

# Urinary Tract Infection in Children with Spina Bifida and Spinal Cord Injury

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## Introduction

### Background:

Urinary tract infections (UTI) are one of the most common bacterial infections (Schappert & Rechtsteiner, 2008; Litwin et al., 2005). Data from the National Ambulatory Medical Care Survey estimated that UTI caused 8.1 million physician visits (Schappert & Rechtsteiner, 2008). Children with spina bifida (SB) and spinal cord injury (SCI) are at high risk for UTI (Ouyang et al., 2010; Nair et al., 2005). The purpose of this study was to examine the organisms associated with UTI in the population of children with SB and SCI who were treated in out-patient and in-patient settings at the Kennedy Krieger Institute (KKI).

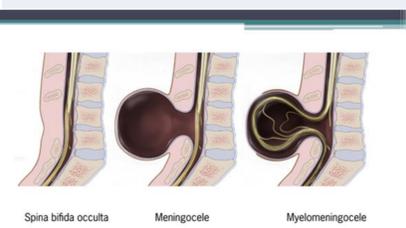
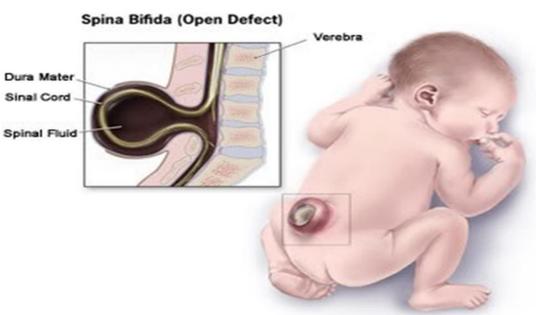
## Spina Bifida

1 out of 1,000 infants in us born with Spina Bifida

90-95% of babies born with Spina Bifida are born to parents with no family history of Spina Bifida

Most common in girls than boys

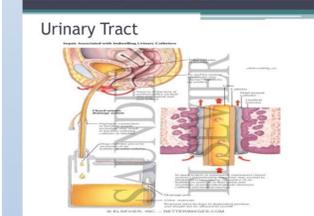
Most common neural tube defect



### Diagnosis

Spina bifida can be diagnosed during pregnancy or after the baby is born. Spina bifida occulta might not be diagnosed until late childhood or adulthood, or might never be diagnosed.

## Urinary Tract



## Purpose

The purpose of the study was to examine organisms associated with UTI in the population of children with SB and SCI who were treated in out-patient and in-patient settings

Public health significance: Knowledge of the causative organisms associated with UTI in patients with SB and SCI is of public health significance to promote appropriate use of antibiotics and reduce kidney damage

## Materials & Methods

•A retrospective record review was conducted to extract data from medical records and a pre-existing data base of in-patients and out-patients with SB and SCI who were diagnosed with UTI.

•Medical records from 2010-2013 were reviewed Data on demographics (e.g., gender, age, and race/ethnicity), medical condition, medication, and organism responsible for UTI, organism antibiotic resistance, hospital status input & output will be obtained.

•Chi square analysis was done to determine if there were statistically significant differences in the organisms infecting children with SCI versus SB.

## Results

Participants (N = 31) were approximately equally distributed (male = 52%; n=16). The mean age of the population was 16 years with a standard deviation (SD= 7.8). The majority of participants are: 55%white (n= 17), 32% African American (n= 10), 10%American Indian (n = 3) and all respondents were 6% non-Hispanic (n=1, Hispanic n = 1). Medical condition/diagnosis (SCI = 22, SB = 13) medication(s), organism (s) responsible for UTI, organism (s) antibiotic resistance, hospital status (inpatient = 23, outpatient = 0) were obtained. Data presented on infectious organisms and antibiotics susceptibility for participants with spina bifida and spinal cord injury

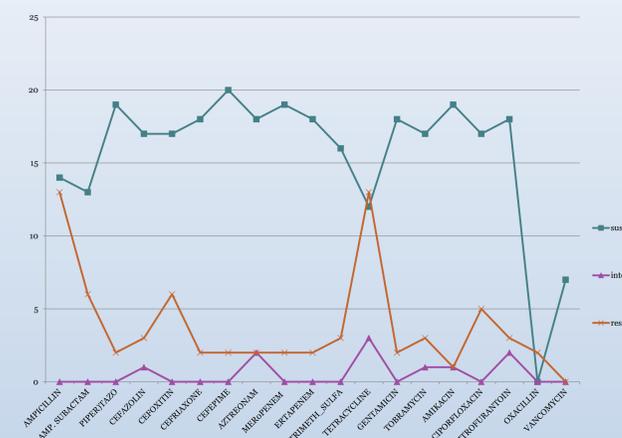
## Antibiotic Sensitivity /Medication

- Kirby-Bauer method Disc:



## Antibiotic Susceptibility Pattern

Rates for antibiotic	sus/1	inter/2	resis/3	
AMPICILLIN	14	0	13	
AMP. SUBACTAM	13	0	6	
PIPER)TAZO	19	0	2	
CEFAZOLIN	17	1	3	
CEFOXITIN	17	0	6	
CEFRIAXONE	18	0	2	
CEFEPIME	20	0	2	
AZTREONAM	18	2	2	
MEROPENEM	19	0	2	
ERTAPENEM	18	0	2	
TRIMETH_SULFA	16	0	3	
TETRACYCLINE	12	3	13	
GENTAMICIN	18	0	2	
TOBRAMYCIN	17	1	3	
AMIKACIN	19	1	1	
CIPROFLOXACIN	17	0	5	
NITROFURANTOIN	18	2	3	
OXACILLIN	0	0	2	
VANCOMYCIN	7	0	0	
<b>TOTAL</b>	<b>297</b>	<b>10</b>	<b>72</b>	<b>379</b>



### Limitations

- Small sample size
- Limited access to lab work in out patient population
- Limited generalizability

## Conclusion and Public Health Significance

- E. coli is the leading cause of UTI in our study.
- Contrary to the study's of hypothesis, the susceptibility of the bacteria to commonly used antibiotics is good.
- It is also recommended that proper sensitivity testing of Urinary tract infection causing organisms should be undertaken to guide the management of UTIs until the development of conclusive local guidelines to therapy.
- Using antibiotic susceptibility data assists pediatric providers in using appropriate first line antibiotics when children present with symptoms of urinary tract infection.

## References

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