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Leveraging Clinical Informatics to Improve Child Mental Health Care

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Acceleration in the use of health information technologies has stimulated an equally increasing need for workforce development in clinical informatics. The near universal adoption of electronic health records (EHR), centralization of medical records within care networks, development of specialty-adapted physician support tools, and production of vast clinical data mines,[1] provides new opportunities to leverage these technologies to improve access and quality of care. Recently, many physicians have newly implemented video appointments with minimal training on how to integrate with EHR systems. To address the need for physician training, clinical informatics was recognized in 2014 as a formal subspecialty by the American Board of Medical Specialties (ABMS). Although physician informaticians can work across all medical or surgical specialties, clinical training within medical specialties is key to tailoring technology to optimize care at the clinic, provider, and patient levels.[2]

Yet despite these advances, child and adolescent psychiatrists are underrepresented among physicians working in clinical informatics, and gaps in the translation of health information technologies to child mental health care are apparent. For example, many EHR workflows and decision-support systems are developed for adults in medical settings that do not readily map to psychiatric and pediatric care.[3,4] Children and adolescents experience developmental and physiologic variation that may not be appropriately addressed by EHR templates created for adults.

In addition, patient-facing technologies, those designed to promote patient engagement in their care, have emerged as additional means to facilitate data-sharing and communication

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between child psychiatrists, patients, and families. These technologies include smartphones (e.g., text messaging, mobile applications), websites, wearables (e.g., fitness trackers), and patient portals. However, rigorous assessment and validation of these technologies in child and adolescent psychiatry have lagged behind other medical specialties, and most patient-facing technologies for pediatric mental health are not integrated into EHRs.

In response, we present a set of clinical vignettes to demonstrate the utility of clinical informatics in pediatric mental health, call for an increase in the number of child and adolescent psychiatrists working in clinical informatics, and discuss specific ways in which we can approach the evolving digital transformation of our practice.

Informatics in Child and Adolescent Psychiatric Care

A distinguishing feature of child and adolescent psychiatry is the breadth and depth of human development. The transitions from early childhood through adolescence create shifting contexts in which clinical data are used to provide mental health care. Consider the following divergent vignettes:

> *A psychiatrist in an early childhood consultation clinic is evaluating a five-year-old who avoids physical contact, has difficulty being soothed or comforted, and flaps his hands repetitively*. Initial questions include eliciting parents' descriptions of their child's development, review of developmental screening records from the pediatrician, and observation of behavior. Clinical informatics tools include parent surveys provided electronically prior to the encounter and automatically imported into assessment notes in the electronic health record, access to pediatrician documentation, and a templated documentation format to elicit relevant behavioral observations. A clinician uses the provider messaging systems to communicate recommendations to the pediatrician and a secure telehealth platform for follow-up sessions.
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> *A psychiatrist is consulted by an emergency department to evaluate an adolescent who is brought in by parents for suicidal ideation with plans to overdose on prescription medications*. The initial clinical approach focuses on the nature and severity of suicidal thoughts and evaluation of safety, including access to medications and firearms. Clinical informatics tools include an emergency department workflow interface for nursing triage incorporating standardized suicide screening questions, decision support for weight-adjusted dosing of emergency medications, a mobile app-based safety plan upon discharge with built-in follow-up secure messaging to alert emergency contacts when the patient is at risk of suicide, and patient and parent portals to provide after-visit information while maintaining the privacy of the adolescent when appropriate.

These examples illustrate how adaptation of health information technologies to pediatric mental health care varies substantially across the age spectrum, practice setting, and presenting concern. When implemented well, these technologies can support the child and adolescent psychiatrist's clinical decision process as well as advance the delivery of high-quality care through improved standardization and efficient workflows.

Child and Adolescent Psychiatrists Can Take Us Forward

The translational interface between child psychiatry and clinical informatics remains in its infancy despite its potential. While pediatric subspecialties have worked to expand the use of the EHR,[5] further expansion of informatics tools in child psychiatry could be better optimized to support child mental health care. Analogous translational efforts are needed at the interface of child mental health care, clinical informatics, epidemiology, quality improvement, and research. These efforts should include child and adolescent psychiatrists who can provide content expertise to improve EHR functionality, collaborate with key entities such as the Office of the National Coordinator for Health Information Technology, and advocate for children's mental health needs in federal and state health informatics initiatives.

Caring for the mental health needs of adolescent patients raises distinct concerns surrounding the role of health information and patient privacy.

Child psychiatrists have the expertise to be leaders at the interface of technology, privacy, and child mental health. Being thoughtful regarding privacy boundaries, child psychiatrists could provide expertise with regard to envisioning shared protected portals to display clinically relevant information while minimizing unnecessary breaches of confidentiality. Sensitive data in electronic health records may be inadvertently displayed in a patient portal, printed in an after-visit summary, or auto-populated in forms for medical clearance. Limitations to confidentiality of sensitive information has led some practice settings to block access to patient portals for adolescents. Privacy concerns surrounding sensitive data also exist across medical providers, health systems, and payers with respect to transmitting data through the EHR. The Office of the National Coordinator of Health Information Technology proposed new rules in 2019 that encourage the use of an additional standard called Data Segmentation for Privacy (DS4P) to tag sensitive data and reduce transmission to other sites. However, challenges remain to implementation, including whether emergency measures, such as 'break the glass,' which permits access to electronic records on a need to know basis, might be used to allow access to non-disclosed data.[6] Partnering with their institutional information system specialists, child psychiatrists can help adapt patient portals, EHRs, and health information exchanges to account for these unique issues, paving the way for expanded use of these applications in clinical care.

A growing role of child psychiatrists in clinical informatics is in the ecological dissemination of health technologies.

Systematic integration of patient data from disparate sources is essential to realizing the full value of clinical informatics. This is particularly true in child and adolescent psychiatry, where disparate sources include not only clinician- and patient-generated data, but also information from key stakeholders in the wellbeing of the child, including parents and schools. Mobile devices and wearables collecting ecological momentary data are a promising means to identify patterns in data collected outside of the clinician-patient interaction (as discussed in JAACAP Translations on deep phenotyping),[7] but integration with traditional health care data, including EHRs, remains a key problem. With clinical informatics training, child psychiatrists will be well-positioned to effectively advocate for

interoperability and standardization while taking into account the unique aspects of child psychiatric care.

Advancing Knowledge and Expertise

There are many ways by which child and adolescent psychiatrists can enhance their knowledge of the field of clinical informatics, learn more about informatics tools for everyday practice, and become leaders in helping health information technology meet the needs of child and adolescent psychiatry. Recognizing that new digital health solutions are increasingly developed and integrated into our clinical workflow is the first step. Expressing openness and curiosity about the potential for these tools to change our clinical practice is essential. For clinicians who have not yet adopted EHRs, we encourage open communication with informatics experts to identify EHR implementation best practices to ensure they meet the needs of the provider. For clinicians currently using EHRs, we challenge psychiatrists to determine if their current EHR is well-suited for child mental health care, learn to maximize effective use of and configuration of the EHR, and develop facility with patient portals. We hope child and adolescent psychiatrists will seek out informatics knowledge, collaborate with informatics experts, and advocate for improvement and assessment of EHRs for child mental health at a larger scale. Those with special interest can also participate in and contribute to professional societies dedicated to accelerating the field of informatics within and across subspecialties. For clinicians interested in advancing their own knowledge, resources are available (Table 1) as well as pathways to board certification in clinical informatics.[8]

The digital transformation of our subspecialty necessitates a corresponding increase in the number of child and adolescent psychiatrists with skills to strategically deploy health information technology in child mental health care. In the next decade, enhancing the general knowledge in our subspecialty about clinical informatics will be critical. With greater involvement of child and adolescent psychiatrists in informatics, we can better navigate challenges of the digital transformation and move closer toward the promise of health technology as a means to support quality mental health care for children.

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Table 1.

Sample Informatics Resources for Child and Adolescent Psychiatrists

	Cost	Target Learner
Published Material		
American Academy of Child and Adolescent Psychiatry Health Information Technology Subcommittee. Opportunities and Challenges in the Use of Electronic Health Record (EHR) Systems for Child and Adolescent Psychiatrists.[9]	Free	Introductory
Finnell JT, Dixon BE. Clinical Informatics Study Guide: Text and Review. Springer International Publishing; 2015.	Purchase Required	Introductory
Shortliffe EH, Cimino JJ. Biomedical Informatics: Computer Applications in Health Care and Biomedicine. Springer London; 2013.	Purchase Required	Introductory
Journal of the American Medical Informatics Association	Subscription Required	Advanced
Online Courses		
Harvard Clinical Informatics Lecture Series[10]	Free	Introductory
The Healthcare Information and Management Systems Society Learning Center Modules[11]	Free	Intermediate
American Medical Informatics Association 10×10 Program[12]	Tuition Required	Advanced
The Regenstrief EHR Clinical Learning Platform[13]	Subscription Required	Intermediate
Conferences		
American Medical Informatics Association: Clinical Informatics Conference, Annual Symposium[14]	Registration Fee Required	All levels
Health Information and Management Systems Society Global Health Conference and Exhibition[15]	Registration Fee Required	All levels