Journal of Medical Systems (2019) 43: 315
https://doi.org/10.1007/s10916-019-1450-y

SYSTEMS-LEVEL QUALITY IMPROVEMENT

The Accuracy of Diagnostic Codes in Electronic Medical Records in Japan

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Received: 18 July 2019 / Accepted: 3 September 2019 / Published online: 7 September 2019

To the Editor

Currently, electronic clinical databases and patient registries are rapidly being introduced in the biomedical research field. Thus, numerous real-world data on patients and healthcare information are available globally for clinical research, drug safety, epidemiology, and health technology assessment [1]. However, in Japan, electronic medical records (EMRs) have primarily been implemented for medical insurance claims and medical care. Clinicians therefore enter data for medical services rather than for clinical research and thus, EMRs do not accurately reflect clinical information. Particularly, the large variation in coding practices between clinicians is problematic [2]. Despite considerable research interest, the accuracy of diagnostic codes in EMRs in Japan has not been sufficiently verified.

Therefore, we validated the accuracy of diagnostic codes for stroke in a hospital-based cancer registry using EMRs, prior to studying the association of cancer with stroke in Japan [3]. In total, 27,932 patients enrolled in the hospital-based cancer registry at Osaka University Hospital were included. First, we extracted the ICD-10 (international classification of diseases, 10th revision) diagnostic codes for stroke from the EMR database. Subsequently, using patients' medical records, we manually reviewed the information on the diagnostic codes, including acute or old diagnoses and primary or other diagnoses. Only 20% of the codes for stroke included diagnoses of acute stroke and approximately 40% included old diagnoses of stroke, wherein the registration and onset dates did not match. Notably, 40% included registrations for laboratory tests or diagnoses of stroke mimics, and did not actually involve stroke.

Our study revealed that the accuracy of the diagnostic codes is low, which could result because clinical data is not entered into EMRs with the objective for research. Our study may be limited as it was conducted at single center and validated only the diagnostic codes for stroke; hence, the results may not represent every EMR in Japan. However, as EMRs have primarily been implemented for medical services, our results may represent the current state of EMRs in Japan.

Japan has active projects wherein large-scale databases at multiple institutions use EMR data for real-world research. Thus, if the registered diagnostic codes in EMRs are used for research in isolation, incorrect results can be obtained. Hence, Japanese researchers should resolve this issue by improving the quality of registered diagnostic codes in EMRs.

Acknowledgements We would like to thank Mr. Taizo Murata for his assistance of data acquisition.

Funding This study was funded by JSPS KAKENHI (grant number JP15K08915).

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee (The ethics committee for clinical research at Osaka University Hospital, Approval No. 16160) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was waived due to the retrospective nature of the study.

This article is part of the Topical Collection on *Systems-Level Quality Improvement*

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