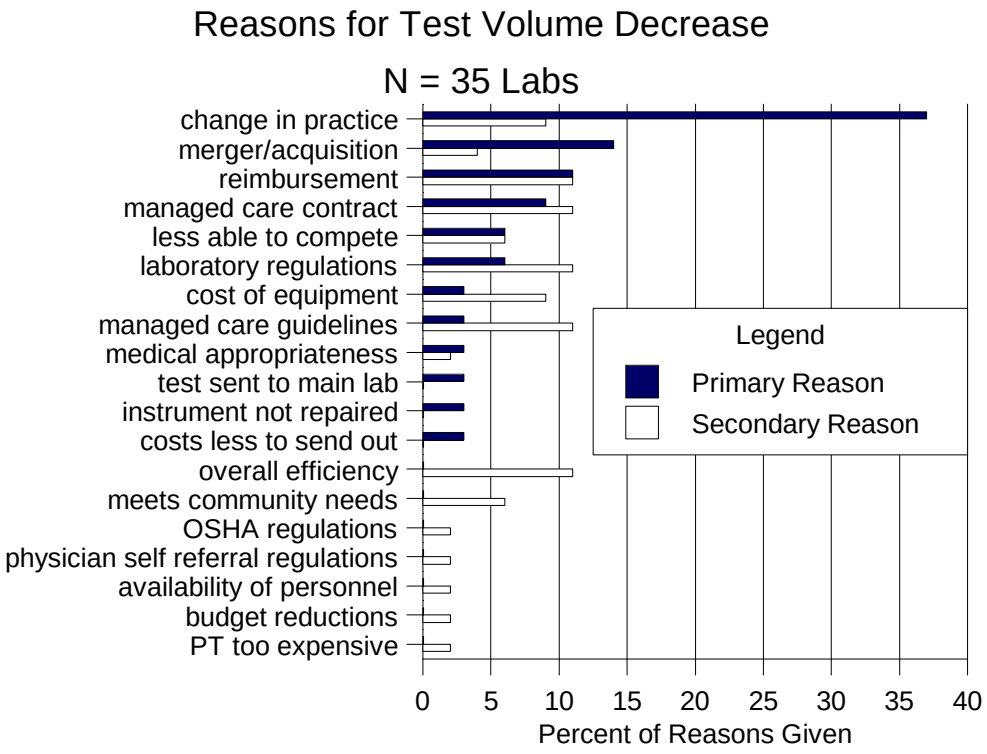
Of the 35 laboratories with a decrease in total test volume, the top primary reasons given were: *Change in practice - # providers, # patients seen, case mix of patients seen* (37%); *Result of mergers/acquisitions* (14%); and *Changes in reimbursement for on-site testing* (11%). The most common secondary reasons given were: *Changes in overall efficiency-overhead costs, billable procedures* (11%); *Changes in reimbursement for on-site testing* (11%); *Complying with laboratory regulations-CLIA, state* (11%); *Testing sent out due to managed care or insurance contract agreement* (11%); and *Changes in managed care guidelines* (11%).

When individual reasons are grouped into categories of interest, those related to practice changes and marketplace issues accounted for 60% of the primary reasons. When all secondary reasons are grouped, issues related to costs (*Changes in overall efficiency-overhead costs, billable procedures; Changes in cost of testing equipment, reagents, supplies; Changes in reimbursement for on-site testing*) comprised 30%, with marketplace issues accounting for 17% and regulatory issues (C*omplying with laboratory regulations-CLIA, state; Complying with OSHA regulations; Complying with physician self-referral regulations; Proficiency testing too expensive*) for 17%.

When combining all reasons (primary and secondary) given by POLs, those related to costs were most frequently given. For hospital laboratories, practice changes ranked highest and for independent laboratories, marketplace issues had the highest ranking. (A detailed comparison of categories of reasons versus laboratory types is not presented here, due to the low numbers of hospital, independent and rural laboratories that had a total volume decrease).

Figure 3 shows a summary of the individual primary and secondary reasons given by all respondents that experienced a decrease in total test volume within the past two years.

Figure 3


Reasons for Test Volume Decrease
N = 35 Labs
change in practice
merger/acquisition
reimbursement
managed care contract
less able to compete
laboratory regulations
cost of equipment
managed care guidelines
medical appropriateness
test sent to main lab
instrument not repaired
costs less to send out
overall efficiency
meets community needs
OSHA regulations
physician self referral regulations
availability of personnel
budget reductions
PT too expensive
Legend
Primary Reason
Secondary Reason
0
5
10
15
20
25
30
35
40
Percent of Reasons Given

Laboratories that Discontinued Testing

Laboratories were asked to list up to five tests that were discontinued in the past two years. For each test listed, laboratories were asked to give one primary reason and up to three secondary reasons for discontinuing the test. In addition, for each test listed, laboratories were asked to describe changes in the number of orders of each test since it was discontinued.

One hundred seven laboratories (55%) discontinued at least one test in the past two years. A total of 276 tests were discontinued by these laboratories. Chemistry tests were discontinued by the highest percentage of laboratories (64%), followed by: diagnostic immunology tests (30%); hematology tests (28%); microbiology tests (28%); waived tests (5%); and blood bank tests (2%). Forty-five percent of laboratories discontinued testing from multiple specialties.

Respondents indicated changes in ordering patterns for 239 of the tests which were discontinued. For the majority of tests listed (72%), orders for the test remained the same when it was no longer performed on-site. For 23 % of the tests, orders decreased and for 5% of the tests, orders increased.

There were no significant differences between POL, hospital or independent laboratories with respect to the percentages that discontinued testing. A higher percentage of rural laboratories discontinued testing than did urban laboratories. Large laboratories (annual test volumes > 10,000) discontinued testing at a higher rate than small laboratories (annual tests volumes < 10,000).

Table 3 - Laboratories that Discontinued Tests

	POL	Hospital	Independent		Urban	Rural		Annual Test Volume	
								<10,000	>10,000
Number of Labs	115	44	34		135	58		92	101
Percent that discontinued tests	56	57	50		51	66		47	63

Reasons That Tests Were Discontinued

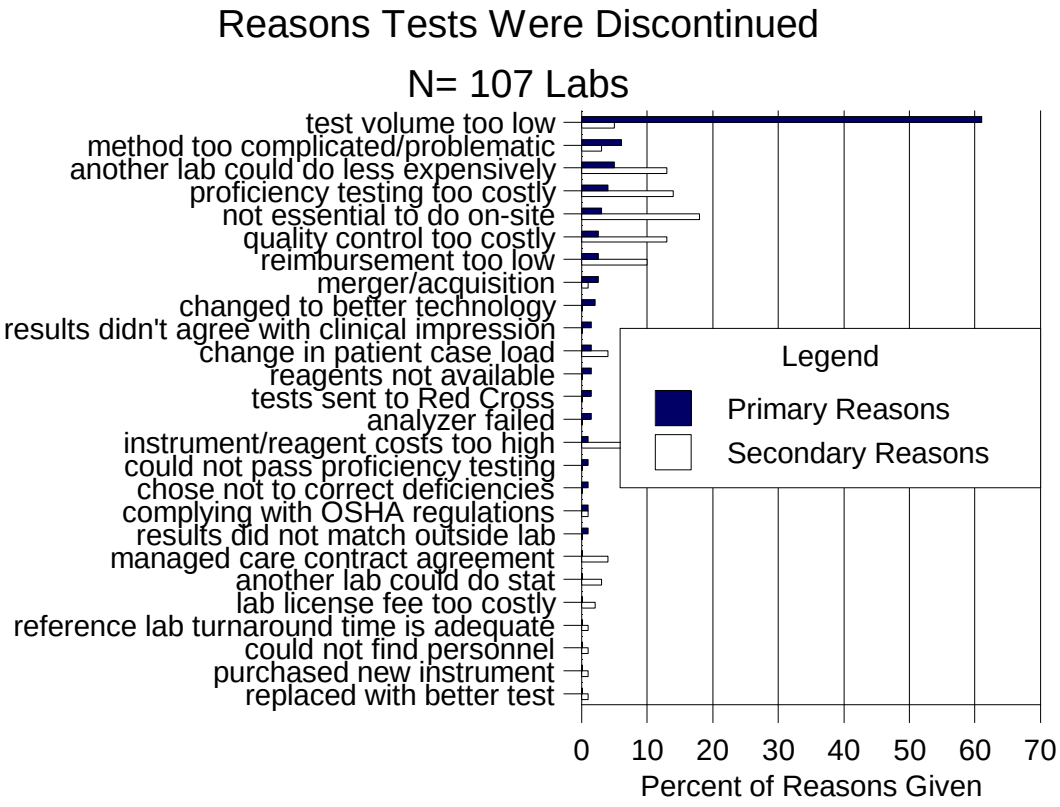
The most common primary reasons given for discontinuing tests were: *Test volume was too low to be cost effective* (61%); *Method was too complicated or problematic* (6%); *Another laboratory could perform less expensively* (5%). The most frequent secondary reasons given for discontinuing tests were: *Determined that test was not essential to perform on-site* (18%); *Proficiency testing was too costly* (14%); *Quality control requirements made test too costly* (13%); *Another laboratory could perform less expensively* (13%); and *Reimbursement was too low to justify doing on-site* (10%).

When individual reasons are grouped according to categories of interest, those related to practice issues (*Test volume was too low to be cost effective; Change in patient load or case mix; Determined that test was not essential to perform on-site; Another laboratory could perform STAT*) and those related to test technology/accuracy issues (*Method was too complicated or problematic; Results did not agree with clinical impression, patient history, outcome; Replaced with better technology; Results didn't match an outside laboratory;* and *Could not achieve acceptable scores on proficiency testing*) accounted for 75% of the primary reasons.

When all secondary reasons were grouped, 31% of the reasons related to regulatory issues (*Quality control requirement made test too costly; Laboratory license fees were too costly; Proficiency testing was too costly; Could not find personnel with necessary training or qualifications to perform test; Concerned with meeting OSHA requirements)*, with practice related issues and non-regulatory cost issues (*Reimbursement was too low to justify doing on-site; Instrument or reagent costs were too high; Another lab could perform less expensively*) comprising another 30% each. *Mandated by a managed care or insurance contract agreement* accounted for only 4% of all secondary reasons given for discontinuing a test. No one gave this as a primary reason.

Figure 4 summarizes all the primary and secondary reasons given for tests that were discontinued.

Figure 4


Reasons Tests Were Discontinued
N= 107 Labs
test volume too low
method too complicated/problematic
another lab could do less expensively
proficiency testing too costly
not essential to do on-site
quality control too costly
reimbursement too low
merger/acquisition
changed to better technology
results didn't agree with clinical impression
change in patient case load
reagents not available
tests sent to Red Cross
analyzer failed
instrument/reagent costs too high
could not pass proficiency testing
chose not to correct deficiencies
complying with OSHA regulations
results did not match outside lab
managed care contract agreement
another lab could do stat
lab license fee too costly
reference lab turnaround time is adequate
could not find personnel
purchased new instrument
replaced with better test
Legend
Primary Reasons
Secondary Reasons
0
10
20
30
40
50
60
70
Percent of Reasons Given

Discontinued Testing According to Laboratory Specialties

A total of 144 chemistry tests were discontinued by 68 laboratories. More than half (55%) of these tests were common, routine chemistries or chemistry profiles. Enzymes, lipids and electrolytes were listed most frequently among the routine chemistry tests discontinued. Thyroid testing accounted for another 13% of the tests discontinued and therapeutic drug tests for 12%.

Thirty-seven microbiology tests were discontinued by 30 laboratories. Direct Strep antigen, Chlamydia, parasitology and "other" cultures (not throat or urine) comprised 65% of the tests listed.

Thirty laboratories discontinued 34 hematology tests. Reticulocyte counts accounted for 38% of the tests listed, followed in frequency by coagulation testing (18%) and complete blood counts (CBC) (12%).

Forty-six diagnostic immunology tests were discontinued by 32 laboratories. The tests most frequently discontinued were mononucleosis testing (24% of all diagnostic immunology tests discontinued), rheumatoid arthritis testing (17%) and hepatitis testing (9%).

Seven waived tests were discontinued. Under blood banking, two tests were listed as discontinued. A remaining six tests were categorized as "other", consisting primarily of miscellaneous microscopic examinations.

Reasons for Discontinuing Testing, by Laboratory Specialties

Within each laboratory specialty, each primary reason given at least once by a laboratory was counted and added to each of the secondary reasons given at least once per laboratory. This total number of reasons was used to calculate the frequencies at which tests were discontinued, according to laboratory specialties and according to categories of interest. Table 4 summarizes this information.

Table 4 - Reasons for Discontinuing Testing - By Laboratory Specialty

Reasons Related to:	Percent of all reasons (primary and secondary) given for discontinuing tests, according to the following laboratory specialties:			
	Chemistry 68 labs 144 tests 160 reasons	**Microbiology** 30 labs 37 tests 68 reasons	**Hematology** 30 labs 34 tests 57 reasons	**Immunology** 32 labs 46 tests 68 reasons
Practice Changes (Test volume too low; Change in patient load; Not essential to perform on-site; Another lab could perform Stat)	46	38	40	49
Cost (Non-Regulatory) (Reimbursement too low; Instrument/reagent costs too high; Another lab could perform less expensively)	25	13	12	15
Regulatory (Quality control requirements too costly; Proficiency testing too costly; Lab license fees too costly; Chose not to correct deficiencies cited; OSHA requirements)	11	35	26	29
Method too complicated or problematic	4	7	14	0
	Tests listed as "method too complicated or problematic":			
	Amylase, HDL, Cholesterol, Total T3, Theophylline, L/S ratio	Cultures-other, Chlamydia, AFB testing, Yeast wet mount	WBC, Hemoglobin, Hematocrit, Reticulocyte, Hgb A1C, Sickle cell test	None

Focus on POLs that Discontinued Testing

In order to characterize the types of POLs in the network that have discontinued testing, data were correlated to location, size of laboratory (based on annual test volume) and size of practice (based on the number of physicians ordering testing). It was found that a higher percentage of rural POLs discontinued testing (76%) than did urban POLs (51%). It was also found that large POLs discontinued testing at a higher rate than small POLs. This was determined by comparing POLs based on annual test volume: 64% of large laboratories (>10,000 tests/year) discontinued testing compared with 53% of small laboratories (<10,000 tests/year) and by comparing size of

practice: 67% of large practices (4 or more physicians) discontinuing testing compared with 56% of small practices (1-3 physicians).
Reasons given by POLs for discontinuing testing fall into categories of practice changes most frequently (38% of all reasons), followed by regulatory issues (24%) and costs (non-regulatory) (21%). A list of the tests discontinued by POLs appears in appendix i.

Laboratories that Added Testing

Laboratories were asked to list up to five tests that they added to their on-site testing menu in the last two years. For each test listed, they were asked for one primary reason and up to three secondary reasons for adding the test. In addition, laboratories were asked to indicate any changes in orders of each test, since it was added.

Seventy-five laboratories (39%) added at least one test in the last two years. A total of 172 tests were added by these laboratories. Chemistry tests were added by the highest percentage of laboratories (61%), followed by: diagnostic immunology tests (33%); hematology tests (25%); microbiology tests (20%); waived tests (5%); blood bank tests (4%); and other tests (4%). Thirty-seven percent of all laboratories added testing from multiple specialties.

Respondents indicated changes in ordering patterns for 136 of the tests they added. For 52% of the tests added on-site, orders remained the same (within 10%). Test orders increased for 46% of the tests that were added, and decreased for 2%.

Hospital and independent laboratories added testing at much higher frequencies than did POLs. A higher percentage of rural laboratories added tests compared to urban laboratories. And large laboratories (annual test volumes >10,000) added testing at a higher rate than did small laboratories (annual test volumes <10,000).

Table 5 - Laboratories that Added Testing

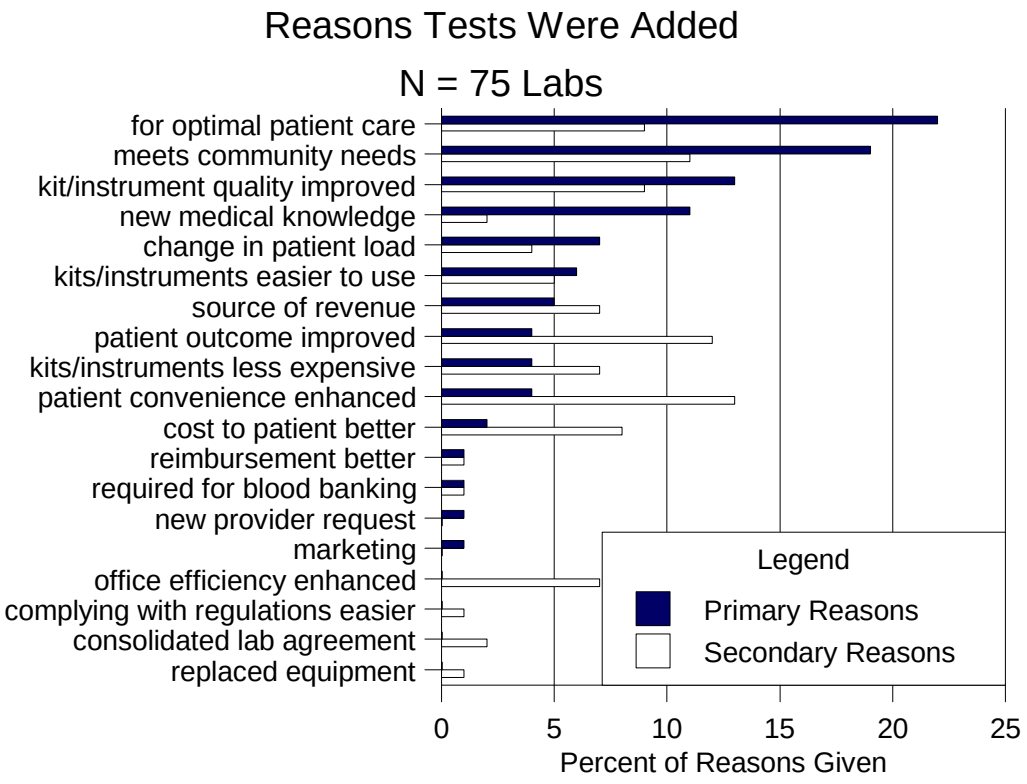
	POL	**Hospital**	**Independent**		**Urban**	**Rural**		**Annual Test Volume**	
								<10,000	>10,000
Number of Labs	115	44	34		135	58		92	101
Percent that Added Tests	24	70	47		33	53		20	56

Reasons That Tests Were Added

The most common primary reasons for adding tests were: *Test is deemed necessary to perform on-site for optimal patient management* (22%); *Meets the needs of the community/clients* (19%); *Better technology available: improved quality of kits of instruments* (13%); and *New medical knowledge that test is appropriate* (11%). The most frequent secondary reasons given were: *Patient convenience is enhanced* (13%); *Patient outcomes are improved* (12%); and *Meets the needs of the community/clients* (11%).

When individual primary reasons were grouped according to categories of interest, 30% related to patient outcome/convenience (*Test deemed necessary to perform on-site for optimal patient care; Patient outcomes are improved; Patient convenience is enhanced*). Issues related to better test technology *(Improved quality of kits/instruments; Kits/instruments are easier to use*) comprised 19% of the primary reasons and meeting the needs of community and clients another 19%. When all secondary reasons were grouped, the highest percent (34%) related to patient outcome/convenience. Issues related to testing costs/revenue (*Costs of kits or instruments are less expensive; Cost to patient is reduced when performed on-site; Reimbursement is better; Provides a source of revenue for practice*) ranked next, comprising 24% of all secondary reasons.

Figure 5


Reasons Tests Were Added
N = 75 Labs
for optimal patient care
meets community needs
kit/instrument quality improved
new medical knowledge
change in patient load
kits/instruments easier to use
source of revenue
patient outcome improved
kits/instruments less expensive
patient convenience enhanced
cost to patient better
reimbursement better
required for blood banking
new provider request
marketing
office efficiency enhanced
complying with regulations easier
consolidated lab agreement
replaced equipment
Legend
Primary Reasons
Secondary Reasons
0
5
10
15
20
25
Percent of Reasons Given

Tests Added by Laboratory Specialties

Forty-six laboratories added 80 chemistry tests. The following were the most commonly added tests: routine chemistries (25%); thyroid tests (free T3, free T4, TSH) (13%); therapeutic drug testing (13%); and drugs of abuse testing (11%).

Twenty-one hematology tests were added by 19 laboratories. Most commonly listed were: hemoglobin A1C (33%); coagulation tests (24%); CBC (19%); and reticulocyte counts (10%).

Fifteen laboratories added a total of 23 microbiology tests. Clostridium difficle antigen was listed most frequently (22%), followed by Chlamydia testing (13%) and urine cultures (13%).

Thirty-four diagnostic immunology tests were added by 25 laboratories. The most common test listed was Helicobacter pylori antibody testing (38%). Hepatitis and HIV tests accounted for another 21% of the diagnostic immunology tests added.

Three waived tests were added. Under blood banking, four tests were listed as added. The remaining seven tests were categorized as "other".

Reasons for Adding Tests, by Laboratory Specialties

Within each laboratory specialty, each primary reason given at least once by a laboratory was counted and added to each of the secondary reasons given at least once per laboratory. This total number of reasons was used to calculate the frequency at which tests were added, according to laboratory specialties and according to categories of interest. Table 6 summarizes this information.

Table 6 - Reasons for Adding Testing - By Laboratory Specialties

Reasons Related to:	Percent of all reasons (primary and secondary) given for adding tests, according to the following laboratory specialties:			
	Chemistry 46 labs 80 tests 128 reasons	**Microbiology** 15 labs 23 tests 43 reasons	**Hematology** 19 labs 21 tests 41 reasons	**Immunology** 25 labs 34 tests 65 reasons
Patient Outcome/Convenience (Patient convenience is enhanced; Patient outcomes are improved; Test necessary for optimal patient management)	34	49	42	17
Cost/Revenue (Kits/instruments are less expensive; Cost to patient reduced when done on-site; Provides a source of revenue for practice; Reimbursement is better)	12	16	20	22
Better Technology (Improved quality of kits/instruments; Kits/instruments are easier to use)	17	14	17	23
Practice Issues (Change in patient workload/case mix; New medical knowledge test is appropriate; Office efficiency is enhanced)	17	9	12	20
Meets the needs of community/clients	17	12	7	14

Focus on POLs that Added Testing

A higher percentage of rural POLs (40%) added testing than did urban POLs (20%). Based on annual test volumes, large POLs (>10,000) added testing at a higher rate than small POLs (<10,000), 33% versus 20% respectively. Thirty three percent of POLs in large practices (4 or more physicians ordering testing) added testing compared with 18% of POLs in small practices (1-3 physicians).

Reasons given by all POLs for adding testing fall into the category of enhanced patient outcome/convenience most frequently (33% of all reasons), followed by issues related to cost/revenue (20%) and practice changes (18%).

The following are tests that POLs added that were *deemed necessary to perform on-site for optimal patient management:* Chemistry tests - albumin, amylase, CO2, creatine kinase, direct bilirubin, drugs of abuse, total protein; Hematology tests - coagulation testing, complete blood

count, reticulocyte count; Microbiology tests - antibiotic sensitivity, Chlamydia testing, urin colony count, urine culture; and Diagnostic Immunology tests - mononucleosis testing.

Testing Currently Performed by POLs - Tests Deemed Essential

From a list of tests commonly performed in POLs, network participants (excluding those in hospital and independent laboratories) were asked to indicate each test currently performed on-site. For the same list of tests, participants were asked to indicate tests felt to be essential to perform on-site for optimal patient management and/or care.

Responses for 93 laboratories, categorized as POL, clinic or health maintenance organization (HMO), were evaluated. The most common tests, performed by more than 75% of these laboratories, were urinalysis, fecal occult blood, urine sediment and other direct microscopic examinations. Between 50 to 75% of all these laboratories perform urine pregnancy test, micro-hematocrit, erythrocyte sedimentation rate (ESR), direct Strep antigen, CBC and white cell differential.

The following tests were deemed essential for optimal patient management by more than 90% of the laboratories that performed them on-site: urinalysis; urine sediment and other direct microscopic examinations; urine pregnancy test; micro-hematocrit; CBC; whole blood glucose; white blood count and hemoglobin and/or hematocrit. Table 7 demonstrates the frequency at which POLs perform selected tests and the frequency at which POLs deem these tests essential for optimal patient care.

Table 7 - Tests Performed by POLs (N=93 Respondents)
Tests Performed by > 75% of POLs

Test	% that currently perform on-site	of those that perform, % that deem essential
urinalysis, waived	89	96
urine sediment examinations	77	93
microscopic examinations	76	93
fecal occult blood	76	79

Tests Performed by 51-75% of POLs

urine pregnancy	68	92
complete blood count (CBC)	68	94
erythrocyte sedimentation rate	67	68
direct Strep antigen	59	87
micro-hematocrit	51	91

white cell differential	51	77

Table 7 (continued)

Tests Performed by 26-50% of POLs

Test	% that currently perform on-site	of those that perform, % that deem essential
whole blood glucose, waived	47	95
mononucleosis screen	47	73
glucose	44	90
white blood count	42	95
hemoglobin or hematocrit	41	95
creatinine	39	67
Gram's stain	37	76
cholesterol	34	44
urine colony count	33	61
HDL cholesterol	31	38
electrolytes (Na, K, or Cl)	30	82
blood urea nitrogen (BUN)	29	70
ALT or AST	29	63
urine culture	29	59
throat culture	29	44
serum HCG	27	64

Table 7 (continued)

Tests Performed by 10 - 25% of POLs

Test	% that currently perform on-site	of those that perform, % that deem essential
coagulation	24	86
bilirubin	23	62
chemistry profile	22	65
antibiotic sensitivity	20	58
rheumatoid arthritis screen	20	26
thyroid testing	19	39
urinalysis by instrument	16	80
cultures - other	15	43
Chlamydia testing	14	39
cardiac enzymes (CK, LD)	13	83
prostate specific antigen	12	27
hemoglobin A1C	11	40
H.pylori antibodies	10	33

Tests Performed by < 10 % of POLs

therapeutic drug monitoring	8	71
hemoglobin, waived	6	100
allergy testing (IgE)	3	67
cholesterol, waived	2	0
ovulation test	2	50

In addition to determining which tests are performed in POLs, we also hoped to determine which tests are not performed in POLs, even though they are felt to be essential for optimal patient care. In this question, laboratories were able to indicate any test that they felt was essential, even though they did not currently perform the test. For any testing listed in this manner, assumptions

could be made that there was some barrier that prevented the POL from performing the test on-site. If this was found to be a frequent occurrence, a future questionnaire could further characterize this area of interest. However, the data gathered from this question demonstrates that this is not a frequent occurrence. Only five laboratories listed tests that were not currently performed on-site, but were felt to be essential. In each of these instances, the laboratory's response to the question about discontinued testing was reviewed. If the same tests that they revealed as essential were listed as discontinued, the reasons were evaluated. The following summarizes the tests listed by these laboratories and correlates them to reasons (if given) explaining why the essential tests are not currently part of their on-site test menu.

Table 8 - Laboratories That Do Not Do Tests Deemed Essential for Optimal Patient Management/ Care

	Tests listed as not currently performed but deemed essential	**Tests listed as discontinued in last 2 years**	**Primary reason given why test was discontinued**
Lab A	Direct Strep antigen, Gram's stain, mononucleosis, rheumatoid arthritis (RA)	Direct Strep antigen, mononucleosis, RA	Proficiency testing was too costly
Lab B	Throat, urine, and other cultures; urine colony count, antibiotic sensitivity, Gram's stain, chemistry profile, AST, bilirubin, CK/LD, cholesterol, creatinine,electrolytes, glucose, serum HCG, therapeutic drugs, thyroid, BUN, PSA, A1C, mononucleosis, RA, CBC, WBC, coagulation.	Mononucleosis, RA, CBC	Test volume was too low to be cost effective
Lab C	Waived glucose, microhematocrit	these were not listed as discontinued	N/A
Lab D	Throat and urine culture, antibiotic sensitivity	throat and urine culture	Test volume was too low to be cost effective
Lab E	Electrolytes, differential	Electrolytes	Instrument needed parts, it was decided not to repair

Discussion

Through data collected from this questionnaire we learned that in the last two years, more network laboratories experienced an increase in total test volume than those with a decrease. The primary reasons for an increase in total volume were related to practice changes, market place influences and changes in testing technology. For laboratories with a total volume decrease, the primary influences related to changes in practice, market place issues and costs.

Fifty-five percent of all network laboratories discontinued at least one test in the last two years. Issues related to practice changes and testing technology accounted for the majority of the primary reasons given. Regulatory issues ranked highest among all secondary reasons given.

Thirty-nine percent of all laboratories added at least one test in the last two years. Hospital and independent laboratories added testing at much higher frequencies than did POLs. Testing was most frequently added because it was deemed essential for optimal patient care, or for enhanced patient outcome and convenience. A higher percentage of rural laboratories added tests and discontinued tests than urban laboratories. A higher percentage of large laboratories and office practices added tests and discontinued tests than small laboratories and office practices.

Managed care or insurance contract agreements were not found to be a significant factor in determining where laboratory testing is being performed.

Only five percent of POLs listed tests that they were not performing on-site, even though they were deemed to be essential for optimal patient care.

Conclusions

Through this data gathering device, we investigated a wide range of factors that affect access to laboratory testing, including high profile issues such as regulations, reimbursement and managed care. We found however, that changes in on-site test volumes and on-site test menus are primarily a result of business decisions, based on medical practice changes and market place influences.

Appendix i **Testing Discontinued by POLs**

168 tests were discontinued by 65 labs

Tests	Percent of all tests discontinued by POLS
Waived Testing	4
Urinalysis	1
Urine pregnancy	<1
Whole blood glucose	<1
Micro-hematocrit	<1
Hemoglobin	<1
Erythrocyte sedimentation rate	<1
Chemistry Testing	54
Routine:	
Chemistry profile	4
Enzymes	11
(ALT, Alkaline phosphatase, Amylase, AST, CK, GGT)	
Lipids (Cholesterol, HDL, Triglycerides)	7
Electrolytes (Sodium, Potassium)	6
Bilirubin	2
Creatinine	1
Glucose	2
BUN	2
Uric acid	2
Endocrinology:	
Serum HCG	2
Thyroid testing	4
Therapeutic drug testing	7
Miscellaneous:	4
(Cortisol, Ferritin, Free testosterone, Iron, Magnesium)	
Hematology Testing	13
Complete blood count	2
WBC, Hemoglobin, Hematocrit or Platelet	2
White cell differential	<1
Coagulation	1
Reticulocyte count	5

Hemoglobin A1C	1

Testing Discontinued by POLs

Tests	Percent of all tests discontinued by POLs
Microbiology Testing	14
Direct Strep antigen	3
Urine culture	1
Throat culture	<1
Other culture types	2
Group B Strep	<1
Gram's stain	1
Chlamydia testing	3
Parasitology	<1
Mycology	<1
Mycobateriology	<1
Virology	<1
Microscopic examinations: (urine sediment, KOH preps, wet mounts, semen exam)	2
Diagnostic Immunology Testing	12
Mononucleosis screen	7
Rheumatoid arthritis testing	4
H. pylori antibodies	1
Hepatitis testing	<1