



Policy Statement—Health Information Technology and the Medical Home

abstract

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The American Academy of Pediatrics (AAP) supports development and universal implementation of a comprehensive electronic infrastructure to support pediatric information functions of the medical home. These functions include (1) timely and continuous management and tracking of health data and services over a patient's lifetime for all providers, patients, families, and guardians, (2) comprehensive organization and secure transfer of health data during patient-care transitions between providers, institutions, and practices, (3) establishment and maintenance of central coordination of a patient's health information among multiple repositories (including personal health records and information exchanges), (4) translation of evidence into actionable clinical decision support, and (5) reuse of archived clinical data for continuous quality improvement. The AAP supports universal, secure, and vendor-neutral portability of health information for all patients contained within the medical home across all care settings (ambulatory practices, inpatient settings, emergency departments, pharmacies, consultants, support service providers, and therapists) for multiple purposes including direct care, personal health records, public health, and registries. The AAP also supports financial incentives that promote the development of information tools that meet the needs of pediatric workflows and that appropriately recognize the added value of medical homes to pediatric care. *Pediatrics* 2011;127:978–982

INTRODUCTION

The Medical Home, the Strategic Plan of the American Academy of Pediatrics, and Health Information Management

The medical home¹ model is the central organizing principle for health care management for all children, including those with special health care needs.² The ideal medical home (1) translates evidence into high-quality pediatric care that is measurable, (2) provides coordinated pediatric primary and specialty care for all children, and (3) sustains pediatric practice through fair payment, cost-efficiency, and recognition of the value of pediatric primary care. The medical home model supports the strategic plan of the American Academy of Pediatrics (AAP)³ by unifying evidence-based practice and the business of pediatric care through patient/family-provider relationships that are based on trust and effective, reliable information management.

Medical Home Information Functions

The medical home must centralize and support the primary care relationship between the patient/family and health care provider through

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KEY WORDS

health information technology, medical home, pediatrics, electronic health record, medical record, data

ABBREVIATIONS

AAP—American Academy of Pediatrics

EHR—electronic health record

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well-designed and well-implemented health information management. Critical information-management functions that support and enhance medical home principles include:

- establishment and maintenance of assurance (confidentiality, integrity, availability, currency, continuity, and accuracy) of patient health information;
- comprehensive organization and management of patient-care information (eg, encounter data, prescriptions, referrals, medication reconciliations) over a patient's lifetime and across all providers and services (eg, pharmacies, laboratories, imaging services, consultants, and other providers); comprehensive and accurate collection of social, demographic, and genetic histories (including family trees) with linkage to maternal and perinatal/natal data; and translation of evidence into patient-centered care plans that implement and track care;
- timely measurement of clinical effectiveness of care and effects on patient health outcomes;
- secure communication of clinical and business functions (documentation, coding, billing, accounting) among providers, the patient/family, and other members of the health care team (including insurance companies);
- education and sharing of health knowledge, information, and data for informed and shared decision-making by patients/families; and
- reuse of accrued and aggregated clinical data and experience for quality improvement, practitioner assessment, maintenance of certification, research, and program-planning in a manner that does not compromise patient confidentiality

and does not require additional consent or assent.

Supporting Medical Homes With Information Technology

Improving the Continuity of Care

Medical home information-management systems must facilitate accurate, real-time collection, storage, retrieval, review, and communication of patient health information over time and across providers. For pediatrics, the core of such systems is a lifelong, electronic health record (EHR). Basic requirements for the content of an EHR for general⁴ and inpatient⁵ pediatric care have been articulated. Ambulatory medical home information systems must support:

- longitudinal tracking and continuity of health maintenance and chronic disease management via clinical decision-support tools that adequately meet the needs of pediatric care;
- coordination and comanagement of care provided to children with special health care needs during complex episodes that require numerous providers (primary care providers, specialists, inpatient care) via real-time communications and health information networks;
- patient transfers that span different care episodes (ie, ambulatory care to emergency care, emergency care to inpatient or critical care, critical care to rehabilitation care, inpatient care to home), including comprehensive and systematic communication of health information required for all care before, during, and after transfers between providers via structured care-transition tools and processes;
- patient-care transitions between medical homes—such as transitions from pediatric to adult medical homes⁶—via universal (ie,

vendor/technology-neutral) portability standards for patient records among different medical home information systems;

- continuous quality improvement of all health care processes and provider performance over the entire patient life span via adoption and use of inclusive standardized age-specific (prenatal to elderly) data and measures; and
- information assurance: (a) confidentiality (authentication and authorization) as required by local and national regulations and pertinent legislation for all pediatric populations (including adolescents and children in foster care); (b) content and source integrity through audit trails and disaster recovery and notification protocols; and (c) real-time availability of patient information to care providers who need it, whenever they need it.

Real-time availability of patient information from the medical home to other entities (ie, to patients, families, pharmacies, laboratories, hospitals, emergency departments, immunization information systems, registries, other practices) requires the establishment of secure and compliant health care information communications networks. Such networks and all tools (eg, personal health records, electronic prescribing, ambulatory order entry, secure messaging, and data entry) that access patient information from the medical home must support information assurance in transit (and at rest) between entities or electronic applications.

Improving the Efficiency and Safety of Care

Medical home information systems must help enhance the efficiency and cost-effectiveness of care. Systems can help improve efficiency through reduction (if not elimination) of unrec-

essary service duplications, such as redundant laboratory testing or imaging studies, by centralizing and making available past and current results to authorized providers in a just-in-time fashion.

Automation of repetitive tasks, such as electronic prescribing and clinical decision support (electronic checklists, reminders, and alerts) for ongoing scheduled clinical tasks, such as timely immunization administration, must improve efficiency, reliability, and resilience of health care processes by removing barriers and ambiguities that lead to failures and patient harm. Medical home processes in need of this type of improvement include medication-tracking and reconciliation (especially during patient transfers and care transitions and product recalls), vaccine management and catch-up (especially during shortages), and medical and durable equipment management for children with special health care needs.

To maximize the efficiency and safety of pediatric care, information systems must connect and facilitate clear communication among all partners within the care network. In addition to having easy access to the physical networks that facilitate communication, all entities within the care network must support information-interchange standards (such as the ASTM/HL7 Continuity of Care Record/Document⁷) that include relevant concepts (eg, weight-based [mg/kg] medication dosing) that meet the needs of pediatric patients and their care.

Improving the Quality of Care

Medical home information systems must support continuous quality improvement. Systems must facilitate:

- timely translation of evidence into actionable practice protocols;
- consistent and measurable delivery of evidence-based clinical care; and

- continuous collection and reporting of quality indicators based on clinical data.

As care quality is increasingly defined by indicators on the basis of clinical practice data (as opposed to claims data) by payers and regulators, information systems must be designed and implemented to collect and display, process, and report measures derived directly from clinical care and outcomes data. To provide true measures of clinical effectiveness and cost-effectiveness, it will become necessary to design systems and measures that link performance indicators to “episodes of care” that go beyond simple “encounters.”

To translate current evidence into practice, systems must support incorporation of current guidelines into actionable practice tools. Tools such as checklists and clinical decision support must be incorporated into electronic encounter forms and other clinician interfaces that can collect performance data that demonstrate the impact of guideline implementation within specific care settings.

Finally, as a potential source of ongoing accrued clinical data, medical home information systems must make such clinical data available to support quality improvement on multiple levels: to provide data for performance feedback (for continuous professional development and maintenance of certification) at the level of the individual clinician; to develop and refine clinical decision support and to assess performance (data for programs such as eQIPP [Education in Quality Improvement for Pediatric Practice]⁸) at the practice level; and to pool data from individual medical home information systems (to health information exchanges) for public health research and planning at community and population levels.

RECOMMENDATIONS

The AAP supports:

1. Development, implementation, and widespread deployment of a comprehensive electronic infrastructure to support pediatric information-management functions of the family-centered medical home. These functions include (a) management and tracking of patient health and services over a patient’s lifetime across multiple providers, (b) comprehensive, efficient, and timely transfer of health data for safe patient transitions among providers, institutions, and practices, (c) establishment of central coordination of a patient’s health information among multiple repositories (including personal health records and information exchange), (d) translation of evidence into actionable protocols and clinical decision support, and (e) reuse of archived clinical data for continuous quality improvement and public health research.
2. Formal and centralized advocacy in legislative and technical arenas to promote the development, implementation, and widespread adoption of tools to support pediatric information functions in medical home information systems, including (a) pediatric-specific quality measures based on clinical data, (b) data standards that facilitate electronic collection, processing, and reporting of pediatric-specific and pediatric-appropriate clinical data from medical homes for quality improvement for practices, continuous professional development of providers, regulatory reporting, and population-based health research, and (c) health information exchanges that connect medical homes to other sectors of the health care environment.
3. Universal portability of health information to other entities including per-

sonal health records, pharmacy, laboratory, and imaging information systems; other patient electronic information systems (regardless of vendor); and registries for research and resource management.

4. Creation of financial incentives to
 - (a) promote adoption of the medical home model in primary and specialty care, (b) design, implement, and deploy health information technologies that meet pediatric requirements for quality and safety, and (c) promote widespread universal adoption of such technologies (including education and training) into medical home information systems.

Barriers to Overcome

Challenges to these recommendations include:

- Need for universal bidirectional interoperability of systems—As interconnected systems evolve, there is increasing need to create and maintain bidirectional exchange of data from EHRs to practice-management and billing/scheduling systems, insurance information systems, and health information exchanges. Interoperability is vulnerable to loss when systems change; therefore, universal standards for maintaining data-sharing among systems are needed.
- Need for centralized leadership—As the movement to increase adoption of EHRs and associated health information technology accelerates, so does the need for a central organizing entity for pediatric-specific technical, legislative, and advocacy efforts. Such an entity must work to align incentives and help pediatric practices navigate the changes that will be required to promote family-centered medical homes and health information technology adoption. These evolving needs will require the AAP⁹ to work in partnership with practices, vendors, and other stakeholders in the best interests of child health to build national and regional health information networks that meet the needs of pediatric care. An important area for initial technical work is in the development of a pediatric EHR format as part of the Child Health Insurance Reauthorization Act (CHIPRA).¹⁰ The AAP has established the Child Health Informatics Center¹¹ to lead in some of these efforts.
- Financial uncertainty—Pediatric practices bear the risks and costs of health information technology adoption but do not currently see financial returns on those investments. Therefore, financial incentives and assurances that mitigate risks of adoption and that provide return on investments to practices are needed if wider pediatric adoption of health information technology is the target goal. Federal efforts include providing financial incentives for “meaningful use” of “certified products” that extend to all pediatric practices.¹²
- Privacy, security, and information ownership—Privacy laws, designed to provide patients with particular and well-recognized benefits, pose implementation challenges for providing assurance of confidentiality, integrity, and availability of pediatric patient data. In addition to jurisdictional variations in laws surrounding patient privacy, there are technical, political, and ethical issues surrounding information management for children with conditions such as HIV or rare diseases, adolescent privacy and confidentiality issues, and of confidential data stored in health information exchanges. In addition, the progressive management, regulation, and ownership of archived personal health information and its reuse as children reach the age of majority are unclear.
- Practitioner resistance—The technical challenges in implementing electronic information systems in ambulatory settings are daunting for many practices, especially smaller ones. The work and cost of selecting and implementing a system is compounded by the work and cost of converting existing practice data and infrastructure to fit an electronic record, and the loss of productivity during deployment may deter many practices from adoption. In addition, practices are vulnerable to changes in health information technology vendor choices that may require additional costly changes as markets change.

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