

Digital Rectal Examination (DRE)

1 Overview

Described in this document are the Stanford University algorithms for extracting both cases and controls of digital rectal examination (DRE) from electronic health records (EHR) of prostate cancer patients. DRE is a clinical procedure, part of a set of quality metrics used to determine quality care for these patients. In this regard, DRE is defined as quality care when it is performed within a time period of up to six months before first treatment for prostate cancer [1-3]. For the purposes of this algorithm a case is defined as DRE documented, whereas a control is DRE not documented.

2 Algorithm Descriptions

The case and control selection algorithms require a number of both patient- and encounter-level data to be extracted from the EHR. This information includes: diagnosis (ICD codes), diagnosis date, treatment dates, physician encounter dates, and encounter details.

2.1 DRE Case and Control Selection Algorithm Logic

A case of DRE is defined with the following:

- a. EHR of all male patients of 35 years of age or more, AND
- b. For which there are physician documented notes on whether a DRE was performed, AND
- c. This documentation is obtained from clinical notes of interest (e.g. history and physical, progress notes, procedures, outpatient letters, pre-operation evaluation), AND
- d. There is an ICD-9-CM / ICD-10-CM diagnosis of prostate cancer, AND
- e. The notes were entered up to six months prior to first treatment.

DRE Controls will be defined when:

- a. EHR of all male patients of 35 years of age or more, AND
- b. For which there is an ICD-9-CM / ICD-10-CM diagnosis of prostate cancer, AND
- c. For which there is no physician entered documenting notes that on whether a DRE was performed up to six months prior to first treatment.

In order to select a case of DRE, the following elements are required:

- i. Counts of all visits of male patients over 35 years of age
- ii. Provider free text notes on whether performing or deferring a DRE
- iii. Counts of prostate cancer, using both ICD-9 and ICD-10 code assignment
 - a. ICD-9-CM: 185
 - b. ICD-10-CM: C61
- iv. Treatment code assignment dates by billing source
 - a. Prostatectomy
 - CPT: 55801-55845, 55866
 - ICD-9-CM: 60.0-60.6
 - ICD-10-PCS: 60.61-60.69
 - b. Radiation therapy
 - CPT: 77261-77499, 77750-77799

- ICD-10-PCS: DV00-DV006, DV10-DV10BYZ, DV20-DV20JZ, DVY0-DVY0KZZ
- c. Chemotherapy
 - CPT: 96400-96425
 - ICD-9-CM: 99.25
 - ICD-10-PCS: 3E03305, 3E04305, XW03351, XW04351
- d. Hormonal therapy
 - CPT: 4164F

2.2 Vocabularies

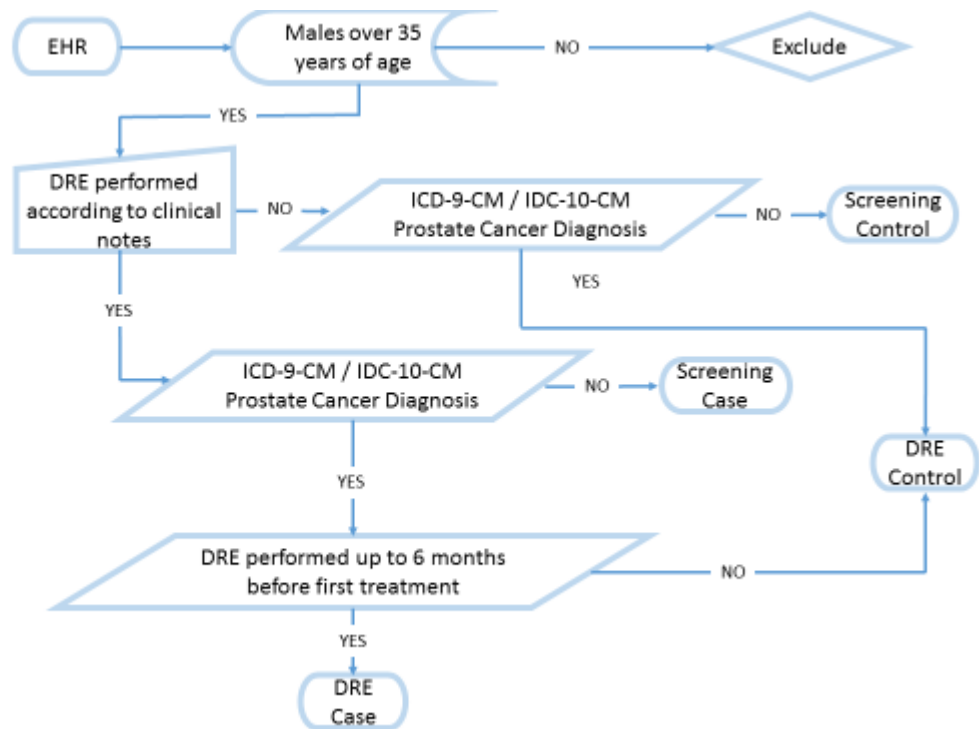
For the DRE case selection algorithm, the following terms were used to identify whether digital rectal examination was performed. Where possible, vocabularies were matched with existing ontologies from the National Center for Biomedical Ontology (NCBO), see below.

In addition, the following terms were used to identify when DRE not performed: DRE deferred, rectal examination deferred, DRE not performed, rectal examination not performed, rectal not examined (see table below).

EHR term	Ontology	ID	Synonyms
Digital rectal examination	SNOMED-CT	P2-01529	[Digital examination, procedure]
	MedDRA	10048892	
	NCIT	C17631	[DRE]
	ICD-9-CM	89.34	Digital examination of rectum
	ICD-10-CM		
	HP		
	MESH	D051517	[Examination, Digital Rectal] [Palpation, Rectal] [Digital Rectal Examinations] [Rectal Palpations] [Rectal Palpation] [Rectal Examination, Digital] [Rectal Examinations, Digital] [Palpations, Rectal] [Examinations, Digital Rectal]
	ICPC2P		
	CTV3		
	COSTART		
SNMI			
DRE deferred	Not found		
Rectal examination deferred	Not found		
DRE not performed	Not found		
Rectal examination not performed	Not found		
Rectal not examined	Not found		
DRE rejected	Not found		

Rectal examination rejected	Not found		
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a. Flow Diagram:



1. Litwin, M., et al., *Prostate Cancer Patient Outcomes and Choice of Providers: Development of an Infrastructure for Quality Assessment*. 2000, RAND Corporation: Santa Monica, CA.
2. Miller, D.C., et al., *Use of quality indicators to evaluate the care of patients with localized prostate carcinoma*. *Cancer*, 2003. **97**(6): p. 1428-35.
3. Mohler, J.L., et al., *Prostate Cancer, Version 1.2016*. *J Natl Compr Canc Netw*, 2016. **14**(1): p. 19-30.