

## Best Journal Articles of 2007

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E<sup>2</sup> Evidence x Experience = Good Medicine

## Staying in touch with the literature

Medscape Pediatrics

Pediatrics and  
Adolescent Medicine

Journal WATCH  
MEDICINE THAT MATTERS

AAP GRAND  
ROUNDS

eTOC

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## “Best” Journal Articles of 2007

Is it interesting?

Does it make me think differently?

Will it change what I do?



## Topics

- UTI - MSU technique
- UTI - investigations
- UTI - Antibiotics x 2
- Steroids for bronchiolitis
- Desmopressin in enuresis
- IBD screening



## UTI - MSU technique

**To clean or not to clean: effect on contamination rates in midstream urine collections in toilet-trained children.** Pediatrics 2007 Jun; 119:e1288-93

<http://pediatrics.aappublications.org/cgi/content/abstract/119/6/e1288>

350 x 2-18 year old in ED with ?UTI (60% girls)

Randomised to clean or not clean perineum (retract foreskin / labia then wash with gauze & liquid soap) vs no cleaning

Contamination rates (well defined)



## UTI - MSU technique

7% confirmed UTI

Contamination rates

- Clean 8%
- Non-clean 24%

Predictive value of +ve dipstick test (nitrites/L-esterase/both)

- Clean 40.5%
- Non-clean 12.7%

Conclusion:

- Clean!



## UTI – oral vs IV antibiotics

### Antibiotic treatment for pyelonephritis in children: multicentre randomised controlled non-inferiority trial

BMJ 2007;335:386 <http://www.bmj.com/cgi/content/full/335/7616/386>

**502 children 1 month to 7 years with confirmed UTI**  
**Subgroup with acute pyelonephritis – signs + acute DMSA**  
**Excluded severe sepsis/dehydration/vomiting++**  
**Randomised to IV Ceftriaxone vs oral Amox/clavulanate**  
**Short term & 1 year outcomes**



## UTI – oral vs IV antibiotics

### Results

No difference overall (n=502)  
and in pyelonephritis sub-group (n= 278) for

- Duration of fever,
- inflammatory markers at 72 hours,
- sterile urine at 72 hours,
- DMSA abnormalities at 12 months

? Enough young kids  
185 <6 months of age

### Conclusion

In non-septic, non vomiting kids with UTI, even with pyelonephritis –  
oral antibiotics are appropriate initial treatment



## UTI - investigation

### Urinary tract infection in children: diagnosis, treatment and long-term management.

National Institute for Health and Clinical Excellence (NICE)

<http://guidance.nice.org.uk/CG54>

How much should we investigate after 1<sup>st</sup> UTI?



## UTI - investigation

Table 6 Recommended imaging schedule for infants younger than 6 months

Test	Responds well to treatment within 48 hours	Atypical UTI <sup>a</sup>	Recurrent UTI <sup>a</sup>
Ultrasound during the acute infection	No	Yes <sup>c</sup>	Yes
Ultrasound within 6 weeks	Yes <sup>b</sup>	No	No
DMSA 4–6 months following the acute infection	No	Yes	Yes
MCUG	No	Yes	Yes



## UTI - investigation

**Table 7 Recommended imaging schedule for infants and children 6 months or older but younger than 3 years**

Test	Responds well to treatment within 48 hours	Atypical UTI <sup>a</sup>	Recurrent UTI <sup>a</sup>
Ultrasound during the acute infection	No	Yes <sup>c</sup>	No
Ultrasound within 6 weeks	No	No	Yes
DMSA 4–6 months following the acute infection	No	Yes	Yes
MCUG	No	No <sup>b</sup>	No <sup>b</sup>



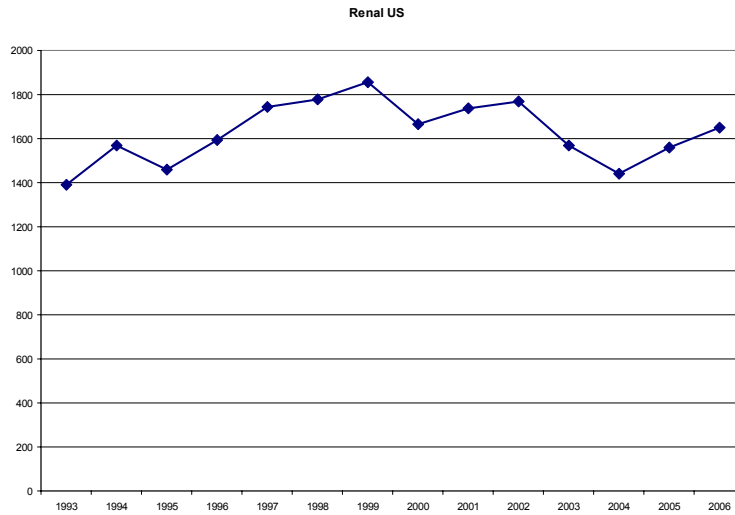
## UTI - investigation

**Table 8 Recommended imaging schedule for children 3 years or older**

Test	Responds well to treatment within 48 hours	Atypical UTI <sup>a</sup>	Recurrent UTI <sup>a</sup>
Ultrasound during the acute infection	No	Yes <sup>b,c</sup>	No
Ultrasound within 6 weeks	No	No	Yes <sup>b</sup>
DMSA 4–6 months following the acute infection	No	No	Yes
MCUG	No	No	No



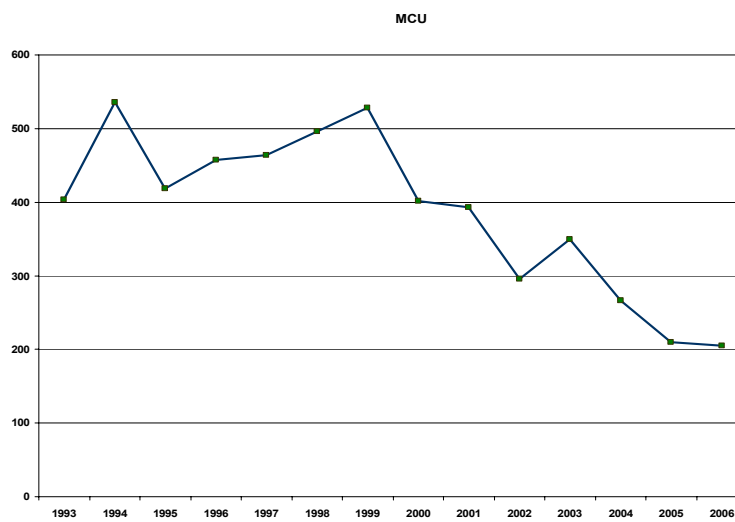
## UTI – investigation RCH



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## UTI – investigation RCH



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## UTI - investigation

Does this change the need for SPA / CSU?



## UTI – antibiotic prophylaxis

### Recurrent Urinary Tract Infections in Children Risk Factors and Association With Prophylactic

**Antimicrobials** JAMA. 2007;298:179-186.

<http://jama.ama-assn.org/cgi/content/abstract/298/2/179>

Several association questions

Do prophylactic antibiotics reduce risk of recurrent UTI?





## UTI – antibiotic prophylaxis

Large primary care network over 5 years  
611 had proven 1st episode UTI  
Antibiotic prophylaxis recorded (80% no)

### Results

Recurrence rate 15%

No difference overall or in any sub-group  
with vs without antibiotics (**OR = 1.01** CI 0.5 to 2.02)

Risk of recurrence with resistant organism much higher in  
antibiotic group – (**OR = 7.5** CI 1.6 to 35.17)



## UTI – antibiotic prophylaxis

### Conclusion

No apparent benefit from prophylactic antibiotics  
Evidence of harm (resistance)  
(cost, side-effects, selection pressure)

Not an RCT



## UTI – antibiotic prophylaxis

### **Clinical Significance of Primary Vesicoureteral Reflux and Urinary Antibiotic Prophylaxis After Acute Pyelonephritis: A Multicenter, Randomized, Controlled Study**

PEDIATRICS Vol. 117 No. 3 March 2006, pp. 626-632

<http://snipurl.com/1qlfn>



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## UTI – antibiotic prophylaxis

236 kids aged 3 months to 18 years with confirmed pyelonephritis.

Early DMSA & MCU

Grade IV & V reflux excluded

Randomised (stratified by VUR +/-) to SMX-TMP (or Nitrofurantoin) vs placebo.

Followed 1 year – incl DMSA scan at end.



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## UTI – antibiotic prophylaxis

### Results

Recurrence rate 20.1%

For non-VUR group

antibiotics vs placebo – no difference

For VUR group (not higher overall)

antibiotics vs placebo – no difference

But more pyelonephritis in those with antibiotics (7 vs 1)

All resistant organisms



## UTI – antibiotic prophylaxis

### Conclusion

No clear increased risk of UTI or PN in VUR (GI-III)

No apparent benefit from prophylactic antibiotics overall  
or in VUR (GI-III)

Evidence of harm (resistance)

(cost, side-effects, selection pressure)

Is there still a place for antibiotic prophylaxis  
after 1<sup>st</sup> UTI beyond 3 months of age?



## Steroids for bronchiolitis

### A Multicenter, Randomized, Controlled Trial of Dexamethasone for Bronchiolitis

N Engl J Med 2007;357: 331-9.

<http://content.nejm.org/cgi/content/abstract/357/4/331>

20 ED Centres

2- 12 months 1st episode wheezing & RDAI 6+

Several exclusions

8686 infants considered

600 enrolled

1mg/kg dexamethasone vs placebo

Outcome – Hospitalisation and RDAI improvement after 4 hours.

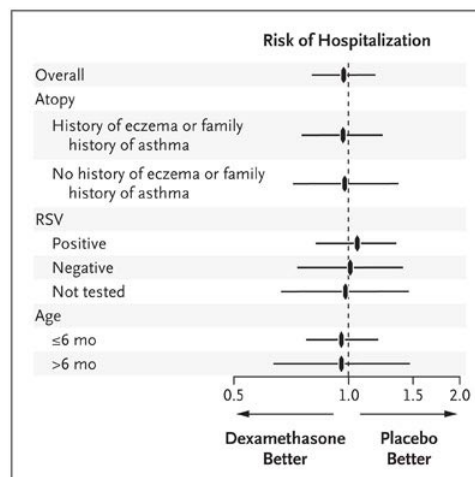


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## Steroids for bronchiolitis

### Results



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## Steroids for bronchiolitis

### Results

**Table 3.** Hospital Admission and Changes in Clinical Variables from Baseline to 4 Hours after Intervention.\*

Variable	Dexamethasone Group	Placebo Group	Difference between Groups (95% CI)	P Value
Hospital admission (%)	39.7	41.0	-1.3 (-9.2 to 6.5)	0.74
RACS	-5.3±4.7	-4.8±4.6	-0.5 (-1.3 to 0.3)	0.21
RDAI score	-4.4±3.1	-3.9±3.2	-0.5 (-1.0 to -0.1)	0.03
Respiratory rate (breaths/min)	-8±15	-7±14	-1.0 (-3.0 to 1.0)	0.39
Oxygen saturation (%)	0.3±3.3	0.9±3.2	-0.6 (-1.0 to -0.1)	0.02
Heart rate (beats/min)	-13±24	-5±25	-8.0 (-12.0 to -5.0)	<0.001
Temperature (°C)	-0.6±0.9	-0.2±1.0	-0.4 (-0.6 to -0.3)	<0.001

\* Data for all variables except hospital admission are expressed as the change from baseline to 4 hours. RACS denotes Respiratory Assessment Change Score, and RDAI Respiratory Distress Assessment Instrument.



## Steroids for bronchiolitis

### Conclusion

**Steroids unhelpful in 1<sup>st</sup> wheezing illness infants 2-12 months**

? Older infants

? Recurrent wheeze

? The most sick



## Desmopressin in enuresis

### Relief of Nocturnal Enuresis by Desmopressin is Kidney and Vasopressin Receptor Independent

J Am Soc Nephrol 18: 1534-1539, 2007

<http://jasn.asnjournals.org/cgi/content/abstract/18/5/1534>

How does desmopressin work in PNE?

Desmopressin reduces bedwetting by reducing the amount of urine produced at night

Cochrane Database of Systematic Reviews 2002



## Desmopressin in enuresis

Desmopressin very effective in PNE but:

- Fluid restriction has never been successful.
- Desmopressin does not reduce urine volume in most pts.



## Desmopressin in enuresis

Study of 1 patient!

10 year old boy with Diabetes Insipidus

+ve water deprivation test

No response to desmopressin - Nephrogenic  
Familial

Also had Nocturnal Enuresis

Someone started him on desmopressin

⇒ Dry immediately



## Desmopressin in enuresis

On and off desmopressin several times with reliable response.

Could the effect of desmopressin be due to something else than reduced urine volume?

Vasopressin 3 receptor (AVPR1B) is distributed widely in the brain. Arousal.

? Arousal effect rather than anything to do with fluids.

Tricyclic antidepressants also stimulate this.

[The Lancet 2002;359:495](#)



## IBD screening

### Laboratory Values for Children With Newly Diagnosed Inflammatory Bowel Disease

PEDIATRICS Vol. 119 No. 6 June 2007, pp. 1113-1119

<http://pediatrics.aappublications.org/cgi/content/abstract/119/6/1113>

Can blood tests help diagnose / exclude IBD  
526 children with IBD 392 Crohn 134 UC  
Utility of Hb, Plts, ESR, Albumin



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## IBD screening

TABLE 2 Frequency of Normal Laboratory Values at Diagnosis

Disease Subtype	Frequency of Normal Laboratory Values, %				
	4 Tests	3 Tests	2 Tests	1 Test	0 Tests
CD					
Mild	21	20	29	25	5
Moderate	5	9	27	34	25
Severe	2	8	18	32	40
Total	9	12	26	31	22
UC					
Mild	54	23	13	8	2
Moderate	6	24	32	26	12
Severe	0	5	10	45	40
Total	19	20	23	24	14



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## IBD screening

**TABLE 3** Frequency of Normal Individual Laboratory Values

	Frequency of Normal Laboratory Values, % (n)							
	CD			UC			IBD	
	Mild (N=105)	Moderate (N=196)	Severe (N=65)	Mild (N=39)	Moderate (N=72)	Severe (N=20)	All	Moderate/Severe
ESR	35 <sup>a,b</sup> (37)	16 <sup>a</sup> (31)	14 <sup>b</sup> (9)	74 <sup>d,e</sup> (29)	28 <sup>d</sup> (20)	15 <sup>e</sup> (3)	26	18
Hemoglobin level	51 <sup>a,b</sup> (54)	24 <sup>a</sup> (47)	20 <sup>b</sup> (13)	62 <sup>d,e</sup> (24)	31 <sup>d</sup> (22)	5 <sup>e</sup> (1)	32	24
Platelet count	58 <sup>a,b</sup> (61)	43 <sup>a</sup> (85)	34 <sup>b</sup> (22)	95 <sup>d,e</sup> (37)	49 <sup>d</sup> (35)	50 <sup>e</sup> (10)	50	43
Albumin level	82 <sup>a,b</sup> (86)	51 <sup>a,c</sup> (100)	31 <sup>b,c</sup> (20)	87 <sup>e</sup> (34)	76 <sup>f</sup> (55)	10 <sup>e,f</sup> (2)	60	50



## IBD screening

Blood tests not v useful in excluding IBD

Haematochezia – very sensitive

Add “no haematochezia” to no abnormal blood tests – much improved negative predictive value.

Endoscopy for typical symptoms, especially haematochezia, irrespective of blood tests

