Public Health System Impact Assessment for MPS-1
Summary Data Report

Survey Field Date: 11/13/2014
Survey Close Date: 01/07/2015

Survey Response Rate

Total Sample	Completed Surveys	Completion Rate
53	39	73.6%

1. Does your state currently include MPS-1 NBS as a part of the routine NBS panel or as any type of pilot evaluation?

Answer	Response	%
Yes (end survey)	3	7.7%
No	36	92.3%
Total	39	100.0%

2. Within the last three years, has your state included…*Please check all that apply.*

Answer	Response	%
MPS-1 as part of the routine NBS panel (end survey)	0	0.0%
MPS -1 as any type of pilot evaluation (end survey)	0	0.0%
None of the above	36	100.0%

3. Has there been a state-level decision to start screening for MPS-1 as part of NBS?

Answer	Response	%
Yes (end survey)	0	0.0%
No	36	100.0%
Total	36	100.0%

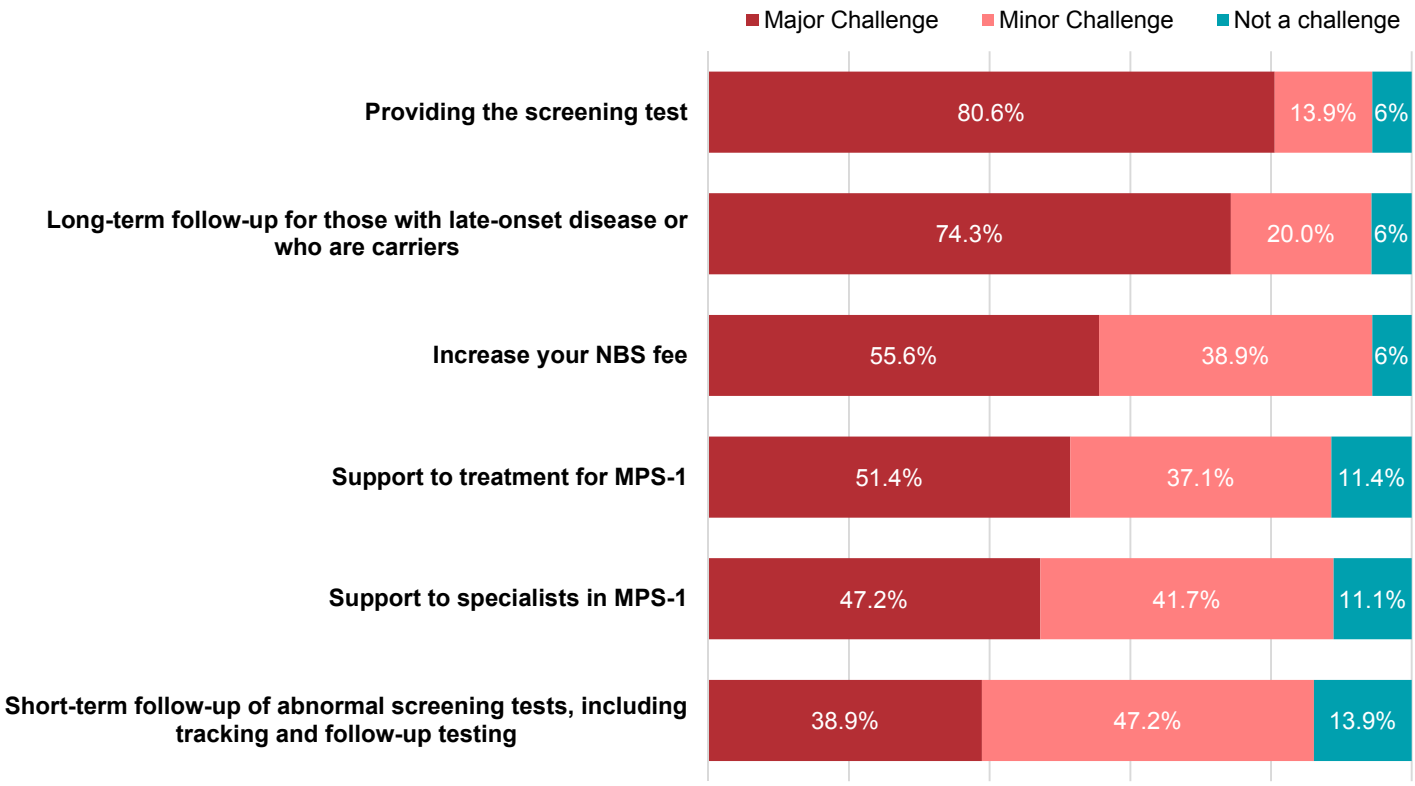
4. Which of the following provides NBS laboratory services for your state's NBS program? *Please check all that apply.*

Answer	Response	%
Your own state's public health or NBS laboratory	26	72.2%
A contracted regional NBS laboratory or other not-for profit laboratory	9	25.0%
A contracted commercial laboratory	5	13.9%
Other - please specify:	2	5.6%
None of the above	0	0.0%
Other specified responses		
We are a laboratory associated with [University]. We contract with the State to perform screening.		
Recent legislation will allow for contracted laboratory services for future panel additions.		

5. Please categorize the **funding** challenges related to NBS program activities for MPS-1 in your state.

	Major Challenge		Minor Challenge		Not a challenge	
Activity	n	%	n	%	n	%
Providing the screening test	29	80.6%	5	13.9%	2	5.6%
Long-term follow-up for those with late-onset disease or who are carriers*	26	74.3%	7	20.0%	2	5.7%
Increase your NBS fee	20	55.6%	14	38.9%	2	5.6%
Support to treatment for MPS-1*	18	51.4%	13	37.1%	4	11.4%
Support to specialists in MPS-1	17	47.2%	15	41.7%	4	11.1%
Short-term follow-up of abnormal screening tests, including tracking and follow-up testing	14	38.9%	17	47.2%	5	13.9%

*35 total responses yielded for this category



5a. Please describe any additional challenges.

The disorder does not fit our criteria for adding screenings to our panel. Early effective treatment in the newborn period is part of our requirements.
Would require additional Follow-up Personnel. Any increase in the personnel services line (PSL) would need to be evaluated and authorized by agency leadership. This would also require increased funding for the program.
Continual increasing of NBS fees to cover the costs of incorporating new disorders may be difficult to justify to program administrators and legislators. Addition of new disorders one at a time presents funding issues; multiplex disorder detection would be more cost effective and acceptable. As a contract laboratory, the ability for other NBS Program clients to be willing and able to add new disorders when offered at an increased service cost must be taken into account. Funding issues play a large role in this.
Space limitations, particularly for additional mass spectrometers. LIS interfaces for non-PE assays.
One of challenges for the [state] NBS Program is the lengthy process of adding a new disorder. This includes the process of discussion by the advisory committee and then formally recommending an addition to the [state] panel. Then there is the drafting of amended regulations, the approval process for the intent to modify the regulations and then the final approval process with multiple public comment phases. This process can take several years and makes it difficult to predict when the change will receive final sign-off for implementation.
as with all new test establishing infrastructure and validation is a major strain
Distance to travel to specialists and limited number of specialists are always a challenge.
Start-up funding would probably be requested by submitting a legislative appropriations request, which is a lengthy process as our legislature meets biannually. Grant funding is usually not enough to cover start-up costs and a pilot study of all newborns in the state. In addition to funding for purchasing testing equipment/consumables and hiring staff, building retrofit and LIMS updates are also costly. May require capital authority for equipment (if purchased instead of leased) and information technology). Both funding and new positions are needed for testing and follow-up staff. Other funding needs may include travel, technical training, provider and public education, and re-validation of electronic reporting.
Any funding of new disorders will require a statutory change at this time. The fact that MPS-1 is not yet on the RUSP will further complicate the challenge.
NBS panel is specified in statute; Additions to panel are made by public act.

6a. **Other than funding**, certain factors related to MPS-1 might make screening easier or more challenging in your state. Please let us know the degree to which these factors impede or facilitate your ability to screen for MPS-1 in your state. In order to respond to these questions, assume that MPS-1 has been authorized for addition to your state's panel and that funds for both laboratory testing and follow-up are made available.

To what extent do the factors below impede or facilitate the adoption of screening for MPS-1 in your state?

	Do not have and cannot get within 1-year		Do not have, but could get within 1-year		No impact		Have but needs improvement		Have and no improvement needed	
	n	%	n	%	n	%	n	%	n	%
Sufficient number of NBS staff to notify and track NBS results	6	16.7%	16	44.4%	3	8.3%	9	25.0%	2	5.6%
Access to appropriate diagnostic services after a positive screen (e.g., diagnostic testing, clinical evaluations)	7	19.4%	7	19.4%	5	13.9%	10	27.8%	7	19.4%
Availability of specialists	5	13.9%	4	11.1%	4	11.1%	13	36.1%	10	27.8%
Availability of treatment for those diagnosed through NBS	5	13.9%	3	8.3%	8	22.2%	15	41.7%	5	13.9%
LIMS capacity and instrumentation interface	6	16.7%	17	47.2%	3	8.3%	8	22.2%	2	5.6%
Onsite genotyping as part of a second-tier test	18	50.0%	17	47.2%	0	0.0%	1	2.8%	0	0.0%
Laboratory equipment needed to screen specimens for MPS-1 using digital fluorometry*	10	38.5%	12	46.2%	2	7.7%	2	7.7%	0	0.0%
Laboratory technical expertise to screen for MPS-1*	4	15.4%	9	34.6%	5	19.2%	7	26.9%	1	3.8%
Number of technical staff within your laboratory to screen for MPS-1*	5	19.2%	19	73.1%	1	3.8%	1	3.8%	0	0.0%
Laboratory equipment needed to screen specimens for MPS-1 using flow injection MS/MS*	14	53.8%	8	30.8%	1	3.8%	3	11.5%	0	0.0%
Availability of the screening test in your contracted laboratory~	6	46.2%	3	23.1%	0	0.0%	1	7.7%	3	23.1%

**Only asked to respondents that selected "Your own state's public health or NBS laboratory" at question 4.*
~ Only asked to respondents that selected "A contracted regional NBS laboratory or other not-for profit laboratory" or "A contracted commercial laboratory" at question 4.

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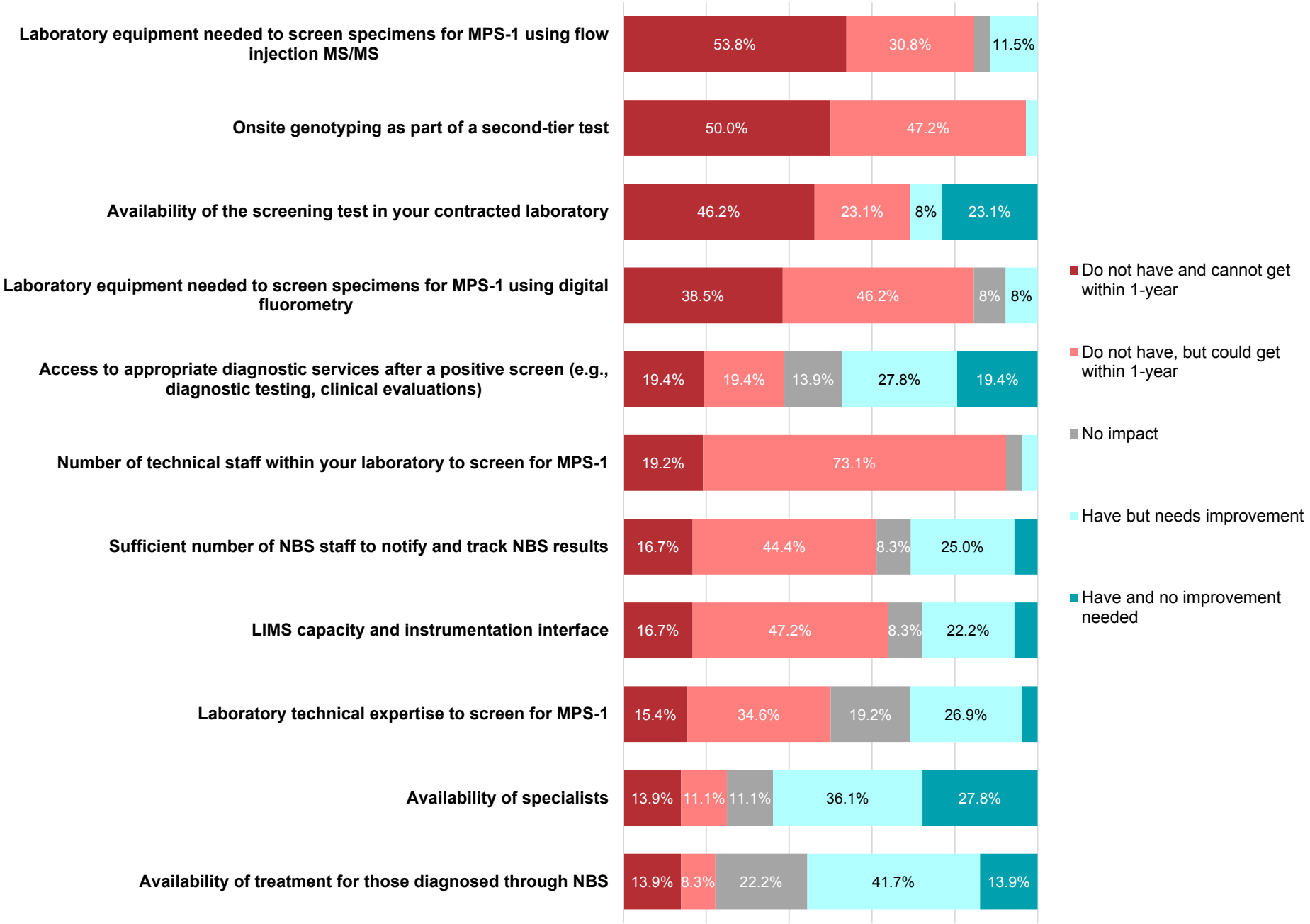

6b. **Other than funding**, certain factors related to MPS-1 might make screening easier or more challenging in your state. Please let us know the degree to which these factors impede or facilitate your ability to screen for MPS-1 in your state. In order to respond to these questions, assume that MPS-1 has been authorized for addition to your state's panel and that funds for both laboratory testing and follow-up are made available.

To what extent do the factors below impede or facilitate the adoption of screening for MPS-1 in your state?

	Will hinder implementation		May hinder implementation		No impact		May aid in implementation		Will aid in implementation	
	n	%	n	%	n	%	n	%	n	%
Cost per specimen to conduct screening (personnel, equipment, reagents)	13	36.1%	19	52.8%	3	8.3%	0	0.0%	1	2.8%
Other ongoing NBS program activities (e.g., addition of other conditions, other quality improvements)	11	30.6%	18	50.0%	5	13.9%	2	5.6%	0	0.0%
Predicted run time to screen for MPS-1 as it relates to other workload	8	22.2%	14	38.9%	14	38.9%	0	0.0%	0	0.0%
Extent to which screening protocol for MPS-1 has been demonstrated in other NBS programs	7	19.4%	7	19.4%	4	11.1%	13	36.1%	5	13.9%
Cost of treatment for newborns diagnosed with NBS	4	11.1%	21	58.3%	9	25.0%	1	2.8%	1	2.8%
Other non-NBS public health priorities within your state	4	11.1%	14	38.9%	17	47.2%	1	2.8%	0	0.0%
Expected clinical outcomes of newborns identified by screening	3	8.3%	14	38.9%	6	16.7%	9	25.0%	4	11.1%
Expected cost-benefit of screening in your state	3	8.3%	10	27.8%	8	22.2%	12	33.3%	3	8.3%
Advocacy for screening for this condition	0	0.0%	3	8.3%	9	25.0%	20	55.6%	4	11.1%

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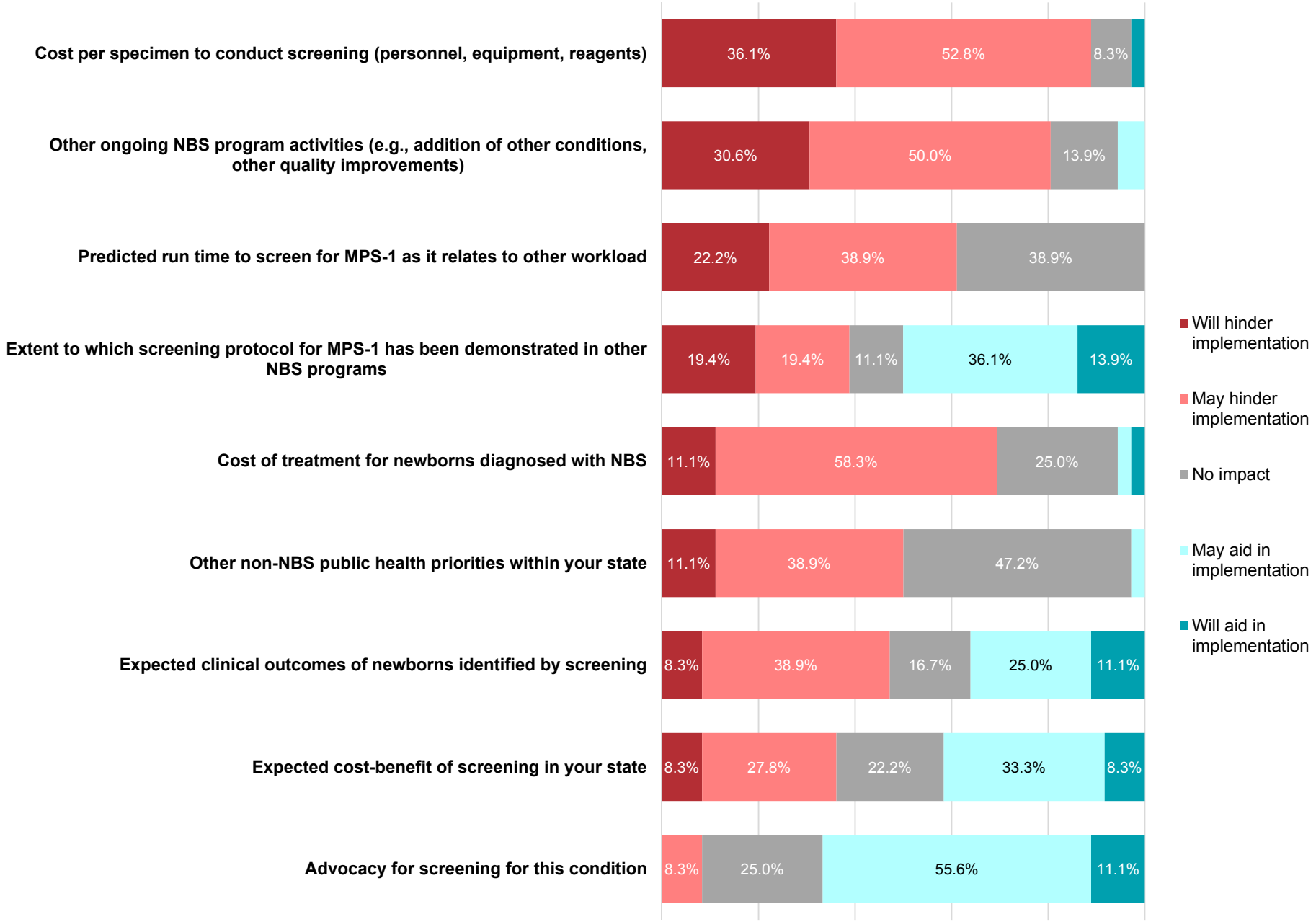


6b1. Please describe any additional factors.

Really unknown about need for more staff/contractor time. Need to figure out how many milder cases need follow-up, treatment, etc.
Our outside contract lab reports - adaptation methods to existing instrumentation and processes is an issue with MPS-1. Preference, and most cost-effective method, is to add a new condition utilizing the equipment and resources already in use in the laboratory. Availability of the FDA approved kit versus laboratory developed test and the potential FDA regulations impact on LDTs.
Adaptation of testing methods to existing instrumentation and processes is an issue with MPS-1. Preference, and most cost-effective method, is to add a new condition utilizing the equipment and resources already in use in the laboratory. The availability of an FDA approved kit versus laboratory developed test and the potential FDA regulations impact on LDTs.
Equipment and staffing requirements may be significant enough to require more space than is currently allocated to the newborn screening program. This is potentially a major additional inhibiting factor.
FDA regulation of laboratory developed tests. Availability of QC material.
Laboratory space is an issue, particularly for the implementation of more MS assays. The pending FDA regulations regarding laboratory-developed tests may have an impact.
Need established PT program for MPS-1, if not already in place. Need FDA-approved kits to minimize validation processes.
In general, the infrastructure needed for this disorder. What will be the cost of the equipment, staffing, specialists and treatment? What about long-term f/up?
Possible funding issues.
Currently, building and laboratory space is limited. Need testing workflow with cutoff values and follow-up algorithm examples from other states, educational materials, ACT and FACT sheets, methodology for 2nd-tier molecular assay, availability of QC materials and technical training. A decision would be needed whether to multiplex with other LSD disorders or not. New regulations regarding use of NBS specimens for research may hinder implementation if the pilot phase is considered research. Additional factors regarding follow-up include language barriers, education of PCPs, increased workload to genetics centers as false positive rate is not clear until a method has been implemented. [state] is a two screen state – unforeseen if that will be a benefit or harm in screening for MPS-1.
Please see the [state] Lab response
We currently have limited space to expand testing in our building.
Space constraints

6c. What is the most significant barrier to NBS for MPS-1 in your state?

Criteria not sufficient for adding to our panel.
Recommendation of state specialists and advisory council based on outcome data/findings currently available
Funding and support for follow-up activities for abnormal results
Funding, staffing, and follow up specialists
Cost to implement. Regulatory changes would be required to implement universal screening.
No in-state bone marrow transplant for newborns and cost (enzyme and shipping) to obtain enzyme replacement therapy on a regular basis. No ERT capabilities in neighboring areas.
Funding and laboratory space.
Currently no FDA approved test and not yet approved by Secretary's blah blah Committee.
Convincing stakeholders at the state level that it would be appropriate given ability for treatment and that cost increases would need to be defrayed.
Lack of established testing, funding and the ability to marry short and long-term follow-up.
Screening test identify mild or late on-set form of the disease.
Funding to cover the costs.
Funding to cover the resources needed for the laboratory,follow-up, and system components.
Expected clinical outcomes, and lack of clear demonstration that MPS-1 is appropriate for mandated population-based screening.
Throughput of assay. Analytical procedure takes too long.
Cost of implementation
Approval by SACHDNC
Funding for screening and follow-up of positive screens.
MPS-1 is not yet on the RUSP or recommended for addition to our testing panel by our newborn screening advisory committee or the Commissioner of Health.
The cost of laboratory renovations to accommodate the additional instrumentation and staff
[state] will not even consider adding MPS-1 to the panel until approved by Secretary's advisory, until our contract lab ([state]) has thoroughly evaluated methodology and implemented screening as well as published follow-up and treatment data, and until mutiple state programs have published data to show screening efficacy. This is the process [state] DPHHS has imposed and SCID has not yet been added to the panel.
cost, cost benefit, technology level
Consideration of adding this disorder to the screening panel has to be based on NBS guiding principles. What do we understand about this disorder? In other words, what is the risk in the population? Can we provide early effective,evidence based treatment that will prevent disability and death? Can we identify this disorder with our screening equipment? What will the rate of false positives be? What is the risk to the population?
Funding.
Funding.
Uncertainties related to number and definition of false positives and the level of associated healthcare costs generated by screening for MPS1
Legislative authority is needed to allocate funding for the screening and depends on the legislative cycle (every 2 years). It will be difficult to gain legislative authority if the cost/benefit ratio as perceived by the State Legislature and state Medicaid Program is not favorable. Per one of the metabolic specialists in our state, the detection of a single case covered by Medicaid at birth vs. 2 years of age will cost the state $250,000, but it is not clear that there is a long term benefit (to age 18) for this expenditure for severe disease. NBS cannot separate severe disease from attenuated disease; in the latter case, early detection may reduce net health care costs by increasing quality-adjusted life span.
Please see the [state] Lab response
Funding. Not only would legislation be required to increase our fee, and increase our appropriation.
Funding availability for space and screening cost
Funding/Budget shortfall at state level

6d. What would most facilitate screening for NBS MPS-1 in your state?

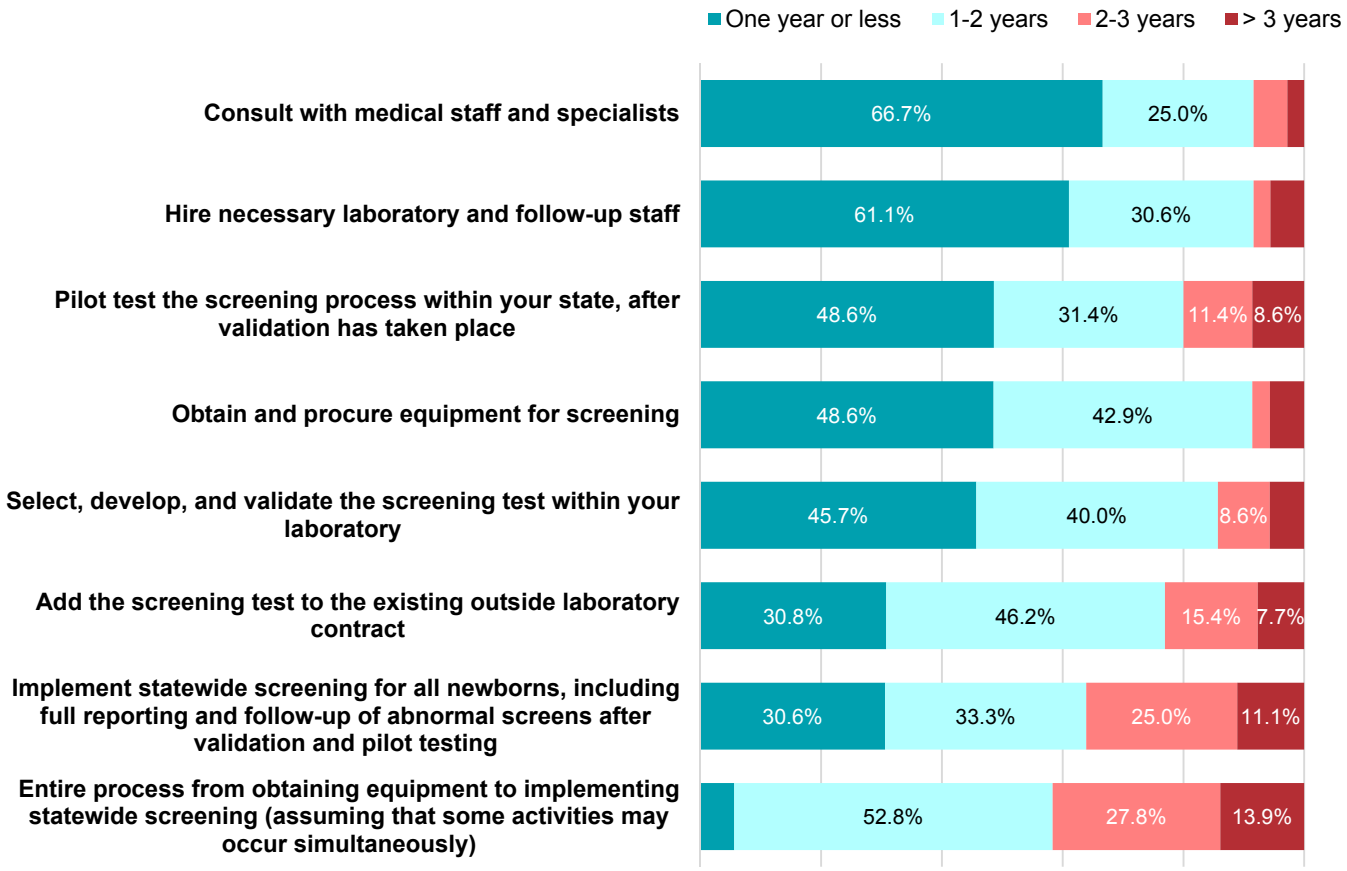
Newborn treatment modality
FDA-approved non-derivatized mass spec kit
If MPS1 was added to the Core test list of the RUSP to encourage adding it to the test panel.
Funding
Consensus on treatment protocols and additional funding
Gain capacity for in-state bone marrow transplant for newborns.
Fix answers in 6C
Money
FDA approved kit and a champion to facilitate and coordinate screening efforts.
clinical benefit from early identification
Our outside contract lab reports - test method that utilizes already existing instrumentation without compromising current analyses; multi-plexed methods to increase cost effectiveness for adding new conditions (costs spread out over two or more conditions). FDA approved kit.
Test method that utilizes already existing instrumentation without compromising current analyses; multi-plexed methods to increase cost-effectiveness for adding new conditions (costs spread out over two or more conditions). FDA approved kit.
1) Demonstration of significant clinical utility and improved outcomes for early diagnosis 2) external (grant?) funding for multiple facets of implementation
Unless 6c. is solved, no possibility of implementation.
Addition to RUSP; availability of grants to aid in implementation
Approval by SACHDNC
Studies showing a positive cost benefit ratio, and good clinical outcomes for infants detected by screening.
MPS-1 being officially added to the RUSP nationally.
Funding for renovations, instrumentation and LIMS modifications
Implementation of successful screening in our contract lab for a long enough period to show efficacy.
clear cost-benefit analysis; champion, provider, advocate with an ability to carefully generate buy-in from ALL stakeholders
Please refer to above answer. Will there be positive clinical outcomes once we identify this disorder?
Start-up costs and approval of fee increase.
Funding and support for a pilot that would generate the data necessary to address the current uncertainties and provide evidence for how an effective screening program for MPS1 would be implemented.
Education on the benefit of MPS-1 screening for all stakeholders, including the legislators.
Please see the [state] Lab response
Approval from the legislature to screen for MPS-1 and budget allocation to cover for testing, treatment, and laboratory space.
1) Funding for equipment/staff 2) Addition of MPS 1 to RUSP

7. How long would it take to achieve the following assuming that MPS-1 was added to your state NBS panel and funds were allocated today, with your current NBS program and laboratory infrastructure?

	One year or less		1-2 years		2-3 years		> 3 years	
	n	%	n	%	n	%	n	%
Consult with medical staff and specialists	24	66.7%	9	25.0%	2	5.6%	1	2.8%
Hire necessary laboratory and follow-up staff	22	61.1%	11	30.6%	1	2.8%	2	5.6%
Entire process from obtaining equipment to implementing statewide screening (assuming that some activities may occur simultaneously)	2	5.6%	19	52.8%	10	27.8%	5	13.9%
Implement statewide screening for all newborns, including full reporting and follow-up of abnormal screens after validation and pilot testing	11	30.6%	12	33.3%	9	25.0%	4	11.1%
Pilot test the screening process within your state, after validation has taken place*	17	48.6%	11	31.4%	4	11.4%	3	8.6%
Obtain and procure equipment for screening*	17	48.6%	15	42.9%	1	2.9%	2	5.7%
Select, develop, and validate the screening test within your laboratory*	16	45.7%	14	40.0%	3	8.6%	2	5.7%
Add the screening test to the existing outside laboratory contract~	4	30.8%	6	46.2%	2	15.4%	1	7.7%

* 35 total responses yielded for this category

~*Only asked to respondents who reported "A contracted regional NBS laboratory or other not-for profit laboratory" or "A contracted commercial laboratory" at question 4.*



8. Please share any additional information regarding implementation of NBS for MPS-1.

The cost for reagents is currently unknown.
By framing these questions within the context of assuming approval has occurred and funds were allocated, really minimizes how important those steps are. Getting approval whether it be via a regulatory process or legislation, and getting funding are really the biggest hurdles.
Also necessary to produce educational materials on MPS-1 for providers and patients; translations into multiple languages required.
I don't think implementation will be considered in [state] until the SADCHDNC recommends addition to the RUSP, and the recommendation is accepted by the Secretary of HHS. Obviously this could change if patient advocacy groups go directly to the state legislature.
Another component to the addition of MPS-1 would be the investment of time and money in educating parents and healthcare professionals. In [state] we have invested in a web-based educational tool for healthcare professionals. There would have to be a MPS-1 training module added, as part of [state]'s implementation process.
To add disorders in [state]; it is at least a two year process. We convene a NBS advocacy committee meeting where we have presentations by experts. Next we present our committees' decision to the Commissioner of Health. If he approves of the decision we then hold public hearings. Lastly we present all this information the [state] Rules Committee. If it is accepted as a rule then we can officially add it as a NBS disorder.
Statistical prevalence may be pertinent.
Responses above are based on past experience. Going forward may be affected by the current Newborn Screening Saves Lives Act amendment and the forthcoming new regulations to be drafted in the Common Rule. Requiring an enhanced level of informed consent for NBS "research" (which may include this type of pilot study) may introduce significant additional costs as well as increasing the time a study would need to be conducted to generate necessary data (given that less than 50% of parents would be expected to provide consent for such projects and the expected under-representation of certain subpopulations).
One of our metabolic specialists commented that he would not be in favor of adding just MPS1 but would be in favor of adding a group (MPS 1, 2, 3, 4, 6).
Please see the [state] Lab response

9. Please provide information about the respondent:

See data file for contact information

10. How long have you had this position?

Answer	Response	%
< 1 year	5	14%
1-3 years	8	22%
7-9 years	4	11%
More than 10 years	13	36%
4-6 years	6	17%
Total	36	100%

11. Who did you consult with to answer these questions? *Please check all that apply*.

Answer	Response	%
Other NBS program staff	27	75%
State NBS laboratory experts	17	47%
MPS-1 Specialists	11	31%
State NBS advisory board	5	14%
State Title V Director	3	8%
Primary care providers	1	3%
Advocates within your state for MPS-1 screening	0	0%
Other - please specify:	15	42%
None of the above	3	8%

Other specified responses
Administrator, Community and Family Services - DOH
PHL Director and NBS follow-up
Genetics professionals, contracted NBS laboratory manager
Contracted NBS laboratory, Chief Medical Officer (I do not know who the advocates are within my state for MPS-1 screening)
Our Contract Lab
Bio-chemical geneticist
Follow-up coordinator at the [university] Dept. of Human Genetics
Advocates for LSD screening within the [State]
product vendors
Addition of MPS-1 much too preliminary to warrant consultation at this time. Entirely dependent on SAC and contract lab.
MPS-1 technology and screening deep dive
Laboratory Director of [state] Newborn Screening Program
Regional laboratory staff
Program Director, Laboratory Administrative Director, and Follow-up Coordinator
Laboratory Management