



Kaiser Permanente HealthConnect™

**The Substance, Strategy, and Impact of Kaiser Permanente's
Electronic Health Record (EHR) System**

Pamela Hudson, Vice President
KP HealthConnect National Business Program

March 2007

Agenda

- Kaiser Permanente Before KP HealthConnect
- KP HealthConnect Deployment
- Lessons Learned

Before KP HealthConnect (circa 2002)

- Nine silos (8 regions + national)
- No common platform
- Numerous disparate IT systems
- Limited standard data elements
- Expensive IT maintenance costs
- Region (physician) owns the paper medical record
- In 1999, began to build a nationwide Clinical Information System (CIS)



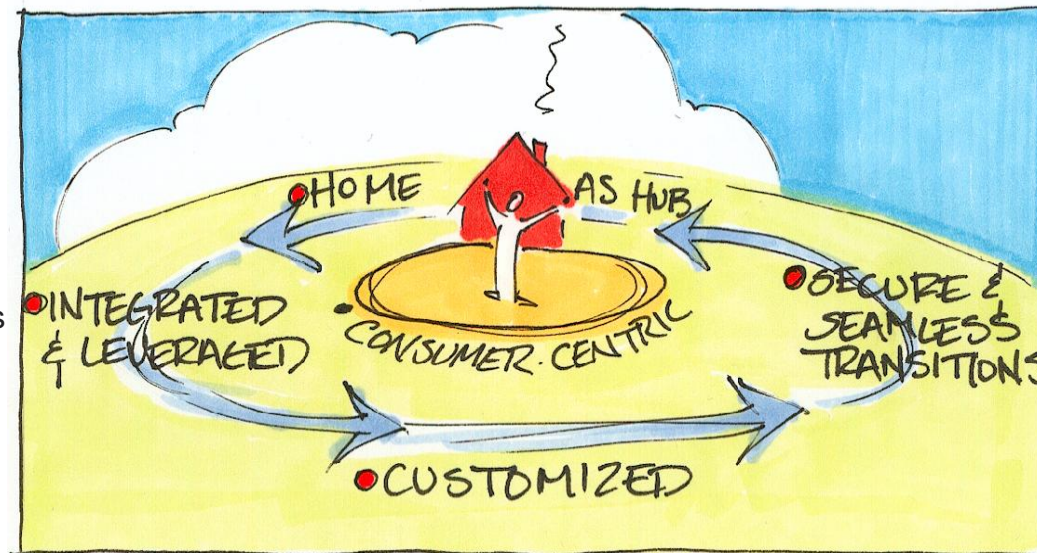
The Kaiser Permanente "Blue Sky" Vision

Home as the Hub

- The home, and other settings, will grow significantly as a locale of choice for some care delivery (diagnostics).
- An individual's care delivery support system has expanded to explicitly include other community and family resources

Integration & Leveraging

- Medical services are integrated with wellness activities; care delivery processes are integrated with health plan operations
- IT functionality enables us to leverage scarce or specialized clinical resources - MDs, RNs and other clinical staff.



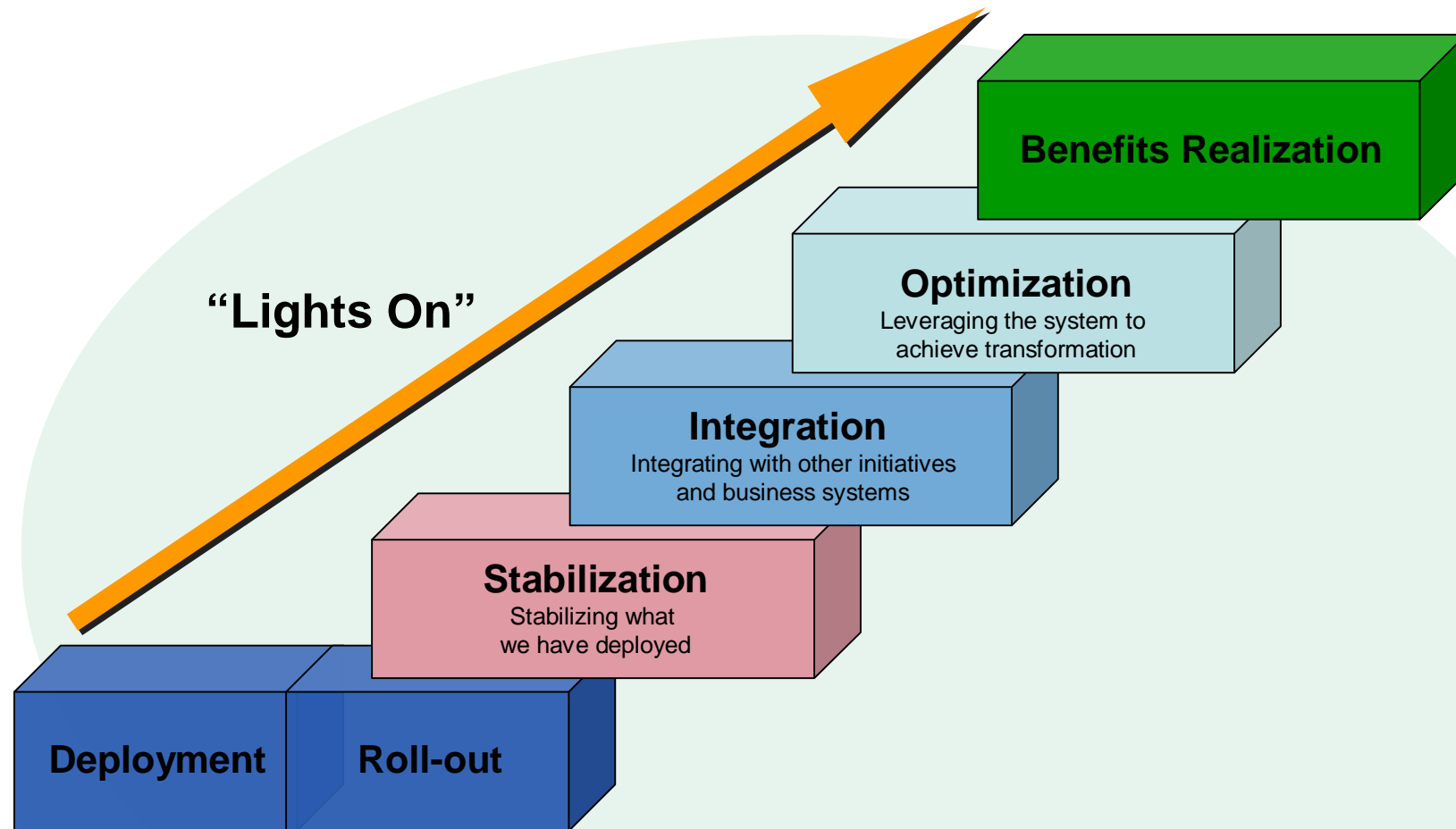
Secure and seamless transitions

- 'Warm Handoffs' - The human skill sets and operational processes to deliver care and service effectively, efficiently, and compassionately.

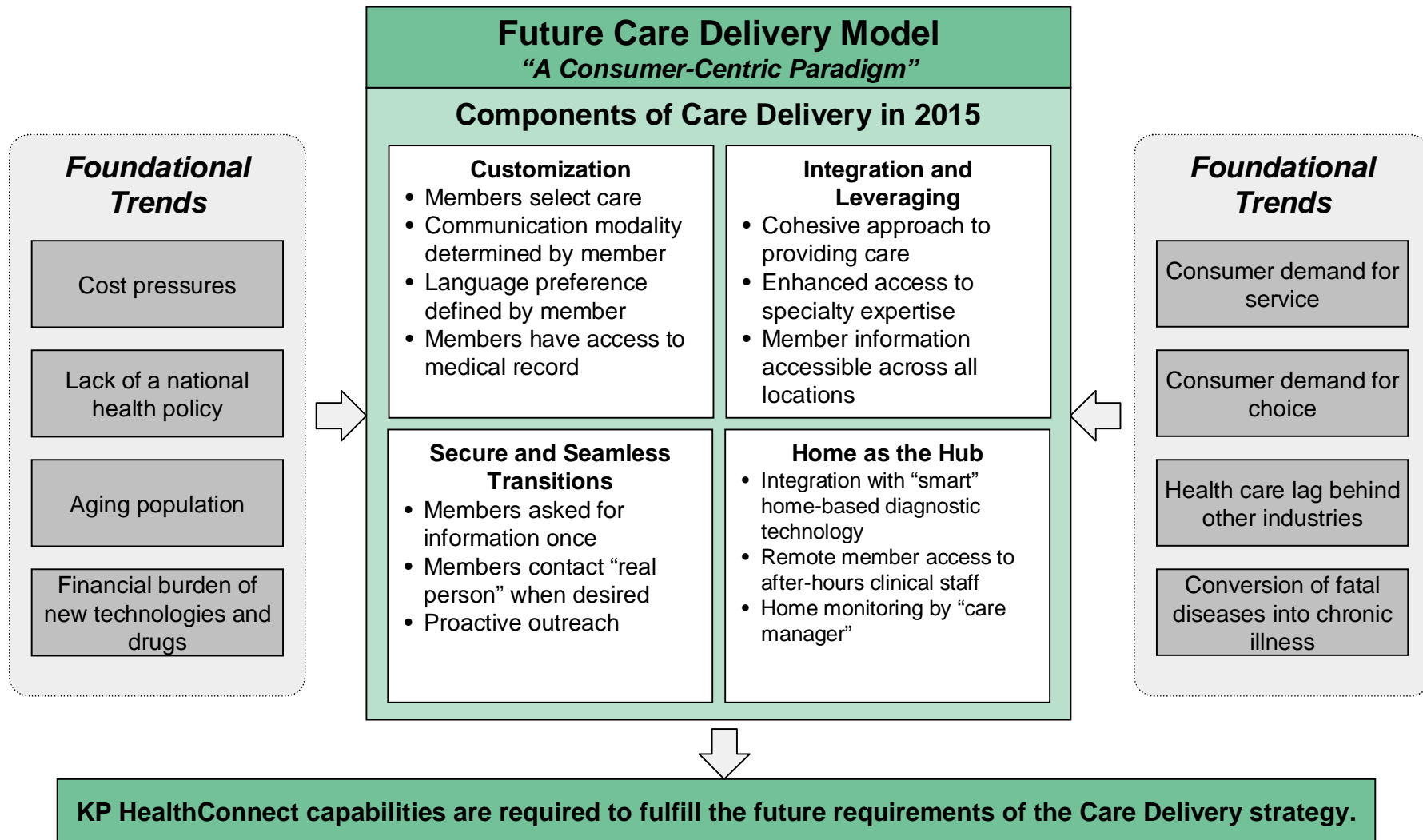
Customization

- Occurs at any level of the members' journey with KP (choosing health plans, cost sharing, individual care pathways, and communication modalities.)
- The member drives customization and KP responds.

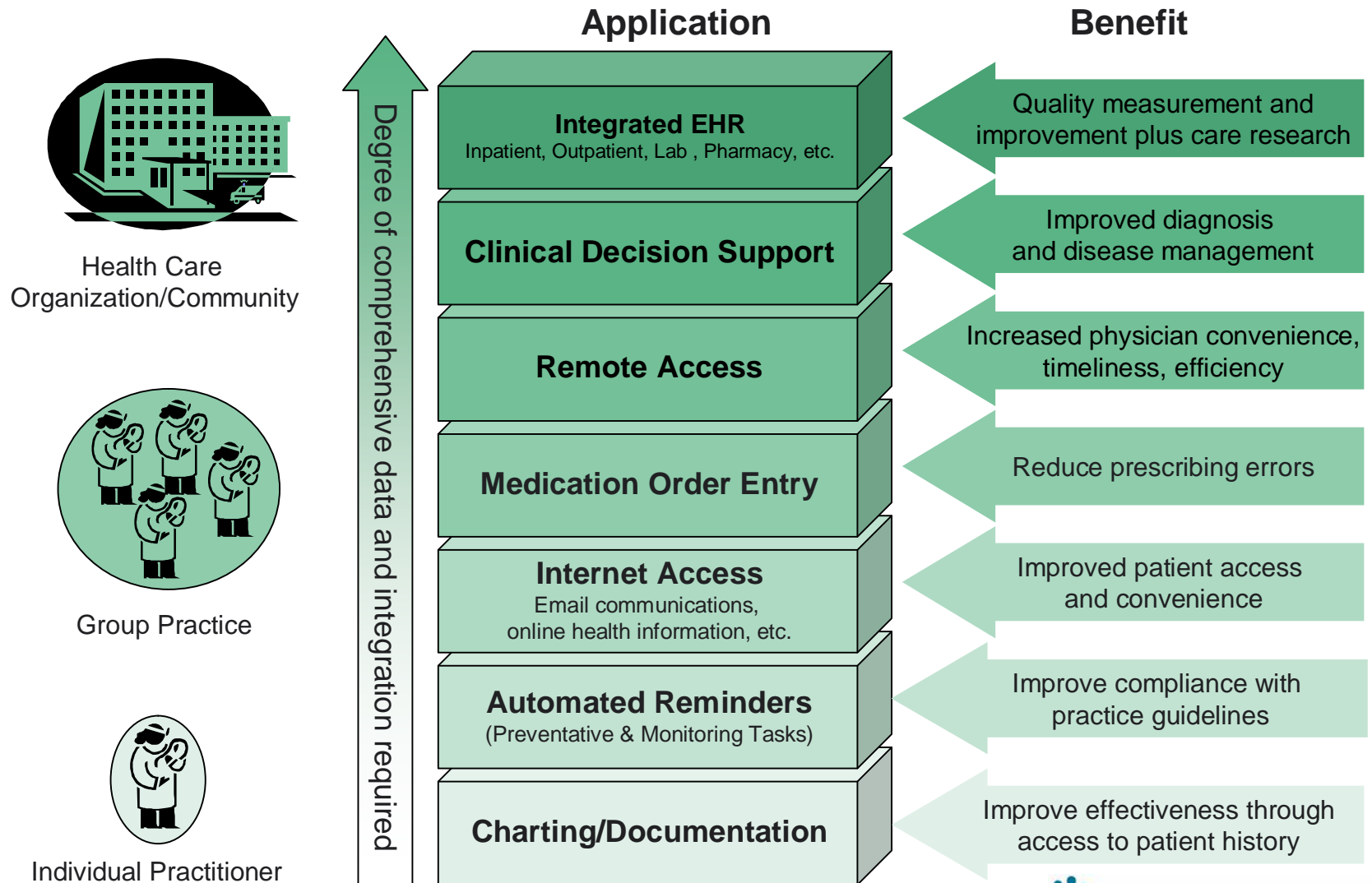
"Lights on" to "Blue Sky"



KP HealthConnect: Fundamental Redesign of Health Care



Leveraging Clinical IT



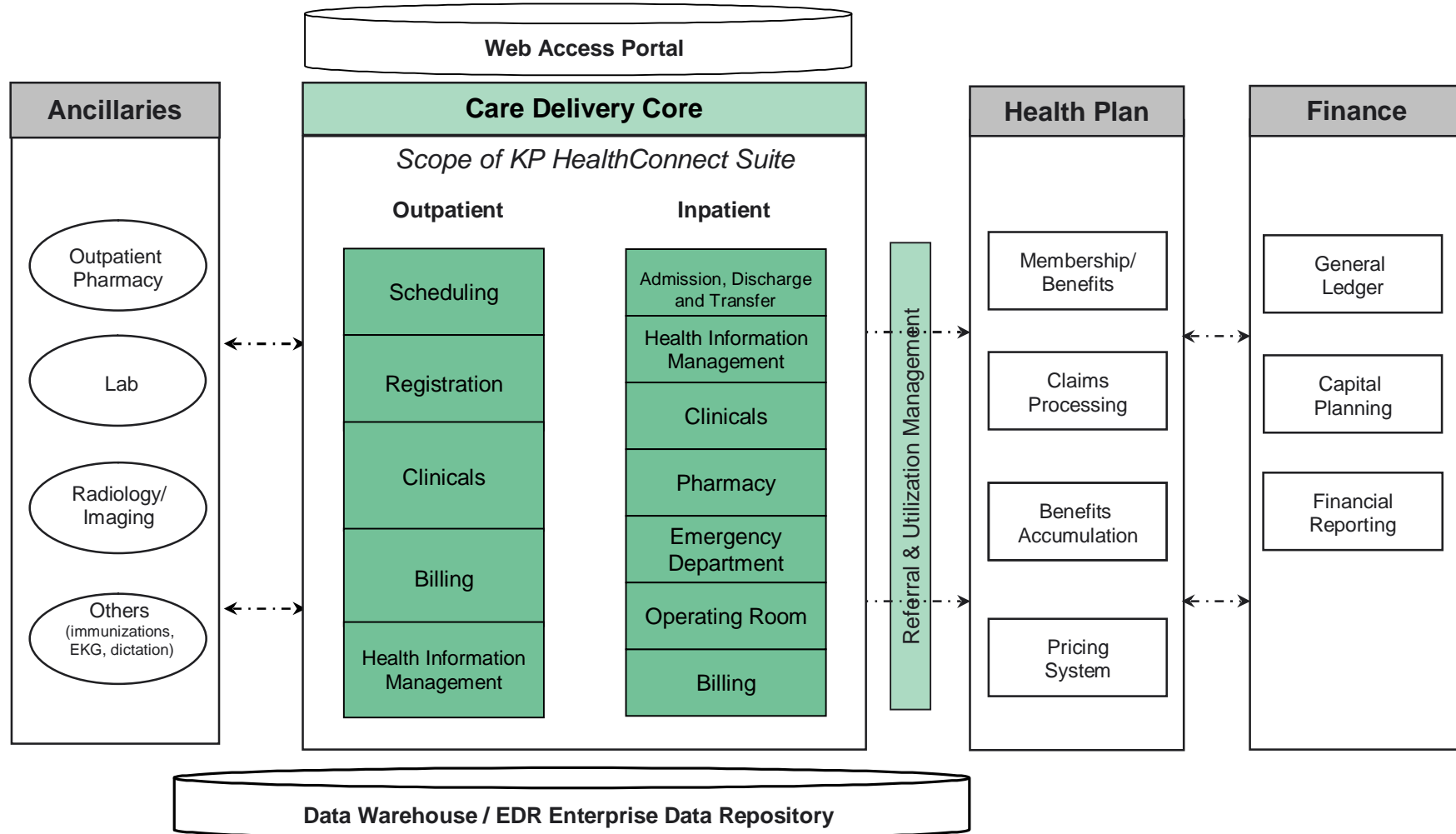
Kaiser Permanente HealthConnect™

- More than just an electronic medical record
- The development and deployment of a highly-sophisticated information management and delivery system
- A program-wide system that will integrate the clinical record with appointments, registration and billing
- A complete health care business system that will enhance the quality of patient care

Kaiser Permanente HealthConnect™ Goals

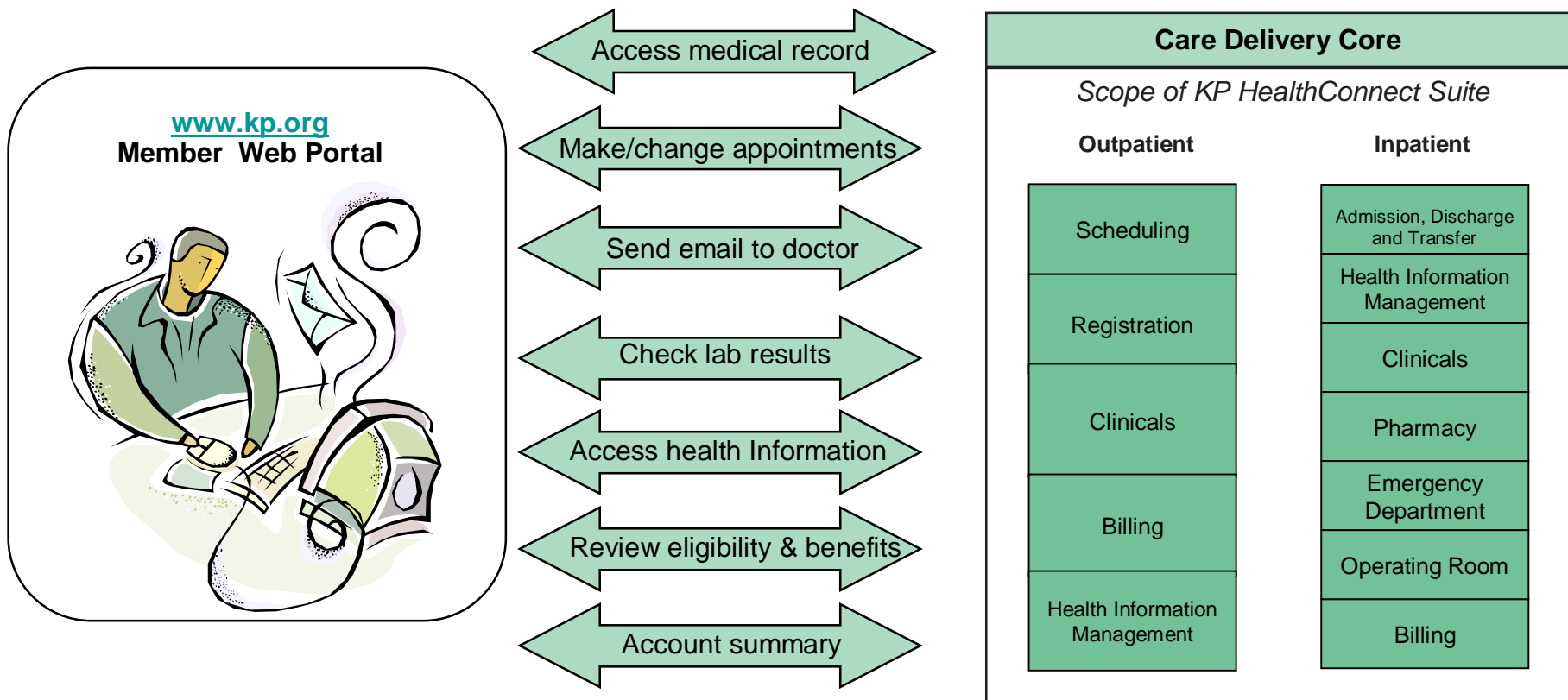
Quality Our Patients Can Trust	Personal & Convenient Service	Affordable Health Care
<p>High Quality</p> <ul style="list-style-type: none">• We have clinical information available 24/7.• Our clinical outcomes are unsurpassed.• Our clinicians know in real-time the recommended best practices.• We are the national leaders in patient safety.• We enhance our research to support evidence-based care.	<p>Personal</p> <ul style="list-style-type: none">• We have and use up-to-date clinical, social and patient preference information.• We provide patients information for shared decision making.• We enhance personalized care. <p>Convenient</p> <ul style="list-style-type: none">• Our patients access information via telephone, Web and email.• We actively support our patients' participation in their own care.• We minimize wait times and out-of-pocket costs with efficient access to care.• We achieve superior integration and continuity of care.	<p>Affordable</p> <ul style="list-style-type: none">• We reduce the cost of care and improve visit experiences.• We eliminate waste associated with paper medical records and missing medical records.• We eliminate costly in-person services unless medically necessary or desired by the patient.• We streamline IT and administrative processes and costs

Scope of Kaiser Permanente HealthConnect™



Members Can Actively Participate in Care

Expanded Online Access for Members



Member-Centric Services

- Your allergies
- Your immunizations
- Your lab test results
- Your ongoing health conditions
- Past office visit information
- Online Rx refills
- Email your doctor
- Your future appointments
- Your eligibility & benefits
- Request a change to your medical record
- Act for a family member

System Enhanced with KP Clinical Content

- Access to library of KP knowledge and best medical practices at the point of care
- Tools and templates that facilitate the delivery of evidence-based medicine
- Dynamic decision-support tools that enhance quality and patient safety
 - § Drug-Drug Interactions Alerts
 - § Drug Allergy Alerts
 - § Best Practice Alerts
 - § Health Maintenance Reminders
 - § Alternative Order and Medication Alerts
- Patient education and tools to support self-care

Supporting Patient Safety

- IHI 100K Lives bundles
- Drug alerts
- Health maintenance reminders
- Best practice reminders
- “Close the loop” with results, referrals, and follow-up appointments
- Patient safety metrics

Safeguards for Privacy

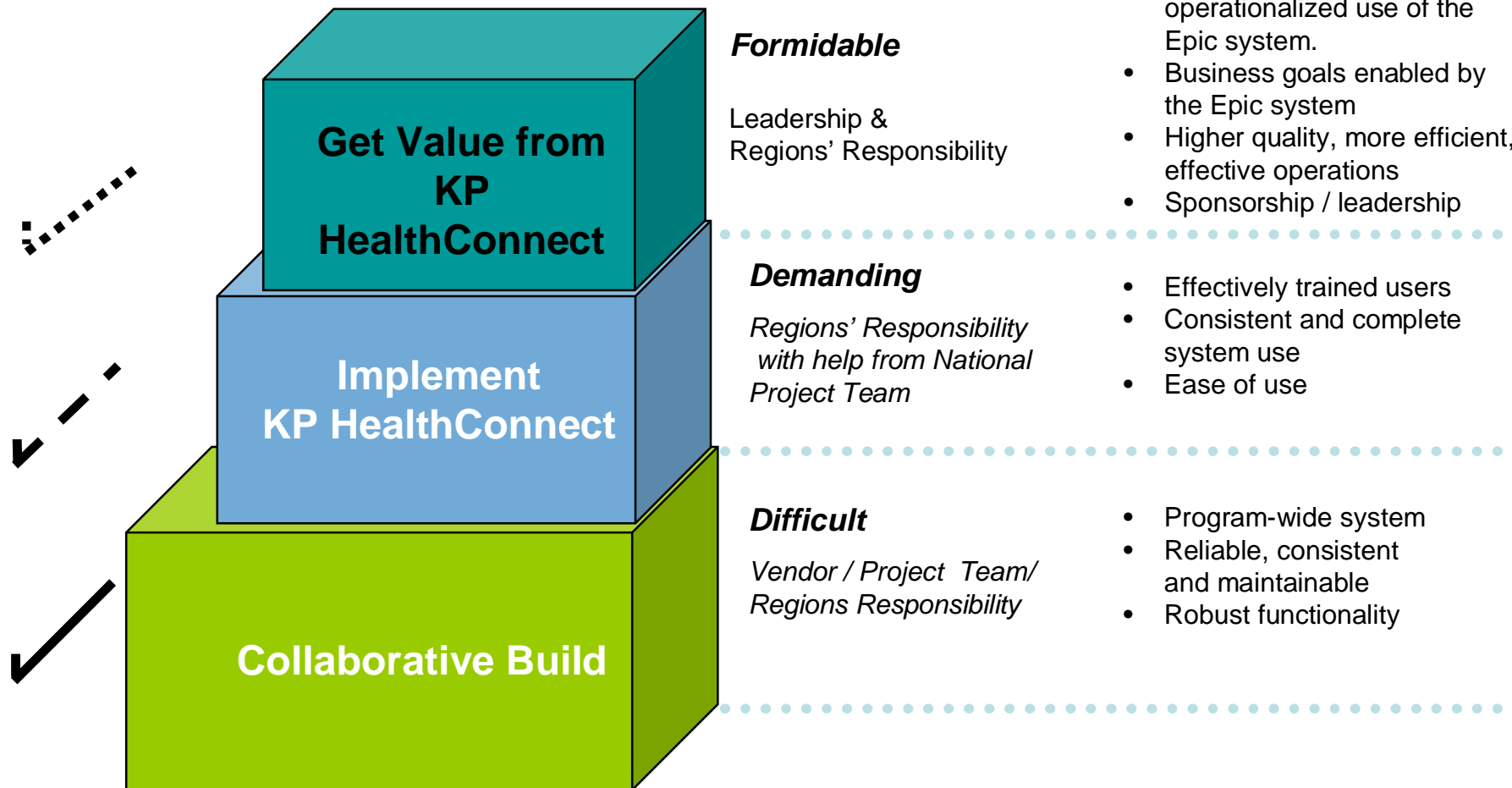
- Protects member privacy and keeps health information secure
- HIPAA compliant
- Administrative procedures, physical safeguards and technical security mechanisms
 - § **User authentication** - Unique user records, automatic log-out of user and/or securing of application, configurable password rules and aging
 - § **Entity authentication** – Automatic-logoff, unique user IDs, password, PIN, biometrics, token, single sign-on
 - § **Access control** –user-based, role-based and context-based access
 - § **Authorization control** – role-based and user-based access
 - § **Web access control** - highly-secure internet connections with unique passwords required

Challenges

System capability needed to:

- § Share data and move information across 18 instances in 8 regions real time
- § Provide a consistent data model to populate a national data repository to support all reporting needs
- § Reduce variation and provide evidenced-based clinical decision support and documentation
- § Share successful work practices across the country to streamline internal processes and reduce work variation

Challenges



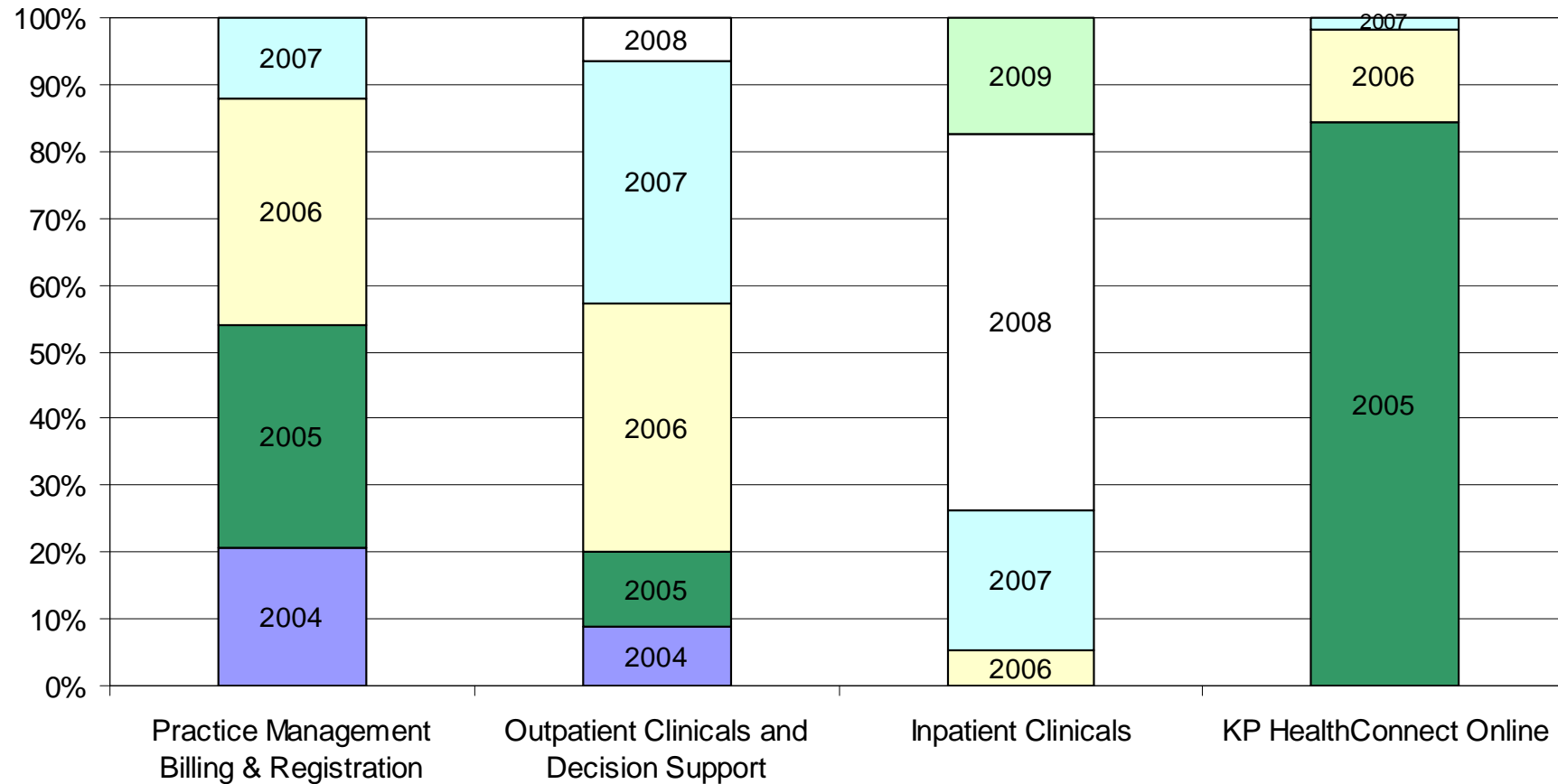
With KP HealthConnect (circa 2007)

- Collaborative culture
- One technology platform
- Integrated systems
 - § Inpatient/outpatient
 - § Inter/Intra-region
- Standardizing data elements
- Retiring expensive legacy IT systems
- Member owns the medical record and is engaged in their own care



Percentage of KP Population Coverage by Year/Suite

Revised 4-24-06



Population coverage based on actual & planned finish dates

Caregiver Benefits

- Single, comprehensive medical record available 24/7
- Alerts that support patient care by catching abnormal results, negative trends, patient history, chronic problems, and drug/procedure combinations
- Access to current treatment guidelines via online references and resources
- Care Management Institute (CMI) protocols and standard test/screens decision support
- Prescribe medication, order lab work, radiology and provide referrals at the point-of-care
- Expanded communications opportunities to improve partnering between patient and caregiver
 - § After visit summary to support care post office-visit
 - § Secure messaging and other online services

KP HealthConnect Clinicals - Ambulatory

The screenshot displays the KP HealthConnect Clinicals - Ambulatory interface. At the top, there is a header with patient information: Home, Age, Sex, DOB, MRN, Allergies (Penicillins), PCP, Alert (HM), INS (None), and MyCh (Inact). Below this is a toolbar with icons for Images, Questionnaires, Admin, Benefits, References, SmartSets, Scans, Dictations, Open Orders, Change PCP, and Print AVS.

The main content area is divided into sections. The top section shows 'Allergies: <Verified on 3/6/2003>Penicillins' and 'Vitals : BP: , P: , T: , T Src: , Resp: , W: , H: SaO2: , PF: , BMI: , BSA:'. Below this is a 'Charting' section with a table of entries:

Charting	Description	Comment
Chief Complaint	1. Sore Throat	
Vitals	BP: , Pulse: , Temp: , Temp Src: , Resp: Weight: , Height: , SaO2: , PF:	
Nursing Notes	Tobacco Use: Cigarette Packs/Day: , Years: , Pack Years: Date Quit: , Tobacco Types: Comment: Tobacco use last verified on encounter date: Tobacco use verified in this encounter:	
SmartSets	SmartSets - Encounter Matches	
Progress Notes	1. PHARYNGITIS	
Diagnoses	2. RHINITIS	
Orders		
Patient Instructions		
LOS		
Follow-up		
Close Encounter		

At the bottom left, there is a 'Visit Navigator' sidebar with options: Snapshot, Chart Review, Results Review, Flowsheets, Problem List, History, Letters, Demographics, Order Entry, Imm/Injections, Level of Service, Allergies, Medications, Forms, and Visit Navigator. Below the sidebar are 'Hot Keys' (F7: Prev Section, F8: Next Section, F9: Close/Open Section, Shift-F5: Cat. Lookup) and an 'Exit Workspace' button.

KP HealthConnect Clinicals - Ambulatory

The screenshot displays the KP HealthConnect Clinicals - Ambulatory interface. At the top, there is a navigation bar with various menu items like Desktop, Action, Patient Care, Scheduling, etc. Below this is a patient information header showing fields for Age, Sex, DOB, MFI, Allergies (Penicillins, Shellfish, Dairy Product*), PCP, Alert (HM), HS (None), and MyChart (Inactive).

The main content area is divided into several sections:

- Charting:** A sidebar on the left lists various charting options such as Chief Complaint, Vitals, Nursing Notes, Best Practice, SmartSets, Progress Notes, Dx and Orders, Patient Instructions, LOS, Follow-up, and Close Encounter.
- Chief Complaint:** A table with columns for Description and Comment. The entry is "1. Cough" with a comment of "3 days, productive cough".
- Vitals:** A section for recording vital signs including BP, Pulse, Temp, Temp Src, Resp, Weight, Height (5' 10"), BMI, and BSA. It also includes fields for Pain Information (Pain Free), Tobacco Use, Cigarette Packs/Day, Years, and Pack Years.
- Nursing Notes:** A section for recording nursing observations. The note states: "Patient reports taking OTC medication for cough — Formula 44 and Mirtussin with moderate relief."

At the bottom of the interface, there is a status bar with various icons and a "Print" button.

KP HealthConnect Clinicals - Ambulatory

The screenshot displays the KP HealthConnect Clinicals - Ambulatory interface. At the top, there is a navigation bar with menu items: Desktop, Argon, Patient Care, Scheduling, HM, Billing, Hospital Billing, Reg/ADT, Surgery, Pharmacy, CRM/CM, Referrals, Radiology, Home Health, Reports, Tools, Admin, Help. Below this is a secondary navigation bar with icons for Home, Schedule, In Basket, Chart, Encounter, Ta. Enc., Hospital Chart, Patient Lists, Secure, Print, and Log Out. The main header area shows patient demographics: Age, Sex, DOB, M/F, Allergies (Penicillins, Shellfish, Dairy Products), PCP, Abri (H), INS (None), and MyChart (Inactive). A left sidebar lists various activities like Snapshot, Chart Review, Results Review, etc. The main content area is divided into sections: Allergies (c-Verified on 7/10/2001), Vitals (BP, P, T, T Src, Resp, Wt, Ht, BMI, BSA), Charting (with checkboxes for Chief Complaint, Vitals, Nursing Notes, BestPractice, SmartSets, Progress Notes, Dx and Orders, Patient Instructions, LOS, Follow-up, Close Encounter), BestPractice Alerts (Patient is due for following diabetes management topics: FOOT EXAM, EYE EXAM, MICROALBUMIN, Influenza vaccine), SmartSet(s) (BestPractice SmartSet), and SmartSets - Encounter Matches (ASTHMA, BRONCHITIS, ACUTE, CARDIOVASCULAR RISK ASSESSMENT, DIABETES F/U, DIABETES TYPE 2 NEW ONSET, HYPERTENSION FOLLOW-UP, JOINT INJECTION/ASPIRATION).

Health Plan Benefits

- Eliminate waste associated with paper medical records and missing medical records
- Provision of multiple services in a single visit
- Increased efficiency for office and emergency room visits
- Reduction in unnecessary office visits
- Elimination of duplicate lab and radiology
- More appropriate and timely referrals
- Increased adherence to formulary

Early Value Realization

- 21st Century Care Innovation Work
- Enhanced Care Team Communication
- Increased Member Satisfaction
- Secure Messaging and EHR Impact on Visit Demand
- Improved Patient Safety
- System Retirement
- Data Consistency/Reporting Efficiency