Supplementary tables:

Analyte	Condition screened for (Primary Conditions)	Notes
Immune reactive trypsinogen (IRT)	Cystic fibrosis (elevated)	May be elevated in heterozygotes/ SGA infants
C10 (decanoylcarnitine)	Medium chain acyl Co Deficiency (MCAD)	
C10:1 (decenoylcarnitine)	MCAD	
C12 Dodecanoylcarnitine	MCAD	
C14 Tetradecanoylcarnitine	Very-long chain acyl dehydrogenase deficiency (VLCAD), Long chain 3-hydroxyl acyl CoA deficiency (LCHAD), Trifunctional protein deficiency (TFP)	
C16 Hexadecanoylcarnitine	VLCAD	
C2 Acetylcarnitine	Systemic carnitine deficiency	Main utility in ratios for secondary conditions. Labile, degrades quickly
C3 Propionylcarnitine	Propionic acidemia (PA), multiple carboxylase deficiency (MCD), methmalonyl CoA deficiency (MMC), cobalamin A/B deficiency	May be deranged in maternal and infant vitamin B12 deficiency
C4 Butyrylcarnitine / Isobutyrylcarnitine	Not a marker for primary disorders in isolation	Short-chain acyl dehydrogenase deficiency, glutaryl aciduria II, isobutyryl CoA dehydrogenase deficiency (IBG)
C5 Isovalerylcarnitine	Isovaleric acidemia (IVA)	
C5D Glutarylcarnitine	Glutaric aciduria (GA I)	
C5OH Methylmalonylcarnitine/hydroxyisovalerylcarnitine	3 methylcrotonyl CoA carboxylase deficiency (3MCC), Beta ketothiolase deficiency (BKT), MCD	
C6 (hexanoylcarnitine)	MCAD	
C8 Octanoylcarnitine	MCAD	
CO Carnitine (Free)	Systemic carnitine deficiency	May pick up maternal systemic primary carnitine deficiency
Citrulline	Citrullinemia I (CIT I), Arginosuccinylyase deficiency (ASL)	
Leucine/Isoleucine	Maple syrup urine disease (MSUD)	
Methionine	Homocystinuria	Secondary marker for vitamin B12 deficiency (maternal and infant)
Phenylalanine	phenylketonuria	

Tyrosine	tyrosinemia	
TSH Thyroid stimulating hormone	Congenital hypothyroidism	
Not included in analysis*		
C12:1 Dodecenoylcarnitine	VLCAD	
C14:1Tetradecenoylcarnitine	VLCAD,LCHAD,TFP	
C14:2 Tetradecadienylcarnitine	VLACD,LCHAD,TFP	
C16O Hydroxyhexadecanoylcarnitine §	LCHAD, TFP	
C18O Hydroxyoctadecanoylcarnitine§	LCHAD, TFP	

Supplementary Table 1. Selected analytes screened for by the NSWNSP. Disorders screened for but not listed: congenital adrenal hyperplasia, spinal muscular atrophy, CF mutations, severe combined immune deficiency syndrome (SCID), primary immune deficiencies, galactosemia
*Several cases (metformin and diet) predate the inclusion of these analytes to the NBS testing panel.
§ These analytes were excluded

Analytes (µmol/l)	Metformin-exposed diabetes cases (N=73)	Diet-treated diabetes cases (N=146)	Normal controls (N=131)	*P* value* Metformin-exposed diabetes cases vs normal controls	*P* value* Metformin-exposed diabetes cases vs diet-treated diabetes cases
C5 (isovalerylcarnitine)	1.27	0.83	1.00	<0.001	**0.002**
TSH	1.08	0.92	1.00	0.387	0.021

Supplementary table 2. Significant analytes for first-trimester exposure group (MoM values)
*Mann-Whitney U-test

Analyte (µmol/l)	Metformin-exposed diabetes cases (N=107)	Diet-treated diabetes cases (N=193)	Normal controls (N=186)	*P* value* Metformin-exposed diabetes cases vs normal controls	*P* value* Metformin-exposed diabetes cases vs diet-treated diabetes cases
C4 (butyrylcarnitine)	1.14	0.97	0.97	0.025	0.052
C5 (isovalerylcarnitine)	1.18	0.92	0.92	<0.001	**0.005**
C5D (glutarylcarnitine)	1.13	0.85	1.00	0.039	**0.018**
C10 (decanoylcarnitine)	1.11	1.00	0.96	0.048	0.400
C12 (Dodecanoylcarnitine)	1.07	0.93	0.93	0.031	0.237
C14 (Tetradecanoylcarnitine)	2.06	1.45	0.72	<0.001	0.170
C6 (hexanoylcarnitine)	1.20	1.00	0.83	<0.001	0.444
C8 (Octanoylcarnitine)	1.25	1.00	0.89	<0.001	0.486
Leucine	0.93	0.98	1.01	<0.001	0.391

Supplementary Table 3. Significant analytes for second trimester exposure group (13-26 weeks)
*Mann-Whitney U-test

Analyte (µmol/l)	Metformin-exposed diabetes cases (N=385)	Diet-treated diabetes cases (N=415)	Normal controls (N=619)	Metformin-exposed diabetes cases vs normal cases *P* value	Metformin-exposed diabetes cases vs diet-treated maternal diabetes cases *P* value
C4 (butyrylcarnitine)	1.11	0.97	1.04	0.002	0.134
C5 (isovalerylcarnitine)	1.09	0.92	1.00	**<0.001**	**0.006**
C10:1 (decenoylcarnitine)	1.00	1.00	1.00	0.314	**0.039**
C12 (Dodecanoylcarnitine)	1.07	1.00	1.00	0.014	0.621
C14 (Tetradecanoylcarnitine)	2.20	1.50	1.00	<0.001	0.855
C6 (hexanoylcarnitine)	1.00	1.00	1.00	0.001	0.488
C8 (Octanoylcarnitine)	1.13	1.00	1.00	0.002	0.883
Leucine	0.97	1.02	1.00	0.037	0.522

Supplementary Table 4. Significant analytes for third trimester exposure group (>26 weeks)
*Mann-Whitney U-test

Analyte	**P Value**
C4	0.001
C5	<0.001
C6	<0.001
C8	<0.001
Citrulline	0.031
Leucine	0.013

Supplementary Table 5. Significant analytes on comparing the insulin-treated and metformin only group.