

gains of demand management have been in the field of microbiology whose request forms offer the greatest potential. Additional assistance to clinician may be rendered by the current trends in clinical microbiology practice to limit the processing of inappropriate specimens. Good communications between the medical, nursing, infection control, and laboratory staff proved vital for safe and successful implementation of the strategy of performing only a very limited range of microbiological tests in patients with hospital acquired diarrhea.<sup>4</sup> However, it should be emphasized that the selective reduction of test ordering should not result in underutilization or failure to order a potentially indicated test. The availability of information technology and greater acceptability of evidence based medicine will probably be the most important factors in making demand management a reality. Therefore, it is highly recommended to routinely and regularly inspect both the Clinical Microbiology Laboratory request forms for proper completion before their recording, and the accompanying specimens for appropriate quality before their processing. In our institution, all necessary measures to increase awareness of the importance of clinical microbiology laboratory request forms between healthcare workers should be applied. These measures should include institutional surveys, active enhanced communications, laboratory user's manual, education and audit. A survey of laboratory users focused clinicians' attention on the microbiology service, raised the profile of the laboratory, and resulted in improved communications and a better understanding of customer needs. The direct participation of laboratory professionals in discussions on patient care resulted in an enhancement of the overall quality of the health care provided to the patient.<sup>5</sup> It is also advantageous to produce and distribute a regularly updated microbiology laboratory user's manual or handbook including guidelines for completion of microbiology request form, specimen collection, rejection criteria of defective incomplete forms and inappropriate specimens, specimen transport arrangements, turnaround times and availability of interpretative and medical advice. Continuing medical education such as regular clinico-pathological meetings for hospital doctors and interactive induction courses for junior doctors are recommended. The clinical skills laboratories or centers are new promising trends in medical education.<sup>6</sup> Medical audit is the systematic, critical analysis of the quality of medical care, including the procedures used for diagnosis and treatment, the use of resources, and the resulting outcome and quality of life for the patient. Medical audit has been established for many years in most of the pathology disciplines and has been reviewed specifically with

regards to medical microbiological audit. The re-design of microbiology request form, the demand management strategy, the increased awareness plan and the computerization of the laboratory are pivotal measures for the development of the diagnostic and clinical microbiology service in our institution.

Received 23rd December 2003. Accepted for publication in final form 13th March 2004.

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## Outbreak of multidrug resistant *Acinetobacter* in the neonatal intensive care unit

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Nosocomial or hospital acquired infection rates are higher in the intensive care areas of the hospitals and newborn nurseries. The possible reasons could be the age, decrease immunity, use of invasive measures like intubation, central lines, total parenteral nutrition, catheters and wide spread use of antibiotics.<sup>1,2</sup> Although, both gram positive and gram-negative organisms are reported to be involved, recent reports have suggested the emergence of the rare gram-negative organisms. One example is the recent report of outbreak of *Enterobacter cloacae* species in a neonatal intensive care unit.<sup>3</sup> This report describes a rapid spread of another rare gram-negative multi-resistant

**Table 1** - Summary of the cases.

Gender	Place of birth	Mode of delivery	Birth weight (g)	GA	Apgar score	Diagnosis	Outcome
Male	Outborn	CS	4400	40	5/8	PPHN	Died
Female	Inborn	NSD	1210	31	3/5	Prematurity	Died
Female	Inborn	NSD	2830	40	8/9	Diaphragmatic hernia	Died
Female	Inborn	NSD	2380	34	9/10	Prematurity	Discharged home
Male	Inborn	NSD	1310	29	8/9	Prematurity	Discharged home
Male	Inborn	NSD	1310	31	5/9	Prematurity	Discharged home
Male	Inborn	CS	2180	33	7/9	Prematurity	Discharged home

CS - cesarean, NSD - normal spontaneous delivery, birth weight, GA - gestational age in weeks  
Apgar score in one and 5 minutes, PPHN - persistent pulmonary hypertension

bacterium, the *Acinetobacter species*, in one of the busiest Neonatal Intensive Care Unit (NICU) of the Eastern Province of Saudi Arabia. *Acinetobacter* are very short rod shaped gram-negative bacteria. They are strict aerobes and grow well between 30-32°C. They are free living ubiquitous saprophytes. Their pathogenicity is usually limited to opportunistic infections.<sup>4</sup> Their colonization has been reported to occur with prolong intubation of neonates.<sup>5</sup> In various reports, different materials have been implicated as source of *Acinetobacter* infection, namely indwelling catheters, fat emulsions, suction bottles, aerosols and air conditioners.<sup>6-8</sup> This risk of infection is not only limited to the preterm infants, term infants have also been shown to be affected. Recently, we observed a rapid spread of *Acinetobacter* organism among the neonates admitted to the NICU at King Fahd Hospital of the University (KFHU). The organism was isolated from the transtracheal aspirate cultures in seven intubated neonates during a period of one week. The organism was sensitive to Imipenem only and resistant to Amikacin, Ampicillin, Augmentin, Aztreonam, Cefazidime, Ceftriaxone, Ciprofloxacin, Gentamicin, Pipracillin, Tetracycline, Tobramycin and Trimethoprim/Sulfamethaxole. The multi-resistant nature of the organism and rapidity of spread prompted us reporting this case series. The summary of the cases is depicted in **Table 1**. Aggressive measures were taken to combat this outbreak till. No further cases were reported. The unit was closed for all new admissions. The whole unit was cleaned by the House Keeping Department using general dusting, scrubbing, and wiping. No Fumigation was performed. Suspected cases were isolated. Index of suspicion for gram negative sepsis was increased and appropriate antibiotics were

initiated early in suspected cases of sepsis. Improved hygienic measures including strict hand washing protocol with hygiene barrier nursing was enforced. Cultures were sent from air, wash basins, ventilatory tubing and suction catheters. No source could however be identified. Thorough cleaning and disinfection of the unit was carried out by using disinfectants namely presept, Johnson & Johnson (Dichloroisocyanurate sodium salt 50%) and Metricide 28, Metrix (2.5% Glutaraldehyde). Central sterilization supply department (CSSD) disinfected the used equipment by using presept solution. In the present case series, fortunately the blood cultures in all the cases were negative thus positive endotracheal/transtracheal aspirate culture were taken as colonization of the endotracheal tube rather than infection. Despite all possible methods, we were unable to find the possible link or source of the organism. However, as the outbreak was noted after the transfer of one of the sick neonate from another hospital (case 1), we assume this case to be the 'index case' and the possible source of the organism. Also, it was difficult to associate colonization with increased mortality, as the cause of death in these infants were directly linked to the primary disease namely pulmonary hypertension (case 1), prematurity (case 2) and diaphragmatic hernia (case 3). The infection control policy and protocol at the NICU of KFUH is followed very strictly. Thus, this type of outbreak could only be explained by the fact that at the time of this outbreak the unit was overcrowded. As we are the only governmental NICU providing level III care for neonates in whole Al-Khobar area, many times we had to compromise to accommodate the increasing demand. This highlights on the need for expansion in the NICU services at this region. The main aim of this report is to emphasize on the nature

of the rapid progressive colonization of NICU with multi-resistant organism. This further reiterates on the importance of the policy of rationing the use of antibiotics and strictly following the infection control measures.

In conclusion, this report highlights on the phenomenon of quick spread of the rare multi-resistant organism in an intensive care setup. Neonates being relatively non-immune are more susceptible. Thus, vigilant care should be given to the infection control policies to prevent these outbreaks.

Received 29th December 2003. Accepted for publication in final form 7th March 2004.

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## Acute gluteal abscess due to chloroquine injection in Sudanese pregnant woman

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We have previously reported on the different manifestations of severe malaria among pregnant Sudanese women, which involved all parities and showed a wide range of presentations including cerebral malaria.<sup>1</sup> In Sudan, falciparum malaria has been reported as one of the main causes of maternal mortality.<sup>2</sup> A 24-years-old woman, gravida 3, para 2, pregnant for 24-weeks presented to New Halfa Teaching Hospital complaining of fever, sweating, headache, and pain in the region of chloroquine injections which she received 9 days earlier. On admission her weight was 63 kg, the pulse was 90/minute, the blood pressure was 110/70 mm Hg, the temperature was 38.9°C, with clear chest and there was no palpable spleen or liver. The patient's hemoglobin was 9.5 g/dl and her urine was clear. Right-sided gluteal abscess 6 x 8 cm was found. After preparation (fasting), the abscess was drained under general anesthesia (Ketamine). Ampicillin/cloxacillin 500mg was given at first intravenously and then continued orally for 7 days. *Staphylococcus aureus* was isolated and it was sensitive to Ampicillin/cloxacillin. After the appearance of healthy granulation tissue in the third day the patient was discharged to continue the dressing at the health center and to come for follow up in the antenatal clinic until delivery, which was normal vaginal delivery in hospital. The birth weight was 2.9 kg. This pregnant woman presented with fever, moreover the abscess was drained under general anesthesia; both the fever<sup>3</sup> and anesthesia are hazardous during pregnancy. Such rare complication (abscess at chloroquine injection site) should be considered among the causes of morbidity and mortality associated with malaria or its treatment. Chloroquine is very popular in Sudan and is usually self prescribed drug with a common belief that the injectable form is more effective than the orally administered drug. Thus, in Sudan, chloroquine has been reported earlier to cause massive necrosis and associated with gluteal abscess especially when given at home or with minimum care for contamination.<sup>4,5</sup>

Received 16th November 2003. Accepted for publication in final form 7th March 2004.

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