

INTERNATIONAL SPINAL CORD INJURY DATA SETS

URINARY TRACT IMAGING BASIC DATA SET - COMMENTS

The working-group consists of:

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Michael Craggs, representing the European Urological Association (EAU)

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Erik Schick, representing the International Continence Society (ICS)

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Collection of data on urinary tract imaging is universal when individuals with spinal cord lesions are evaluated for their urinary tract.

The purpose of the Urinary Tract Imaging Basic Data Set for Spinal Cord Injury (SCI) is to standardize the collection and reporting of a minimal amount of information on imaging of the urinary tract in daily practice in accordance with the purpose and vision of the International Spinal Cord Injury Data Sets (Biering-Sørensen et al. 2006). This will also make it possible to evaluate and compare results from various published studies. It is not expected that the present basic data set shall be used in full in any centre for a single individual with SCI. The intention is to give a basic data set for each of the commonly used imaging investigations of the urinary tract.

The data in the Urinary Tract Imaging Basic Data Set should be used in connection with data in the International SCI Core Data Set (DeVivo et al. 2006), which includes information on date of birth and injury, gender, the cause of spinal cord lesion, and the neurologic status, the Lower Urinary Tract function Basic Data Set (Biering-Sørensen et al. 2008), and the Urodynamic Basic Data Set (Biering-Sørensen et al. 2008).

A spinal cord lesion may be of traumatic or non-traumatic aetiology. In the present context, lesions to the spinal cord, conus medullaris, and cauda equina are included.

It is extremely important that data be collected in a uniform manner. For this reason, each variable and each response category within each variable has been specifically defined in a way that is designed to promote the collection and reporting of comparable minimal data.

Use of a standard format is essential for combining data from multiple investigators and locations. Various formats and coding schemes may be equally effective and could be used in individual studies or by agreement of the collaborating investigators.

References

Biering-Sørensen F, Charlifue S, DeVivo M, Noonan V, Post M, Stripling T, Wing P. International spinal cord injury data sets. *Spinal Cord* 2006;44(9):530-4.

DeVivo M, Biering-Sørensen F, Charlifue S, Noonan V, Post M, Stripling T, Wing P. International Spinal Cord Injury Core Data Set. *Spinal Cord* 2006;44(9):535-40.

Biering-Sørensen F, Craggs M, Kennelly M, Schick E, Wyndaele JJ. International Lower Urinary Tract function Basic Spinal Cord Injury Data Set. *Spinal Cord* 2008;46(5):325-30.

Biering-Sørensen F, Craggs M, Kennelly M, Schick E, Wyndaele JJ. International Urodynamic Basic Spinal Cord Injury Data Set *Spinal Cord* 2008 ;46(7):513-6.

Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, van Kerrebroeck P, Victor A, Wein A. The Standardisation of Terminology of Lower Urinary Tract Function: Report from the Standardisation Sub-committee of the International Continence Society. *Neurourology and Urodynamics* 2002;21;167-78.

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Organisations that have endorsed the International SCI Urinary Tract Imaging Basic Data Set as of April 1, 2008

International Spinal Cord Society

American Spinal Injury Association

The Neurourology Committee of the International Continence Society

International Society for Physical and Rehabilitation Medicine

American Paraplegia Society

Using the International Spinal Cord Injury Urinary Tract Imaging Basic Data Set

The information in this data set is often to be provided by colleagues in other departments doing the imaging studies on the particular individual with spinal cord lesion. Therefore there have not been made special training cases for this particular Data Set, as it is anticipated that the is to be collected for the Data Set Form from the information received from the diagnostic imaging departments. The documentation with explanations for the International Spinal Cord Injury Urinary Tract Imaging Basic Data Set is found in the Introduction to the International Spinal Cord Injury Urinary Tract Imaging Basic Data Set.

Questions and suggestions regarding the International Spinal Cord Injury Urinary Tract Imaging Basic Data Set should be directed to Vanessa Noonan Vanessa.Noonan@vch.ca or Fin Biering-Sørensen finbs@rh.dk.

VARIABLE NAME: Date performed.

DESCRIPTION: This variable documents the date of data collection for the particular investigation, i.e. the date for the performance of the investigation (Intravenous pyelography / Urography; CT-urogram; Ultrasound of the urinary tract; X-ray of the urinary tract – Kidney Ureter Bladder (KUB); Renography; Clearance; Cystogram; Video cystogram / Micturition cystogram (MCU) / Videourodynamic).

CODES: YYYYMMDD

COMMENTS: The investigation may be carried out at any time after the spinal cord injury. Therefore the date of data collection of the investigation is imperative to be able to identify the data collected in relation to other data collected on the same individual at various time points. In addition, the date is likewise important to have the time interval from date of birth (age), and time interval from date of injury (time since injury).

VARIABLE NAME: Intravenous pyelography / Urography, or CT urography, or Ultrasound of the urinary tract.

DESCRIPTION: This variable documents the result of:
The intravenous pyelography / urography performed on the date given. It is an X-ray investigation with intravenous contrast medium, which permits one to evaluate the entire urine collecting/ transportation system. It must include a plain film of the abdomen at the start. Or
The CT (Computer Tomography) urography performed on the date given. It is a CT investigation with intravenous contrast medium, which permits one to evaluate the entire urine collecting/ transportation system. Or
The result of an investigation of the kidneys, renal pelvis, ureters, and urinary bladder carried out with ultrasound, and performed on the date given.

CODES: Method: Intravenous pyelography / Urography,
CT urography,
Ultrasound of the urinary tract
Normal
Stasis/dilatation in upper urinary tract:
Right side
Left side
Kidney stone:
Right side
Left side
Stone in ureter:
Right side
Left side
Bladder stone
Other findings

COMMENTS: **Normal:** Normal anatomical conditions were found at the investigation; in particular, no stasis or dilatation of the upper urinary tract or stones in the kidneys, ureters or bladder.
Stasis/dilatation in upper urinary tract: This means stasis or dilatation was found of the renal pelvis (hydronephrosis) and/or ureter (hydroureteris) at *the right and/or the left side*.
Kidney stone: This means urinary stone(s) was/were found in the renal pelvis or renal parenchyma at *the right and/or the left side*.
Stone in ureter: This means urinary stone(s) was/were found in the ureter at *the right and/or the left side*.
Bladder stone: This means urinary stone(s) was/were found in the urinary bladder. Stones of any kind or size qualify for documentation.
Other findings: Findings of any specific deviations from the normal state not documented above can be stated in a text-field, from where it will be possible to retrieve more detailed data whenever necessary. Because many possible findings exist, it is not practical to give an exact list of findings.

VARIABLE NAME: X-ray of the urinary tract – Kidney Ureter Bladder (KUB)

DESCRIPTION: This variable documents the result of the X-ray of the urinary tract – Kidney Ureter Bladder (KUB) performed on the date given.

CODES: Normal
Kidney stone:
 Right side
 Left side
Stone in ureter:
 Right side
 Left side
Bladder stone
Other findings

COMMENTS: *Normal*: Normal anatomical conditions were found at the investigation; in particular, no stones in the kidneys, ureters or bladder.
Kidney stone: This means urinary stone(s) was/were found in the renal pelvis or renal parenchyma at *the right and/or the left side*.
Stone in ureter: This means urinary stone(s) was/were found in the ureter at *the right and/or the left side*.
Bladder stone: This means urinary stone(s) was/were found in the urinary bladder. Stones of any kind or size qualify for documentation.
Other findings: Findings of any specific deviations from the normal state not documented above can be stated in a text-field, from where it will be possible to retrieve more detailed data whenever necessary. Because many possible findings exist, it is not practical to give an exact list of findings.

VARIABLE NAME: Renography

DESCRIPTION: This variable documents the result of the renography performed with radioactive isotope marked substance on the date given.

CODES: Method: DMSA (Technetium-99m dimercaptosuccinic acid)
DTPA (Technetium-99m diethylenetriamine pentaacetic acid)
Mag 3 (Technetium-99m mercaptoacetyltriglycine)
Normal
Excretory function:
Right side XXX %
Left side XXX %
Stasis/dilatation in upper urinary tract:
Right side
Left side
Other findings

COMMENTS: **Method:** Due to the fact that different methods of renography may give a somewhat different focus regarding picture, morphology and function, it is important that the method used is known.

Normal: Normal uptake and excretion curve of the isotope marked substance used. Normal functional and anatomical conditions were found at the investigation, in particular, equal excretory function of the two kidneys or stasis or dilatation of the upper urinary tract.

Excretory function: The combined excretory function for the two kidneys is 100 %. The percentage of excretory function each kidney *at the right and the left side* is to be documented. If only one kidney is functioning, the coding will be 100 % for the functioning kidney and 0 % for the non-functioning kidney.

Stasis/dilatation in upper urinary tract: This means stasis or dilatation was found of the kidney pelvis and/or ureter *at the right and/or the left side*.

Other findings: Findings of any specific deviations from the normal state not documented above can be stated in a text-field, from where it will be possible to retrieve more detailed data whenever necessary. Because many possible findings exist, it is not practical to give an exact list of findings.

VARIABLE NAME: Clearance.

DESCRIPTION: The clearance investigation variable documents the total glomerular filtration capacity of the kidneys performed on the date given.

CODES: XXX mL/(min. x 1.73 m²).

COMMENTS: This is an investigation performed with a radioactive isotope marked substance. The value is corrected for the individual's body surface area (1.73 m²). Reference intervals are adjusted for the person's age and the method utilized.

VARIABLE NAME: Cystogram.

DESCRIPTION: The cystogram variable may document anatomical pathologies in the lower urinary tract.

CODES: Normal
Bladder stone
Vesicoureteric reflux
 Right
 Left
Bladder diverticulum
Bladder neck at rest
 Open
 Closed
Other findings

COMMENTS: **Normal:** Normal anatomical conditions were found at the investigation; in particular, no stones in the bladder, vesicoureteral reflux, or bladder diverticulum.
Bladder stone: This means urinary stone(s) was/were found in the urinary bladder. Stones of any kind or size qualify for documentation.
Vesicoureteric reflux: This means reflux to the ureter was observed at *the right and/or the left side*.
Bladder diverticulum: This means diverticula of any size within the bladder or bladder neck were found.
Bladder neck at rest: The bladder neck is evaluated to be either *open or closed* at rest.
Other findings: Findings of any specific deviations from the normal state not documented above can be stated in a text-field, from where it will be possible to retrieve more detailed data on the computer whenever necessary. Because many possible findings exist, it is not practical to give an exact list of findings

VARIABLE NAME: Voiding cystogram / Micturition cystourogram (MCU) / Videourodynamic

DESCRIPTION: The cystogram variable may document anatomical pathologies in the lower urinary tract.

CODES: Normal
Vesicoureteric reflux
 Right
 Left
Bladder neck during voiding:
 Normal
 Closed (dyssynergia)
Striated urethral sphincter during voiding:
 Normal
 Closed (dyssynergia)
Other findings

COMMENTS: **Normal:** Normal anatomical and functional conditions were found at the investigation; in particular, no stones in the bladder, vesicoureteral reflux, bladder diverticulum, or detrusor sphincter dyssynergia.
Vesicoureteric reflux: This means reflux to the ureter was observed at *the right and/or the left side*.
Bladder neck during voiding: Normal bladder neck function is when the bladder neck opens, and is continuously relaxed to allow the bladder to be emptied at normal pressure. **Closed bladder neck during voiding (dyssynergia)** is when the detrusor contracts concurrent with the bladder neck being closed.
Striated urethral sphincter during voiding: Normal urethral function is defined as a urethra that opens, and is continuously relaxed to allow the bladder to be emptied at a normal pressure (Abrams et al. 2002). **Detrusor sphincter dyssynergia** is defined as detrusor contraction concurrent with an involuntary contraction of the urethral and/or periurethral striated muscle. Occasionally flow may be prevented altogether (Abrams et al. 2002).
Other findings: findings of any specific deviations from the normal state not documented above can be stated in a text-field, from where it will be possible to retrieve more detailed data on the computer whenever necessary. Because many possible findings exist, it is not practical to give an exact list of findings

URINARY TRACT IMAGING BASIC DATA SET (Version 1.0)

Intravenous pyelography / Urography or CT urogram, or Ultrasound of the urinary tract

Date performed: YYYYMMDD

Method used: Intravenous pyelography / Urography
 CT urography
 Ultrasound of the urinary tract

Normal

Stasis/dilatation in upper urinary tract: Right side Left side

Kidney stone: Right side Left side

Stone in ureter: Right side Left side

Bladder stone

Other findings: _____

X-ray of the urinary tract – Kidney Ureter Bladder (KUB)

Date performed: YYYYMMDD

Normal

Kidney stone: Right side Left side

Stone in ureter: Right side Left side

Bladder stone

Other findings: _____

Renography

Date performed: YYYYMMDD

Method used: DMSA (Technetium-99m dimercaptosuccinic acid)
 DTPA (Technetium-99m diethylenetriamine pentaacetic acid)
 Mag 3 (Technetium-99m mercaptoacetyltriglycine)

Normal

Excretory function: Right side ___% Left side ___%

Stasis/dilatation in upper urinary tract: Right side Left side

Other findings: _____

Clearance

Date performed: YYYYMMDD
_____ mL/(min. x 1.73 m²)

Cystogram

Date performed: YYYYMMDD

Normal

Bladder stone

Vesicoureteric reflux: Right Left
 Bladder diverticulum
Bladder neck at rest: Open Closed
 Other findings: _____

Voiding cystogram / Micturition cystourogram (MCU) / Videourodynamic

Date performed: YYYYMMDD
 Normal
Vesicoureteric reflux: Right Left
Bladder neck during voiding: Normal Closed (dyssynergia)
Striated urethral sphincter during voiding: Normal Closed (dyssynergia)
 Other findings: _____