



Trends and Variations in General Medical Services Indicators For Hypertension: Analysis of QRESEARCH Data

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1 EXECUTIVE SUMMARY

This report has three main objectives:

1. To determine the inter-practice variation in achievement of 5 indicators for hypertension care using the nGMS measures on the 30th September 2004
2. To describe trends in achievement of each indicator every quarter for the last 3 years (1st October 2001- 30st Sep 2004)
3. To report on the pattern of usage of the newly introduced exception codes

The key findings are:

- All practices could meet the requirement for a disease register for hypertension (Indicator 1).
- The prevalence of hypertension has risen from 97 per 1000 registered patients in the first quarter (October - December 2001) to 115 per 1000 by the last quarter examined (July – September 2004).
- There is substantial inter-practice variation in prevalence of hypertension with a normal distribution.
- The percentage of patients with hypertension and smoking status recorded (Indicator 2) varies markedly between practices with a long tail at the lower end.
- The trend in recording smoking status is upwards with over 90% having smoking status recorded by the last quarter of 2004.
- The recording of smoking cessation advice (Indicator 3) exceeded 90% in the last quarter.
- By the final quarter in 2004 a steady trend had yielded a rise from 80% to 88% overall in the proportion of people with hypertension who have a recorded blood pressure reading in the previous 9 months (Indicator 4).
- In terms of hypertensive control (BP of 150/90 or less – Indicator 5) there has been a rise from 46% to 67% over the 3 years, with a steeper rise in recent quarters.
- In recent quarters there has been some use of the “hypertension resolved” codes but it is still minimal.

- Hypertension exception codes which are used 10 times more frequently than hypertension resolved codes, and with use increasing in recent quarters.
- Maximum therapy exclusion codes were used at a similar level to the hypertension exception codes.
- Blood pressure recording exception codes were only present in 4 patients.

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3 OBJECTIVES

This report has three main objectives:

- To determine the inter-practice variation in achievement of 5 indicators for hypertension care using the nGMS measures in the last quarter of 2004 (July 2004 to September 2004)
- To describe quarterly trends in achievement of each indicator for the last 3 years (October 2001 to September 2004).
- To report on the pattern of usage of the newly introduced exception codes

4 METHOD

4.1 Version of database used

The 5th national version of the QRESEARCH database was used for this analysis. This database contains data until 30th September 2004.

4.2 Study period

The study period ran from 1st October 2001 to 30th September 2004 (12 quarters in total).

4.3 Practice inclusion criteria

To be included in the analyses, practice had to have EMIS installed before the first day of each study period and have complete data for the each quarter.

4.4 Patient inclusion criteria

In order to be included in the analysis, patients had to be registered with the practice on the first day of the relevant quarter.

4.5 Case definition for hypertension

Prevalent cases of hypertension were defined by the presence of a Read code for hypertension (G2; G20%; G24-G2z) in their record prior to the end of the analysis period. This is the definition used in the nGMS contract.

4.6 Definition of the quality indicators

We used the “New GMS Contract QOF Implementation Dataset and Business Rules – Hypertension Indicator set” (Version 5.0 release date 27th September 2004). Some of current Read codes [particularly the ‘exception codes’] were not in existence or possibly not used prior to mid 2004.

4.7 General exclusions

In general patients are excluded from the denominator for each indicator if they were newly registered with the practice (i.e. registered within the preceding 3 months) or if they were newly diagnosed with hypertension (i.e. diagnosed within the preceding three months) or if they have a Read code including an exception to hypertension reporting code within the previous 15 months. However, if the patients happen to have the required measurement then they could appear in the numerator. There are also some exclusions specific to different indicators. This means that the eligible population for each indicator varies. A summary of the individual exclusions is shown in the appendix. The results for each of the indicators are also discussed in the relevant sections.

5 RESULTS

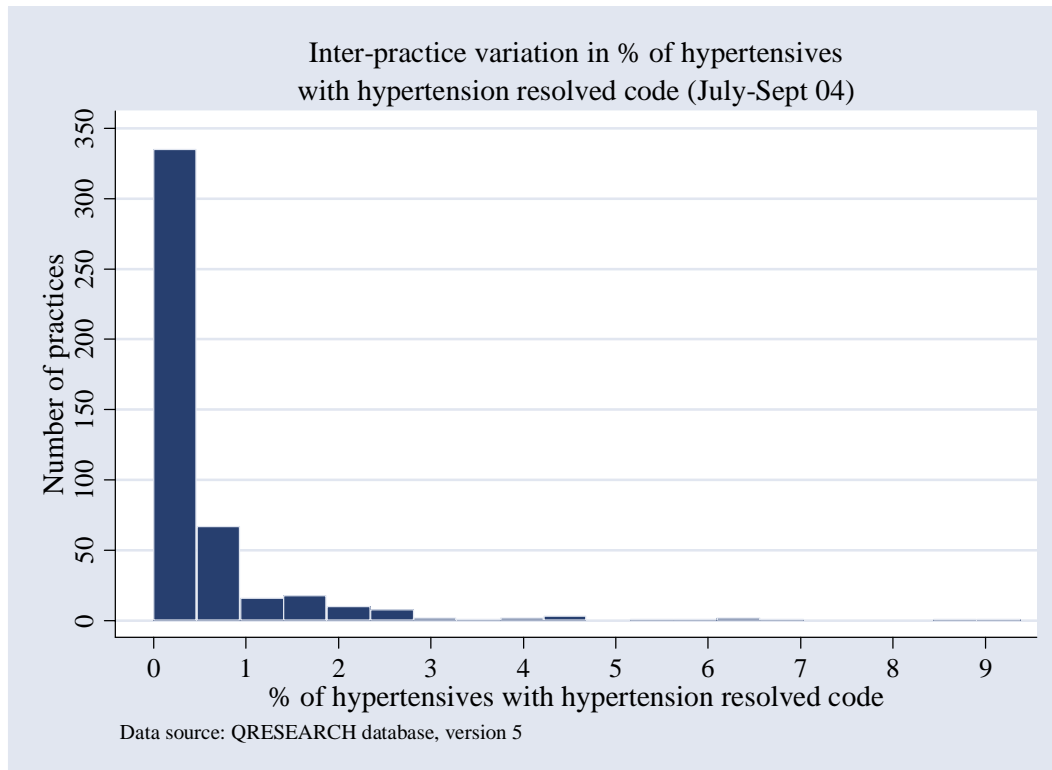
5.1 Study population

There were 469 practices from the QRESEARCH database (5th version) with complete data for the three year study period which were therefore included in this analysis. There were 3.37 million registered patients on 1st October 2001 rising to 3.42 million on 30th September 2004.

5.2 Patients with ‘Hypertension resolved’

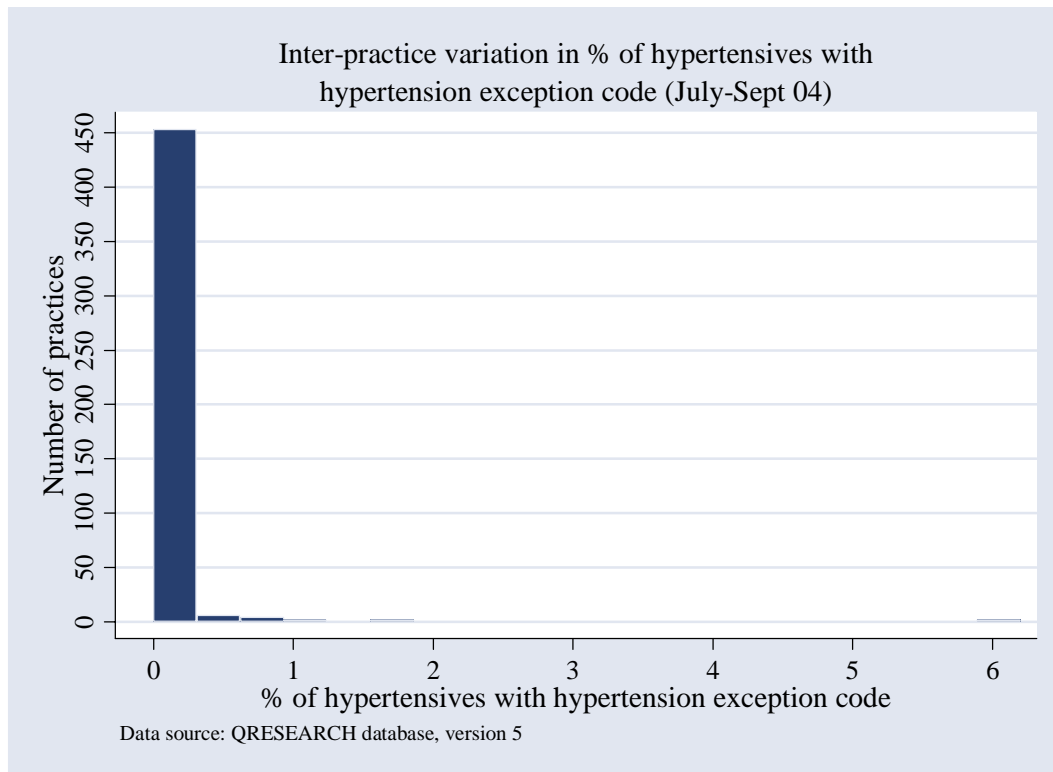
The next chart shows the variation between practices in the percentage of patients with a ‘hypertension resolved’ code in the last quarter (July to September 2004).

Overall there were just 219 patients with a hypertension resolved code out of 388,000 patients with a diagnosis of hypertension (see Table 2, page 24). This low usage of the code is probably because the code is new. Most uses of this code are likely to be for those misdiagnosed or where the diagnosis was recorded incorrectly. Occasionally, patients modify their lifestyle (e.g. weight reduction) and this can lower blood pressure so it is possible that a few of these were genuine cases where hypertension had resolved. The appendix shows how the use of this code has changed over the 12 quarters (the rates are too low to plot). Most of the increase has occurred in the last 3 quarters.



5.3 Patients with ‘Hypertension exception code’

There were 2,000 patients with hypertension who had a hypertension exception reporting code recorded in the 12th quarter. This was 20 times higher than the 106 patients with a hypertension exception code recorded in quarter 9 (October to December 2003). The inter-practice variation in the 12th quarter is shown in the chart below. Data for all the quarters can be found in the appendix (Table 3, page 25).



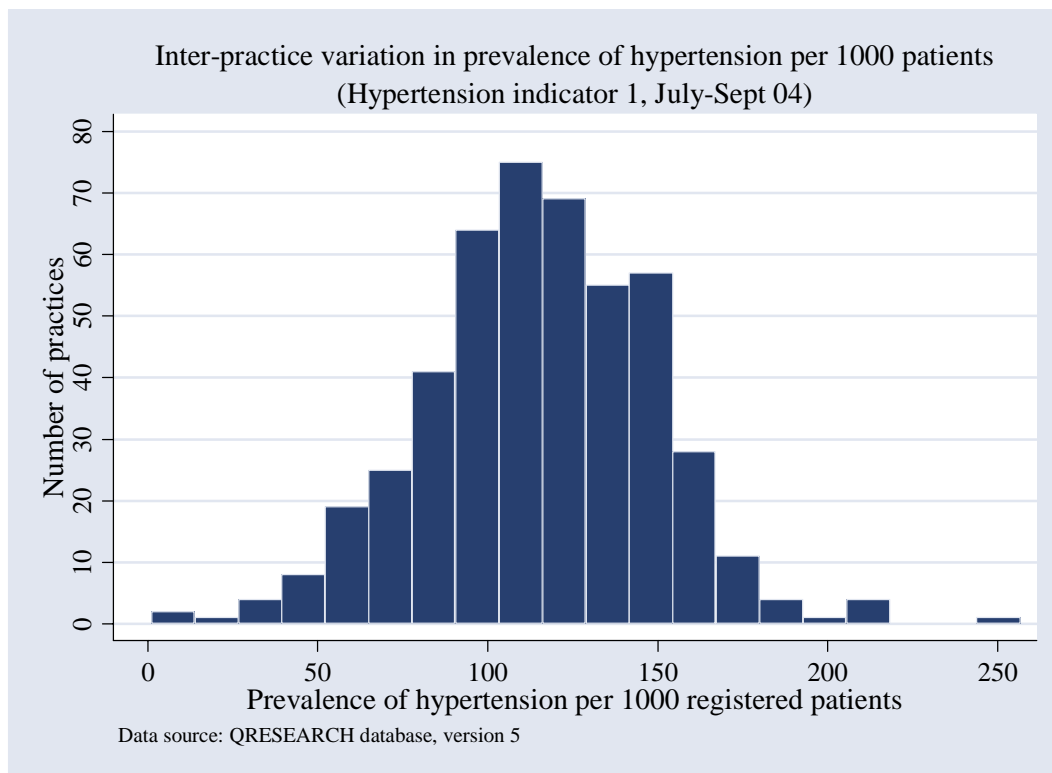
5.4 Hypertension indicator 1: % with a register

Indication BP1: The practice can produce a register of patients with established hypertension. No numerator or denominator is required.

Specific exclusions: none – all practices are eligible for inclusion in this indicator

All practices were able to identify some patients with hypertension and were therefore able to satisfy hypertension indicator one. The next graph shows the inter-practice variation in prevalence of hypertension per 1,000 registered patients in the last quarter of 2004. Tabular data are available in the appendix (Table 1, page 23).

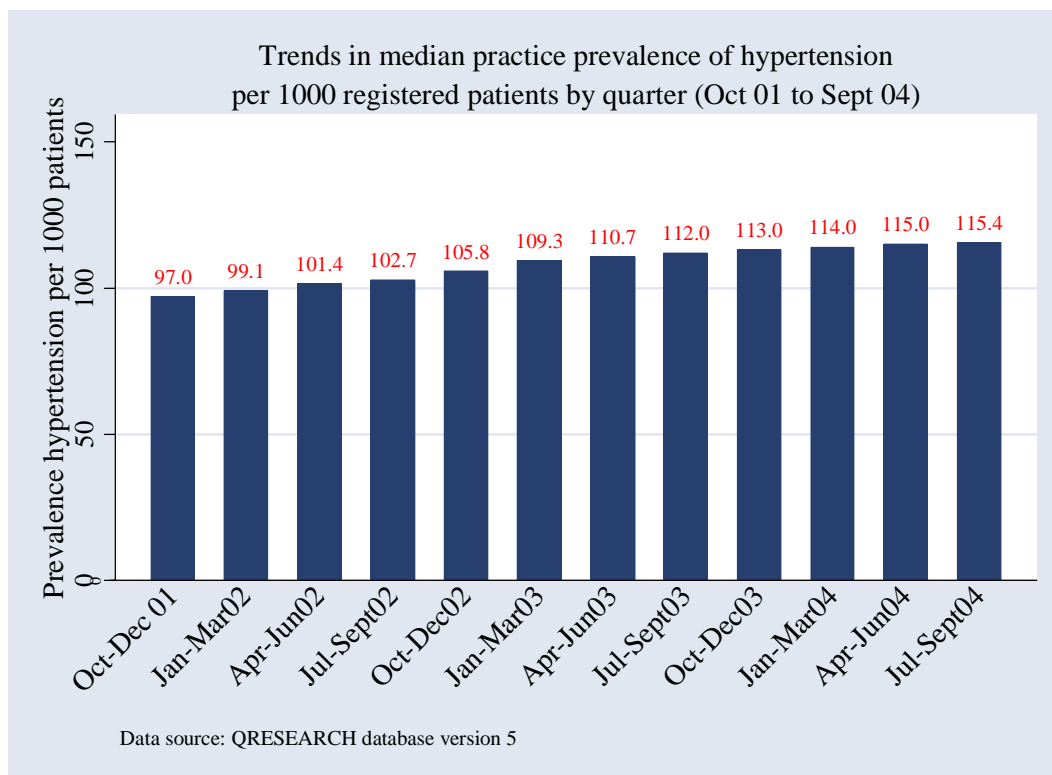
The median prevalence was 115 per 1,000 registered patients (inter quartile range 95 to 138).



5.5 Hypertension Indicator 1: Quarterly Trends

The next chart shows the trends in the median practice prevalence of hypertension per 1000 registered patients for each of 12 quarters between October 2001 to September 2004. Tabular data are available in the appendix (Table 1, page 23).

The median practice prevalence rose from 97 per 1,000 registered patients to 115 per 1,000 registered patients over the 12 quarters.



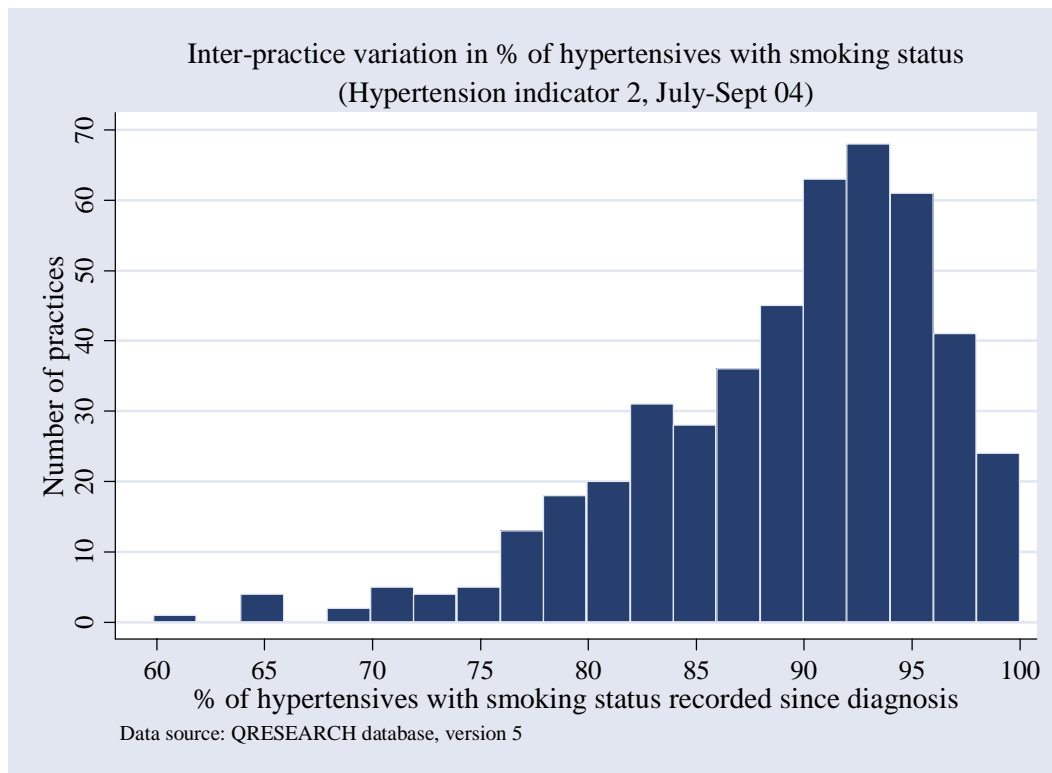
5.6 Hypertension Indicator 2: % with smoking status recorded

Indicator BP2: The percentage of patients with hypertension whose notes record smoking status at least once since diagnosis. .

Exclusions: General exclusions apply. No indicator specific exclusions.

The next charts show the practice variation of recording of smoking status since diagnosis of hypertension in the last quarter of 2004 (July to September 2004). The corresponding tabular data are in the appendix (Table 4, page 26)

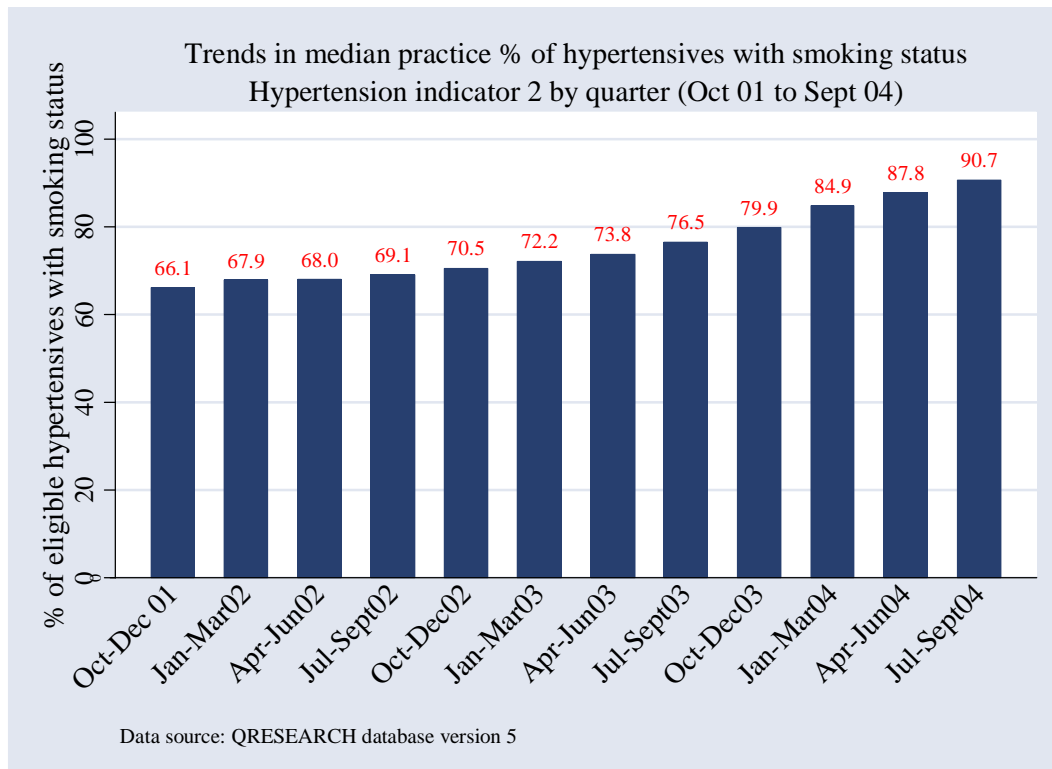
Overall recording rates are reasonably high (median 91%) with a reasonable spread between practices (inter quartile range IQR 85% to 94%).



5.7 Hypertension Indicator 2: Quarterly Trends

The next chart shows quarterly trends in the percentage of hypertensive patients with smoking status recorded. There has been a substantial rise over the 12 quarters from 66% (October to December 2001) to 91% (July to September 2004). The corresponding tabular data are in the appendix (Table 4, page 26)

This search has been done using the Read codes defined in the new GMS contract. It is important to note, however, that many EMIS practices were using EMIS specific codes for smoking prior to April 2004 and this rise is highly likely to reflect a change in the codes used rather than a substantial increase in recording rates. The prevalence of smokers changed very little over the 12 quarters with 13% of hypertensive patients recorded as smokers in quarter 1 and also in quarter 12 (see appendix).



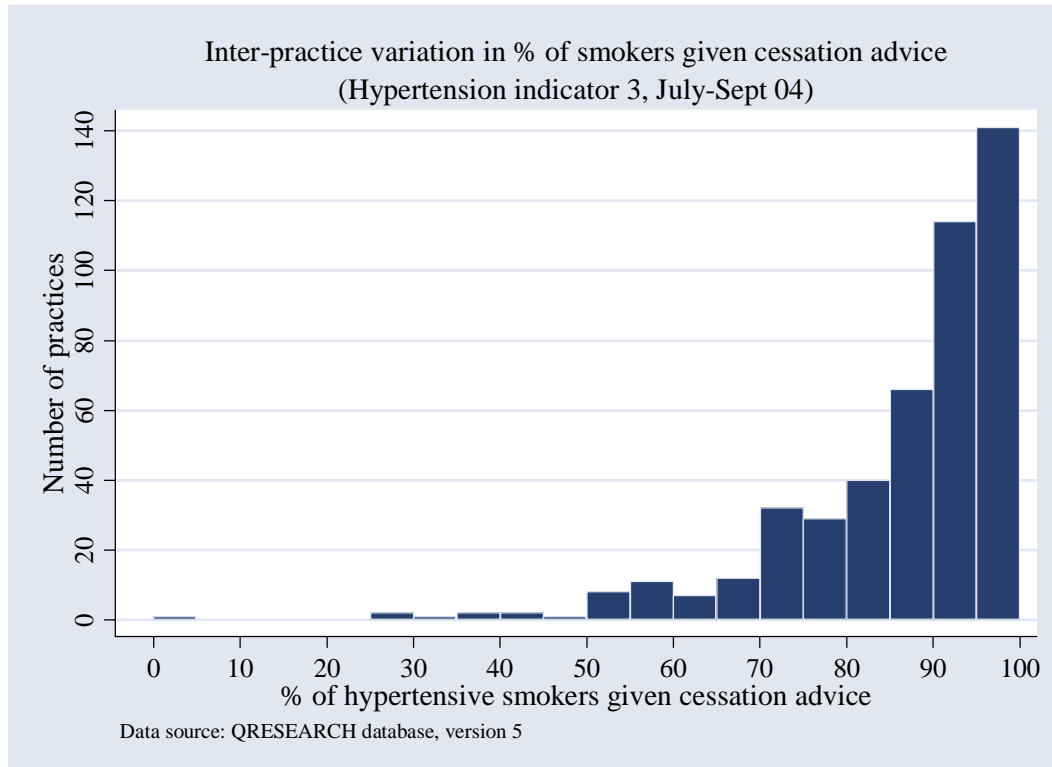
5.8 Hypertension Indicator 3: % of smokers receiving smoking cessation advice

Indicator BP3: The percentage of patients with hypertension who smoke, whose notes contain a record that smoking cessation advice or referral to a specialist service, if available, has been offered at least once.

Exclusions: General exclusions apply. No indicator specific exclusions.

The next chart shows the inter-practice variation in smoking history recorded since diagnosis of hypertension in quarter 12 (July to September 2004). Overall rates were high: the median rate was 91% with a relatively wide (inter-quartile range 81% to 96%).

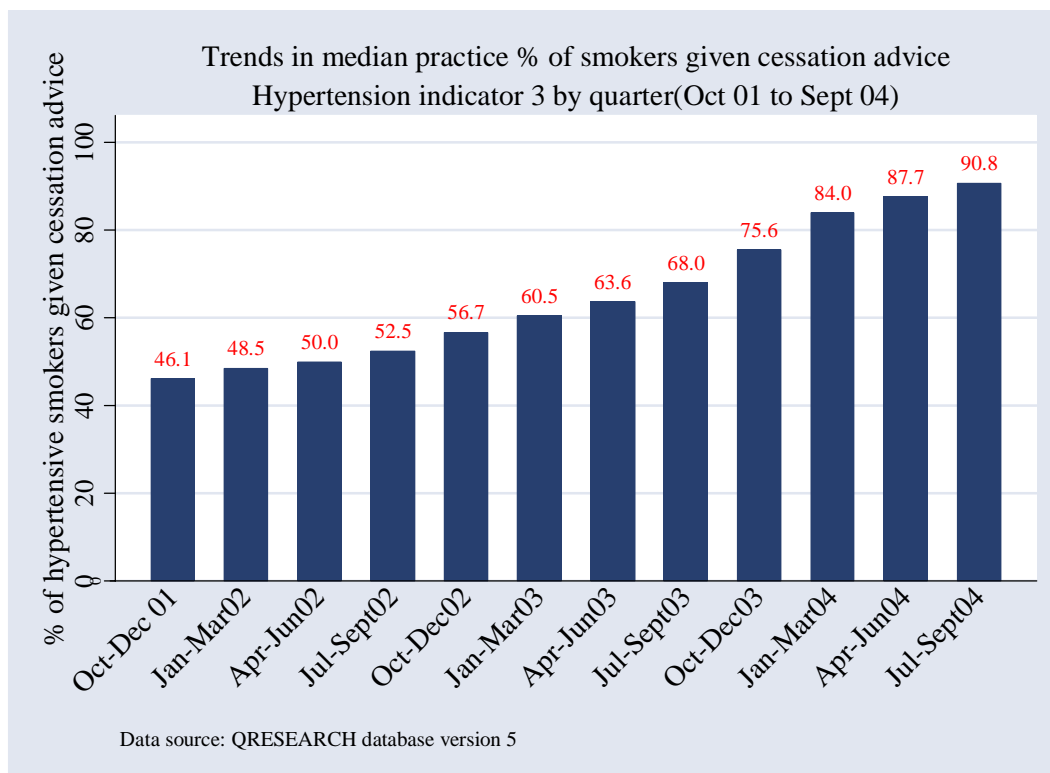
The corresponding tabular data can be found in the appendix (**Table 6**, page 23)



5.9 Hypertension indicator 3: Quarterly Trends

The next chart shows how trends in the percentage of smokers given smoking cessation advice has changed over the 12 quarters. The corresponding tabular data can be found in the appendix (**Table 6**, page 23)

In quarter 1 (October – December 2001) the median practice percentage was 46% (inter quartile range 17% to 72%). By quarter 12, this had more than doubled to 91% and the inter-practice variation had lessened (81% to 96%).



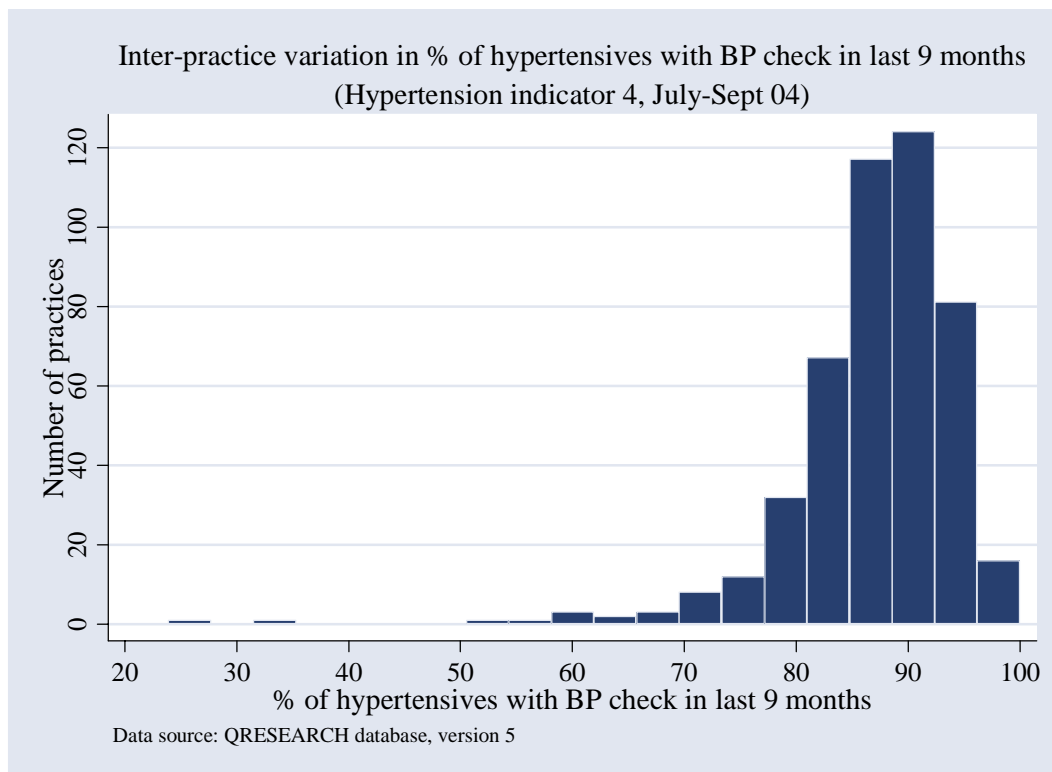
5.10 Hypertension Indicator 4: % with a blood pressure recorded

Indicator BP4: The percentage of patients with hypertension who have a record of blood pressure in the last 9 months

Specific exclusions: Patients with a Read code for exception from blood pressure recording.

Rates for blood pressure recording are high as expected with a median practice percentage of 88% in the 12th quarter and a relatively narrow inter-practice variation (84% to 92%). It is notable, however, that the tail to the left of the graph shows a few practices with low rates even for this indicator.

The corresponding tabular data can be found in the appendix (Table 8, page 30)

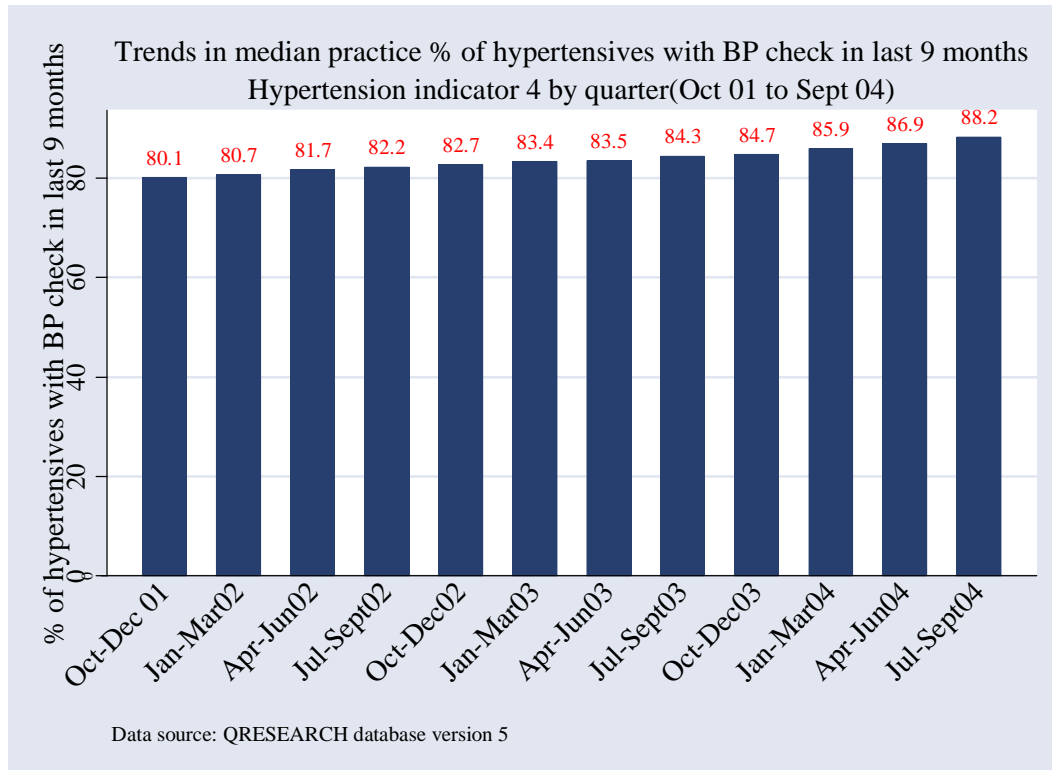


5.11 Hypertension Indicator 4: Exclusions

There were 4 patients with hypertension who had a blood pressure exception reporting code recorded in the 12th quarter and none before this.

5.12 Hypertension indicator 4: Quarterly Trends

The next chart shows trends in the percentage of patients with hypertension with a blood pressure check over the 12 quarters. In quarter 1 (October – December 2001) the median practice percentage was 80% (inter quartile range 70% to 87%). By quarter 12, this had increased to 88% and the inter-practice variation had lessened (84% to 92%).



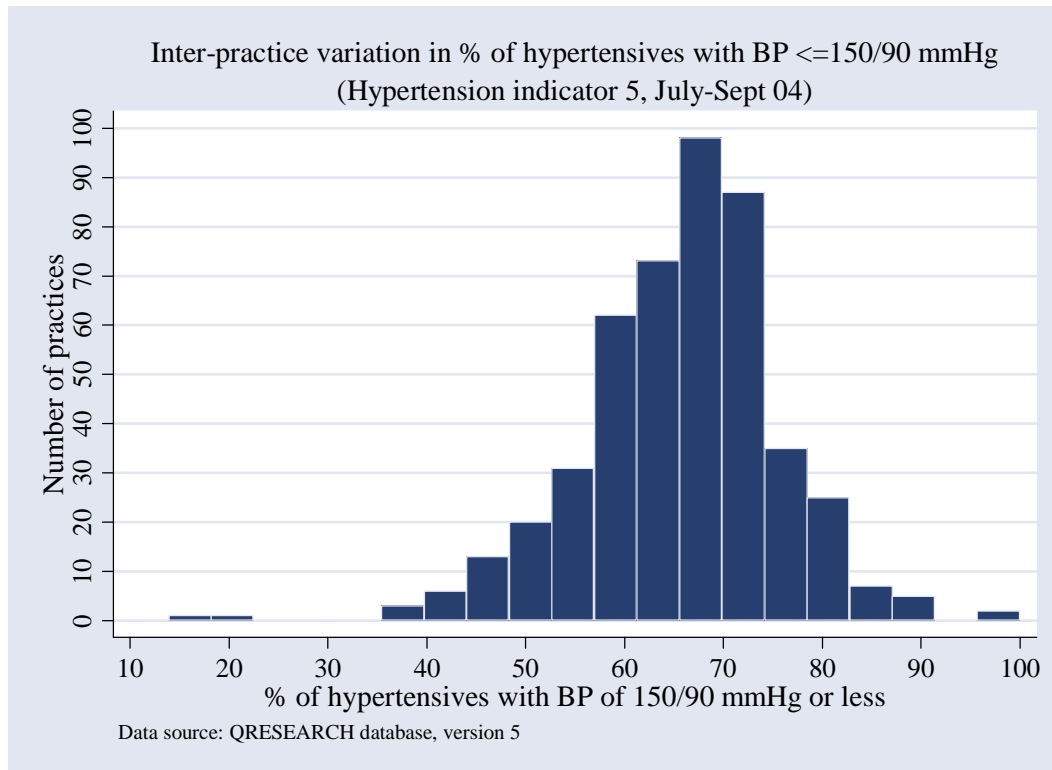
5.13 Hypertension Indicator 5: % with a BP of 150 and 90 mm Hg or less

Indicator BP5: The percentage of patients with hypertension in whom the last blood pressure is 150/90 or less

Specific exclusions: patients with a Read code indicating maximal anti-hypertensive treatment

The next chart shows the inter-practice variation in the percentage of hypertensive patients with a blood pressure of 150/90 mm hg or less. The corresponding tabular data can be found in the appendix(see Table 9, page 31).

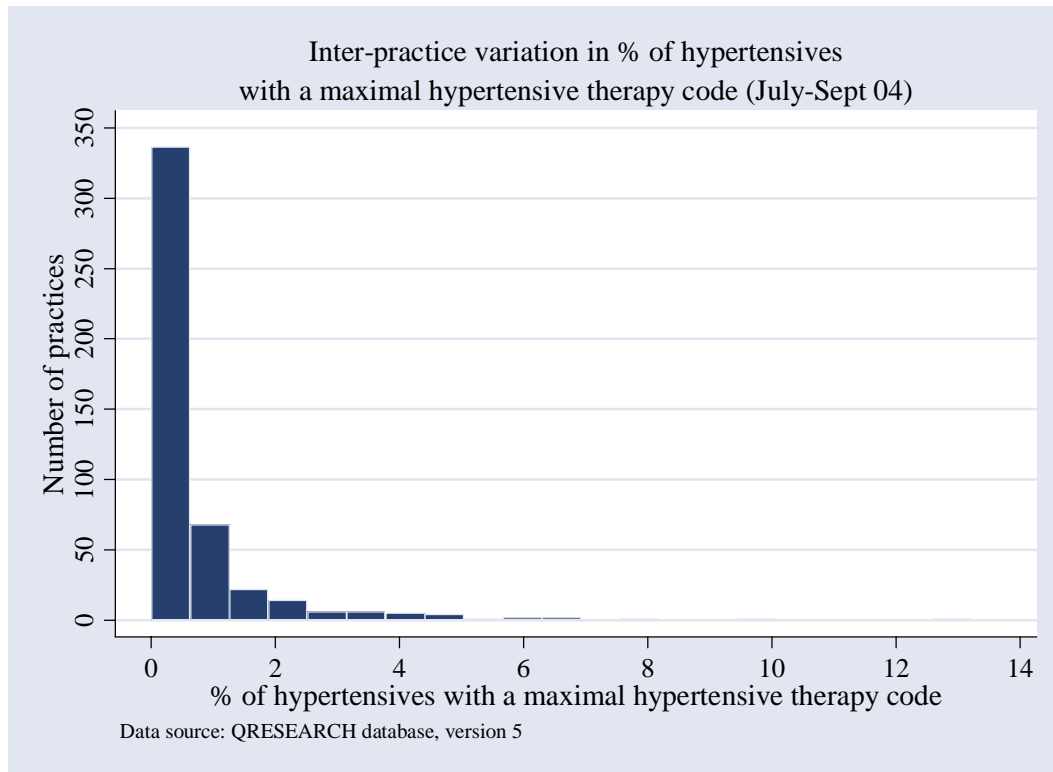
The median practice rate for the percentage of hypertensives with a blood pressure of 150/90 mm Hg or less in quarter 12 (July to October 2004) as 67% (inter-quartile range 60% to 72%).



5.14 Hypertension Indicator 5: Exclusions

Although the overall rates are too low to show graphically, the number of patients with a code for maximum antihypertensive therapy rose from 122 in quarter 9 (October to December 2003) to 2,289 in quarter 12 (July to October 2004). The corresponding tabular data can be found in the appendix (Table 7, page 29)

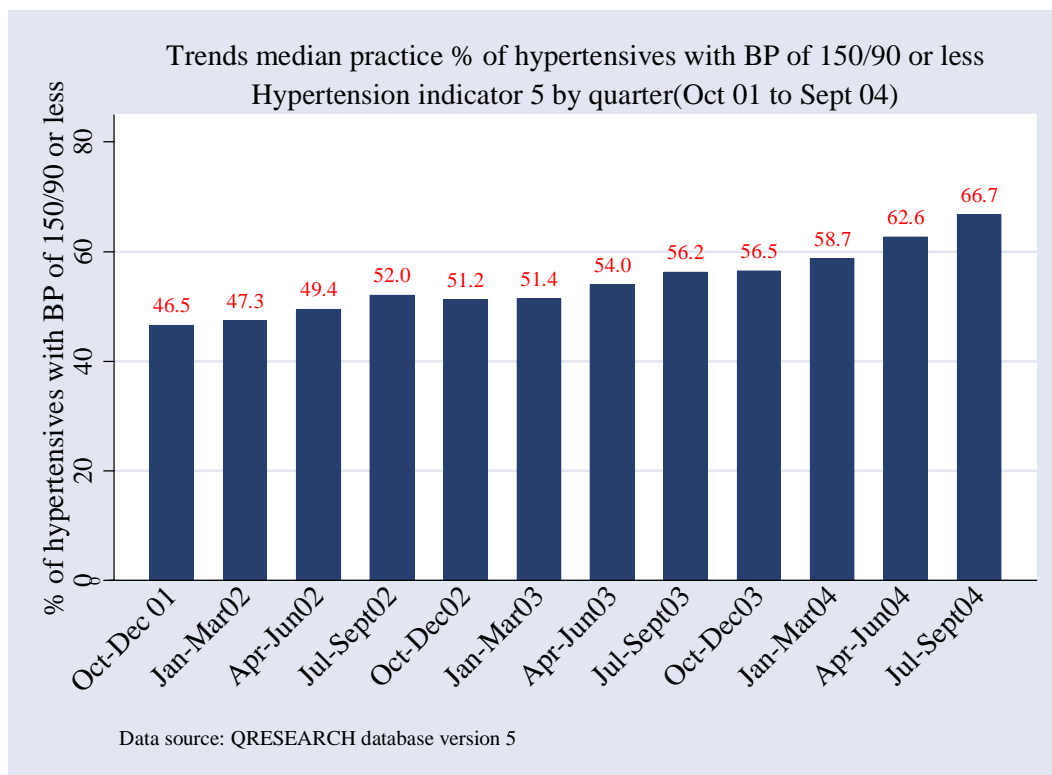
The median practice percentage was 0.25 (inter-quartile range 0 to 0.7%). The inter-practice variation for the 12th quarter is shown in the chart below. It is important to realise that this is a diagnostic code entered by the GP – the measurement is not based on actual prescribed treatment and many more patients may be on triple (or quadruple) antihypertensive therapy since resistant hypertension and intolerance to antihypertensive drugs is relatively common.



5.15 Hypertension Indicator 5: Quarterly Trends

The next chart shows how trends in the percentage of hypertensive patients with a blood pressure value of 150/90 mm HG or less has changed over the 12 quarters. The corresponding tabular data can be found in the appendix (Table 9, page 31).

In quarter 1 (October – December 2001) the median practice percentage was 47% (inter quartile range 40% to 55%). By quarter 12, this had increased to 66% (inter-practice variation 60% to 72%).



6 DISCUSSION

The prevalence of hypertension in our study is higher than that in other primary care studies¹ and has increase significantly over the 12 quarters studied in the report. This may be because the population prevalence of hypertension is increasing; the definition of hypertension has changed with lower threshold values for diagnosis. Alternatively it may reflect improvements in case finding or data quality.

We found a significant variation between practices in the recording of almost all of the indicators. Our study design does not allow us to determine whether this is due to variation in the quality of care or differences in the completeness of data entry though the electronic record tends to be more complete than the paper record². However, there was a marked reduction in the variation between practices over the 12 quarters.

In terms of the first two objectives set (to report on performance against indicators and inter-practice variation), all practices could meet the requirement for a disease register for hypertension (Indicator 1). The prevalence of hypertension has risen from the first quarter (October - December 2001) when it was 97 per 1,000 to 115 per 1,000 registered patients by the last quarter examined (July – September 2004). This rate is higher than other studies, but the slow steady rise is unlikely to be due to data artefact, and is more likely to be due to increased case detection and improved life expectancy. Certainly there is no sign of a nGMS provoked surge or drop.

There is substantial inter-practice variation in prevalence of hypertension with a normal distribution. For many practices this is almost certainly an expression of the variation in their practice population but the outliers at either end may be under or over diagnosing or recording.

The number of patients with hypertension and smoking status recorded (Indicator 2) varies markedly between practices with a long tail at the lower end – suggesting that movement towards the mean is possible for a number of practices. The trend is upwards with over 90% having smoking status recorded by the last quarter of 2004. There is no evidence of a nGMS surge, but it would be expected that the trend will continue up, with low outliers in particular catching up.

The recording of smoking cessation advice (Indicator 3) is over 50% except in a very small number of practices. Overall this indicator has exceeded 90% in the last quarter and again the nGMS pressures are likely to continue this trend.

There is much less inter-practice variation in the proportion of people with hypertension who have a recorded blood pressure reading in the previous 9 months (Indicator 4). By the final quarter in 2004 the steady trend had yielded a rise from 80% to 88% overall.

In terms of hypertensive control (BP of 150/90 or less – Indicator 5) there has been a gratifying rise from 46% to 67% over the 3 years, with a steeper rise in recent quarters. The inter-practice variation is much as might be expected for such an indicator.

We were also asked to look at use of exception codes. In recent quarters there has been some use of the “hypertension resolved” codes but it is still minimal and probably reflects misdiagnoses, coding errors and genuinely resolved hypertension. The use is too small to impact on the analyses for the QoF, but usage is increasing in recent quarters and might become a significant issue in time. A similar story applies to Hypertension exception codes which are used 10 times more frequently than hypertension resolved codes, and with use increasing in recent quarters. Maximum therapy exclusion codes were used at a similar level to the hypertension exception codes. Both these latter might become sufficiently used, if current trends continue, to impact on QoF analyses. Blood pressure recording exception codes were only present in 4 patients.

These data, reported at the very start of the new GMS contract, will be of interest to practices as they plan their delivery strategies and to health service planners responsible for monitoring and remuneration. The large variation between practices in levels of outcomes achieved was expected although the overall values achieved were lower than expected for several indicators (in particular indicator 5) indicating the substantial amount of work needed to provide optimum care for all patients.

7 FUTURE WORK

Future reports will present similar analyses of the other conditions covered by the new General Medical Services Contract.

8 REFERENCES

1. Newnham A, Ryan R, Khunti K, Majeed A. Prevalence of diagnosed diabetes mellitus in general practice in England and Wales. *Health Statistics Quarterly* 2002;14:5-13.
2. Hippisley-Cox J, Pringle M, Cater R, Wynn A, Hammersley V, Coupland C, et al. Electronic record in primary care - regression or progression? Cross-sectional survey. *BMJ* 2003;326:1439-1443.

9 APPENDIX

Table 1: Trends in median practice prevalence rate of hypertension per 1000 registered patients

Start of quarter	Total patients with hypertension	Registered patients	Practice median prevalence rate per 1000 registered patients	25th	75th
01-Oct-01	321,649	3,371,828	97.0	77.1	116.6
01-Jan-02	330,895	3,372,749	99.1	79.3	118.8
01-Apr-02	338,936	3,376,356	101.4	82.2	120.2
01-Jul-02	345,282	3,396,358	102.7	83.8	122.6
01-Oct-02	351,644	3,391,864	105.8	85.7	125.3
01-Jan-03	359,904	3,393,214	109.3	88.6	127.9
01-Apr-03	366,150	3,396,352	110.7	89.6	129.3
01-Jul-03	371,440	3,411,704	112.0	90.5	132.4
01-Oct-03	376,822	3,409,348	113.0	91.8	134.2
01-Jan-04	382,115	3,406,060	114.0	93.5	136.7
01-Apr-04	386,045	3,410,710	115.0	94.5	137.8
01-Jul-04	388,442	3,420,653	115.4	94.9	138.4

Table 2: Trends in practice median percentage with hypertension resolved code

Start of quarter	Total patients with hypertension resolved code	Total patients with hypertension	Practice median percentage with hypertension resolved code	25th	75th
01-Oct-01	36	321,649	0.0	0.0	0.0
01-Jan-02	34	330,895	0.0	0.0	0.0
01-Apr-02	34	338,936	0.0	0.0	0.0
01-Jul-02	32	345,282	0.0	0.0	0.0
01-Oct-02	33	351,644	0.0	0.0	0.0
01-Jan-03	39	359,904	0.0	0.0	0.0
01-Apr-03	36	366,150	0.0	0.0	0.0
01-Jul-03	40	371,440	0.0	0.0	0.0
01-Oct-03	38	376,822	0.0	0.0	0.0
01-Jan-04	112	382,115	0.0	0.0	0.1
01-Apr-04	136	386,045	0.0	0.0	0.3
01-Jul-04	219	388,442	0.1	0.0	0.6

Table 3: Trends in median practice percentage with hypertension exception code

Start of quarter	Total patients with hypertension exception code	Total patients with hypertension	Median practice percentage with hypertension exception code	25th	75th
01-Oct-01	2	321,649	0.0	0.0	0.0
01-Jan-02	2	330,895	0.0	0.0	0.0
01-Apr-02	2	338,936	0.0	0.0	0.0
01-Jul-02	2	345,282	0.0	0.0	0.0
01-Oct-02	2	351,644	0.0	0.0	0.0
01-Jan-03	3	359,904	0.0	0.0	0.0
01-Apr-03	6	366,150	0.0	0.0	0.0
01-Jul-03	11	371,440	0.0	0.0	0.0
01-Oct-03	106	376,822	0.0	0.0	0.0
01-Jan-04	521	382,115	0.0	0.0	0.0
01-Apr-04	1,055	386,045	0.0	0.0	0.0
01-Jul-04	1,900	388,442	0.0	0.0	0.0

Table 4 Practice median % of hypertension patients with smoking history recorded since diagnosis

Start of quarter	Total hypertension patients with smoking history since diagnosis	Total hypertension patients eligible for smoking history	Practice median % of hypertension patients with smoking history recorded since diagnosis	25th	75th
01-Oct-01	205,701	312,609	66.1	54.7	76.9
01-Jan-02	214,121	320,316	67.9	55.1	78.3
01-Apr-02	223,012	329,766	68.0	56.5	79.4
01-Jul-02	231,203	337,281	69.1	57.3	80.3
01-Oct-02	238,866	343,145	70.5	58.5	81.2
01-Jan-03	249,170	350,317	72.2	60.3	82.5
01-Apr-03	259,855	358,295	73.8	62.3	83.7
01-Jul-03	271,609	364,561	76.5	65.2	84.8
01-Oct-03	287,828	369,516	79.9	69.7	87.4
01-Jan-04	311,212	375,611	84.9	76.8	90.6
01-Apr-04	326,690	380,332	87.8	81.2	92.3
01-Jul-04	340,728	382,894	90.7	85.3	94.4

Table 5 Practice median % of hypertension patients who smoke

Start of quarter	current smokers	Total hypertension patients	Practice median % of hypertension patients who smoke	25th	75th
01-Oct-01	49,627	321,649	13.5	10.8	17.7
01-Jan-02	50,585	330,895	13.6	10.8	17.4
01-Apr-02	51,584	338,936	13.7	10.8	17.3
01-Jul-02	52,376	345,282	13.8	11.0	17.4
01-Oct-02	53,131	351,644	13.8	11.1	17.4
01-Jan-03	53,875	359,904	13.8	11.0	17.3
01-Apr-03	54,401	366,150	13.7	10.9	17.3
01-Jul-03	54,917	371,440	13.7	11.1	17.4
01-Oct-03	55,257	376,822	13.7	11.2	17.3
01-Jan-04	54,819	382,115	13.6	10.9	17.3
01-Apr-04	54,519	386,045	13.4	10.8	17.1
01-Jul-04	54,467	388,442	13.4	11.0	17.0

Table 6 Practice median % of hypertension patients who smoke who have had smoking advice given ever

Start of quarter	Total hypertension who smoke given advice ever	Total hypertension patients who smoke	Practice median % of hypertension patients who smoke who have had smoking advice given ever	25th	75th
01-Oct-01	21,467	47,942	46.1	16.8	71.7
01-Jan-02	22,781	48,739	48.5	19.4	73.3
01-Apr-02	24,271	49,843	50.0	22.3	75.5
01-Jul-02	25,561	50,777	52.5	25.9	76.4
01-Oct-02	26,937	51,553	56.7	28.9	77.5
01-Jan-03	28,720	52,122	60.5	34.3	79.0
01-Apr-03	30,784	52,937	63.6	41.8	81.2
01-Jul-03	33,282	53,525	68.0	47.5	84.3
01-Oct-03	36,854	54,027	75.6	55.6	88.0
01-Jan-04	40,856	53,730	84.0	67.1	92.4
01-Apr-04	43,543	53,586	87.7	74.9	94.1
01-Jul-04	45,905	53,502	90.8	81.3	95.9

Table 7: Practice median percentage of patients with hypertension with a code for maximal antihypertensive therapy code

Start of quarter	Total patients with maximal therapy code	Total patients with hypertension	Practice median percentage with maximal therapy code	25th	75th
01-Oct-01	2	321,649	0.0	0.0	0.0
01-Jan-02	3	330,895	0.0	0.0	0.0
01-Apr-02	5	338,936	0.0	0.0	0.0
01-Jul-02	5	345,282	0.0	0.0	0.0
01-Oct-02	5	351,644	0.0	0.0	0.0
01-Jan-03	5	359,904	0.0	0.0	0.0
01-Apr-03	7	366,150	0.0	0.0	0.0
01-Jul-03	27	371,440	0.0	0.0	0.0
01-Oct-03	122	376,822	0.0	0.0	0.0
01-Jan-04	768	382,115	0.0	0.0	0.2
01-Apr-04	1,490	386,045	0.1	0.0	0.5
01-Jul-04	2,289	388,442	0.2	0.0	0.7

Table 8 Practice median % of hypertension patients who have had BP check in the last 9 months

Start of quarter	Total hypertension patients with blood pressure check in last 9 months	Total hypertension patients eligible for blood pressure check	Practice median % of hypertension patients who have had BP check in the last 9 months	25th	75th
01-Oct-01	250,040	320,607	80.1	69.9	86.8
01-Jan-02	259,846	329,246	80.7	71.8	86.8
01-Apr-02	270,440	337,940	81.7	73.9	87.5
01-Jul-02	278,662	344,274	82.2	74.4	87.2
01-Oct-02	285,916	350,819	82.7	75.1	87.6
01-Jan-03	294,547	358,771	83.4	76.9	87.9
01-Apr-03	301,058	365,413	83.5	77.5	87.8
01-Jul-03	308,659	370,634	84.3	78.8	88.7
01-Oct-03	315,598	376,245	84.7	79.0	89.1
01-Jan-04	324,589	381,606	85.9	81.0	90.0
01-Apr-04	331,054	385,615	86.9	82.6	90.4
01-Jul-04	337,332	388,025	88.2	84.3	91.6

Table 9 Practice median % of hypertension patients who have BP <=159/90 mmhg

Start of quarter	Total hypertension patients with BP 150/90 or less	Total eligible for BP value checks	Practice median % of hypertension patients who have BP <=159/90 mmhg	25th	75th
01-Oct-01	143,356	302,893	46.5	39.6	55.3
01-Jan-02	147,750	310,476	47.3	39.3	55.0
01-Apr-02	158,753	318,246	49.4	41.5	56.6
01-Jul-02	171,392	326,173	52.0	44.3	59.4
01-Oct-02	172,978	332,918	51.2	44.1	59.4
01-Jan-03	176,827	340,324	51.4	44.5	58.9
01-Apr-03	188,621	347,891	54.0	47.3	60.5
01-Jul-03	201,464	354,384	56.2	49.9	63.8
01-Oct-03	204,872	360,157	56.5	50.0	64.2
01-Jan-04	213,921	365,190	58.7	52.4	65.9
01-Apr-04	230,269	370,939	62.6	56.1	69.4
01-Jul-04	244,794	374,210	66.7	60.1	71.7