The concept of a medical home has recently received increased attention as a potential remedy to address system-wide problems of high health care costs and limited access. Although the concept is not new, the momentum for broad implementation of the medical home model has been building over several years. In 2001, the Institute of Medicine report Crossing the Quality Chasm outlined six aims for addressing the increased fragmentation of the U.S. health care system known as domains of quality, including patient-centered care. The increasing prevalence of chronic health conditions in the U.S., the rising numbers of uninsured, and a growing shortage of primary care clinicians are other factors contributing to the push for implementation of the concept of a medical home.

The American Academy of Pediatrics first introduced the concept of the medical home in 1967 as a model to deliver medical care to children with special needs. This concept was expanded in 2004 by the Future of Family Medicine Project when it recommended that every American have a personal medical home to receive primary, chronic and preventive care services. In 2007 the American Academy of Family Physicians, the American Academy of Pediatrics, the American College of Physicians and the American Osteopathic Association released the "Joint Principles of the Patient-Centered Medical Home (PCMH)." The principles of this model include:

1. **Personal physician.** Each patient has an ongoing relationship with a personal physician trained to provide the point of first contact, and continuous and comprehensive care.

2. **Physician directed medical practice.** The personal physician leads a team of multidisciplinary health care personnel with collective responsibility for ongoing patient care.

3. **Whole person orientation.** The personal physician is responsible for providing for all the patient’s health care needs or taking responsibility for appropriately arranging care with other qualified professionals, including care for all stages of life.

4. **Coordinated and/or integrated care.** Care is coordinated across levels of care and the patient’s community, and care is facilitated by enhanced communication, including information technologies, registries and...
other means to assure that patients receive appropriate care.

5. **Quality and safety.** Care is provided that aims to attain optimal outcomes—using evidence-based medicine, clinical decision support tools and information technology—ensured through quality improvement strategies with physician accountability for improvements and patient participation in decision making.

6. **Enhanced access.** Access to care is enhanced through open scheduling and expanded hours, and other options for communication such as telephone and email.

7. **Payment.** Reimbursement should adequately value the extent of services provided by the medical home, including clinical services, coordination of care, care management and health information systems.

Parallel to the development of the medical home model, the **chronic care model** (CCM) has been proposed as an effective means of providing primary care to patients with chronic illness. CCM focuses more on “system changes” intended to “guide quality improvement and disease management activities” for treating individuals with chronic illness. The CCM includes six essential elements:

1. Encouraging provider organization linkages with **community-based resources.**
2. Prioritizing management of chronic care within the **health care organization.**
3. Providing **self-management support** to patients and their families.
4. Restructuring of the medical practice to create practice teams leading to **delivery system design.**
5. Providing **decision support** through use of evidence-based clinical practice guidelines.

6. **Use of clinical information systems** that include reminder systems to physicians, feedback to physicians on their performance and disease registries for planning patient care.

In 2006 the American College of Physicians presented the concept of the **advanced medical home** (AMH), which elaborated and expanded on CCM to further align CCM and PCMH concepts. The key attributes of the advanced medical home included:

1. Use of evidence-based guidelines and clinical decision support tools
2. Organization of care delivery according to CCM and the provision of core functions of CCM to provide enhanced care for all patients
3. Creation of an integrated coherent care plan in partnership with patients
4. Providing enhanced access to care through face-to-face and alternative means
5. Identification and measurement of key quality indicators for continuous improvement
6. Adoption of information technology
7. Providing feedback and guidance on the performance of the physicians and the overall practice

The evolution of the PCMH and CCM/AMH concepts indicates a convergence of elements over time, though some concepts remain unique to each model. PCMH greatly emphasizes the importance of patient participation in the clinical decision-making process and focuses on all populations within the primary care delivery system. CCM/AMH models focus on delivery of care to chronically ill populations with greater emphasis on redesigning the delivery system to enable provision of optimal care. However, the convergence of these models indicates agreement in the field that a redesign of delivery of primary and chronic care should at least include the elements jointly outlined in the PCMH and CCM/AMH models.
Existing Evidence on the Impact of Medical Home and Chronic Care Models

The implementation of the medical home concept is still in its infancy and many of its elements are yet to be implemented broadly. Only 27% of non-elderly adults in the United States indicate having the four access-related indicators of a medical home, such as a usual source of care, the ability to easily reach their doctors on the phone, the ability to easily get medical care or advice weekends and evenings, and physician visits that were on time and well organized. Less is known about the implementation of other crucial aspects of a medical home, such as level of care coordination and quality of care.

Despite the potential advantages of the medical home model, multiple barriers continue to hinder its effective implementation. These barriers include changing the current practice culture that is dominated by urgent and episodic care, and difficulties in implementing elements such as practice redesign, care management and information technologies in small physician practices.

Several studies have attempted to evaluate the impact of various components of the medical home and chronic care models; however, considerable variation exists in the method of implementation and number of elements executed, leading to difficulties in assessing impact. Specific elements, such as a personal physician and team-based approach, are difficult to assess due to a lack of studies examining these components of the medical home independently from the entire package of services generally provided under disease management or care coordination programs. Furthermore, available information about physicians’ attitudes towards the medical home concept is limited. An existing physician survey of aspects of the medical home—such as patient feedback, electronic communications and reminder systems—indicates prevalent skepticism among physicians. The cost-effectiveness of medical home models that incorporate all elements of the medical home model is not available, though evidence of the success of some programs has been documented.

Other studies have demonstrated savings associated with effective implementation of the medical home model. The Community Care of North Carolina (CCNC) is credited with saving approximately $160 million annually, primarily through a 23% reduction in both emergency room visits and outpatient visits, and a reduction of 11% in pharmacy services. The program is also credited with improved quality of care, such as increased asthma control (reduced hospitalization and emergency room visits and increased influenza vaccination), and reductions of diabetes care indicators below NCQA (National Committee for Quality Assurance) thresholds. Factors credited with the success of the CCNC program include the small scale of the pilot program, strong physician leadership throughout the program and implementation of the best practices learned during the pilot program. Similarly, the Geisinger Health System (GHS) in Pennsylvania is credited with a 20% reduction in hospital admissions and across the board savings of approximately 7% in medical costs, based on early pilot results.

A meta-analysis of elements of the chronic care model (CCM) indicate a positive association between elements of CCM, including delivery system design, self-management support, decision support and clinical information systems with better patient outcomes and processes. Implementation of the CCM within a specific community health center, Clinica Campesina Family Health Services, is credited with a drop in blood sugar levels, increased percentage of patients with at least two such tests per year, increase in patients with self-management goals, and increases in eye and foot examinations.

Qualitative observations of implementation of the chronic care model confirm that the success of self-management support is dependent on focusing on the provision of
support and encouragement rather than providing didactic patient education. Furthermore, a critical element in the success of self-management services is that they are integrated within or closely aligned with the medical home rather than through independent disease/care management providers who operate on a referral basis or parallel to the medical home. Similarly, introduction of decision support tools such as registries and evidence-based guidance is effective in changing provider behavior when registries are used to simultaneously issue reminders for overdue care, assess severity of illness combined with recommendations for treatment changes and generate summary reports for visits.

A Framework for Implementing the Medical Home Model in California

Health Care Coverage Initiative (HCCI)

The HCCI demonstration project was implemented under California’s Section 1115 waiver (No. 11-W-00193/9). Senate Bill 1448 was enacted to provide a statutory framework for HCCI and on March 29, 2007, Governor Schwarzenegger announced that $540 million would be awarded to ten counties selected from the seventeen proposals submitted. The programs are to provide an expansion of health care coverage to eligible, low-income uninsured adults who are not otherwise eligible for public programs such as Medi-Cal. The programs receive financial support for three years, without assurance of funding after the demonstration period ends. HCCI provides $180 million in federal funds in years three, four and five of the waiver (September 1, 2007 to August 31, 2010) for the development and implementation of the project.

A fundamental feature of the HCCI program is the assignment of individuals to a medical home. A major goal of the programs is to improve access, quality of care and overall health of low-income uninsured individuals by shifting from the more costly episodic care to a more coordinated care provided by a medical home.

Numerous differences exist in implementation of the HCCI program among participating counties. These differences are partly due to variations in existing infrastructure within systems of care for their respective indigent populations prior to introducing the HCCI program. Some participating counties had relatively organized indigent programs based on existing provider networks which delivered a more extended scope of services and employed existing health information technology. Others were developing and reforming their existing systems, and planning for infrastructure and quality of care improvements. Still, other participating counties began with limited infrastructure, disparate networks without previous contractual relationships and limited or outdated health information technologies.

Health information technology availability ranged from full-fledged electronic systems for enrollment, medical records, referral, patient tracking and prescribing to basic communication methods, including paper and pencil enrollment and referrals via fax transmission. HCCI program operations began on September 1, 2007, though counties at early stages of development of their networks and infrastructure required a longer lead time to begin enrollment and delivery of services. Those with existing systems and plans were able to use HCCI funds to implement their HCCI program relatively rapidly with some modifications.

The Framework for Examining the Medical Home within HCCI and Interim Findings

Under the HCCI demonstration project, selected California counties are required to assign individuals to a medical home defined as:

“… a single provider or facility that maintains all of an eligible person’s medical information and that is a licensed provider of health care services, and that provides primary medical care and prevention services.”
This broad definition does not specify most of the concepts outlined in the PCMH or CCM/AMH models. However, it allows for great flexibility in implementation of the model within the existing safety net systems in each county. As stated, implementation options can range from loosely defined usual source of care to more distinctly defined PCMH or CCM/AMH models. Furthermore, counties had the option to target specific chronically ill subgroups and determine the scope of services provided under their respective programs. These variations have led to further differences in county-specific implementation of the medical home models under the HCCI program.

Exhibit 1 uses the framework of PCMH and CCM/AMH models to determine which elements of these models have been implemented in California in the HCCI counties. This framework incorporates selected elements of both models that have been implemented fully or to some degree in HCCI county programs.

At the time of this publication and based on the criteria outlined in contracts between HCCI counties and DHCS, participating counties have fulfilled the statutory requirements of their contract by assigning enrollees to licensed physicians who provide primary and preventive care and who maintain the patients’ medical records. In the first year and a half of the program, participating counties have also successfully implemented multiple aspects of the PCMH and CCM/AMH models for at least a portion of their program enrollees, if not all.

**Personal Physician**

All counties have assigned patients to medical homes. In some instances the assignment is at the clinic level, allowing the clinic to assign patients to a specific physician. Some counties can verify that a personal physician is assigned within a clinic. Adherence to the medical home is enforced in three out of ten counties and encouraged in others.

**Physician-Directed Team-Based Approach**

All counties report utilizing the physician-directed team-based approach in delivery of care. Counties have augmented teams lacking essential team members such as nurse disease/case managers and health educators in various ways. These members may be housed in a single clinic or travel between assigned clinics. In some cases, these team members are not physically present in clinics or physician offices. The members of the teams collaborate in patient care activities to varying degrees; some disease/case managers deliver their services without initial input from the primary care physician while others plan and deliver patient care in close collaboration with the physician.

**Whole Person Orientation and Care Coordination/Integration**

The medical homes in all counties coordinate the care provided to their patients by arranging for referrals, follow-up and other service needs of their patients. The degree to which service use is coordinated is partly dependent on the extent of services covered under the county’s HCCI program. When services are not covered by the county, care coordination may be limited to referrals. In most cases, providers receive some form of feedback about use of services such as inpatient care, emergency room visits or specialist visits. The sources of this feedback range from specialists faxing results back to primary care physicians; to clinic or private-practice providers accessing hospital records remotely; and to notes provided by emergency department physicians in electronic records.

All counties provide disease and case management services to all or some of their HCCI enrollees. In many cases, elements of disease and case management services are blended where the same nurses or social workers may provide both types of service as needed. In nine counties, individuals with more severe (high risk) chronic conditions are identified and receive disease and case management services. These individuals require additional oversight, assistance and self-care instruction in managing their disease.
Exhibit 1

Elements of the Medical Home and Chronic Care Models Implemented in HCCI Counties, Interim Findings

<table>
<thead>
<tr>
<th>County</th>
<th>County</th>
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<td>1</td>
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<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
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<tr>
<td>Personal Physician:</td>
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</tr>
<tr>
<td>Clinic-Based (C), Private Physician-Based (P)</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
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<tr>
<td>Assignment to PCP within clinic is verifiable:</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Number of medical homes assigned (includes clinics and private providers)</td>
<td>16</td>
<td>140</td>
<td>23</td>
<td>11</td>
<td>196</td>
<td>27</td>
<td>14</td>
<td>14</td>
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<tr>
<td>Adherence to assigned medical home enforced:</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
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<tr>
<td>Physician-Directed Team-Based Approach</td>
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<tr>
<td>Multidisciplinary team: on site (O/S), shared (S), virtual (V)</td>
<td>O/S</td>
<td>O/S</td>
<td>O/S</td>
<td>O/S</td>
<td>O/S</td>
<td>O/S</td>
<td>O/S</td>
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<tr>
<td>Team communication methods: in-person meetings (I/P), conference calls (CC), other (O)</td>
<td>I/P</td>
<td>I/P</td>
<td>I/P</td>
<td>I/P</td>
<td>I/P</td>
<td>I/P</td>
<td>I/P</td>
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<tr>
<td>Whole Person Orientation and Care Coordination/Integration</td>
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<tr>
<td>Medical home arranges for referral (R), Follow-up (F), and other care w/other providers (O)</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
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<tr>
<td>Follow-up with PCP post-utilization of other services</td>
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<tr>
<td>Specialist visit: Yes (Y), No (N)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Emergency room visit: Yes (Y), No (N)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Inpatient stay: Yes (Y), No (N)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Disease (DM), case management (CM)</td>
<td>DM</td>
<td>DM</td>
<td>DM</td>
<td>DM</td>
<td>DM</td>
<td>CM</td>
<td>DM</td>
<td>DM</td>
</tr>
<tr>
<td>Risk stratification of chronically ill population: Yes (Y), No (N)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>High utilizer management through DM/CM, other (O), none (N)</td>
<td>DM</td>
<td>CM</td>
<td>DM</td>
<td>CM</td>
<td>DM</td>
<td>CM</td>
<td>CM</td>
<td>DM</td>
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</table>
### Exhibit 1

#### Elements of the Medical Home and Chronic Care Models Implemented in HCCI Counties, Interim Findings (continued)

<table>
<thead>
<tr>
<th></th>
<th>County 1</th>
<th>County 2</th>
<th>County 3</th>
<th>County 4</th>
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<th>County 7</th>
<th>County 8</th>
<th>County 9</th>
<th>County 10</th>
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</thead>
<tbody>
<tr>
<td><strong>Self-Management Support for Chronic Conditions</strong></td>
<td></td>
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<tr>
<td>Educational materials: disease guidelines/descriptions, nutrition guides: Yes (Y), No (N)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Resources: patient logs, customized treatment plans, equipment (e.g. scales, monitors): Yes (Y), No (N)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<td>Y</td>
</tr>
<tr>
<td><strong>Mode of DM/CM communication:</strong> in-person (I/P), phone (T), group (G), none (N)</td>
<td>I/P</td>
<td>I/P</td>
<td>I/P</td>
<td>I/P</td>
<td>T</td>
<td>I/P</td>
<td>T</td>
<td>I/P</td>
<td>I/P</td>
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<tr>
<td>Quality Improvement</td>
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<tr>
<td>Feedback to providers</td>
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<td></td>
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<tr>
<td>Quality of care measures: HEDIS, other (O), none (N)</td>
<td>HEDIS</td>
<td>HEDIS</td>
<td>O</td>
<td>N</td>
<td>HEDIS</td>
<td>O</td>
<td>HEDIS</td>
<td>O</td>
<td>HEDIS</td>
<td>O</td>
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<tr>
<td>Method of measurement: chart review (CR), claims/encounter data analysis (C/E), none (N)</td>
<td>C/E</td>
<td>C/E</td>
<td>CR</td>
<td>N</td>
<td>C/E</td>
<td>CR</td>
<td>C/E</td>
<td>C/E</td>
<td>C/E</td>
<td>CR</td>
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<tr>
<td>Practice patterns/service utilization: preventive (P), labs (L), prescriptions (Rx), other (O), none (N)</td>
<td>P</td>
<td>L</td>
<td>Rx</td>
<td>O</td>
<td>P</td>
<td>L</td>
<td>Rx</td>
<td>O</td>
<td>P</td>
<td>L</td>
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<tr>
<td>Method of measurement: chart review (CR), claims/encounter data analysis (C/E)</td>
<td>C/E</td>
<td>C/E</td>
<td>CR</td>
<td>C/E</td>
<td>CR</td>
<td>C/E</td>
<td>CR</td>
<td>C/E</td>
<td>CR</td>
<td>C/E</td>
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<tr>
<td>Patient feedback: satisfaction surveys (S), complaints (C)</td>
<td>S</td>
<td>S</td>
<td>C</td>
<td>S</td>
<td>C</td>
<td>S</td>
<td>C</td>
<td>S</td>
<td>S</td>
<td>C</td>
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<tr>
<td>Evidence-based guidelines disseminated to physicians</td>
<td></td>
<td></td>
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<tr>
<td>Method of dissemination: in-person (I/P), email/mail (M), Web site (W)</td>
<td>I/P</td>
<td>I/P</td>
<td>M</td>
<td>W</td>
<td>I/P</td>
<td>M</td>
<td>W</td>
<td>I/P</td>
<td>M</td>
<td>W</td>
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<tr>
<td>Use of computer-based clinical decision support software: Yes (Y), No (N)</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
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</tr>
<tr>
<td>Direct oversight/intervention by peer/medical director: Yes (Y), No (N)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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</table>
### Exhibit 1

**Elements of the Medical Home and Chronic Care Models Implemented in HCCI Counties, Interim Findings (continued)**

<table>
<thead>
<tr>
<th>Clinical decision support tools</th>
<th>County 1</th>
<th>County 2</th>
<th>County 3</th>
<th>County 4</th>
<th>County 5</th>
<th>County 6</th>
<th>County 7</th>
<th>County 8</th>
<th>County 9</th>
<th>County 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of disease registries: diabetes (1), congestive heart failure (2), hypertension (3), hyperlipidemia (4), asthma (5), other (6)</td>
<td>1 3 4</td>
<td>1 1 6</td>
<td>1 1 3</td>
<td>1 2 3</td>
<td>1 1 1 1 1 2</td>
<td>5</td>
<td></td>
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</tr>
<tr>
<td>Availability of disease registries to providers in network: all (A), some (S), none (N)</td>
<td>A A S</td>
<td>S S S</td>
<td>S S S</td>
<td>S S S</td>
<td>A A A</td>
<td>S</td>
<td></td>
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</tr>
<tr>
<td>Electronic patient information: (EMR) or similar, other (O) such as electronic summary sheet or care records, none (N)</td>
<td>O O O EMR</td>
<td>O EMR</td>
<td>O EMR</td>
<td>O EMR</td>
<td>O O O</td>
<td></td>
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<tr>
<td>Electronic records availability to providers: all (A), some (S), none (N)</td>
<td>S S S A S S S A S</td>
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<tr>
<td>Electronic referral/tracking: all (A), some (S), none (N)</td>
<td>S S N S A A S S S A</td>
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<tr>
<td>Electronic prescribing: all (A), some (S), none (N)</td>
<td>S S N S N N S A N N</td>
<td></td>
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</tbody>
</table>

### Access to Care

#### Open access scheduling
- **Walk-in:** Yes (Y), No (N)
  - County 1: Y Y N Y Y Y Y Y Y Y
  - County 2: Y Y N Y Y Y Y Y Y Y

- **Same or next day appointment by phone for primary non-urgent care:** Yes (Y), No (N)
  - County 1: Y Y Y Y Y Y Y Y Y Y

- **Extended hours:** Yes (Y), No (N)
  - County 1: Y Y Y Y Y Y Y Y Y Y

- **24/7 nurse advice line: on site (O/S), system wide (S), none (N)**
  - County 1: N S N S S S N N N S

- **Urgent care:** Yes (Y), No (N)
  - County 1: Y Y Y Y Y Y Y Y Y Y

- **Phone, email, or other communication modes with PCP:** Yes (Y), No (N)
  - County 1: Y Y N Y N Y Y Y Y Y

### Provider Payment

- **Enhanced primary care provider payment:** Yes (Y), No (N)
  - County 1: Y Y Y Y Y Y Y N Y Y

- **Payment method:** global fee-for-service (G), personnel (P), other (O)
  - County 1: G O G G O P G G G O G G P

- **Incentives:** quality indicators (Q), other (O), none (N)
  - County 1: N N N Q O O N N N N N N

- **Enhanced specialist payment:** Yes (Y), No (N)
  - County 1: Y Y N Y Y N N N Y Y
Counties employ different criteria for selection of high-risk individuals depending on the characteristics of their enrollees. Nine counties also identify individuals with high rates of service use who may not be chronically ill or have conditions that are not targeted by the specific HCCI program such as mental illness and substance abuse problems. These individuals also receive disease and case management services to provide more appropriate ambulatory care and prevent inappropriate use of emergency rooms or other services.

Self-Management Support for Chronic Conditions
All counties provide some form of educational materials and provide various resources to patients under their self-management support services. In seven counties, the educational materials are developed or selected by the county. In others, educational materials are selected or developed by different clinics and are not uniformly available to all enrollees. Patient education is provided in a variety of settings, including in-person individual or group meetings and/or phone contacts. Most counties use a variety of these approaches depending on the intensity of the intervention and whether on-site staff provides such care. All counties provide some form of self-management resources to patients. Programs with a specific focus on chronically ill populations and disease management services develop care treatment plans and other similar tools to aid patients in managing their conditions. Some counties also provide equipment to help patients.

Quality improvement
All counties examine quality of care delivered to their HCCI enrollees and engage in some form of quality assurance and improvement activities. Eight counties use HEDIS (Healthcare Effectiveness Data and Information Set) quality measures and four employ other measures of quality in addition to HEDIS. Two of the eight counties use claims or encounter data alone, but all others use a combination of claims/encounter data and chart review to examine physician adherence to their quality measures. In addition to quality measures, counties examine physicians’ practice patterns such as adherence to formularies, utilization trends and billing patterns primarily using claims/encounter data. Chart reviews are used less frequently than claims/encounter data. All counties also measure patient satisfaction through surveys or plan to do so. In some counties, surveys are conducted centrally and in others surveys are conducted by clinics independently. The focus of the surveys may be broader than the HCCI population; however, the results are usually used in feedback to providers. Patient complaints are also used to provide feedback to providers by the majority of the counties.

Seven counties use multiple modes of communication to disseminate evidence-based guidelines to physicians, including in-person meetings, email or mail and on their Web sites. The remaining counties use a single method of dissemination. Five counties utilize some form of clinical decision support software or have purchased the software and are in the process of making it available to providers. In addition, the medical director in each county provides direct feedback to providers on their adherence to guidelines.

Clinical decision support tools include disease registries in all counties, with five counties utilizing more than one disease registry for their HCCI population. The disease registries are available system-wide in four counties. In others, registries may be available at specific clinics or clinic sites within the county system or contracted by the county. Five counties have developed an electronic medical record or a lifetime clinical record. Some counties have developed other forms of summary electronic records. Still others may depend on systems available in provider clinics. These records are available system-wide to all providers in three counties and available to some providers in other counties.

Nine counties have some form of electronic referral/tracking system and in three counties
they are available to all providers. Electronic prescribing is available to all providers in one county and to some providers in four counties.

Access to care
All counties extend access to their HCCI population through urgent care and extended hours. Many providers also have walk-in capability or offer same day appointments for non-urgent care. However, the latter is limited to availability of open appointments in three counties rather than guaranteed ability to get the same day appointment. Five counties provide a 24/7 nurse advice line. In eight counties, patients can communicate with physicians beyond the visit mostly through leaving messages with the clinic/physician staff. A few providers can be reached by patients through email.

Provider payment
Nine counties pay primary care providers at enhanced rates. Eight of these counties pay providers a global fee. Two of the nine counties also utilize providers that are employees in their systems. Also, two of the counties that pay primary care providers enhanced fees provide some form of incentive to providers to encourage high quality standards and/or to encourage provider acceptance of HCCI patients. Of the nine counties that pay primary care providers enhanced fees, six provide enhanced specialty payments to encourage specialist participation.

HCCI Counties Plan to Further Enhance Medical Home Implementation
All HCCI counties plan to further enhance the medical home model. The majority of the changes fall into three major categories: Health Information Technology (HIT), quality improvement, and enhanced access. Multiple counties have plans for implementation of enhancements to their HIT, ranging from creating electronic health and medical records, modifying e-referrals to two-way communication between primary care physicians and other providers, standardizing chronic disease registries that are available system-wide, and providing clinical decision support software. Quality improvement plans range from increasing feedback to providers through patient satisfaction surveys and chart reviews, closing the feedback loop with specialists, improving patient care and closer scrutiny of disease and care management services. Access enhancement plans include improving the ability of enrollees to get same-day appointments, increasing availability of extended hours and increasing the size of the provider networks.

Recommendations for Further Enhancements of Medical Home Implementation in HCCI Counties
HCCI counties have taken different approaches to implementation of the medical home. Some counties have focused more closely on chronically ill populations with greater emphasis on quality of care, while others have focused on integration of a larger population of enrollees with greater emphasis on enhanced access. The analysis of medical home implementation in the HCCI program highlights aspects of the medical home that would benefit from further enhancements as HCCI participating counties continue to refine their medical home models:

1. Ensure assignment to a personal physician who can lead a team of providers.
2. Examine the level of adherence to a medical home to ensure continuity of care. This is important when patients’ medical records are not available electronically and system-wide.
3. Explore the possibility of providing and/or increasing disease and case management services through on-site or shared personnel in county facilities, private practices and contracted clinics.
4. Examine team communication methods to ensure two-way communication between physicians and other team members. This will enable physicians to better plan and direct care in collaboration with the rest of the team.
5. Improve care coordination processes by ensuring feedback to the physician team leader following use of specialty care, emergency room visits, hospitalizations and other forms of services.

6. Identify high-risk and high service utilizers to focus more intensive care coordination and self-management support services on these high-need patients. This can also improve overall quality of care, patient outcomes, and maximize cost-effectiveness.

7. Examine the quality of patient education materials and standardize them system-wide to ensure all patients can benefit from them.

8. Increase and standardize the availability of essential self-management support tools, such as patient logs, customized treatment plans, spirometers, glucose monitors and other needed equipment.

9. Expand availability of system-wide clinical decision support tools and data such as disease registries and other health information technology, particularly among medical homes.

10. Explore and identify innovative ways to extend direct patient access to providers.

11. Consider incentives to improve implementation of aspects of the medical home that require financial resources and significant investment of time by providers.

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**Endnotes**


