



Standard Practice for Description of Reservation/Registration-Admission, Discharge, Transfer (R-ADT) Systems for Electronic Health Record (EHR) Systems¹

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1. Scope

1.1 This practice identifies the minimum information capabilities needed by an ambulatory care system or a resident facility R-ADT system. This practice is intended to depict the processes of: patient registration, inpatient admission into health care institutions and the use of registration data in establishing and using the demographic segments of the electronic health record. It also identifies a common core of informational elements needed in this R-ADT process and outlines those organizational elements that may use these segments. Furthermore, this guide identifies the minimum general requirements for R-ADT and helps identify many of the additional specific requirements for such systems. The data elements described may not all be needed but, if used, they must be used in the way specified so that each record segment has comparable data. This practice will help answer questions faced by designers of R-ADT capabilities by providing a clear description of the consensus of health care professionals regarding a uniform set of minimum data elements used by R-ADT functions in each component of the larger system. It will also help educate health care professionals in the general principles of patient care information management as well as the details of the constituent specialty areas.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory requirements prior to use.*

¹ This practice is under the jurisdiction of ASTM Committee E31 on Healthcare Informatics and is the direct responsibility of Subcommittee E31.25 on Healthcare Data Management, Security, Confidentiality, and Privacy. This guide was prepared in collaboration with the American Health Information Management Assn.

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2. Referenced Documents

2.1 ASTM Standards:²

E1384 Practice for Content and Structure of the Electronic Health Record (EHR)

E1633 Specification for Coded Values Used in the Electronic Health Record

E1714 Guide for Properties of a Universal Healthcare Identifier (UHID)

E1715 Practice for An Object-Oriented Model for Registration, Admitting, Discharge, and Transfer (RADT) Functions in Computer-Based Patient Record Systems

E1869 Guide for Confidentiality, Privacy, Access, and Data Security Principles for Health Information Including Electronic Health Records

2.2 ANSI Standards:³

ANS X3.38 Identification of States of the United States for Information Interchange

ANS X3.47 Structure of the Identification of Name Populated Places and Related Entities of the States of the United States

NCCLS LIS-5A Specification for Transferring Clinical Observations Between Independent Computer Systems

NCCLS LIS-8A Guide for Functional Requirements of Clinical Laboratory Information Management Systems

NCCLS LIS-9A Guide for Coordination of Clinical Laboratory Services within the Electronic Health Record Environment and Networked Architectures

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

2.3 *ISO Standards*:⁴

ISO 639 Names of Languages

ISO 3166 Names of Countries

ISO 5218 Representation of Human Sexes

2.4 *Federal Information Processing Standard Publication*:⁵

FIPSPUB 6-2 Counties of the States of the United States

FIPSPUB 5-1 States of the United States

3. Terminology

3.1 *Definitions of Terms Specific to This Standard*:

3.1.1 *admission*—formal acceptance by a hospital of a patient who is to be provided with room, board, and continuous nursing services in an area of the hospital where patients generally stay overnight.

3.1.2 *basic data set for ambulatory care*—data items which constitute the minimum basic set of data that should be entered in the record concerning all ambulatory medical care encounters.

3.1.3 *clinic outpatient*—admitted to a clinical service of a hospital for diagnosis or therapy on an ambulatory basis in a formally organized unit of a medical or surgical specialty or subspecialty. The clinic assumes overall medical responsibility for the patient.

3.1.4 *discharge*—termination of a period of inpatient hospitalization through the formal release of the inpatient by the hospital.

3.1.5 *disposition*—directing of a patient from one environment/health care delivery mode to another at conclusion of services.

3.1.6 *emergency patient*—admitted to emergency room service of a hospital for diagnosis and therapy of a condition that requires immediate medical, dental, or allied services.

3.1.7 *encounter*—face-to-face contact between a patient and a provider who has primary responsibility for assessing and treating the patient at a given contact, exercising independent judgment.

3.1.8 *inpatient*—an individual receiving, in person, resident hospital-based or coordinated medical services for which the hospital is responsible.

3.1.9 *inpatient episode*—period of time in which the patient is in an inpatient status, beginning with admission and terminating with discharge.

3.1.10 *master patient index*—permanent listing that reveals identity and location of patients treated by a health care facility.

3.1.11 *outpatient*—an individual receiving, in person, non-resident, provider-supplied or coordinated medical services for which the provider is responsible. The types of outpatients recognized are:

3.1.11.1 Emergency

3.1.11.2 Clinic, and

3.1.11.3 Referred.

3.1.12 *patient care record*—legal documented record of health care services provided by a health care facility. Synonymous with: medical record, health record, patient record.

3.1.13 *practitioner specialty*—for a particular practitioner, the subject area of health care or scope of health care services in which the major share of his or her practice is carried out. See National Provider System Taxonomy in Specification E1633.

3.1.14 *registration*—recording the patient demographic and financial data in a unit record for patient care or a billing record for charge capture, respectively.

3.1.15 *referred outpatient*—admitted exclusively to a special diagnostic/therapeutic service of the hospital for diagnosis/treatment on an ambulatory basis. Responsibility remains with the referring physician.

3.1.16 *specialty type*—classification of specialized fields of medical services, such as, for example, Gynecology, General Surgery, Orthopedic Surgery, etc.

3.1.17 *transfer*—change in medical care unit, medical staff, or responsible physician of an inpatient during hospitalization.

3.1.18 *uniform hospital discharge data set*—Those essential data elements which should be recorded to provide a composite picture of the patient's stay.

3.2 *Acronyms*:

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| CPR | Computer-based Patient Record |
| EHR | Electronic Health Record |
| R-ADT | Registration-Admission, Discharge, Transfer |
| ADT | Admitting, Discharge, Transfer |
| R-RADT | Registration/Reservation-Admitting, Discharge, Transfer |
| MPI | Master Patient/Person Index |

4. Significance and Use

4.1 *Background*:

4.1.1 Effective health care delivery requires an efficient information base. A standard description is needed regarding the capabilities of Registration-Admission, Discharge, Transfer (R-ADT) Systems in both automated hospital and ambulatory care information systems. This practice is intended not only to provide a common explanation of the minimum information elements required in such systems, thus augmenting those already published^{6,7} but also to provide the basis for future patient data interchange formats. This practice has been developed to serve as a uniform minimum description of R-ADT functional components that should be common in all systems and used in both transportable general purpose and custom developed systems. This description requires acceptance of the premise regarding the need for logical integration of concepts in systems development. In the integrated systems concept, the R-ADT function is the foundation module for all patient information and communication among all departments, and it is used in initiating services within the patient care setting. A common R-ADT system in a hospital enables all departments

⁴ Available from International Organization for Standardization (ISO), 1, ch. de la Voie-Creuse, Case postale 56, CH-1211, Geneva 20, Switzerland, <http://www.iso.ch>.

⁵ Available from US Dept. of Commerce, Government Printing Office, Washington, DC.

⁶ *Uniform Ambulatory Medical Care: Minimum Data Set*, DHHS Publication PHS 81-1161, DHHS National Center for Health Statistics, 1981.

⁷ *Uniform Hospital Discharge Data Set*, DHHS Publication HSM 74-1451, Health Information Policy Council DHHS, 1984.

to streamline the initiation and tracking of the services they provide to patients; it also provides an opportunity for accurate tracking of patient movement throughout a hospital stay, for instance, and the linkage of inpatient and outpatient services. It is also the system which provides all inpatient census-related administrative reports. Likewise, an R-ADT component in an Enterprise Architecture captures the initial patient demographic profile for the EHR and is subsequently accessed in posting an individual's clinical data, for inquiry regarding that clinical data and for linkage to financial records. It is an integral part of the EHR function. It may also be linked to other systems which provide patient care information management capabilities.

4.1.2 A registration system is capable of providing the initial information capture for all health care facilities; an ADT subsystem can provide common admitting data for all departments in hospitals and other inpatient facilities. Establishing a standard description of a logical R-ADT process model is useful because that standard will become a reference for other documents describing the other functional subsystems used in patient care information systems. It is understood that a minimum set of information elements must be initially captured upon registration and then used for all subsequent ambulatory or inpatient care; the subsequent minimum set of admitting elements is then used to drive or initiate additional services for patients through each subsystem. With a standard minimum R-ADT component definition, standards for constituent subsystems can now be coordinated and developed through reference to this model. This description should be used by vendors and subsystem designers who need to develop their systems in a coordinated and integrated way so that each subsystem will contribute modularly with overall systems planning for the user organization. Such modularity will aid management who are assigned to evaluate each system and subsystem in order to assess the potential of existing technology to provide the needed patient care information management systems capabilities.

4.2 *Use*—This practice is written assuming that the health care facility will have several options for gaining the R-ADT capability and may either acquire a system from a commercial vendor or design an integrated in-house system which may be a component of an ambulatory care practice or a hospital information system. Many of the characteristics of existing vendor systems are conventional and can interoperate; the care facility may simply need to identify whether or not the offered features meet its needs. Beyond the general capabilities, the unique systems capabilities can then be identified and structured to meet the special needs of that individual enterprise. A more accurate selection can therefore be made from the features offered by vendors if each health care facility/hospital carefully identifies its own R-ADT functional requirements with the aid of this guide prior to evaluating candidate systems or development approaches and specifying that these requirements be met.

4.3 *Role of R-ADT Systems in Integrated Delivery Systems*—Registration/Reservation-Admission, Discharge. Transfer functions in integrated delivery systems need to provide a uniform enterprise view with data accessible across the IDS. Typical functions in this environment may include

registration to an enterprise master patient index, reporting capabilities on R-ADT functions, enterprise scheduling and enterprise capabilities for eligibility and utilization management. Patient data collected should be transferable to medical record abstract applications and contribute to clinical repositories to maintain longitudinal focus to evolve toward electronic health records. IDS networks provide infrastructure and should conform to enterprise technical security requirements that meet legal and accreditation requirements.

5. System Description

5.1 *General Principles and Purpose*—The purposes of an R-ADT system are to:

5.1.1 Identify or verify patients, or both, via a facility master patient index created and maintained through the registration process.

5.1.2 Establish an initial record of the patient entry into the system by creating the demographic segment of the EHR (registration).

5.1.3 Maintain the registration record and demographic data as a common node for patient care record systems so that it can be used by all ancillary support systems.

5.1.4 Augment the registration record by addition of those data required for any inpatient admission.

5.1.5 Initiate services for all inpatients admitted to the facility by providing notification of the start of services.

5.1.6 Track movements of the inpatient throughout hospitalization.

5.1.7 Facilitate scheduling of ancillary and clinical services through a bed control and transfer function.

5.1.8 Produce the inpatient census data and the corresponding census and statistical reports.

5.1.9 Identify movement, location, status, and discharge of each in-patient and the times and dates of these events, this helps coordinate efficient support services for treating that patient during hospitalization. This is achieved by means of census reporting and afterwards during follow-up care by means of linkage to the care record.

5.1.10 Offer all departments of the health care facility common information about each registered/admitted patient through maintenance of a single registration record, thus eliminating duplicative patient data capture by those departments.

5.1.11 Produce the initial portion of a uniform hospital discharge abstract and the initial data set used for clinical and financial analysis.

5.1.12 Identify the roles of all responsible practitioners for each patient.

5.2 *Background*—In the past, the functions comprising typical R-ADT system services have included:

5.2.1 Provide a means to build, update, correct, and maintain an existing master patient index, or the current portion thereof.

5.2.2 Provide patient identification through a master patient index to identify all care recipients.

5.2.3 Maintain a registry of all patients who have received care; the registration record on each patient should contain all