

LSDs Currently Screening: Full population

1. Krabbe

3. Pompe

4. MPS-1 under evaluation (likely not until late this year or next year)

**LSDs Currently Screening: Pilot Testing
NIH/NICHHD, R01 Grant with Mt Sinai (Dr. Melissa
Wasserstein)**

1. Fabry
2. Gaucher
3. Niemann-Pick A/B
4. MPS-1 adding soon

Previously, we were screening for Pompe

Pilot Study Overview

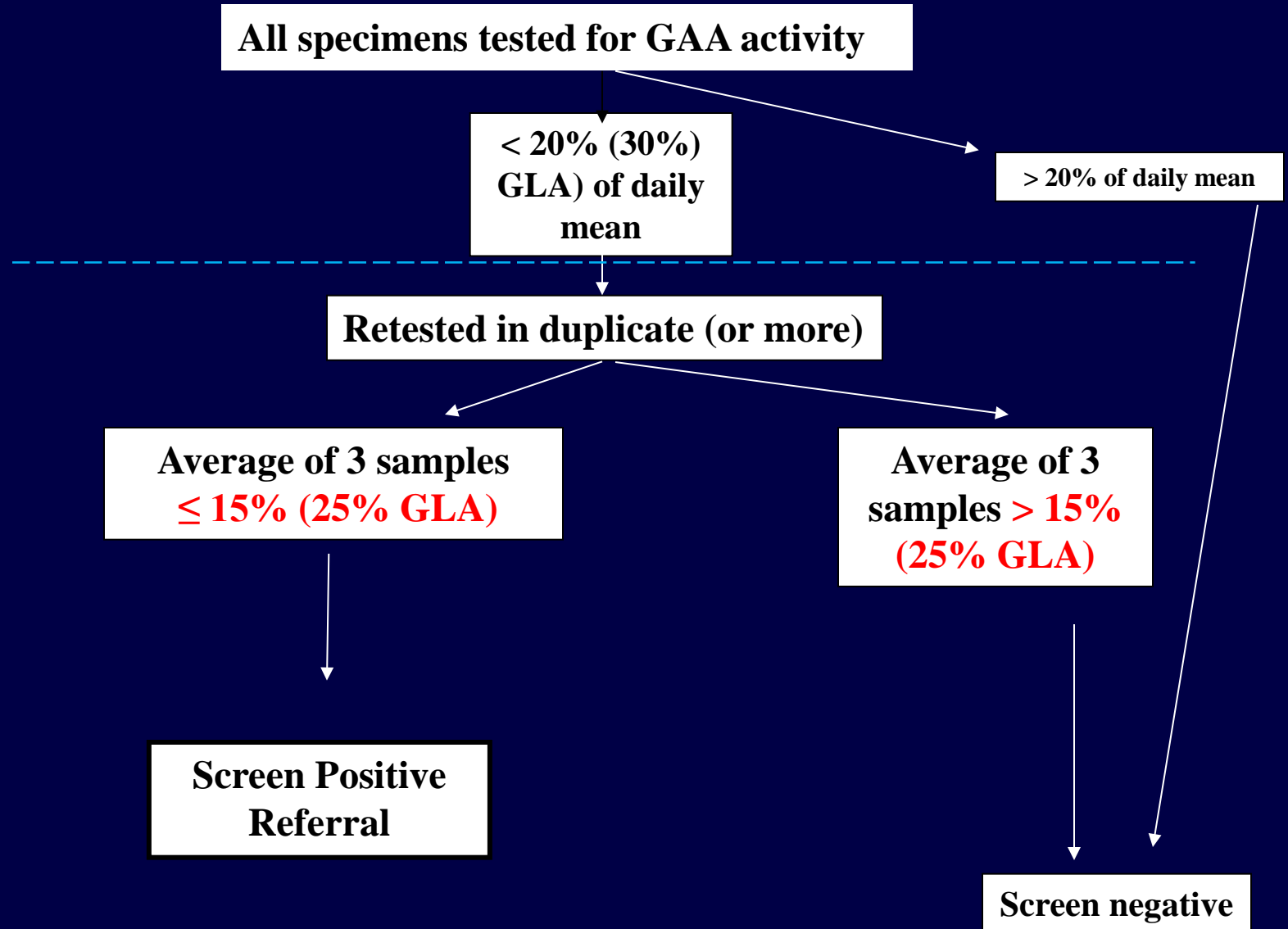
1. Currently using CDC provided reagents
2. Validated Perkin Elmer Reagents (awaiting approval)
3. Four NY City hospitals
4. Informed consent process (opt in), one study coordinator at each hospital (weekends, no coverage)
5. 400-500 samples per week, tested in one batch
6. Lot of work to segregate and test for babies/families that opt into the study (late consents!)
7. Has an ethics component

ELSI Component

- Evaluate the ethical issues associated with screening newborns for later-onset phenotypes.
- The socioeconomic impact of long term follow up and treatment of infants identified with LSDs by NBS, and potential medicolegal liabilities.
- Administer questionnaires and conduct semi-structured interviews with parents in NYS who have had a newborn with a positive screen for an LSD in order to determine levels of anxiety, depression and stress, and to compare if these levels are different in families whose infants are at risk to develop later-onset disease.
- Analysis of the economic impact of a positive diagnosis on families, focusing on follow-up and treatment costs as well as insurability.

Medicolegal liabilities: challenge of maintaining continuity of care, parents forget their child is at risk, inform adult child, maintaining communication with families, etc.

Testing Algorithm



Population Statistics

Statistics										
	Activity ($\mu\text{mol/L/hr}$)					% of Daily Mean Activity ($\mu\text{mol/L/hr}$)				
	GALC	GAA	GLA	ABG	ASM	GALC%	GAA%	GLA%	ABG%	ASM%
Population Mean =	3.58	13.38	19.19	12.19	20.06	100.14	100.12	100.15	100.11	100.14
StdDev =	2.56	5.62	10.40	6.90	8.14	67.69	39.05	52.52	54.08	38.38
Min =	0.18	0.25	1.24	0.11	-0.03	5.60	2.20	6.30	0.90	-0.20
Max =	71.72	100.54	345.41	359.68	131.06	1736.60	772.20	1485.60	2484.00	652.40
N =	29852	29852	29852	29852	29852	29852	29852	29852	29852	29852
Median =	3.05	12.44	16.84	11.15	18.59	86.20	94.45	88.40	92.40	93.30
Less than first cutoff	77	42	66	105	1					
Less than referral cutoff	6	15	25	35	1					

Power of multiplexing: Low GALC samples

Date	Specimen	Activity					% of Daily Mean Activity				
		GALC	GAA	GLA	ABG	ASM	GALC	GAA	GLA	ABG	ASM
02/21/14	LSD140511677	0.18	4.69	4.31	2.94	14.06	5.6	26.9	19.6	21.1	71.1
03/06/14	LSD140591719	0.24	3.88	1.75	2.04	23.32	7.5	23.1	9.5	14	93.7
03/27/14	LSD140842513	0.29	2.55	2.18	0.97	22.05	8.8	20.9	12	7.8	101.8
04/04/14	LSD140912514	0.22	2.25	1.24	1.36	15.63	6	18.4	6.3	12.5	81.9
11/14/14	LSD143162970	0.28	3.76	4.28	1.89	13.21	8.6	34.1	22.7	17.4	64.7
11/20/14	LSD143181725	0.28	0.25	1.63	0.11	28.5	9.5	2.2	9.4	0.9	134.6

Population Study Results

1. Enrolled 27,460 newborns (May 15, 2013 – March 31, 2015)
2. We test unsatisfactory samples in this study
3. 72% consent rate
4. 6 Pompe referrals (1 late onset, 1 negative, 4 pseudo)
5. 6 Fabry referrals (3 late onset, 2 negative, 1 lost to follow-up)
6. 4 Gaucher referrals (3 late onset, 1 negative)
7. 1 NP-A/B referral (late onset, Type B)

4+1 Test Date	Specimen Type	NYS 4+1 Method Activity					NYS 4+1 Method %DMA				
		GALC	GAA	GLA	ABG	ASM	GALC	GAA	GLA	ABG	ASM
7/3/2013	GAA_Pos	1.84	0.19	10	7.18	12.95	38.8	1.4	49	51	94.7
7/3/2013	GLA_Pos	1.46	5.76	1.33	3.34	5.27	30.8	42.1	6.5	23.7	38.6
7/3/2013	ABG_Pos	1.71	8.27	7.71	0.5	14.99	36.1	60.5	37.8	3.6	109.7
7/24/2013	313L2 (CDC PT)	2.45	0.43	33.57	18.33	8.87	74.5	2.9	185.5	172.3	57.7
10/23/2013	GAA+ 120121583	2.13	0.19	16.54	5.58	16.54	72.2	1.3	86.7	46	80.3
10/23/2013	GAA+ 120382519	1.32	0.38	13.47	4.2	32.08	44.7	2.6	70.6	34.6	155.8
10/31/2013	GAA+ 120121583	1.93	0.09	16.26	4.77	14.22	56.1	0.6	74.8	34.3	66.2
10/31/2013	GAA+ 120382519	1.31	1.35	15.38	6.35	30.11	38.1	8.9	70.8	45.7	140.2
10/31/2013	413L1 (CDC PT)	1.68	0.09	37.51	15.46	9.05	44.1	0.5	171.3	118.6	40.3

Thank you Questions?

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