Meeting the Challenges of VRE
What can we do ???

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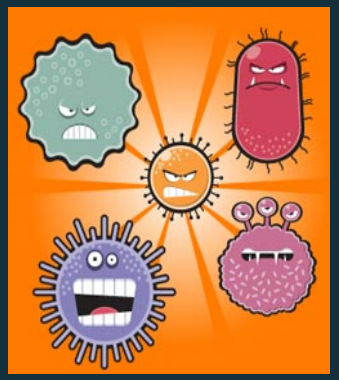
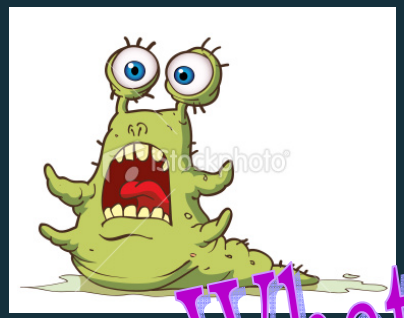
十大抗藥惡菌圍攻香港
已涉2死 或社區隱形傳播
十大抗藥惡菌在本港情況
兩翁染腸道菌情況穩定
繼上周五前後有三名男病人感染抗萬古
霉素腸道鏈球菌，明愛醫院內科及老人病房
再有兩名男病人感染抗萬古霉素腸道鏈球
菌。該兩名年齡分別七十及八十二歲的
者，現時情況穩定，正接受進一步觀察及
離治療，新確診個案已呈報醫管局及衛生
護中心跟進。其餘十九名已進行測試的患
者，仍等待化驗結果。
明愛內科及老人科病房
3名病人為VRE帶菌者
明愛醫院內科及老人科病房自上
月25日起，先後已有3名、年齡介乎
75歲至88歲的男病人，確診為抗萬古
霉素腸道鏈球菌(VRE)帶菌者。
3名病人現時情況穩定，正接受
進一步觀察及隔離治療。該院已按既
定程序，加強感染控制措施，亦已根
據指引，為21名曾與患者有接觸，及
正接受醫學監察的病人進行測試，現
正等待結果。有關個案亦已呈報醫院
管理局及衛生防護中心跟進。

VRE in CMC

	Period	Clinical case	Carrier	Management
1.	Sept/Oct 10	2 (F)	3	Screening + Env dis
2.	Feb 11	2 (M)	5	Screening + Env dis
3.	June 11	1 (M)	NIL	Screening + Env dis
4.	June 11	1 (F)	NIL	Screening + Env dis
5.	July 11	1 (M)	3	Screening (renal pat) Env dis by HPV
6.	Aug 11	1 (M)	3	Screening + whole ward disinfection

* 10 affected wards had thorough cleaning & disinfection in March 2011





What can we do for the VRE?

Vancomycin Resistant Enterococci （**VRE**）

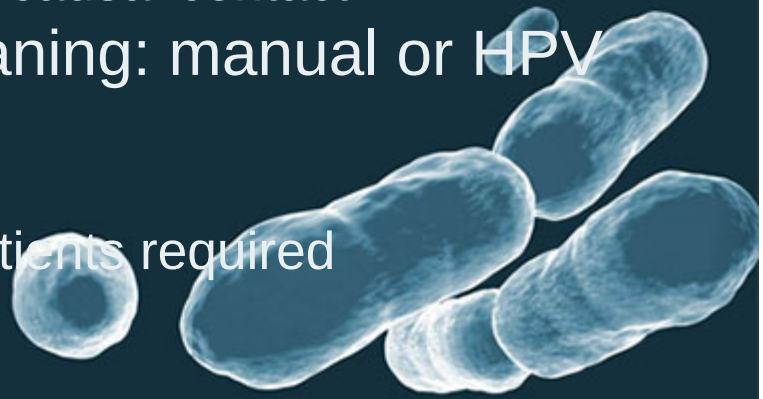
- Enterococci:
  - Gram +ve bacteria normally found in bowel and the female genito-urinary tract
  - Relatively low virulence
  - UTI or other infections
  - Exposed to antibiotics, drug-resistant strains survive and multiply → overgrowth of drug-resistant enterococci in the bowel
- VRE:
  - Vancomycin–resistant enterococal species, Enterococcus faecium and Enterococcus faecalis
  - Neither more infectious nor more virulent than sensitive enterococci
  - Vancomycin Resistance (Van A, B, C, D, E)

The emergence of VRE poses several problems:

- It is resistant to all commonly used antibiotics (penicillin, cephalosporins and other β-lactams, aminoglycosides and glycopetides)
- Has potential to transmit the vancomycin-resistance gene to gram +ve organisms such as Staph aureus.
- May cause outbreaks of infection in hospitals
- Survive in the environment (dry surface: 4D - 7M)
- Persist for long periods in the GI tract of a colonized pat
- Associated with increased mortality in patients with neutropenia.

CMC Experiences

- VRE patients
  - Frequent admissions, antibiotics exposure, long hospitalization, OAHR
  - Foley's catheter in situ
  - With device – CAPD / HD, ambulatory but with diarrhoea
- Easy spreading: same cubicle, with devices/drainage
- VRE Screening:
  - carriers detected at same cubicle (1st round)
  - Effective environmental cleaning: 2 exercises post cleaning (>40 samples -ve)
  - Recent renal ward outbreak, > 100 contacts, 3 carriers identified, no additional +ve cases found among causal contact
- Environmental and equipment cleaning: manual or HPV
  - Huge task
  - Team works
  - HPV: 2 full days and evacuation of patients required



Fighting the battle:

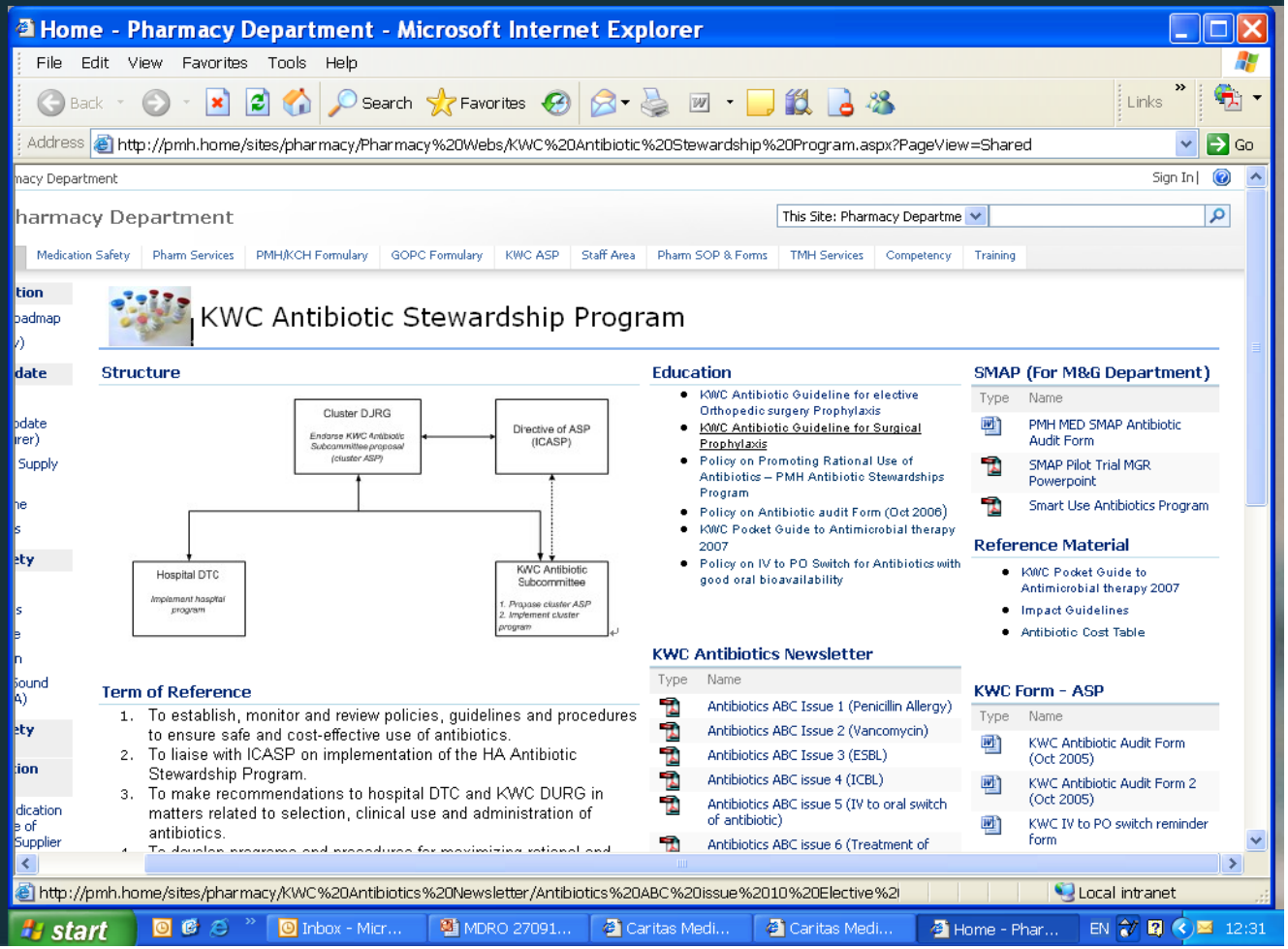
- Prompt communication between ICT & Lab
- Immediate action:
  - Source isolation – single room + CP
  - Collect information of source patient
    - DOA, pat movement, bed nos, procedures, previous history of admission, ? OAHR, pat's condition, antibiotics
  - Environment and equipment cleaning & disinfection
  - Contact tracing + VRE screening
  - Enforce IC practices: HH, environment cleaning & disinfection, designated equipment
- Communication
  - Internal: ICO, HCE, GMs, COS, DOM, case MO, WM, MRP, CGAT
  - External: Lab, CICO, HA CCIDER, SEB/CHP – outbreak, ICB/CHP – OAHR, other hospitals
  - Visitor: education & IC practices

Fighting the battle (cont'):

- Enhanced ICN ward round
  - Fu pat condition
  - Enforce IC practices: HH, environmental cleaning
  - Observe caring practices
- Co-ordinate VRE screening, CP for exposed patients until screening result -ve
- Alert system: CMS, MDRO
- Review the HA / local VRE guideline
- Data/information analysis: source of infection, epidemiology link
- Sporadic or clustering, ? HOCT meeting need

Strategies for Prevention and Control of MDROs

- Rational use of Antibiotics (慎用抗生素)



世界衞生日
World Health Day
7.4.2011

善用抗生素 保護生命
Safe Use of Antibiotics Save Lives

衞生署
Department of Health

衞生防護中心
Centre for Health Protection

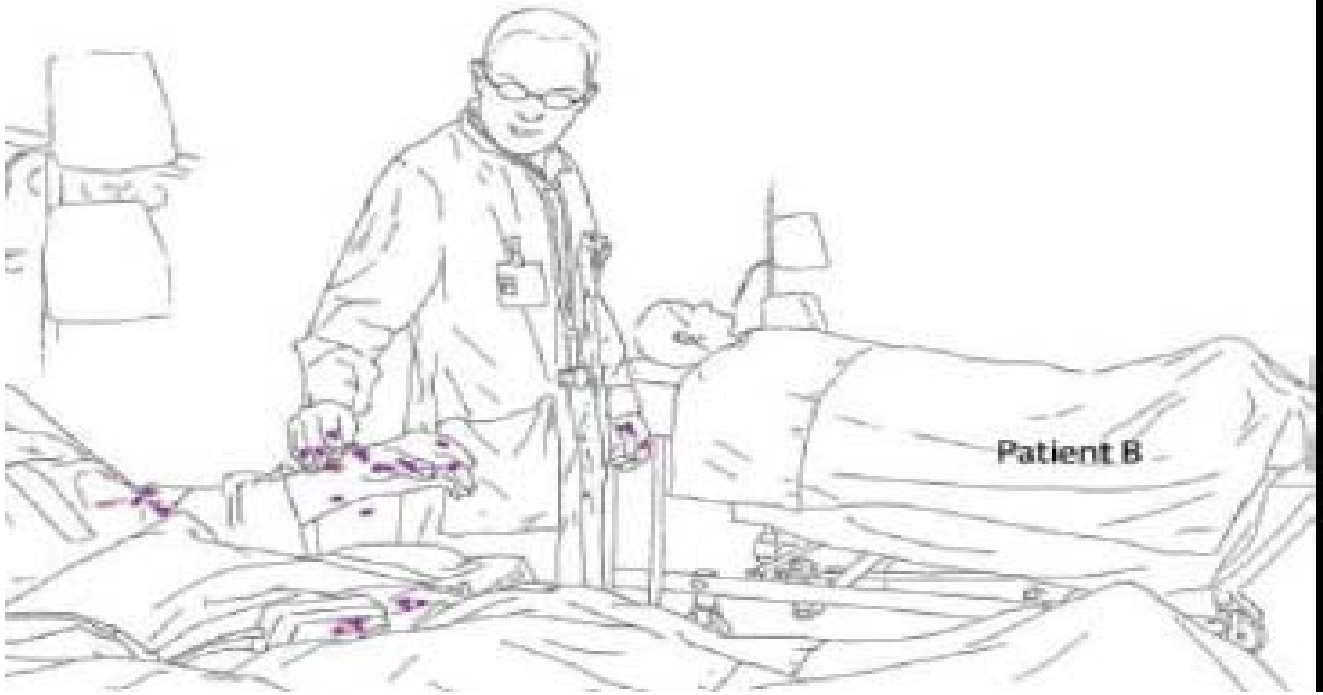
醫院管理局
HOSPITAL AUTHORITY

www.chp.gov.hk

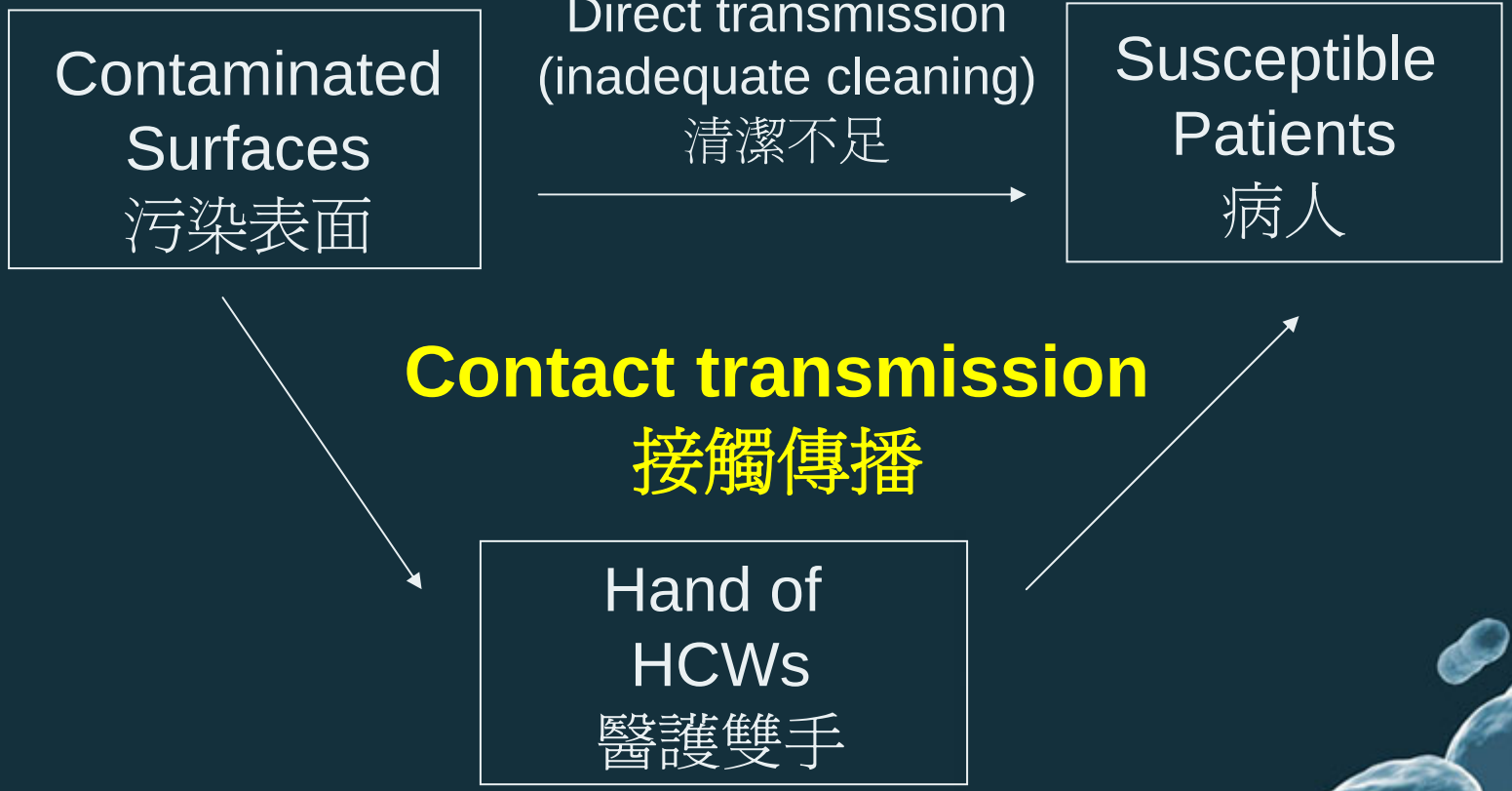
Engineering Control – Contact Precautions

Direct contact with patient 直接與病人接觸
(hand or skin to skin contact)

Lancet Infect Dis. 2006 Oct;6(10):641-52.



Indirect contact (touch environmental surface or patient care items in patient's environment)
間接接觸傳播 – 環境、病人儀器等



BMC Infect Dis. 2006 Aug 16;6:130.

Indirect Contacts

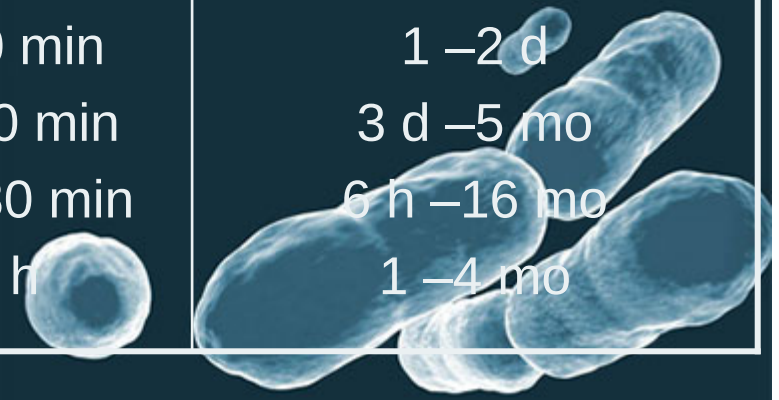
The Inanimate Environment Can Facilitate Transmission

~ Contaminated surfaces increase cross-transmission ~

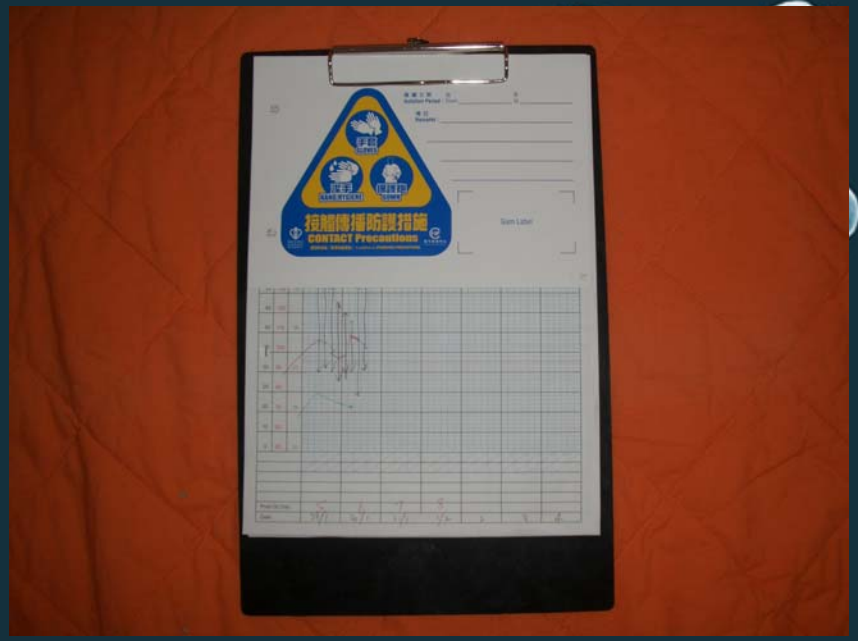
Abstract: The Risk of Hand and Glove Contamination after Contact with a VRE (+) Patient Environment. Hayden M, ICAAC, 2001, Chicago, IL.

Contamination rates of HCW's hands with bacteria

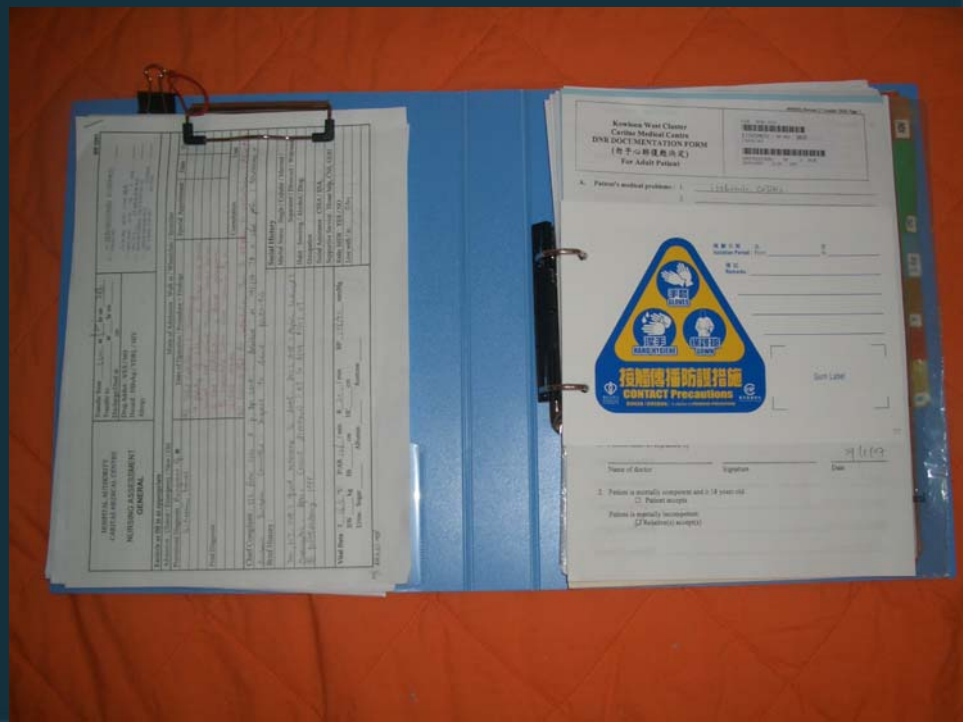
Pathogen	Rate(%)	Duration on Hand	Duration on inanimate surface
S. aureus	10.5-78.3	> 150 min	1 –7 mo
MRSA	16.9	NA	1 –7 mo
VRE	41	60 min	5 d –4 mo
C. diff	14 –59	NA	1 d –5 mo
E . coli	NA	6 –90 min	2 h –16 mo
Klebsiella spp	17	2 h	2 h –30 mo
S. marcescens	15.4 -24	> 30 min	3 d –2 mo
P. vulgaris	NA	> 30 min	1 –2 d
Acinetobacter spp	3 -15	> 150 min	3 d –5 mo
Pseudomonas spp	1.3 –25	30 –80 min	6 h –16 mo
Yeast	23 -81	1 h	1 –4 mo

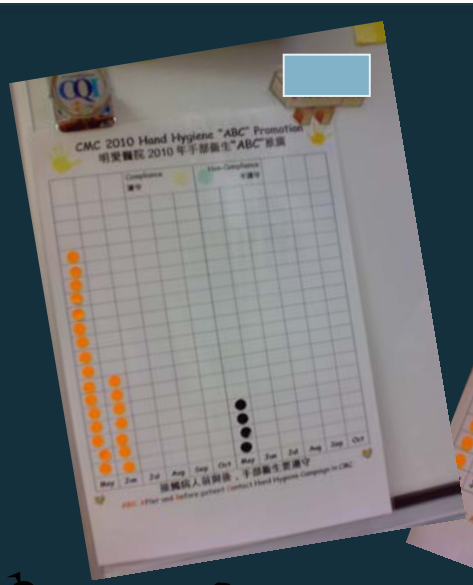


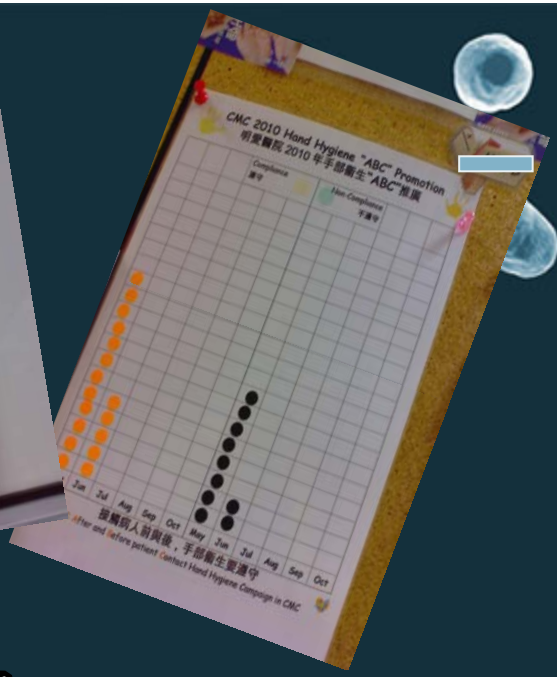
Clin Microbiol Rev. 2004 Oct;17(4):863-93.

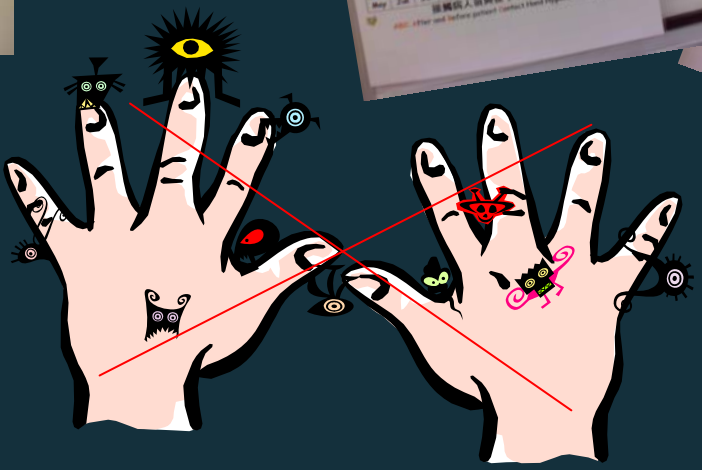


Contact Precautions



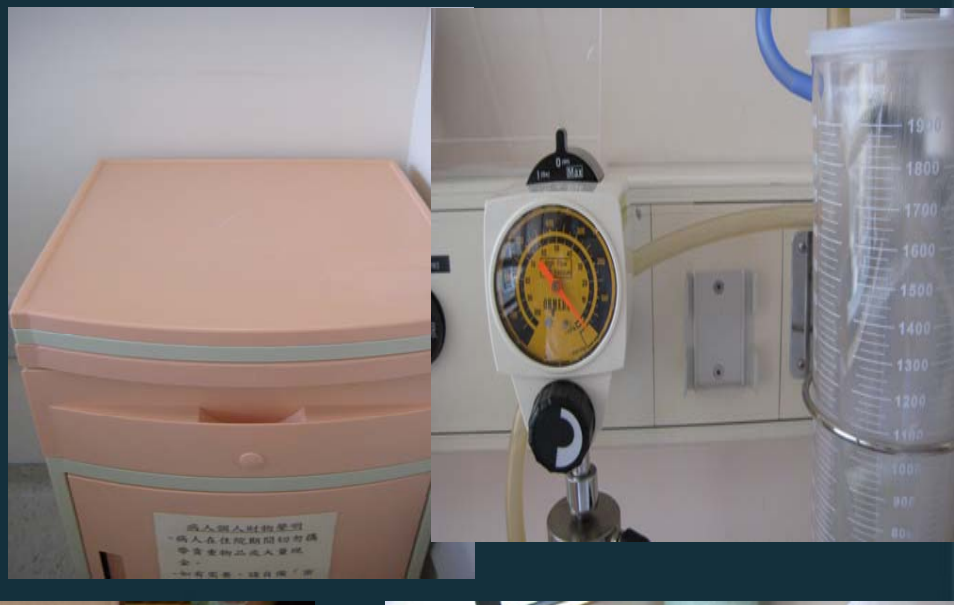


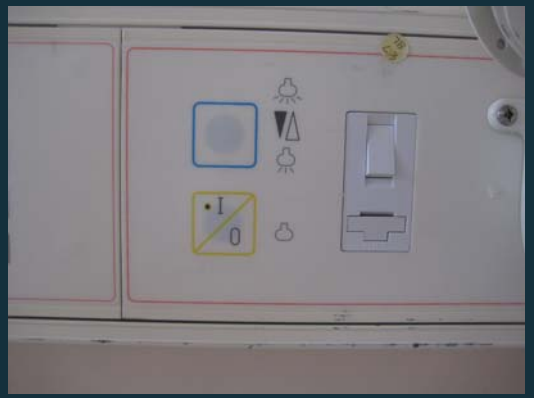




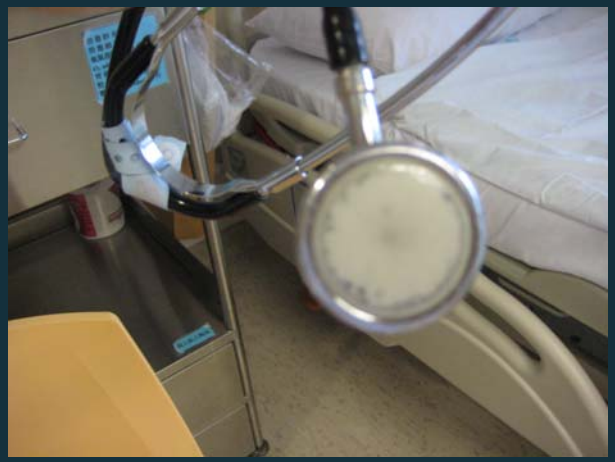
ABC Hand Hygiene Program:

Frequent touch areas – enhance cleaning and disinfection





Designated equipment or be disinfected between use



Learned Experiences

斬草除根大行動(8/3/11 to 29/3/11)

- Thorough cleaning/disinfection 10 affected wards
- Aim: remove VRE, MRSA etc
- Involved all parties: ICT, Central cleaning team, contract out cleaning team, ward staff, Laundry, hospital administration
- Cleaned all areas / equipment except ceiling and floor (patient areas, toilet, pantry, store rooms, admission rooms, medical/nursing staff rooms, all equipment, beds, lockers…….
- Change all bed curtains, blankets etc
- ICN carried out hygienic audits

HPV bio-decontamination Exercise at Renal ward* (30&31 July 2011)

- Recent clustering involved two renal patients in July.
- HOCT meeting decided to carry out Hydrogen peroxide vapour bio-decontamination
- Site visit by expert team, ICT, FM, Engineering team, Central cleaning team
- Preparation meeting for different teams
- Vacated the renal ward and carried out HPV over week end.

Back to basic:

- IC is everyone’s business
- Always remember to practice good hand hygiene
- Keep the environment clean

Our challenges (挑戰):

- Busy and crowded environment
- Shortage of manpower
- Inadequate isolation facilities
- Resources for IC measures
- Fragmented cleaning services in clinical areas
- Effectiveness of environmental cleaning and disinfection
- Human behavior
- Rational use of antibiotics
- Burden of workload on carry out CP
- Policy for OAHR

But those who are waiting for the Lord
will have new strength;
they will get wings like eagles:
running, they will not be tired,
and walking, they will have no weariness.

Bible (Isaiah 40:31)

Thank you