METHICILLIN RESISTANT
STAPHYLOCOCCUS AUREUS — FIRST CASE
OF BACTERMIA IN THE UNIVERSITY
HOSPITAL, KUALA LUMPUR

SYNOPSIS
Hospital acquired infections due to Staphylococcus aureus pose a major problem in many hospitals. However, even more ominous are infections caused by methicillin-resistant S. aureus (MRSA). The first case of a serious infection due to methicillin-resistant Staphylococcus aureus occurred in the University Hospital in June 1986. A newborn baby with bacteremia and septic arthritis was treated effectively with a combination of vancomycin and fusidic acid. The methods of spread and control of infection due to these organisms are discussed.

INTRODUCTION
Hospital associated infections due to Staphylococcus aureus pose a major problem in many large general hospitals. In the University Hospital, Kuala Lumpur, it accounts for about a quarter (27% in 1983 and 1984, 25% in 1985) of all hospital acquired infections. More ominous and dangerous is the presence of methicillin-resistant Staphylococcus aureus (MRSA) in the hospital environment.

Reports from Australia (1,2), the United States (3,4) and the United Kingdom (5,6), suggest an increasing occurrence of nosocomial infection with methicillin-resistant S. aureus. In the University Hospital in 1979, 11.5% of all nosocomial infections due to S. aureus were found to be methicillin-resistant. In 1981 this figure rose to 13% and then fell to 6.6% in 1983. The percentage of MRSA then rose to 9% in 1984 and then to 18.8% in 1985. All these strains of MRSA were isolated from the flora of hospitalized patients or from surgical wounds, but until now serious conditions like septicaemia or meningitis were not recorded. The first serious infection with MRSA occurred in June 1986 and the following is a report of this case.
CASE REPORT

A premature female infant of 34 weeks gestation, with a birth weight of 1380 g was delivered by emergency caesarean section because of bleeding placenta praevia. Apgar at 1 minute was 1/10 and at 5 minutes 9/10. The baby was resuscitated successfully with external cardiac massage, intermittent positive pressure ventilation and 40% intravenous dextrose and 8.4% sodium bicarbonate. She was subsequently admitted to the special care nursery where she was put on 10% dextrose intravenous drip. She did not require further ventilatory support, but because she was anaemic, haemoglobin level being 9.6 g % at age 3 hours, she was transfused with 25 ml of whole blood. Her condition remained good and by the third day of life, small amount of infant formula was introduced via the nasogastric route. By the sixth day of life, full nasogastric feeds were well tolerated and the intravenous drip was discontinued.

On day 12 she developed a warm, tender swelling over the left knee but there was no effusion nor any radiological change in the joint. The baby was afebrile but there was a leucocytosis of 59,800/rul with 85% neutrophils. Blood for culture was taken and treatment with intravenous crystalline penicillin 100,000 units/kg/day and gentamicin 5 mg/kg/day was commenced. Two days later (14th day of life) fluid was detected in the left knee joint and 2.5 ml of pus was aspirated. A Gram stain of this aspirate revealed Gram positive cocci. The crystalline penicillin was then replaced with intravenous cloxacillin.

On the 15th day, an arthrotomy was performed due to reaccumulation of pus in the joint. An X-ray taken of the left knee then showed radiolucent areas at the upper end of the tibia. Blood cultures and cultures of knee aspirates grew methicillin-resistant S. aureus (MIC to cloxacillin 8 mg/L) which was also resistant to gentamicin. MRSA was also isolated from the umbilical swab. Therapy was changed to intravenous cefoperazone 100 mg/kg/day and amikacin 15 mg/kg/day. Over the next few days the baby's condition did not improve and a repeat X-ray of left knee showed sub-periosteal reaction with new bone formation. A second arthrotonomy was performed on the 24th day and pus drained from the knee joint and infrapatellar pouch.

The antibiotic regime was changed in view of the continuing active infection and antibiotic sensitivity results. Intravenous vancomycin 15 mg/kg/day in 12 hourly doses and fusidic acid 20 mg/kg/day in 8 hourly doses were started in place of cefoperazone and amikacin.

Within a week of the new antibiotic regime, the inflammatory changes subsided and there was no further accumulation of pus in the joint. After six weeks of vancomycin and fusidic acid therapy, the general condition of the baby was good and she had gained weight. She was discharged on the 74th day weighing 3,450 g.

DISCUSSION

It is not known for certain when MRSA first appeared in the University Hospital nor whether it was introduced from an outside source. Awareness of its presence in the hospital environment is essential both for the microbiologists as well as for the clinicians, so that prompt identification and appropriate therapy can be instituted.

Generally “methicillin-resistance” is a generic term which includes resistance to all penicillinase-resistant semisynthetic penicillins like nafcillin, oxacillin, cloxacillin, dicloxacillin and flucloxacillin. Although in-vitro tests with MRSA may indicate susceptibility to clinically achievable serum concentra-