

**Table 2**

## Sources of the Data Extracted from the Standards and Paper-based Record Sheets

Source	Administrative	Encounter	Problem	Treatment Plan	Provider	Exam	Diagnosis	History	Event	Insurance
ASTM	E1238, E1239 <sup>1</sup> , E1384, E2473 <sup>2</sup> , and CCRV.1a,	E1238, E1239, E1384, E2084 <sup>3</sup>	E1238	E1384, CCRV.1, CCRV.1a	E1384, CCRV.1, CCRV.1a	CCRV.1, CCRV.1a	CCRV.1, CCRV.1a	E1384, CCRV.1	CCRV.1	E1384
HL7	HL7v.x standard, <sup>a</sup> and the messages <sup>b</sup> and the functions of EHR-DSTU <sup>c</sup>	HL7V.X standard <sup>a</sup> and the messages <sup>b</sup>	--	HL7V.X	HL7V.X	HL7V.X	-----	-----	Messages	HL7V2.5, UB sheets
Paper record	Identification data in all the sheets as header, other data in the reception sheets, the discharge summary, the record summary, anesthesia form, and preoperative care form	Admission and discharge summary, unit summary, progress note, physician' order, nurses' note, anesthesia, preoperative care, operation report, postoperative care, vital signs chart, laboratory report attachment, pathology report, radiology report, consultation request, the electrocardiogram	-----	Physician's orders, postoperative care, and nurses' note	All related sheets	Admission and discharge summary, medical history and physical exam, anesthesia, preoperative care, operation report, postoperative care, vital signs control, vital signs chart, fluid balance chart and consultation request sheet	Medical history and physical exam	Admission and discharge summary sheet, pathology report, radiology report, laboratory attachment report, and the electrocardiogram attachment sheets	Admission and discharge summary, unit summary	Reception sheet and the discharge summary, anesthesia, preoperative care, the operation report, and postoperative care sheets

Sources:

1. ASTM International. ASTM E1239-04(2010), Standard Practice for Description of Reservation/Registration- Admission, Discharge, Transfer (R-ADT) Systems for Electronic Health Record (EHR) Systems. Available at <https://www.astm.org/Standards/E1239.htm>.
2. ASTM International. ASTM E2473-05(2011), Standard Practice for the Occupational/Environmental Health View of the Electronic Health Record. Available at <https://www.astm.org/Standards/E2473.htm>.
3. ASTM International. ASTM E2084-00, Standard Specification for Authentication of Healthcare Information Using Digital Signatures. Available at <https://www.astm.org/DATABASE.CART/WITHDRAWN/E2084.htm>.

<sup>a</sup> Kasthurirathne, S. N., B. Mamlin, G. Grieve, and P. Biondich. "Towards Standardized Patient Data Exchange: Integrating a FHIR Based API for the open medical record system. *Studies in Health Technology and Informatics* 216 (2015): 932.

<sup>b</sup> Oh, A. S. "A Study on HL7 Standard Message for Healthcare System Based on ISO/IEEE 11073." *International Journal of Smart Home* 9, no. 6 (2015): 113–18.

<sup>c</sup> Meehan, R. A., D. T. Mon, K. M. Kelly, M. Rocca, G. Dickinson, J. Ritter, and C. M. Johnson. "Increasing EHR System Usability through Standards: Conformance Criteria in the HL7 EHR-system Functional Model." *Journal of Biomedical Informatics* 63 (2016): 169–73.