

## Strategies to Prevent and Control Methicillin-resistant *Staphylococcus aureus* Infections in a Tertiary Hospital

**Nordiah Awang Jalil**, Siti Rokiah Yusof, Nor Rina Mahawar, Razila Yacob, Farahzilla Anuwar, Nurhayatie Mohamad Kosnen, Mohd Rizal Abdul Manaf

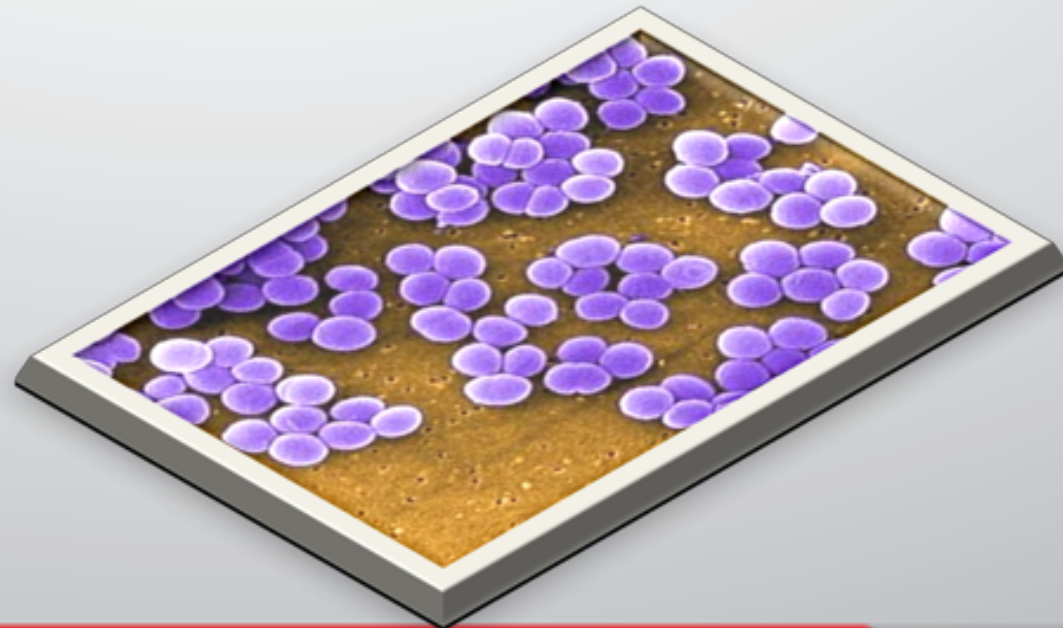
**Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia**

# Objectives



UNIVERSITI  
KEBANGSAAN  
MALAYSIA  
*The National University  
of Malaysia*

- Background
- MRSA Surveillance Program
- MRSA Infection Prevention & Control strategies
- Outcome Measures
- Lessons learnt



UKM

# Universiti Kebangsaan Malaysia Medical Centre



- **850-bed tertiary teaching hospital**
- **Major clinical consultancy services**
- **About 3000 admissions/month**



# Infection Control Unit

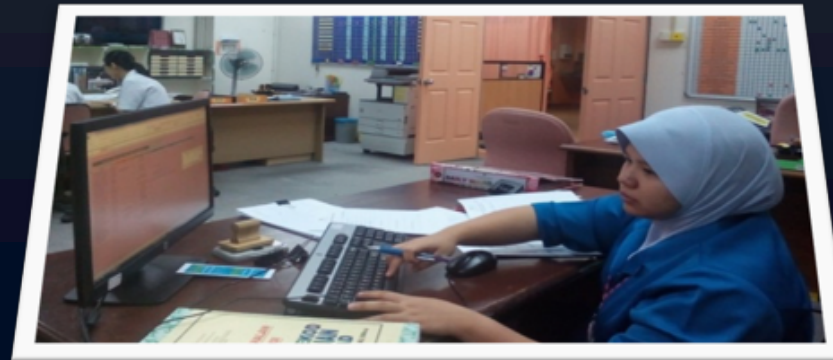
IPC strategies for the identification, management and control of MRSA

- Reduce the risk of transmission of MRSA
- Minimize the risk of patients acquiring an MRSA HCAI



# MRSA Surveillance Program

- ❖ Infection Control Nurse (ICN) daily visited the Microbiology Laboratory
  - All positive MRSA culture results upon validation were placed in a designated pigeon hole
  - collect MRSA data
  - MRSA line listing



# ICN Ward Visit

- ✓ Visit all MRSA patients
- ✓ Adherence to contact precaution
- ✓ Isolation room / cohort patients
- ✓ Emphasize 5-moments of hand hygiene
- ✓ Cleaning and disinfection of equipment
- ✓ Environmental hygiene
- ✓ Visitor policies



# Isolation or Cohort

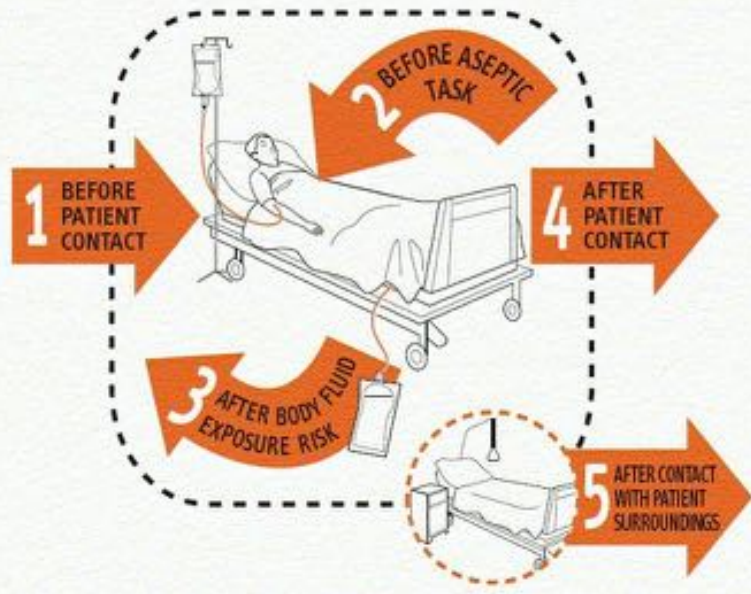
Isolation

Cohort

Contact  
Precaution



# Your 5 moments for HAND HYGIENE

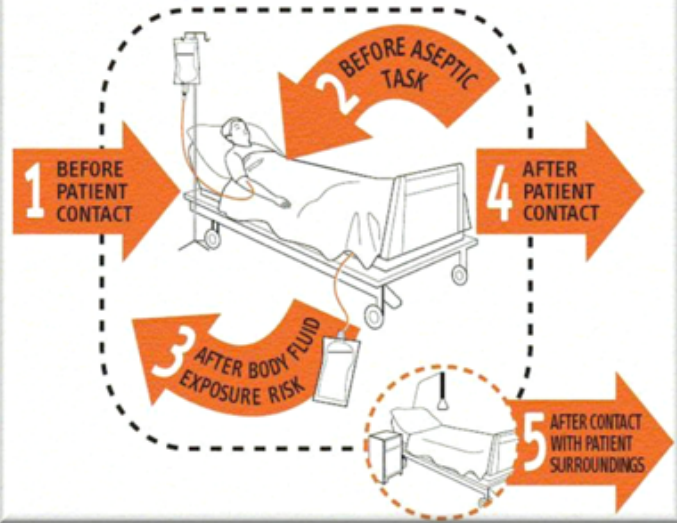


## Hand Hygiene at the Point of Care





# Your 5 moments for HAND HYGIENE



Transmission Precautions



## Infection Prevention & Control Strategies

Back to Basic

Standard Precautions

## Environmental Cleaning



CSSD



# ICN Ward Round



Determine MRSA Infection / Colonization

Rx MRSA Infection  
➤ Anti-MRSA agents

Decolonized MRSA Colonizer  
➤ Intranasal mupirocin bd x 5 days  
➤ Chlorhexidine bath daily x 5 days



# Reinforced Staff Education



# SEARCH & DESTROY

- **Active Surveillance MRSA Screening Upon Admission and Weekly**

➤ **ICU**

➤ **NICU**



# DASH BOARD



Timeliness  
Tracking  
MRSA  
cases

# Outcome measures

- ❖ MRSA HCAI rates
- ❖ Total MRSA rates (infection plus colonization)
- ❖ excluding duplicate MRSA isolates from the same patient
- ❖ reported to relevant stakeholders and Ministry of Health, Malaysia



# Rate of Total MRSA & MRSA Infection Universiti Kebangsaan Malaysia Year 2013 -2017

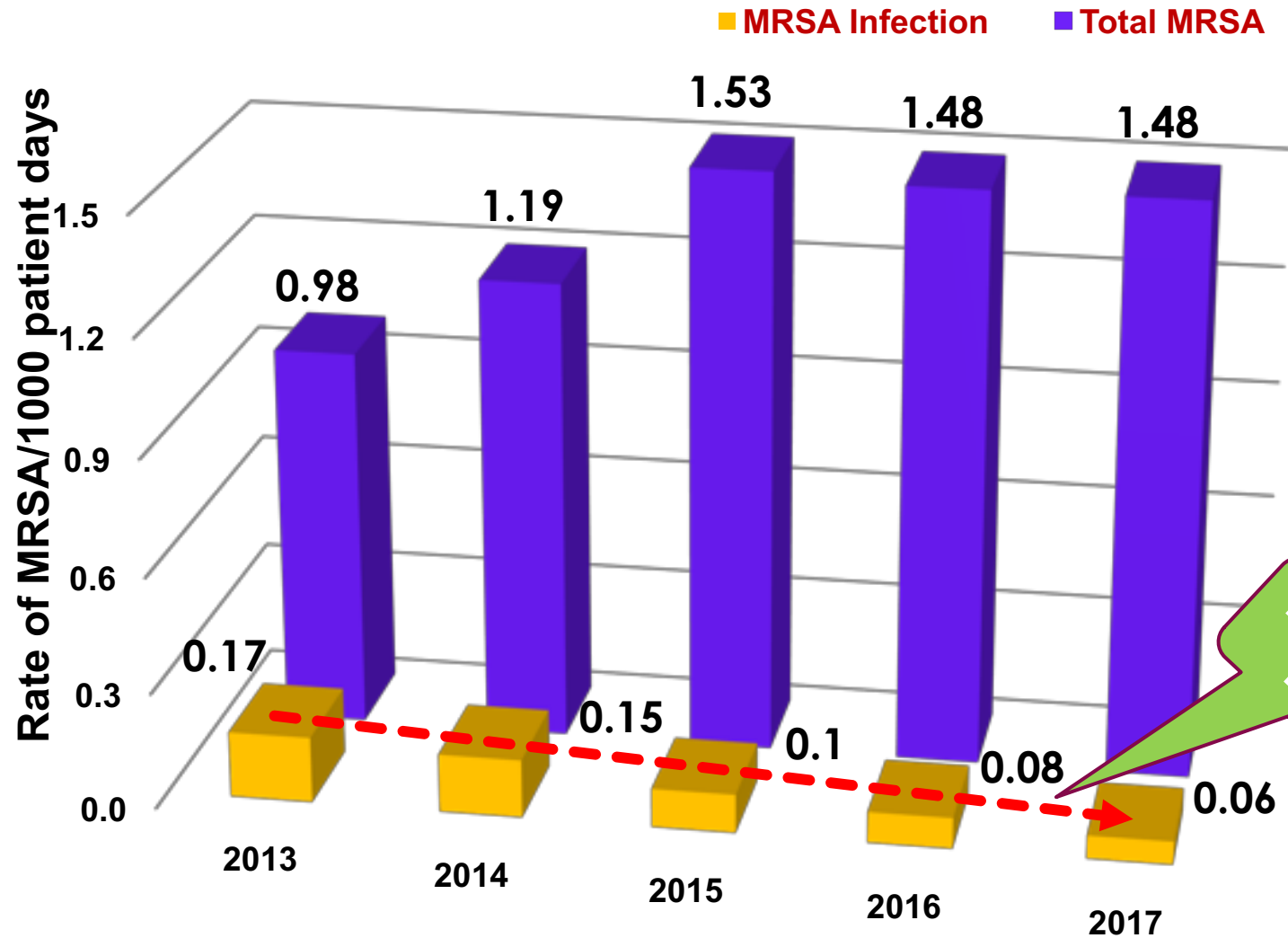


Figure 1: Rate of Total MRSA & MRSA Infection/1000 patient days

## Statistical Analysis

- one-way repeated measures ANOVA
- compare MRSA HCAI rates from 2013 till 2017

➤ Significant Declining Trend of MRSA HCAI

➤ **p value = 0.031**

➤ (Wilks' Lambda = 0.302, F = 4.627, p=0.031, multivariate eta squared = 0.698)

# Comparison Rates MOH Vs UKMMC

National MDRO Incidence Rate by Type of Organism, Jan-Dec 2017

ORGANISMS	No. of Infection	No. of Coloniser	No. of Total Isolates	Rate Per 100 Admissions		Rate per 1000 Pt Days	
				Infection	Total Isolate	Infection	Total Isolate
MRSA	1,342	1,149	2,491	0.08	0.14	0.18	0.34
ESBL-KLEBS PNEUMO	1,876	1,412	3,288	0.11	0.19	0.26	0.45
ESBL-E.COLI	863	1,051	1,914	0.05	0.11	0.12	0.26
MDR A.BAUMANII	1,452	1,206	2,658	0.08	0.15	0.20	0.36
CRE	428	687	1,115	0.02	0.06	0.06	0.15
VRE	72	71	143	0.004	0.01	0.01	0.02
TOTAL	6,033	5,576	11,609	0.08	0.16	0.13	0.59



Infection Control Unit, Medical Care Quality Section, Medical Development Division, MOH

## UKMMC MRSA Rate 2017

Rate per 1000 pt days

Infection	Total Isolates
-----------	----------------

0.06

1.48

## UKMMC MRSA HCAI rates

- far below the national MRSA HCAI rates



# CONCLUSION

- ❑ Implementation of multifaceted approaches is crucial in the success of preventing and controlling further spread of MRSA as decreasing MRSA HCAI rates were observed throughout the five years' period
- ❑ **Impact of antimicrobial stewardship program on MRSA HCAI need consideration for future endeavor**