

The Future of Infection Control: Challenges and Opportunities
Dr. Ling Moi Lin, Infection Control Association (Singapore)
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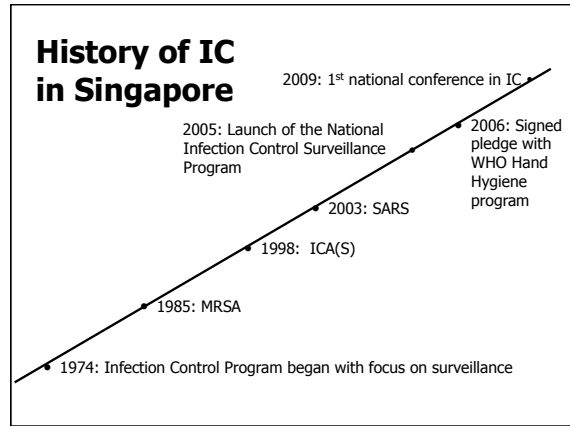
Broadcast Live From
INFECTION CONTROL ASSOCIATION
 (SINGAPORE)

The future of infection control: challenges and opportunities

Dr Ling Moi Lin
 Director, Infection Control, Singapore General Hospital
 President, Infection Control Association (Singapore)
 President, Asia-Pacific Society of Infection Control

Teleclass broadcast sponsored by
 Diversey Inc (www.diversey.com)

www.webbertraining.com February 18, 2011



Standards for quality healthcare system

- Safe
- Effective
- Patient-centered
- Timely
- Efficient
- Equitable

Institute of Medicine, 2001 and 2002

We are living in exciting times....

- The healthcare systems in world recognized need for change
- Singapore responded and made the change
 - Infection Control benefited from this
 - International accreditation became necessary - JCI



Asia may not have been known for major discoveries..

- But we do have major issues of potential significance
 - Pandemics
 - MDROs

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Pandemics

- Nipah virus
- SARS
- Avian influenza
- Dengue

- Factors
 - lapses in infection control practices?
 - 'the world is flat'?

NDM-1 at UK, India, Bangla Desh and Pakistan

Lancet Infect Dis 2010; 10: 597-602

Singapore
HOME > BREAKING NEWS > SINGAPORE > STORY

Sep 15, 2010
New superbug found here

A newly found superbug from India has been found in two patients here. -- PHOTO: AFP

A NEWLY found superbug from India that has been making news around the world infected two patients here early this year - before anyone knew what they were dealing with - but was successfully dealt with and contained.

The patients had infections from bacteria with the New Delhi metallo-beta-lactamase-1 (NDM-1) gene which has the ability to shield bacteria from all antibiotics, turning them into drug-resistant superbugs.

More NDM-1 cases within a month in Singapore

Four more infected by new superbug

They are likely to have caught the bug locally: more cases may surface

By Susan Kozak
HEALTH CORRESPONDENT

ANTHONY (last name changed) has been infected by the new superbug, the highly drug-resistant New Delhi metallo-beta-lactamase-1 (NDM-1), bringing the total to four.

Of the eight cases, three were already contained and between 14 and 16 had the bug in the lab. As a result of them being contained, it is likely that they did not catch the bug locally.

The youngest patient may have acquired the superbug while in hospital as he developed a urinary tract infection at

two-month old. The NDM-1 bacteria was not present in either from close family members. Susan Kozak estimated that more will come with time, either from the new arrivals with the bug, or from an animal source, bacteria.

The gene makes the bacteria resistant to most of the most common antibiotics.

Mr Khan told "The Straits Times" that the NDM-1 is already found in different species and strains of bacteria here."

First detected in the Indian capital of Delhi last year - hence its name - NDM-1 has been rising from in many countries because bacteria with this gene are difficult to destroy.

An article in the *Lancet Infectious Diseases* journal last month stated: "The potential of NDM-1 to be a worldwide public health problem is great, and coordinated international surveillance is needed."

Cases have emerged in India, the United States, Europe and Australia, and in the Indian sub-continent.

Last month, it was reported that two people in Singapore had been infected by the superbug.

One was a patient who had received medical treatment in India and the other a Bangladeshi nurse who had come to Singapore for medical treatment.

Both were patients of the Singapore General Hospital (SGH) and were discharged when the hospital received its first cases in the light of news about the superbug.

In the most cases, there were local cases in Singapore at the first time, but also other cases in the last few months and the fourth was imported from India last week.

From the time he has been reported, up to 100 is thought to have been "from an infected source", said Dr Khan.

He said all six patients suffered from other health problems that made them more susceptible to infection.

It is added that the bacteria found in the last case came from the same source as the first two cases, and "was responsible for several infections, despite having the NDM-1 gene".

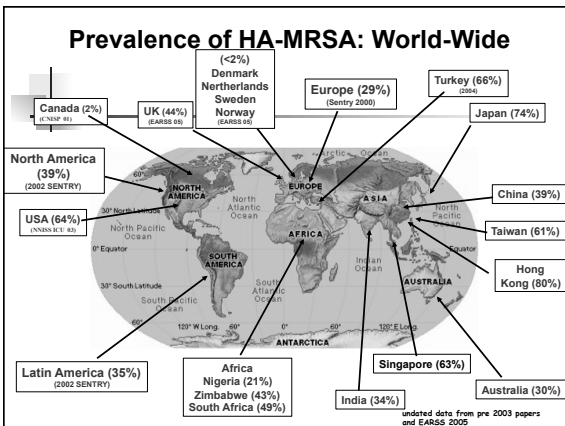
It will come at the same time as the second patient, a patient who had been hospitalized for medical treatment.

To prevent these such from emerging, he said, doctors must use antibiotic judiciously and implement other infection control. This includes hand washing and protective and other measures.

Dr Khan said that the number will go up. "One of 'travels' at the time, and makes it harder to contain the bug," he said.

"Despite not being detected, the NDM-1 gene may continue to spread, especially in our bacterial populations as it is already found in different species and strains of bacteria here. We can therefore expect more cases."

www.sph.gov.sg



ESBL estimates

Diagn Microbiol Infect Dis. 2005 Aug;52(4):323-9

Percentage of organisms expressing an ESBL phenotype in the SENTRY Antimicrobial Surveillance Program in the Asia-Pacific region, 1998-2002

Organism, country or region (number of isolates tested)	No. (%) of isolates with presumptive ESBL phenotype				No. (%) of isolates with confirmed ESBL phenotype			
	All substrates ^a	Colistin ^b	Ceftazidime ^c	Aztreonam ^d	All substrates ^a	Colistin ^b	Ceftazidime ^c	Aztreonam ^d
<i>K. pneumoniae</i>								
Australia (328)	15 (4.6)	15 (100)	13 (86.7)	11 (73.3)	12 (3.7)	12 (100)	12 (100)	11 (91.7)
China (75)	28 (37.3)	26 (92.9)	25 (89.3)	28 (100)	23 (30.7)	21 (91.3)	23 (100)	23 (100)
Hong Kong (224)	37 (16.5)	34 (91.9)	30 (81.1)	33 (89.2)	26 (11.6)	23 (88.5)	24 (92.3)	24 (92.3)
Japan (210)	23 (11.0)	19 (82.6)	21 (91.3)	21 (91.3)	21 (10.0)	17 (81.0)	21 (100)	21 (100)
Philippines (319)	89 (27.9)	89 (100)	82 (92.1)	85 (95.5)	70 (100)	67 (95.7)	67 (95.7)	67 (95.7)
Singapore (225)	82 (36.4)	80 (97.6)	81 (86.8)	79 (96.3)	80 (35.6)	78 (97.5)	80 (100)	78 (97.5)
South Africa (135)	40 (29.6)	38 (95.0)	38 (95.0)	36 (90.0)	38 (28.1)	36 (94.7)	38 (100)	36 (94.7)
Taiwan (222)	36 (16.2)	31 (86.1)	34 (94.4)	33 (91.7)	30 (13.5)	25 (83.3)	28 (93.3)	27 (90.0)
Overall (1738)	350 (20.1)	332 (94.9)	324 (92.6)	326 (93.1)	300 (17.3)	282 (94.0)	293 (97.7)	287 (95.7)

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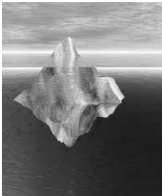
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MDRO and outbreaks

- MRSA clusters
- VRE outbreak

MRSA reduction programs

- Active surveillance
 - Risk stratification
 - Universal screening
 - Inpatients
 - Elective surgeries




The truth

- Looking at issue in perspective:
 - Not an iceberg but a 'drift ice'

Challenge #1

- Reducing HA-MRSA to near zero
 - In all acute care hospitals and ILTCs
- What we can do
 - Work has begun and will continue
 - We do not give up



Other outbreaks

- *Bacillus* species and powdered gloves
 - Effective investigations by both clinical microbiologists and infection control professionals
- *B cepacia* and oral mouth wash, body wipes

Environmental contamination

Rates of Surface Contamination with MRSA, VRE, and *C. difficile*

Surface	MRSA*	VRE†	<i>C. difficile</i> ‡
Floors	55%	—	48%
Commode/Toilet	—	—	41%
Windowsill	—	—	33%
Bedsheets	53%	40%	21%
Patient Gown	51%	—	—
Overbed Table	40%	20%	—
Bedrail	29%	28%	19%
Blood Pressure Cuff	—	14%	—
Totals	29%	23%	27%

* Boyce J.M., et al. Environmental contamination due to methicillin-resistant *Staphylococcus aureus*: Possible infection control implications. *Infect Control Hosp Epidemiol* 18:622-627, Sep. 1997.
 † Slaughter S., et al.: A comparison of the effect of universal use of gloves and gowns with that of glove use alone on acquisition of vancomycin-resistant enterococci in a medical intensive care unit. *Ann Intern Med* 125:448-456, Sep. 15, 1996.
 ‡ Samore M.H., et al. Clinical and molecular epidemiology of sporadic and clustered cases of nosocomial *Clostridium difficile* diarrhea. *Am J Med* 100:32-40, Jan. 1996.

MRSA, methicillin-resistant *Staphylococcus aureus*; VRE, vancomycin-resistant *Enterococcus*; *C. difficile*, *Clostridium difficile*.

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Reality

- Many high touch points in patient care area



BMC Infectious Diseases

Research article Open Access

How long do nosocomial pathogens persist on inanimate surfaces? A systematic review

Axel Kramer¹, Ingeborg Schwebke² and Günter Kampf^{1,3}

Address: ¹Institut für Hygiene und Umweltmedizin, Ernst-Moritz-Arndt-Universität, Greifswald, Germany; ²Robert Koch Institut, Berlin, Germany and ³Bode Chemie GmbH & Co. KG, Scientific Affairs, Hamburg, Germany

Email: Axel Kramer - kramer@uni-greifswald.de; Ingeborg Schwebke - schwebke@rki.de; Günter Kampf - guenter.kampf@bode-chemie.de

* Corresponding author

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 BMC Infectious Diseases 2006, 6:130 doi:10.1186/1471-2334-6-130
 This article is available from: <http://www.biomedcentral.com/1471-2334/6/130>

Received: 24 April 2006
 Accepted: 14 August 2006

Table 1: Persistence of clinically relevant bacteria on dry inanimate surfaces.

Type of bacterium	Duration of persistence (range)
<i>Acinetobacter</i> spp.	3 days to 5 months
<i>Bordetella pertussis</i>	3 – 5 days
<i>Campylobacter jejuni</i>	up to 6 days
<i>Clostridium difficile</i> (spores)	5 months
<i>Chlamydia pneumoniae</i> , <i>C. trachomatis</i>	≤ 30 hours
<i>Chlamydia psittaci</i>	15 days
<i>Corynebacterium diphtheriae</i>	7 days – 6 months
<i>Corynebacterium pseudotuberculosis</i>	1–8 days
<i>Escherichia coli</i>	1.5 hours – 16 months
Enterococcus spp. including VRE and VSE	5 days – 4 months
<i>Haemophilus influenzae</i>	12 days
<i>Haemobacter tylosi</i>	≤ 90 minutes
<i>Klebsiella</i> spp.	2 hours to > 30 months
<i>Listeria</i> spp.	1 day – months
<i>Mycobacterium bovis</i>	> 2 months
<i>Mycobacterium tuberculosis</i>	1 day – 4 months
<i>Neisseria gonorrhoeae</i>	1 – 3 days
<i>Proteus vulgaris</i>	1 – 2 days
<i>Pseudomonas aeruginosa</i>	6 hours – 16 months; on dry floor: 5 weeks
<i>Salmonella typhi</i>	6 hours – 4 weeks
<i>Salmonella typhimurium</i>	10 days – 4.2 years
<i>Salmonella</i> spp.	1 day
<i>Serratia marcescens</i>	3 days – 2 months; on dry floor: 5 weeks
<i>Shigella</i> spp.	2 days – 5 months
<i>Staphylococcus aureus</i> , including MRSA	7 days – 7 months
<i>Streptococcus pneumoniae</i>	1 – 20 days
<i>Streptococcus pyogenes</i>	3 days – 6.5 months
<i>Vibrio cholerae</i>	1 – 7 days

ORIGINAL INVESTIGATION

Role of Environmental Contamination as a Risk Factor for Acquisition of Vancomycin-Resistant Enterococci in Patients Treated in a Medical Intensive Care Unit

Jose A. Martinez, MD; Robin Rathayer, MPH; Karen Hansjosten, RN; Laurie Barfoot, RN; David R. Snyderman, MD

Background: Colonization pressure, proximity to another case, exposure to a nurse who cares for another case, central feeding, and the use of succinylate, vancomycin hydrochloride, cephalosporins, or antibiotics are among the defined risk factors for acquisition of vancomycin-resistant enterococci (VRE) in the intensive care unit (ICU) setting. However, the role of rooms with contaminated environmental surfaces has not been well delineated.

Methods: Retrospective case-control study conducted on patients admitted to the medical ICU (MICU) of a tertiary-care, university-affiliated medical center during a 9-month period. Patients who acquired VRE (cases) were matched with 2 randomly selected control subjects who did not acquire VRE and had been in the MICU for at least the same number of days.

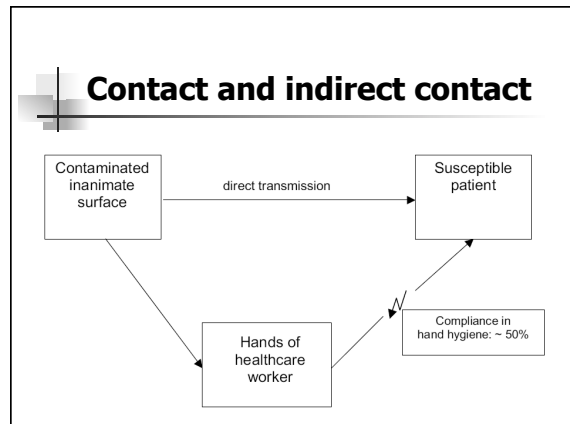
Results: Thirty cases were matched with 60 appropriate controls. Cases were more likely to have been in the hospital for longer than 7 days before MICU admission (P = .009); to have occupied a specific room with persisting contaminated surfaces (P = .06); to have had a central venous catheter (P = .07); to have received vancomycin (P = .02), cephalosporins (P = .03), and quinolones (P = .06) before MICU admission; and to have received vancomycin (P = .02) and metronidazole sodium phosphate (P = .03) after MICU admission. Multivariate analysis showed that a hospital stay of longer than 1 week before MICU admission (P = .04), use of vancomycin before or after MICU admission (P = .03), use of quinolones before MICU admission (P = .03), and placement in a contaminated room (P = .02) were the best predictors of VRE acquisition.

Conclusions: Among all other factors associated with VRE transmission, VRE acquisition may depend on room contamination, even after extensive cleaning. This study underscores the need for better cleaning and the role of the environment in transmission of VRE.

Arch Intern Med. 2003;163:1905-1912

Summary of paper

- Heavy contamination of hospital surfaces—such as bed linens, bed rails, and tabletops—with MDROs such as MRSA, VRE, and *C. difficile*
- Many MDROs are able to live on inanimate surfaces for prolonged periods of time, and studies have shown that the hands of health care workers are just as likely to become contaminated with MDROs by touching surfaces in the rooms of colonized patients as they are touching the skin of those patients
- Patients who are admitted to rooms previously occupied by a patient colonized with an MDRO have a higher risk of acquiring an MDRO during their hospitalization



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Journal of Hospital Infection (2004) 56, 101–105
 Available online at www.sciencedirect.com
 ELSEVIER
 www.elsevierhealth.com/journals/jhin

Investigation of an outbreak of multidrug-resistant *Acinetobacter baumannii* in trauma intensive care unit

S.S. El Shafie^{a,*}, M. AlIshaq^b, M. Leni Garcia^b

Table II Results of environmental cultures

Reservoir	Number of swabs	Number positive for <i>A. baumannii</i>
Bedrails	7	3
Mattresses	5	None
Walls	5	None
Curtains	3	1
Sinks	2	None
Faucets	2	None
Suction with vacuum	2	2
Medication box	3	None
Infusion pump	2	None
Ambo bags	3	3
Ventilation filter	3	3
Total	33	12 (36%)

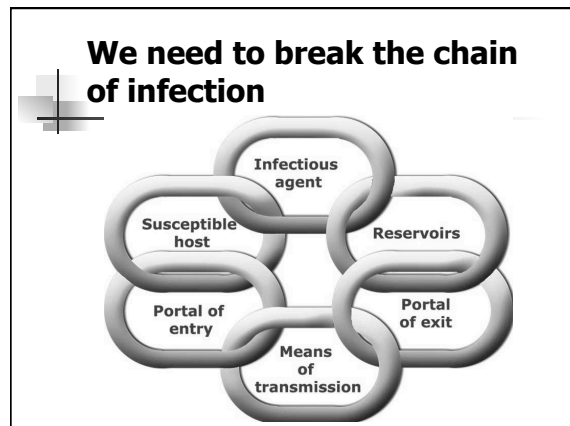
Evaluation of patient area cleaning

- 157 rooms and 1404 targets evaluated in 3 hospitals studied
- 45%, 42%, and 56% of targets were removed by routine terminal cleaning/disinfecting activities

Carling et al, AJIC 2006

Challenge #2

- Clean and safe environment and equipment
- What we can do
 - Be involved in selection of products used by/on patients
 - Partnership with MMD, BME



Contact Precautions

- Purpose
 - To reduce the risk of transmission of epidemiologically important micro-organisms by direct or indirect contact
- Organisms
 - MDRO, *C difficile*, gastroenteritis

Components

- Patient placement
 - Single room or cohort
- Gown and gloves
- Hand hygiene
- Patient transport
- Cleaning
- Equipment

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Do we really need to apply Contact Precautions all the time?

- YES!
 - Objective
 - To prevent transmission
- NO!
 - Adverse events associated
 - Less patient-health care worker (HCW) contact
 - Delays and more noninfectious adverse events
 - Increased symptoms of depression and anxiety
 - Decreased patient satisfaction with care

Less patient-HCW contact

- Less likely to visit ICU patients (Kirkland and Weinstein, 1999)
 - 2.1 vs 4.2 hourly patient contacts by HCW for CP patients vs non-CP (p= 0.03)
 - HCWs more likely to wash hands after seeing CP patients (83% vs 34%, respectively, p <0.001)

Less patient-HCW contact

- Attending physicians less likely to examine patients on CP (Saint et al, 2003)
 - Senior residents examined CP and non-CP equally (83% vs. 87%, respectively, p = 5.58)
 - Attending physicians examined fewer patients on CP (35% vs. 73%, respectively; RR, 0.49, p<0.001)

Less patient-HCW contact

- All HCWs spend less time with patients on CP, which is not explained by severity of illness (Evans et al, 2003)
 - 5.3 CP vs 10.9 non-CP overall ICU/Floor HCW encounters (P ,.001)
 - 22% less contact time with HCWs (29 CP vs 37 min non-CP per hour, P 5.008)

Patient placement

- Single rooms
 - Availability
- Cohort
 - Like patients
 - Bed management issues

Knowledge, attitudes, and practices of contact precautions among Iranian nurses

Mehrdad Askarian, MD, MPH,¹ Ramin Shiraly, MD, MPH,² and Mary-Louise McLaws, DTMPh, PhD, MPH³
 Shiraz, Iran, and New South Wales, Australia

Background: Knowledge, attitudes, and contact precaution practices were surveyed in nurses at Shiraz University of Medical Sciences.
Methods: Two hundred seventy nurses, midwives, and auxiliary nurses completed a questionnaire consisting of 8 knowledge items with corresponding attitudes and practices items.
Results: Compliance with precaution practices was low, 19.5%, and little more than half, 51.8%, held positive attitudes toward the guidelines, whereas 65.5% could correctly answer all precaution knowledge items. Nurses with correct knowledge were 11.5 times more likely (P < .0001) to hold positive attitudes toward the guidelines and 14.2 times more likely (P < .0001) to comply with all 8 precaution practices, and compliers were 6.2 times more likely (P < .0001) to hold positive attitudes than noncompliers.
Conclusion: Although correct knowledge was associated with compliance and positive attitudes, the proportion of nurses who held positive attitudes also had good knowledge, and compliance with practices was not abundant. Better training coverage may result in compliance with precaution practices becoming the norm. (Am J Infect Control 2005;33:486-8.)

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Knowledge ≠ Compliance

Table 1. Scores for correct knowledge, compliant practices, and positive attitudes regarding contact precautions among nursing staff

Contact precaution items	Correct knowledge %	Positive attitude %	Practice compliant %
Isolation of patients needing contact precautions in a private room.	71.8	79.4	33.3
Gloving on entry and removing gloves before leaving patient's room.	93.7	96.6	49.6
Washing hands with antiseptic agent on removal of gloves.	78.6	86.0	38.5
Wearing gown on entry to patient's room.	86.0	89.3	37.4
Notifying ward prior to receiving patient.	72.0	78.7	30.4
Dedicating noncritical patient care equipment to isolated patient.	71.5	85.1	27.0
Cleaning and disinfecting all common equipment between isolated patients.	84.7	90.1	36.7
Double plastic gloving for prevention of transmission of hospital-acquired infections.	57.0	32.9	25.2

A controlled trial of universal gloving versus contact precautions for preventing the transmission of multidrug-resistant organisms

Gonzalo M. L. Bearman, MD, MPH,^a Alexandre R. Marra, MD,^{a,b} Curtis N. Sessler, MD,^a Wally R. Smith, MD,^a Adriana Rosato, PhD,^a Justin K. Laplante,^c Richard P. Wenzel, MD, MSc,^a and Michael B. Edmond, MD, MPH, MPA^a
Richmond, Virginia, and São Paulo, Brazil

Am J Infect Control 2007;35:650-5.)

Table 1. Compliance with infection control practices

	Phase 1 (n = 1220)		Phase 2 (n = 1102)		P value
	N	%	N	%	
Hand hygiene before patient contact	228	18.7	126	11.4	<.001
Hand hygiene after patient contact	704	57.7	578	52.5	.011
Gloving	387	31.7	959	87.0	<.001
Gown	325	27.4	19	1.7	<.001
Total compliance ^a	328	27.5	959	87.0	<.001
Time of observations					
Early morning (12 AM-6 AM)	337	27.6	165	15.0	<.001
Morning (6 AM-12 PM)	280	23.0	222	20.1	.11
Afternoon (12 PM-6 PM)	337	27.6	363	32.9	.006
Night (6 PM-12 AM)	266	21.8	352	31.9	<.001

^aTotal compliance for phase 1 = gloves and gowns; for phase 2 = only gloves.

Am J Infect Control 2007;35:650-5.)

Undesirable outcome: increased HAIs

Table 5. Nosocomial infection rates

Nosocomial infections per 1000 device-days	Phase 1	Phase 2	P value
BSI	6.2	14.1	<.001
UTI	4.4	7.4	<.001
VAP	0	2.3	<.001

BSI, bloodstream infection; UTI, urinary tract infection; VAP, ventilator-associated pneumonia.

Our experience

- Staff compliance to Contact Precautions about 50%
- Visitors' compliance about 5%

Gown and gloves

- But I am not touching the patient!
- I am only serving him his food tray!
- I am just talking to the patient!

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Challenge #3 - Contact precautions: Get Real

- Achieving >90% compliance to Contact Precautions
- What we can do
 - Making it easier for staff to do it right all the time
 - Focus on hand hygiene

Patient and his visitors

- Hand hygiene and patient involvement
 - Patient education
 - Getting them to ask if you have cleaned their hands



Challenge #4

- Developing effective partnership with patients and their families
- What we can do
 - Get them involved

BMJ 2007; 335: 24-7

Effectiveness of strategies for informing, educating, and involving patients

Evidence that strategies to strengthen patient engagement are effective is substantial, argue **Angela Coulter** and **Jo Ellins**, but any strategy to reduce health inequalities must promote health literacy

VENUE
Grand Capri@The Waterfront Hotel
501 Riverside Road
Singapore 098491
T: +65 6733 0380
F: +65 6737 0900

Event Website: <http://www.icas.org.sg>
Email: info@icas.org.sg for updated information and to view registration

Official Language
English is the medium of instruction for the course

Who Should Attend
Doctors, Nurses, Public Health Administrators, Operating Theatres Personnel, Pharmaceutical, Personnel, Infection Control Practitioners, Emergency Response Personnel, Critical Care Personnel

Course Fees
ICACIS Members : Nurses - S\$300 Others - S\$450
Non ICACIS Members : Nurses - S\$350 Others - S\$500

Registration
Apply for or mail the completed form to the secretary, ICACIS registration is also available.

Payment Details
All course fees can be made by cheque or bank draft (order payable to Infection Control Association (Singapore) and related to be attached). All payments are to be made in SINGAPORE DOLLARS. A receipt will be issued within 10 days of receiving payment.

Cancellation Policy
Request for cancellation/withdrawal must be made in writing to the Conference Secretariat, latest by 1st June 2010. The ongoing conference requires that requests received after this date will not be considered. 50% of the course fees will be returned within six months after the course.

Liability
The Organizers are not liable for any personal accidents, illnesses, loss or damage to private properties of delegates during the course. Delegates are advised to make their own arrangements with respect to their insurance.

Disclaimer
Whilst every attempt will be made to ensure that all aspects of the conference will be held as scheduled, the Organizing Committee reserves the right to make appropriate changes should the need arise with or without prior notice.

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Tel: +65 6722 5522 Fax: +65 6940 1964
Email: icacis@icas.org.sg

Final Announcement

5th APCIS TRAINING COURSE IN INFECTION CONTROL

12 - 22 July 2010
Grand Capri@The Waterfront Hotel
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Vision

- Building trained IC professionals
- Example in Korea

Infection control nurse specialist education in Korea

Hyung Mi Kim, RN, PhD,^a Jae Sim Jeong, RN, MPH, PhD,^b and Ho Ran Park, RN, PhD^c
Jecheon and Seoul, South Korea

With the amendment of the Medical Service Act in 2005, the infection control nurse specialist system was launched as one of several specialties for nursing in Korea. Nurse specialists are certified through the national qualifying examinations after graduating from a specialist nursing program with core and specialty courses at a graduate school approved by the Ministry of Health and Welfare. This article describes graduate preparation and certification for infection control nurse specialists in Korea.

Key Words: Graduate program, nurse, specialty
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- 3 graduate schools

- Master's program for registered nurses with a bachelor's degree or higher and more than 3 years of experience at an infection control department or more than 6 years of experience at a general hospital

Table 1. An example of a curriculum in an infection control specialist program (Graduate School of Clinical Nursing Science, Catholic University of Korea)

Course (semester credit)		Total credits
Core		13
Theory (12)	Advanced health assessment (2) Advanced pathophysiology (2) Advanced pharmacology (2) Nursing research (2) Nursing theories (2) Nurse specialist roles and policies (2) Advanced health assessment	
Specialty		21
Theory (11)	Statistics (1) Clinical microbiology and immunology (2) Infectious diseases (2) Epidemiology of infectious diseases (2) Introduction to infection control (2) Advanced infection control (2) Clinical microbiology (2) Infectious disease epidemiology (1) Statistics (1) Surveillance and outbreak investigation (2) Infection control by clinical services (2) Infection control practices (2)	
Practice (10)		

Broadcast live from the annual conference of the Infection Control Association (Singapore)
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The Future of Infection Control: Challenges and Opportunities
Dr. Ling Moi Lin, Infection Control Association (Singapore)
Teleclass sponsored by Diversey Inc. www.diversey.com

The changing and expanding roles of the ICPs

- Management
- Engineer
- Educator / facilitator

Challenge #5: Trained ICPs

- Adequate numbers of able IC professionals
- What we can do:
 - Train, train



Conclusion

- MDROs remind us that our IC programs need 'upgrading'

Conclusion

- 5 pillars need strengthening or work to be done:
 - MDRO program
 - Equipment and environment safety
 - Practical Contact Precautions
 - Patient involvement
 - Trained ICPs



Thank you

Email: ling.moi.lin@sgh.com.sg

www.icas.org.sg



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