

ANTIBIOTIC PROPHYLAXIS FOR URINARY TRACT INFECTIONS IN ANTENATAL HYDRONEPHROSIS

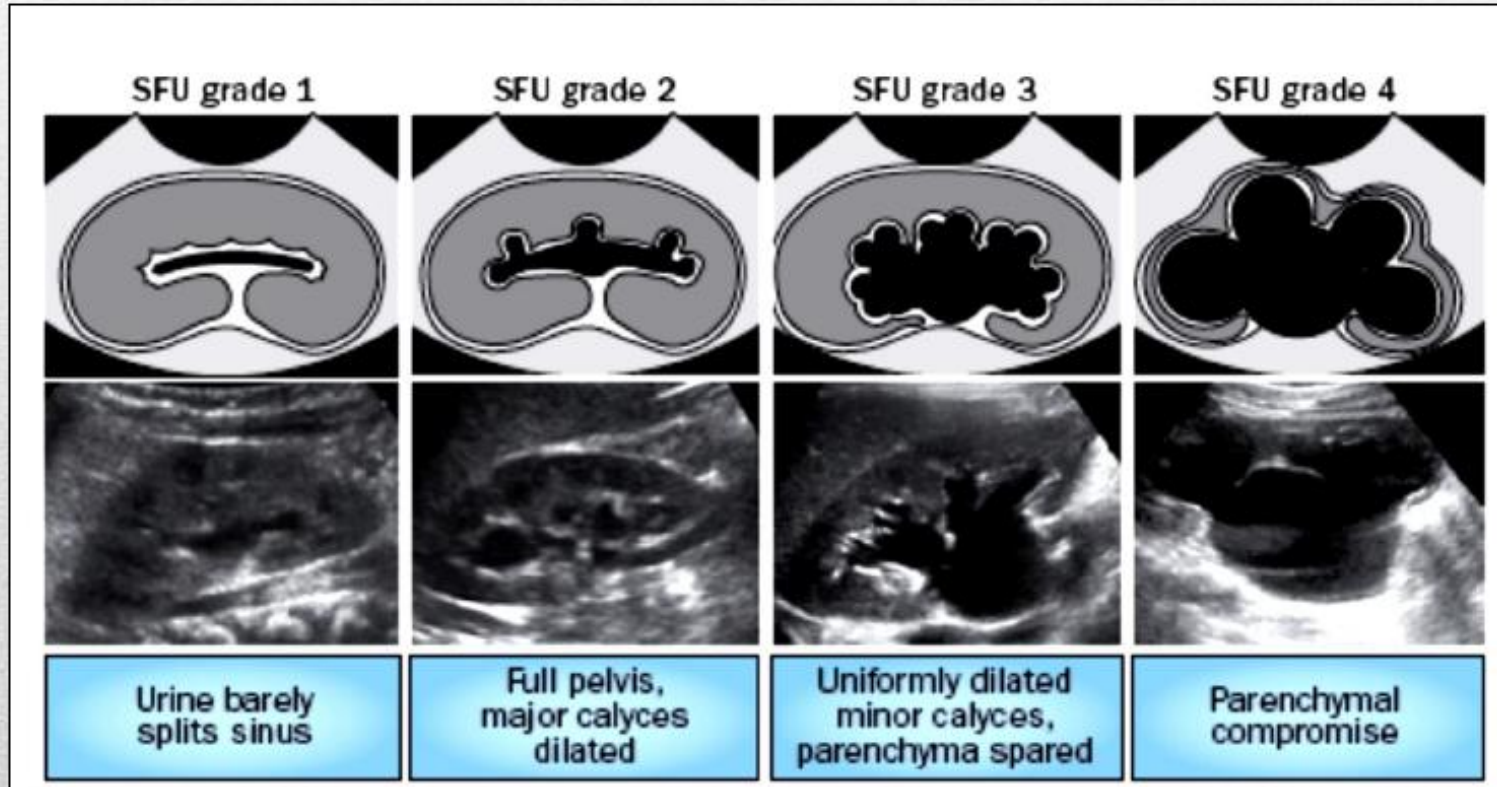
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ANTENATAL HYDRONEPHROSIS

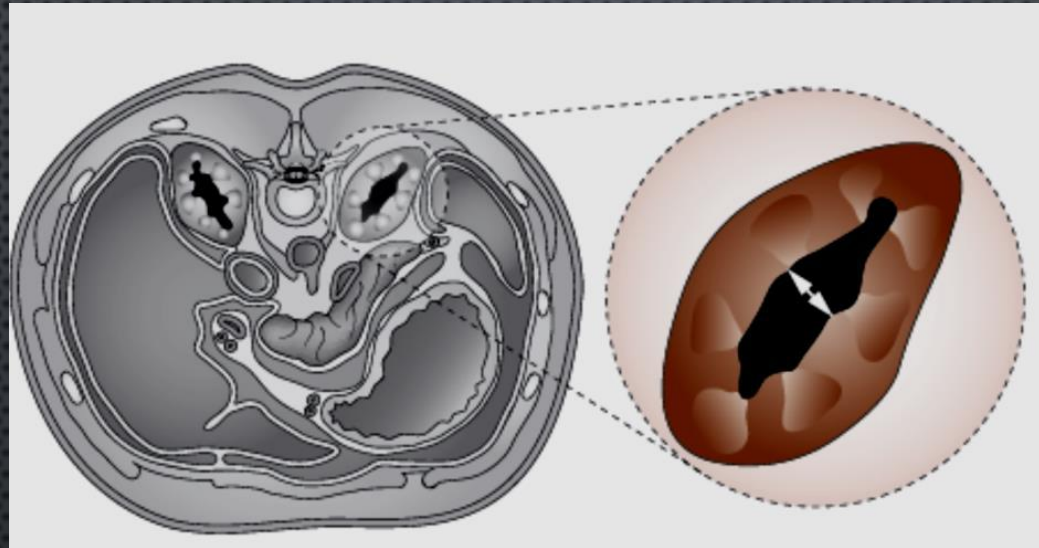
- **DEFINITIONS: HYDRONEPHROSIS REFERS TO DILATATION OF THE RENAL COLLECTING SYSTEM ABOVE NORMAL LIMITS FOR GESTATIONAL OR POSTNATAL AGE.**
- **PREVALANCE: 0.5 – 4% (BILATERAL IN 17 – 54%)**
- **GRADING SYSTEM: 2 COMMON SYSTEMS**
 - 1. SOCIETY FOR FETAL UROLOGY (SFU) GRADING SYSTEM**
 - 2. MAXIMUM AP (TRANSVERSE) RENAL PELVIS DIAMETER**

SOCIETY FOR FETAL UROLOGY (SFU)

The grading system of Society for Fetal Urology for postnatal HN is based on US findings of the degree of renal-pelvic & calyceal dilation and takes into account the integrity of the parenchyma. Grade 0 is normal and not represented in the figure

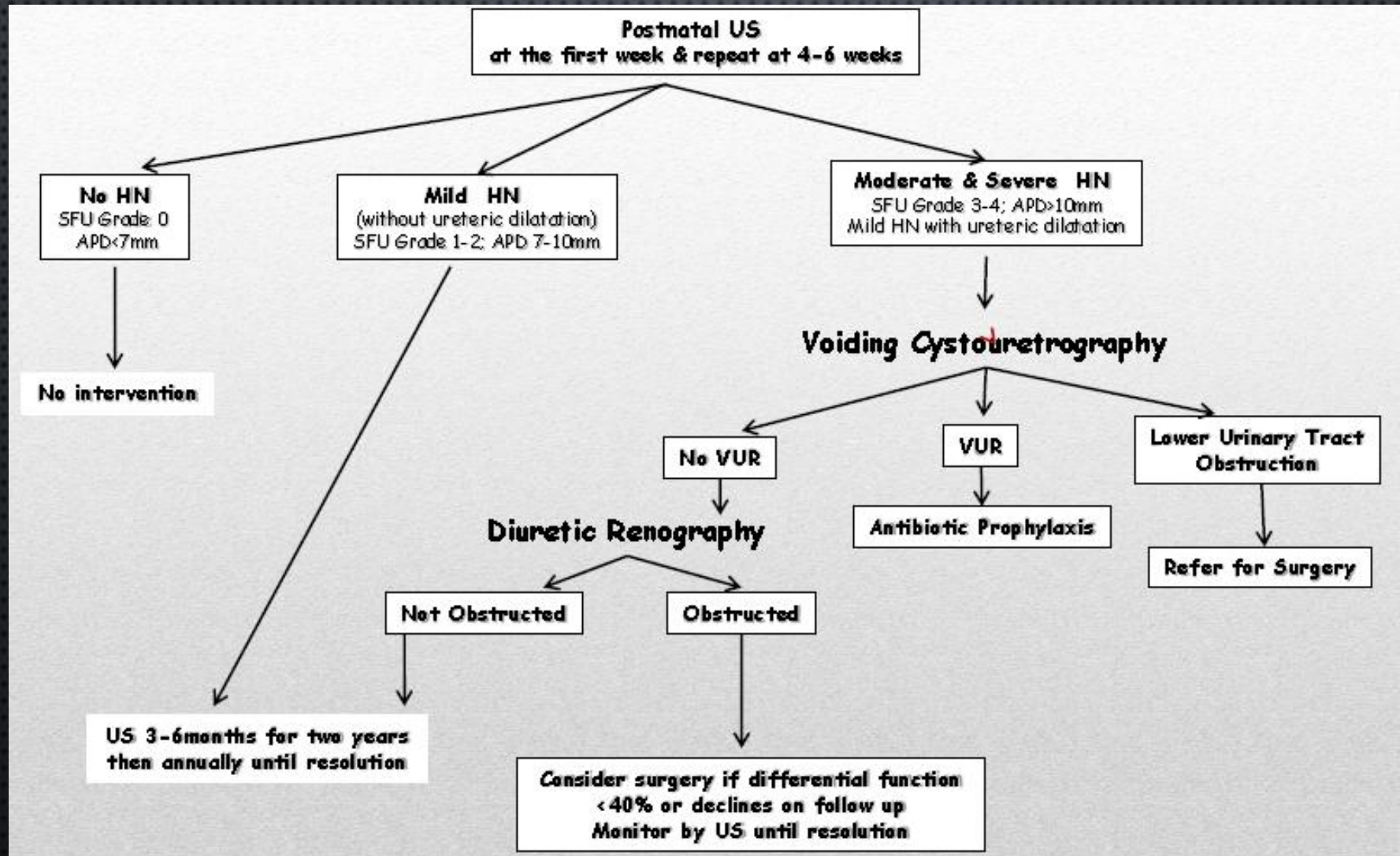


MAXIMUM AP RENAL PELVIS DIAMETER



<i>Description</i>	<i>2nd Trimester RPD</i>	<i>3rd Trimester RPD</i>	<i>Postnatal RPD</i>
Normal	<5mm	<7mm	<5mm
Mild	5-7mm	7-10mm	5-10
Moderate	7-10mm	10-15mm	10-15
Severe	>10mm	>15mm	>15

ANTENATAL HYDRONEPHROSIS



ANTENATAL HYDRONEPHROSIS

VOIDING CYSTOURETHROGRAPHY

- VCUg be restricted to patients with moderate to severe ANH (APD >10mm ; SFU grade 3-4) or ureteric dilatation at 4-6 weeks of age
- VCUg should be performed early within 24-72 hours of life, to the patients with suspected lower urinary tract obstruction
- VCUg should be performed to the patients with ANH who developed UTI
- VCUg is also required in patients with history of milder grades of ANH who show worsening HN, progressive parenchymal thinning]

VCUG is associated with risks of UTI & and exposure to radiation !

ANTENATAL HYDRONEPHROSIS

Urinary Tract Infection (UTI) & Antibiotic Prophylaxis

- The risk of UTI increases with degree of HN (8% with mild HN vs 20% of moderate or severe HN)
- No uniform guidelines exist about the usage of prophylactic antibiotics
- Literature included limited data to support the proposed protective effect of antibiotic prophylaxis
- A significant benefit was demonstrated in infants with high-grade HN who were given prophylaxis as compared with those who were not

ANTENATAL HYDRONEPHROSIS

Urinary Tract Infection (UTI) & Antibiotic Prophylaxis

- Parents should be informed about the risk of UTI and need for prompt management
- Infants with moderate or severe HN (SFU 3-4; renal APD ≥ 10 mm) or dilated ureter should receive antibiotic prophylaxis during evaluation
- All patients with VUR were recommended to receive antibiotic prophylaxis through the first year of life

CONTINUOUS ANTIBIOTIC PROPHYLAXIS

- **BASED ON LIMITED DATA AND HEAVILY REFLECTS EXPERT OPINION.**
- **CONTRADICTIONARY INFORMATION: BACTERIAL ANTIBIOTIC RESISTANCE AND UNKNOWN LONG-TERM EFFECTS**
- **THE NECESSITY AND EFFECTIVENESS OF CONTINUOUS ANTIBIOTIC PROPHYLAXIS (CAP) IN PREVENTING UTIs.**

CONTINUOUS ANTIBIOTIC PROPHYLAXIS



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Abstract

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Pediatrics. 2013 Jan;131(1):e251-61. doi: 10.1542/peds.2012-1870. Epub 2012 Dec 17.

Antibiotic prophylaxis for urinary tract infections in antenatal hydronephrosis.

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Abstract

BACKGROUND AND OBJECTIVE: Continuous antibiotic prophylaxis (CAP) is recommended to prevent urinary tract infections (UTIs) in newborns with antenatal hydronephrosis (HN). However, there is a paucity of high-level evidence supporting this practice. The goal of this study was to conduct a systematic evaluation to determine the value of CAP in reducing the rate of UTIs in this patient population.

CONTINUOUS ANTIBIOTIC PROPHYLAXIS

METHODS:

- PERTINENT ARTICLES AND ABSTRACTS FROM 4 ELECTRONIC DATABASES AND GRAY LITERATURE, SPANNING PUBLICATION DATES BETWEEN 1990 AND 2010.
- ELIGIBILITY CRITERIA INCLUDED:
 1. STUDIES OF CHILDREN ≤ 2 YEARS OLD WITH ANTENATAL HN
 2. RECEIVING EITHER CAP OR NOT
 3. REPORTING ON DEVELOPMENT OF UTIs
 4. CAPTURING INFORMATION ON VOIDING CYSTOURETHROGRAM (VCUG) RESULT AND HN GRADE.
- FULL-TEXT SCREENING AND QUALITY APPRAISAL WERE CONDUCTED BY 2 INDEPENDENT REVIEWERS

CONTINUOUS ANTIBIOTIC PROPHYLAXIS

METHODS:

- SFU GRADES I AND II AND/OR CORRESPONDING TRANSVERSE RENAL PELVIS APD RANGING BETWEEN 4.0 AND 14.9 MM ON POSTNATAL ULTRASOUND AS LOW-GRADE HN
- SFU GRADES III AND IV AND/OR A TRANSVERSE APD OF THE RENAL PELVIS ≥ 15.0 MM ON POSTNATAL ULTRASOUND WERE GROUPED INTO HIGH-GRADE HN
- UTI IN PATIENTS WITH VESICOURETERAL REFLUX (VUR) VERSUS NO VUR, AND IN FEMALES COMPARED WITH MALES.

CONTINUOUS ANTIBIOTIC PROPHYLAXIS

RESULTS:

- 21/1681 CITATIONS WERE INCLUDED IN THE FINAL ANALYSIS (N = 3876 INFANTS). NONE OF THE INCLUDED STUDIES WAS A RANDOMIZED CLINICAL TRIAL. 13 STUDIES HAD A RETROSPECTIVE DESIGN AND 8 WERE PROSPECTIVE.
- 76% WERE OF MODERATE OR LOW QUALITY.
- POOLED UTI RATES IN PATIENTS WITH LOW-GRADE HN WERE SIMILAR REGARDLESS OF CAP STATUS: 2.2% ON PROPHYLAXIS VERSUS 2.8% NOT RECEIVING PROPHYLAXIS.
- IN CHILDREN WITH HIGH-GRADE HN, PATIENTS RECEIVING CAP HAD A SIGNIFICANTLY LOWER UTI RATE VERSUS THOSE NOT RECEIVING CAP (14.6% [95% CONFIDENCE INTERVAL: 9.3–22.0] vs 28.9% [95% CONFIDENCE INTERVAL: 24.6–33.6], P , .01).
- THE ESTIMATED NUMBER NEEDED TO TREAT TO PREVENT 1 UTI IN PATIENTS WITH HIGH-GRADE HN WAS 7

CONTINUOUS ANTIBIOTIC PROPHYLAXIS

CONCLUSIONS:

- THIS SYSTEMATIC REVIEW SUGGESTS VALUE IN OFFERING CAP TO INFANTS WITH HIGH-GRADE HN, HOWEVER THE IMPACT OF IMPORTANT VARIABLES (EG, GENDER, REFLUX, CIRCUMCISION STATUS) COULD NOT BE ASSESSED. THE OVERALL LEVEL OF EVIDENCE OF AVAILABLE DATA IS UNFORTUNATELY MODERATE TO LOW (LEVEL D)

THANK FOR YOUR ATTENTION!