

# Elucidating Challenges and Opportunities in the Transition to ICD-10-CM

**AUTHORS:** Alexander G. Fiks, MD, MSCE,<sup>a,b,c,d,e,f</sup> and Robert W. Grundmeier, MD<sup>a,d,e</sup>

<sup>a</sup>*Pediatric Research Consortium*, <sup>b</sup>*PolicyLab*, <sup>c</sup>*Center for Pediatric Clinical Effectiveness*, <sup>d</sup>*Center for Biomedical Informatics at the Children's Hospital of Philadelphia*, and <sup>e</sup>*Department of Pediatrics at the Perelman School of Medicine at the University of Pennsylvania, Philadelphia, Pennsylvania*; and <sup>f</sup>*Pediatric Research in Office Settings at the American Academy of Pediatrics*

## KEY WORDS

ICD-10, informatics, diagnostic codes, medical billing, electronic health records

## ABBREVIATIONS

EHR—electronic health record

ICD-9-CM—International Classification of Disease, Ninth Revision Clinical Modification

ICD-10—International Classification of Disease, Tenth Revision

International Classification of Disease—Tenth Revision

ICD-10-CM—International Classification of Disease

Tenth Revision, Clinical Modification

QI—quality improvement

Drs Fiks and Grundmeier conceptualized the manuscript, drafted the initial manuscript, and approved the final manuscript as submitted.

Opinions expressed in these commentaries are those of the author and not necessarily those of the American Academy of Pediatrics or its Committees.

[www.pediatrics.org/cgi/doi/10.1542/peds.2014-0726](http://www.pediatrics.org/cgi/doi/10.1542/peds.2014-0726)

doi:10.1542/peds.2014-0726

Accepted for publication Mar 26, 2014

Address correspondence to Alexander G. Fiks, MD, MSCE, The Children's Hospital of Philadelphia, 3535 Market Suite, Room 1546, Philadelphia, PA 19104. E-mail: [fiks@email.chop.edu](mailto:fiks@email.chop.edu)

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

Copyright © 2014 by the American Academy of Pediatrics

(Continued on last page)



Throughout the history of medicine, clinicians have worked to classify disease. As early as 1662, John Graunt studied the London Bills of Mortality to report death rates by condition.<sup>1</sup> Originally created for epidemiologic purposes, systems of disease terminology became useful for other purposes, including billing. Since 1979, the *International Classification of Diseases, Ninth Revision with Clinical Modifications* (ICD-9-CM) has been used for third-party payment in the United States. Worldwide, the 10th revision of the ICD (ICD-10) has been used with local modifications in numerous countries for a decade or more. Now, all US entities covered by the Health Insurance Portability Accountability Act will be required to use ICD-10-CM on or after October 1, 2015. ICD-10-CM has about 5 times as many codes as ICD-9-CM. It is hoped the new codes will be better aligned with current medical terminology, characterize health information that could not be described with ICD-9-CM (eg, Glasgow coma score, blood type), and provide greater detail about health conditions (eg, severity of disease, laterality of anatomic location). The transition to ICD-10-CM should also facilitate comparisons of health outcomes between the United States and other nations.<sup>2</sup>

The transition to ICD-10-CM occurs in the context of an accelerating transformation in how electronic health data, including diagnostic codes, are used. Driven by the investment of \$19 billion to promote the adoption of electronic health records (EHRs) by the American Recovery and Reinvestment Act of 2009,<sup>3,4</sup> nearly 80% of office-based physicians are currently using EHRs.<sup>5</sup> These systems may facilitate an increasing number of large-scale research studies and quality improvement (QI) projects in addition to their traditional role in patient care and billing. In the research arena, the Patient-Centered Outcomes Research Institute has funded 11 electronic health record–driven Clinical Data Research Networks, including 1 focused exclusively on pediatrics. Similarly, the American Academy of Pediatrics Pediatric Research in Office Settings Network is working with collaborating networks from across the United States to study through EHR data the safety and efficacy of medication for children. Increasingly positioning pediatricians as active users of EHR data, American Board of Pediatrics Maintenance of Certification Part IV now requires pediatricians to participate in data-driven QI projects. In this setting, pediatricians, their practices and health systems, and researchers and QI experts must recognize the implications of changing from ICD-9-CM to ICD-10-CM.

The study by Caskey and colleagues in the current issue of *Pediatrics*, through a detailed analysis of Illinois Medicaid billing codes, carefully characterizes the many ways that the transition from ICD-9-CM to ICD-10-CM may change the meaning, what clinical informaticians call the semantics, of commonly used codes.<sup>6</sup> The good news is that the authors found that 74% of codes were readily transitioned. However, they found 26% of diagnostic codes, representing 16% of reimbursements,

to be convoluted, indicating that the transition from ICD-9-CM to ICD-10-CM is complex and likely to be challenging. Among the convoluted mappings, they found that codes suffer from information loss, with the transition obscuring a clinically important distinction, overlapping categories, where the choice of the correct ICD-10-CM code from multiple options may not be intuitive, or inconsistency, when the ICD-9-CM codes map to ICD-10-CM codes with a clinically different meaning. Although it is not surprising that meaning may be lost in this translation, both the extent of the difficulties in translation and the financial implications warrant careful attention.

Caskey has made an important contribution to ICD-10-CM transition efforts by categorizing the different mapping errors that can occur and providing lists of error-prone diagnoses. As mentioned

by the authors, appropriate ICD-10-CM training should be provided to billers, staff, clinicians, and others using the data. In addition, we recommend that all health systems generate reports of their most frequent diagnoses to determine which may be subject to errors, based on this analysis by Caskey and their own review. In addition to billing personnel, research and QI teams that make secondary use of coded diagnoses should review these lists. Before the transition to ICD-10-CM, members of the institutional review boards should also search for protocols extending beyond October 1, 2015 that make secondary use of coded diagnoses. Existing reports that support QI or research should be examined for references to ICD-9-CM codes and updated to include suitable ICD-10-CM codes. In addition, research and QI teams should plan a period

of careful observation after the ICD-10-CM transition to monitor for unanticipated shifts in cohort size or outcomes that may be spurious.

Although this transition presents immediate challenges and costs, the more granular coding supported by ICD-10-CM promises to improve the specificity of billing and payment as well as process and outcome measurement for QI and research. As Caskey demonstrates, active planning and vigilance are needed now and through the implementation of ICD-10-CM to best realize these goals.

### ACKNOWLEDGMENTS

We thank Richard “Mort” Wasserman, MD, and Benjamin Margolis, PhD, for their critical review of this commentary, and Nathalie duRivage, MHS, for her help with manuscript preparation.

### REFERENCES

1. Jones HW. John Graunt and his bills of mortality. *Bull Med Libr Assoc.* 1945;33(1):3–4
2. Meyer H. Coding complexity: US Health Care gets ready for the coming of ICD-10. *Health Aff (Millwood).* 2011;30(5):968–974
3. H.R. 1—111th Congress: Health Information Technology for Economic and Clinical Health Act of 2009. Available at: <https://www.govtrack.us/congress/bills/113/hr1331/text>. Accessed March 7, 2014
4. H.R. 1—111th Congress: American Recovery and Reinvestment Act of 2009. Available at: [www.govtrack.us/congress/bills/111/hr1/text](http://www.govtrack.us/congress/bills/111/hr1/text). Accessed March 4, 2014
5. Hsiao CJ, Hing E. Use and characteristics of electronic health record systems among office-based physician practices: United States, 2001–2013. *NCHS Data Brief.* 2014;143:1–8
6. Caskey R, Zaman J, Nam H, et al. The transition to ICD-10-CM: challenges for pediatric practice. *Pediatrics.* 2014;134(1):31–36

---

(Continued from first page)

**FINANCIAL DISCLOSURE:** The authors have indicated they have no financial relationships relevant to this article to disclose.

**FUNDING:** Dr Fiks was supported by award number K23HD059919 from the *Eunice Kennedy Shriver* National Institute of Child Health & Human Development. Drs Fiks and Grundmeier are supported by grant R40MC24943 and formerly received support from cooperative agreement UB5MC20286 (the American Recovery and Reinvestment Act of 2009), from the Maternal and Child Health Bureau of the Health Resources and Services Administration, Department of Health and Human Services. This content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Child Health & Human Development, the National Institutes of Health, Maternal and Child Health Bureau, Health Resources and Services Administration, or the Department of Health and Human Services. Funded by the National Institutes of Health (NIH).

**POTENTIAL CONFLICT OF INTEREST:** The authors have indicated they have no potential conflicts of interest to disclose.

**COMPANION PAPER:** A companion to this article can be found on page 31, and online at [www.pediatrics.org/cgi/doi/10.1542/peds.2013-4147](http://www.pediatrics.org/cgi/doi/10.1542/peds.2013-4147).

## Elucidating Challenges and Opportunities in the Transition to ICD-10-CM

Alexander G. Fiks and Robert W. Grundmeier

*Pediatrics* 2014;134;169

DOI: 10.1542/peds.2014-0726 originally published online June 2, 2014;

<b>Updated Information &amp; Services</b>	including high resolution figures, can be found at: <a href="http://pediatrics.aappublications.org/content/134/1/169">http://pediatrics.aappublications.org/content/134/1/169</a>
<b>References</b>	This article cites 4 articles, 2 of which you can access for free at: <a href="http://pediatrics.aappublications.org/content/134/1/169#BIBL">http://pediatrics.aappublications.org/content/134/1/169#BIBL</a>
<b>Subspecialty Collections</b>	This article, along with others on similar topics, appears in the following collection(s): <b>Administration/Practice Management</b> <a href="http://www.aappublications.org/cgi/collection/administration:practice_management_sub">http://www.aappublications.org/cgi/collection/administration:practice_management_sub</a> <b>Billing &amp; Coding</b> <a href="http://www.aappublications.org/cgi/collection/billing_-_coding_sub">http://www.aappublications.org/cgi/collection/billing_-_coding_sub</a> <b>Health Information Technology</b> <a href="http://www.aappublications.org/cgi/collection/health_information_technology_sub">http://www.aappublications.org/cgi/collection/health_information_technology_sub</a> <b>Biomedical Informatics</b> <a href="http://www.aappublications.org/cgi/collection/biomedical_informatics_sub">http://www.aappublications.org/cgi/collection/biomedical_informatics_sub</a>
<b>Permissions &amp; Licensing</b>	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: <a href="http://www.aappublications.org/site/misc/Permissions.xhtml">http://www.aappublications.org/site/misc/Permissions.xhtml</a>
<b>Reprints</b>	Information about ordering reprints can be found online: <a href="http://www.aappublications.org/site/misc/reprints.xhtml">http://www.aappublications.org/site/misc/reprints.xhtml</a>

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



# PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

## **Elucidating Challenges and Opportunities in the Transition to ICD-10-CM**

Alexander G. Fiks and Robert W. Grundmeier

*Pediatrics* 2014;134;169

DOI: 10.1542/peds.2014-0726 originally published online June 2, 2014;

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://pediatrics.aappublications.org/content/134/1/169>

Pediatrics is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. Pediatrics is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2014 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 1073-0397.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

