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### Background and Objectives

Since the year 2008 data of pregnant women in Germany treated in specialized diabetes practices are documented in the GestDiab register. Data from the pregnant women with gestational diabetes (GDM) or overt type 1 or 2 diabetes mellitus (DM) and their offspring are collected.

The German Diabetes Association issued a new guideline for GDM in 2011, followed by a legal directive in March 2012. It is now mandatory in Germany to screen each pregnant woman for GDM with a two-step approach (50 g glucose challenge test and subsequently a 75 g oral Glucose Tolerance Test (oGTT) at a gestational age of 24<sup>+0</sup> to 27<sup>+6</sup> weeks). oGTTs performed during this time span are reimbursed.

The new guideline classifies for the first time overt diabetes as a separate disease entity if diagnosed during pregnancy.

The significance of the postpartum screening for diabetes is emphasized.

This analysis investigates the impact of the new guideline and directive by comparing data of the register GestDiab from the years following their introduction (2013/14) with those before these were implemented (2009/10).

### Methods

Data were collected by physicians without getting any reimbursement during routine care in the specialized diabetes practices.

Diagnosis, therapy and interpretation of data followed the respective valid GDM-guideline of the German Diabetes Association in three time periods: before, during and after implementation of the guideline / directive.

Informed consent was obtained from all women. Participation was voluntary.

Analysis of the data was performed with was performed with Excel and standard statistical analysis methods.

### Results

- Comparison of the data obtained in the years 2009/10 (before the new guideline was issued) and 2013/14 (with new guideline in place) shows:
- In 2013/14 GDM was more frequently diagnosed between the 24<sup>th</sup> and 28<sup>th</sup> week of gestational age (WG) than in 2009/10: 33% vs. 27%;  $p < 0,001$  (Fig.1).
- More pregnant women were treated with insulin: 40% vs. 34%;  $p < 0,0001$  (Tab. 1).
- Frequency of Cesarean Sections (CS) was not different: 39% vs. 38%; NS.
- The percentage of overweight women (29% vs. 26%;  $p < 0,001$ ) and obese women (35% vs. 32%,  $p < 0,001$ ; Tab. 1) was higher in the later time period.
- More women participated in the postpartum diabetes screening: 43% vs. 39%;  $p < 0,001$ ; (Tab.1). In 2013/14 36% of these had a pathological test result (Fig. 2).
- The diagnosis "DM diagnosed during pregnancy" was made in as many as 4% of the pregnant women (2013/14).

### Discussion

- The diagnosis GDM is now more frequently established during the preferred time span, allowing a timely start of therapy. However there are still many women diagnosed too late.
- Overt diabetes is more often diagnosed during pregnancy than following pregnancy, allowing for earlier intensified care.
- The rate of CS is high and unchanged, although GDM per se without further obstetrical problems is not an indication for this mode of delivery.
- Women with GDM are more frequently treated with insulin than recommended in the guideline.
- More women are now taking advantage of the chances for early detection and prevention of diabetes that comes with postpartum testing; however, even in this well taken care of group of women more than half miss out on this chance.

### Conclusion:

The new German GDM guideline and directive induced a positive change:

- More pregnant women learn early about their GDM diagnosis. This benefits mother and child.
- Screening for diabetes after the pregnancy identifies women (and their families) with a high risk for diabetes and cardiovascular disease in the subsequent years.

More attention is needed for:

- A strategy for disease prevention following pregnancy.
- Earlier diagnosis of GDM in pregnancy.
- Reduction of overweight and obesity in young women.

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	2009-2010		2011-2012		2013-2014	
	n	%	n	%	n	%
pregnancies documented in register GestDiab	2334		3383		4640	
number of participating practices	23		24		28	
<b>diagnostic</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
overt diabetes mellitus first diagnosed in pregn.	-		125	4%	186	4%
GDM (according to the valid guidelines)	2334	100%	3258	96%	4454	96%
<b>descriptive characteristics</b>	<b>MW</b>	<b>Median</b>	<b>MW</b>	<b>Median</b>	<b>MW</b>	<b>Median</b>
BMI (kg/m <sup>2</sup> )	27,8	26,5	28,1	26,8	28,5	27,2
age at date of delivery	31,8	32,0	31,9	32,0	32,2	32,0
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
treatment with insulin	785	34%	1105	33%	1846	40%
postpartum diabetes screening	915	39%	1163	36%	1894	43%
number of caesarean sections	38%		40%		39%	
<b>body weight before pregnancy</b>	<b>%</b>		<b>%</b>		<b>%</b>	
underweight	2%		2%		2%	
normal weight	40%		37%		34%	
overweight	26%		28%		29%	
obesity grade I to III	32%		33%		35%	

Table 1: Descriptive data of the pregnancies during the relevant time periods as above

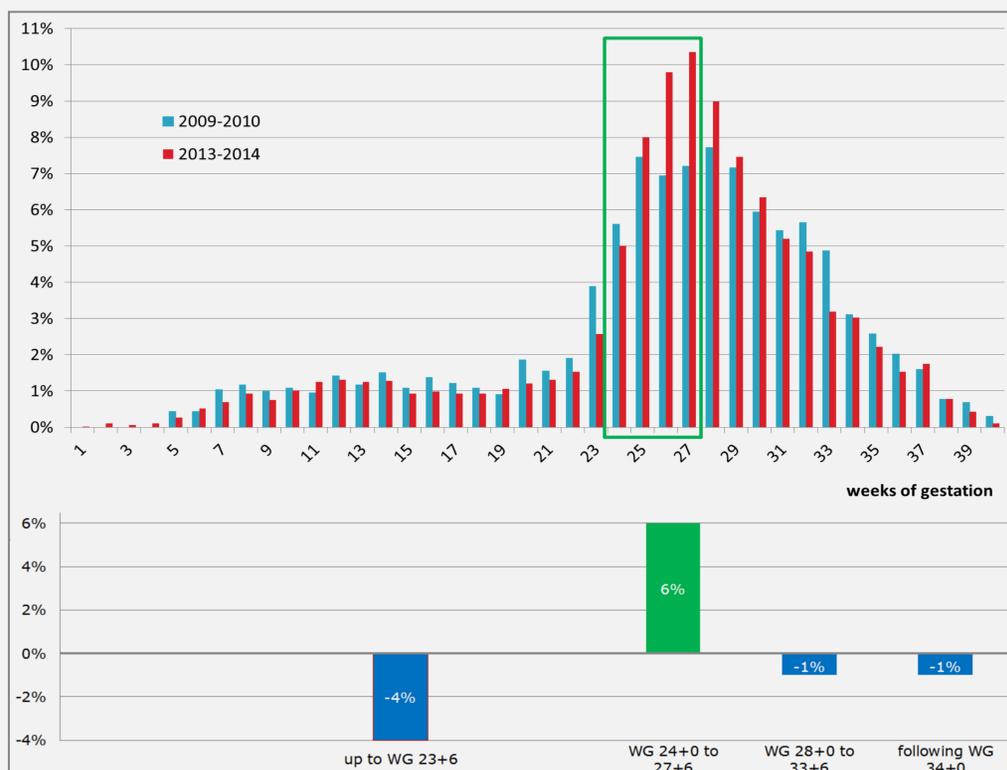
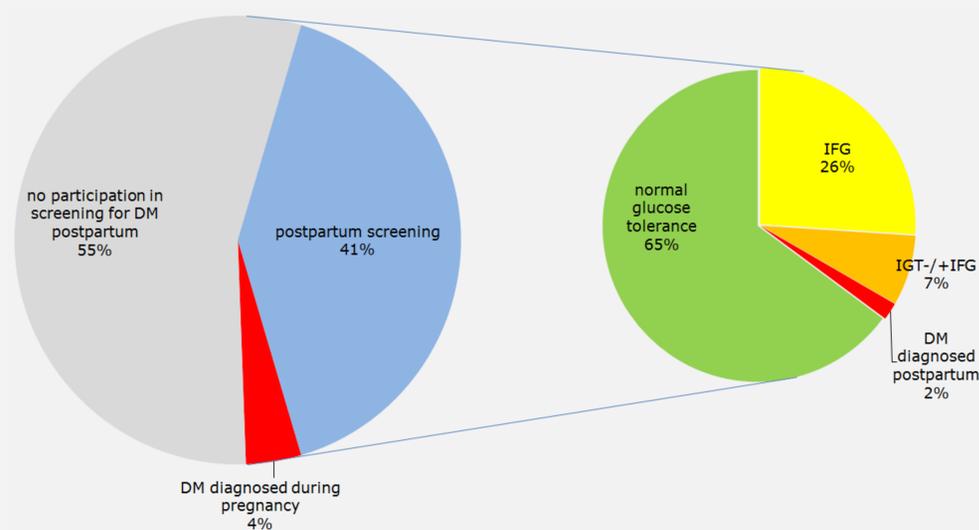


Figure 1

a. Gestational week (WG) when diagnosis of GDM was made: in the years 2009/10 (blue bars) and in the years 2013/14 (red bars). The green rectangle marks weeks 24<sup>+0</sup> to 27<sup>+6</sup>, the target time period for GDM diagnosis.

b. Difference in the proportion of GDM diagnoses made in the years 2009/10 vs. 2013/14.



All pregnancies 4640 = 100%

Postpartum diabetes screening 1894 = 100%

Figure 2

Diabetes and other diagnoses made during pregnancy 2013/2014:

All pregnancies concerned (left) = 4640, of those 186 with overt DM diagnosed in pregnancy. Of the remaining women 1894 with postpartum diabetes screening (right): DM (n=34), increased fasting glucose = IFG (n=493), impaired glucose tolerance without or with IFG = IGT -/+ IFG (n=138), normal glucose tolerance (n=1229)