Priority Evidence-Practice Gaps in Aboriginal and Torres Strait Islander Maternal Health Care

Data Supplement - Final Report
Phase 1 data (2012 – 2014)
Phase 2 data (2007 – 2014)

Engaging Stakeholders in Identifying Priority Evidence-Practice Gaps and Strategies for Improvement in Primary Health Care (ESP Project)

To be read in conjunction with the Maternal Health Care Final Report

Gibson-Helm M, Bailie J, Matthews V, Laycock A, Boyle J, Bailie R. Maternal Health Care for Aboriginal and Torres Strait Islander People: Final Report. ESP Project: Priority Evidence-Practice Gaps and Stakeholder Views on Barriers and Strategies for Improvement. Menzies School of Health Research. June 2016.

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CRE-IQI
One21seventy National Centre for Quality Improvement in Indigenous Primary Health Care

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1 Phase 1 data report – identifying priority evidence-practice gaps

Sixty-five health centres last used the maternal health audit tool in 2012, 2013 or 2014 (Table 1). These health centres had used the audit tool for varying numbers of CQI cycles (Table 2). The maternal health audit tool had been used mostly by health centres in Qld and the NT. A total of 1,091 records were audited in the 65 health centres. Forty-eight of these health centres recorded a completed maternal health systems assessment in the One21seventy database.

Table 1 ***Most recent maternal health audit and systems assessment completed in 2012, 2013 or 2014 (number of client records audited, number of health centres)***

		2012	2013	2014	Total
FWNSW	#Records		46		46
	#Centres		3		3
	#SATs				0
QLD	#Records	138	228	90	456
	#Centres	13	13	3	29
	#SATs	14	25	1	40
NT	#Records	80	185	170	435
	#Centres	7	12	8	27
	#SATs	4	7	1	12
SA	#Records	33			33
	#Centres	2			2
	#SATs		1	2	3
WA	#Records	30		91	121
	#Centres	1		3	4
	#SATs	1	1	1	3
Total	#Records	281	459	351	1091
	#Centres	23	28	14	65
	#SATs	19	34	5	58

Table 2 ***Most recent maternal health audit cycle completed in 2012, 2013 or 2014 (number of health centres)***

	Last Audit Cycle Completed								
	Baseline	1	2	3	4	5	6	7	Total
FWNSW						1	2		3
QLD	2	6	5	13	3				29
NT	10	4	7	4	2				27
SA		2							2
WA	1				1	1		1	4
Total	13	12	12	18	6	1	2	1	65

The majority of health centres are in remote communities and are government managed (Table 3). Most records (82%) audited were for Aboriginal and Torres Strait Islander women. Caesarean sections and assisted births were less common than the total population across Australia. Over two-thirds of women (69%) had their pregnancy care transferred at some stage, mostly for birthing.

Table 3 ***Characteristics of health centres and maternal health clients whose records were last audited during 2012-2014 (number & (%))***

		FWNSW	QLD	NT	SA	WA	Total
Primary Health Care Centres		**3**	**29**	**27**	**2**	**4**	**65**
Location	Urban		1 (3.5)	1(4)	2(100)		4(6)
	Regional	1(33)	3 (10.3)	2(7)		1(25)	7(11)
	Remote	2(67)	25 (86.2)	24(89)		3(75)	54(83)
Governance	Government		29 (100)	17(63)	2(100)	1(25)	49(75)
	Community Controlled	3(100)		10(37)		3(75)	16(25)
Size of population served	≤500	1(33.3)	10 (34)	3(11)			14(21.5)
	501-999	1(33.3)	8 (28)	9(33)			18(27.7)
	≥1000	1(33.3)	11 (38)	15(56)	2(100)	4(100)	33(50.8)
Completed maternal audit cycles	Baseline		2 (7)	10(37)		1(25)	13(20)
	1-2 cycles		11 (38)	11(41)	2(100)		24(37)
	≥3 cycles	3(100)	16 (55)	6(22)		3(75)	28(43)
Number of audited records		**46**	**456**	**435**	**33**	**121**	**1091**
Maternal age (mean & range)		27 (16-43)	27 (13-46)	26 (14-45)	25 (16-38)	26 (16-41)	26 (13-46)

Indigenous status of mother	Indigenous	41(89)	302(66)	418 (96)	33(100)	103(85)	897(82)
	Non-indigenous	5(11)	91(20)	17 (4)		18(15)	131(12)
	Not stated		63(14)				63(6)
Indigenous status of infant	Indigenous	42(91.3)	240(52.6)	394 (91)	21(64)	87(72)	784(72)
	Non-indigenous	2(4.35)	48(10.5)	13 (3)	1(3)	5(4)	69(6)
	Not stated	2(4.35)	168(36.8)	28 (6)	11(33)	29(24)	238(22)
Type of birth	Vaginal	24(52.2)	296(65)	297 (68.3)	23(70)	72(59.5)	712(65.3)
	Caesarean Section	14(30.4)	104(23)	113 (26)	9(27)	36(29.8)	276(25.3)
	Assisted	6(13)	36(8)	23 (5.3)	1(3)	13(10.7)	79(7.2)
	Not Stated	2(4.3)	20(4)	2 (0.5)			24(2.2)
Location of birth	Local hospital	31(67.4)	204(45)	45 (10.3)	2(6)		282(25.9)
	Regional hospital	12(26.1)	166(36)	283 (65.1)		98(81)	559(51.2)
	City hospital	2(4.4)	78(17)	92 (21.2)	31(94)	18(15)	221(20.3)
	Home/Community health centre			9 (2.1)		4(3)	13(1.2)
	Other			4 (0.9)		1(1)	5(0.5)
	Not stated	1(2.2)	8(2)	2 (0.5)			11(1)
Antenatal care transfer	To other location	3(6.5)	248(54)	406 (93)	1(3)	96(79.3)	754(69.1)
	From other location	1(2.2)	45(10)	3 (1)	2(6)	4(3.3)	55(5)
Reason for transfer	Birthing		243(53)	305 (70.1)		84(69.4)	632(57.9)
	Complications		25(5)	50 (11.5)	1(3)	6(5)	82(7.5)
	High risk pregnancy	2(4.4)	16(4)	45 (10.3)		1(0.8)	64(5.9)
	Other	2(4.4)	9(2)	9 (2.1)	2(6)	9(7.4)	31(2.8)
	No transfer	42(91.3)	163(36)	26 (6)	30(91)	21(17.4)	282(25.9)

1.1 Identifying priority evidence-practice gaps

The priorities for improvement, or priority evidence-practice gaps, reported here were determined by identifying items in the national clinical audit and systems assessment data that reflected:

a) basic aspects of clinical care that were being delivered and recorded at a high level of performance by the majority of services, but that were being delivered at a much lower level by a proportion of services;

b) aspects of care where there was more general wide variation in recorded delivery of care;

c) important aspects of comprehensive PHC that were generally recorded at low levels; and,

d) components of PHC centre systems that were relatively poorly developed.

These criteria were used by the ABCD Project team in conjunction with clinical experts to identify a preliminary set of priorities. The preliminary priorities are presented in the body of the report, and are also presented below for summary purposes.

Although a proportion of health centres are doing well in many aspects of pregnancy care, there is wide variation in some key aspects of pregnancy care, and some aspects are not provided well by the majority of health centres:

Client records

- Completeness of delivery summaries (particularly for health centres at the lower end of the range)
- First trimester pregnancy care visits
- Folate prescription prior to conception

Risk factors and brief interventions

- Documented discussion of smoking and alcohol use early in pregnancy (particularly for health centres at the lower end of the range)
- Brief intervention, counselling or referral related to breastfeeding, cultural considerations and social risk factors such as domestic/social environment, social/family support, housing, food security.

Laboratory Investigations

- Offering foetal anomaly screening to all women
- Anti-D injections, during pregnancy and post-birth, and post-birth Rubella immunisations for women who require them (particularly for health centres at the lower end of the range)

Routine antenatal checks and abnormal findings

- Calculating BMI and providing BMI management plans for all women
- Follow-up MSU tests after abnormal urinalysis results
- Performing CTGs or initiating kick charts in response to abnormal foetal movements

Emotional wellbeing screening and care

- Emotional wellbeing screening for all women and appropriate follow-up for women identified to be at-risk

Postnatal care

- Discussion at the postnatal visit of smoking, SIDS prevention, and social circumstances such as finance, housing and food security

Health centre systems

Similar ratings were generally noted for each system component. However the overall range was often wide, indicating that some health centres felt their systems were functioning very well and others felt their systems were not functioning well. Priorities for health centre systems improvement to enable health centres to provide high quality maternal care include:

- Continuity of care, and physical infrastructure, supplies and equipment within the Delivery system design component
- Specialist-generalist collaborations within the Information systems and decision support component
- Education and support, behavioural risk reduction and peer support within the Self-management support component
- Communication and cooperation on health centre governance and operation, and on regional health planning and development of health resources within the Links with the community, other health services and other services and resources component.

1.2 Presentation of audit data: horizontal box and whisker plots

The presentation of audit findings generally follows the structure of the maternal health audit tool, with sections on recording of key client information; risk factors and brief interventions, routine services, documentation of follow-up of abnormal results and emotional wellbeing screening and care.

Each section of the report includes:

- A summary of key findings from the national audit data;
- Preliminary priority evidence-practice gaps (preliminary priorities for improvement) based on the national data; and
- Box and whisker plots for each of the items in the audit tools, which show the level of adherence to best practice guidelines, and variation between health centres.

Box and whisker plots

The mean percent delivery of each service item is calculated for each health centre and displayed within a 'box and whisker plot' to show the distribution (or variation) in delivery of that item across health centres.

Box and whisker plots show (Box 1):

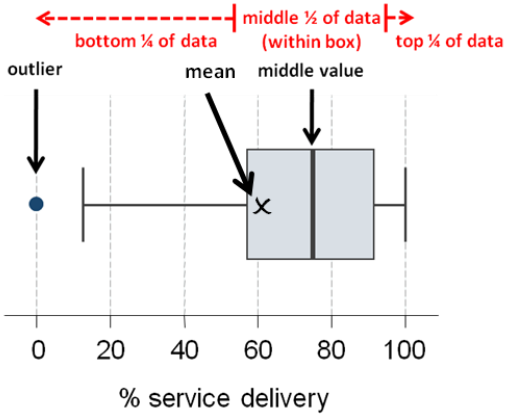
- the minimum and maximum values (ends of whiskers if no outliers);
- outliers which are values far away from most other values in the data set (or a distance that is greater than 1.5 times the length of the box);
- the range of service item delivery by dividing the dataset into quarters:
  - the box represents the middle 50% of the dataset (or interquartile range), and the line within the box represents the median (or middle value);
  - the right hand whisker (and outliers if present) represents the top 25% of the data

- the left hand whisker (and outliers if present) represents the bottom 25% of the data; and

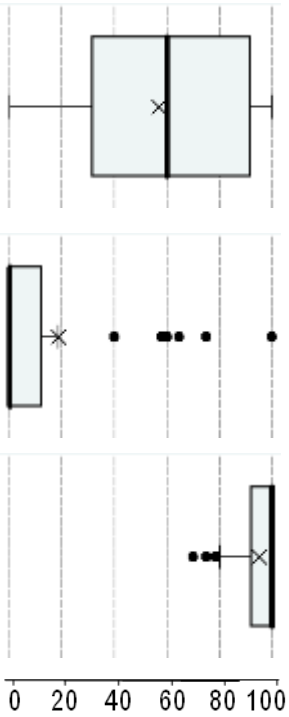
- the longer the box plot, the greater the range (or variation).

Box 1: How to interpret box and whisker plots

Interpretation:



Examples:



- Wide variation in service delivery (range 0-100%).
- Health centres relatively equally dispersed across the range. 25th to 75th centile is 30-90%.

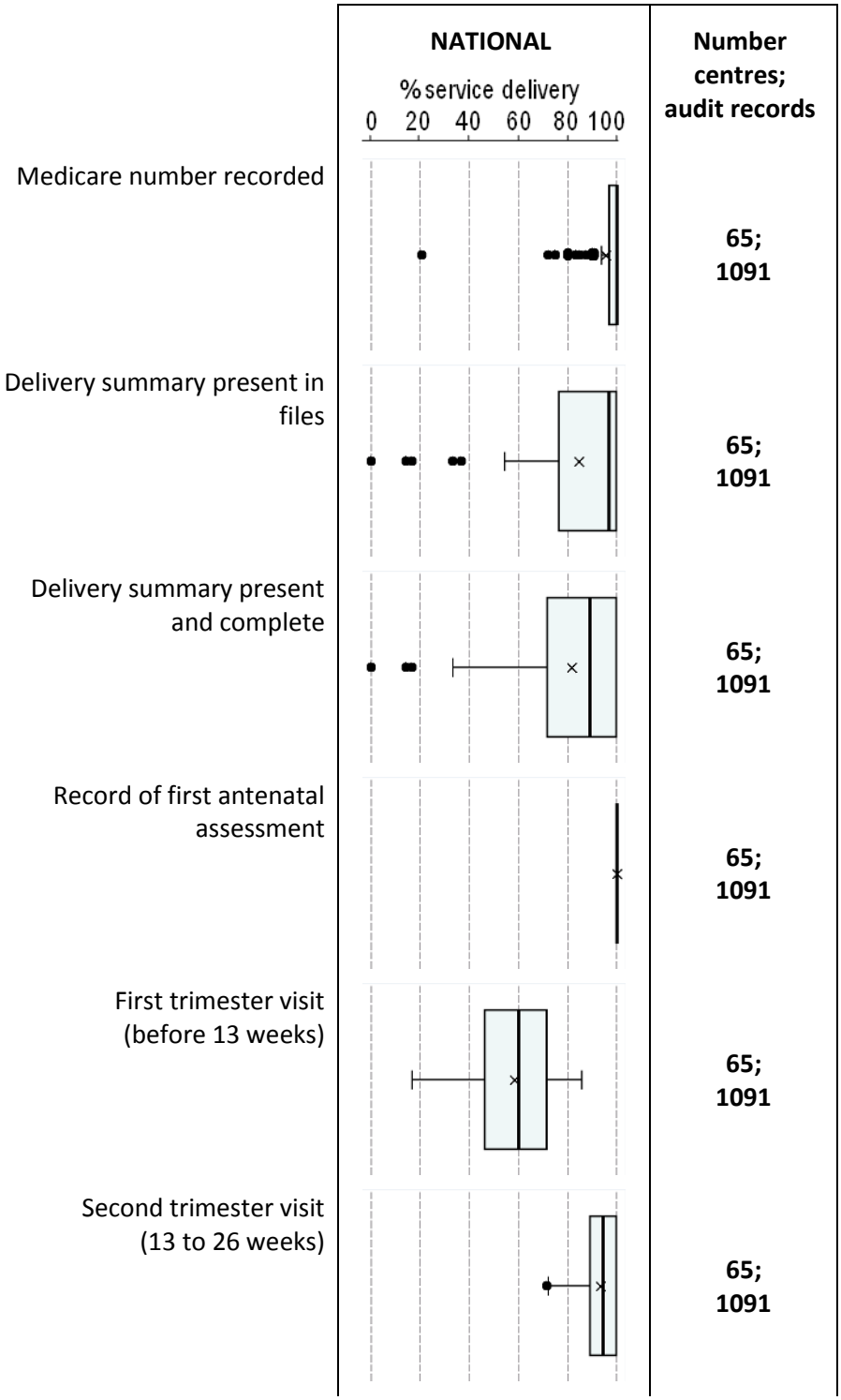
- Majority of centres at lower end of range (between 0-20%) with a few health centres at higher levels – up to 100%.

- Smaller variation in service delivery (range 70-100%).
- All centres at higher end with 75% of centres in the 90-100% range.

1.3 Client records & health summaries

The figures in this section show mean health centre percentages of clients who have a record of key information in medical records such as prescription of folate or iron, timing of pregnancy care visits, care plans and delivery summaries.

Figure 1 Mean health centre percentages of clients with a record of key information in medical records



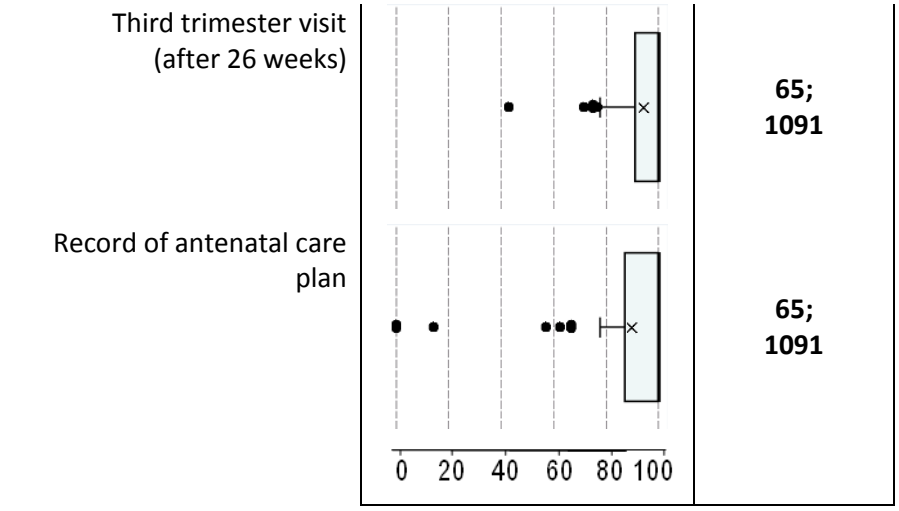
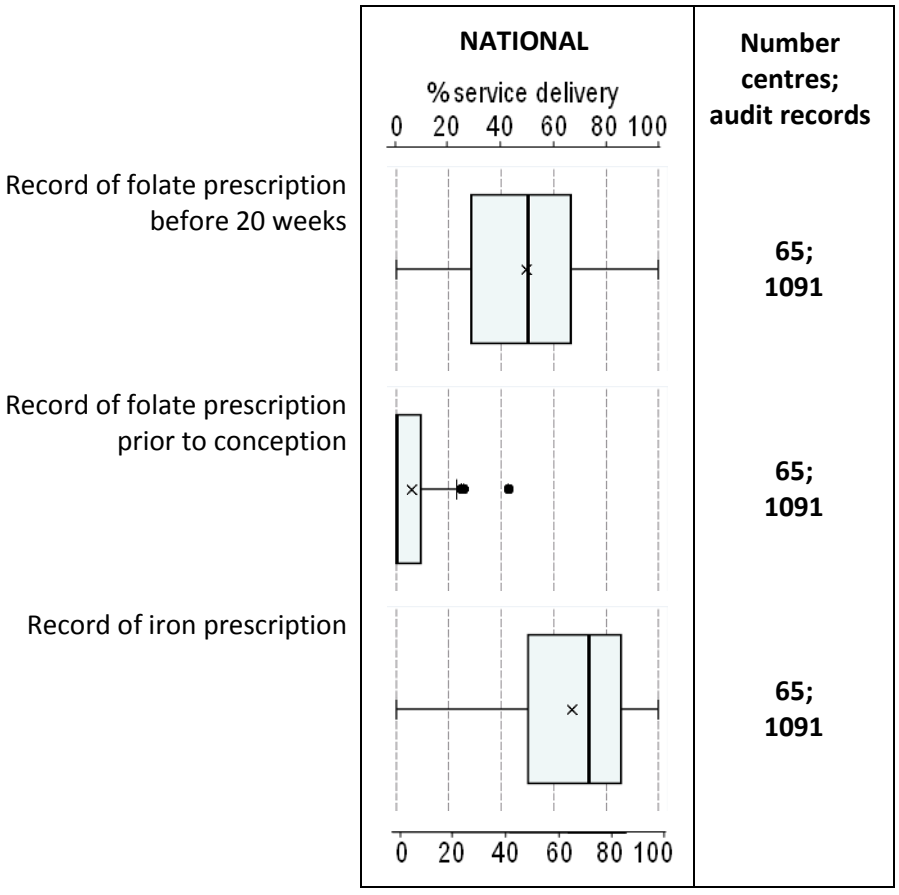


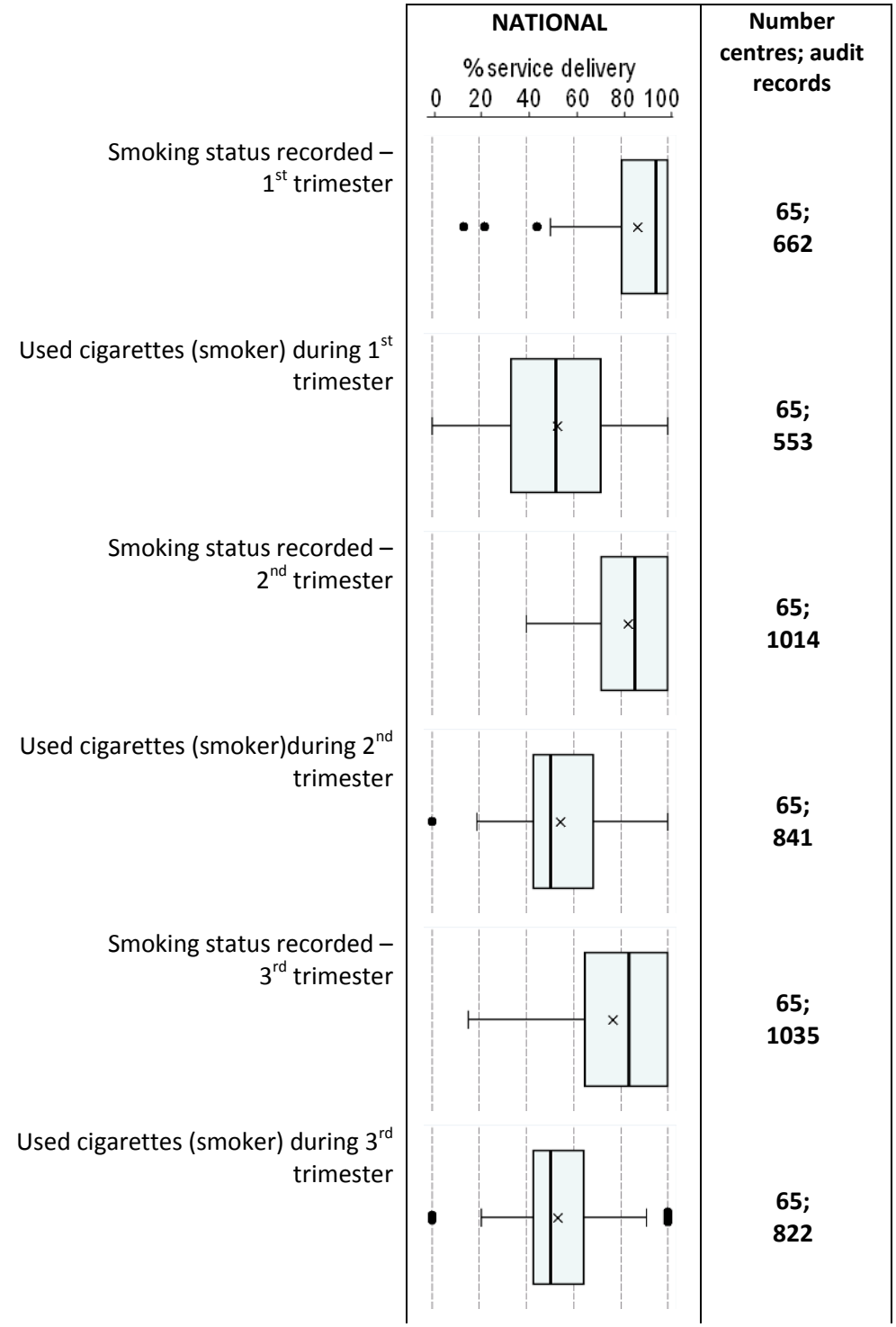
Figure 2 **Mean health centre percentages of clients with a record of routine supplements.**



1.4 Risk factors and brief interventions

The figures in this section show mean health centre percentages of maternal health clients with a record of a range of risk factor and brief intervention discussions.

Figure 3 Mean health centre percentages of clients with a record of smoking during pregnancy and brief interventions



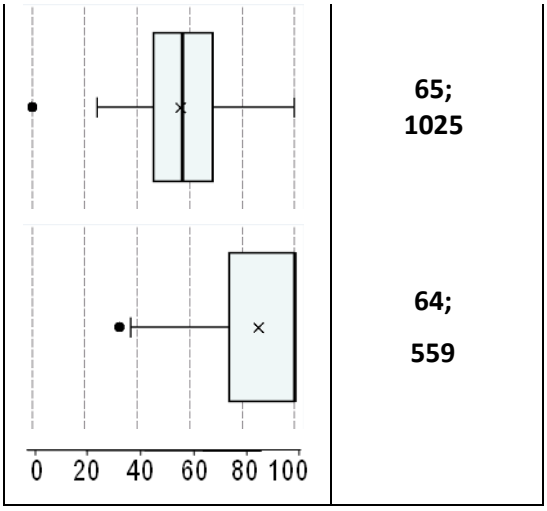
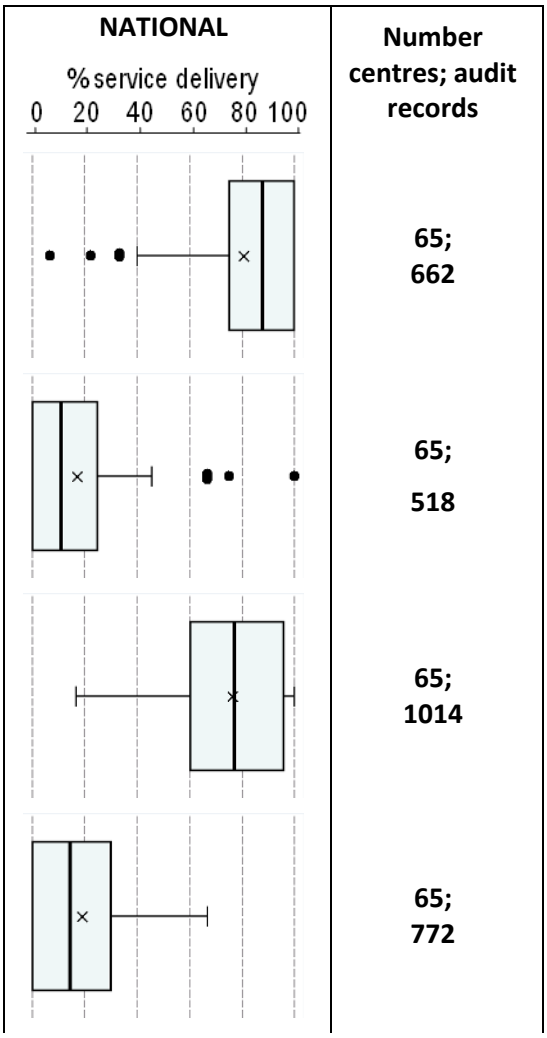


Figure 4 **Mean health centre percentages of clients with a record of alcohol use during pregnancy and brief interventions**



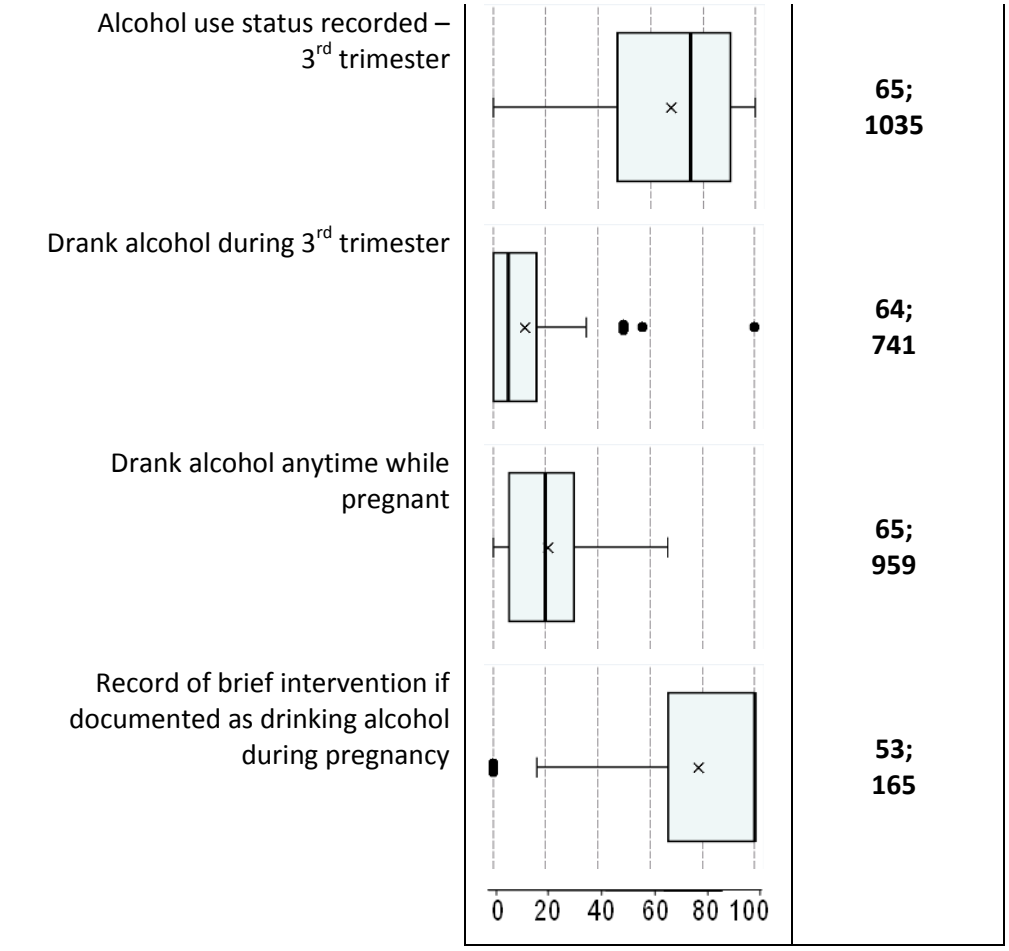
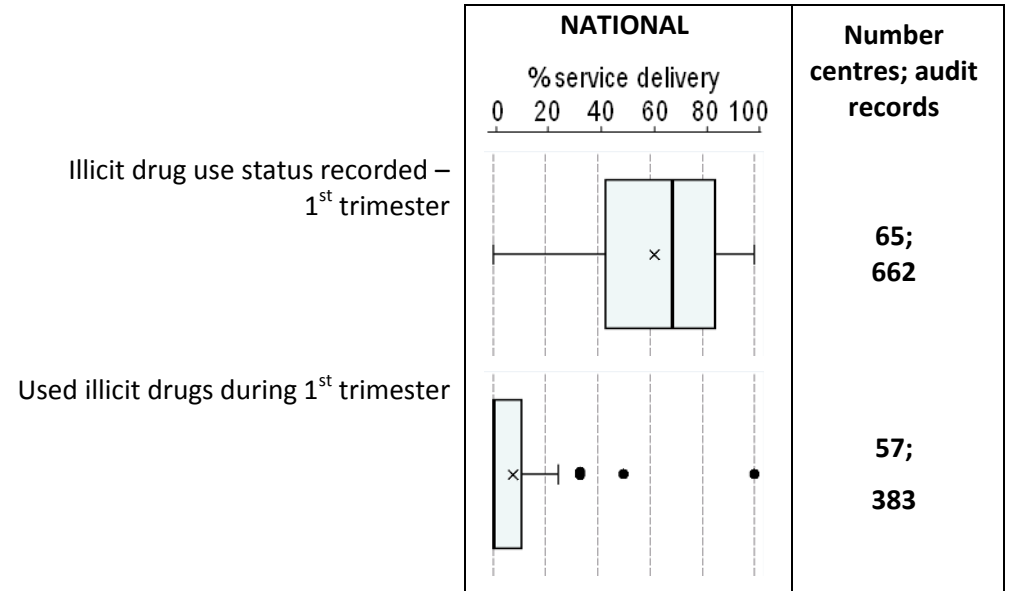


Figure 5 **Mean health centre percentages of clients with a record of illicit drug use during pregnancy and brief interventions**



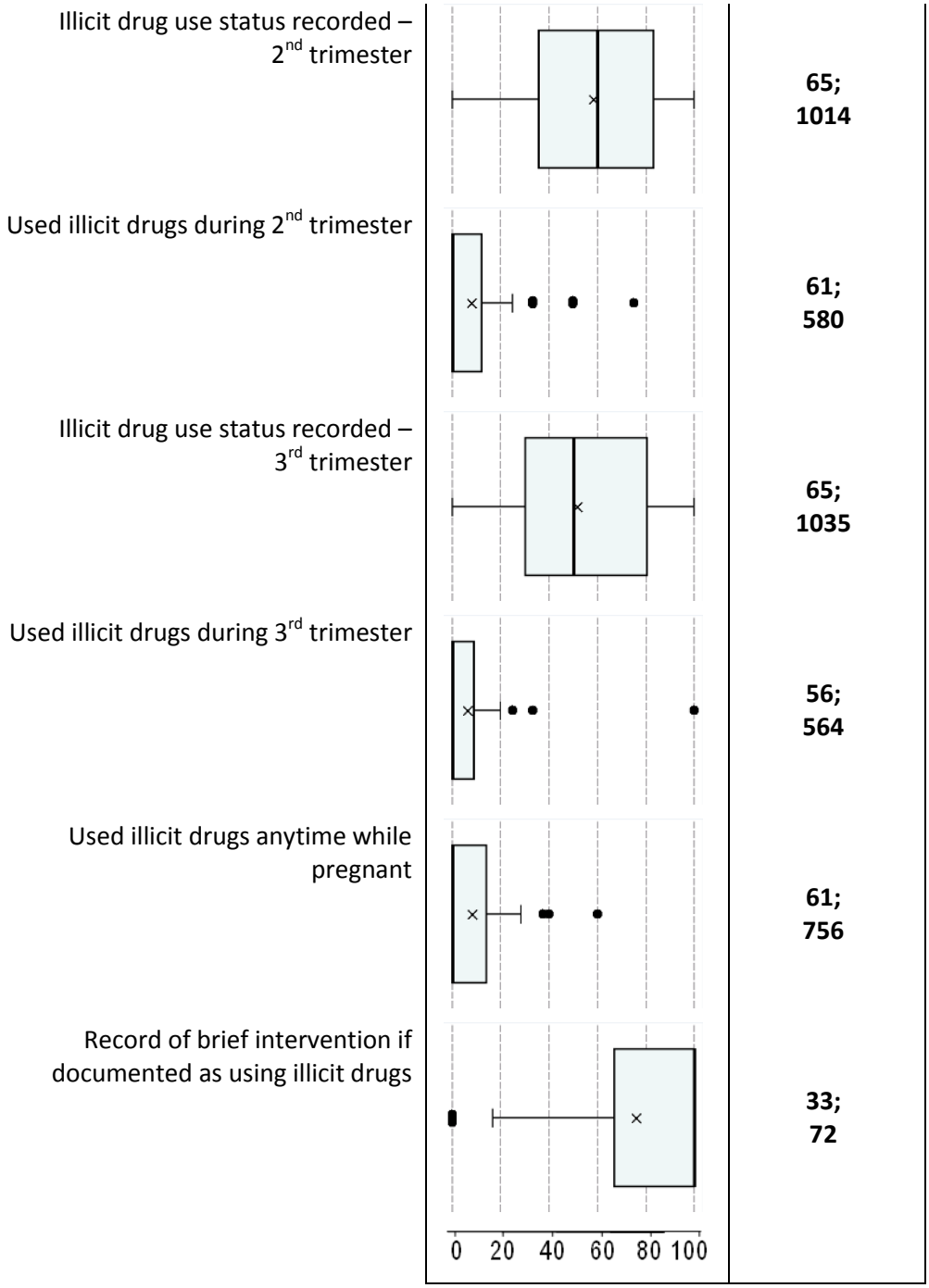

Illicit drug use status recorded – 2nd trimester
65; 1014
Used illicit drugs during 2nd trimester
61; 580
Illicit drug use status recorded – 3rd trimester
65; 1035
Used illicit drugs during 3rd trimester
56; 564
Used illicit drugs anytime while pregnant
61; 756
Record of brief intervention if documented as using illicit drugs
33; 72
0 20 40 60 80 100

Figure 6 **Mean health centre percentages of well clients with a record of pregnancy risk factors and brief interventions.**

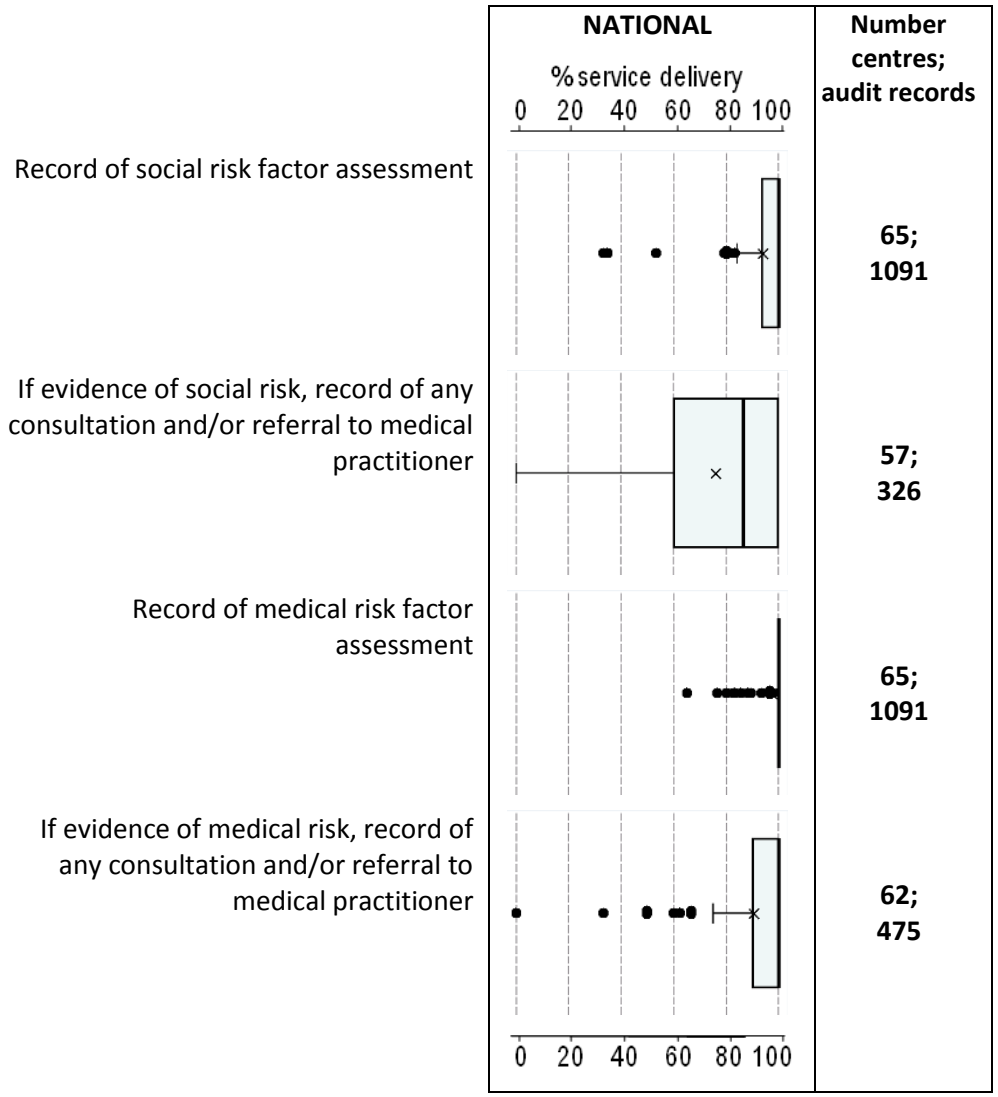
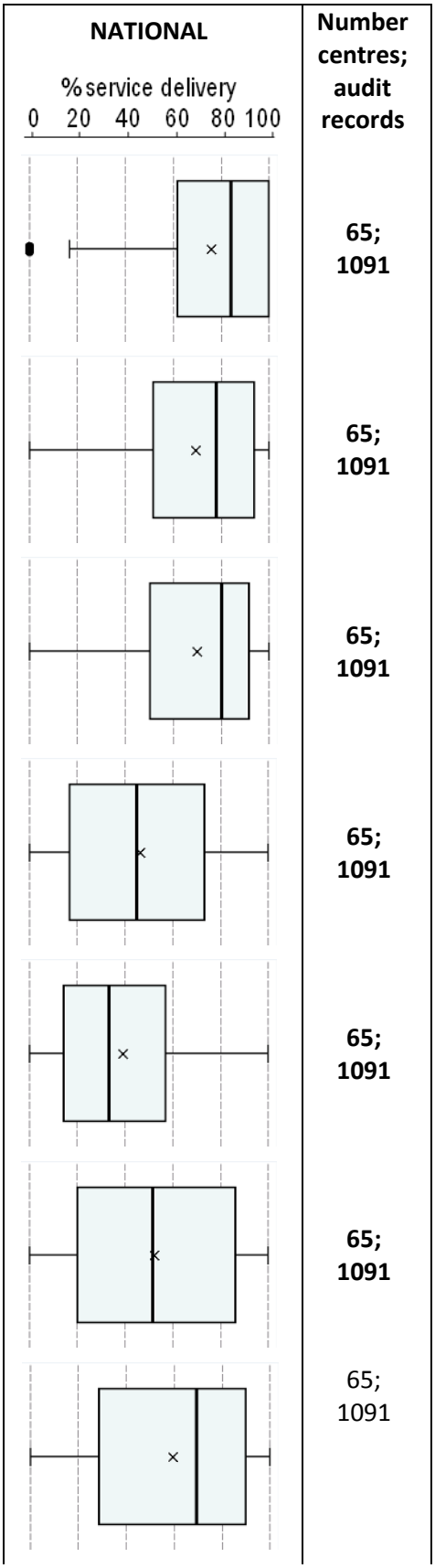
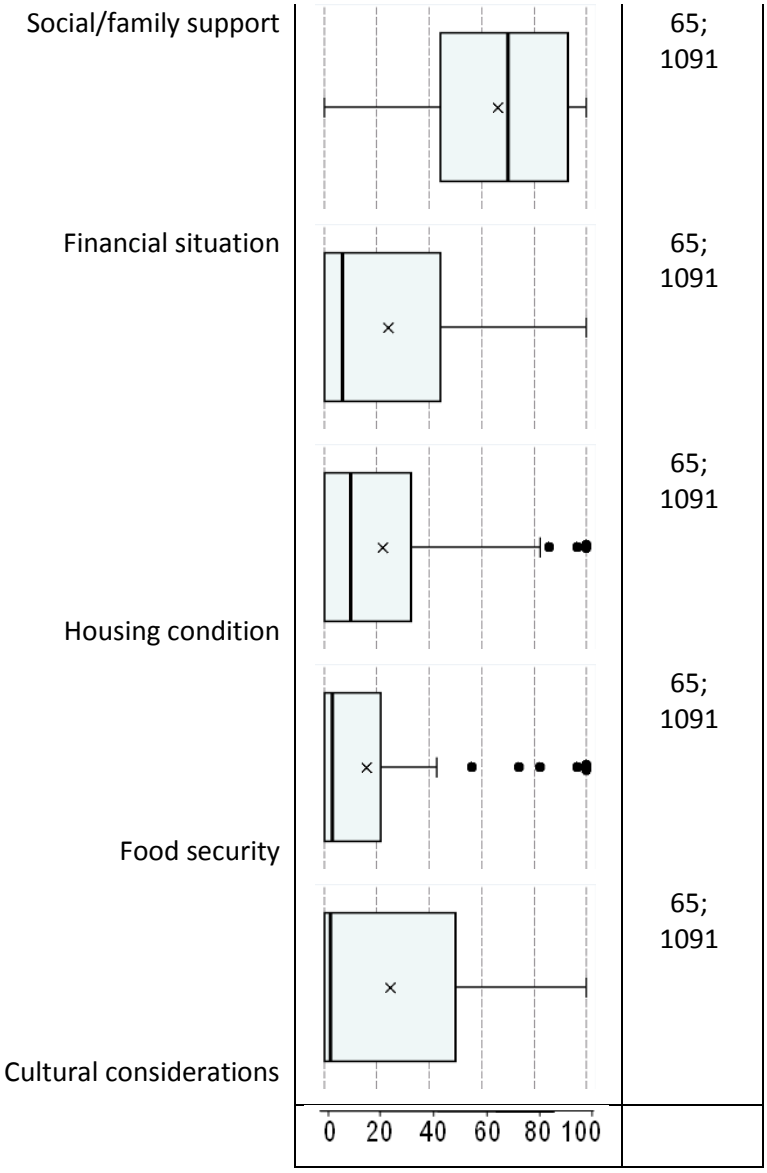


Figure 7 **Mean health centre percentages of maternal health clients with a record of the following brief intervention/ counselling.**




Social/family support
Financial situation
Housing condition
Food security
Cultural considerations
65; 1091
65; 1091
65; 1091
65; 1091
65; 1091
0 20 40 60 80 100

1.5 Laboratory Investigations

The figures in this section show mean health centre percentages of maternal health clients with a record of laboratory investigations for current pregnancy.

Figure 8 **Mean health centre percentages of maternal health clients with a record of the following initial investigations**

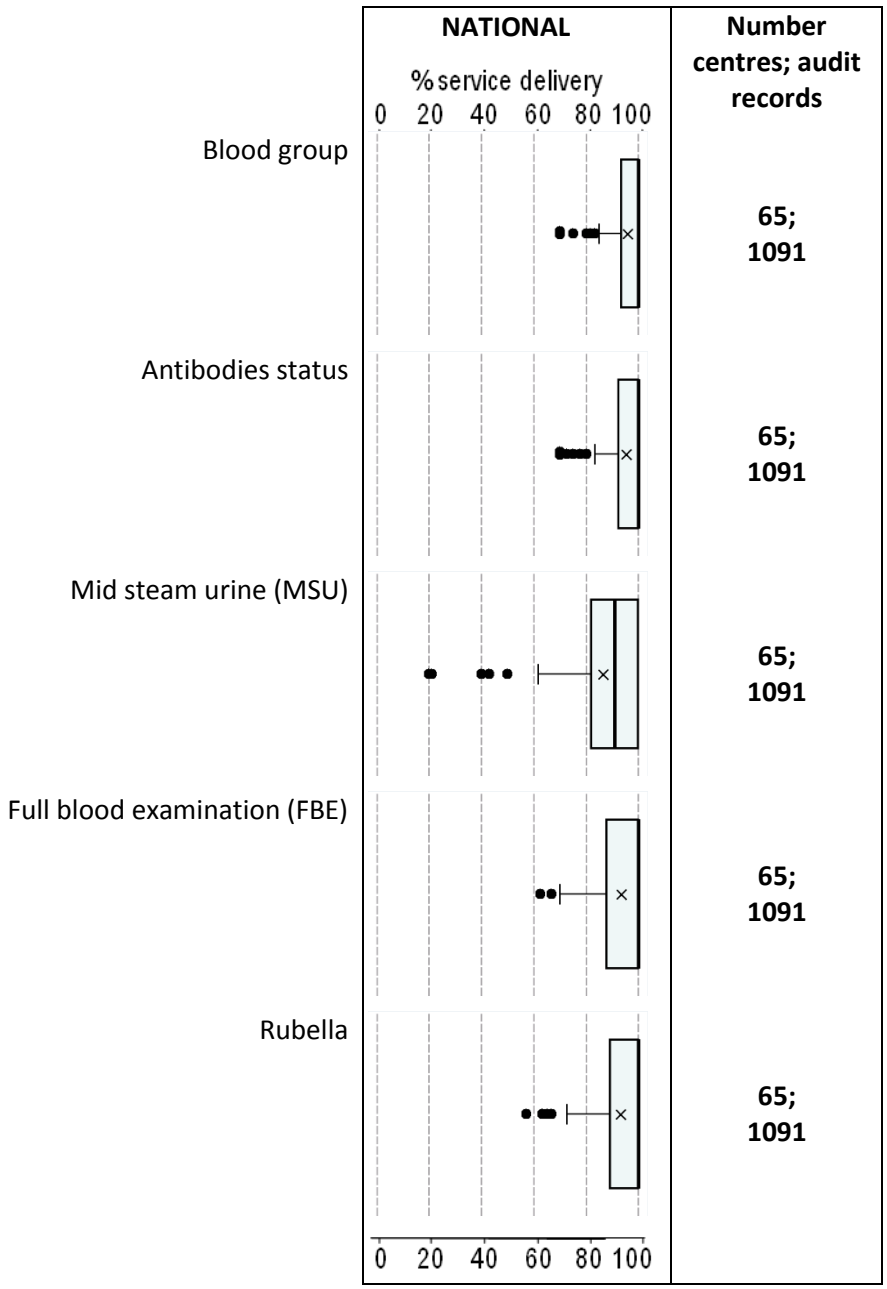


Figure 8 cont. **Mean health centre percentages of maternal health clients with a record of the following initial investigations.**

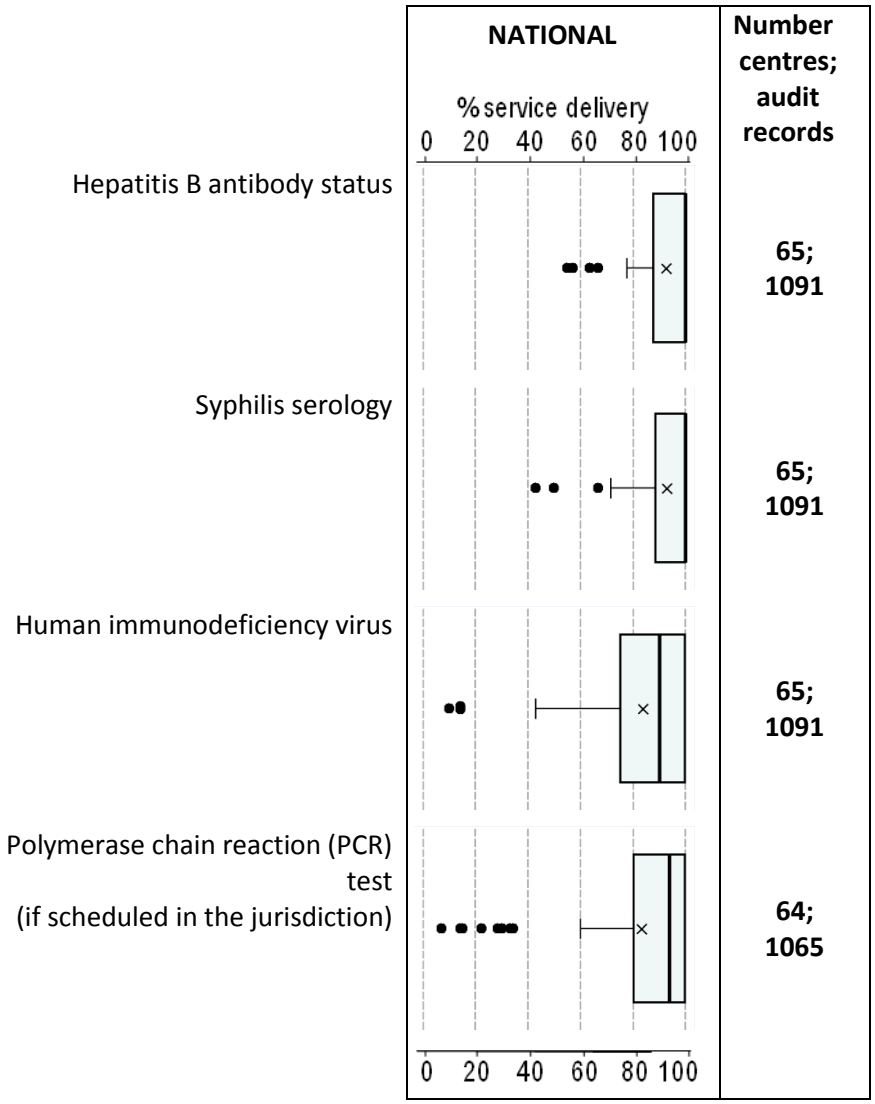


Figure 9 **Mean health centre percentages of maternal health clients with a record of fetal anomaly screening.**

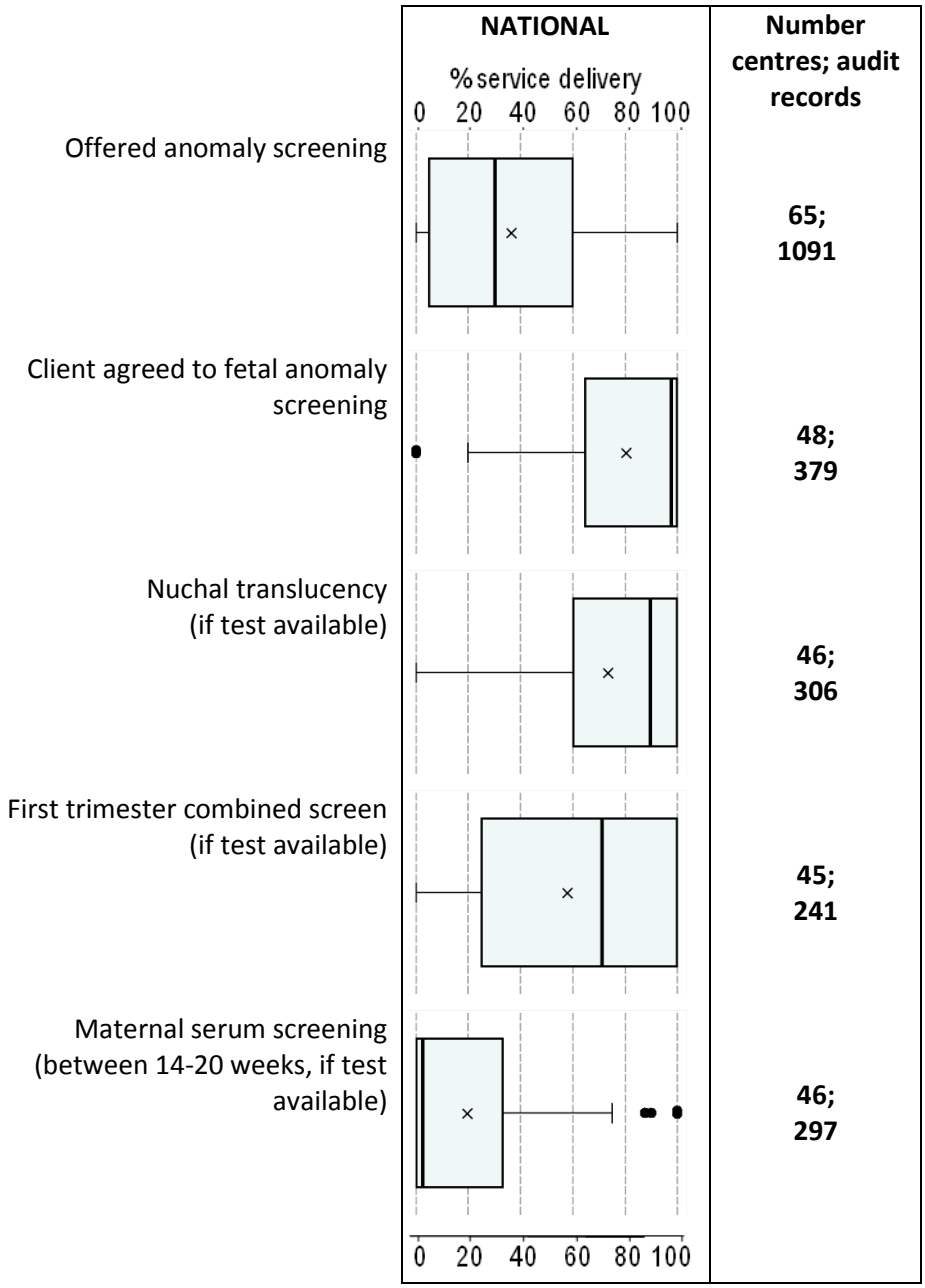


Figure 10 Mean health centre percentages of maternal health clients with a record of other investigations.

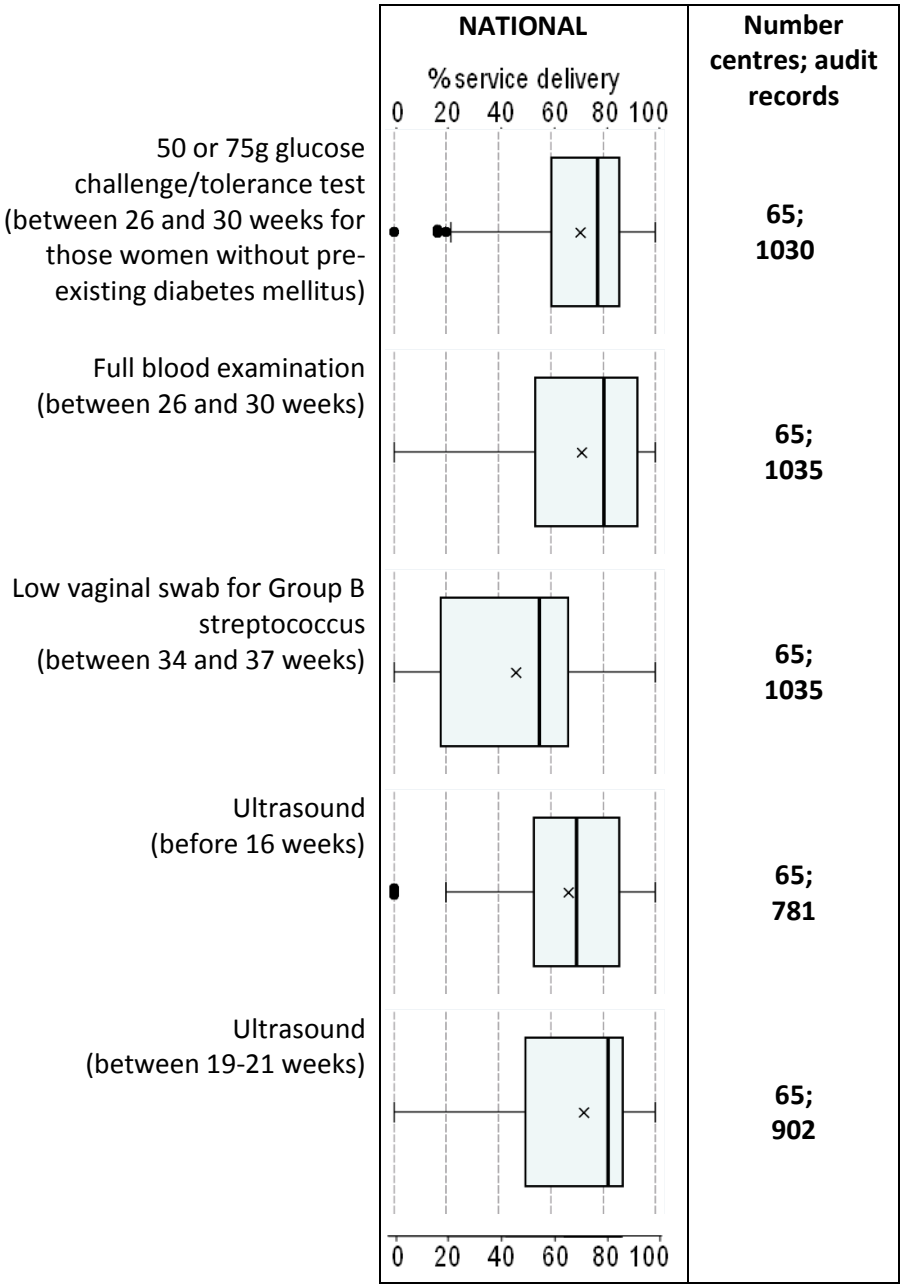


Figure 11 **Mean health centre percentages of maternal health clients with a record of follow-up action if abnormal findings from investigations.**

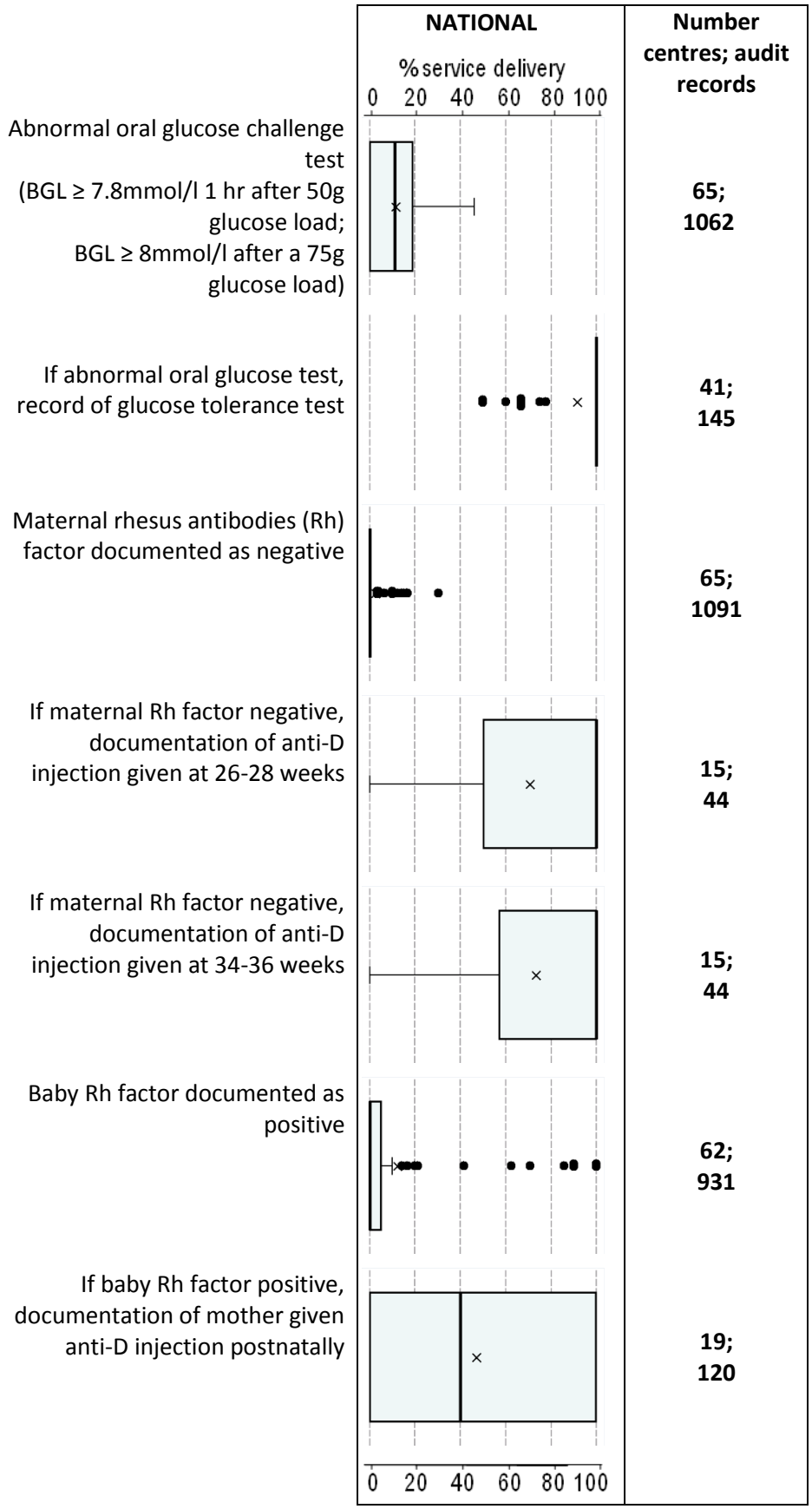
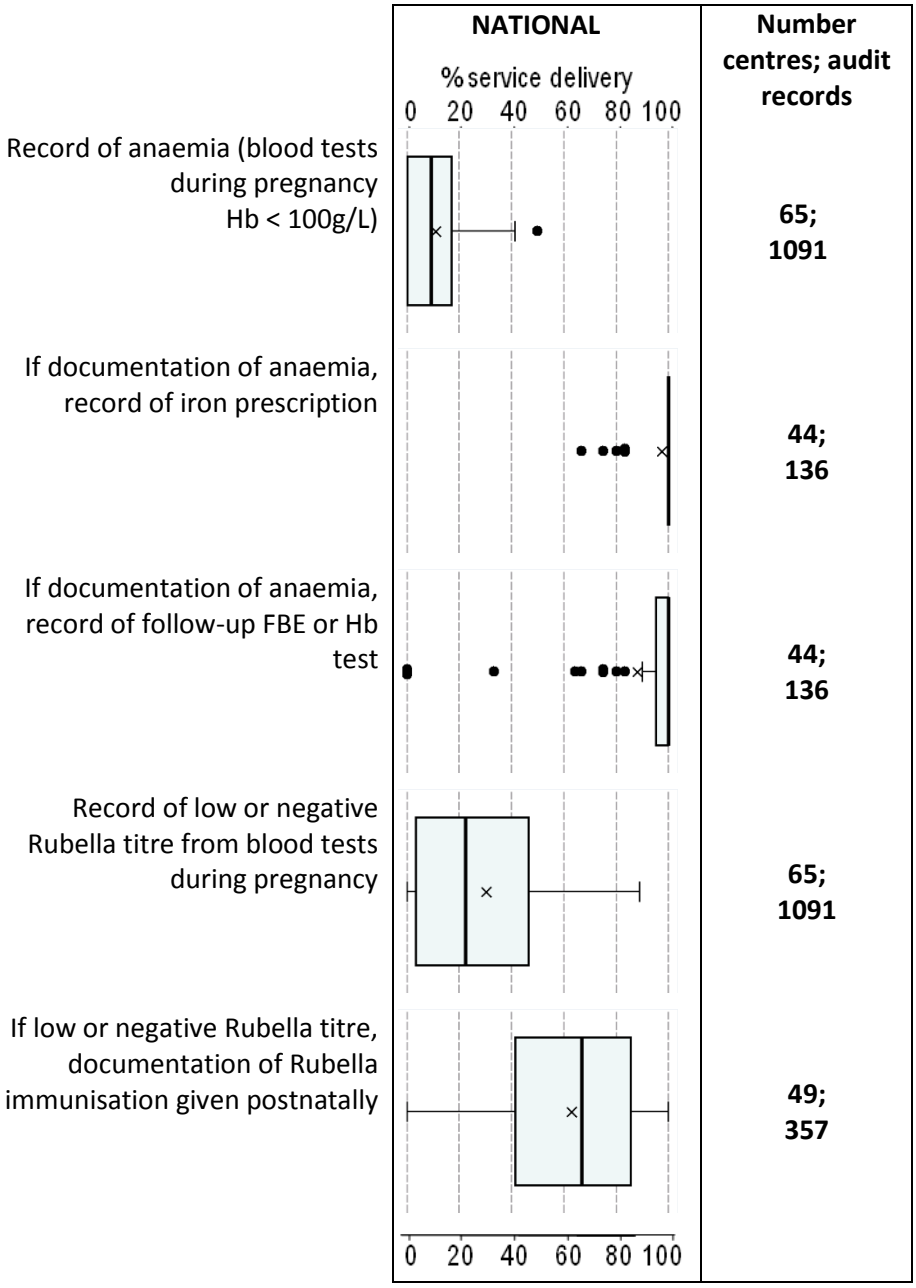


Figure 11 cont. **Mean health centre percentages of maternal health clients with a record of follow-up action if abnormal findings from investigations.**


NATIONAL
Number centres; audit records
% service delivery
0 20 40 60 80 100
Record of anaemia (blood tests during pregnancy Hb < 100g/L)
65; 1091
If documentation of anaemia, record of iron prescription
44; 136
If documentation of anaemia, record of follow-up FBE or Hb test
44; 136
Record of low or negative Rubella titre from blood tests during pregnancy
65; 1091
If low or negative Rubella titre, documentation of Rubella immunisation given postnatally
49; 357
0 20 40 60 80 100

1.6 Routine antenatal checks and abnormal findings

The figures in this section show mean health centre percentages of maternal health clients with a record of routine antenatal checks and follow-up actions for abnormal findings.

Figure 12 Mean health centre percentages of maternal health clients with a record of routine antenatal checks, abnormal findings and follow-up

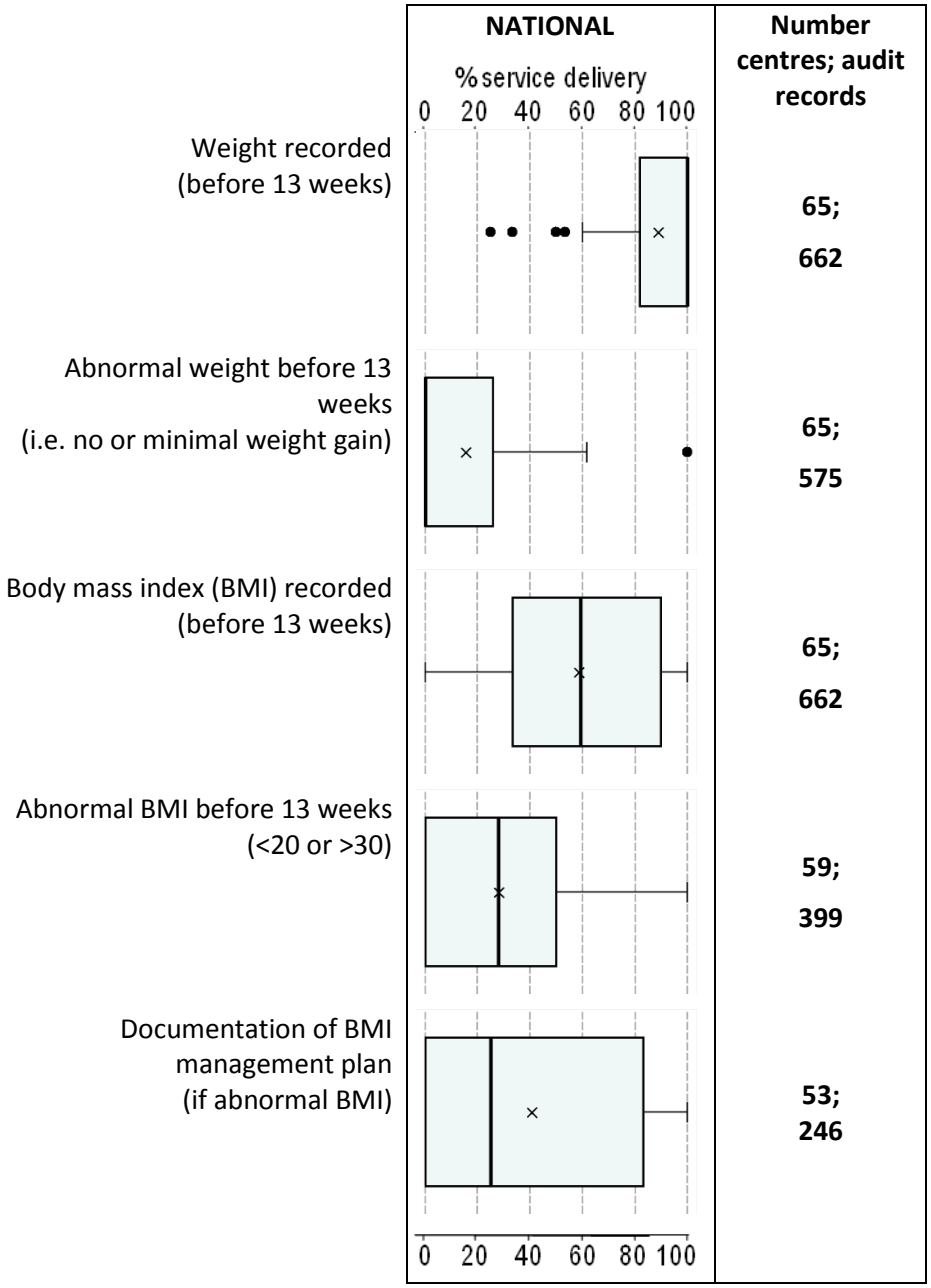
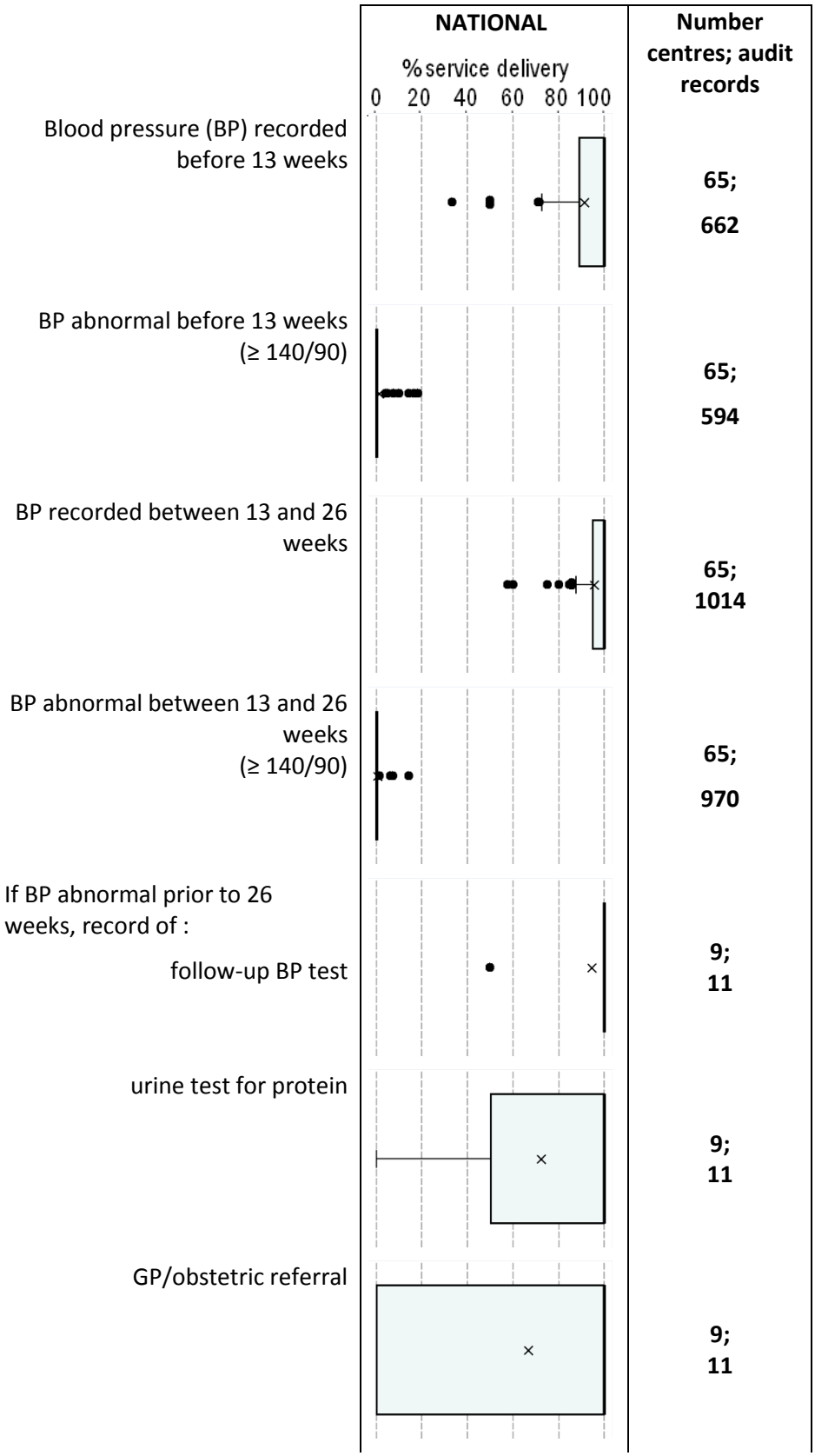
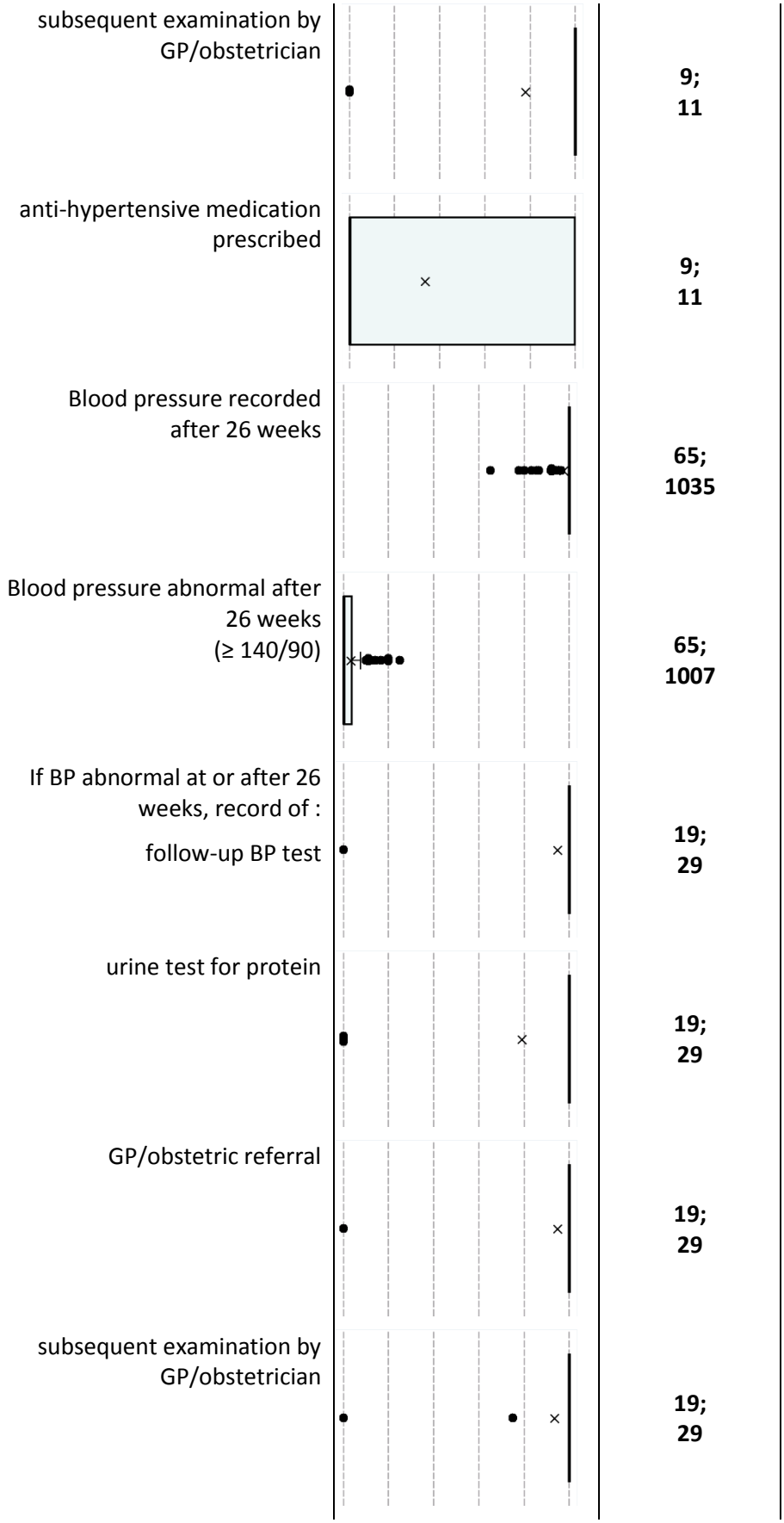


Figure 13 **Mean health centre percentages of maternal health clients with a record of blood pressure checks, abnormal findings and follow-up.**




subsequent examination by GP/obstetrician
9; 11
anti-hypertensive medication prescribed
9; 11
Blood pressure recorded after 26 weeks
65; 1035
Blood pressure abnormal after 26 weeks (≥ 140/90)
65; 1007
If BP abnormal at or after 26 weeks, record of :
follow-up BP test
19; 29
urine test for protein
19; 29
GP/obstetric referral
19; 29
subsequent examination by GP/obstetrician
19; 29

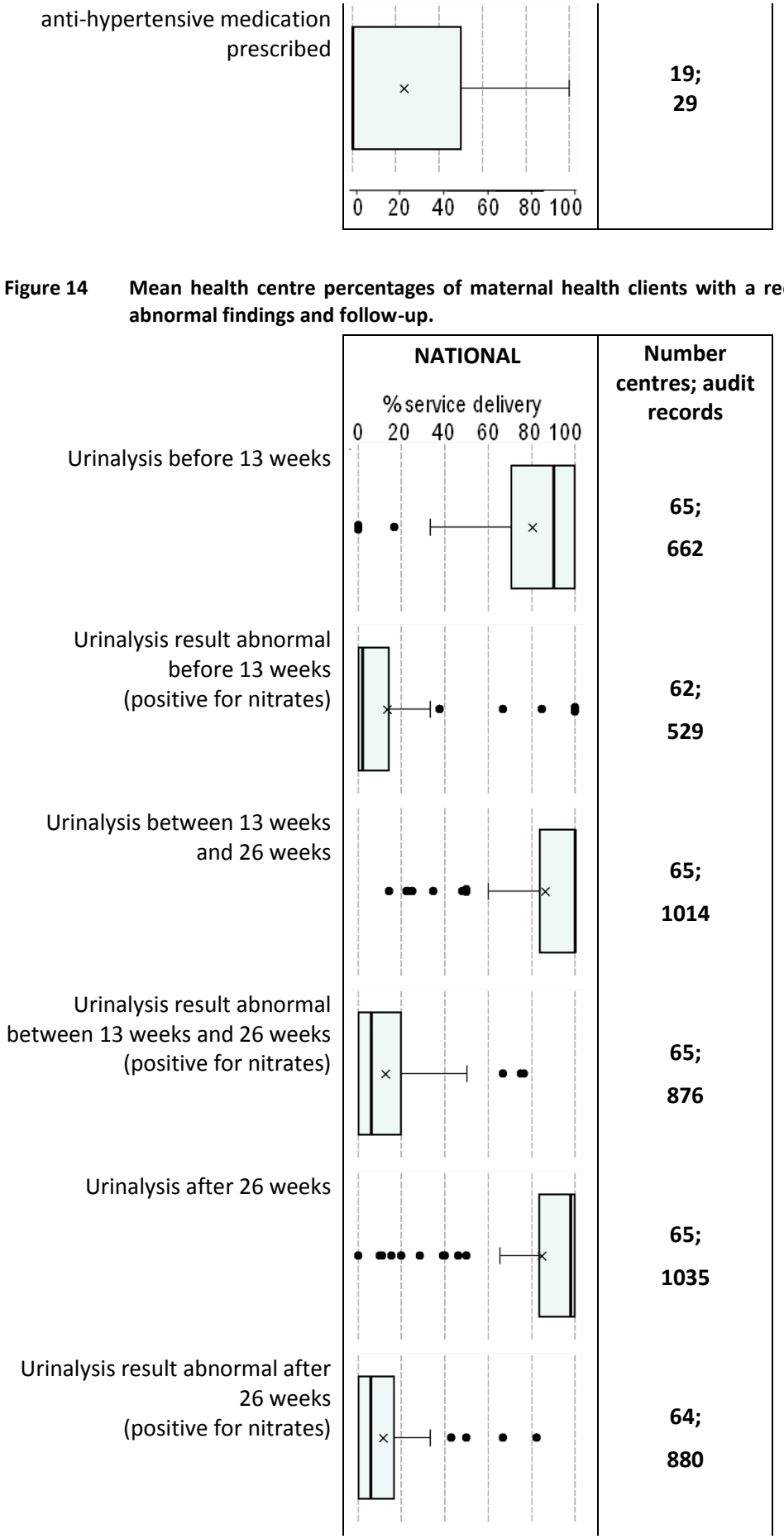


Figure 14 **Mean health centre percentages of maternal health clients with a record of urinalysis checks, abnormal findings and follow-up.**

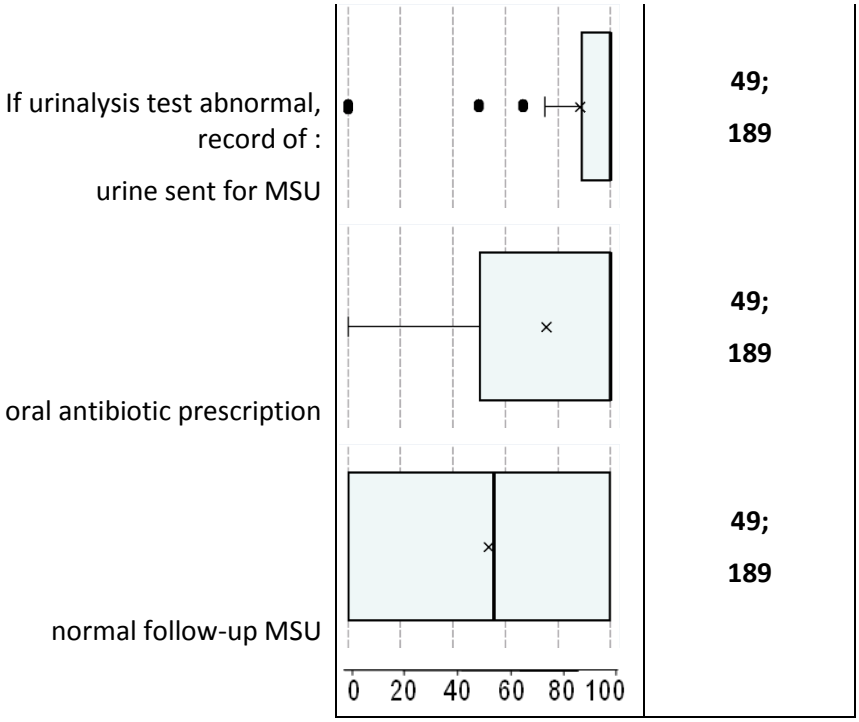
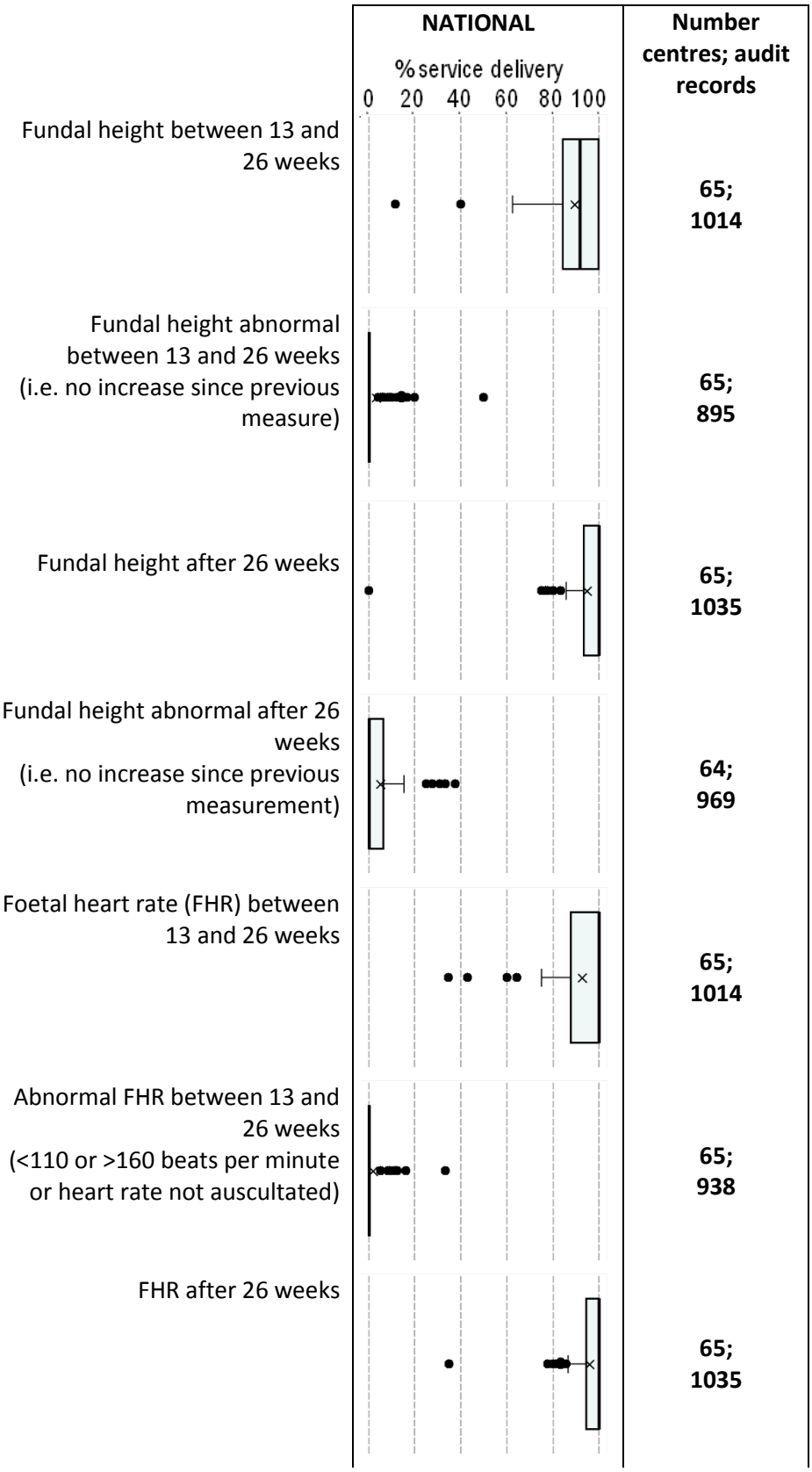
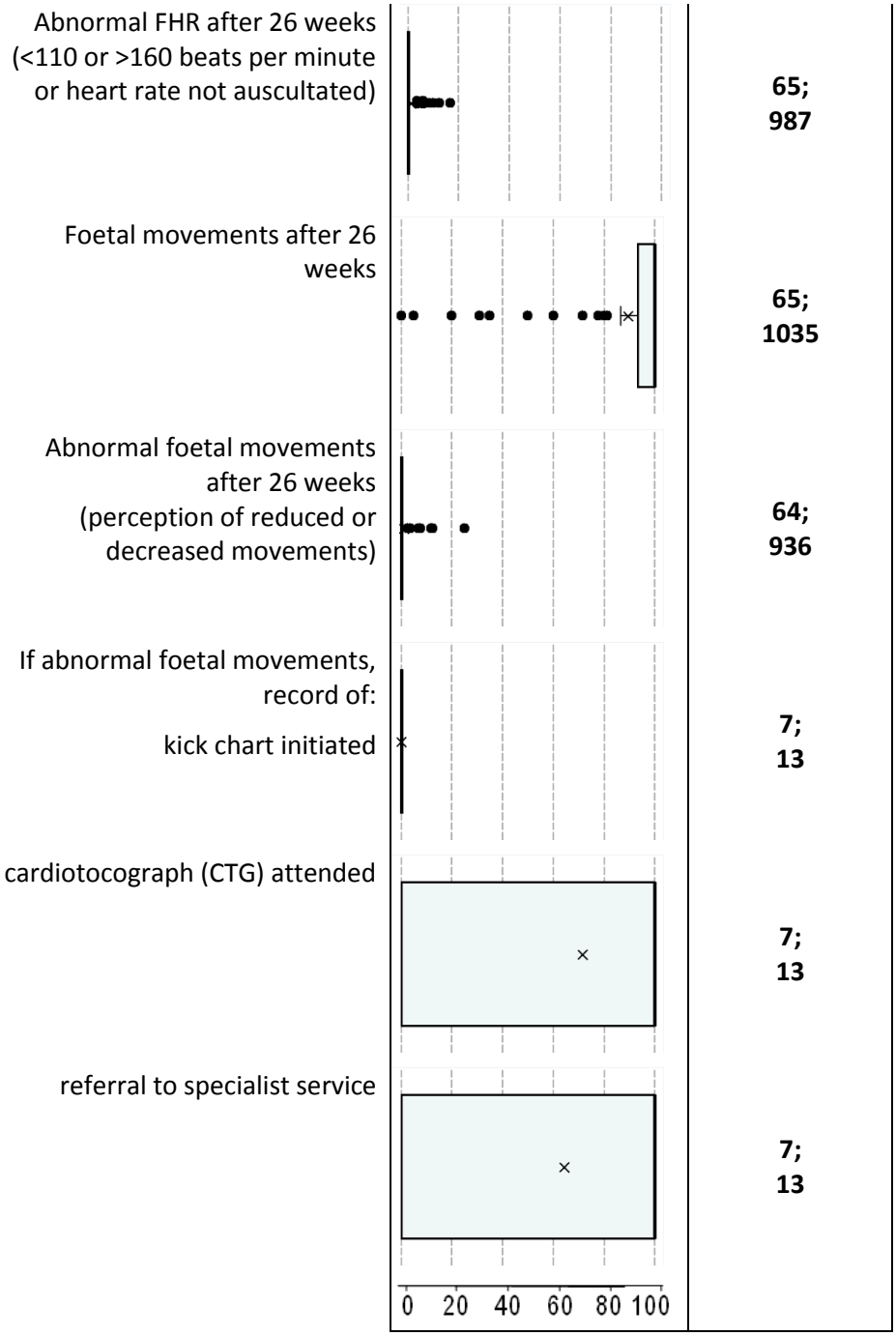

If urinalysis test abnormal, record of :
urine sent for MSU
oral antibiotic prescription
normal follow-up MSU
0 20 40 60 80 100
49;
189
49;
189
49;
189

Figure 15 **Mean health centre percentages of maternal health clients with a record of other routine checks, abnormal findings and follow-up.**

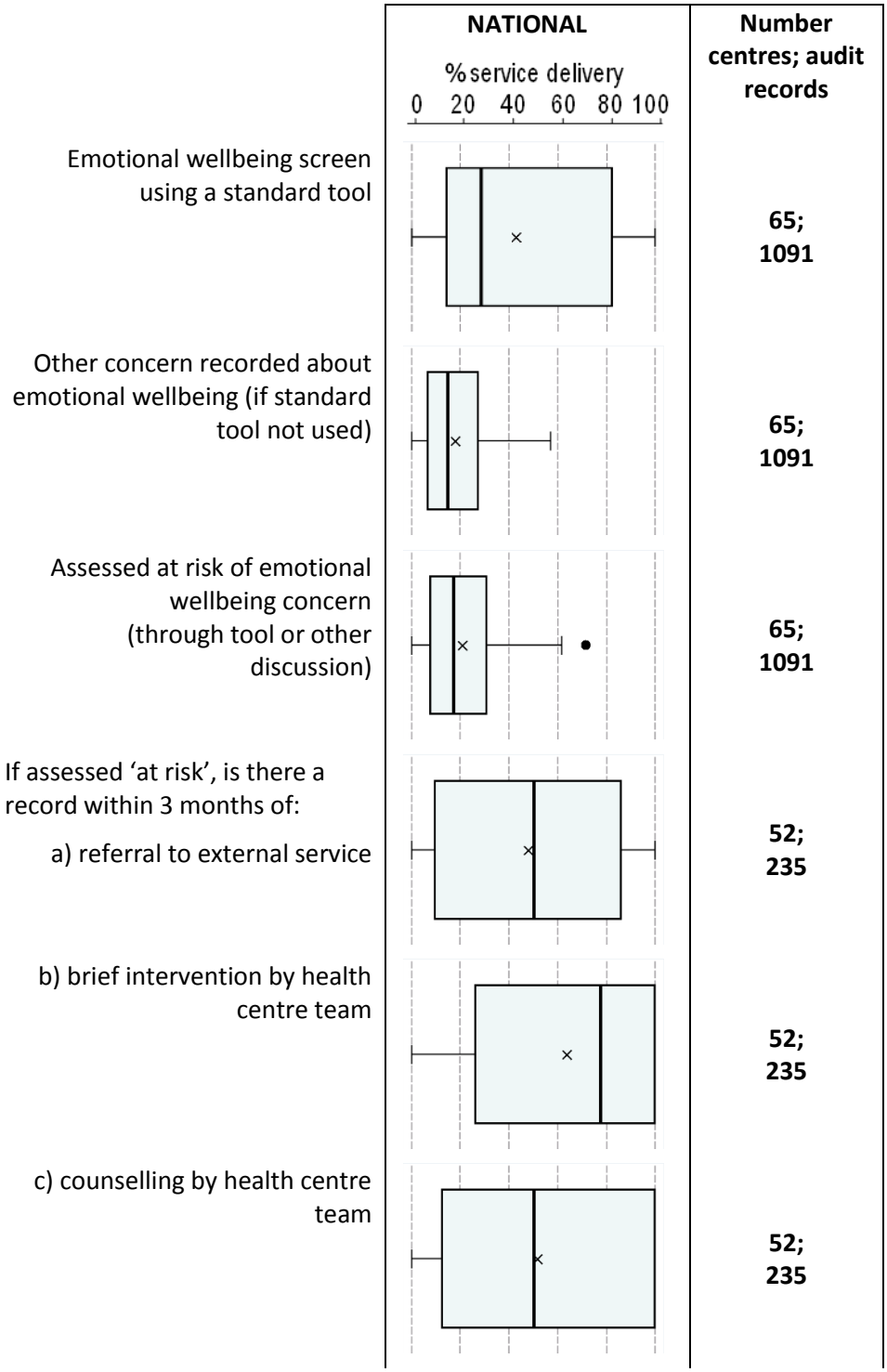


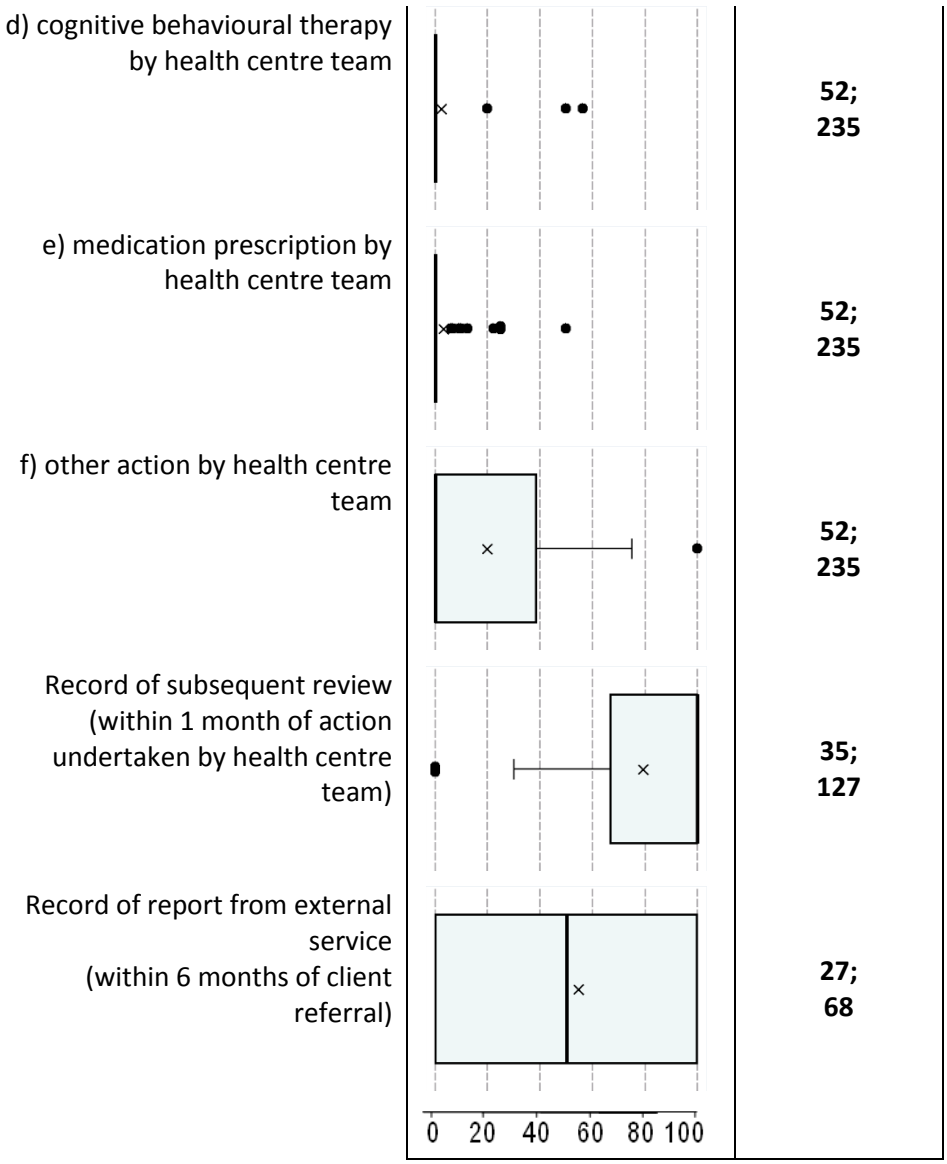

Abnormal FHR after 26 weeks (<110 or >160 beats per minute or heart rate not auscultated)
65; 987
Foetal movements after 26 weeks
65; 1035
Abnormal foetal movements after 26 weeks (perception of reduced or decreased movements)
64; 936
If abnormal foetal movements, record of:
kick chart initiated
7; 13
cardiotocograph (CTG) attended
7; 13
referral to specialist service
7; 13
0 20 40 60 80 100

1.7 Emotional wellbeing screening and care

This figure shows the mean health centre percentages of maternal health clients with a record of emotional wellbeing screen and follow-up action if identified at risk during pregnancy.

Figure 16 Mean health centre percentages of well clients with a record of emotional wellbeing screen and follow-up action if identified at risk




d) cognitive behavioural therapy by health centre team
52; 235
e) medication prescription by health centre team
52; 235
f) other action by health centre team
52; 235
Record of subsequent review (within 1 month of action undertaken by health centre team)
35; 127
Record of report from external service (within 6 months of client referral)
27; 68
0 20 40 60 80 100

1.8 Postnatal care

This figure shows mean health centre percentages of maternal health clients with a record of a postnatal visit and related counselling.

Figure 17 Mean health centre percentages of well clients with a record of postnatal visit and brief interventions.

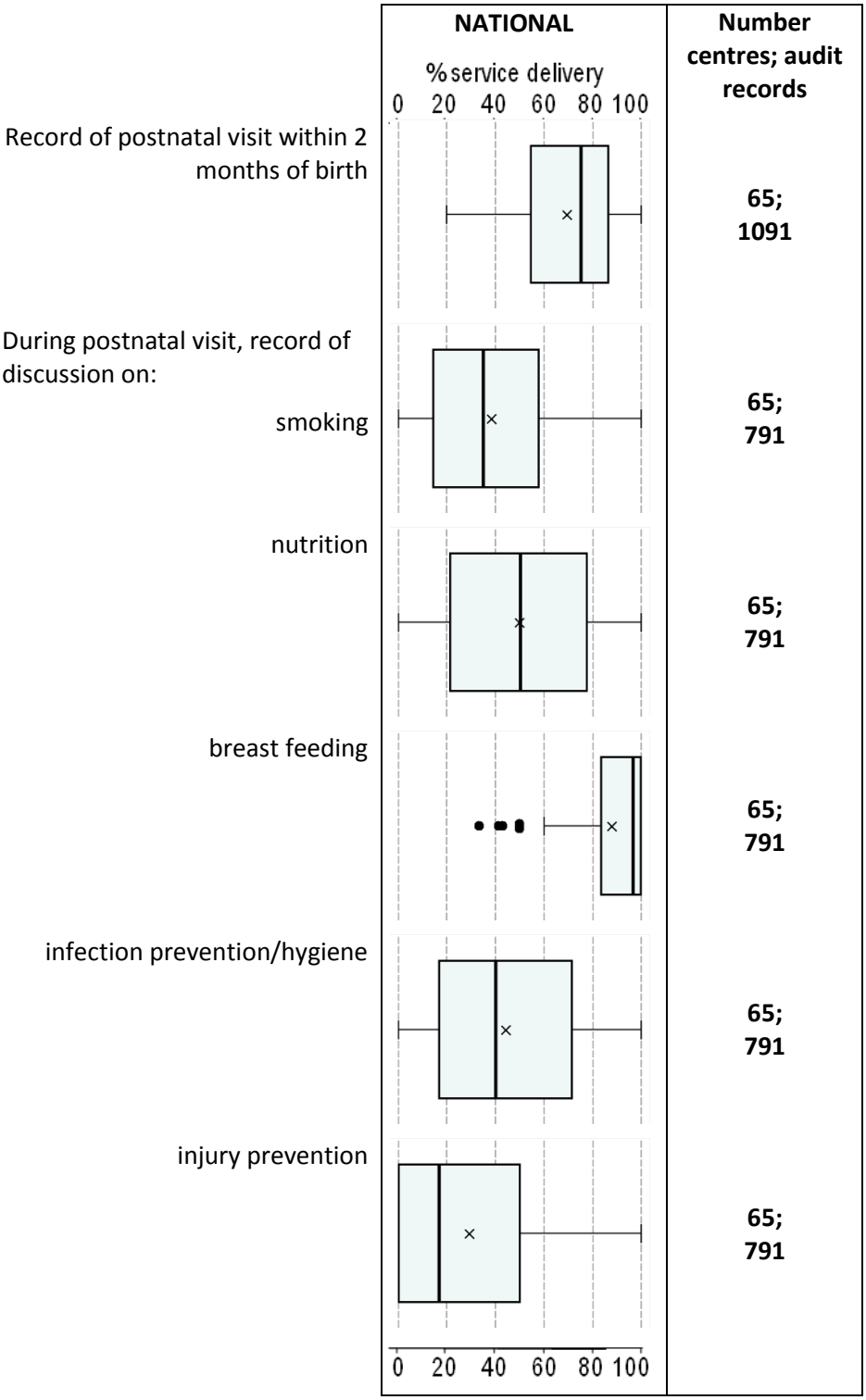
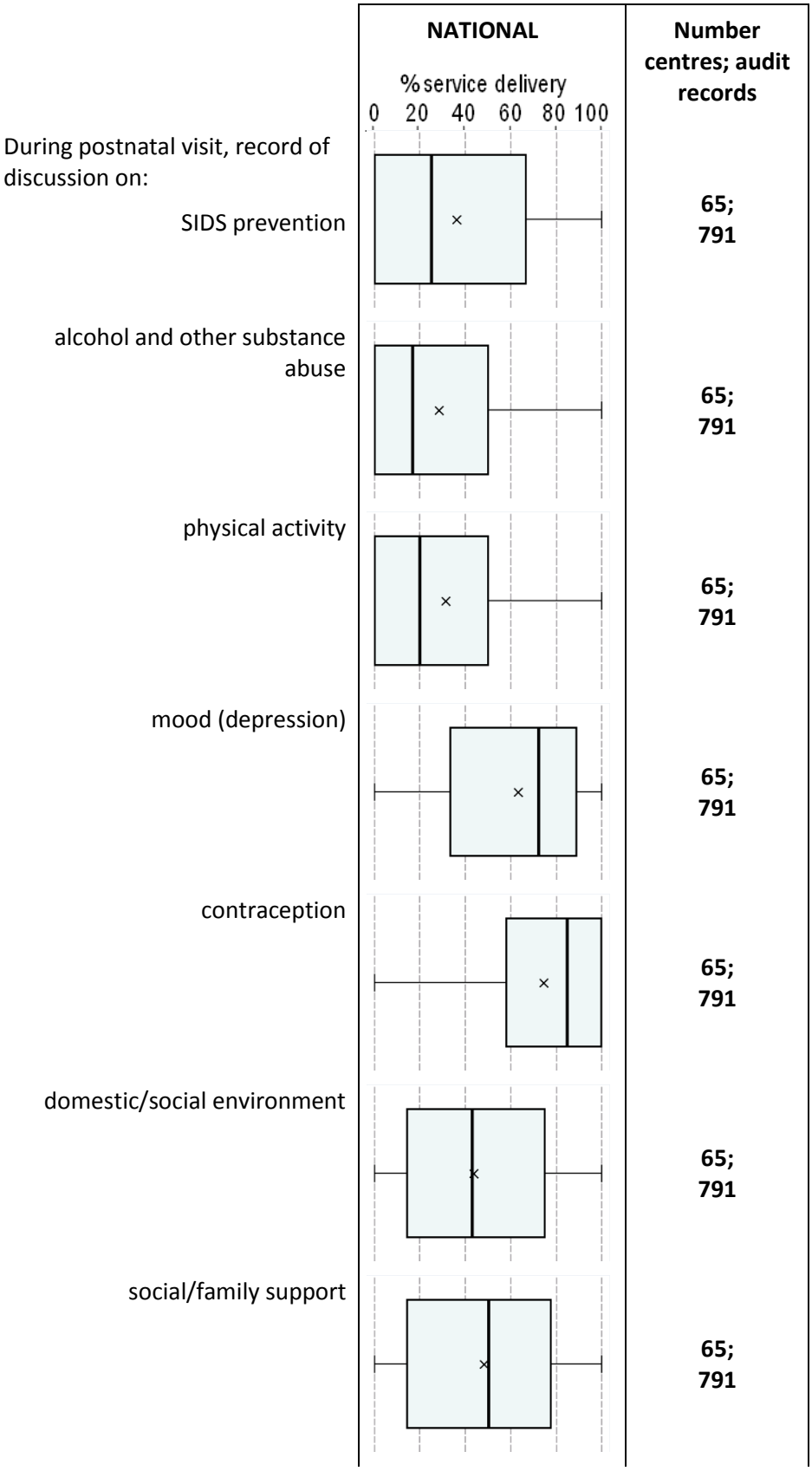
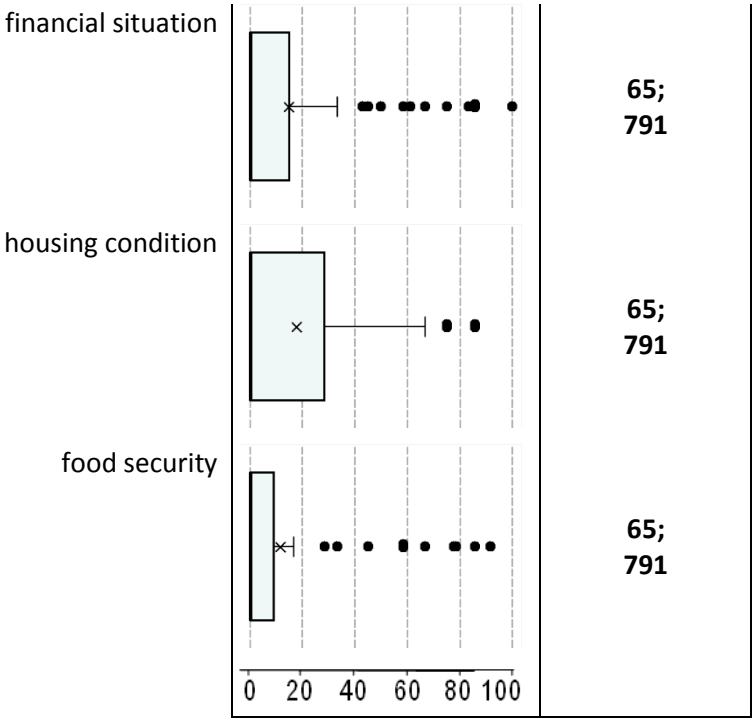


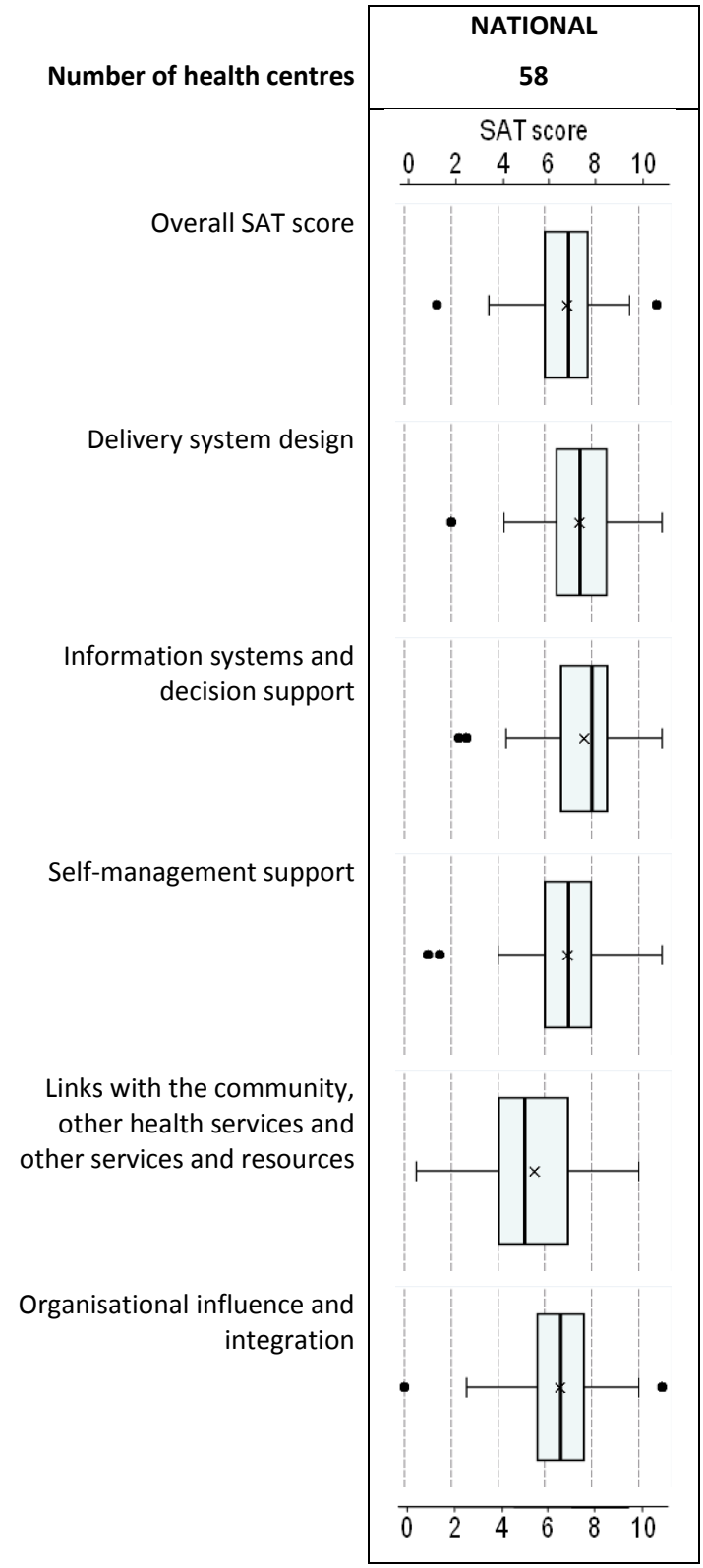
Figure 19 cont: **Mean health centre percentages of well clients with a record of postnatal visit and brief interventions.**




financial situation
housing condition
food security
0 20 40 60 80 100
65;
791
65;
791
65;
791

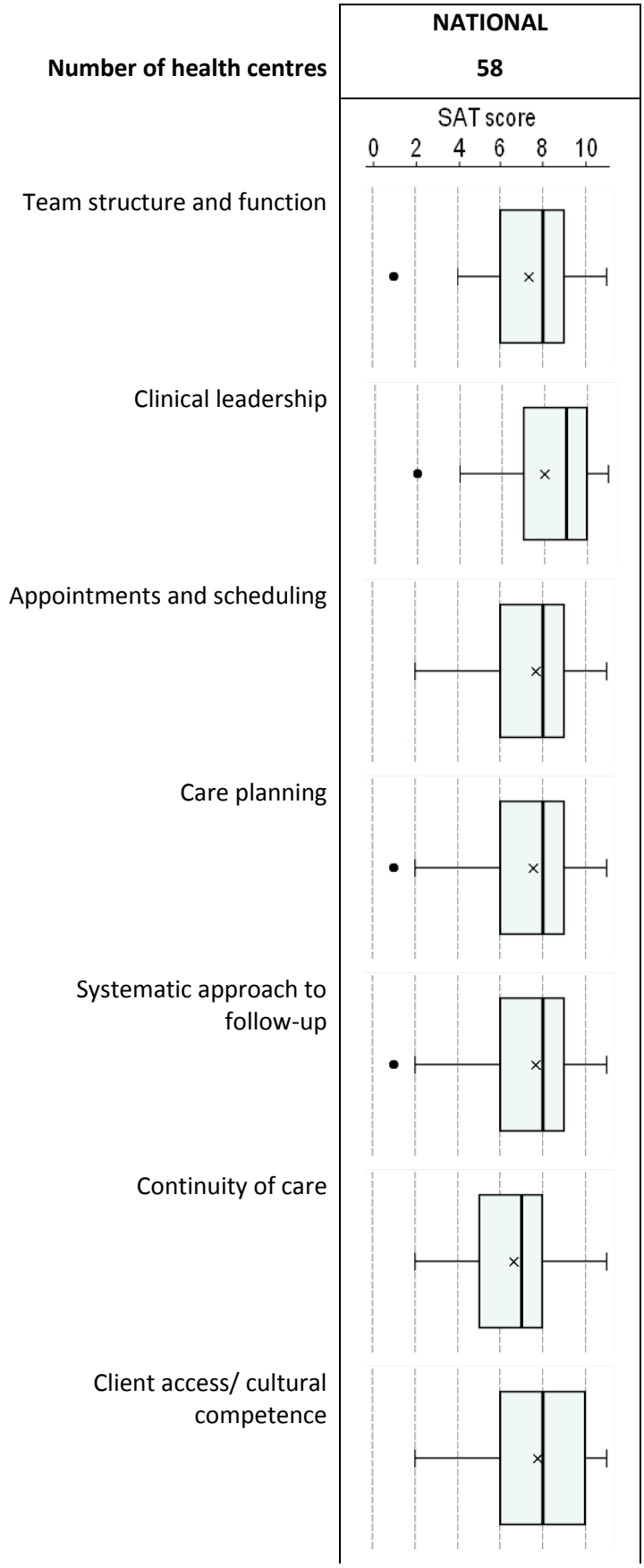
1.9 Health centre systems

Figure 18 Mean system component scores as assessed by health centres



Scores for the individual items within each system component, aggregated for all health centres nationally, are shown in the Figures X-X below.

Figure 19 Delivery system design component scores as assessed by health centres.



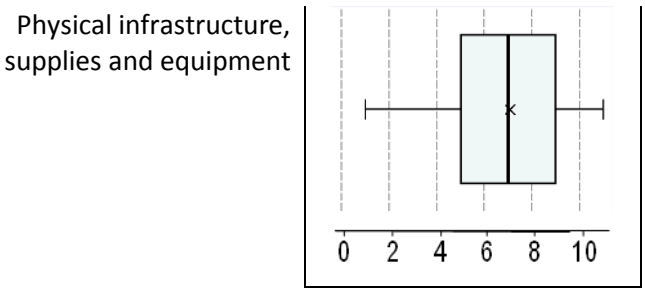


Figure 20 Information systems and decision support component scores as assessed by health centres.

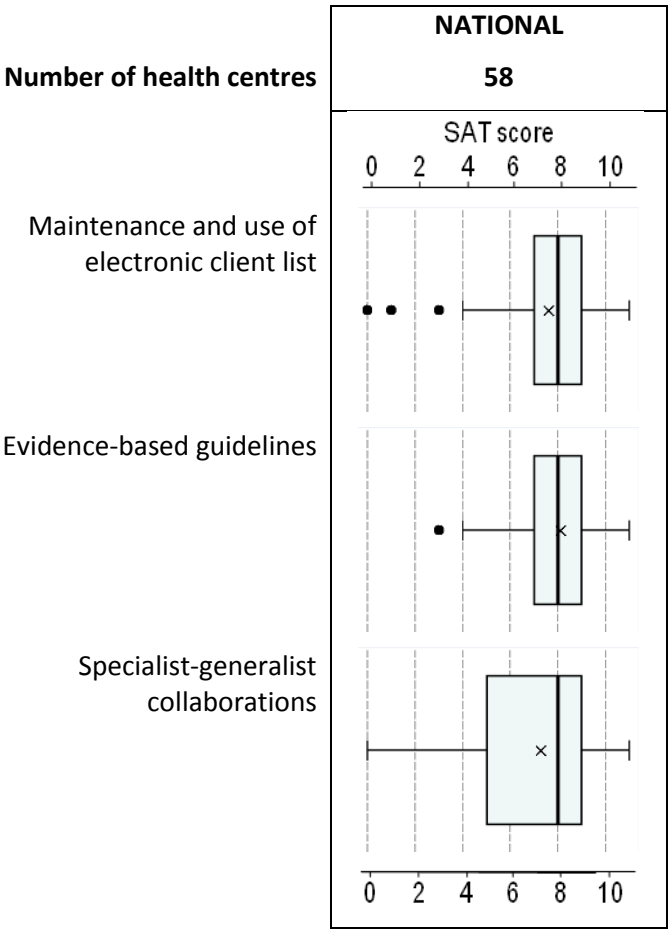


Figure 21 Self-management support component scores as assessed by health centres

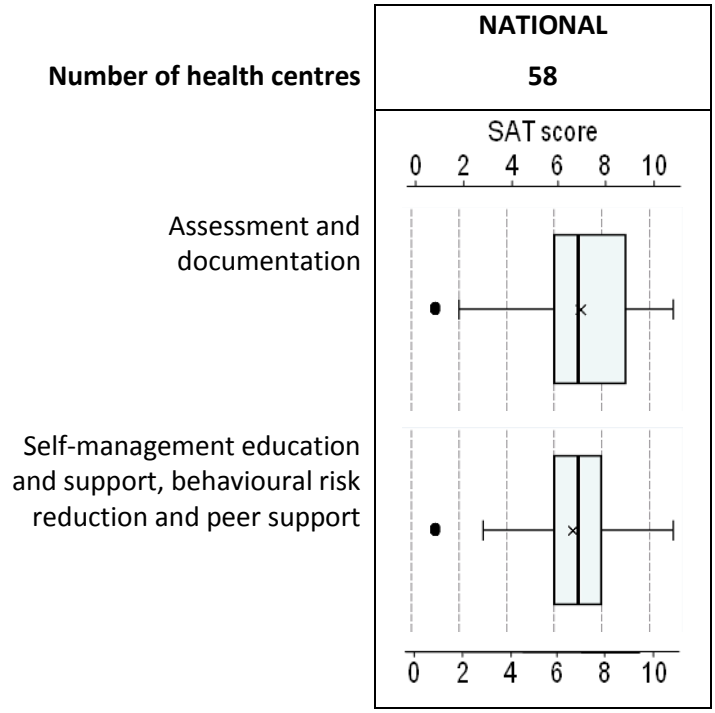


Figure 22 **Information Links with the community, other health services and other services and resources component scores as assessed by health centres**

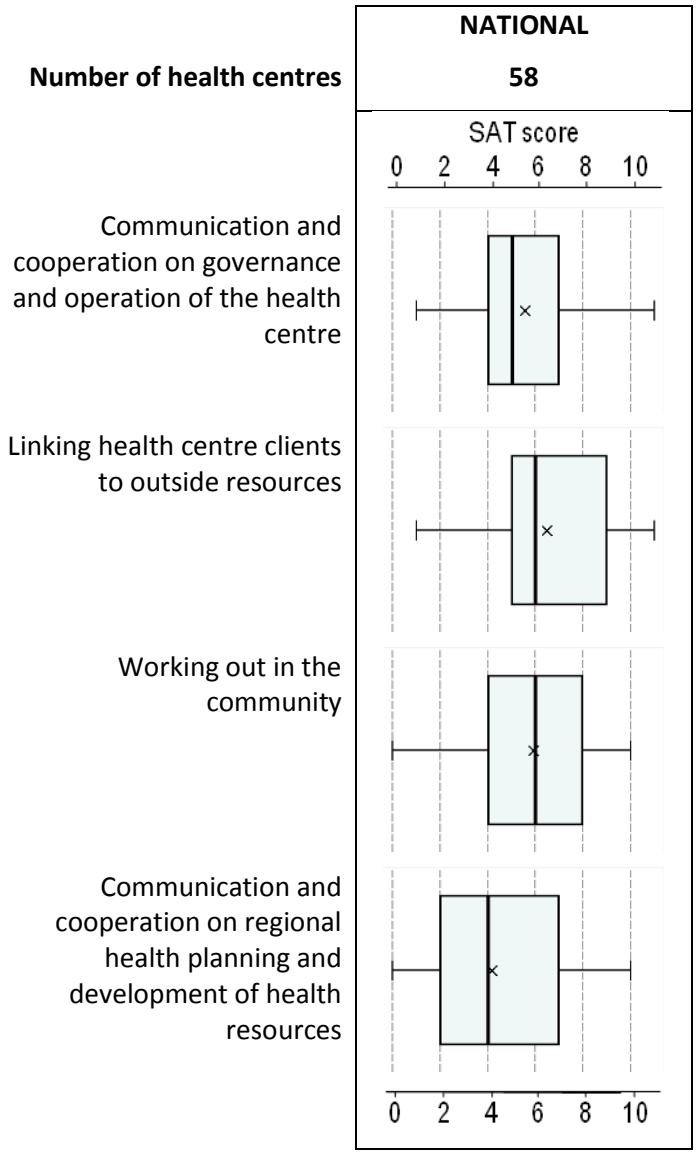
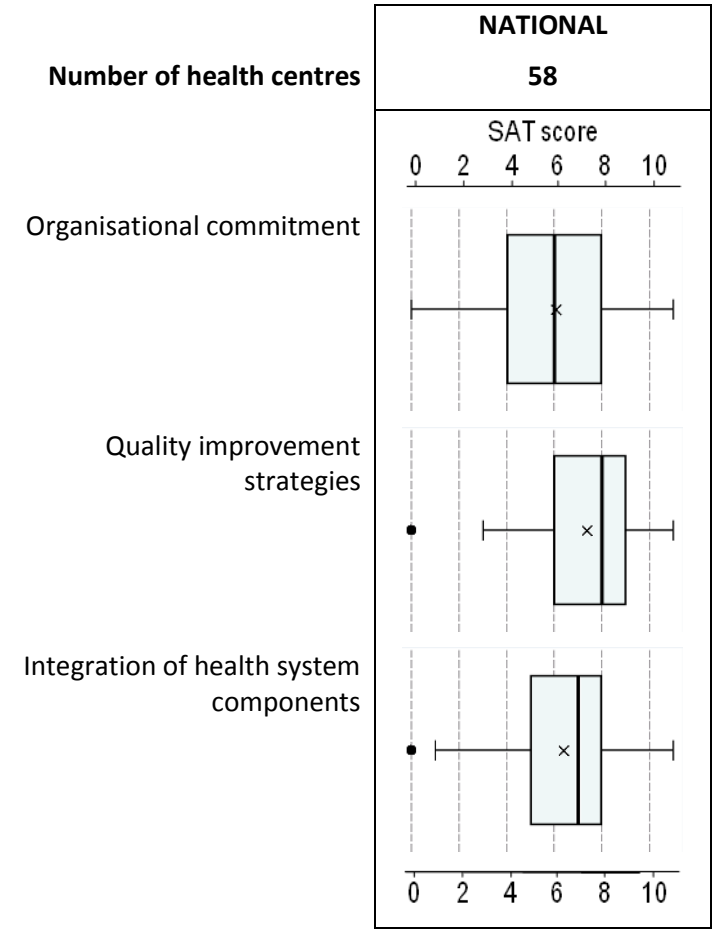


Figure 23 Organisational influence and integration component scores as assessed by health centres



2 Phase 2 data report – identifying barriers and enablers

The focus of this report is on priority areas for improvement. There are other aspects of care that are being done relatively well, or that have shown marked improvement over time, and these will be covered in other reports.

Health centre characteristics

Ninety-one health centres conducted maternal health care audits between 2007 and 2014 auditing a total of 4,402 patient records.

The number of health centres using the maternal health care audit tool increased from 19 in 2007 (342 records audited) to 50 (892 records audited) in 2012. The number declined to 14 health centres in 2014 (351 records audited) (Table 4).

There were 45 health centres that conducted at least three audit cycles, with 28 health centres conducting four or more cycles (Table 5).

Overall, 76% (69/91) of health centres were in remote locations and 69% (63/91) were government managed (Table 6).

Patient characteristics

The data presented relate to aspects of antenatal and postnatal care for women with infants aged between 2 and 14 months who were resident in the community for at least 6 months of the infant's gestation and utilised the local health centre as their usual source of primary health care.

The majority of women whose records were audited were Aboriginal and/or Torres Strait Islander (79%) and the mean age was 26 years (range 10-49 years) (Table 5). Two thirds of women (67%) had their pregnancy care transferred at some stage, most commonly for birthing. Caesarean section and assisted vaginal births were less common than in the total population of women giving birth in Australia [2]. Of the women who attended for pregnancy care, 64% also attended for a postnatal visit (Table 5).

Table 4 ***Maternal health audits and system assessments completed between 2007-2014 (number of client records audited, number of health centres and number of SATs)***

		Audit Year								
		2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
FWNSW	#Records	102	62	68	35	49	52	46		414
	#Centres	5	4	5	2	3	3	3		5
	#SATs	5	5	5						15
QLD	#Records		54	155	243	540	513	323	90	1,918
	#Centres		3	9	18	30	27	16	3	38
	#SATs		3	8	18	35	33	21		118
SA	#Records				13	23	60			96
	#Centres				1	2	2			4
	#SATs					4		1	1	6
WA	#Records	90	158	132	54	57	60	60	91	702
	#Centres	3	8	7	2	2	2	2	3	12
	#SATs	3	8	7	2	2	2	2	1	27
NT	#Records	150	113	143	97	152	207	240	170	1,272
	#Centres	11	9	8	5	6	16	15	8	32
	#SATs	11	10	7	3	5	7	6	1	50
Total	#Records	342	387	498	442	821	892	669	351	4,402
	#Centres	19	24	29	28	43	50	36	14	91
	#SATs	19	26	27	23	46	42	30	3	216

Table 5 ***Maternal health audits completed between 2007 and 2014 by audit cycle (number of client records audited and number of health centres)***

		Audit Cycle								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Total**
102	#Records	102	67	63	44	50	47	41		414
	#Centres	5	5	4	3	3	3	2		5
QLD	#Records	655	524	426	259	54				1918
	#Centres	38	29	21	16	3				38
SA	#Records	63	33							96
	#Centres	4	2							4
WA	#Records	251	125	84	92	60	30	30	30	702
	#Centres	12	6	3	3	2	1	1	1	12
NT	#Records	500	306	290	133	43				1,272
	#Centres	32	21	17	6	2				32
Total	#Records	1,571	1055	863	528	207	77	71	30	4,402
	#Centres	91	63	45	28	10	4	3	1	91

Table 6 Characteristics of participating health centres and maternal health clients whose records were audited between 2007 & 2014 (number & %)

		2007		2008		2009		2010		2011		2012		2013		2014		Overall	
Primary Health Care Centres		**19**		**24**		**29**		**28**		**43**		**50**		**36**		**14**		**91**	
Location	Urban			3	13%	1	3%	2	7%	2	5%	3	6%	2	6%	2	14%	8	9%
	Regional	5	26%	5	21%	7	24%	3	11%	9	21%	4	8%	7	19%	2	14%	14	15%
	Remote	14	74%	16	67%	21	72%	23	82%	32	74%	43	86%	27	75%	10	71%	69	76%
Governance	Government	5	26%	9	38%	16	55%	20	71%	32	74%	38	76%	27	75%	9	64%	63	69%
Community-controlled		14	74%	15	63%	13	45%	8	29%	11	26%	12	24%	9	25%	5	36%	28	31%
Size of	<=500	5	26%	4	17%	4	14%	6	21%	12	28%	12	24%	7	19%	1	7%	23	25%
population	501-999	5	26%	6	25%	7	24%	6	21%	10	23%	16	32%	7	19%	2	14%	21	23%
served	>=1000	9	47%	14	58%	18	62%	16	57%	21	49%	22	44%	22	61%	11	79%	47	52%
Completed	Baseline	19	100%	11	46%	11	38%	10	36%	21	49%	12	23%	5	14%	2	14%	28	31%
maternal	2 cycles			13	54%	10	34%	10	36%	8	19%	14	27%	6	17%	2	14%	18	20%
health cycles	≥3 cycles					8	28%	8	29%	14	33%	26	50%	25	69%	10	71%	45	49%
Number of audited records		**342**		**387**		**498**		**442**		**821**		**892**		**669**		**351**		**4,402**	
Maternal age: mean (& range)		26 (11-48)		26 (10-44)		26 (10-47)		26 (14-49)		27 (14-47)		27 (14-47)		27 (13-46)		26 (15-44)		26 (10-49)	
Indigenous	Yes	284	83%	356	92%	431	87%	372	84%	577	70%	677	76%	513	77%	285	81%	3,495	79%
status of	No	44	13%	24	6%	31	6%	44	10%	139	17%	152	17%	87	13%	61	17%	582	13%
mother	Not recorded	14	4%	7	2%	36	7%	26	6%	105	13%	63	7%	69	10%	5	1%	325	7%
Type of birth	Unassisted vaginal	226	66%	268	69%	333	67%	278	63%	525	64%	564	63%	448	67%	229	65%	2871	65%
	Caesarean	80	23%	83	21%	128	26%	102	23%	211	26%	237	27%	156	23%	88	25%	1085	25%
	Assisted vaginal	0	0%	0	0%	0	0%	13	3%	42	5%	45	5%	51	8%	33	9%	184	4%
	Not stated	36	11%	36	9%	37	7%	49	11%	43	5%	46	5%	14	2%	1	0%	262	6%
Location of	Local hospital									267	33%	245	27%	227	34%	58	17%	797	29%
birth[1]	Regional hospital									313	38%	385	43%	244	36%	225	64%	1,167	43%
	City hospital									220	27%	242	27%	173	26%	57	16%	692	25%
Home/Community health centre										10	1%	5	1%	8	1.2%	7	2%	30	1%
	Other									2	0.2%	1	0.1%	14	2%	2	0.6%	19	1%
	Not stated									9	1%	14	2%	3	0.4%	2	0.6%	28	1%
Antenatal care	To other location									417	51%	538	60%	387	58%	250	71%	1,592	58%
transfer[1]	From other loc									95	12%	91	10%	46	7%	9	3%	241	9%
Reason for	Birthing									377	46%	473	53%	324	48%	201	57%	1,375	50%
transfer[1]	Complications									36	4%	71	8%	46	7%	21	6%	174	6%
High risk pregnancy										49	6%	61	7%	46	7%	19	5%	175	6%
	Other									50	6%	24	3%	17	3%	18	5%	109	4%
No transfer										309	38%	263	29%	236	35%	92	26%	900	33%
Record of postnatal visit		211	62%	183	47%	317	64%	295	67%	470	57%	562	63%	512	77%	278	79%	2,828	64%

[1] Indicators were introduced to the audit tool in June 2010.

2.1 Presentation of data

Audit data on indicators relevant to the identified evidence-practice gaps in maternal health care are presented over time in two ways - by year and by audit cycle.

By year - includes data for all participating health centres and provides an indication of influences on clinical performance that may be occurring at different times in the general health system environment. These influences might include changes in CQI processes, changes in the number and types of participating health centres and various other influences on the CQI data that are generated through the use of One21seventy tools.

By audit cycle - includes data for the same cohort of health centres that have conducted maternal health care audits in at least three audit cycles. This presentation provides an indication of the impact of duration of participation in CQI on delivery of care according to best practice guidelines. Note that 'Audit Cycle 1' represents baseline audit data, 'Audit Cycle 2' represents the first follow-up audit and so on.

Box plots are used to show variation between health centres

An important focus of the ABCD Partnership is understanding variation between health centres and over time in delivery of care in accordance with best practice guidelines. 'Box and whisker plots' (or box plots) are a useful way of presenting data on variation in a graphical form that should assist with interpretation.

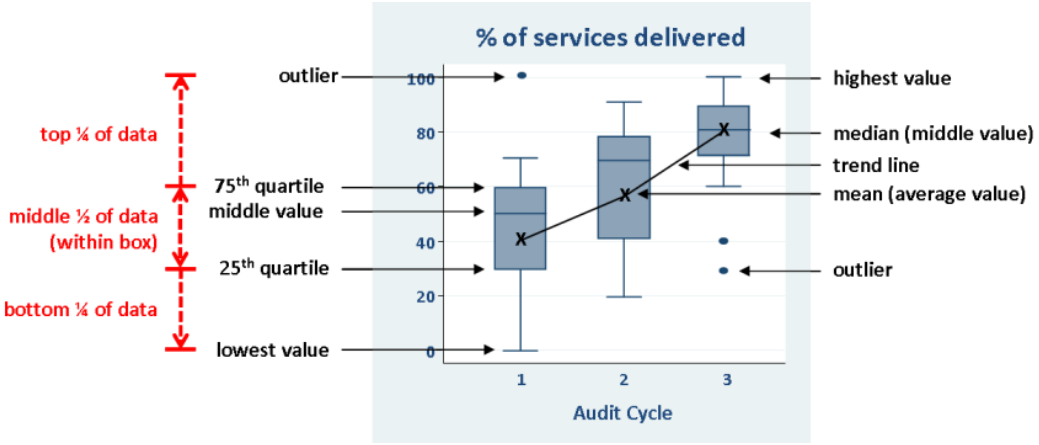
In the analysis of the audit data, the mean (average) percent delivery of items of clinical care relevant to each indicator is calculated for each health centre. These mean percentages are displayed in a box plot for a given year or audit cycle to show the distribution or range in recorded delivery of care between health centres.

How to interpret box and whisker plots

Box and whisker plots show (Figure 3):

- health centres with the minimum and maximum mean percentage in recorded delivery of care in accordance with best practice guidelines (ends of whiskers show highest value if no outliers);
- outliers – health centres that are far away from most others in the data set (or a distance that is greater than 1.5 times the length of the box); and
- the level of variation between health centres in recorded delivery of care by dividing scores into quarters:
  - the box represents the middle 50% of health centres, and the line within the box represents the median (or middle health centre);
  - the 'whisker' at the top of the box (and outliers if present) represents the top 25% of health centres
  - the 'whisker' at the bottom of the box (and outliers if present) represents the bottom 25% of health centres;
  - the longer the box plot, the greater the range of care delivery (or variation) between health centres.

Box 2: How to interpret boxplots



In assessing data trends for indicators relevant to the priority evidence practice gaps, it is helpful to focus on:

a) **the trend for the mean (average) and median (middle) values for health centres** – in particular whether the mean and median are increasing, staying steady or decreasing; and

b) **the trend in the variation between health centres** – in particular whether the variation is getting less (shorter boxes, shorter whiskers), and importantly, whether there is an improvement in the values for the health centres at the lower end of the range (higher level for the bottom end of whiskers under boxes).

2.2 Overall maternal health care service delivery

Stakeholder feedback on the priority evidence-practice gaps highlighted the importance of continuing attention to holistic care, and ensuring that focus on specific indicators does not detract from the importance of providing high quality care across the scope of best practice. Two composite indicators are presented showing delivery of antenatal and postnatal services in accordance with best practice guidelines (Figure 24). The antenatal composite includes recording of risk factors, routine antenatal checks, laboratory investigations and brief interventions and counselling. The postnatal composite includes brief intervention and counselling for new mothers.

Summary of trends (Figure 24)

Over years

- There have been clear improvements in the overall service delivery of maternal health care both in pregnancy and postnatally.
- There was no clear reduction in variation in pregnancy care between health centres (except for in 2014 where data are from a relatively small number of health centres).
- Variation in postnatal care increased between health centres over time. This suggests large improvements at some health centres and little or no improvement at some health centres.
- In general, pregnancy care is currently delivered at higher levels than postnatal care.

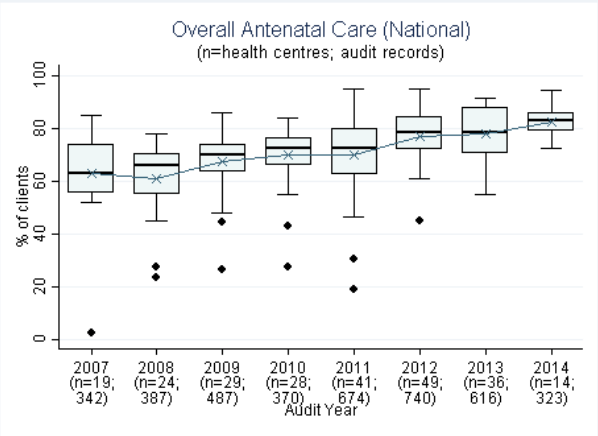
Over successive audit cycles

- For health centres that completed three or more maternal health audit cycles, there were improvements in the mean level of overall service delivery related to pregnancy care. There was no evidence of reduced variation between health centres over successive audit cycles.
- There were improvements in the mean level of overall service delivery related to postnatal care. However there was no evidence of reduced variation between health centres over successive audit cycles.

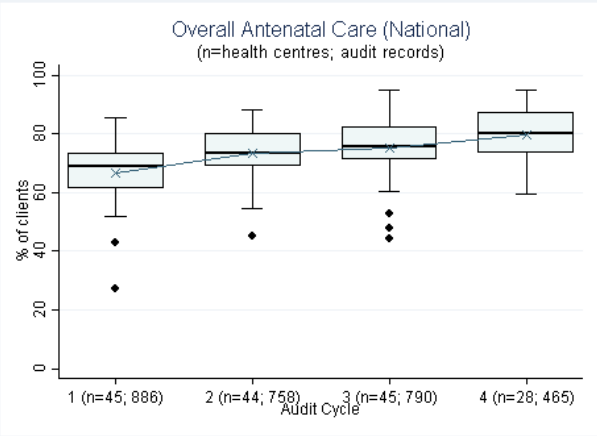
Figure 24 **Mean health centre overall service delivery* for antenatal and postnatal care, by audit year for all health centres and by audit cycle for health centres that have at least 3 years of audit data.**

(n=number of health centres; number of client records audited)

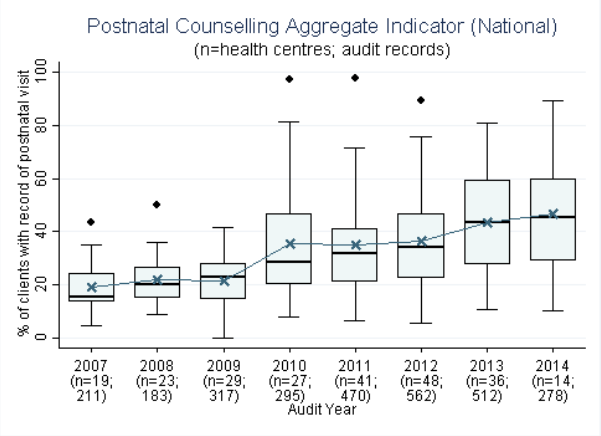
Antenatal Care - Year



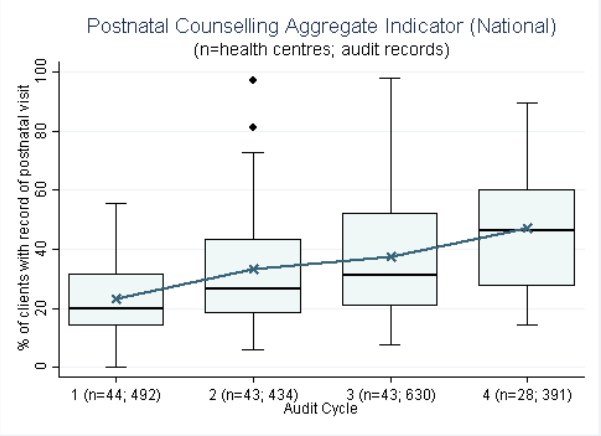
Antenatal Care - Audit Cycle



Postnatal Care - Year



Postnatal Care - Audit Cycle



*****Antenatal composite indicator includes 26 best practice indicators present in the maternal health audit tool: ≥7 antenatal visits, estimated gestational age ≤13 weeks at first antenatal visit, blood pressure (1st, 2nd & 3rd trimester), urinalysis (1st & 2nd trimester), BMI (1st trimester), fundal height (2nd & 3rd trimester), foetal movements (3rd trimester), blood glucose (2nd trimester), documentation of blood group, antibody status, rubella, Hepatitis B status, MSU, full blood examination, Syphilis serology, HIV, PCR test, smoking status recorded (1st & 3rd trimester), drinking status recorded (1st & 3rd trimester), social risk assessment, emotional wellbeing assessment, discussion on plans for care and birthing, nutrition, breastfeeding, domestic and social environment and cultural considerations.

Postnatal composite indicator includes 15 best practice indicators: brief interventions and counselling for smoking, nutrition, breastfeeding, infection prevention, injury prevention, SIDS prevention, alcohol & other substance abuse, physical activity, mood (depression), contraception, domestic and social environment, social and family support, financial situation, housing condition and food security.

2.3 Overall health centre systems

The figure below shows the average component scores within the relevant system domain for health centres that undertook a systems assessment (SAT) between 2007 and 2014. For background information on the SAT, please refer to Appendix A. Nationally, 82 of the 91 health centres that completed an maternal health care audit undertook a systems assessment at least once over this period. Table 4 provides more information on the frequency of SAT completion over years. System components are scored on a scale of 0 - 11. Higher scores reflect better function.

Summary of trends (Figure 25)

Over years

- There is some evidence of improvement in the average overall health centre SAT scores over time, but no evidence of reduced variation between health centres.

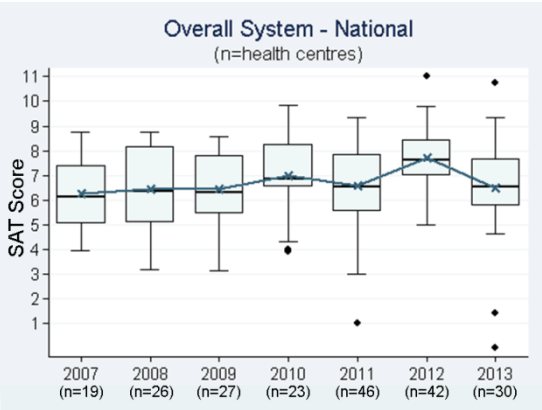
Over successive audit cycles

- For health centres that completed three or more systems assessments for maternal health, there were improvements in the average overall SAT score but no evidence of a change in variation.

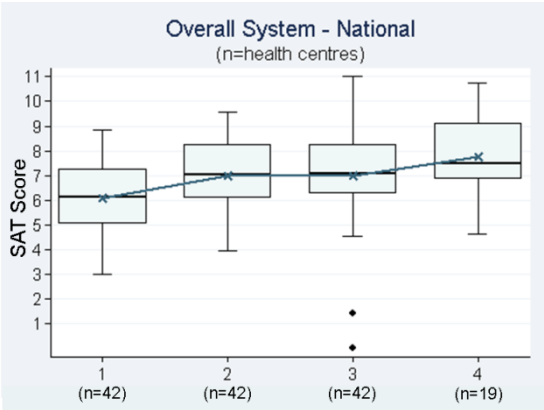
Figure 25 **Overall system assessment score*, by year for all health centres and by cycle for health centres that have at least 3 years of systems assessment data**

(n=number of health centres that conducted a systems assessment)

Year



Audit cycle



*Overall score is the average of each of the five domain scores that make up the total systems assessment (i.e. delivery system design, information systems and decision support, self-management support, links with the community, other health services and other resources and organisational influence and integration.

2.4 Enquiry about smoking and delivery of smoking cessation advice in pregnancy

Most respondents (32/33) identified 'Enquiry about smoking and delivery of smoking cessation advice in pregnancy' as a high priority for improvement.

The figure below shows the mean health centre recording of this identified gap, by year and audit cycle for all health centres.

Summary of trends (Figure 26)

Over years

- Enquiry about smoking status in the first trimester increased from 2007 to 2012 and then decreased in 2013-2014 (but remaining above 2007 levels). Variation between health centres decreased over time but some health centres still have much lower levels of enquiry than others.
- Small improvements were made in enquiring about smoking status in the second trimester and were maintained over time. There was no clear reduction in variation over time (except in 2014 where the data are from a relatively small number of health centres).
- Enquiry about smoking status in the third trimester improved consistently over time. Variation between health centres also decreased over time.
- A similar proportion of women smoked cigarettes during pregnancy in each year (median or mean of 50-65%).
- Delivery of cigarette cessation advice increased considerably from 2007-2011 and then high levels were sustained from 2012-2014. Variation between health centres decreased over time.

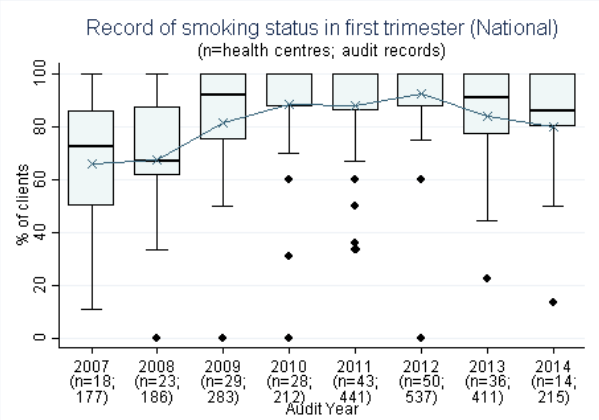
Over successive audit cycles

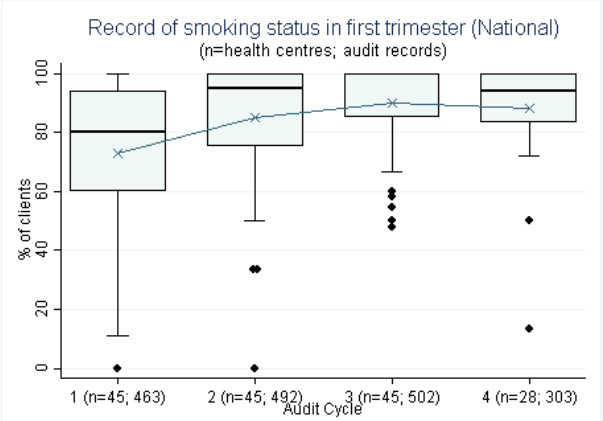
- For health centres that completed three or more audit cycles for maternal health, there was an improvement in enquiry about smoking status in the first trimester and third trimesters over successive audit cycles. There was some reduction in variation between health centres.
- Enquiry about smoking status in the second trimester remained similar across audit cycles. There was no clear reduction in variation.
- A similar proportion of women smoked cigarettes during pregnancy across audit cycles.
- Delivery of cigarette cessation advice increased over successive audit cycles. There was some reduction in variation between health centres across audit cycles.

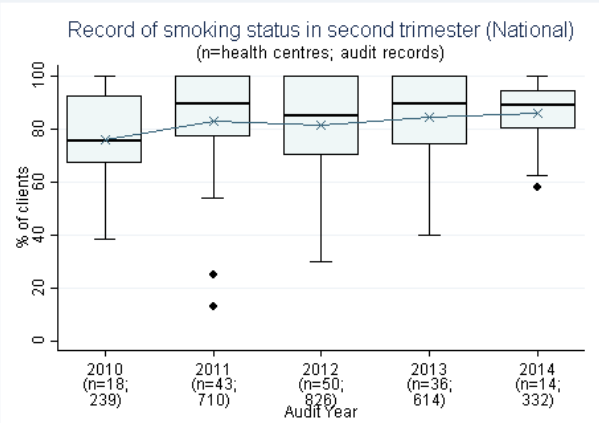
Figure 26 **Mean health centre percentage of maternal health clients with record of smoking status, use of cigarettes and brief intervention where required, by audit year for all health centres and by audit cycle for health centres that have at least 3 years of audit data**

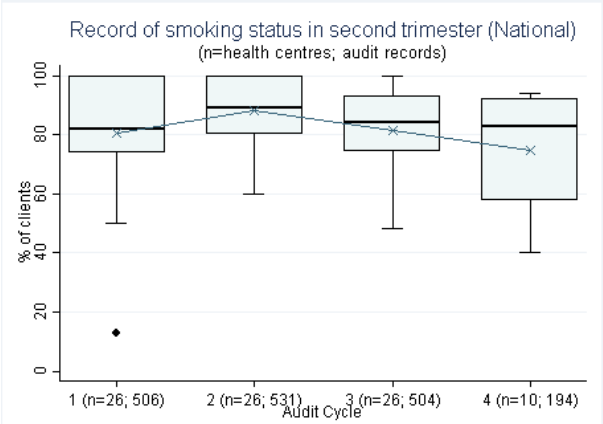
(n=number of health centres; number of clients)

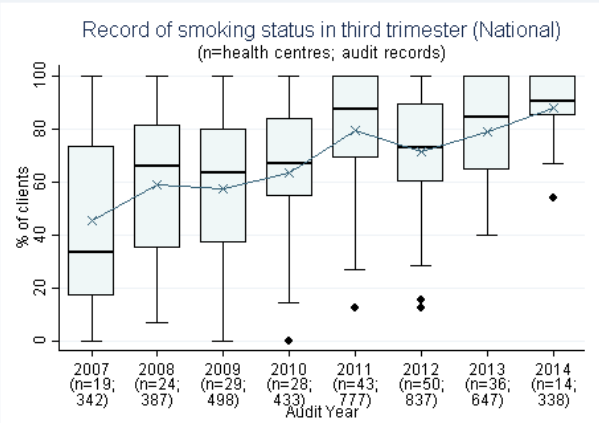
Year **Audit Cycle**

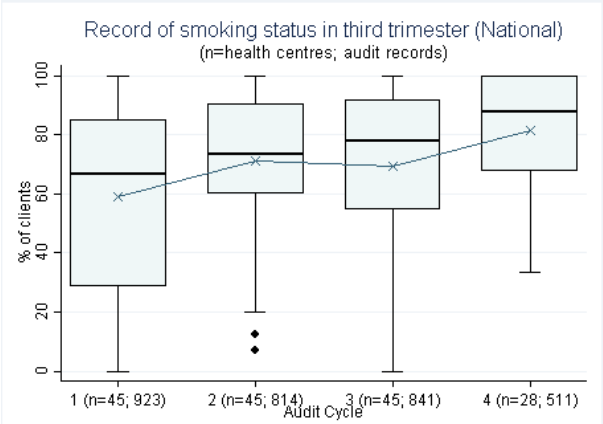




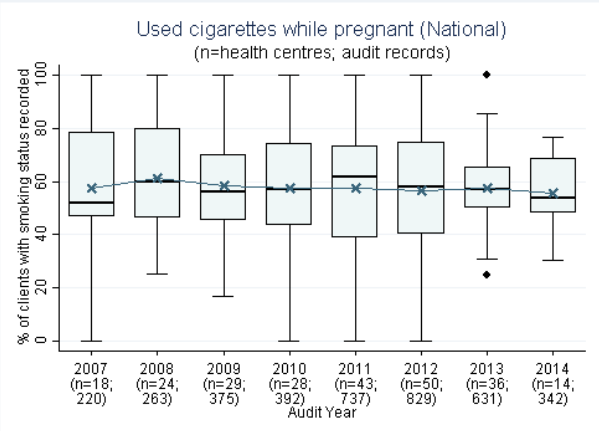


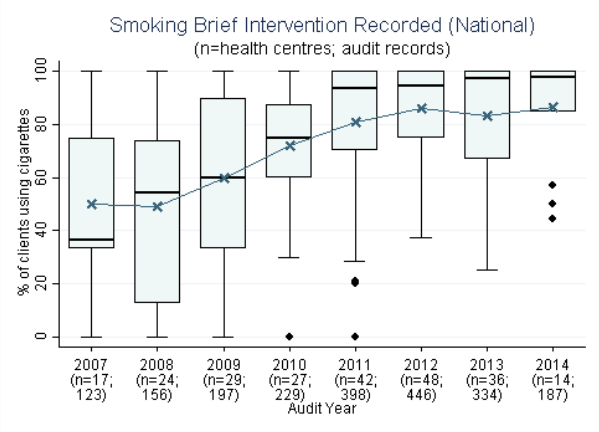




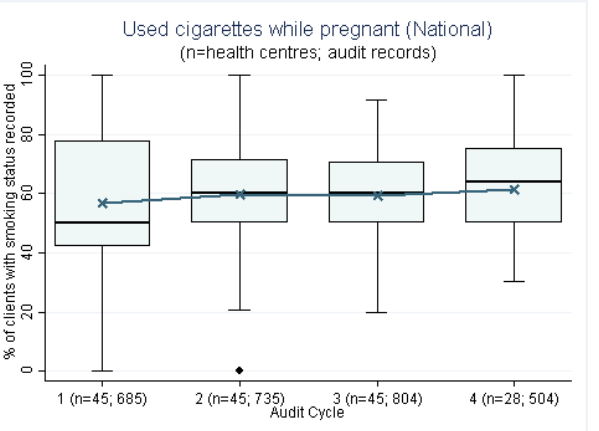


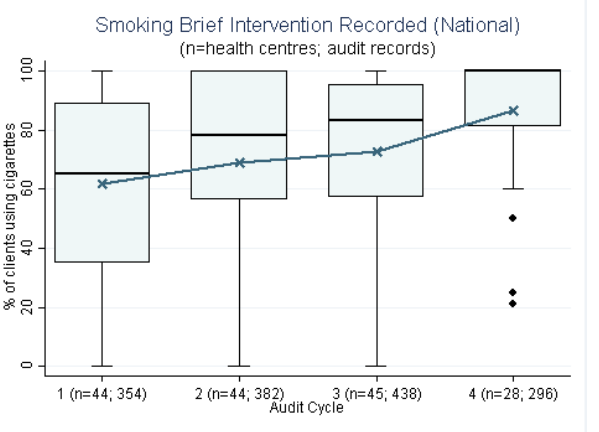
Year





Audit Cycle





2.5 Enquiry about alcohol use and delivery of brief counselling early in pregnancy

Most respondents (29/31) identified 'Enquiry about alcohol use and delivery of brief counselling early in pregnancy' as a high priority for improvement.

The figure below shows the mean health centre record of enquiry about alcohol use and delivery of brief counselling early in pregnancy, by audit year and audit cycle.

Summary of trends (Figure 27)

Over years

- For each trimester, enquiry about alcohol use increased over time and variation between health centres decreased over time.
- While enquiry about alcohol use was generally delivered at high levels in 2014, low levels remained at some health centres.
- There was a steady decrease in the proportion of women who used alcohol during pregnancy over time (from 35% in 2007 to 10-15% in 2014).
- Delivery of brief intervention/counselling for alcohol use increased considerably over time, although low levels remained at a few health centres. There was some reduction in variation.

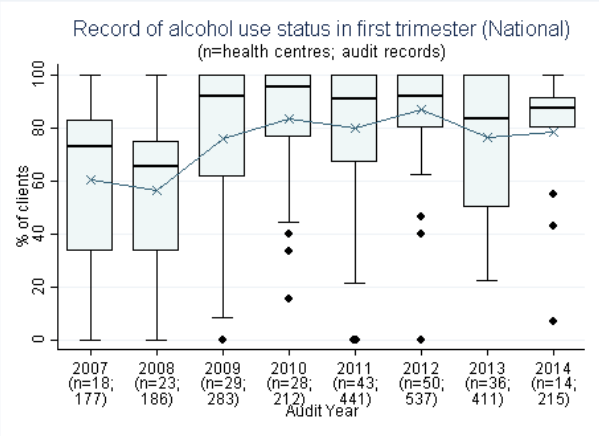
Over successive audit cycles

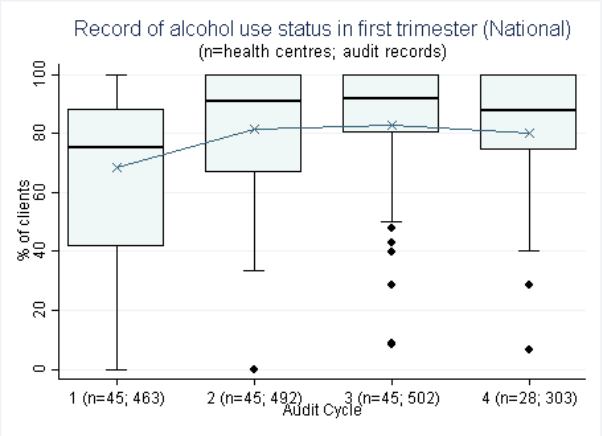
- For health centres that completed three or more audit cycles for maternal health, there were increases in enquiry about alcohol use in the first trimester, and a reduction in variation between health centres over successive audit cycles.
- There was no clear trend in enquiry about alcohol use in the second trimester and no clear trend in variation.
- Enquiry in the third trimester about alcohol use increased over audit cycles. There was no clear trend in variation.
- There was a decrease in the proportion of women who used alcohol during pregnancy over audit cycles.
- Delivery of brief intervention/counselling for alcohol use increased between audit cycles with some reduction in variation.

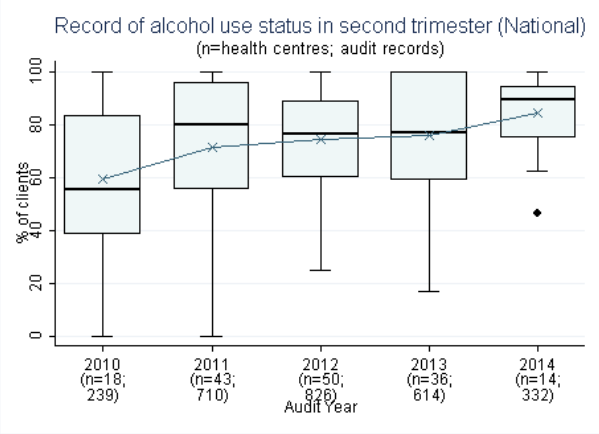
Figure 27 **Mean health centre recording of status for alcohol use and brief intervention for alcohol drinkers, by audit year for all health centres and by audit cycle for health centres that have at least 3 years of audit data**

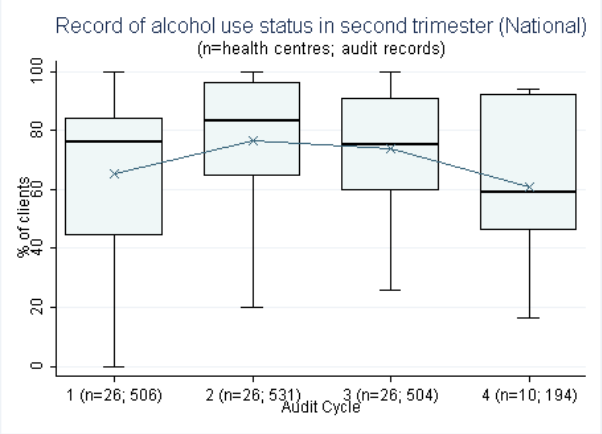
(n=number of health centres; number of clients)

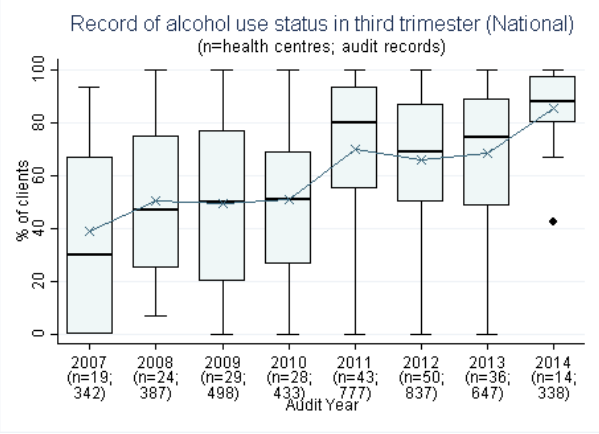
Year **Audit Cycle**

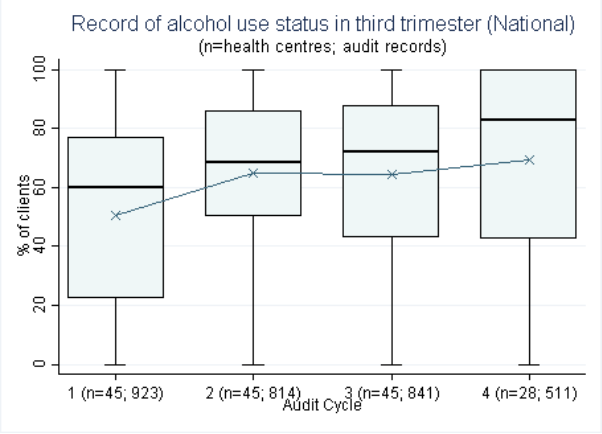


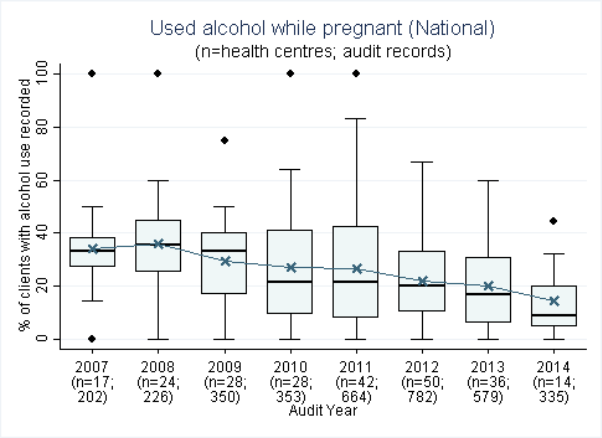


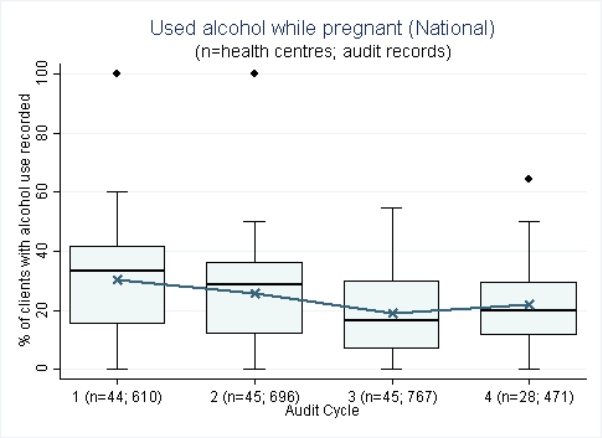


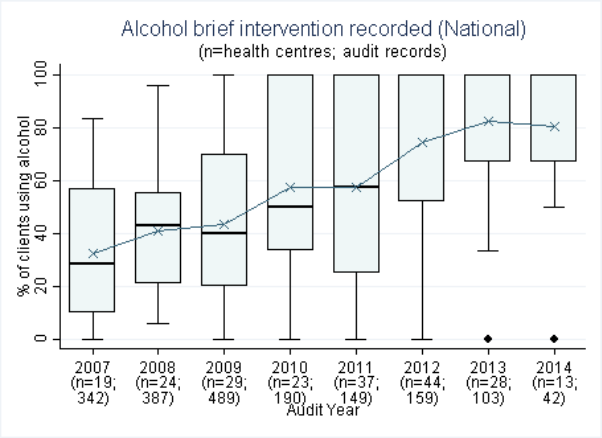


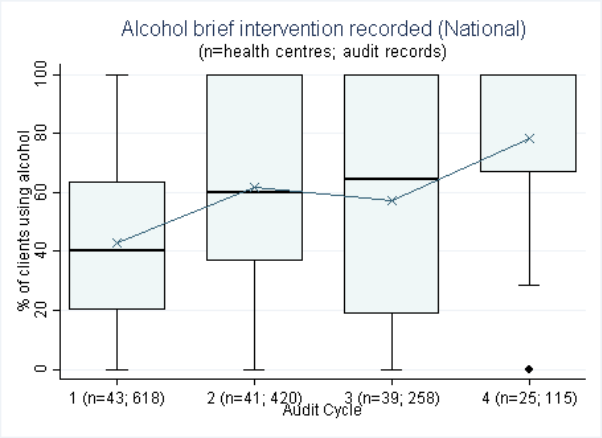












2.6 Social risk factor assessment in pregnancy and, if evidence of social risk, record of referral to appropriate services

Most respondents (31/33) identified 'Social risk factor assessment and, if evidence of social risk, record of referral to appropriate services' as a high priority for improvement.

The figure below shows the mean health centre recording of social risk factor assessment in pregnancy and, if evidence of social risk, record of referral to appropriate services, by audit year and audit cycle.

Summary of trends (Figure 28)

Over years

- There was a clear increase over time in mean levels of social risk factor assessment and a clear decrease in variation between health centres.
- There was a steady increase in follow-up when social risk factors were present with some evidence of reduction in variation between health centres.

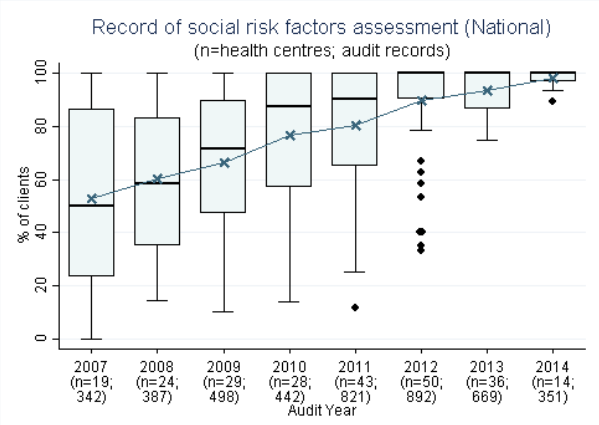
Over successive audit cycles

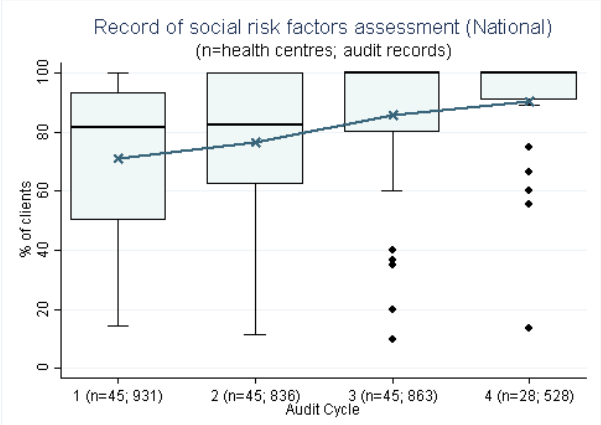
- For health centres that completed three or more audit cycles for maternal health, there was a clear increase in mean levels of social risk factor assessment with each successive cycle and a decrease in variation between health centres.
- There was a steady increase in follow-up when social risk factors were present and a decrease in variation with each successive cycle.

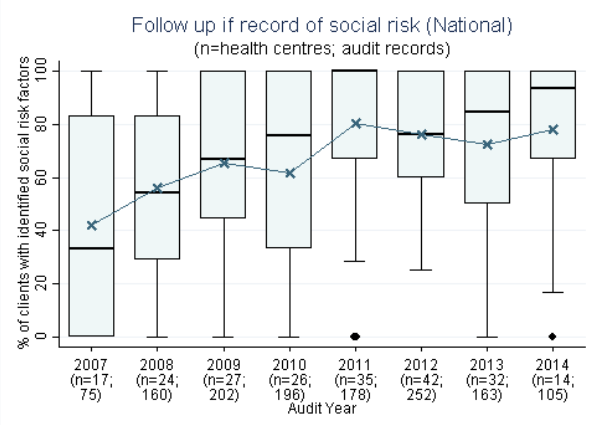
Figure 28 **Mean health centre recording of social risk factor assessment and, if evidence of social risk, record of referral to appropriate services, by audit year for all health centres and by audit cycle for health centres that have at least 3 years of audit data**

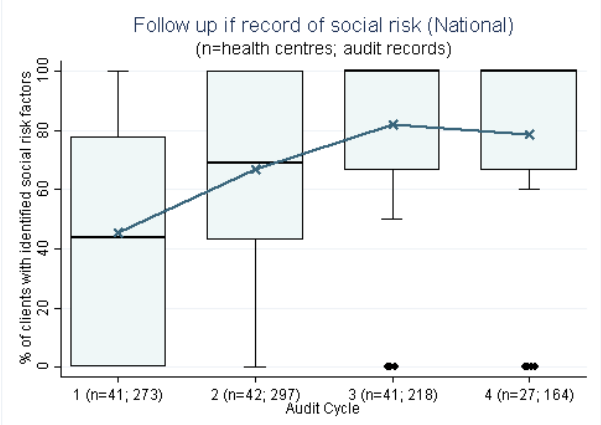
(n=number of health centres; number of clients)

Year **Audit Cycle**









2.7 Provision of appropriate follow-up for women identified as at-risk based on emotional wellbeing assessment in pregnancy

Most respondents (31/33) identified 'Provision of appropriate follow-up for women identified as at-risk based on emotional wellbeing assessment[2] as a high priority for improvement.

Most respondents (30/33) also identified 'emotional wellbeing screening for all women during pregnancy' as a high priority for improvement.

The figure below shows the mean health centre documentation of emotional wellbeing screening during pregnancy and appropriate follow-up for women identified as at-risk, by audit year and audit cycle.

Summary of trends (Figure 29)

Over years

- There were large improvements in emotional wellbeing screening in pregnancy over time. Variation increased between health centres over time, suggesting improvement for services at the upper end of the range.
- A similar proportion of women were identified as at-risk based on emotional wellbeing assessment across time. There was no clear trend in variation between health centres.
- There was an increase in the mean number of women with a record of follow-up action for those who had a record of being at risk. There was a reduction in variation between health centres in recording of follow-up action for clients assessed as being at risk.

Over successive audit cycles

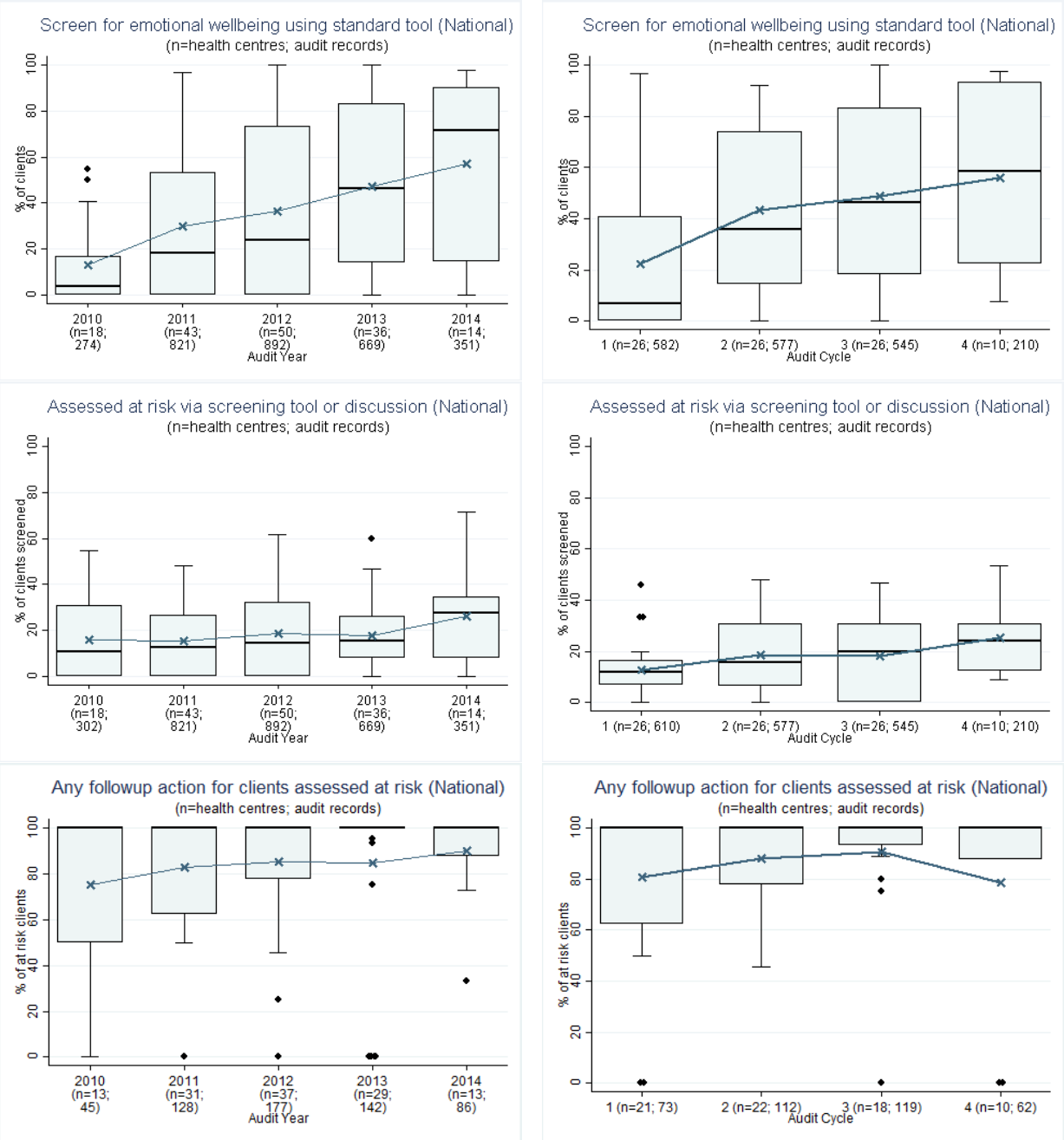
- For health centres that completed three or more audit cycles for maternal health, there were large improvements in emotional wellbeing screening in pregnancy. There is no evidence of a reduction in variation between health centres.
- There was an increase in the mean proportion of women identified as at-risk over successive audit cycles. This increase may reflect better case-finding due to an increase in routine emotional wellbeing assessments.
- There was no clear trend in recorded follow-up actions for women identified as at-risk over successive audit cycles. There was some reduction in variation between health centres in the recording of follow-up action for women who had been identified as being at risk.

[2] The emotional wellbeing screening and follow-up indicators were introduced to the maternal health tool in June 2010.

Figure 29 **health centre recording of the number of women who received emotional wellbeing screening using a standard tool during pregnancy, the number who were assessed at emotional wellbeing risk and recording of appropriate follow-up action within three months, by audit year for all health centres and by audit cycle for health centres that have at least 3 years of audit data**

(n=number of health centres; number of clients)

Year **Audit Cycle**



2.8 Discussion of SIDS prevention and the importance of keeping a safe environment for the baby at the postnatal visit

Most respondents (30/32) identified improved recording and 'discussion of SIDS prevention and the importance of keeping a safe environment for the baby' as a high priority for improvement.

Most respondents (30/33) also identified 'discussion of smoking and the increased risk of SIDS in babies in a smoking environment' as a high priority for improvement.

The figure below shows the mean health centre record of a discussion of smoking, SIDS prevention and the importance of keeping a safe environment for the baby, by audit year and audit cycle.

Summary of trends (Figure 30)

Over years

- There has been some improvement over time in documented discussion of smoking at the postnatal visit. There has been no reduction in variation between health centres.
- There have been large improvements over time in documented discussion of SIDS prevention at the postnatal visit. There is no evidence of reduction in variation between health centres.

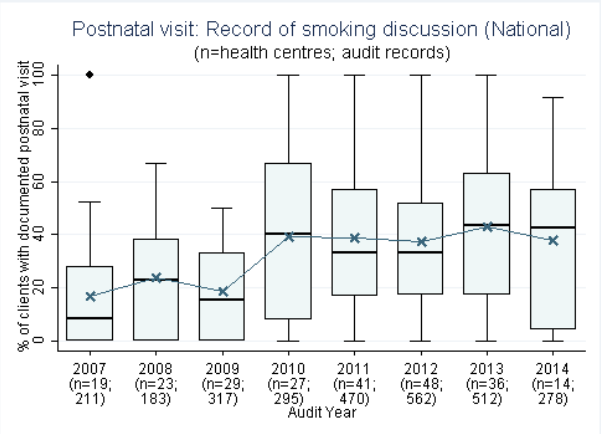
Over successive audit cycles

- For health centres that completed three or more audit cycles for maternal health, there have been improvements in documented discussion of smoking at the postnatal visit over successive audit cycles. There is no clear evidence of a reduction in variation.
- There have been improvements in documented discussion of SIDS prevention at the postnatal visit over successive audit cycles. However variation between health centres remains large.

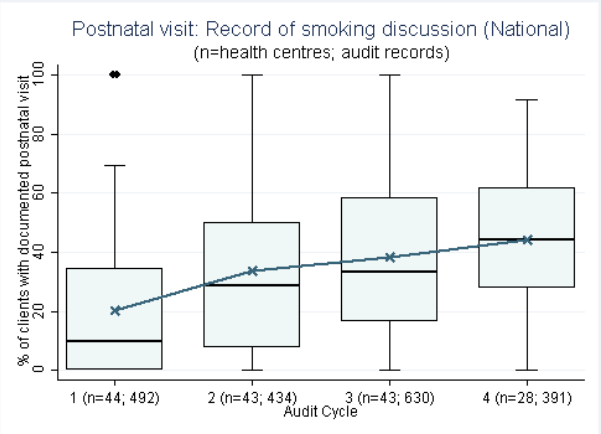
Figure 30 **Mean health centre recording of a discussion on the increased risk of SIDS in a smoking environment and SIDS prevention during postnatal visit, by audit year for all health centres and by audit cycle for health centres that have at least 3 years of audit data**

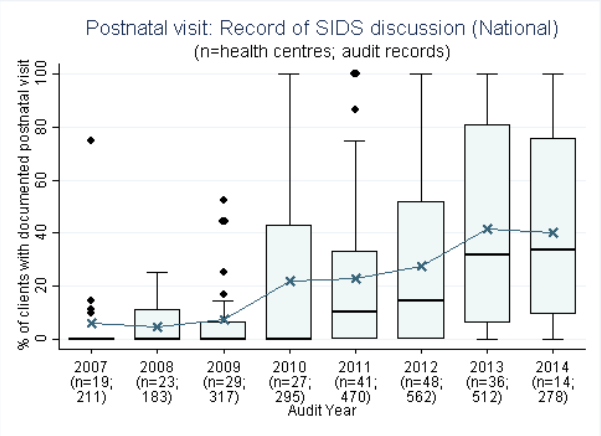
(n=number of health centres; number of clients)

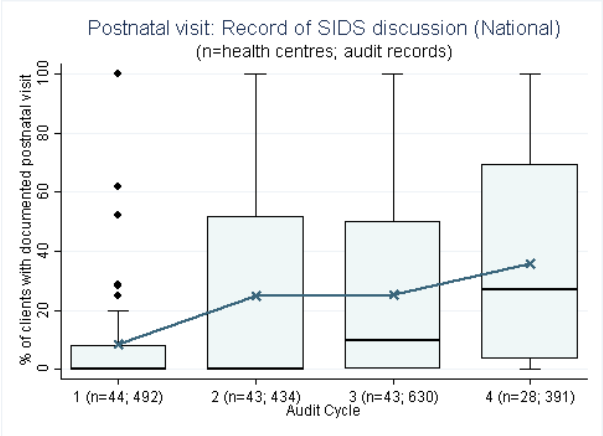
Year



Audit Cycle







2.9 Discussion of diet and nutrition for the mother and baby at the postnatal visit

Most respondents (30/32) identified 'discussion of diet and nutrition for the mother and baby' as a high priority for improvement.

The figure below shows the mean health centre record of a discussion of diet and nutrition for the mother and baby, by audit year and audit cycle.

Summary of trends (Figure 31)

Over years

- Documented discussion of nutrition for the mother and baby at the postnatal visit has increased. There has been no reduction in variation between health centres.

Over successive audit cycles

- For health centres that completed three or more audit cycles for maternal health, there were improvements over successive audit cycles. There has been no reduction in variation between health centres.

Figure 31 **Mean health centre recording of a discussion on diet and nutrition for the client and her infant during postnatal visit, by audit year for all health centres and by audit cycle for health centres that have at least 3 years of audit data**

(n=number of health centres; number of clients)

Year **Audit Cycle**