Electronic Tools
In the Kaiser Permanente Electronic Health Record

Wiley Chan, MD
KP NW: Director, Guidelines & EBM
    Physician, Internal Medicine
KP National: EBM Methodologist
NHLBI: Co-Chair, Implementation Work Group
Statement of Disclosure

Wiley Chan, MD

- I have no commercial or academic conflicts of interest
- Employment: Northwest Permanente Medical Group, which works exclusively with the Kaiser Foundation Health Plan in the US
  - Co-Chair: NHLBI Implementation Science Work Group
- Member: State of Oregon Health Evidence Review Commission (HERC)
  - Chair: HERC Evidence-Based Guidelines Subcommittee
Kaiser Permanente: Largest Non-Profit Health Care Program in the United States

- Founded in 1945
- 8 regions in 9 states and District of Columbia
- 8.6 million members (as of 12/09)
- 15,129 physicians (as of 12/09)
- 164,098 employees (as of 12/09)
- KP Care Management Institute (CMI)
- KP National Guideline Program (NGP)
KPNW Region
At a Glance

- Members: 481,435*
- Active online users: 224,439* (47%)
  - Percent of "eligible" population†: 64%
- Clinicians including affiliated clinicians: 2445*
- Medical outpatient clinics: 28

†Age >12, with Internet access

*October 2012
EHR Content & Decision Support That Get Used

- Modal alerts (can’t avoid interacting with it)
- Pieces of content that do one thing quickly & well
  - All-encompassing content not generally well accepted
- More efficient than alternative methods
  - User-friendly
  - Purely workflow
  - Embedded guidance for Clinician, Staff, Member
    - Do it right the first time
- Based on reliable guidance
  - Evidence based
  - Accurately targeted
EHR Content & Decision Support That Get Used

- Fully integrated into standard workflows
  - Right place & right time
  - Targeted toward lowest permissible scope of practice
  - Fully supported by implementation tools and training

- Actively promoted
  - High-level Leadership support
  - Aligned with organization’s priorities
  - Aligned with and supports improvement in performance metrics
  - User training

- Centralized, coordinated governance
  - Aligned clinical guidance
  - Judicious use of decision support
Features Associated With Successful Clinical Decision Support

- **General System Features:**
  - Integration with charting/order entry system to support workflow integration

- **Clinician-System Interaction Features:**
  - Automatic provision of decision support as part of clinician workflow
  - No need for additional clinician data entry
  - Provision of decision support at the time and location of decisionmaking

- **Communication Content Features:**
  - Provision of a recommendation, not just an assessment
  - Justification of decision support via provision of research evidence
  - Promotion of action rather than inaction

- **Auxiliary Features:**
  - Local user involvement in development process
  - Provision of decision support results to patients as well as providers

Overview

- Evidence-based guidance must be implemented to impact health outcomes
- Robust tools exist to embed guidance in Electronic Health Records (EHRs)
- Tools aimed at patients are rapidly proliferating
- Effective use of electronic tools requires thoughtful management of clinical knowledge and workflow processes
Management of Adult Hypertension

**BLOOD PRESSURE (BP) GOALS**
- ≤ 139 / 89 mm Hg – Uncomplicated Hypertension
- ≤ 129 / 79 mm Hg – Diabetes or CKD Stages 1–3, CVA, TIA

**NNT CVI** = 63
**NNT MI** = 66
**NNT CVI or MI** = 36

**KP National HTN Algorithm**

1. **ACE-Inhibitor**
   - Lisinopril / HCTZ (Advance as needed)
   - 20 / 25 mg X ½ daily
   - 20 / 25 mg X 1 daily
   - 20 / 25 mg X 2 daily
   - **Pregnancy Potential: Avoid ACE-Inhibitors**

2. **Thiazide Diuretic**
   - If ACEI intolerant or pregnancy potential
   - Chlorothalidone: 12.5 mg → 25 mg OR HCTZ: 25 mg → 50 mg

3. **Calcium Channel Blocker**
   - Add amlodipine: 5 mg X ½ daily → 5 mg X 1 daily → 10 mg daily
   - If not in control

4. **Beta-Blocker OR Spironolactone**
   - Add atenolol: 25 mg daily → 50 mg daily (Keep heart rate > 55)
   - OR
   - IF on thiazide AND eGFR > 60 mL/min/1.73m² AND K < 4.5
   - Add spironolactone: 12.5 mg daily → 25 mg daily
   - If not in control

- Consider medication non-adherence.
- Consider interfering agents (e.g., NSAIDs, excess alcohol).
- Consider white coat effect. Consider BP checks by medical assistant (e.g., two checks with 2 readings each, 1 week apart).
- Consider discontinuing lisinopril/HCTZ and changing to chlorothalidone 25 mg plus lisinopril 40 mg daily.
- Consider additional agents (hydralazine, terazosin, reserpine, minoxidil).
- Consider stopping atenolol and adding diltiazem to amlodipine, keeping heart rate > 55.
- **Avoid using clonidine, verapamil, or diltiazem together with a beta blocker. These heart-rate slowing drug combinations may cause symptomatic bradycardia over time.**
- Consider secondary etiologies.
- Consider consultation with a hypertension specialist.
Hypertension SmartSet

SmartSet: Hypertension

Search for SmartSets

Triggered by Encounter or Problem List Diagnosis
Triggered by Reason for Visit
SmartSet: Hypertension

Orders Can be Defaulted

Expandable Sections with Embedded Guidance

Contains All the Tools Required for Point-of-Care

Hyperlink to Web Portal
SmartRx: Alternative Order

Type Diagnosis or Condition into Order Field

Link to SmartSet

Embedded Guidance

Alternatives in Preferred Order

Hypertension SmartRx

Hyperlink to Web Portal
Best Practice Alerts

Aspirin

Highly Utilized, Single-Purpose
Best Practice Alert
Programmable Triggering Logic

Defaulted Link to SmartSet
Best Practice Alert:
Aspirin SmartSet

Defaulted Medication Order
& Patient Instructions

Medication Order Placed
Panel Support Tool: Panel View

Search Panel for Specific Care Gaps

Sort Panel by Various Criteria

“Gap Score” Constructed to Reflect Clinical Importance of Care Gaps

“Y” Denotes Membership in Registry
Color Reflects Clinical Importance of Registry-Specific Care Gaps
### Panel Support Tool: Detail View

#### Registry Membership
- Care Gap Acuity (Color) & Gap Score

#### Visits, Immunizations, Vitals, & CAD Risk
- Patient Vitals
  - Last BP: 132 / 65 on 10/7/11
  - Pulse: 62 on 10/7/11
  - Weight: 218.0 on 5/3/11
  - Height: 73.0 on 2/8/11
  - BMI: 28.8 on 5/3/11
  - Ten Year Cardiac Risk: %

#### Care Recommendations
- Therapeutic Care Gaps:
  - Aspirin use - Use "CAD" order to document, if daily ASA use
  - ACE/ARB - START? for CVD risk
  - Statin - START at min. Simva 40, LDL OVERDUE Possible interaction

- Chronic Condition Monitoring Care Gaps:
  - HBA1C OVERDUE Last: 8.4 08-FEB-11
  - Lipid Panel OVERDUE
  - CKD confirmed - MicroAlbumin Screen Urine DUE.

- Preventive Care Gaps:
  - Flu Shot due - Last done: 10/23/08
  - Tdap DUE (not Td), then boost with Td every 10 yrs - Last done: 11/12/09
  - Consider Colorectal Cancer Screening if never before screened or greater than 10 years.

#### Pertinent Labs
- **LDL**: 118 on 11/17/09
- **HDL**: 37.0 on 11/17/09
- **TRI**: 206 on 11/17/09
- **CHOL**: 196 on 11/17/09
- **A1C**: 8.4 on 2/8/11
- **FBG**: 109 on 1/2/11
- **ALT**: 24 on 8/3/10
- **CRE**: 1.6 on 2/8/11
- **BUN**: 13 on 2/8/11
- **GFR**: 42.0 on 2/8/11
- **ALB/CRE**: 121 on 8/3/10
- **PRO/CRE**: HGB: 13.4 on 2/8/11
- **HCT**: 40.9 on 2/8/11
- **NA**: 135.0 on 2/8/11
- **K** : 4.7 on 2/25/11
- **TSH**:
- **PSA**:

#### Active Prescriptions
- **LANTUS INJ 100/ML Date: 11/17/11**
- **METFORMIN HCL TAB 850MG Date: 10/5/11 Daily Dose: 1700.0000**
- **GLIPIZIDE TAB 10MG Date: 10/5/11 Daily Dose: 40.0000**
- **ATENOLOL TAB 50MG Date: 10/5/11 Daily Dose: 75.0000**
- **NITROSTAT SUB 0.4MG Date: 9/12/11**
- **CEPHALEXIN CAP 500MG Date: 2/25/11 Daily Dose: 2000.0000**
- **HYDROCODONE/ACETAMINOPHEN TAB 5-500MG #96 Date: 2/25/11**
- **DOXYCYCLINE HYCLATE CAP 100MG Date: 1/2/11 Daily Dose: 200.0000**

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FDA Issues Safety Alert on Zocor

The Food and Drug Administration on Wednesday announced new safety restrictions on high-dose simvastatin, also known as Zocor, a cholesterol-lowering drug taken by an estimated 2.1

searched for 'simvastatin'

Results 1 - 50 of about 429. Search took 0.04 seconds.

SmartText : RX LTC NEW TEXT STATIN TO SIMVASTATIN
Contributor: Northwest  CID: 19041765  Functional Type: MR Telephone Encounter/Nurse Triage; MR Charting  Last Update: 11/12/20

SmartText : RX MMPHO SIMVASTATIN

SmartText : RX DUSI TEXT SIMVASTATIN HISTORY
Contributor: Northwest  CID: 19048528  Functional Type: MR Charting; MR Telephone Encounter/Nurse Triage  Last Update: 03/24/2009

SmartText : MED SIMVASTATIN SUPER RX
Contributor: Northwest  CID: 19031049  Functional Type: MR Alternatives  Last Update: 04/21/2010

Best Practice Alerts / Locators : DS CR MED SIMVASTATIN 40 MG ERX ...
Contributor: Northwest  CID: 1901063  Functional Type: Criteria  Last Update: 10/13/2008

Best Practice Alerts / Locators : DS CR MED SIMVASTATIN 80 MG ERX ...
Contributor: Northwest  CID: 1901068  Functional Type: Criteria  Last Update: 10/15/2008

SmartList : RX DUSI SIMVASTATIN HISTORY
Contributor: Northwest  CID: 19068581  Functional Type: N/A  Last Update: 03/24/2011

Alternative - Medication : SIMVASTATIN 5MG TABLET (GENERIC) ALT
Clinical Knowledge Management
KPNW

 Governance Group Membership (Partial List)

- Department of Medical Informatics
- Quality Management
- Guidelines & Evidence-Based Medicine
- Analytics
- Operations
  - Primary Care, Specialty Care, Inpatient, Nursing, Pharmacy, Ancillaries
- Resource Stewardship
- Patient Safety

 Workflows built into SharePoint

- Clinical content requests, revisions & approvals
- Clinical content tracking, meta-tagging, and inter-linking
Determining When/Where/How to Embed Guidance: Clinical Pathway Analysis

**Member identified- lipid screen needed**

**Leverage Point Identified**
- Member identified- lipid screen needed

**Lipid test ordered**
- Member advised to go to lab for lipid test

**Leverage Point Identified**
- Member goes to lab for lipid test

**Area of concern**
- Lipid test results in PCP HC in-basket

**Member sees lipid test result in HC**
- Provider reviews lab results

**Member notified of lipid results**
- 10 min

**Leverage Point Identified**
- Member notiﬁed of lipid results

**Leverage Point Identified**
- Leverage Point Identified

**Member sees lipid test result in HC**
- 10 min

**Member notified of lipid results**
- 10 min

**Area of concern**
- 0-7 days

**Member notified of lipid results**
- 0-7 days

**Blue box= touch time**
- 2 min

**Red box= wait time**
- 2 min

- Immed- not at all
- 2 min
- 0-7 days
- Immed- not at all
- 20 min
- 6-24 hours
- Hours-
- days
- 10 min
Determining When/Where/How to Embed Guidance
Root Cause Analysis

Chol test done outside KP
• Ch 9 Health Fair
• New member
• HC outside lab questionnaire –
• Staff & providers don’t now about

Missed opportunity to order
• Primary Care
  • Acute visit
  • HME- POE inconsistent
  • Nurse visit
  • HTN BPGV or BP ck
  • Phone encounter
• Care manager
• OB/GYN
• Specialty – Eye care, etc
• Pharmacy
• Other outreach – CRC, Mammo, Flu clinic

No primary care encounter
• New member
• Lack of awareness it is needed
• Lack of knowledge- not know important
• Seeks health care elsewhere

Chol test order-
Pt didn’t get lab test done
• Fasting barrier – inconvenient, logistics, can’t fast
• Lab hours not convenient
• Lab wait time barrier
• Member doesn't want to know or understand importance
• Fear – medication, needles
• Not drawn w/other labs if lipid test order expired

3/19/10
Source: chart review and member feedback

Missing Cholesterol Test for CV Risk Assessment
KPNW EHR Clinical Content Inventory
April, 2012

- Med Alternatives: 2,398
- Smarts sets: 959
- Order Sets: 541
- Panels: 594
- Referral Orders: 423
- Best Practice Alerts: 409
- Alternatives: 324
- VCG Groupers: 190
- Smart Rx: 91
- Super Rx: 22
- Health Maintenance Topics: 17
Many Order Sets are heavily used

Highest 5 represent 25% of use

Highest 17 represent 50% of use

Many Order Sets are infrequently used
Management Statistics: Alternatives April 2012

Alternatives: 324 total

- In Production: 181
- Retired: 143

Alternative Production Review * Status

- 2010: 55
  - # Not Current: 138
  - # Current: 5
- 2011: 106
  - # Not Current: 87
  - # Current: 106
- Jan: 109
  - # Not Current: 84
  - # Current: 25
- Feb: 123
  - # Not Current: 70
  - # Current: 53
- Mar: 178
  - # Not Current: 5
  - # Current: 173
- Apr: 179
  - # Not Current: 2
  - # Current: 177

*Reviewed within past 2 years

Alternatives by Type in Production

- Imaging: 17
- Lab: 90
- Referral: 40
- Others: 34
Effect of BestPractice Advisory on Chlamydia Screening Rates (HEDIS)

Chlamydia Screening
Commercial Members
Age 16-24

2010 Stretch Target 73.6%
2011 Target 72.9%

% of Population

Score (16-20) 49.1% 50.0% 48.4% 48.6% 48.9% 51.1% 67.4% 71.5% 71.4% 71.6% 71.2% 71.8% 72.1% 71.9%
Score (21-24) 51.0% 49.7% 51.9% 53.6% 56.0% 58.6% 72.1% 75.6% 75.7% 75.2% 75.1% 75.4% 76.5% 76.9%
Score (overall) 50.1% 49.8% 50.2% 51.2% 52.0% 54.7% 69.5% 73.4% 73.4% 73.2% 73.0% 73.4% 74.2% 74.3%

The percentage women 16-24 years of age, continuously enrolled for 1 year who were identified as sexually active, who had at least one test for chlamydia during the measurement year. Overall score is average for two age groups.
PST ‘Best Practice’ training in 4-5/07 resulted in a 1%-3% increase in DM A1C and DM LDL scores by 8/07.

The focused centralized outreach in late 2007 was tasked to boost DM bundle for the PCPs with lower performance scores. Using PST, DM A1C and DM LDL scores increased 3%-6% by 12/07. Three of these four improvements satisfied NW quality target goals.
Does It Work?  
Impact of PST Usage

The High utilizers had the largest drops compared to the Medium and Low utilizers:

- Therapy (8/06-8/07): 8%-12% larger decline
- Monitoring (8/06-8/07): 8%-14% larger decline
- Prevention (8/06-8/07): 2%-5% larger decline

For the prevention gap score, the High utilizers had the lowest (best) score after 9/06 and the Low utilizers had the highest score.

*The monitoring & prevention gap score spikes in 1/07-3/07 were likely due to seasonal variation of HEDIS reporting.*
Impact of Secure Messaging on Quality of Care

On-line SmartBook URL: http://kpnet.kp.org/kphealthconnect/stabilize/smartbook/index.htm

For Internal Use Only – Proprietary & Confidential – Version 8.0

“Evidence”/Expert Opinion/Basis: Among SCAL members with diabetes and/or hypertension, secure e-mail was associated with statistically significant improvements on eight out of nine HEDIS measures by 2.0% - 6.5%.

Goal: To evaluate the quality impact of secure patient-physician e-mail.

Design, Setting, and Participants: Retrospective observational study in SCAL using 2005-2008 data from 35,423 members with diabetes and/or hypertension who used secure e-mail. A pre-post and a matched-control analysis were conducted. Patients who used secure e-mail were matched to patients who did not by baseline status on HEDIS measures, age, sex, primary care provider, and diagnostic cost group score.

Outcome measures: For members with diabetes, performance on eight HEDIS measures: HbA1c screening and control, LDL-C screening and control, retinopathy screening, nephropathy screening, and blood pressure control (<140/90 and <130/80). For members with hypertension alone, performance on HEDIS blood pressure control (<140/90).

Findings: HEDIS performance differences between members who used secure e-mail and those who did not ranged from 4.0% (BP control) to 11.1% (HbA1c control). In the matched control analysis, performance differences ranged from 2.0% (BP control) to 6.5% (LDL-C control).

Selected measures/ matched-control study

- Two or more secure e-mail threads* were associated with a greater likelihood of better performance than a single thread on HbA1c and LDL-C screening, HbA1c control, and nephropathy screening.
- During study period, 556,339 secure e-mail threads contained 630,807 messages. The average thread contained 1.13 patient messages and 1.16 provider messages.
- In a pilot study of physician responses to secure e-mail with patients, one SCAL MD said, “I love this for diabetics. They can print the doses and numbers. They follow my instructions to the letter with e-mail. It’s easy, helpful, and better than playing phone tag.”

Zhou YY. Health Affairs 2010;29:1370-1375

Confidence Level 4

Source

Key Assumptions
- Messaging use was compared to HEDIS performance two to four months later
- Secure e-mail used for non-urgent and easily resolved issues
- Benefit realization time: 3-6 months

Key Enablers
- Members have access to necessary technology
- Physicians support secure e-mail use

KPHC Functionality
- Kp.org / My health Manager
- KPHC Clinicals - Ambulatory

Contact
- Michael Kanter, MD, Medical Director, Quality and Clinical Analysis, SCPMG, SCAL
- Jian Wang, Senior Statistical Consultant, HIT Transformation/Analytics, program offices
- Terhilda Garrido, VP, HIT Transformation/Analytics, program offices

*Thread = series of connected questions and replies; one patient-physician “conversation”.

On-line SmartBook URL: http://kpnet.kp.org/kphealthconnect/stabilize/smartbook/index.htm

For Internal Use Only – Proprietary & Confidential – Version 8.0
Unblinded Internal Reporting of Performance Metrics

Northwest Permanente, PC

High Priority Measures - Filter by Clinician Name

Regional | Building or Department | Name | Module | PCSA

Clinician Name: [Redacted] (export clinician data to Excel)

Cervical Cancer Screening

- Recent month above target
- Recent month near target
- Recent month below target

Dec. 2007: 00.7% | May 2008: 98.3%
Nov. 2008: 99.0% | Apr. 2008: 94.6%
Oct. 2008: 99% | Mar. 2009: 96.6%
Sep. 2008: 99.1% | Feb. 2009: 95.6%
Aug. 2008: 89.2% | Jan. 2009: 91.9%
Jul. 2008: 89.3% | Dec. 2007: 83.3%
Jun. 2008: 89.3% | N=97

Colorectal Cancer Screening

- Recent month above target
- Recent month near target
- Recent month below target

Dec. 2007: 06.7% | May 2008: 07.7%
Nov. 2008: 70% | Apr. 2008: 56.8%
Oct. 2008: 70.7% | Mar. 2009: 64.2%
Sep. 2008: 69.8% | Feb. 2008: 65.3%
Aug. 2008: 69.7% | Jan. 2009: 83.2%
Jun. 2008: 86.7% | N=217
KP.org: My Health Manager

Welcome, Catherine | Sign off

My health manager | Health & wellness | Health plans & services | Locate our services

My doctor | My medical record | Pharmacy center | Appointment center | My plan and coverage | My message center

Schedule appointments

Schedule your appointments online.

My message center

Schedule appointments | E-mail my doctor | Act for a family member | Past visit information | Order an ID card

My medical record

Exchange secure e-mail with your doctor's office in my message center. You also can go there to contact our Member Services and Web manager.

Appointment center

Wondering if you should book a visit? Consult our interactive symptom checker, or go straight to scheduling in the appointment center.

My medical record

See test results, immunizations, and more health information in my medical record.
KP.org: My Medical Record
You're done with the first step. Now we'll use the information you've provided us to put together your personalized plan.

Your plan will give you information, tips, tools, and behavioral recommendations that should help you make useful changes in your life. It's important that you're aware that this plan is not intended to provide any medical advice, treatment or diagnosis. HealthMedia recommends you consult your physician or other healthcare providers for all medical and health-related matters.

Click on the Submit button below so we can customize a plan for you.
Robust Tools Exist to Embed Guidance at the Point of Care

Internet and Mobile-Device Applications Can Greatly Expand the Point of Care
- Convenient access to medical record and resources
- Communication and transactions
- Enhance patient engagement

Tools are necessary, but insufficient
Embedding Guidance That Gets Used

- More efficient than alternative methods
  - Convenience for patients
- Integrated into standard workflows
  - Offload clinicians
  - Supported by training & implementation tools
- Associated with reported performance metrics
  - Simple and explicit
  - Focused on performance gaps & potential benefit
- Based on reliable guidance
  - Evidence-based
  - Accurately targeted
Summary: Embedding Guidance

- Embedded Guidance That Gets Used
  - Aligned with organizations’ priorities
    - Actively promoted and supported
  - Centralized, coordinated governance
    - Aligned with other content and with guidelines
    - Carefully deployed, accurate, and rigorously maintained
  - Patient tools that enhance engagement
Electronic Tools in the Kaiser Permanente EHR

Wiley.Chan@kp.org
Appendix
Panel Support Tool: Care Gaps

Check one or more boxes then click the "Search" button. When choosing more than one care gap, members who have one or more of those care gaps will be listed. More detail on care gap definitions can be found in the glossary.

Limit search: Sex? and Age Between and

Active in KP.ORG?

Therapy
- Asthma
  - Consider start/increase of inhaled steroids

Heart Protection
- Heart Protection (Statins, ACE-I, Aspirin) for High Risk Populations

Statins
- CVD & DM populations
- Based on 10yr CAD risk score

ACE/ARB
- HOPE trial
- DM Nephropathy
- Heart Failure

Aspirin
- Daily Aspirin for High Risk Populations
- Based on 10yr CAD risk score

Betablockers for
- Post-MI
- Heart Failure

Glycemic control
- Insulin consideration when A1c > 9 and on Orals > 1yr
- Metformin consideration when BMI > 27 and A1c > 6

BP control
- Suspected HTN
- Diagnosed HTN - uncontrolled
- Met HTN and no BP taken in 12 months
- Dx HTN, uncontrolled and on < 3 BP meds

Osteoporosis
- Women 65+ with T-score <= -2.5
- Post-fracture - osteoporosis per HEDIS

Search

Chronic Condition - Monitoring

DM
- HbA1c screening due
- Renal screening due
- Eye screen due
- Foot screen due

High Risk Populations
- Lipid Panel for high risk populations due

Monitoring Meds (HEDIS)
- Annual Labs Due

CKD
- Lab(s) due - Renal Function Panel or Microalbumin Screen, Urine
- Unconfirmed CKD - Creat due

OTP
- OTP Brief Pain Inventory due
- OTP Order due
- OTP Office Visit due
- 2 or more early refills in 6 mos
- On > 4 gm/d acetaminophen
- UDS due

Primary Prevention

High Risk Populations
- Flu shot due (during flu season)
- Pneumovax due

General Population
- Mamo due soon / overdue
- Mamo overdue
- Pap smear due
- Hysterectomy code unclear
- Chlamydia screening due
- Colorectal screening due
- Lipid Panel due q 5yrs
- Tetanus shot due
- Osteoporosis screening due
- Physical Exam due

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**Panel Support Tool: Training Aids**

The PST allows you to actively assist in managing our members’ health care needs and provides the opportunity to fulfill all or most of the members’ care gaps in one office visit.

With PST, you can view one or more physician's panels and easily identify those patients that have one or more care gaps. Most of the care gaps have been defined according to HEDIS guidelines.

A “care gap” is a screening lab, a drug, or a therapy that is indicated due to the patient’s condition and age.

**Role of the medical assistant**
The MA professional is an integral part of the PCP team who frequently communicates with members of all ages, from all walks of life. The MA reinforces for the member what the clinician has ordered. With the help of the medical assistant, clinicians and nursing staff are able to communicate more completely on their work with patients. It is the medical assistant’s responsibility to keep the office’s workflow going in all areas of the medical office and provide services and support that contribute to the total care and well-being of our members.

**Panel Support Tool**: Making it easier to do the right thing for our members & health care teams.

---

**PST TIPS:**

<table>
<thead>
<tr>
<th>Tip</th>
<th>Topic</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pend orders!</td>
<td>Click and accept (but do not sign)</td>
</tr>
<tr>
<td>2</td>
<td>Know your care gaps!</td>
<td>Read MA “talking points” for selected conditions (See Clinical Library)</td>
</tr>
</tbody>
</table>
| 3   | Dx-R = MEDICARE REFRESH | Hover over diagnosis and find source and date of diagnosis. On patient printout, use a marker to highlight for PCP. Goal: To assist the PCP team in reviewing all “R” -members. Kaiser is paid for their Medicare risk patients based on the diagnoses that are documented in their medical record. Each Medicare risk member has to have their list of diagnoses refreshed each calendar year. This can occur only through a face-to-face visit.
| 4   | Hover over “**” values | Shows the last three trends (i.e., BP trends, Hba1c, etc.) if available |
| 5   | Care gap graphs | Hover over the last number on graph and click. You will be taken to results of panel query instantly providing patient list! |
| 6   | REVIEW your patient | At the end of the day or after each patient visit always REVIEW your patient to instantly update your roster. |

---

**MA orders to Pend (consider using PST SmartSet) Test screen order status:**

<table>
<thead>
<tr>
<th>MA orders to Pend:</th>
<th>Foot Screen OVERDUE, Last Exam On: 11/12/2001</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LOPS Test</td>
</tr>
<tr>
<td>1</td>
<td>Hba1C OVERDUE Last: 8.5 on 2/9/05</td>
</tr>
<tr>
<td>2</td>
<td>LDL OVERDUE Last: 6/19/04</td>
</tr>
<tr>
<td>3</td>
<td>Cholesterol Screening OVERDUE, None on Record</td>
</tr>
<tr>
<td>4</td>
<td>Renal Screening Due</td>
</tr>
<tr>
<td>5</td>
<td>CKD annual labs due: microAb/Cr or UPr/Cr</td>
</tr>
<tr>
<td>6</td>
<td>Colorectal screening due</td>
</tr>
<tr>
<td>7</td>
<td>Flu Shot due – Last done: 1/8/04</td>
</tr>
<tr>
<td>8</td>
<td>Tetanus-Diphtheria due – Last done: 5/19/95</td>
</tr>
<tr>
<td>9</td>
<td>Pneumovax due</td>
</tr>
<tr>
<td>10</td>
<td>Pap due</td>
</tr>
<tr>
<td>11</td>
<td>Mammo due, none Scheduled</td>
</tr>
<tr>
<td>12</td>
<td>Active Smoker</td>
</tr>
</tbody>
</table>

---

**After logging on, the PST allows you to:**

- Get a quick and easy update on member's health care needs and alert the PCP to specific actions.
  - Example: An "R" in the Dx column indicates that the patient has a refusals Medicare diagnosis code.
  - Quickly identify the health care needs of those members that have not been met.
  - Quickly and easily alert the PCP to member's care gaps.
    - Examples of care gaps:
      - Cardiovascular disease
      - Hemoglobin A1C scores higher than 9
      - A BMI over 35 / Hypertension

**Assist in identifying needs/opportunities so new targets can be prioritized.**

**Assist in identifying trends in HEDIS scores, and track patients who need follow-up care.**

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**For Internal Use Only**
Reviewed and approved by: Panel Support Tool Co.
Orders for PST Care Recommendations (Will be Unnecessary With Active Guidelines Interface)
High blood pressure is also referred to as the “silent killer” because there often are no symptoms. A person can have high blood pressure for years without knowing it. Uncontrolled high blood pressure can lead to stroke, heart attack, heart failure, kidney disease, and blindness.

The ONLY way to know if you have high blood pressure is to have your blood pressure CHECKED. When you go in to see your health care provider, if your numbers are elevated, ask what you can do to help lower your numbers.

<table>
<thead>
<tr>
<th>JNC7 Definitions:</th>
<th>Systolic BP: mm Hg</th>
<th>Diastolic BP: mm Hg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal BP</td>
<td>&lt;120</td>
<td>&lt;80</td>
</tr>
<tr>
<td>Pre-hypertension</td>
<td>120-139</td>
<td>80-89</td>
</tr>
<tr>
<td>Stage I Hypertension</td>
<td>140-159</td>
<td>90-99</td>
</tr>
<tr>
<td>Stage II Hypertension</td>
<td>≥160</td>
<td>≥100</td>
</tr>
</tbody>
</table>

Breast Cancer Screening

Evidence has shown that breast cancer is more easily treated and often curable if it is found early. Mammography is the most effective way of detecting breast cancer early. Research has shown that it is especially effective in women of ages 50 to 69 years every one to two years. Women between ages of 40 and 49 may also benefit although the evidence isn’t as strong. Suggest that the member further discuss breast cancer screening with their clinician today.

Cervical Cancer Screening

The best way to detect pre-cancer and cancer of the cervix is by having regular Pap tests. Avoiding risk factors such as HIV, smoking, and multiple sexual partners may also reduce the chances of developing cervical cancer. KP recommends screening low risk women aged 21-64 every 3 years with Pap testing. Research shows that this reduces the incidence of invasive cervical cancer by 91%. Pre-cancers are completely curable when followed up properly. Survival with CIS and even micro-invasive cervical cancer is also nearly 100%. Suggest that the member further discuss cervical cancer screening with their clinician today.

Colorectal Cancer (CRC) Screening

Colorectal cancer is highly preventable, treatable, and often curable. Colorectal cancer can affect anyone – men and women alike – and risk increases with age. It is the third most common cause of cancer in men and women and the second most common cause of cancer deaths in the US. It is recommended that beginning at age 50, men and women of average risk should be screened by using the FOBT test every year. Suggest that member further discuss CRC screening with their clinician today.

Cardiovascular disease (CVD) occurs two to four times as often in adults with diabetes as those without the disease. As a result we have designed a triple medication program called ALL that research has shown helps to reduce the risk of heart disease in patients with diabetes.

ALL stands for:
- Aspirin
- Lisinopril (an ACE inhibitor), and a
- Lipid-lowering medication (a statin).

Use of these three medications is strongly encouraged in people who have had a heart attack, a stroke, or in people who are at high risk (someone with diabetes over age 40), unless there is a specific reason not to use them. Additionally, men and women with diabetes, age 40 and over may benefit from this program. Suggest that the member further discuss ALL with their clinician to see if the program is right for them.

Pneumococcal Polysaccharide Vaccine

Alternative Name: Pneumovax. Pneumococcal disease kills more people in the United States each year than all other vaccine-preventable diseases combined. Anyone can get pneumococcal disease. However, people at greatest risk include: people 65 and older, the very young, and people alcoholism, heart or lung disease, kidney failure, diabetes, HIV infection, or certain types of cancer. Suggest that the member further discuss Pneumovax with their clinician today.

Chlamydia Screening

Asymptomatic genito-urinary chlamydia infection is common in sexually active men and women. Left untreated, cervical infections in women can lead to pelvic inflammatory disease, fallopian tube scarring, ectopic pregnancy, and infertility. Screening of sexually active women under age 26, followed by appropriate treatment, has been shown to be effective in reducing serious complications associated with chlamydia infection. Suggest that the member further discuss chlamydia screening with their clinician today.

Pertussis Vaccine

Pertussis (whooping cough) is a highly contagious respiratory tract infection that affects adults as well as children. We offer a new vaccine for a single booster immunization against pertussis in combination with tetanus and diphtheria, now available for adults 19-64 years of age. Ask your provider if this vaccine is right for you. Suggest that the member further discuss the Pertussis vaccine with their clinician today.
Logic-Encoded Web Pages, Data Transfer, & Meta-Tagged Links

- Logic-encoded web pages
  - Require manual data entry
  - Return individualized recommendations

- Automated individual-level data transfer
  - Pass detailed information from EHR to web servers

- Meta-tagged links
  - Pass Orders from web servers to EHR
  - “Actionable” recommendations & graphic/text algorithms

- Combination allows individualized, actionable guidance, seamlessly embedded in an EHR
Logic-Encoded Web Pages, Data Transfer, & Meta-Tagged Links

User Enters Data

<table>
<thead>
<tr>
<th><strong>Age</strong></th>
<th><strong>56 years</strong></th>
<th><strong>Atherosclerotic CVD</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td>Female</td>
<td><strong>Diabetes</strong></td>
</tr>
<tr>
<td><strong>Total Cholesterol</strong></td>
<td><strong>250 mg/dL</strong></td>
<td><strong>Microalbuminuria</strong></td>
</tr>
<tr>
<td><strong>HDL Cholesterol</strong></td>
<td><strong>56 mg/dL</strong></td>
<td><strong>Duration of DM ≥10 yrs</strong></td>
</tr>
<tr>
<td><strong>Systolic Blood Pressure</strong></td>
<td><strong>120 mmHg</strong></td>
<td><strong>LDL Cholesterol</strong></td>
</tr>
<tr>
<td><strong>Diastolic Blood Pressure</strong></td>
<td><strong>80 mmHg</strong></td>
<td><strong>On Statins</strong></td>
</tr>
<tr>
<td><strong>On BP Medications</strong></td>
<td></td>
<td><strong>GFR &lt; 30</strong></td>
</tr>
<tr>
<td><strong>Smoker</strong></td>
<td></td>
<td><strong>FHx of Premature CAD</strong></td>
</tr>
</tbody>
</table>

[Calculate]
Logic-Encoded Web Pages, Data Transfer, & Meta-Tagged Links

Data Passed from EHR to Web Server

Individualized Recommendations Returned

Hyperlinks to Details

10-Year CAD Risk is 16%
Aspirin 81 mg daily Optional (10-Year CAD Risk 10-20%)
LDL-C Goal < 130
Simvastatin 40mg daily Recommended

Corresponding Sections In Dyslipidemia Guidelines
- Choice of Drug - Primary and Secondary Prevention
- Lipid Treatment Goals for Primary Prevention
- Use of hsCRP Test
- Using 10-Year CAD Risk Tables To Determine Treatment Initiation Plan
Logic-Encoded Web Pages, Data Transfer, & Meta-Tagged Links

CAD Risk Placed in Context with Gender/Age Group & Other Risk Factors
Logic-Encoded Web Pages, Data Transfer, & Meta-Tagged Links

Data Passed from EHR to Web Server

Individualized Recommendations Returned

Meta-Tagged Links Return Orders in EHR

Combination of:
• Logic-Encoded Web Pages
• Automated Individual-Level Data Transfer
• Meta-Tagged Links

Allows individualized, actionable guidance, seamlessly embedded in an EHR

Simvastatin 40 mg

Corresponding Sections In Dyslipidemia Guidelines

Using 10-Year CAD Risk Tables To Determine Treatment Initiation Plan

10-Year CAD Risk is 16%
Aspirin 81 mg daily Optional (10-Year CAD Risk 10-20%)
LDL-C Goal of 130
Simvastatin 40mg daily Recommended
Personal Heart Report for DEMO2001584618: Risk of Heart Attack or Stroke

Your Data

- ID# 001584618
- HBA1C: no value
- Age: 65
- Height: 5ft 10inches
- Weight: 184.0 lbs
- Total Cholesterol: 141
- LDL: 80
- HDL: 27.0
- GFR: 90.0
- Smoking: Yes

Options:

- Click checkbox to change graph based on patient’s actual aspirin usage
- Risk of similar healthy individual*
- Risk of patient today
- Risk increase if patient stops meds
- Risk decrease with each intervention
- Risk with combination of selected options
- Click checkboxes below graph and click New Total to recalculate graph based on intervention(s) selected by patient
- Document via dropdown
- Click “Generate Handout” at top to print the Member Report for the patient.
- Click ‘Go to PreDM Optimizer Graph’ to view this patient’s Getting Diabetes Report.
What is Clinical Knowledge Management?

- Activities and tools required to develop, implement, maintain, track, measure and report on clinical knowledge
  - Guidelines
  - EHR content
  - Nursing & Case Management protocols, Clinical Initiatives
  - Patient-oriented content

- A key supporting infrastructure and strategic resource
  - Supports clinicians, staff and patients, clinical operations, quality, safety, resource stewardship, and many other key organizational stakeholders and initiatives
  - Leverages and makes operational the substantial investment in the electronic health record infrastructure
  - Drives directly to resource savings and revenue enhancements
Clinical Knowledge Management KPNW

- Guidelines/EBM
- EHR Clinical Content

- Knowledge Synthesis & Maintenance
- Knowledge Representation (Guideline)
- Knowledge Integration & Alignment (Order set or Alert)
- KPHC** Content Maintenance

- Governance
- Metrics Usage statistics Outcomes

^ Includes Knowledge Discovery, Acquisition and Creation
*Primary focus areas for KPNW Knowledge Management Team
** KPHC and related applications
Useful Evidence-Based Guidance At the Point of Care

- Evidence-Based Medicine Helps Us Determine the Right Thing
- Make it Easy to Do the Right Thing
- If You Make Something Easy to Do, It Better Be the Right Thing
Determining When/Where/How to Embed Guidance
What is the High-Performer Doing Differently?

**Measurement**
Q: Out of those HTN and had a visit within past 12 months, what % received reliable BP measurement?

| Reliable BP | n = 227 | 32.61% |
| Non-Reliable BP | n = 469 | 67.39% |

Q: How many hypertensives in High vs. Low Perf Facilities?

| High-Perf Facility | n = 2,617 | BP Control = 75% |
| Low-Perf Facility | n = 1,588 | BP Control = 66% |

**Diagnosis**
Q: How many hypertensives in High vs. Low Perf Facilities?

| Adherent | n = 2,535 | 96.87% |
| Non-adherent | n = 82 | 3.13% |

**Treatment**
Q: Out of those hypertensive, what % is currently adherent to Rx?

| Adherent | n = 1,527 | 96.16% |
| Non-adherent | n = 61 | 3.84% |

**Follow-up**
Q: Out of those adherent, what % of patients had a visit within 12 months?

| Adherent | 12-Month Visit | n = 2,028 | 80.00% |
| Non-adherent | 12-Month Visit | n = 1,217 | 79.70% |

| No 12-Month Visit | n = 507 | 20.00% |
| No 6 Months BP | n = 310 | 20.30% |

**Monitor**
Q: out of those adherent, what is the % with HTN under control in the next 6 months?

| BP Controlled | n = 1,472 | 72.58% |
| BP Uncontrolled | n = 456 | 22.49% |

| No 6 Months BP | n = 386 | 31.72% |
Voice of the Member

What are the issues related to getting a cholesterol test?
- Fasting - Inconvenient, waiting in the lab, logistics of planning it, need to eat earlier
- Fear – don’t want to go on a medication
- Ch 9 Health Fair – “I already got this test”

What do we need to do to help KP members get their cholesterol tests so KP and the member knows their risk for heart disease?
- Put structure to it – tell us to come in within 2 weeks so we don’t put it off
- Tell us it is important –
  - PCP/Health Care Team need to tell pt it is important
  - Make prompt stand out – put it in a box, make it red
- Make it easy
- If we need to fast – explain WHY that is important
- Let us know it is FREE
- Dr/pt relationship is important – better to get testing here than Ch 9 Health Fair
Why do members not have a lipid profile order?

Root Cause Analysis – Lipid Screening PI Project Team – 5/7/10

Pt reasons

- Pt doesn’t think needed/believe in
- Pt doesn’t mention PVR prompt to provider
- Pt never comes in for HMA
- Staff or provider not aware can enter labs in HC
- Outside lab done before had HC ability to enter
- MD concern for in-basket volume
- Lack of staff assistance to process lipid results
- Lack of system support
- Lack of communicated cross dept agreements
- Lack of member awareness & knowledge
- Pt has outside lipid results
- Member only goes to other depts
- Staff or provider not notice PVR prompt or HT lab “missing lipid for Framingham”
- Provider style
- Provider forgot to order
- Avoid ordering due to concern for need to review many labs
- Time constraints
- Silo’d thinking
- Encounter reason not related
- Visit driven by patient’s agenda
- Acute visit focus
- Specialties
- After Hours
- No lipid profile order in members w/primary care encounters

Encounter reason not related

Provider & staff missed opportunity

- Provider & staff missed opportunity
- No lipid profile order in members w/primary care encounters
- Pt reasons
- Lack of system support
- Lack of communicated cross dept agreements
- Pt reasons
- PT reasons
Root Cause Analysis – Why are Members Missing A Lipid Test for CV Risk Assessment?

- Voice of the member – Barriers reported
  Fasting, PCP has not communicated that it is important

- Macro process flow-
  1. Lipid test not ordered for the member
  2. Members advised to go to lab but they don’t get lab done
  3. Concern re: increased volume of lipid tests in PCP in-basket

- Missed opportunities
  1. 80% have touched primary care
  2. Providers & staff don’t utilized PVR prompts, HT tab, Framingham info
  3. Front desk staff is printing PAS/PVR prompt & touching new members

- Root Causes identified
  1. Lack of system support
  2. Lack of provider awareness
  3. Lack of member awareness/ knowledge
  4. Lack of cross departmental communicated agreements
Lipid Screening PI Project Process Flow

- Member in for visit
  - PRA checks member
    - PAS/PVR prompts
      - PRA highlights & uses script to alert member to screenings due
        - Hands to member
      - MA/LPN rooms patient
        - MA/LPN accepts & signs screening non-fasting lipid order
          - MA/LPN places PVR sheet on keyboard
            - Prompts provider to order cholesterol & other screenings due
              - Fasting lipid ordered
              - Screening non-fasting lipid ordered
              - Member goes to lab fasting that day or no later than 2 wks
              - Member instructed to go to lab before leaving clinic to complete test
              - Lipid completed
                - Results in provider in-basket or RN lipid pool
                  - RN reviews results per CV risk assessment/LDL goal setting nsg gl
                    - Notify pt by ltr of nl results
                    - Notify pt by phone if initiating TLC
                    - Notify PCP if medication needed

- Members not coming in for visits
  - List pulled from HealthTRAC
    - MA/LPN – Letter outreach
      - Orders Screening non-fasting lipid by gl w/results to go to RN lipid pool
      - Sends letter/email to pt asking to CI w/in 2 wks
      - Documents in HC
    - RN Reminder call
      - Reminder phone call if has not completed lipid w/in 2-3 wks
      - RN reviews results per CV risk assessment/LDL goal setting nsg gl
        - Notify pt by ltr of nl results
        - Notify pt by phone if initiating TLC
        - Notify PCP if medication needed

- List of new members/members not seen in 3 yrs
  - Provided to Front Desk 2xs/wk

- New members or not seen in 3 yrs
  - Packet given & reviewed upon check-in by PRA or Volunteer

- Packets prepared by Front Desk staff for new members/members not seen in 3 yrs
  - Includes Preventive Screening handout

- Red text represents PI project changes added to workflow
KPCO Lipid Screening PI Project
Changes to Address Root Causes May-Aug 2010

PLAN
DO
STUDY
ACT

Provide System Support

Increase Member Awareness & Knowledge

Create & Communicate Cross Dept Agreements

Increase Provider/Staff Awareness/Knowledge thru Education & Trng

Red = needs additional sponsor support
Healthier living with diabetes

Diabetes is a rapidly growing health problem. Currently, more than 18 million people in the United States have diabetes.

Although diabetes is a life-long condition, you can still lead a healthy life and avoid complications. These actions are key:

- eating well
- staying active
- keeping your blood sugar (glucose) levels as close to normal as possible
- monitoring your blood pressure
- using medications properly

Learn more about how you can manage your diabetes.

If you don’t have diabetes, find out if you are at risk for developing it.

Continue on to basic facts about diabetes.
KP.org: HealthMedia

My Home  Coaching  My Account  Log Out

You are logged in as MARIA

CONSULTATION
You've finished about 10% of your consultation.

PLAN
Your plan is a comprehensive road map to get you from where you are to where you want to be.

TOOLS
Your tools are everything you need to build a new, healthier life.

CHECK-INS
Your check-in evaluations will tell us how you're doing, and what we can do to help.

Are you:
- Male or
- Female

What is your ethnicity?
- White, Non-Hispanic
- Black or African-American
- Hispanic
- Asian
- Pacific Islander
- Native American Indian or Native Alaskan
- Native Hawaiian
- Multiracial
- Other
What's Ahead

1. Education

We'll go over many of the facets of diabetes, including both physical and emotional effects. Once you understand the full impact, you'll be in a better position to manage your condition.

2. Lifestyle

We'll show you how to fit diabetes management into your life — not the other way around! We'll also help you build a support system and guide you past roadblocks.
Knee Problems and Injuries

Are you worried about a symptom? This tool will ask questions about your symptoms and, based on your answers, tell you whether and how soon you may need medical attention.

Check your symptoms

Try Home Treatment

You have answered all the questions. Based on your answers, you may be able to take care of this problem at home.

- Try home treatment to relieve the symptoms.
- Call your doctor if symptoms get worse or you have any concerns (for example, if symptoms are not getting better as you would expect). You may need care sooner.

Learn what you can do at home.
Get help with other symptoms.