



Best Practices in Hypertension

Controlling High Blood Pressure

Kaiser Permanente of the Mid-Atlantic States
Rockville, MD



MEDICAL GROUP PROFILE

- **Established in 1945** in California, this integrated health delivery system expanded to the Washington/Baltimore area in 1979 and is referred to as Kaiser Permanente of the Mid-Atlantic States region, hereafter called Kaiser Permanente.
- **Kaiser Permanente is a not-for-profit group model serving a population of approximately 500,000** in the metropolitan area covering Maryland, Virginia, and the District of Columbia.
- **Kaiser Permanente has more than 900 physicians in 30 medical centers**, which provide primary and specialty medical care to members. They are equipped with in-house laboratories and pharmacies.
- **In 2005, Kaiser Permanente migrated from a home-built electronic medical record (EMR) to the Epic suite of products, called Kaiser Permanente HealthConnect, a highly sophisticated, nationwide information management and delivery system.** This system enables Kaiser Permanente to provide real-time medical information to doctors and nurses through EMR and clinical management systems. Patients, doctors, nurses, and other authorized healthcare staff have immediate access to complete, up-to-the-minute medical records. EMRs contain test and lab results, prescribed drugs, allergies, and interactions, and medical history. Through the new system, patients will eventually be able to schedule appointments, request medication refills, ask for referrals, and ultimately access their medical records and doctors online from home.

BUDGET

This project was completed without added personnel or administrative or financial incentives. It used the existing electronic medical record system.

EXECUTIVE SUMMARY

Blood pressure (BP) is determined by the amount of blood pumped out of the heart into the blood vessels; the size and condition of the blood vessels; and the existence of other diseases that affect organs, e.g., the heart and kidney.

Hypertension (HTN) or high BP, is now defined as: (1) systolic BP (the first or top number) that is consistently 140 mmHg or above; or (2) diastolic BP (the second or bottom number) that is consistently 90 mmHg or above. “Essential HTN” is HTN with no definable etiology; it accounts for 90% – 95% of all HTN cases. “Secondary HTN” indicates that another disease, such as renal failure, is involved in the development of HTN.

Uncontrolled HTN can lead to organ damage, including heart failure, heart attacks, nephropathy, peripheral vascular disease, aortic dissection, loss of vision, or stroke. Nearly one third of Americans adults have HTN. Of those with high BP, 30% do not know that they are hypertensive.¹

The Health Plan Employer Data and Information Set (HEDIS) is a set of nationally recognized standardized performance measures designed to ensure the public has the information by which to compare the performance of managed healthcare plans. It was developed by the National Committee for Quality Assurance (NCQA) with input from more than 300 organizations representing every sector of the nation’s healthcare industry.

In 2001, Kaiser Permanente ranked below the 25th percentile for the HEDIS indicator for controlling high BP, as reported in NCQA’s Quality Compass publication. More importantly, the results meant that fewer than 50% of Kaiser Permanente’s members with documented HTN had their BP under control (defined as less than 140/90 mmHg). These members were at significantly increased risk of end-organ damage (such as stroke, renal failure, and heart failure).

¹ www.Americanheart.org. *Heart Disease and Stroke Statistics – 2005 Update*. Accessed July 7, 2005.

Kaiser Permanente's chief operating officer, medical director, and associate medical director for quality recognized the need for a population care program to address controlling high BP. They communicated this need to regional leaders through the regional quality improvement committee, while assigning the daily operational functions of the program to a cardiovascular program (CVP) director within the regional chronic care management department. At that time, the 1.0 full-time equivalent (FTE) CVP program director, a master's-prepared registered nurse, was responsible for three other chronic care programs, with a 1.0 FTE direct reporting program manager, who had a master's degree in cardiovascular rehabilitation. The CVP director worked with a 0.4 FTE physician implementation director who was responsible for implementing all chronic care management programs (i.e., coronary artery disease, heart failure, stroke/stroke prevention, diabetes, asthma, elder care, and depression); the other 0.6 FTE of the physician's time was devoted to clinical practice as a pulmonologist. A family practice physician with a passion for HTN served as the volunteer physician champion.

The CVP director met with the operations director of each of the three service delivery areas within the region to discuss the problem and ensure local leader sponsorship for the program. The CVP director planned a three-hour "Meeting of the Minds," to identify and discuss barriers to the highest quality of care for Kaiser Permanente's members with HTN. The meeting agenda was developed by the CVP director and manager, with additional input from the physician implementation director and a quality department expert designated as the meeting facilitator.

An invitation was sent eight weeks prior to the meeting to the area administrative teams and physician leaders for each of the medical centers within the region, asking them to participate by sending a representative from their health care teams (a physician, nurse practitioner, nurse, and/or clinical assistant) who was responsible for direct patient care. An invitation was also sent to the chiefs of internal medicine, family practice, cardiology, neurology, nephrology, and urgent care, again asking a health care team representative to attend. In addition, representatives were invited from other departments, including pharmacy, nutrition, behavioral health, case management, nurse advice (nurses who give advice online and via the telephone based on Kaiser Permanente protocols), quality, measurement (responsible for clinical data reporting, including HEDIS submission), health education (responsible for member education and classes), risk management, medical records, and information technology (IT) as well as the clinical group responsible for development of the Kaiser Permanente EMR system.

The invitations resulted in a well-attended multidisciplinary meeting. The CVP director provided an overview of HTN and NCQA's HEDIS Controlling High BP indicator. Each participant was given a copy of the organization's clinical practice guidelines and a laminated card outlining the *Sixth Report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure* (JNC 6). An hour of the meeting was spent brainstorming about barriers to achieving the highest-quality of care. After identifying a significant number of barriers, the meeting facilitator used nominal methodology, in which each participant voted for the five most important barriers in ranking order. A weighted score (the number of votes multiplied by the number of the specific ranking) was obtained to identify the highest-ranked barriers:

❶ Incorrect Readings

Many attendees commented on having observed errors in technique or significant differences in results when BP was measured a second time by another person. Errors included not allowing the member to rest prior to the measurement, using the wrong cuff size, not baring the arm, and not supporting the arm.

❷ Incorrect Recordings

The BP measurements were not entered into the documentation system correctly.

❸ Member Education

Members with HTN were not following the prescribed treatment plan.

❹ Health Care Team Education

Health care teams needed continuing education and updates on HTN and BP control.

❺ Practitioner Practice Patterns

The practitioners identified a hesitancy to initiate medication therapy.

Additional barriers included:

❻ Inadequate System for Follow-Up

BP documentation and placement within the Kaiser Permanente EMR were not standardized. In addition, BP measurements were not accessible in an easily retrievable administrative data set. Attendees recognized the need to easily identify members with HTN; to track trends within this population; and to develop systems to increase awareness regarding these members among practitioners, as well as between practitioners about their respective populations.

7 Lack of Evidence-Based Clinical Practice Guidelines

Although clinical practice guidelines had been developed and disseminated, it was found that several versions still existed throughout the clinical medical centers. It was also noted that the guidelines needed to be updated and to address co-morbidities.

GOAL

To improve the percentage of all Kaiser Permanente members with documented HTN who have their BP in control, as defined by HEDIS.

Using the HEDIS 2001 national 90th percentile for BP control (62.3%) as a benchmark, Kaiser Permanente agreed that the program goal was to have 63% of members age 36 to 85 with a diagnosis of HTN maintain a systolic BP <140 mmHg and a diastolic BP <90 mmHg.

However, JNC 6 defined an “out of control” BP more tightly than did HEDIS; it also addressed co-morbidities, e.g., diabetes and chronic renal failure. Kaiser Permanente believed that once the organization was able to accurately identify and track BPs administratively, a baseline could be established using the JNC 6 definitions for “in control” BP; the program could then set a goal at least a 10% improvement from baseline.

INTERVENTION

Obtained Leadership Support

In addition to the sponsorship described previously, the COO, medical director, and associate medical director for quality requested and received quarterly status reports from the CVP director. These reports served as the basis for ongoing feedback, suggestions, and communication among the senior leadership, the CVP director, physician implementation director, the health care teams, and the “Meeting of the Minds” participants.

Implemented BP Measurement Competency Validation Program

Kaiser Permanente used a mannequin arm that simulated Kortakoff sounds.

The CVP director, in conjunction with the regional education director and the regional director for nursing practice, who were responsible for nursing education and practice, drafted a BP measurement competency.

The competency draft was based on the information found in *Human Blood Pressure Determination by Sphygmomanometer* (American Heart Association, 2001) and a BP competency program developed by the Virginia State Health Department. The BP measurement competency validation program was modeled after the American Heart Association training for cardiopulmonary resuscitation. It included cognitive, affective, and psychomotor objectives, and consisted of a 10-question paper-and-pencil test and a return demonstration using a mannequin that simulates Kortakoff sounds.

The competency draft was sent to the “Meeting of the Minds” participants for comments. After their feedback was incorporated, the competency draft was piloted in the orientation program that all new clinical personnel are required to attend. The results from the orientation program were used to compare the psychomotor objectives to cognitive objectives as well as to conduct an item analysis of the 10-question test to identify items that were poor discriminators. The test was revised and again piloted in the orientation program. In addition, in late spring 2002, the CVP director met with nurse clinical managers who have clinical and administrative responsibilities within their medical centers. The CVP director gave a presentation on HTN, demonstrated BP measurement technique, and validated the coordinators’ competency. (They used the competency and the mannequin within their centers later in the year). The competency program was reviewed and approved by nursing and medical leadership.

The BP measurement competency program was implemented in May 2002. It was included in four all-day clinical assistant skills fairs. The clinical assistants were paid for two hours to attend. The CVP director, the CVP manager, and the regional education director conducted the competency program at the skills fairs. See Appendix 1 for more details.

The numbers for systolic and diastolic BP, as well as an auscultatory gap, were preset in a mannequin that simulated Kortakoff sounds. Participants obtained the BP and the instructor gave immediate feedback. A BP measurement was deemed acceptable if it was within 4 mmHg of the preset values.

Nearly 500 clinical assistants completed the competency during the first skills fair, but with alterations. Kaiser Permanente did not anticipate the large number of participants and the limited time that was available for each of the 20 skill stations. Therefore, the evaluation was completed in two parts: 1) group evaluation of knowledge with supportive teaching (most groups were three to 10 people); and 2) one-on-one assessment of BP measurement using the BP mannequin with volume set at the loudest level, no auscul-

tatory gap, and default heart rate (80). The diastolic and/or systolic BP was changed after each evaluation. The settings were randomly chosen, but were often higher than normal to shorten the time of the validation. No adjustments were made based on the clinical area of work (e.g., pediatrics). The staff members who provided relief to the tester during her infrequent breaks had not been validated as BP measure competent and did not use any other pre-defined criteria. However, they observed fewer than 10% of the participants. The results are as follows:

- 60.5% of the participants correctly identified systolic and diastolic settings.
- 12.6% of the participants correctly identified diastolic BP at or within 4 mmHg of preset level, but incorrectly identified a lower systolic number by more than 4 mmHg of pre set level (range of 5-26 mmHg).
- 10.1% of the participants correctly identified the systolic BP, but incorrectly identified the diastolic BP at a higher level by more than 4 mmHg of preset level (range of 6-20 mmHg).
- 10.1% of the participants did not correctly identify the systolic or diastolic BP at or within 4 mmHg of preset levels (range of 6-22 mmHg).
- 4.2% of the participants correctly identified the systolic BP, but incorrectly identified the diastolic BP at a lower level by more than 4 mmHg of preset level (range of 6-18 mmHg).
- 2.5% of the participants correctly identified the diastolic BP, but incorrectly identified the systolic BP at a higher level by more than 4 mmHg of preset level (range of 6-10 mmHg).

The results from the skills fairs indicated that Kaiser Permanente needed to continue to educate clinical staff on the correct method of BP measurement, highlighting the techniques that were most often unknown or overlooked, such as:

- **Determining maximum inflation point;**
- **Ensuring that the arm is bare and supported;**
- **Ensuring that deflation of cuff pressure is slow but constant and without re-inflation; and**
- **Ensuring that deflation is continued after the diastolic number is identified.**

The CVP director and the director of nursing practice reviewed and revised the nursing procedure for BP measurement to ensure the above techniques were included. The BP measurement competency validation (using parts 1 and 2) became a standard part of clinical orientation in 2002. The competency program was disseminated throughout the entire region by the significant support of nursing practice consultants and the medical center's nursing managers.

To maintain BP measurement competency, the nursing practice consultants, working in conjunction with the nursing managers, provided "Lunch and Learn" events at each of the medical centers, at which the BP measurement competency (again, using both parts) was validated yearly. In addition, nursing adopted a policy of mandatory blood pressure measurement at all primary care and specialty encounters.

A "BP Tips" poster was developed to highlight several key steps required to obtain accurate BP measurements. In addition, a poster entitled "Know Your Numbers" was developed to assist members with understanding what their BP numbers mean (see Appendix 2). In November 2003, these posters were placed in all areas where BP was measured. These posters continually reinforced the proper measurement techniques. They also helped to educate patients.

Logging BP into the Patient Encounter System

The encounter system is a mainframe application that stores information about Kaiser Permanente members' outpatient clinical encounters. An encounter form is a paper document that is printed before the member receives care during an outpatient encounter (see Appendix 3). It contains a list of codes for visit types and diagnoses. Each department has its own encounter form. For an outpatient encounter with a practitioner, information (e.g., demographics, when the member was last seen and the name of the practitioner, the past five diagnoses, and the past five procedures) is pre-printed on the encounter form based on data found within the encounter system.

Completing the encounter form was already an established part of the workflow for every outpatient visit. The printed encounter form is given to the physician, who completes it after the visit by identifying the type of visit and diagnosis. The encounter form is then given to the person designated to enter the information about the member's visit into the electronic encounter system.

The participants at the "Meeting of the Minds" agreed the best solution for BP documentation would allow tracking and appropriate follow-up using a designated vital sign section in the EMR.

However, the group responsible for the EMR stated that the ability to capture vital signs was years away. Therefore, until a better solution was possible, the group agreed to pursue a “Band-Aid” approach by having the clinical assistant document the patient’s BP on the encounter form, which would be entered into the electronic encounter system. This approach would eliminate the need for the physician to enter the HTN staging, which was found to be accurate slightly over 60% of the time in a study conducted in 2001 by a Kaiser Permanente quality data analyst.

While the participants agreed that entering the BP on the encounter form would be done for all members, some of the medical center physician directors, primary care chiefs, and area administrators expressed concerns that this intervention could burden the health care team and the staff responsible for entering encounter information. The CVP director and physician implementation director met with those leaders several times to identify a compromise. The group agreed that a space for the BP reading, such as:

BP SYS: _____ **/DIA:** _____

would be pre-printed on the encounter form. The BP would be documented on the encounter form and then entered into the encounter system – but only for those members with HTN and those with an at-risk chronic disease (e.g., diabetes, chronic kidney disease, coronary artery disease, and heart failure) when they have a primary care, urgent care, cardiology, endocrine, nephrology, or obstetric encounter. Encounters for special procedures and surgery were excluded.

Entering BPs into the encounter system made it possible to pre-print the last two BPs on the encounter form, giving the physician three BPs to review during the visit with the member. Three BP measurements permit trending and identifying a need for an intervention during the visit.

The codes used to identify members with at-risk chronic disease can be found in Appendix 4. Kaiser Permanente’s Microsoft® Access database for case management of its Integrated Renal Program was used to identify chronic kidney disease. Patients usually are referred to the program because their glomerular filtration rate is less than or equal to 30mls/min/1.73 m² (stages 3-5 of chronic kidney disease or CKD).

Developing the Computer Search Query

Previously, the Kaiser Permanente encounter system was set to review only the past five encounters to determine past diagnoses and procedures. To determine the appropriate query for BP diag-

noses within the encounter system and to identify an acceptable error rate, a quality data analyst provided data from more than 18,000 encounters for review.

After filtering out non-provider-related appointment types (e.g., radiology, laboratory, or physical therapy) and appointment types where a BP was most likely not obtained (e.g., behavioral health and podiatry) from the database encounters for 900 members who had at least one HTN encounter in 2002, a sample of nearly 4,000 encounters for 244 members was analyzed.

The purpose of the analysis was to identify the number of previous encounters that were needed to obtain a diagnosis hypertensive ICD-9 code associated with an encounter. This number would then be used in the computer query for flagging the BP alert on the encounter form.

The review found that if the search query were set to 10 previous encounters, the error rate for identifying the member as hypertensive would be 9% (9/244); the error rate for obtaining two past BPs would be 25% (60/244). If the search query were increased to 15 previous encounters, the error rate for identifying the member as hypertensive would be reduced to 3% (8/244) and the error rate for obtaining two past BPs would be reduced to 11% (27/244). If the search query were increased to 20 previous encounters, the error rate for identifying the member as hypertensive would be 2% (5/244), a negligible decrease; the error rate for obtaining two past BPs would be reduced to 4.5% (11/244).

By changing the query from five to 20 encounters, there wasn’t enough gain to identify the hypertensive member, but there was a significant increase in the ability to capture the past two BPs printed on the encounter form. However, increasing the query to 20 encounters would significantly slow the system with the potential of a significant disruption in health care team workflow. Therefore, the query was set to the past 10 encounters. A systolic BP considered by the system to be valid was set between 0 and 300; a diastolic BP considered by the system to be valid was set between 0 and 175.

Preparing for System Change

Many methods were used to prepare Kaiser Permanente for the regional system change of using the encounter form for documenting BPs. These included:

- **Quarterly status reports prepared for senior leadership** (See Appendix 5);
- **Incorporation into the BP measurement competency;**

- **Presentation in written format and discussion at all meetings concerning quality, clinical practice, and/or HTN;**
- **A notice placed on the organization's intranet site and in newsletters six weeks prior to implementation;**
- **A memo mailed to all leadership, providers, clinical coordinators (who communicated the change to clinical assistants), and all departments;**
- **A broadcast voicemail message sent to all employees in the region two weeks prior to implementation;**
- **A notice placed on the opening page of the EMR just prior to implementation;** and
- **A flyer given to all health care teams to post in areas where BP is measured, as well as where the encounter data is entered into the encounter system.**

A contact person's name and telephone number were provided in all these communications. The system went live in April 2003. A log of concerns, problems, and comments that were reported to the contacts was maintained, along with any correction action taken, and was included in the status report to senior leadership.

Two presentations on HTN (May and June 2003) were given to the medical records personnel who were responsible for assisting providers in correctly coding an encounter. The etiologies, symptoms, diagnosis, and treatment of HTN, as well as effects of untreated HTN, were discussed in depth. Obvious BP errors, e.g., 80/120 or 100/100, were identified; the participants were asked to discuss any errors with the person who had entered them on the encounter form. BP measurement was also reviewed and demonstrated, and each participant gave a return demonstration of BP measurement using the BP mannequin.

Note: This system is no longer in use because Kaiser Permanente now uses HealthConnect as its EMR, which has a designated area for vital signs. However, all of the work that Kaiser Permanente completed to promote the importance of tracking BP made the transition to the new EMR collection method much easier.

Hypertension Reports

Entering BPs into the encounter system facilitated providing feedback reports to the health care team. The first report, drafted in March 2003, was only one printed page; the report finally produced in November 2003 was multiple reports, with some printed, but all electronic files are password-protected and

placed on the organization's intranet. The report sections were developed by the quality data analyst, the physician implementation director, the internal medicine physician champion, and the CVP director, with the primary care service chiefs serving as the review board.

The final Hypertension Report consisted of:

- 1 **A one-page primary care physician overview with four graphs** (see Appendix 6).
 - A pie chart that identified the percentage of a provider's panel with HTN, with an at-risk chronic disease, and with two or more diseases, including HTN.
 - A bar graph showing percentage of members in control sorted by disease condition and trended over time. "In control" was defined as patients with CKD or diabetes whose BP readings were below 130/80, and patients with HTN, coronary artery disease (CAD), or heart failure (HF) whose BP readings were below 140/90. These patients had BP readings documented in the encounter system during the past 12 months from primary care, endocrinology, nephrology, cardiology, obstetrics, and neurology encounters. Members were deemed out of control if they had an encounter but no BP was entered into the encounter system; this decision was made to encourage staff to support this system change.
 - Another bar graph showing the provider's overall percentage of members in control, compared to statistics for the medical center, the area, and the region.
 - A final bar graph indicating the percentage of the provider's patients who had a BP reading entered in the encounter system during the past six months, and at least during the last three outpatient visits.
- 2 **Hypertension Panel – In Control, a graph of all the providers within a center** (see Appendix 7).
- 3 **Hypertension Summary, a summary of members with a chronic condition who are in control for each medical center, totaled for each area and for the region.**
- 4 **The Not in Control report, the member-level report that identifies those who is not in control and includes demographics, co-morbidities, and BP readings for the last five encounters in primary care, cardiology, endocrinology, nephrology, obstetrics, or urgent care** (see Appendix 8).

5 Hypertension Panel – No Encounters, a list of members who have not had a primary care encounter within the past two years (see Appendix 9).

The summary, HTN panel in-control rate comparison, and overview reports were mailed out as hard copy, but the member-level reports were password-protected and only posted on the intranet. The passwords were given to the physicians to share on an as-needed basis.

The data from the summary report is used to generate a report that Kaiser Permanente calls the clinical quality–performance feedback report (see Appendix 10). This report identifies most of the quality indicators for the region and is color-coded to indicate goal achievement.

Member Education Pieces

Several member education tools were revised or created, including:

- 1 **Poster called, “Know what your BP numbers mean”** that was placed in the exam rooms in all the medical centers to help members understand their numbers (see Appendix 2). It also served as a reminder for the health care teams;
- 2 **Booklet on high BP and one on heart health eating;**
- 3 **Handout on high BP medications;**
- 4 **Handout on the DASH diet;** and
- 5 **Handout on an automated telephone health information system** that gives recorded information on high BP in English and Spanish.

Members are encouraged to register and use the organization’s member-only website, which features health advice, discussion forums, and class registration. It also includes interactive, online healthy lifestyle programs, such as managing weight, managing stress, smoking cessation, and creating a nutrition plan.

The Kaiser Permanente self-management class on high BP has been revised to address shared decision making and individualized action plans.

Health Care Team (HCT) Education

In addition to the presentations and educational events already discussed, many continuing education presentations were held, including in-person conferences at the medical centers; lunchtime telephone conference calls; and direct mailings. Resources for the health care teams and for members were sent to the health care teams in primary care, internal medicine, nephrology, neurology, cardiology, and obstetrics/gynecology in May in observance of High Blood Pressure Awareness Day. During that month, Kaiser

Permanente placed an article on its intranet highlighting the health observance, the resources available in the region, and instructions on accessing the HTN reports.

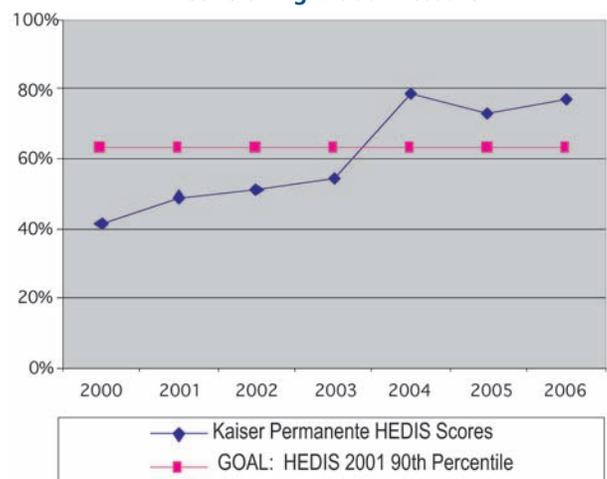
When the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7), was released and printed in the May 14, 2003 issue of the *Journal of American Medical Association*, a memo was developed and sent from the internal medicine physician champion to all practitioners in the organization. The memo highlighted the significant changes contained in JNC 7.

Kaiser Permanente posted the evidence–based Clinical Practice Guidelines on its intranet with associated resources and tools for all team members.

The family practice physician champion participated on a team that identified, reviewed, and critiqued many research studies to develop a set of clinical practice guidelines. These guidelines were approved by medical, nursing, and pharmacy leadership, and were posted on the organization’s website in November 2003. Clinicians received a broadcast voicemail message that indicated the guidelines were posted and asked all clinicians to remove any outdated paper copies.

OUTCOMES

Kaiser Permanente HEDIS Scores for Controlling Blood Pressure



The above graph illustrates the successful results from the many interventions that have been implemented at Kaiser Permanente within the past four years. The un-blinded, physician-level

clinical quality performance feedback reports give physicians and their supporting staff an incentive to accurately document and follow BP.

KEYS TO SUCCESS

One of the key elements that contributed to the success of this program was the involvement of the entire organization. Leadership, primary care and specialty physicians, nurses, nutritionists, pharmacists, clinical assistants, data entry personnel, coders, data analysts, health education specialists, quality experts, IT specialists, medical records personnel, and many more employees had a role that resulted in the organization's success. Each discipline brought an action-oriented passion for controlling hypertension that allowed for organizational agility in implementation, perseverance, and sustained clinical improvements.

The leaders ensured good communication among all the personnel involved and kept the organization on target.

The significant results of the project also validate the published literature on process redesign employing quality improvement concepts: an involvement of the entire organization and information sharing are critical to controlling hypertension. The program focused on increasing the ability of the health care team to measure, monitor, and trend the member's BP. It provided tools, resources, and system changes to make it easier to do the right thing.

It is important to note that this project was completed without added personnel or administrative or financial incentives. It used the existing electronic medical record system.

LESSONS LEARNED

Asking a clinical assistant to place the BP reading on the paper encounter form instead of another piece of paper to allow electronic capture of actual numeric BP results seemed like a simple request. However, because it was a change in workflow, it proved to be the largest hurdle. The amount of time and energy needed to make this change was significantly underestimated. This system change required more discussions, meetings, decisions, and effort on the part of all involved, especially the medical leadership, than any other intervention implemented.

The other hurdle was the detailed work involved in building the data analysis and reporting infrastructure. However, collaboration

between the data analysts, physician implementation director, and the CVP director overcame this obstacle in a relatively short period (six months) to produce HTN reports that made a difference to Kaiser Permanente physicians and ultimately to its members.

After implementation of the BP on the encounter form, a quality assurance check was to have been conducted. Kaiser Permanente planned to review a random sample of encounter forms from each center and compare them to the data in the encounter system as well as to the BP documented in the EMR. However, due to competing priorities and personnel changes, the data quality check has not been conducted. If this had occurred, Kaiser Permanente could have more efficiently identified the areas and personnel that were not entering the BPs into the encounter system.

Since physicians and their support staff have started receiving the un-blinded, physician level Clinical Quality Performance Feedback Reports, they now have an incentive to accurately document and follow BPs. Because members without recorded BPs are counted as being out of control, the percentage of members who have BPs that are out of control versus those that simply do not have electronic data in the system is unknown. If Kaiser Permanente were to build the system again, it would tease out these two pieces as separate data points.

FOR MORE INFORMATION:

Contact

PATRICIA E. CASEY, MSN, RN
 Director, Clinical Content, Care Management Group
 Kaiser Permanente of the Mid-Atlantic States
 2101 East Jefferson Street
 Rockville, MD 20852
Phone: 301-816-6589
Email: Patricia.e.casey@kp.org

Appendix 1

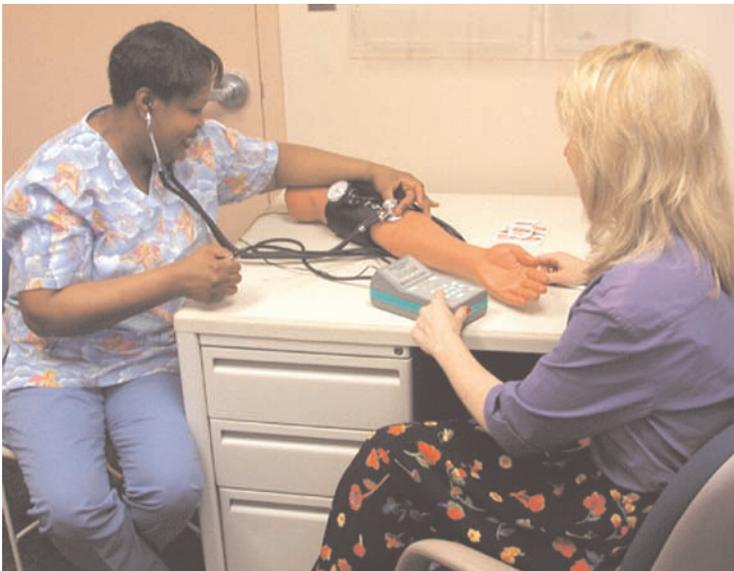
KAISER PERMANENTE BP MEASUREMENT COMPETENCY VALIDATION PROGRAM



This picture and the instruction below are the first page of the 10-question test.

This photo represents several errors in BP measurement, such as:

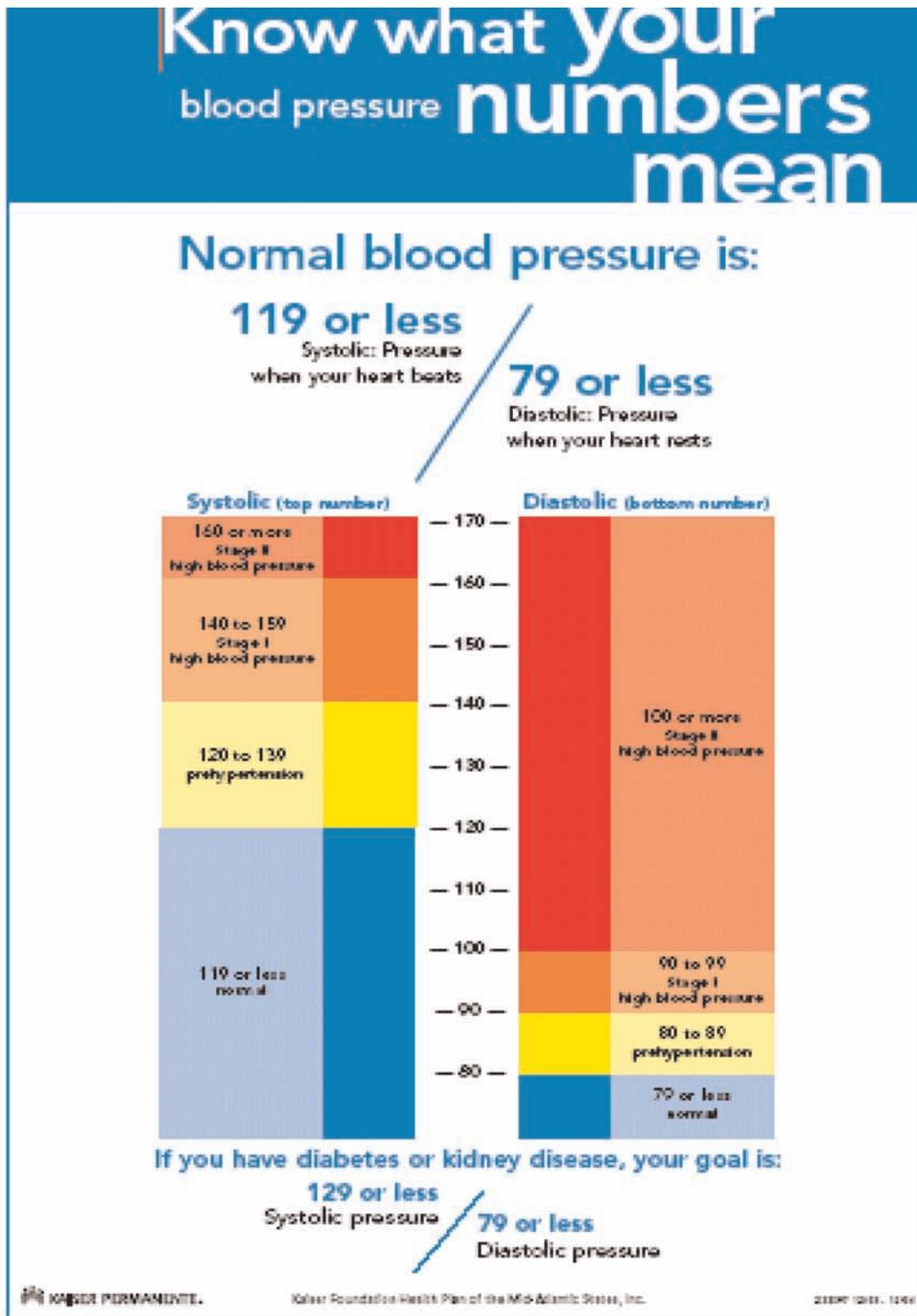
- the placement of cuff over the sleeve;
- using the wrong size cuff;
- arm is in an incorrect position;
- patient is not sitting with her back supported; and
- the nurse's eyes are not level with the manometer.



The second part of the competency required a return demonstration using a mannequin that simulated Kortakoff sounds.

Appendix 2

KAISER PERMANENTE "KNOW YOUR NUMBERS" POSTER



Appendix 3

KAISER PERMANENTE SAMPLE ENCOUNTER FORM

FALLS CHURCH CENTER		
Patient Name	Med Rec#	Enc#
Patient Address	DOB: Sex: F	SSN:
Patient Home Phone	Age: 56 YRS 8 MOS	Status: ACT/NONE
	W# 000000000	Appt Type: 22-NON-PROVIDER
F100E-IM NURSE-FALLS CH	Mbr Ctr: FALLS CHURCH	Clin Spec: 207-INTERNAL MEDICINE
Actual Provider:		
Last Seen: 09/09/2005 with:		Printed On: SEP 19, 2005 3:21 PM
Pers Prov:		Enc Date: 09/19/2005 3:30 PM
Adv. Hist: 08/25/2005 x 1, 08/24/2005 x 3	Sup Prov:	HMO
Last 5 Dx: (1) 250.00-Diabetes, Type II (2) 707.15-OTHER FOOT ULCER (3) 000.01-NEED CODER ASSISTA		
(4) 365.9-Glaucoma Nos (5) V58.69-LONG-TERM USE MEDS		
Last 5 Procs: (1) 92083- VISUAL FIELD EXAM (2) 92499- UNLISTED OPHTHALM (3) 90782-IM/SQ Inj. (Spec:		
(4) J3420- Injection, vitami (5) Q0091- Screening papanic		
Cancellation: No Show: Other/\$0 Co-Pay:		Last H/A: 05/03/2005
BA: F,AH,C,IW,F,AW,BC,AB		BP: 130/76 05/03/2005
Jurisdiction: FEDERAL		
Co-Ins1:	Co-Ins2:	
Is this visit the result of: <input type="checkbox"/> 1-ACCIDENT <input type="checkbox"/> 2-ON THE JOB INJURY <input type="checkbox"/> 3-OTHER HEALTH INS		
ACUPUN 20.00 ALLINJ 10.00 BLUDPROD 0.00 BRSTPROS 50% CHEMO 20.00 CHIRO 20.00 DXSVCS 50.00 EYE_EX 10.00		
HAID FFS-1400.00 INFERT 50% INSPUM 20% IVF 50% LAB 0.00 NEBU 30.00 OFFVST 10.00 OPSURG 50.00 OTRH 20.00		
PEAKFLOW 10.00 PRENATAL 0.00 PROSWIGS FFS-350.00 PTRH 20.00 RAD 0.00 RADIAT 20.00 SPECIMAG 50.00		
FED EMPLOYEES HEALTH BENEFITS PROGRAM		
VISIT TYPES		
CONSULTATION = NEW OR ESTABLISHED PATIENT	99396 Periodic Exam - Adult - Age 40-64 Yrs.	99215 Comprehensive Exam/High Complexity
99241 Problem Focused Exam	99397 Periodic Exam - Adult - Age 65+ Yrs.	99358 Prolonged Physician Service (without face-to-face)
99242 Expanded Problem Focused Exam		99359 Prolonged Physician Service(w/o face-to-face),ea add 30 mins
99243 Detailed Exam	HEALTH ASSESSMENT = NEW PATIENT	
99244 Comprehensive Exam/Moderate Complexity	99385 Periodic Exam - Adult - Age 18-39 Yrs.	TELEPHONE CALLS
99245 Comprehensive Exam/High Complexity	99386 Periodic Exam - Adult - Age 40-64 Yrs.	99371 Telephone Call/Brief Telephone
	99387 Periodic Exam - Adult - Age 65+ Yrs.	99372 Call/Intermediate Telephone Call Complex/Lengthy Counseling
GROUP CLASSES		99373 Telephone Call Complex/Lengthy Counseling
90853 Group Mental Health Class	OFFICE VISIT = ESTABLISHED PATIENT	UNSPECIFIED VISIT TYPE
99078 Group Health Ed Class	99211 Minimal	99499 Unspecified Visit Type
HEALTH ASSESSMENT = ESTABLISHED PATIENT	99212 Problem Focused Exam	
99395 Periodic Exam - Adult - Age 18-39 Yrs.	99213 Expanded Problem Focused Exam	
	99214 Detailed Exam	
		PROLONGED SERVICE (THESE CODES MUST BE USED WITH VISIT TYPE)
		99354 Prolonged Physician Service (face-to-face), First Hr.
		99355 Prolonged Physician Service,add 30 mins
DIAGNOSES		
1 = Primary Dx (must have one), 2,3 = Secondary and Tertiary Dx (up to 5 total diagnoses) BP SYS: 120 /DIA: 49		
GENERAL/MISCELLANEOUS	278.00 1 2 3 Obesity	428.40 1 2 3 Heart Failure, Syst.& Diastolic Unspec.
789.00 1 2 3 Abdominal Pain/Colic	879.8 1 2 3 Open Wound/Laceration	428.30 1 2 3 Heart Failure,Diastolic
995.3 1 2 3 Allerg. React., Unspec.	795.5 1 2 3 Positive PPD Reading	428.20 1 2 3 Heart Failure,Systolic
V81.1 1 2 3 Blood Pressure Check	V72.84 1 2 3 Pre-op Exam, Unspec.	V43.3 1 2 3 Heart Valve Repl nec
611.72 1 2 3 Breast Mass/Lump	V74.1 1 2 3 Screen TB/PPD	272.0 1 2 3 Hypercholes/Dyslipid
786.50 1 2 3 Chest Pain, Unspec.	780.2 1 2 3 Syncope/Fainting	272.4 1 2 3 Hyperlipidemia Nos
780.4 1 2 3 Dizziness/Vertigo	305.1 1 2 3 Tobac Abuse/Smok-Cess	401.9 1 2 3 Hypertension (HTN)
V58.3 1 2 3 Drgs.Chg/Rem Sut		458.0 1 2 3 Orthostatic Hypotension
782.3 1 2 3 Edema	CARDIOVASCULAR/CIRCULATORY	785.1 1 2 3 Palpitations
796.2 1 2 3 Elev. BP (No HX HTN)	429.2 1 2 3 ASCVD	443.9 1 2 3 Periph Vasculär Dz
V70.7 1 2 3 Exam-Clinical Trial	413.9 1 2 3 Angina Pectoris, unspec.	451.9 1 2 3 Thrombophlebitis
780.79 1 2 3 Fatigue/Malaise	427.9 1 2 3 Arrhythmias	424.0 1 2 3 Valvular Hrt Dz
780.6 1 2 3 Fever	427.31 1 2 3 Atrial Fibrillation	459.81 1 2 3 Venous Insufficiency
610.1 1 2 3 Fibrocystic Breast Dz	414.00 1 2 3 CAD	
V70.0 1 2 3 Health Assessment	428.0 1 2 3 CHF,Unspec.	
V69.2 1 2 3 Hi-Risk Sex Behavior	428.1 1 2 3 Heart Failure, Left	
V65.40 1 2 3 Hlth Ed/Instruc./Counsel.		

Appendix 4

KAISER PERMANENTE ICD-9 AND CPT CODES USED TO IDENTIFY AT-RISK CHRONIC DISEASE MEMBERS

Diagnosis and Procedures	ICD-9 Codes	CPT Code
Coronary Artery Disease		
AMI diagnosis codes	Codes between 410.xx and 414.09; Codes between 414.8 and 414.99	
PTCA procedures	36.01, 36.02, 36.05, 36.07, 36.09, V45.82	92980-92982, 92984, 92995, 92996
Stent placement	36.06	92980, 92981
CABG procedures	36.2,V45.81	33510-33514, 33516-33519, 33521-33523, 33533-33536, 33572
Heart Failure		
Rheumatic Heart Failure	398.91	
Hypertensive Heart Disease	402.x1	
Hypertensive Heart & Renal Disease	404.x1, 404.x3	
Cardiomyopathy	425.xx	
Congestive Heart Failure	428.xx	
Hypertension		
Essential Hypertension	401.xx	
Hypertensive Heart Disease	402.xx	
Hypertensive Renal Disease	403.xx	
Hypertensive Heart & Renal Disease	404.xx	
Secondary Hypertensive Disease	405.xx	
Diabetes		
Diabetes Mellitus	250.xx	

Appendix 5

KAISER PERMANENTE QUARTERLY HYPERTENSION STATUS REPORT

Hypertension Summary								
Area and Center	Hypertension* Condition	In*** Control	Not in Control	Total** Disease patients	Total patients w HTN	% Disease Pts of Total	Total Center Members	% Disease Patients In Control
BALTIMORE								
ANNAPOLIS	HTN only	432	185	617				
	Other disease	61	29	90				
	HTN and other chronic disease	179	170	349				
		672	384	1056	966	23.98	4403	63.64
CITY PLAZA	HTN only	374	555	929				
	Other disease	39	73	112				
	HTN and other chronic disease	113	272	385				
		526	900	1426	1314	23.42	6090	37.57
COLUMBIA GATEWAY	HTN only	491	274	765				
	Other disease	77	66	143				
	HTN and other chronic disease	122	180	302				
		690	520	1210	1067	14.99	8071	56.75
SEVERNA PARK	HTN only	758	428	1186				
	Other disease	82	65	147				
	HTN and other chronic disease	325	337	662				
		1165	830	1995	1848	24.84	8031	58.51
TOWSON	HTN only	811	776	1587				
	Other disease	113	99	212				
	HTN and other chronic disease	318	490	808				
		1242	1365	2607	2395	25.11	10382	47.49
WHITE MARSH	HTN only	1283	1250	2533				
	Other disease	122	136	258				
	HTN and other chronic disease	477	873	1350				
		1882	2259	4141	3883	28.64	14457	45.37
WOODLAWN	HTN only	1185	1276	2461				
	Other disease	120	135	255				
	HTN and other chronic disease	365	906	1271				
		1670	2317	3987	3732	27.26	14625	41.40
Total BALTIMORE	HTN only	5334	4744	10078				
	Other disease	614	603	1217				
	HTN and other chronic disease	1899	3228	5127				
		7847	8575	16422	15205	24.86	66059	47.78
NORTH OF RIVER								
CAMP SPRINGS	HTN only	2820	2967	5787				
	Other disease	263	306	569				
	HTN and other chronic disease	921	2039	2960				
		4004	5312	9316	8747	25.87	36015	42.60
GAITHERSBURG	HTN only	1577	1100	2677				
	Other disease	205	169	374				
	HTN and other chronic disease	481	596	1077				
		2263	1865	4128	3754	20.72	19926	54.64
GERMANTOWN	HTN only	489	414	903				
	Other disease	70	60	130				
	HTN and other chronic disease	133	242	375				
		692	716	1408	1278	20.29	6940	48.93

Notes: * Hypertension - Members with a hypertension diagnosis 401.xx-405.xx from past Encounters and Claims, includes Pediatric and Adult members

** Disease conditions: Members with chronic conditions defined as HTN, CAD, Diabetes, Heart Failure and Chronic Kidney Disease

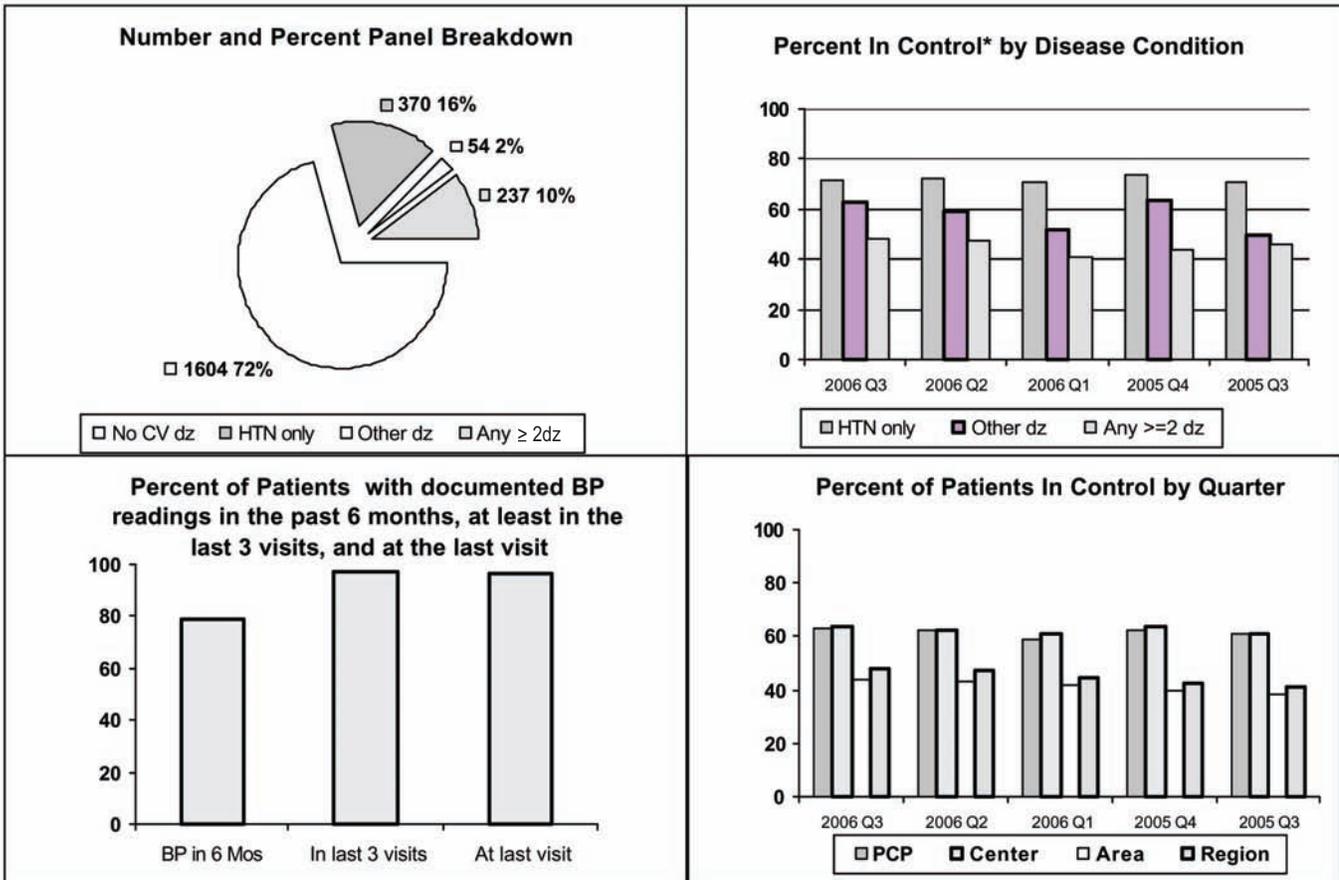
***In Control - Percent of Patients with CKD or Diabetes with BP readings below 130/80, and patients with HTN, CAD or HF below 140/90 and documented BP readings in the Encounter system the past 12 months from primary care, endocrinology, nephrology, cardiology, obstetrics and neurology encounters

Appendix 6

KAISER PERMANENTE HYPERTENSION REPORT – ONE-PAGE SUMMARY FOR PRIMARY CARE PHYSICIAN

Hypertension Report		
Specialty: INTERNAL MEDICINE	Provider Type: PHYSICIAN	
Provider: 1112	Area: BALTIMORE	Center: ANNAPOLIS

Current Panel Size for Month Ending 200609 2265 Total Patients with either HTN, Chronic Kidney Disease (CKD), CAD, HF, or Diabetes 661



Notes:
 Disease conditions HTN only: Members with Hypertension only
 Other dz: Members with one chronic condition other than HTN (Chronic Conditions for this report are defined as Diabetes, Chronic Kidney disease, CAD, HF)
 Any≥2 dz: Members with 2 or more chronic conditions including HTN, e.g. HTN & CAD or DIAB & HF
 No dx CV dz: Members without any cardiovascular disease or at-risk disease for Hypertension

*In control – Patients with CKD or Diabetes with BP readings below 130/80, all others below 140/90 and having documented BP readings in the Encounter system in the past 12 months from primary care, endocrinology, nephrology, cardiology, obstetrics, neurology encounters

Graphs by Quarter start with most recent quarter and go backwards in time.

Appendix 7

KAISER PERMANENTE HYPERTENSION PANEL – IN CONTROL (A GRAPH OF ALL THE PROVIDERS WITHIN A CENTER)

Hypertension Report-Percent In Control at Center Level by PCP

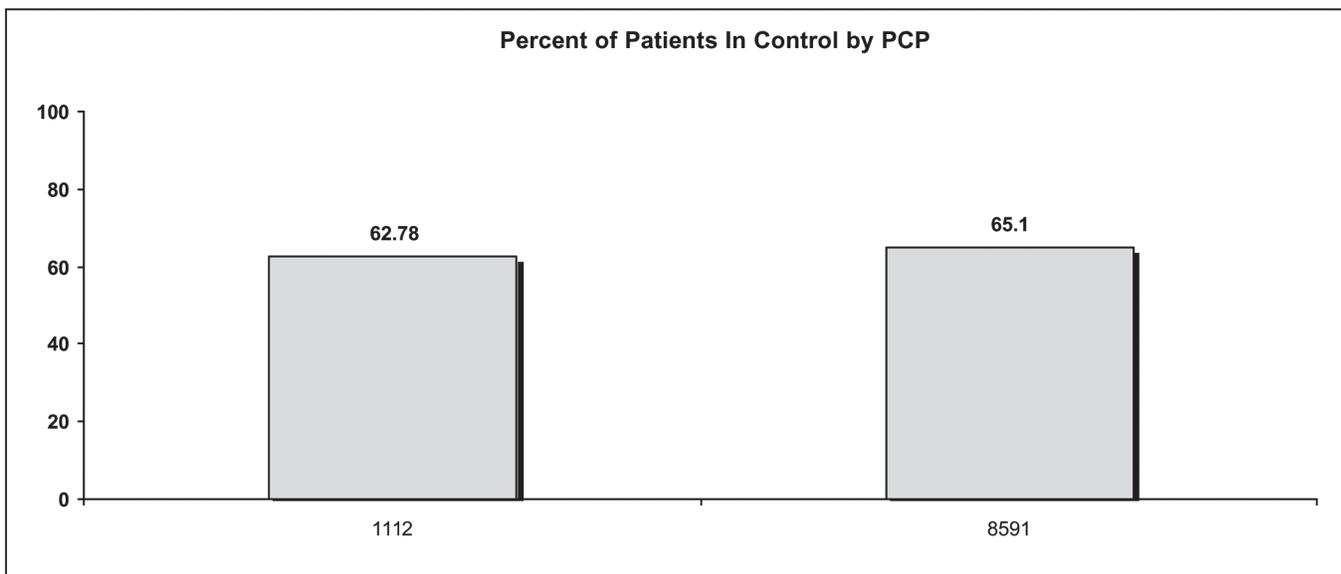
Area: **BALTIMORE**

ANNAPOLIS

Total Patients at Center with either HTN, Chronic Kidney Disease (CKD), CAD, HF, or Diabetes as of 9/30/2006

1045

Percent In Control for Center	63.64
Percent In Control for Area	44.03
Percent In Control for Region	48.15



Notes:

*In Control - Percent of Patients with CKD or Diabetes with BP readings below 130/80, and patients with HTN, CAD or HF below 140/90 and documented BP readings in the Encounter system in the past 12 months from primary care, endocrinology, nephrology, cardiology, obstetrics and neurology

Appendix 8

KAISER PERMANENTE NOT IN CONTROL MEMBER LEVEL REPORT

Hypertension Panel – Not in Control													
Specialty: INTERNAL MEDICINE		Provider Type: NURSE PRACTITIONER				Quarterly Report with data ending as of: Saturday, September 30, 2006							
Provider: 0000		Area: BALTIMORE		Center: WOODLAWN									
DOB	Age	Gender	Home phone#	Medicare Patient	HTN	CAD	HF	Diab	CKD	# Enc in last 2 yrs*	No BP in last 6 mos**	Months between 1st and last BP readings***	Recent 5 BP readings in last 2 years (High BPs underlined)****
00/00/00	48	M	(000) 000-0000	1	Y	N	N	Y	N	5	Y	22	8/3/2006 132 / 74 3/6/2006 143 / 93 3/25/2005 126 / 62 1/6/2005 140 / 88 10/23/2004 129 / 59
00/00/00	47	M	(000) 000-0000	0	Y	N	N	Y	N	4	N	13	1/27/2006 135 / 85 6/2/2005 148 / 98 5/16/2005 132 / 86 12/14/2004 130 / 80
00/00/00	41	M	(000) 000-0000	0	Y	N	N	N	N	3	N	8	11/25/2005 150 / 88 3/18/2005 144 / 88 2/15/2005 /
00/00/00	55	M	(000) 000-0000	0	Y	N	N	Y	N	0	N	0	/
00/00/00	45	F	(000) 000-0000	0	N	N	N	Y	N	1	N	0	2/6/2006 150 / 96
00/00/00	62	F	(000) 000-0000	0	Y	N	N	Y	N	5	Y	14	9/25/2006 135 / 65 2/24/2006 130 / 90 1/30/2006 164 / 80 7/28/2005 130 / 80 7/28/2005 120 / 68
00/00/00	55	M	(000) 000-0000	0	Y	Y	N	Y	N	6	Y	11	4/11/2006 152 / 80 11/3/2005 112 / 78 10/5/2005 108 / 78 7/8/2005 110 / 78 5/12/2005 142 / 100
00/00/00	51	F	(000) 000-0000	0	Y	N	N	Y	N	15	Y	5	9/22/2006 120 / 82 <u>8/22/2006 142 / 82</u> <u>6/22/2006 134 / 84</u> <u>4/14/2006 136 / 82</u> 4/7/2006 136 / 88
00/00/00	50	F	(000) 000-0000	0	Y	N	N	N	N	0	N	0	/
00/00/00	62	F	(000) 000-0000	0	Y	N	N	N	N	4	N	10	3/28/2006 148 / 80 9/27/2005 124 / 80 6/24/2005 136 / 80 5/13/2005 132 / 82
00/00/00	41	F	(000) 000-0000	0	Y	N	N	N	N	7	Y	12	4/21/2006 140 / 80 4/11/2006 140 / 70 3/24/2006 110 / 60 5/5/2005 156 / 80 4/13/2005 140 / 82
00/00/00	45	F	(000) 000-0000	0	Y	N	N	N	N	6	Y	14	5/3/2006 131 / 92 2/27/2006 118 / 66 2/26/2006 137 / 96

*Encounters that are primary care, cardiology, endocrine, nephrology and obstetrics are counted as having been seen in the last 2 years, excludes special procedures.

No BP in last 6 months: Y= Yes, BP documented in last 6 months excl urgent care, N= No documented BP in encounter. **The last 5 BP readings include Urgent Care readings.

***Months between first and last BP readings: number of months between 1st and last available BP readings from the 5 last encounters MEG- Measurement Evaluation Group - hotline 301-816-5881 tie line 297

Appendix 9

KAISER PERMANENTE HYPERTENSION PANEL – NO ENCOUNTERS

Hypertension Panel – Without Encounters in the Last 2 Years											
Specialty: INTERNAL MEDICINE		Provider Type: PHYSICIAN			Quarterly Report with data ending as of: Saturday, September 30, 2006						
Provider: 1345		Area: NORTH OF RIVER			Center: GAITHERSBURG						
Medical Record No	Name	DOB	Age	Gender	Home phone#	Medicare Patient	HTN	CAD	HF	Diab	CKD
00000000	XXXXXXXX	00/00/0000	56	M	(000) 000-0000	0	Y	N	N	N	N
00000000	XXXXXXXX	00/00/0000	63	F	(000) 000-0000	0	Y	N	N	N	N
00000000	XXXXXXXX	00/00/0000	62	F	(000) 000-0000	0	Y	N	N	Y	N
00000000	XXXXXXXX	00/00/0000	47	F	(000) 000-0000	0	N	Y	N	N	N
00000000	XXXXXXXX	00/00/0000	56	M	(000) 000-0000	0	N	N	N	Y	N
00000000	XXXXXXXX	00/00/0000	43	M	(000) 000-0000	0	Y	N	N	N	N
00000000	XXXXXXXX	00/00/0000	56	F	(000) 000-0000	0	Y	N	N	N	N
00000000	XXXXXXXX	00/00/0000	56	M	(000) 000-0000	0	N	N	N	Y	N
00000000	XXXXXXXX	00/00/0000	62	F	(000) 000-0000	0	Y	N	N	N	N
00000000	XXXXXXXX	00/00/0000	65	M	(000) 000-0000	0	N	N	N	Y	N
00000000	XXXXXXXX	00/00/0000	46	M	(000) 000-0000	0	Y	N	N	N	N
00000000	XXXXXXXX	00/00/0000	48	F	(000) 000-0000	0	Y	N	N	N	N
00000000	XXXXXXXX	00/00/0000	37	F	(000) 000-0000	0	Y	N	N	N	N
00000000	XXXXXXXX	00/00/0000	52	M	(000) 000-0000	0	N	N	N	Y	N
00000000	XXXXXXXX	00/00/0000	56	M	(000) 000-0000	0	N	N	N	Y	N
00000000	XXXXXXXX	00/00/0000	44	F	(000) 000-0000	0	Y	N	N	N	N
00000000	XXXXXXXX	00/00/0000	56	M	(000) 000-0000	0	Y	N	N	N	N

*Encounters that are primary care, cardiology, endocrine, nephrology and obstetrics are counted as having been seen in the last 2 years, excludes special procedures.

**Medicare Patient 1 On Medicare, 0 Not on Medicare

MEG- Measurement Evaluation Group - hotline 301-816-5881 tie line 297

Page 67
10/24/2006

Appendix 10

KAISER PERMANENTE CLINICAL QUALITY – PERFORMANCE FEEDBACK REPORT

**Clinical Quality Performance Feedback Is Generated Each Quarter by
PCP, Medical Center, Area and Region**

John Smith, MD XXX Medical Center 1st Quarter, 2005

60 Breast Cancer Screening	79.30 %	91.56 %	93.70 %	92.17 %	88.74 %	91.27 %	89.81 %	79.45 %	75.64 %
	217/237	223/238	212/230	205/231	209/229	767/854	13199/16612	34804/46011	
70 Cervical Cancer Screening	84.40 %		91.43 %	90.71 %	90.56 %	90.94 %			
		473/517	459/506	470/519	472/519	/	/	/	
	85.00 %	90.18 %					89.56 %	83.34 %	82.05 %
		450/499					1792/2001	3447/141363	89815/109465
80 Anti-Inflm use in persist Asthma -adult	72.50 %		60.00 %	59.86 %	60.61 %	73.53 %			
			18/30	18/31	20/33	25/34	/	/	/
	76.38 %	62.96 %					67.44 %	62.54 %	58.55 %
		17/27					58/66	1192/1906	2605/4449
90 Anti-Inflm use in persist Asthma -peds	72.80 %		100.00 %	100.00 %	60.00 %	60.00 %			
			1/1	1/1	1/2	1/2	/	/	/
100+ Well Child Visits by 15 months	74.50 %		50.00 %	0.00 %	0.00 %				
			1/2	0/1	0/1		/	/	/
	78.00 %	60.00 %					62.50 %	61.70 %	64.93 %
		3/5					35/66	888/1436	2142/3299
160 Antidepressant: Acute Phase tx.	64.00 %		70.37 %						
			22/31				/	/	/
	65.50 %	67.86 %					64.94 %	60.20 %	57.46 %
		19/28					59/91	906/1510	1765/3072
170 Antidepressant: Continuation Phase tx.	47.60 %		46.16 %						
			14/31				/	/	/
	48.94 %	46.43 %					45.05 %	41.39 %	38.41 %
		13/28					41/91	625/1510	1180/3072
CMU/HP National	Target	MD	MD	MD	MD	MD	Center	Area	Region
400 DM >age 55: Lipid-lowering drug use (Statin)	52.50 %		79.41 %	76.92 %	66.15 %	67.69 %			
			54/68	50/65	43/65	44/65	/	/	/
	63.00 %	80.82 %					71.07 %	69.52 %	62.47 %
		59/73					172/242	4379/6299	13495/21603
410 DM >age 55: Vasodilator drug use (ACE / ARB)	64.00 %		82.35 %	87.63 %	84.62 %	84.62 %			
			56/68	57/65	55/65	55/65	/	/	/
	68.50 %	82.19 %					71.30 %	71.31 %	67.71 %
		60/73					174/242	4492/6299	14628/21603
Local	Target	MD	MD	MD	MD	MD	Center	Area	Region
700 Controlling Hypertension	32.10 %	43.15 %	37.31 %	32.37 %	36.09 %	38.29 %	46.44 %	37.62 %	30.20 %
	208/482	172/461	146/451	166/460	175/467	724/1559	14295/38000	35929/119953	



Provided as an educational service by AMGA and Daiichi Sankyo, Inc.

1422 DUKE STREET, ALEXANDRIA, VA 22314-3403
TEL: (703) 838-0033 FAX: (703) 548-1890 WWW.AMGA.ORG

©2006 American Medical Group Association and Daiichi Sankyo, Inc.
All rights reserved.