

National

Screening Report 2004

DGNS (German Association for Newborn Screening)

Compiled by the study group for data collection (AG Datenerfassung) of the German Association for Newborn Screening, collaborating

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On the 1st July 2005, the modified guidelines (Version of 21st December 2004) for the introduction of the extended Newborn Screening Program in Germany ('Kinder-Richtlinien') come into force. These guidelines regulate the implementation of the screening for congenital metabolic diseases and endocrinopathies at the expense of the 'GKV' (compulsory health insurance). Therewith, a nationwide screening throughout Germany shall be assured [German: Deutsches Ärzteblatt, 102, April, 22 2005].

This National Screening Report contains data from 2004.

At that point in time the screening should have been performed on the basis of the screening guidelines established by professional bodies in November 2002.

The report is based on notification from the laboratories participating in the German Screening Program.

The data on cases identified by screening were checked for plausibility by experts for metabolic diseases as well as pediatric endocrinologists.

On the whole, the screening laboratories were responsible for tracking. In some federal states (for example Bavaria, Thuringia) regional screening centers carried out this task.

The report contains information on:

- 13 screening laboratories
- Which laboratory is serving which federal state?
- Financing of the screening program
- Storage of collection cards (filter paper)
- Number of births
- Total number of first screens
- second screens
- Age at time of blood sampling
- Screening methods and laboratory parameters
- Results Newborn Screening 2004
- Time intervals of process data 2004

13 Screening laboratories

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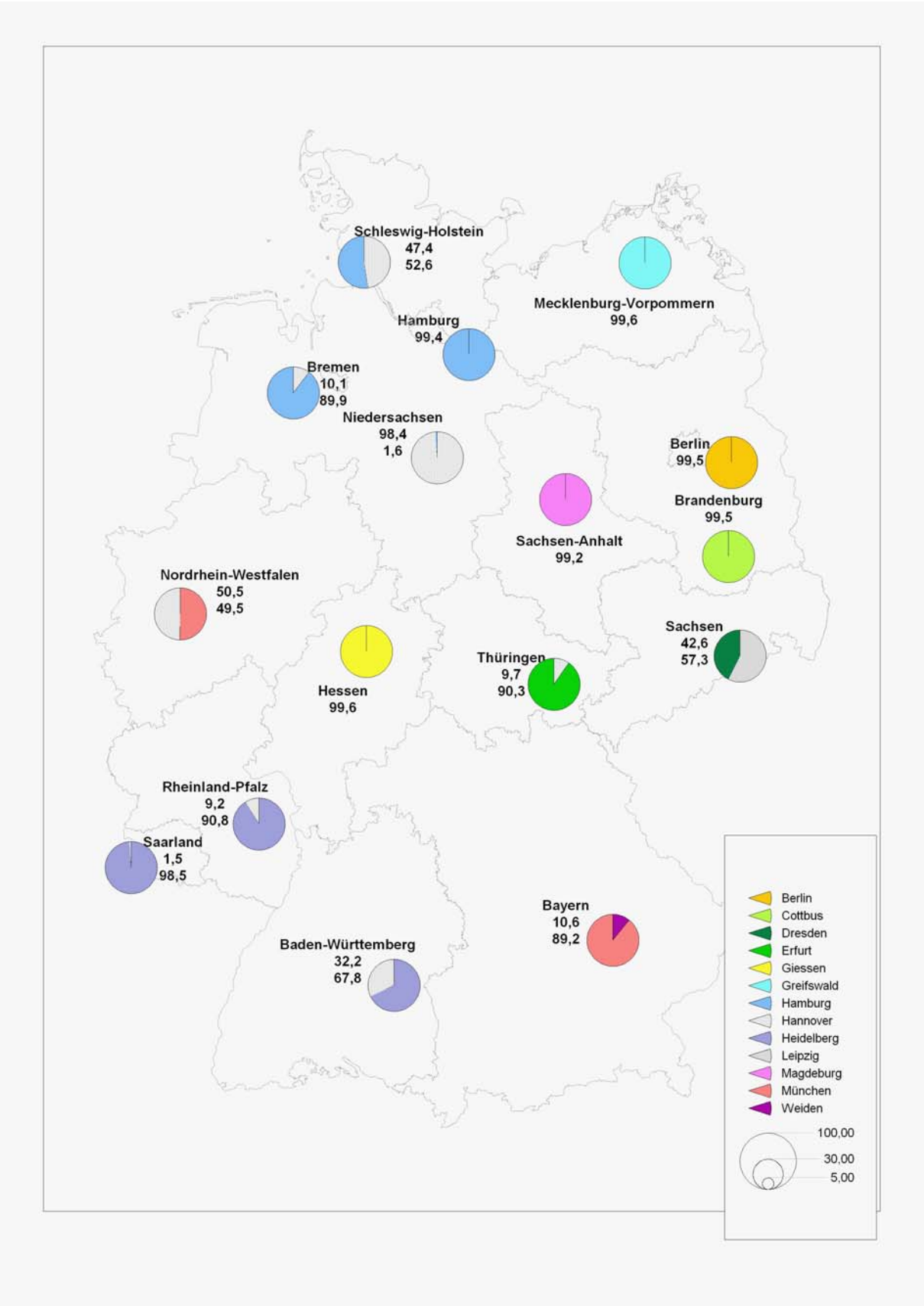
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Which Laboratory is serving which federal state?



Financing of the Newborn Screening Program:

	Berlin	Cottbus	Dresden	Erfurt	Giessen	Greifswald	Hannover	Heidelberg	Leipzig	Magdeburg	Weiden	total	percent
17OHP Land ganz oder Zuschuss	1		1	1								3	27%
17OHP privat*					1		1					2	18%
Galaktose KV									1			1	9%
Galaktose KKH							1	1			1	3	27%
Galaktose Kasse direkt	1	1										2	18%
Galaktose Land ganz o. Zuschuss	1											1	9%
Galaktose privat*					1		1					2	18%
GALT KV									1			1	9%
GALT Kasse direkt	1	1								1	1	4	36%
GALT KKH						1		1				2	18%
GALT Land ganz oder Zuschuss	1		1	1		1						4	36%
GALT privat*					1		1					2	18%
Biotinidase KV									1			1	9%
Biotinidase KKH							1	1				2	18%
Biotinidase Kasse direkt	1	1								1	1	4	36%
Biotinidase Land ganz o. Zuschuss	1		1	1								3	27%
Biotinidase privat*					1		1					2	18%
TMS KKH						1	1	1				3	27%
TMS Kasse direkt	1									1	1	3	27%
TMS Land ganz oder Zuschuss	1		1	1	1							4	36%
TMS Uniklinikum		1										1	9%
TMS privat*					1		1					2	18%
IRT mit KV					1							1	9%
IRT mit KKH					1		1					2	18%
IRT Drittmittel		1										1	9%
IRT privat*					1		1					2	18%
G6PD mit KKH					1		1					2	18%
G6PD mit KV					1							1	9%
G6PD privat*					1		1					2	18%

1 = yes

Duration of storage of collection cards (filter paper)

	3 month	1 year	2 years	3 years	10 years	18 years
Labor						
Berlin						1
Cottbus			1			
Dresden					1	
Erfurt					1	
Giessen				1		
Greifswald					1	
Hannover		1				
Heidelberg					1	
Leipzig					1	
Magdeburg				1		
München	1				1	
Weiden	1					
total	2	1	1	2	6	1

- In case of early blood sampling, recall and confirmation diagnosis, respectively, tracking is carried out by all laboratories.

Analysis of screening data

Total number of birth (data: Federal Statistical Office) **705.622**

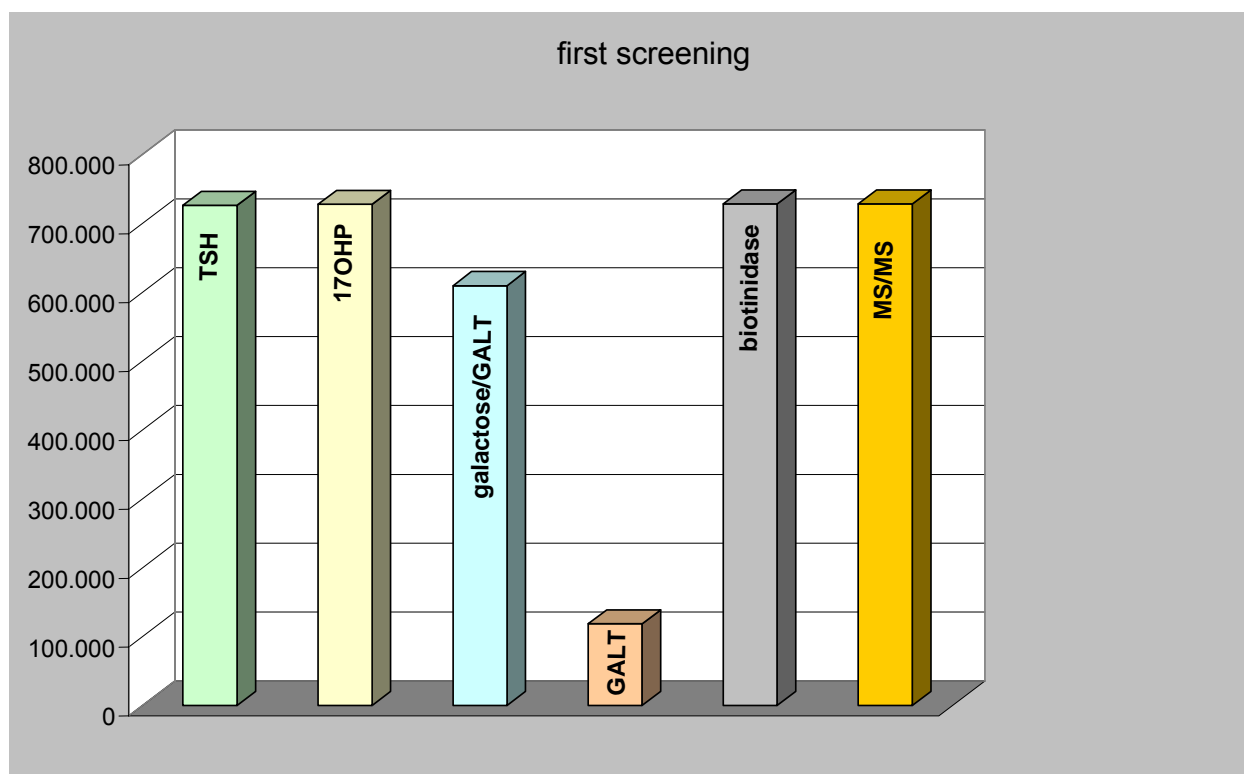
Total number of first screens: **728.092**

	TSH	17 OHP	galactose/GALT	GALT	biotinidase	MS/MS*
first screening	726.046	727.599	609.533	118.559	728.092	728.092
recall	979	2405	603	224	387	2123
recall rate	0,13%	0,33%	0,10%	0,19%	0,05%	0,29%
ppv	22,68%	2,91%	2,49%	0,89%	9,30%	11,78%
patients	222	62	15	2	36	250

- The number of screens by far exceeds the number of birth.

Reasons are:

- If the second screening is performed in a different laboratory than the first screening or if there has been a change of name, it is unknown that a first screening already has been done and that the received sample constitutes a second screening procedure.
- In some laboratories, first screening and second screening are not differentiated for registration or for reporting.
- Extrapolating the rate of second screens on the basis of data from 8 laboratories which report second screens and assuming the rate of second screens being similar in all laboratories, results in the following number of first screens **in Germany as 719.319**.



Second screens

- Second screens:
only those cases should count as second screen, where due to primary sampling before 36 hours of life, primary sampling before 32 weeks of pregnancy, insufficient quality of sampling, or treatment during the neonatal period, respectively, a second blood sample has to be collected.
- Recall:
a recall is the control of a pathological finding, assessed against the appropriate cut off for the given method, maturation and age.
- Only 8 laboratories documented a second screen

	first screening	second screening	rate
TSH	439.800	13.324	3,03%
17OHP	441.353	13.824	3,13%
galactose/GALT	399.855	10.739	2,69%
GALT	344.036	9.094	2,64%
biotinidase	441.846	12.424	2,81%
MS/MS*	456.286	14.004	3,07%

*number in total (all targeted diseases)

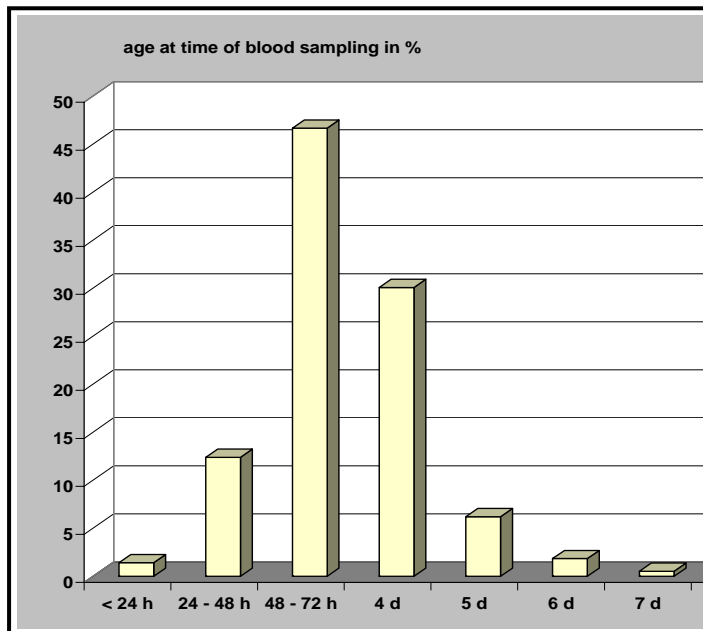
- Splitting of samples explains varying numbers of first screening

laboratory	first screening	second screening	rate %
Berlin	31.056	3.629	11,69
Dresden	14.026	941	6,71
Erfurt	14.964	1.039	6,94
Giessen	55.632	643	1,16
Greifswald	13.025	807	6,2
Heidelberg	106.736	3.588	3,36
Magdeburg	17.160	595	3,47
München	190.690	2.353	1,23
Weiden	15.717	542	3,45
total	459.006	14.137	3,08

- The rate of second screens differs markedly between the different laboratories.
Assumedly some laboratories count recalls as second screens.
The rate of second screens depends on the number of outpatient deliveries (blood sampling at less than 36 hours of life) and on the number of premature born children (blood sampling before 32 week of pregnancy).

Age at time of blood sampling

	age at time of blood sampling in percent
< 24 h	1,41
24 - 48 h	12,39
48 - 72 h	46,66
4 d	30,06
5 d	6,21
6 d	1,84
7 d	0,52
8 d	0,23
9 d	0,12
10 d	0,26
> 10 d	0,26



- The recommended age at time of blood sampling ranges from 36 to 72 hours of life. The database query will be adjusted for the year 2005.

Age at time of blood sampling - percent

	24 - 48 h	48 - 72 h	4 d	5 d
Berlin	14,52	45,82	22,54	5,97
Cottbus	9,40	50,80	29,60	5,40
Dresden	7,36	81,40	7,23	0,78
Erfurt	16,90	52,70	20,20	6,70
Giessen	9,96	18,85	53,55	14,69
Greifswald	10,24	39,62	31,11	11,48
Hannover	2,99	39,34	45,68	7,46
Heidelberg	6,82	53,33	26,90	7,66
Leipzig	13,43	66,62	15,33	1,70
Magdeburg	10,49	69,25	13,55	3,43
München	17,50	81,20	0,00	0,00
Weiden	37,64	56,35	4,12	0,58

Methods

Parameters which are used for the confirmation of target diseases in the MS/MS.

x= key parameter, must be pathological x = additional parameters, may be pathological x = used parameter, no information if key parameter or additional parameter

- Reported data from 11 Laboratories

Parameters PKU / HPA

	Berlin	Dresden	Giessen	Greifswald	Hamburg	Hannover	Heidelberg	Leipzig	Magdeburg	München	Weiden	total
Phe	x	x	x	x	x	x	x	x	x	x	x	11
Tyr		x								x		2
Phe/Tyr	x	x	x	x		x		x	x	x	x	9

Parameters MCAD

	Berlin	Dresden	Giessen	Greifswald	Hamburg	Hannover	Heidelberg	Leipzig	Magdeburg	München	Weiden	total
C6	x	x		x	x	x			x	x		7
C8	x	x	x	x	x	x	x	x	x	x	x	11
C8/C10	x	x		x		x	x		x	x	x	8
C8/C12	x	x		x					x	x		5
C8/C16								x				1
C10	x	x		x		x			x	x		6
C10:1	x	x		x		x			x			5
C8/C2	x			x		x			x			4
C8/C6										x		1

Parameters MSUD

	Berlin	Dresden	Giessen	Greifswald	Hamburg	Hannover	Heidelberg	Leipzig	Magdeburg	München	Weiden	total
Ala										x		1
Val	x	x	x	x	x	x	x	x	x	x	x	11
Leu/Ile	x	x	x	x	x	x	x	x	x	x	x	11
Fischer-Q.										x		1
Leu/Ile:Phe										x		1
Val/Phe										x	x	2
Leulle/Ala	x	x		x					x			4

Parameters VLCAD

	Berlin	Dresden	Giessen	Greifswald	Hamburg	Hannover	Heidelberg	Leipzig	Magdeburg	München	Weiden	total
C12										x		1
C14	x	x	x	x	x				x	x	x	8
C14:1	x	x	x	x	x	x	x	x	x	x	x	11
C16:1								x				1
C14:2	x			x	x				x	x		5
C14:1/C16		x		x					x			3
C14/C4											x	1
C14:1/C4										x	x	2

Parameters LHCAD

	Berlin	Dresden	Giessen	Greifswald	Hamburg	Hannover	Heidelberg	Leipzig	Magdeburg	München	Weiden	total
C14:1						x						1
C14OH										x		1
C16OH	x	x	x	x	x	x	x	x	x	x	x	11
C16:1OH										x	x	2
C18OH	x	x		x	x			x	x		x	7
C18:1OH	x	x	x	x	x	x	x		x	x	x	10
C18:2OH						x						1
C16OH/C16									x			1

Parameters Carnitine acyl carnitine translocase defect

	Berlin	Dresden	Giessen	Hamburg	Hannover	Heidelberg	Leipzig	Magdeburg	München	Weiden	total
AC ges							x				1
fr. Carn. C0	x	x	x	x	x	x	x	x	x	x	10
C16	x	x	x	x				x	x	x	7
C16:1			x						x		2
C18	x	x	x	x				x	x	x	7
C18:1	x	x	x	x				x	x		6
(C16+C18:1)/C2	x				x			x			3
C18:2			x								1
C0/(C16+C18)				x							1
C/(C16+C18:1) ???						x					1

Parameters CPT I

	Berlin	Dresden	Giessen	Greifswald	Hannover	Heidelberg	Leipzig	Magdeburg	München	Weiden	total
fr. Carn. C0	x	x	x	x	x	x	x	x	x	x	10
C8			x ???								1 ???
C16	x	x	x	x				x		x	6
C18	x	x		x				x		x	5
C18:1	x	x						x			3
C16/C2							x				1
(C16+C18:1)/C2		x									1
C0/(C16+C18)	x			x	x	x		x	x		6

Parameters IVA

	Berlin	Dresden	Giessen	Greifswald	Hamburg	Hannover	Heidelberg	Leipzig	Magdeburg	München	Weiden	total
C5	x	x	x	x	x	x	x	x	x	x	x	11
C5/C2		x		x		x						3
C5/C3								x		x	x	3
C5/C8	x	x		x	x				x	x		6
C5/C4	x			x					x	x		4

Parameters CPT II

	Berlin	Dresden	Giessen	Greifswald	Hannover	Heidelberg	Magdeburg	München	Weiden	total
fr. Carn. C0	x	x	x	x	x	x	x	x	x	9
C16	x	x	x	x			x	x	x	7
C16:1			x					x		2
C18	x	x	x	x			x	x	x	7
C18:1	x	x	x	x			x	x		6
(C16+C18:1)/C2	x				x		x			3
C18:2			x							1
C0/(C16+C18)				x		x				2

Parameters GA I

	Berlin	Dresden	Giessen	Greifswald	Hamburg	Hannover	Heidelberg	Leipzig	Magdeburg	München	Weiden	total
C5DC	x	x	x	x	x	x	x	x	x	x	x	11
C5DC/C8	x	x		x	x				x	x	x	7
C5DC/C16								x		x	x	3
C5DC/C2	x											1
C5DC/C4	x									x		2
C5DC/C12	x	x							x			3
C5DC/C18							x					1

Results Newborn Screening Program 2004

- Results have been checked for plausibility by experts for metabolic diseases as well as pediatric endocrinologists.
- Cases with ambiguous findings are not included into the number of detected patients and the calculation of ppv and prevalence.

Complete Screening:

	first screening	recall rate	PPV	patients detected	validity			prevalence	false negative	
					confirmed	probable	unclear			
TSH	726.046	0,13%	22,68%	222	222	61	1:	3.270		
CAH	727.599	0,33%	2,91%	62	62	21	1:	11.735		
Galactosemia	728.092	0,11%	2,06%	17	16	1	1:	40.450	1	
Biotinidase	728.092	0,05%	9,30%	36	36		1:	20.225		
severe				13	13		1:	56.007		
	partial			22	22		1:	33.095		
PHE	728.092	0,05%	43,18%	158	158	2	1:	4.608		
PKU				92	92	1	1:	7.914		
HPA				65	65	1	1:	11.201		
BH4-Def.				1	1		1:	728.092		
MSUD	728.092	0,03%	3,26%	4	4		1:	145.618	1	
MCAD	728.092	0,03%	19,28%	63	53	10	7	1:	11.557	
VLCAD	728.092	0,04%	1,77%	4	2	2	1	1:	182.023	
LCHAD/mTFP	728.092	0,002%		4	2	2		1:	182.023	
CPT I	728.092	0,002%								
CPT II / CACT	728.092	0,02%		1	1			1:	728.092	
GA I	728.092	0,06%	0,61%	6	6			1:	121.349	
IVA	728.092	0,02%	6,25%	10	9	1	1	1:	72.809	
MS/MS total	728.092	0,29%	11,78%	250	235	15	11	1:	2.901	1
Screening in total	728.092	0,92%	4,51%	303	287	16	12	1:	2.387	2

- *In italics: Calculation based on data of laboratories reporting recall rates.*
- Splitting of samples explains varying numbers of first screening.

Hypothyreoidism

	TSH / Hypothyreoidism				
	first screening	recall rate	ppv	detected patients	prevalence
Berlin	31.056	0,60%	4,84%	8	1: 3.882
Cottbus	15.559	0,04%	100,00%	6	1: 2.593
Dresden	14.026	0,04%	100,00%	6	1: 2.338
Erfurt	13.411	0,45%	14,75%	4	1: 3.353
Giessen	55.632	0,31%	10,00%	16	1: 3.477
Greifswald	13.025	0,05%	42,86%	3	1: 4.342
Hamburg	40.552	0,09%	37,14%	10	1: 4.055
Hannover	194.143	0,14%	34,41%	67	1: 2.898
Heidelberg	106.243	0,08%	39,36%	33	1: 3.219
Leipzig	18.850	0,03%	100,00%	5	1: 3.770
Magdeburg	17.142	0,09%	66,67%	8	1: 2.143
München	190.690	0,06%	59,09%	53	1: 3.598
Weiden	15.717	0,06%	30,00%	3	1: 5.239
total	726.046	0,13%	22,67%	222	1: 3.270

- Prevalence ranges from 1:2.143 to 1:5.239

CAH

	17OHP / CAH				
	first screening	recall rate	ppv	detected patients	prevalence
Berlin	31.056	0,32%	2,04%	2	1: 15.528
Cottbus	15.559	0,36%	3,57%	2	1: 7.780
Dresden	14.026	0,06%	22,22%	2	1: 7.013
Erfurt	14.964	0,53%	5,00%	3	1: 4.988
Giessen	55.632	0,24%	0,74%	1	1: 55.632
Greifswald	13.025	0,18%	4,00%	1	1: 13.025
Hamburg	40.552	0,55%	4,50%	7	1: 5.793
Hannover	194.143	0,21%	18,25%	16	1: 12.134
Heidelberg	106.243	0,49%	1,41%	7	1: 15.178
Leipzig	18.850	0,18%	2,94%	1	1: 18.850
Magdeburg	17.142	0,05%			
München	190.690	0,41%	2,32%	16	1: 11.918
Weiden	15.717	0,29%	8,89%	4	1: 3.929
total	727.599	0,33%	2,57%	62	1: 11.735

- Prevalence ranges from 1:3.929 to 1: 55.632

Galactosemia

	first screening	recall rate	detected patients	validity			prevalence	false negative
				confirmed	probable	unclear		
Galactose/GALT								
Berlin	31.056	0,17%	1	1			1: 31.056	
Cottbus	15.559	0,31%	1	1			1: 15.559	
Giessen	55.632	0,17%	0			1		
Hannover	194.143	0,14%	5	5			1: 38.829	
Heidelberg	106.736	0,07%	5	5			1: 17.789	1
München	190.690	0,03%	3	2	1		1: 63.563	
Weiden	15.717	0,10%	0					
	609.533	0,10%	15	14	1	1	1: 38.096	1
GALT								
Dresden	14.026	0,12%	0					
Erfurt	14.964	0,39%	0					
Greifswald	13.025	0,15%	0					
Hamburg	40.552	0,23%	0					
Leipzig	18.850	0,16%	1	1			1: 18.850	
Magdeburg	17.142	0,04%	1	1			1: 17.142	
	118.559	0,19%	2	2			1: 59.280	
total	728.092	0,11%	17	16	1	1	1: 40.450	1

Galactosemia - variants

Berlin	31.056	0,17%	10	10			1: 3.106 8 D2/G, 2 N/G D2/D2
Cottbus	15.559	0,31%	0	0		6	1: 2.593 k.A.
Dresden	14.026	0,12%	2	2			1: 7.013 2 D2/G
Erfurt	14.964	0,39%	24	24			1: 624 3 D2/G, 21 N/G D2/D2 N/D2 (davon 3 mit Diät)
Giessen	55.632	0,17%	6	6			1: 9.272 6 D2/G
Hannover	194.143	0,14%	25	25		2	1: 7.190 17 (1) D2/G, 8 (1) N/G D2/D2
Leipzig	18.850	0,16%	7	7			1: 2.693 5 D2/G, 2 N/D2 D2/D2
Magdeburg	17.142	0,04%	4	4		1	1: 3.428 4 D2/G
Weiden	15.717	0,10%	2	2			1: 7.859 2 D2/G
total			80	80		9	47 D2/G, 33 N/G D2/D2 N/G

Epimerase

1	31.056	0,17%	1	1
8	194.143	0,14%	2	2
14	15.717	0,10%	2	2
total			5	5
Kinase				
8	194.143	0,14%	1	1

- Concerning epimerase, kinase and variations, respectively, total numbers of children at first screen, recalls and prevalence neither may be reported nor are reasonable. As these conditions represent no target diseases, the various laboratories handle positive first screening findings differently.

Biotinidase

	first screening	recall rate	ppv	detected patients	validity			prevalence	false negative
					confirmed	probable	unclear		
Berlin	31.056	0,03%	0,00%	0					
Cottbus	15.559	0,01%	0,00%	0					
Dresden	14.026	0,09%	33,33%	4	4		1: 3.507		
	<i>severe</i>				4	4			
Erfurt	14.964	0,17%	11,54%	3	3		1: 4.988		
	<i>partial</i>				3	3			
Giessen	55.632	0,01%	0,00%	0					
Greifswald	13.025	0,05%	0,00%	0					
Hamburg	40.552	0,13%	0,00%	0					
Hannover	194.143	0,12%	10,21%	24	24		1: 8.089		
	<i>severe</i>				6	6			
	<i>partial</i>				18	18			
Heidelberg	106.736	0,00%	0,00%	0					
Leipzig	18.850	0,01%	50,00%	1	1		1: 18.850		
	<i>partial</i>				1	1			
Magdeburg	17.142	0,01%	0,00%	0					
München	190.690	0,02%	11,76%	4	4		1: 47.673		
	<i>severe</i>				3	3			
	<i>partial</i>				1	1			
Weiden	15.717	0,01%	0,00%	0					
total	Biotinidase	728.092	0,05%	9,30%	36	36	1: 20.225		
	<i>severe</i>				13	13	1: 56.007		
	<i>partial</i>				22	22	1: 33.095		

- severe defect of Biotinidase < 10% remaining activity
- partial defect of Biotinidase > 10% remaining activity

MS / MS

	first screening	recall	recall rate	ppv	detected patients	validity			prevalence	false negative
						confirmed	probable	unclear		
Berlin	31.056	182	0,59%	8,24%	15	15			1: 1.941	1
Cottbus	15.559	61	0,39%	18,03%	11	11			1: 1.414	
Dresden	14.026	42	0,30%	11,90%	5	5			1: 2.805	
Erfurt	14.964	143	0,96%	4,90%	7	7			1: 2.138	
Giessen	55.632	93	0,17%	13,98%	13	13		1	1: 4.279	
Greifswald	13.025	33	0,25%	6,06%	2	2			1: 6.513	
Hamburg	40.552	280	0,69%	6,07%	17	11	6	1	1: 2.385	
Hannover	194.143	643	0,33%	11,35%	73	72	1		1: 2.659	
Heidelberg	106.736	268	0,25%	8,96%	24	21	3	3	1: 4.447	
Leipzig	18.850	31	0,16%	35,48%	11	11			1: 1.714	
Magdeburg	17.142	21	0,12%	33,33%	7	7			1: 2.449	
München	190.690	314	0,16%	20,06%	63	58	5	6	1: 3.027	
Weiden	15.717	12	0,08%	16,67%	2	2			1: 7.859	
total	728.092	2.123	0,29%	11,78%	250	235	15	11	1: 2.901	1

Hyperphenylalaninemia

		first screening	recall rate	ppv	detected patients	validity			prevalence	false negative
						confirmed	probable	unclear		
Berlin		31.056	0,11%	34,29%	12	12			1:	2.588
	PKU					5	5			
	HPA					7	7			
Cottbus		15.559	0,03%	100,00%	5	5			1:	3.112
	PKU					4	4			
	HPA					1	1			
Dresden		14.026	0,04%	80,00%	4	4			1:	3.507
	PKU					2	2			
	HPA					2	2			
Erfurt		14.964			5	5			1:	2.993
	PKU					3	3			
	HPA					2	2			
Giessen		55.632	0,02%	53,85%	7	7			1:	7.947
	PKU					4	4			
	HPA					3	3			
Greifswald		13.025	0,05%	33,33%	2	2			1:	6.513
	PKU					1	1			
	HPA					1	1			
Hamburg		40.552	0,10%	21,95%	9	9			1:	4.506
	PKU					4	4			
	HPA					5	5			
Hannover		194.143			39	39			1:	4.978
	PKU					21	21			
	HPA					18	18			
Heidelberg		106.736	0,05%	27,59%	16	16	2		1:	6.671
	PKU					7	7	1		
	HPA					9	9	1		
Leipzig		18.850	0,06%	81,82%	9	9			1:	2.094
	PKU					5	5			
	HPA					4	4			
Magdeburg		17.142	0,04%	100,00%	7	7			1:	2.449
	PKU					6	6			
	HPA					1	1			
München		190.690	0,04%	53,95%	41	41			1:	4.651
	PKU					28	28			
	HPA					12	12			
	BH4-Def.					1	1			
Weiden		15.717	0,04%	28,57%	2	2			1:	7.859
	PKU					2	2			
total	PHE	728.092	0,05%	43,18%	158	158	2		1:	4.608
	PKU					92	92	1	1:	7.914
	HPA					65	65	1	1:	11.201
	BH4-Def. (DHPR-defect)					1	1	1	1:	728.092
proportion with reported recall		518.985	0,05%	43,18%	114					

- recall rates and ppv calculated on the basis of laboratories reporting recall.

MSUD

	first screening	recall rate	ppv	detected patients	validity			prevalence	false negative
					confirmed	probable	unclear		
Berlin	31.056	0,04%	7,69%	1	1		1: 15.528	1	
Cottbus	15.559	0,01%	0,00%	0					
Dresden	14.026	0,03%	0,00%	0					
Erfurt	14.964			0					
Giessen	55.632	0,10%	0,00%	0					
Greifswald	13.025	0,04%	0,00%	0					
Hamburg	40.552			0					
Hannover	194.143			0					
Heidelberg	106.736	0,01%	28,57%	2	2		1: 53.368		
Leipzig	18.850	0,01%	0,00%	0					
Magdeburg	17.142	0,02%	0,00%	0					
München	190.690			1	1		1: 190.690		
Weiden	15.717	0,01%	0,00%	0					
total	728.092	0,03%	3,26%	4	4		1: 145.618	1	
proportion with reported recall	287.743	0,03%	3,26%	3					

- recall rates and ppv calculated on the basis of laboratories reporting recall

MCAD

	first screening	recall rate	ppv	detected patients	validity			prevalence	false negative
					confirmed	probable	unclear		
Berlin	31.056	0,08%	4,00%	1	1			1:	31.056
Cottbus	15.559	0,12%	27,78%	5	5			1:	3.112
Dresden	14.026	0,04%	20,00%	1	1			1:	14.026
Erfurt	14.964			1	1			1:	14.964
Giessen	55.632	0,02%	36,36%	4	4		1	1:	13.908
Greifswald	13.025	0,08%	0,00%	0					
Hamburg	40.552			6	2	4	1	1:	6.759
Hannover	194.143			24	24			1:	8.089
Heidelberg	106.736	0,01%	42,86%	3	1	2		1:	35.579
Leipzig	18.850	0,02%	66,67%	2	2			1:	9.425
Magdeburg	17.142	0,01%	0,00%	0					
München	190.690			16	12	4	5	1:	11.918
Weiden	15.717	0,01%	0,00%	0					
total	728.092	0,03%	19,28%	63	53	10	7	1:	11.557
proportion with reported recall	287.743	0,03%	19,28%	16					

- recall rates and ppv calculated on the basis of laboratories reporting recall
- no differentiation of severe and mild forms of MCAD defects

VLCAD

	first screening	recall	recall rate	ppv	detected patients	validity			prevalence	false negative
						confirmed	probable	unclear		
Berlin	31.056	9	0,03%	11,11%	1	1			1:	31.056
Cottbus	15.559	5	0,03%	0,00%	0					
Dresden	14.026	18	0,13%	0,00%	0					
Erfurt	14.964	k.A.			0					
Giessen	55.632	2	0,00%	0,00%	0					
Greifswald	13.025	2	0,02%	0,00%	0					
Hamburg	40.552	k.A.			1		1		1:	40.552
Hannover	194.143	k.A.			1	1			1:	194.143
Heidelberg	106.736	76	0,07%	1,32%	1		1		1:	106.736
Leipzig	18.850	0	0,00%		0					
Magdeburg	17.142	0	0,00%		0					
München	190.690	k.A.			0			1		
Weiden	15.717	1	0,01%	0,00%	0					
total	728.092	113	0,04%	1,77%	4	2	2	1	1:	182.023
proportion with reported recall	287.743	113	0,04%	1,77%	2					

- recall rates and ppv calculated on the basis of laboratories reporting recall
- Confirmed VLCAD: there is some data indicating, that after a pathological finding in the first screening the recall result was normal (Spiekerkötter).
- This poses the question how recalls without pathological findings should be handled.

LCHAD/mTFP

	first screening	recall	recall rate	ppv	detected patients	validity			prevalence	false negative
						confirmed	probable	unclear		
Berlin	31.056	1	0,00%		0					
Cottbus	15.559	3	0,02%		0					
Dresden	14.026	0	0,00%		0					
Erfurt	14.964	k.A.			0					
Giessen	55.632	2	0,00%		0					
Greifswald	13.025	0	0,00%		0					
Hamburg	40.552	k.A.			1		1	1:	40.552	
Hannover	194.143	k.A.			2	2		1:	97.072	
Heidelberg	106.736	1	0,00%		0					
Leipzig	18.850	0	0,00%		0					
Magdeburg	17.142	0	0,00%		0					
München	190.690	k.A.			1		1	1:	190.690	
Weiden	15.717	0	0,00%		0					
total	728.092	7	0,002%		4	2	2	0	1:	182.023
proportion with reported recall	287.743	7	0,002%	0,00%	0					

- recall rates and ppv calculated on the basis of laboratories reporting recall
- 1 mTFP-defect / 3 LCHAD
- ppv could not be calculated because cases where data on recall was reported, did not include a confirmed case.

CPT I

	first screening	recall	recall rate	ppv	detected patients
Berlin	31.056	2	0,01%		0
Cottbus	15.559	0	0,00%		0
Dresden	14.026	1	0,01%		0
Erfurt	14.964	k.A.			0
Giessen	55.632	2	0,00%		0
Greifswald	13.025	1	0,01%		0
Hamburg	40.552	k.A.			0
Hannover	194.143	k.A.			0
Heidelberg	106.736	1	0,00%		0
Leipzig	18.850	0	0,00%		0
Magdeburg	17.142	0	0,00%		0
München	190.690	k.A.			0
Weiden	15.717	0	0,00%		0
total	728.092	7	0,002%		0
proportion with reported recall	287.743	7	0,002%		0

- recall rates and ppv calculated on the basis of laboratories reporting recall

CPT II / CACT

	first screening	recall rate	ppv	detected patients	validity			prevalence	false negative
					confirmed	probable	unclear		
Berlin	31.056	0,10%		0					
Cottbus	15.559	0,00%		0					
Dresden	14.026	0,01%		0					
Erfurt	14.964			0					
Giessen	55.632	0,00%		0					
Greifswald	13.025	0,01%		0					
Hamburg	40.552			0					
Hannover	194.143			1	1		1: 194.143		
Heidelberg	106.736	0,01%		0					
Leipzig	18.850	0,07%		0					
Magdeburg	17.142	0,00%		0					
München	190.690			0					
Weiden	15.717	0,01%		0					
total	728.092	0,02%		1	1		1: 728.092		
proportion with reported recall	287.743	0,02%	0,00%	0					

- recall rates and ppv calculated on the basis of laboratories reporting recall
- confirmed case is CPT II

GA I

	first screening	recall rate	ppv	detected patients	validity			prevalence	false negative
					confirmed	probable	unclear		
Berlin	31.056	0,19%		0					
Cottbus	15.559	0,10%		0					
Dresden	14.026	0,00%		0					
Erfurt	14.964			0					
Giessen	55.632	0,01%		0					
Greifswald	13.025	0,02%		0					
Hamburg	40.552			0					
Hannover	194.143			3	3		1:	64.714	
Heidelberg	106.736	0,08%	1,20%	1	1		1:	106.736	
Leipzig	18.850	0,00%		0					
Magdeburg	17.142	0,02%		0					
München	190.690			2	2		1:	95.345	
Weiden	15.717	0,00%		0					
total	728.092	0,06%	0,61%	6	6	0	0	1:	121.349
proportion with reported recall	287.743	0,06%	0,61%	1					

- recall rates and ppv calculated on the basis of laboratories reporting recall

IVA

	first screening	recall rate	ppv	detected patients	validity			prevalence	false negative
					confirmed	probable	unclear		
Berlin	31.056	0,03%		0					
Cottbus	15.559	0,09%	7,14%	1	1			1:	15.559
Dresden	14.026	0,06%		0					
Erfurt	14.964			1	1			1:	14.964
Giessen	55.632	0,00%	100,00%	2	2			1:	27.816
Greifswald	13.025	0,05%		0					
Hamburg	40.552			0					
Hannover	194.143			3	2	1		1:	64.714
Heidelberg	106.736	0,02%	5,26%	1	1		1	1:	106.736
Leipzig	18.850	0,01%		0					
Magdeburg	17.142	0,03%		0					
München	190.690			2	2			1:	95.345
Weiden	15.717	0,00%		0					
total	728.092	0,02%	6,25%	10	9	1	1	1:	72.809
proportion with reported recall	287.743	0,02%	6,25%	4					

- recall rates and ppv calculated on the basis of laboratories reporting recall
- At least 4 out of ten cases are mild forms

MS/MS: diseases not recommended in the guidelines

- Data have not been checked for plausibility.

		first screening	recall	recall rate	detected patients
Tyrosine					
Berlin	Tyrosinosis	31.056	92	0,30%	0
Cottbus	Tyrosine	15.559	10	0,06%	0
Erfurt	Tyrosine metabolic disorder	14.964	k.A.		0
Greifswald	Tyrosinemia	13.025	1	0,01%	0
Heidelberg	Tyr 1	106.736	57	0,05%	0
Leipzig	Tyrosinosis	18.850	8	0,04%	0
Weiden	Tyr	15.717	17	0,11%	0
total		215.907	185	0,09%	0
Citrullinemia					
Berlin	Citrullinemia	31.056	2	0,01%	1
Giessen	Citrullinemia	55.632	26	0,05%	2
Greifswald	Citrullinemia	13.025	2	0,02%	0
Hannover	Citrullinemia	194.143	k.A.		3
Heidelberg	Citrullinemia	106.736	4	0,00%	1
Leipzig	Citrullinemia	18.850	2	0,01%	0
München	Citrullinemia	190.690			2
total		610.132			9
Argininosuccinate-Lyase					
Erfurt	Argininbernsteinsäurekrankheit	14.964	k.A.		1
Hannover	Argininosucc.	194.143	k.A.		1
total		209.107			2
Methionin					
Giessen	Homocysteinuria	55.632	2	0,00%	1
Carnitine defect					
Berlin	Carnitine defect	31.056	28	0,09%	0
Dresden	C0 defect	14.026	1	0,01%	0
Greifswald	Carnitine defect	13.025	3	0,02%	0
Heidelberg	CTD	106.736	6	0,01%	1
Leipzig	CTD	18.850	6		2
Magdeburg	C0 and/or AC reduced	17.142	3	0,02%	0
München	Carnitine transporter	190.690	k.A.		1
total		391.525			4
Mult. AcCo-A DH					
Berlin	GA II	31.056	1	0,00%	1
München	MAD	190.690	k.A.		1
total		221.746			2

		first screening	recall	recall rate	detected patients
C3-Carnitine					
Berlin	PA / MMA	31.056	29	0,09%	1
Cottbus	Propionic aciduria	15.559	13	0,08%	0
Dresden	C3	6.824	12	0,18%	0
Giessen	Propionic acidemia	55.632	2	0,00%	1
Greifswald	Propionic acidemia	13.025	8	0,06%	0
Hannover	PA	194.143	k.A.		3
Hannover	MMA				2
Heidelberg	PA	106.736	125	0,12%	1
Leipzig	Propionic aciduria	18.850	8	0,04%	0
München	PA/MMA	190.690	k.A.		5
Weiden	PA	15.717	21	0,13%	1
total		648.232			14
C4-Carnitine					
Cottbus	SCAD	15.559	2	0,01%	0
Hannover	SCAD	194.143	k.A.		2
Heidelberg	SCAD	106.736	9	0,01%	0
total		316.438			2
C5-Carnitine					
München	SBCAD	190.690	k.A.		1
C5OH-Carnitine					
Berlin	3-MCC / HMG-CoA-L. / β -Ketothiole	31.056	23	0,07%	0
Cottbus	3MCC	15.559	3	0,02%	0
Erfurt	3 MCC defect	14.964	k.A.		2
Giessen	3-MCC	55.632	39	0,07%	1
Greifswald	3-MCC	13.025	2	0,02%	0
Hamburg	HydroxyIVA	40.552	k.A.		1
Hannover	MCC defect	194.143	k.A.		1
Leipzig	3-MCC/HMG/HC	18.850	10	0,05%	4
München	β -Keto-Thiolase	190.690	k.A.		1
Weiden	3-MCC	15.717	5	0,03%	0
total		590.188			10

Other target diseases

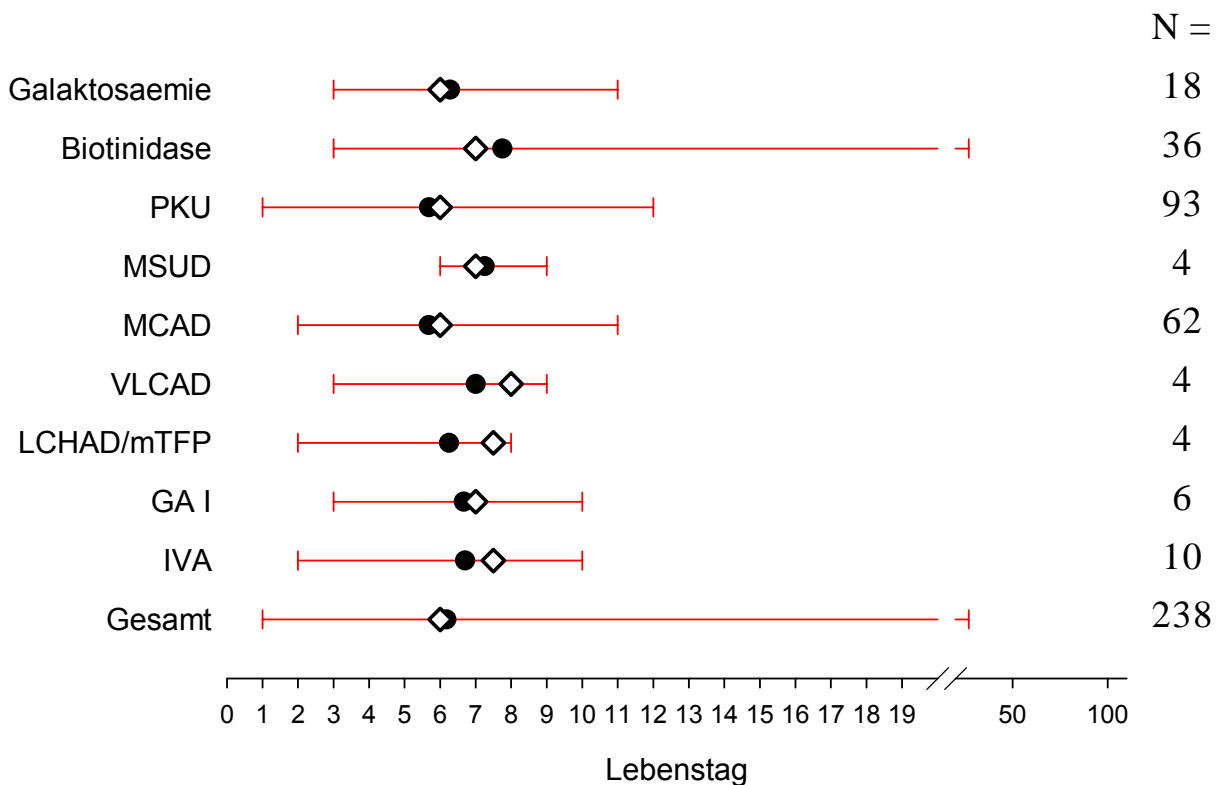
		first screening	recall	recall rate	detected patients
Cystic Fibrosis					
Dresden	IRT	14026	k.A.		3
Giessen	IRT	28380	200	0,70%	10
Hannover	IRT	3416	26	0,76%	7
total		45.822			20
G6PD					
Giessen	G6PD	13121	45	0,34%	29
Hannover	G6PD	194143	568	0,29%	314
total		207.264	613	0,30%	343
Lues-AK					
Hannover	Lues-AK	194143	467	0,24%	28

Time intervals (process data)

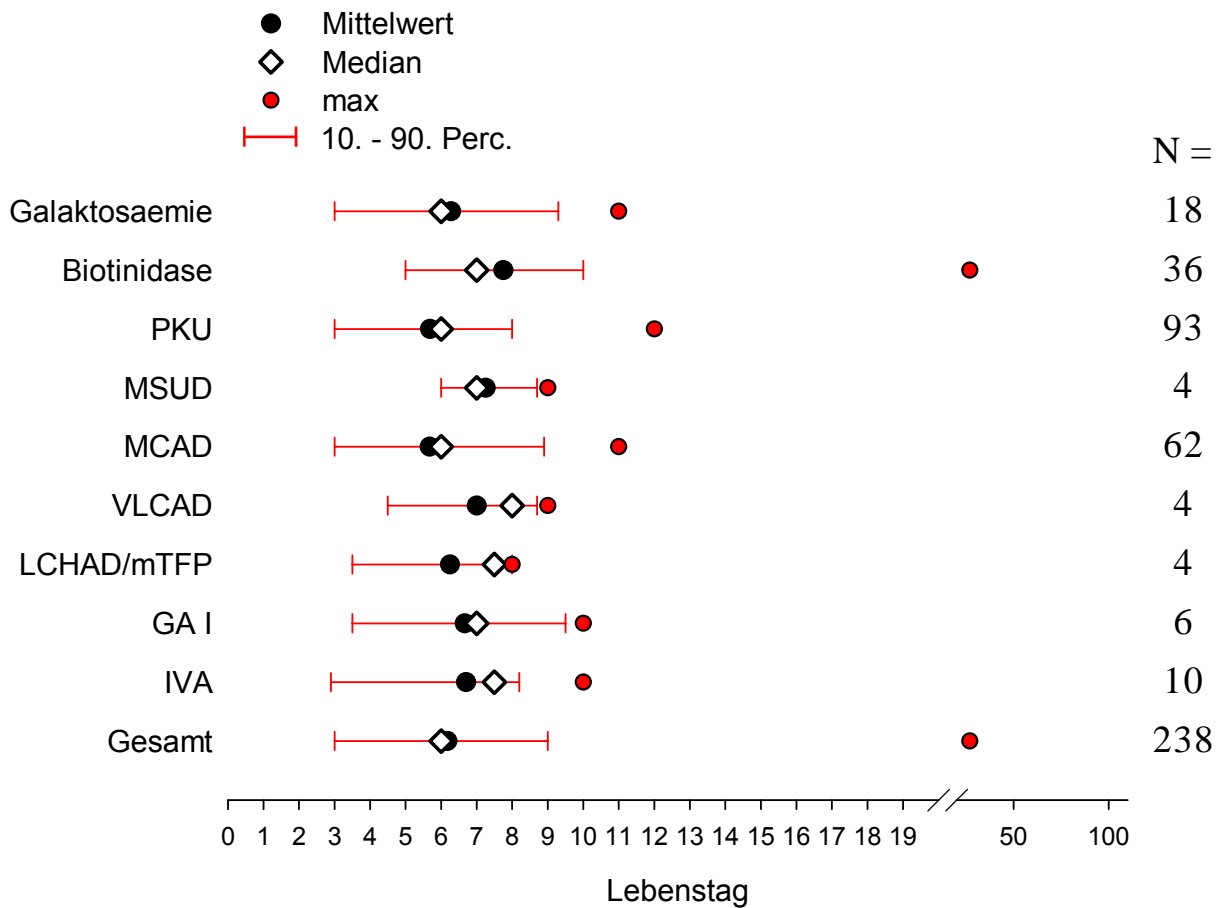
In all confirmed cases of disease where therapy is required (n=238), data on the time point of first screening (n=238), of recall (n=114) and of beginning of therapy, were evaluated and presented by target disease and by laboratories (not HPA, variants of galactosemia, etc.), respectively. For all endocrinopathies no adequate check for plausibility was done, hence data is not illustrated.

Zeitpunkt Screeningbefund (nur therapiepflichtige Pat.)

- Mittelwert (S)
- ◇ Median (S)
- Range

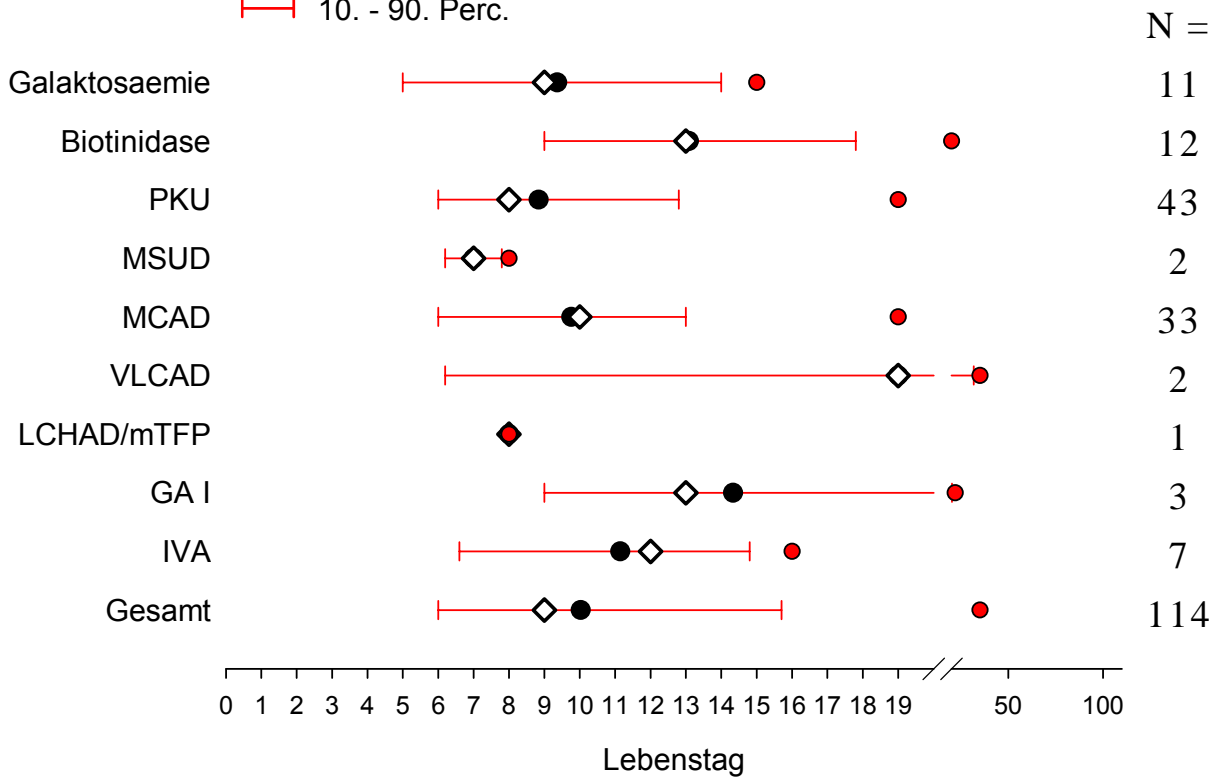


Zeitpunkt Screeningbefund (nur therapiepflichtige Pat.)



Zeitpunkt Recallbefund (nur therapiepflichtige Pat.)

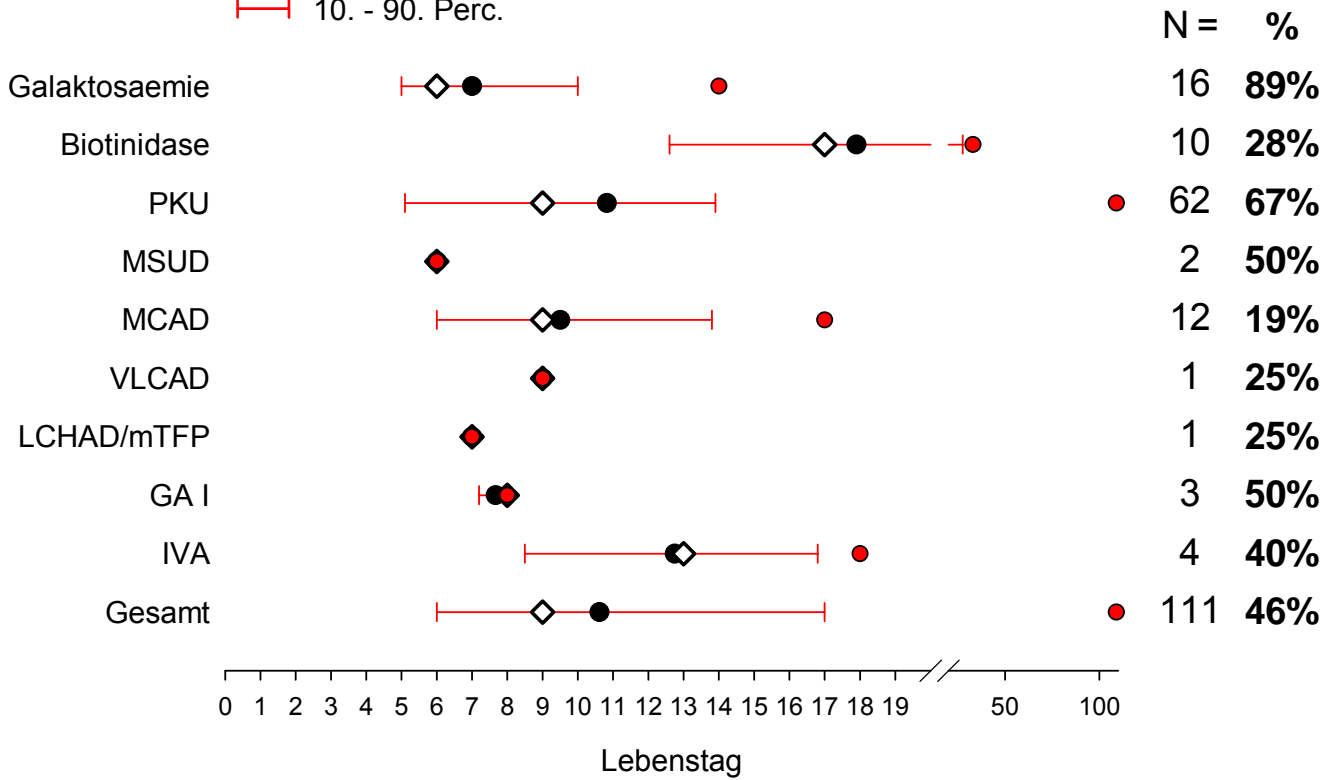
- Mittelwert
- ◇ Median
- max
- 10. - 90. Perc.



Zeitpunkt Therapiebeginn (nur therapiepflichtige Pat.)

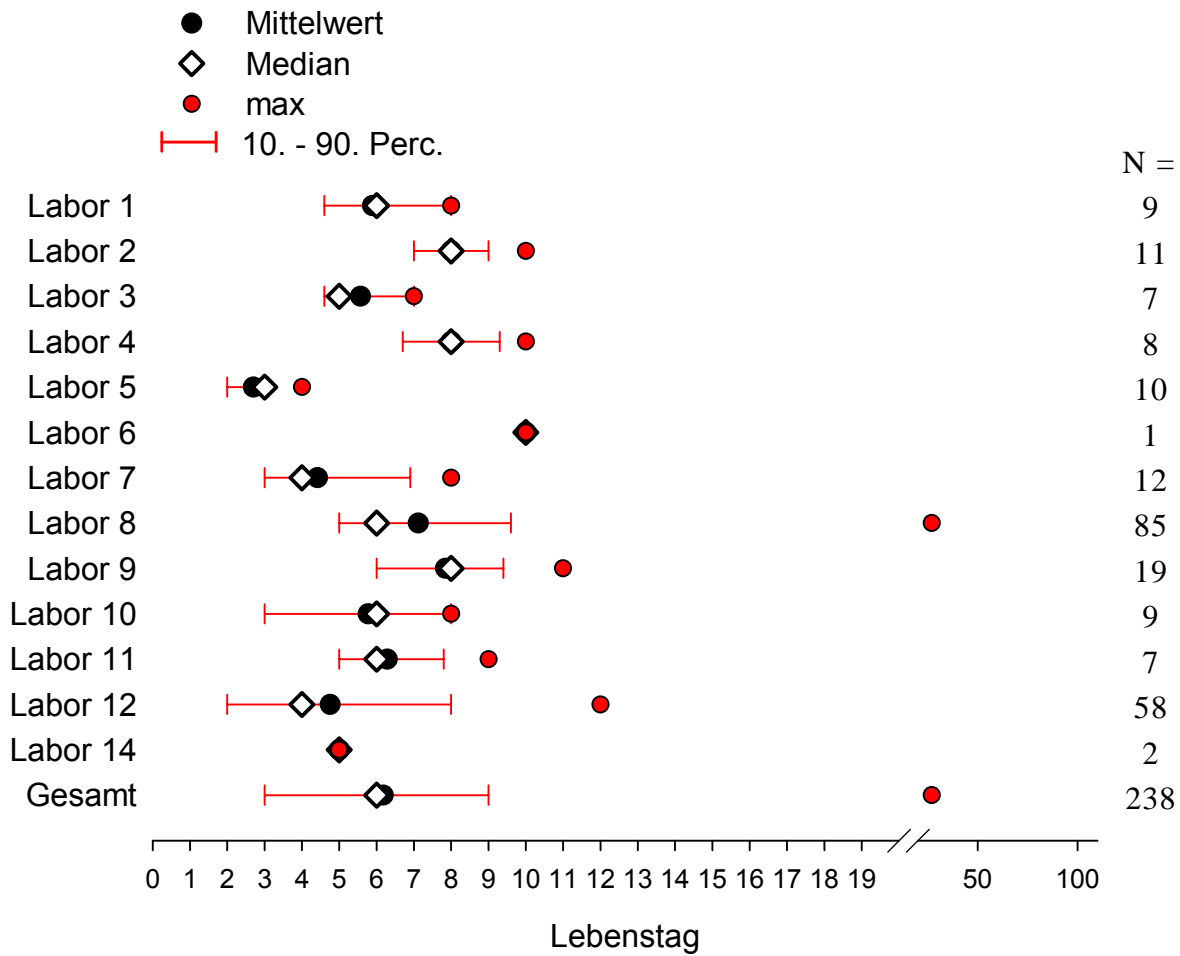
- Mittelwert
- ◇ Median
- max
- |—| 10. - 90. Perc.

Kennntnis über Therapiebeginn aller Therapiepflichtigen



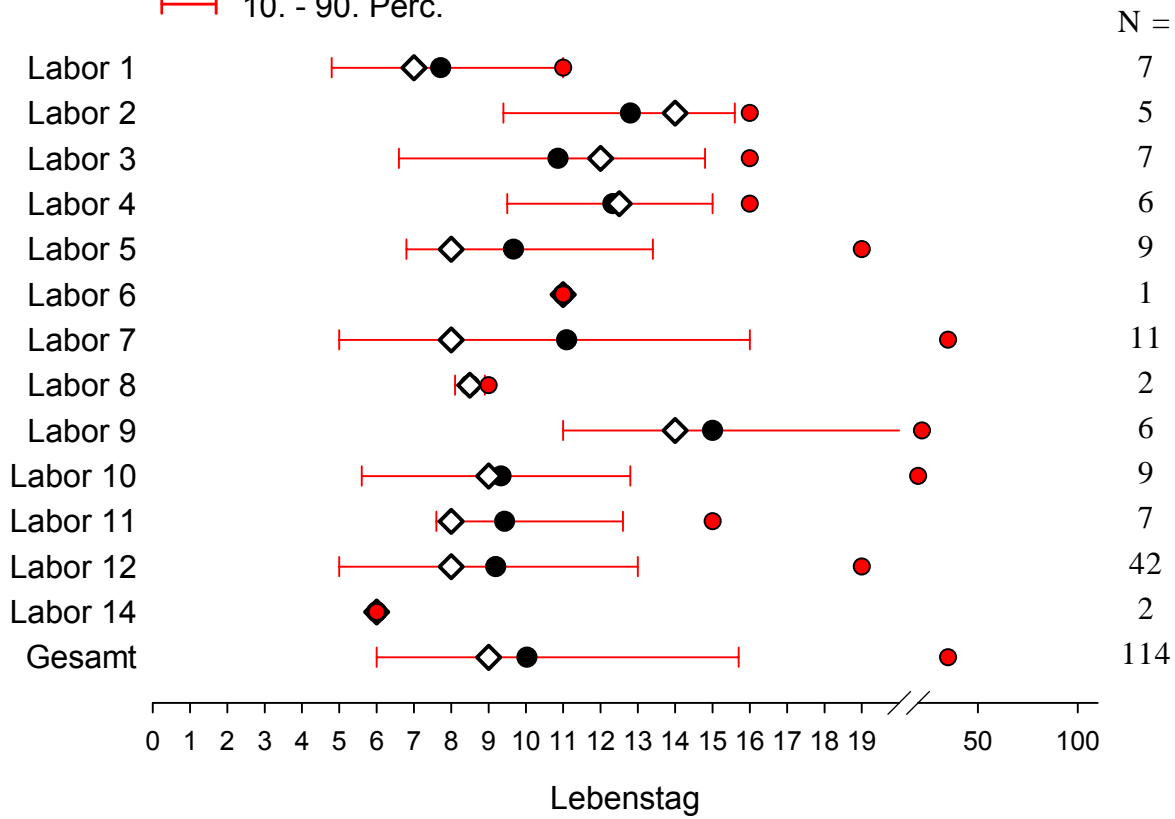
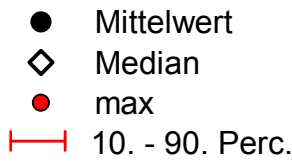
Zeitpunkt Screeningbefund

(nur therapiepflichtige Pat.)



Zeitpunkt Recallbefund

(nur therapiepflichtige Pat.)



Zeitpunkt Therapiebeginn (nur therapiepflichtige Pat.)

