	S. aureus (% sensitive)	#Samples	E. coli (% sensitive)	#Samples	*K. pneumoniae*(% sensitive)	#Samples
Ampicillin			10%	19	0%	8
Augmentin			56%	9	71%	7
Ceftriaxone-			90%	l0	57%	7
Chloramphenicol	72%	39	75	8	38%	8
Erythromycin	59%	39				
Gentamicin	100%	37	70%	10	75%	8
Ofloxacin			100%	9	100%	5
Ofloxacin or methicillin	100%	25				
Penicillin	6%	36				
Co-trimaoxazole	97%	31	10%	10	50%	8
Vancomycin	10%	19				

countries. Empiric treatment of neonatal sepsis should include an agent active against *S. aureus*, such as cloxacillin with gentamicin (MRSA was not detected).

Alarmingly, we found a high frequency of *E. coli* resistant to ampicillin. Antibiotic stewardship and hospital hygiene need to be high priorities [6].

Our data suggest a possible role for hot beds in neonatal *S. aureus* bacteremia.

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Severity of hospitalised rotavirus gastroenteritis in South Australian children prior to and following implementation of an infant rotavirus immunisation program

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Background: A dramatic reduction in the number of hospitalisations for acute rotavirus gastroenteritis has been observed in Australian children following introduction of the rotavirus immunisation program in July 2007. This study aimed to assess and compare severity of hospitalised rotavirus gastroenteritis in children prior to and following introduction of the rotavirus immunisation program.

Methods: Rotavirus gastroenteritis hospitalisations of children < 5 years of age at a tertiary paediatric hospital, during a two year period pre and post rotavirus vaccine introduction, were reviewed and scored for severity using two internationally recognised gastroenteritis severity scoring systems (Clark and Vesikari) All cases had laboratory confirmed rotavirus infection. The sample size allowed for >90% power to detect a difference in mean severity score of 1.5 units.

Results: A total of 203 hospitalisations prior to and 45 hospitalisations post introduction of rotavirus vaccine were reviewed. Age of children ranged from 10 days - 4 years 11 months. There were more males than females in both periods with 56% males overall ($p = 0.004$). The mean age of children hospitalised was significantly higher following introduction of the immunisation program (20.4 months prior compared to 32.7 months post introduction; $p = <0.001$). The mean Clark severity score was 10.8 (10.3-11.2) and 13.4 (12.3-14.4) post introduction of the rotavirus immunisation program. There was no significant difference in proportions of hospitalised cases scoring moderate-severe, between the pre and post rotavirus immunisation periods for either severity scale (Clark: 81% vs 79% and Vesikari: 88% vs 88%). The mean duration of hospitalisation was 33.2 hours (range: 2 hours – 10.5 days), with no significant difference in length of stay prior to introduction of the rotavirus immunisation program (32.3 hours, range 5 hrs – 10.5 days) compared to post introduction (37.6 hrs, range 2 hours - 5.6 days; $p = 0.24$).

Conclusion: Rotavirus vaccines have been very successful in reducing the number of paediatric hospitalisations due to acute rotavirus gastroenteritis, however our findings suggest there has been no impact on the severity of hospitalised cases. An increase in the mean age at hospitalisation following introduction of the rotavirus immunisation program was identified.

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Prevalence of bacteriophage-associated super-antigen genes in *Streptococcus pyogenes* isolated from pediatric patients in Japan

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Background: *Streptococcus pyogenes* infection is one of the most common in pediatric diseases. Lysogenic bacteriophage is included in the genome of *Streptococcus pyogenes*. Although prophages comprise a small fraction of the *Streptococcus pyogenes* genome, they may account for up to 70% of the variation in the gene makeup of *Streptococcus pyogenes*. Streptococcal bacteriophage encodes super- antigen genes that are widely considered to be virulent factors. In this study, we tried to clarify the recent prevalence of bacteriophage-associated super antigen genes in *Streptococcus pyogenes* isolated from pediatric patients in Japan.

Methods: We collected 143 clinical *Streptococcus pyogenes* isolates from children at four medical facilities in Japan from 2009 to 2011. We investigated the presence of 7 known super-antigen genes carried by prophage; *speA, speC, speH, speI, speK, speL*,and *speM* by PCR methods. The *emm* types of *Streptococcus pyogenes* strains were also determined by the sequencing of the *emm* gene.

Results: The prevalence of *speA, speC, speH, speI, speK, speL* and *speM* genes were 30.1%, 61.5%, 20.3%, 31.4%, 16.1%, 18.2%, and 7.7%, respectively. The 19 kinds of *emm* types were observed in 143 clinical isolates. The three major *emm* types of 143 clinical isolates were M12, M1, and M89, respectively. The 92% of M1 strains possessed *speA*. The 78% of M12 strains, 81% of M89 strains, and 87.5% of M4 strains possessed *speC*. The 50% of M12 strains possessed *speH*. The 78% of M12 strains and 75% of M75 strains possessed *speI*. The 75% of M4 strains possessed *speK*. All M4 strains possessed *speL*. All M75 strains possessed *speM*.

Conclusion: A strong correlation existed between *emm*-sequence type and bacteriophage-associated super-antigen genes in *Streptococcus pyogenes*. We suggested that substantial contribu-

tion to the diversification of the *Streptococcus pyogenes* genome attributed to bacteriophage.

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Integrated management of neonatal and childhood illnesses - A cost-effective intervention for controlling diarrhoea: Community based study conducted in rural India

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Background: One in every four deaths in children below the age of 5 years is estimated to be due to diarrhoea. One out of every ten babies born in developing countries fails to reach their fifth birthday, falling victim to diarrhoeal diseases. Diarrhoea kills more young children than AIDS, malaria and measles combined. This study explores the cost-effectiveness of integrating immunization, reproductive and child health, and behavioural change under one roof as *Integrated Management of Neonatal and childhood illnesses* in controlling diarrhoeal diseases.

Methods: Five hundred and ten children below the age of 5 years were selected by cluster sampling method (30 clusters, 17 children in each cluster). Background information was collected from the mother or caretaker of child using a structured questionnaire. Observational checklist was used for assessing environmental conditions. A child below five years of age with acute diarrhoea either in the previous two weeks or at the time of interview was considered as a case of diarrhoea.

Results: The prevalence of diarrhoea was 20.7%. There was no statistically significant difference in prevalence of diarrhoea in males and females. Among various age groups 7- 12 months had highest prevalence of diarrhoea (37.2%) followed by 13-24 months (22.4%). The occurrence of diarrhoea was significantly associated with poor educational status of mother, low birth weight, history of measles, not receiving vitamin A prophylaxis in last 6 months, not gaining weight adequately, poor breast feeding practices, and poor hygiene.

Conclusion: One in five children was affected by diarrhoea. Weaning period was found to be the most crucial time. Low awareness among illiterate mothers, incomplete immunization, under-weight, inappropriate breast feeding practices, poor environmental conditions increase the susceptibility to diarrhoea. A lot of necessary information is already available about effective management of diarrhoea. However, there is lack of critical knowledge & expertise for ensuring accessibility to treatment by those who need it the most. If childhood diarrhoea is not addressed urgently, the countries will fail to achieve the fourth *Millennium Development Goal* (MDG4) target of reducing child deaths by two-thirds by 2015.

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Table 1
Number and percent of infection markers in a sample of pregnant women with high risk pregnancy

Age group	n	CMV	Rubella	Parvovirus	HCV	HBsAg	Syphilis*	HIV**
		IgM	IgM	IgM	Abs			
<21	119	1(0.8)	0	1(0.8)	0	0	0	1(0.8)
21-25	82	1(1.2)	3.7	1(1.2)	0	0	0	2(2.4)
26-30	86	1(1.2)	0	1(1.2)	1(1.2)	0	0	1(1.2)
31-35	85	1(1.2)	1(1.2)	0		0	0	0
>35	105	2(1.9)	1(1.0)	2(1.9)	1(1.0)	0	1(2.5)	3(2.9)
Total	477	6(1.3)	5(1.0)	5(1.0)	2(0.4)	0	1(0.4)	7(1.5)

*Syphilis frequency was calculated from 223 women, since the laboratory test was not valid for the rest of the samples; **HIV infection data were gathered from the questionnaire.

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Frequency of potentially congenital infections in women with high risk pregnancy in Mexico

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Background: TORCH, HIV and other infections can be vertically transmitted and provoke abortions or give birth to congenitally infected newborns, most of who are born subclinical but with high risk to develop squeals later in life. In Mexico, there are few reports on the frequency of these infections in pregnant women, and especially of co-infections.

Methods: Pregnant women attended at the National Institute of Perinatology are being studied for infection markers of acute or current infections using commercial ELISAs. The results presented herein come from the first 477 women, who donated serum for detection of six serologic markers using commercial kits. They also answered a questionnaire applied to search for clinical related factors.

Results: The frequency of different infection markers and of co-infections can be observed in Table 1. The frequency of infections peaked in the second and last age groups. HIV and CMV were the commonest infections and no positive case of HBV has been found. All CMV cases had high IgG avidity, i.e. they were re-infections. A previously unknown frequency of 1.0% of Parvovirus B19 was also observed. Syphilis was only detected in a woman from the older group who also was infected with HIV. Other two co-infections were observed.

Note: three cases presented co-infections: one HIV + CMV, another HIV + Syphilis and a third one CMV + Parvovirus B19.

Conclusion: The results seem different to data reported in other parts of the world, probably due to a) a quite large proportion of young women; b) markers of acute or current infection were looked for in the cases of CMV, Rubella, Parvovirus and HBV; c) Rubella IgM is probably reflecting response against the vaccine actually being administered by the Ministry of Health of Mexico, since no case presented clinical signs of the disease.

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