An Evolving Approach to Primary Care Medicine

Across the country, health systems are striving to achieve improved health outcomes and patient satisfaction, while simultaneously reducing the cost of care. This “triple aim” requires a new model: A primary care model that achieves higher rates of preventive care, manages chronic disease effectively, reduces emergency room and hospital re-admission rates and incurs fewer inpatient admissions. The Patient Centered Medical Home (PCMH) is emerging as one of the most promising developments to transform the delivery of healthcare in the U.S., offering a framework for wellness focused, physician-guided, team-delivered, continuous and coordinated care. This whitepaper defines the characteristics of a successful PCMH: the cultural and operational principles, the functional relationships, the physical elements to support a team-based model, optimal space configurations and design principles.

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Drivers, Statistics, Demographics – Current State of US Healthcare Delivery

Healthcare in America is in crisis. The United States is spending more on healthcare per capita than any other country in the world but still ranks 42nd in terms of life expectancy behind Japan, France, and Canada (U.S. Census Bureau). Although The Affordable Care Act (“Obama Care”) strives to address the issue that millions of Americans lack adequate health insurance, today many in this country delay treatment until expensive emergency care is their only option. Never has it been more critical to manage healthcare delivery costs and improve the health status of the population.

The Robert Wood Johnson Foundation provides the following “Fast Facts” regarding the current healthcare delivery system in the U.S.:

- **Getting in to See the Doctor:** Only one in four Americans with chronic conditions, such as heart disease, diabetes and asthma, was able to get an appointment to see a doctor on the same day the last time they were sick. *Source: The Commonwealth Fund*
- **Recommended Care, Only Half the Time:** It’s a coin flip whether you’ll get the right care for what’s wrong with you. It only happens about half the time. Children receive less than half (46.5 percent) of recommended care. Adult patients receive only half (55 percent) of recommended care. *Source: The New England Journal of Medicine*
- **Cost of Chronic Illnesses:** Americans are living longer, but also with chronic illnesses that limit a person’s functional status, productivity and quality of life. The medical costs of people with chronic illnesses represent 75 percent - or $1.5 trillion - of the $2 trillion spent annually in the U.S. on health care. An aging population is expected to increase the health care challenges of the chronically ill. *Source: Institute of Medicine*

“Healthcare in and of itself has no intrinsic value, health does – the health of our patients, our communities, our nation. The best healthcare is the least amount needed.”
— Donald Berwick

![St. Mary’s MOB](image)
The problems with the American healthcare system are enormously complex. No single component is broken; multiple issues compound the problem to a crisis point where transformation, not tweaks, is required to address the issues. There is general agreement that a significant solution lies in developing a primary care delivery model that effectively manages chronic diseases and focuses on wellness and prevention.

Our current primary care delivery system is episodic, complaint based and illness oriented. The Patient Centered Medical Home (PCMH) is currently evolving as one of the most promising developments in transforming the delivery of healthcare in the U.S., offering a framework for wellness focused, physician-guided, patient centered, continuous and coordinated care. The challenge of the triple aim is to SIMULTANEOUSLY raise the health status of the population and improve outcomes while reducing cost. This can be achieved by focusing on services at the base of the Population Health Management Pyramid, the essence of the PCMH model.

What is a PCMH?
The Patient Centered Medical Home is not itself a brick-and-mortar concept: the term does not infer a model of “nursing home” or “home care” provider. Instead, a Patient-Centered Medical Home (or simply, a medical home) represents a centralized core around which care is coordinated, a “home base.” The transformation to medical home demands a fundamental shift to care that engages patients to achieve their health goals in a continuous and coordinated approach. Essentially, a “medical home” exists when a patient can say: “I get the right care, at the right time, by someone who knows me.”

“An ounce of prevention is worth a pound of cure.”
— Benjamin Franklin
“The bottom line: Care delivered by primary care physicians in a PCMH is consistently associated with better outcomes, reduced mortality, fewer preventable hospital admissions for patients with chronic diseases, lower utilization, improved patient compliance with recommended care, and lower Medicare spending.”
— Patient Centered Primary Care Collaborative

PCMH Defining Characteristics

<table>
<thead>
<tr>
<th>Mindset</th>
<th>Willingness to collaborate</th>
<th>Willingness to delegate</th>
<th>Focus: high utilizers/at-risk patients</th>
<th>Focus on population health</th>
<th>Focus on disease management</th>
<th>Continuous quality improvement</th>
</tr>
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<tbody>
<tr>
<td>Structure</td>
<td>Physician guided - team delivered</td>
<td>Patient-centered care</td>
<td>Data driven</td>
<td>Continuous/coordinated care</td>
<td>Integration of behavioral health</td>
<td>Comprehensive care</td>
</tr>
<tr>
<td>Catalysts</td>
<td>Superb access (same day)</td>
<td>Extended hours</td>
<td>24/7 health information access</td>
<td>Electronic health information</td>
<td>Team based clinical setting</td>
<td>Community connections</td>
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<tr>
<td>Outcomes</td>
<td>Improved clinical outcomes</td>
<td>Reduced cost</td>
<td>Reduced ER visits</td>
<td>Reduced hospital admissions</td>
<td>Satisfied patients</td>
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The National Committee for Quality Assurance, the leading agency for PCMH recognition, defines a patient-centered medical home this way: “Each patient has an ongoing relationship with a personal physician (provider) who leads a team at a single location that takes collective responsibility for patient care, providing for the patient’s health care needs and arranging for appropriate care with other qualified clinicians.” The Patient-Centered Primary Care Collaborative reflects that “care coordination is an essential component of the PCMH, and requires additional resources such as health information technology, and appropriately trained staff to provide coordinated care through team-based models.”

PCMH plays an integral role in the progress of healthcare reform in this country, as any successful reform is linked intrinsically to the Triple Aim (improved outcomes, satisfaction, cost), which relies heavily on an effective and efficient primary care system. That is why primary care providers across the country are becoming medical homes, either on their own or in partnership with larger systems as part of developing Accountable Care Organizations. The models are complementary, where primary care is recognized as the medical home, ACOs represent the larger “medical neighborhood.” For example, as primary care providers, teams and caregivers can communicate quickly with area hospitals, they can take direct action in concert with the patient to improve transitions from the hospital, reduce unnecessary re-admissions, and re-route any future unnecessary ED visits.

Characteristics of the PCMH model include:

- **ACCESS** — Patients have direct access to their provider and/or team. Medical homes offer shorter or no waiting time for consults. This can be achieved through extended hours (evenings, weekends), as well as alternatives to visits (email or phone consults, or group education visits).

- **HEALTH INFORMATION** — Health Information Technology such as electronic medical records (EMR) and registries, provide teams with clinical data to advance the quality and safety of care. Health IT is also leveraged to increase patient engagement, with web-based portals, on-site kiosks, and/or healthcare apps that provide patients access to their health information, education, and/or answers to their questions.

- **PATIENT ENGAGEMENT** — Patients, their families, and their caregivers are all identified and engaged as partners in managing their care. Care delivery teams must build trust with their patients/partners and in many cases, seek out their advice on how to improve the way care is delivered.

- **COMPREHENSIVE CARE** — Care is managed by a team that includes providers, clinical staff, non-clinical staff, and patients, coordinating wellness, preventative and acute care, as well as chronic disease self-management and behavioral health. This team holds each other accountable for the health status of the “whole” patient.

- **COORDINATED CARE** — Care is organized across the healthcare spectrum including inpatient, outpatient, home health, specialties and community support. Caregivers and family members are seen as part of the “care team” and are crucial to coordination efforts.
Key functions and attributes of the PCMH— the traditional PC practice vs. the PCMH

Transformation to a patient centered medical home represents a fundamental re-imagination and redesign of a primary care practice, replacing old cultures, patterns and processes with new ones.

First and foremost, the biggest culture shift is with the role of the physician/provider: where traditionally providers have functioned as a set of independent decision-makers around which the team revolved to carry out instructions, in the new model, physician/providers act more as team leaders empowering each member to optimize their contribution to patient care at every level. Providers also help teams obtain and analyze data that reflects team performance in patient outcomes and satisfaction, and supports team-based efforts to continuously improve performance.

Operationally, transformation is supported at four levels: staffing, health IT, balancing supply and demand and the appropriate physical environment. While this white paper does not prescribe any one staffing or access model for the patient centered medical home, we will provide a brief overview of critical operational issues to consider.

Transformation starts with promoting both team-based care and continuous quality improvement, where teams can:

- Work to their highest licensure to maximize patient care at every touch;
- Craft new scheduling, access and practice operations that suit their patients (e.g., innovative alternatives to the traditional office visit);
- Leverage multiple uses of information systems and technology (such as e-prescribing, patient portals, and patient outcome registries);
- Expand point-of-care services (such as basic tests and procedures);
- Bring evidence-based medicine techniques to the point of care;
- Create new coordination arrangements with other parts of the health care system; and
- Implement new strategies for patient engagement.

In the medical home, the new care team can be assembled in many ways; there is no “one-size-fits-all” approach. The design of the care team must be responsive to the needs of the patient: for example, if a practice serves a high percentage of patients with significant mental illness, then it is essential to include an expert in mental health issues. Whether the behavioral health professionals are hired as full-time staff or contracted, they will play a critical role in team and care coordination efforts. Additionally, if a practice has a large percentage of high-risk, chronic disease patients, this team will be well-served to embed patient education services that may be delivered by someone other than the physician/provider.
The optimal PCMH environment provides dedicated space for care teams to interface on a continuous and confidential basis. Team members who can conveniently, efficiently and effectively access their colleagues will more naturally collaborate...

**PCMH Operational Model**

Staffing the PCMH typically requires an increase of full-time equivalents above the level of a traditional primary care practice. Many practices in transition from traditional primary care to the PCMH model add FTEs to allow providers to work at “top of license” and to improve productivity, continuity of care and patient engagement. A ratio of one full-time MA to provider is a typical minimum staffing level. Additional support is dictated by patient need, acuity and demographics. In addition to providers, the typical PCMH care team may include:

- **MAs**: who, in addition to rooming for their provider, ensure that each visit is planned for and optimized, and may perform some care coordination tasks;
- **RNs and LPNs**: who function as care management “quarterback,” and/or provide education/wellness visits and phone triage;
- **Non-clinical staff**: who, in addition to check-in/check-out, may perform panel management; patient navigation and care coordination support, referral tracking, and/or cost management; and
- **Other staff may include**: Referral/Scheduling, Care Coordinators, Wellness Coaches, Behavioral Health Professionals, Nurse Educators, Pharmacy and Dental services.

*these staff could be shared among multiple providers.

How many patients can a provider manage? Again, there is no “one-size-fits-all” approach. Panel size depends on demographics and acuity of patient mix as well as on the size of the care team. Calculating optimal panel size requires definition of “visits per patient per year,” “provider visits per day” and “provider days per year.” Typical panel size for a PCMH ranges from a low of 1,000 to a high of 2,400. Recent analysis from the Health Care Advisory Board cites medical homes averaging a panel size of 1,958 patients per physician.

As the team and schedule is optimized to see the right patient at the right time, data informs the team to anticipate and respond to their patients’ care needs. Health Information Technology (HIT) platforms include a fully integrated EMR that embeds best practice protocols and allows staff to identify gaps in care and set patients up with the care they need. In addition, EMRs support

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**Operational Model**

<table>
<thead>
<tr>
<th>Traditional Primary Care</th>
<th>PCMH</th>
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<tbody>
<tr>
<td>Physician/provider-driven: workflows push work to provider</td>
<td>Team-based: workflows improved continuously to optimize all staff time and licenses</td>
</tr>
<tr>
<td>Focus is only on today’s problem</td>
<td>Proactively addresses chronic disease management and preventative care at each visit</td>
</tr>
<tr>
<td>Care dependent on schedule availability for visit with physician/provider. Time with provider limited</td>
<td>Alternatives to office visits available (email consults, nurse visits, phone or group visits)</td>
</tr>
<tr>
<td>Barriers (socioeconomic, behavioral, physical) only addressed by provider (if at all)</td>
<td>Barriers tracked and addressed by team, including the patient and caregiver(s)</td>
</tr>
<tr>
<td>Revenue based on visit; reduced opportunity for education health coaching, behavior change</td>
<td>Team leverages health IT to coordinate care with the larger “medical neighborhood”</td>
</tr>
<tr>
<td>Patient experiences fragmented care</td>
<td>Patient feels engaged in their care and is satisfied</td>
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</table>
e-prescribing, hospital communications, care coordination registries and patient communication via web portals. All of this technology, while fairly standard in most commercial industries, is still in development stages in the typical primary care office. In a fully-functioning medical home, the team will need a physical plant that supports team-based communications, mobility and nearly constant change.

C. Physical Transformation

Today, many pilot PCMH projects are housed in traditional primary care office settings, offering little accommodation for team-based care delivery. When the opportunity arises to renovate or plan new facilities for the PCMH, enormous gains are realized. Appropriate organization and layout of the physical PCMH environment enhances the performance of the care team, improves operational efficiencies, encourages collaboration and improves the patient experience.

The basic premise of the PCMH model is to provide continuous and coordinated care, to effectively address chronic disease management and assure follow-up and compliance with healthcare treatment plans and wellness protocols while lowering the cost of care and improving outcomes. This can only be achieved by utilizing a broad spectrum team including providers, medical assistants, RNs, care coordinators and behavioral health specialists. A fully functioning care team requires appropriate space for a wide range of interactions from one-on-one communication to small and mid-sized group meetings.

The optimal PCMH environment provides dedicated space for care teams to interface on a continuous and confidential basis. Team members who can conveniently, efficiently and effectively access their colleagues will more naturally collaborate and trust their fellow team members to fulfill their role in the patient encounter, follow up scheduling/referral and care coordination processes. Convenient access to information, supplies and support space is also critically important.

While there is no perfect one-size-fits-all team size, a “sweet spot” is a three or four provider “house” comprised of patient encounter space (exam rooms, consult rooms, talk rooms) and staff support space including open and private work stations, team spaces and storage areas for dedicated teams. In a group practice, a series of individual “houses” can be arrayed to create the complete medical home platform.

The Physical Model

<table>
<thead>
<tr>
<th>Traditional Primary Care</th>
<th>PCMH</th>
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<tbody>
<tr>
<td>Dedicated and assigned private offices for physicians 100-120 s.f.</td>
<td>Unassigned provider workstations 48-60 s.f. (No private offices provided)</td>
</tr>
<tr>
<td>Ratio 2 exam rooms per provider</td>
<td>Ratio 3 exam rooms per provider (minimum)</td>
</tr>
<tr>
<td>No collaborative/team space</td>
<td>Collaborative/team space centrally located</td>
</tr>
<tr>
<td>Referral/scheduling/triage “up front” and separate from clinical core</td>
<td>Referral/scheduling/triage embedded in clinical core</td>
</tr>
<tr>
<td>Exam rooms 80-100 s.f.</td>
<td>Exam rooms 110-130 s.f.</td>
</tr>
<tr>
<td>Limited use of consult rooms</td>
<td>Consult and “talk” rooms frequently replace exam rooms</td>
</tr>
<tr>
<td>Fixed, built in casework and storage</td>
<td>Flexible, modular casework and storage</td>
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</table>
Four design principles critical to the success of PCMH healthcare delivery

Standardization:
The value of establishing prototypes and adopting standard clinical modules, standard exam room configurations, standard provider workstations and standard equipment is enormous. Standardization of space, including furnishing and equipment, allows for standardization of operational protocols and consistent placement of materials and supplies ensuring more predictable outcomes. Significant cost savings are realized due to standardization through the reduction of customized or individualized purchases and the reduction of storage space for inventory of non-standard components.

Efficiency/Lean Process Improvement
PCMH planning must address efficiency as a fundamental design objective. Removing non value added activities from the delivery process by incorporating critical adjacencies, creating proximity between staff work areas and exam rooms and configurations that naturally promote meaningful interactions between members of the care team, all contribute to the goal of reducing cost while improving outcomes. The long term operational cost savings of the PCMH far exceed the first cost of design and construction; it is of critical importance to understand the optimal and efficient patient/staff encounter and design the PCMH space to support this efficiency.

Adaptability and Flexibility
Creating an adaptable and flexible clinical environment requires a commitment to standard prototypes. Using a standard plan for a typical exam room, the conversion to consult room or office functions is often as simple as removing a sink and swapping out furniture. Given that the PCMH is in early development, we recommend adopting a flexible clinical array that offers the ability to change staffing ratios, change provider/exam room ratios and incorporate new members of the care team. Lessons learned from early PCMH planning efforts caution against overly customized spaces. The more generic the clinical module the more flexible it will be over the long term. Use of modular furniture in the clinical core areas also expands the flexibility significantly.

The Patient Experience:
Successful patient care environments are designed to support and enhance the patient and family experience. There is a proven connection between the environment of care and successful clinical outcomes. When the patient experience is assessed through patient/family surveys, operational processes, communication and interactions with staff trump most environmental issues. But these functions are significantly enhanced by an appropriately designed environment. The key to designing for a positive patient and family experience is to address causes of stress. Clear wayfinding, providing abundant natural light and positive distractions (art, music etc.) go a long way to creating an environment that reduces stress and allows patients to focus on their medical issues unencumbered by environmental irritants.
Minimizing the number of different places a patient must go during a typical visit significantly improves the efficiency of care delivery and the patient experience.

PCMH Physical Model:
The physical space required to support this new care model represents a fundamental shift from the Medical Office Buildings (MOBs) of the past. Next Generation MOBs must house larger practices and provide open collaborative space where a team can effectively work together to optimize the efficiency of the care delivered.

The PCMH Must:
• Respond to the Institute for Healthcare Improvement’s (IHI) Triple Aim to simultaneously: lower the cost of care, improve population health and enhance the experience of care;
• Support team based care delivery;
• Be flexible and adaptable;
• Provide the platform for delivering continuous and coordinated care;
• Harness the power of health information technology; and
• Provide for integrated care including health coaching, behavioral health services and chronic disease management.

Summary of three PCMH Circulation Patterns
All of these models provide the following:
• Patient meet/greet reception stations
• Patient waiting areas associated with each “house” or pod
• Exam and consult rooms
• Dedicated patient toilet rooms
• Enclosed, private provider workstations
• Work stations for care team
• Team rooms for group meetings
• Supply storage
• Clean/soiled storage
• Support space for staff including break room and toilets
• Building support spaces including IT, mechanical and electrical space
Three PCMH Circulation Patterns

Plaid

Unique characteristics
The plaid model is organized in horizontal stripes. The first stripe accommodates the public waiting and check-in functions. The second stripe is comprised of patient exam space with staff supply area embedded in the center, the third stripe is a dedicated staff zone with enclosed provider workstations, team rooms and open work stations for support staff. One of the benefits to this organization is that the staff stripe is well separated from the patient/exam stripe. Team and staff interactions are achieved “off stage” from patients and their families.

Racetrack

Unique characteristics
The racetrack model is organized with staff in the middle ringed by exam rooms around the outside. This organization provides immediate access from the central core to the exam rooms. Team space and provider space can be subdivided into a variety of configurations offering flexibility and adaptability to changing work flows. This organization does not provide as much separation of staff functions from patients and families in the exam room zone as the plaid model. While this can be a source of concern, the visibility and ease of access to exam rooms from the staff core is often preferred by providers.

Thermometer

Unique characteristics
The thermometer model, like the racetrack model, is organized with staff in the middle. Expansion of this model is linear, with the exam zone expanding along with the staff core zone as much as is required to support the number of exam rooms, providers and staff. Like the racetrack model, this option offers ease of access to exam rooms from the central core and can be incrementally expanded or contracted (as a thermometer responds to changes in temperature) to accommodate changes in staffing levels or patient volume.
Three PCMH Circulation Patterns

Plaid

Racetrack

Thermometer
Case Study

The Thermometer Model
In the thermometer model exam rooms are arrayed around a central core accessed from two sides offering the efficiency of housing the clinical staff together. Patients circulate along only one side or the other making wayfinding clear and simple. Access from “front office” to clinical core is linked and contiguous. This layout was developed to support lean operations and communication.
Case Study

The Hybrid Model

This hybrid thermometer/racetrack plan houses a growing Internal Medicine PCMH. The practice includes two 4-5 provider pods with additional space for embedded behavioral health staff. Exam rooms are arrayed around a clinical core housing providers, medical assistants, RNs, phone triage and referral/scheduling functions. Space for behavioral health providers is also included in the core area. Front office space is limited to meet/greet and clerical functions. The check-out process will occur in the exam rooms reducing the number of “stops” a patient makes during an office visit.
Case Study

The Hybrid Model

This hybrid plaid/thermometer model is configured to support an internal medicine PCMH. Two 8 provider pods with care management and behavioral health embedded, share central staff support functions. The clinical encounter space incorporates team rooms for staff huddles as well as provider dictation stations located directly adjacent to MA and support staff work stations. Check-in is centrally located for the entire practice; check out is incorporated internal to each 8 provider pod.
“Disruptive innovation is not a breakthrough innovation that makes good products better; rather it transforms a product that historically is so expensive and complicated that only a few people have access to it. Disruptive innovation makes it so much more affordable and accessible that a much larger population has access to it.”
— Clay Christensen, Professor at the Harvard Business School

CONCLUSION
The PCMH model is uncharted territory for many. For traditional primary care providers, relying on other team members to directly participate in patient care requires a willingness to delegate and relinquish direct control. Clay Christensen, Professor at the Harvard Business School, in his work on disruptive innovation notes that, “Disruptive innovation is not a breakthrough innovation that makes good products better; rather it transforms a product that historically is so expensive and complicated that only a few people have access to it. Disruptive innovation makes it so much more affordable and accessible that a much larger population has access to it.” The PCMH represents a disruptive innovation in healthcare. Adopting this evolving PCMH model requires leadership, vision and a willingness to change.
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Ellen, President of SMRT Architects and Engineers, leads the healthcare planning and design practice. She has a passion for developing healing environments - supporting patients, staff and families - that are operationally sound and environmentally sustainable. She is committed to using the design process to manage change, working with clients to innovate and plan for new care delivery models. Ellen is highly regarded for her collaborative leadership skills, both on projects and within the firm. Many of her healthcare clients have retained Ellen for more than two decades. She is a member of the American College of Healthcare Executives, is Evidence-Based Design Certified and is LEED accredited through the U.S. Green Building Council. Ellen earned her Masters of Architecture at Columbia University and her undergraduate degree at Cornell University.

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SMRT FIRM PROFILE:
SMRT is a full service architecture, engineering and planning firm that specializes in the design of high performance, complex, 24/7 buildings for healthcare, government, science & technology, education and justice clients. Signature healthcare projects include one of the first Patient Centered Medical Home facilities in the country, a new 640,000 square foot replacement hospital delivered eight months ahead of schedule through Integrated Project Delivery (IPD), and a medical simulation center that has served as a model for healthcare systems and medical schools. For more information, please visit www.smrtinc.com.

MAINE QUALITY COUNTS PROFILE:
Maine Quality Counts is an independent healthcare collaborative committed to improving health and healthcare for the people of Maine by leading, collaborating, and aligning improvement efforts. Formed in 2003 and incorporated in 2006, Maine Quality Counts (QC) provides leadership, advocacy and support for improving care.