HONG KONG INFECTION CONTROL NURSES' ASSOCIATION Founded 30 April 1989 香港控制感染護士會

http://www.hkicna.org

Newsletter

Issue 11, March, 2007

Mission of the HKICNA: promulgating infection control best practice in health care organization and the community.
This newsletter is the official publication of HKICNA and published bi-annually in March and September. Members are entitled to a free subscription. It welcomes articles pertaining to prevention, surveillance and control of infections, and related complications in health care organization and community.

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HA library Link : visit "ha.home/ekg", go to "hkmedicineonline", select"journal", click " hkicnanewsletter" & you are there

Home Page's There http://www.hkicna.org

Welcome to visit connecting with HKICNA

HKICNA has made our home page available in March 2007. You are welcome to visit http://www.hkicna.org updating information about HKICNA like the course, research grant, sponsorship, annual general meeting and all activities or events.

HKICNA will start to communicate with members via either home page or e-mail. If you (active member) have never provided your e-mail address to association or your e-mail given before is no longer valid, please visit our home page to provide or update us your e-mail for communication.

Our home page has been developing and some areas are still under construction, your suggestions / input are highly desirable. Please visit there to contact us.

3rd HKICNA conference in *30 August ~ 1 September, 2008.*
Please visit home page frequently for the most up-to-date information.

Fresh Air The Key For Isolation Room Ventilation

Yuguo LI
Associate Professor, Department of Mechanical Engineering
The University of Hong Kong

Use of mechanical ventilation is a must?

Immediately after the SARS epidemics, the Hong Kong Government spent HK$410 million to construct by retrofit more than 500 negative pressure isolation rooms with about 1300 beds in nine existing major acute public hospitals (data not officially confirmed). Each room costs HK$800,000 and each bed costs more than HK$300,000 in average by retrofitting. The isolation rooms are expensive to build? Yes, these isolation rooms also consume more energy to run than general hospital wards do.

In the existing CDC design guidelines, the use of mechanical ventilation is a must. There are at least two major considerations. Mechanical ventilation is capable of delivering a constant supply of outdoor air at a pre-determined ventilation rate, while maintaining a pre-determined negative pressure to avoid leakage of room air into public areas such as the corridor.

The use of relatively high air change rates, the need for installation of HEPA filters and an anteroom in some situations, the strict requirement of negative pressure, and high air-tightness of the room envelope etc, all add up to the high construction and operation cost of negative pressure isolation rooms.

The high construction and operation cost of negative pressure isolation rooms means that ONLY a relatively small number of such rooms can be made available in a country or a city, and/or making such a room available in resource-limited countries can be very difficult. Is there an alternative to mechanical ventilation?

Natural ventilation is an option?

Natural ventilation utilizes the natural forces of wind and stack pressure to drive air into and through a building.

Natural ventilation was widely used in hospitals prior to the invention of mechanical fans. Before the advent of central air conditioning, hospital wards, including treatment areas for tuberculosis patients, were all naturally ventilated (Waxham, 1902). There have been extensive studies of using natural ventilation in residential and commercial buildings in the last 20 years. A recent evaluation of natural ventilation strategies in Peru showed that natural ventilation was effective in reducing nosocomial transmission of tuberculosis (Escombe et al., 2005).

Because of the variability and uncertainty of the driving forces, natural ventilation had been perceived as not being as reliable as mechanical ventilation. Thus, following the development of mechanical fans, mechanical ventilation quickly replaced natural ventilation in many buildings. More recently, however, natural ventilation has again become popular in residential and commercial buildings. This is partly resulted as a consequence of the need to introduce energy efficiency and sustainability measures but also because new developments in control systems have substantially improved the ability of natural ventilation to satisfy occupant thermal comfort and indoor air quality demands.

New design methods and, in some areas, new

understanding of natural ventilation, have been continuously developed over the last two decades. Fortunately, the revitalization of natural ventilation has not meant a return to unreliable conditions. With the aide of new computer design tools and the integration of modern manufacturing and control technologies, natural ventilation can be as reliable as mechanical ventilation when properly designed and operated (Li and Heiselberg, 2003).

Hybrid ventilation systems have also been developed to combine the use of both mechanical and natural ventilation and provide the opportunity to choose the most appropriate ventilation mode based on the circumstances (Delsante and Vik, 2000, Heiselberg, 2002). The hybrid ventilation is aimed at securing as much benefit as possible from natural ventilation while taking advantage of the added security of mechanical ventilation.

Re-think about mechanical ventilation

Mechanical ventilation also has its performance uncertainty and limitation in the maximum air change rate it can provide.

On the issue of uncertainty of the system performance, mechanical ventilation also has its own inherent problems. Previous field studies reported that up to 50% of the tested isolation rooms failed to provide a negative pressure (Fraser et al., 1993, Dahl et al., 1996, Gershey et al., 1998, Pavelchak et al., 2000, Rice et al., 2001). The main factors that disrupted negative pressurization included poor reliability of pressurization control and monitor devices, strong diffuser flow directed at the door, interaction with other exhaust ventilation systems and poor air-tightness of the suspended false ceiling. Dr WH Seto of Queen Mary Hospital once discussed about what would happen when there was a power failure for the mechanical ventilation system in isolation rooms. Power failure is also a risk factor.

It is known that the ventilation flow rate in mechanical ventilation of isolation rooms is limited to 12 air change per hour (CDC, 2003). We know that there has been no scientific evidence for recommending a minimum ventilation flow rate for infection control. It is also known that a higher ventilation rate is able to provide a higher dilution capability. However, use of higher ventilation rates also means a higher energy cost for a mechanical ventilation system.

Natural ventilation by opening windows and proper use of prevailing winds has the potential of providing very high air change rates say 30-50 ACH if designed and operated properly. In theory, if a room is diluted sufficiently by a very high ventilation rate, say 30-50 ACH, the risk of cross-infection due to leaked air from a room is greatly reduced. From this perspective, the amount of “fresh air” supply is a far more important parameter than negative pressure in isolation room ventilation.

Our discussion suggests a strong possibility of re-introducing natural ventilation in hospitals, in particular for infection control.

Hybrid Ventilation – taking the best of both

Heiselberg (2002) defines hybrid ventilation as “a two-mode system, which is controlled to minimize energy consumption while maintaining acceptable indoor air quality and thermal comfort. The two modes refer to natural and mechanical driving forces”. By ensuring proper design and control, a hybrid system can provide improved occupant satisfaction, reduced energy use, lower lifecycle costs and, sometimes, even lower initial

costs. There are three typical types of mixed-mode systems that illustrate the concepts of hybrid ventilation, i.e:

- Alternate use of natural and mechanical ventilation: – this is a "now you and then me" approach. Two fully autonomous systems are installed in the same building combined with a switching control. Natural ventilation is applied whenever this is sufficient to satisfy needs. When natural ventilation becomes inadequate, the system switches over to an entirely mechanical approach. The selection between natural and mechanical ventilation is achieved at the control level.
- Fan-assisted natural ventilation: - this is a "you help me or I help you" system. In this approach natural and mechanical systems commonly share the same ductwork. In periods in which natural driving forces are insufficient, mechanical fans assist the natural ventilation process. In this example, the natural and mechanical driving forces work together such that the hybrid concept is achieved at the ductwork level.
- Concurrent use of natural and mechanical ventilation: - this is a "you and me together" principle. Mechanical and natural ventilation systems work together at the 'room' level. In one practical example of an office building, an under-floor plenum based supply may be used to facilitate the individual control of the supply air (e.g. to office work-stations) while natural ventilation supplies background ventilation to the entire room.

For hospital applications, the "alternate use of natural and mechanical ventilation" may be work well for control of airborne diseases, while the first two types may work well in general patient wards and waiting areas. The use of the third type in a hospital should be very careful as the control of room air flow becomes very difficult and there have not been many successful designs on conventional buildings so far.

Natural ventilation is not just opening windows

I understand that use of natural ventilation in hospitals is a debatable issue to some. For example, the US guidelines (ASHRAE, 2003) effectively rule out the use of natural ventilation in hospitals, while the UK guidelines (HMSO, 1994) encourage its use. Examples of using natural ventilation and/or hybrid ventilation in hospitals can be found in www.eu-hospitals.net.

There is surprisingly a lack of knowledge and data on use of natural ventilation in hospitals. In view of the very important implications of use of natural ventilation for infection control, more investigations should be encouraged. In particular, studies are needed to quantify the relative overall effectiveness of natural and mechanical ventilation in reducing risk of cross-infection in both the isolation cubicle and the public areas such as corridors for heath care workers and in-patients.

Based on the basic principle of natural ventilation and what we know from residential and office buildings, I have a few suggestions.

1. For existing hospitals designed for natural ventilation, architect and engineering consultants may be able to advise you how to maximize the use of natural ventilation by improving window opening controls. There is a retrofit possibility of using mixed-mode ventilation to improve both thermal comfort and ventilation performance.
2. For existing hospitals not designed for natural ventilation, but for air-conditioning, care should

be taken when opening windows. Window opening may change the overall flow pattern and interrupt of the normal air conditioning system operation. Professional advices from architects and engineers are needed.

3. For existing hospitals where some existing wards need to be converted into isolation rooms, there may be a possibility of using natural ventilation by opening windows. Assistance from architects and engineers is needed if they were designed originally with an air-conditioning system.
4. For building new hospitals, your site may be ideal for use of natural ventilation. You can request your architects and engineers to consider natural ventilation, or mixed-mode ventilation.

Key references

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A Game To Convince Hospital Staff To Use Alcohol-Based Handrub

CHAN Wai-fong, RN, MPH
Infection Control Team, Tung Wah Eastern Hospital

Introduction

A booth was set up for promoting hand hygiene among hospital staff. A total of 285 staff (subjects) attended. Skin moisture level of either back of the hand of each subject was checked. Then, he/she was requested to perform hand hygiene using proper technique with their choice of one of the hospital supplied alcohol-based handrubs. After the hands were rubbed to dry, the skin moisture level on the same site would be checked again. Proper hand hygiene technique was reinforced when necessary. Data were collected for analysis.

Instrument

A handheld Scalar Moisture Checker for Skin was used. The skin moisture level was measured and classified into three categories based on the reference of the tool:

1) Dry skin: 0% to 36.0%
2) Normal skin: 36.1% to 44.0%
3) Wet skin: 44.1% or over

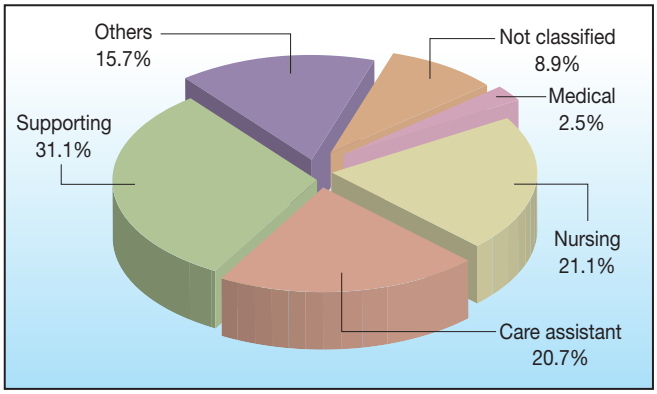
Data analysis

All the data were input into SPSS (version 8.0) for analysis. Descriptive analysis was used to summarize the demographics and categories of skin condition. Paired-samples t-test was used to compare the means of skin moisture level.

Result

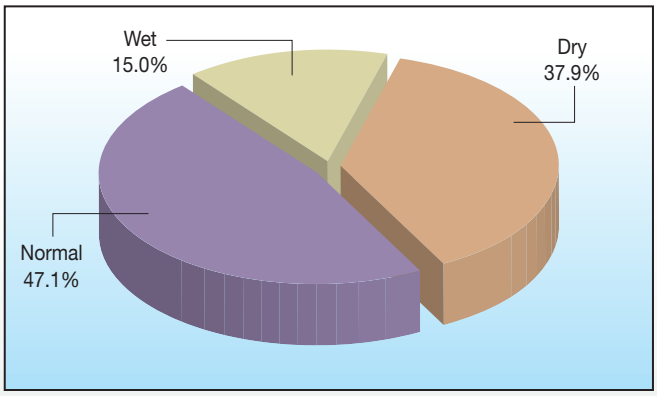
Among 285 subjects, only 280 of them had complete data recorded for analysis. The distribution of subjects by staff group was summarized in Fig.1.

Fig 1: Distribution of subjects by staff group



The results of the skin moisture checking showed that, around half of the subjects had normal skin condition on hands and 38% dry condition. The prevalence of skin condition of hospital staff was tabulated in Fig.2. There was no significant difference in the means of skin moisture level among different staff groups ($p>0.05$).

Fig.2: Prevalence of skin condition of hospital staff



After the first skin checking, the subjects were asked to perform hand hygiene using alcohol-based handrub. Then, their skin moisture was rechecked. It was found that the mean level of the skin moisture was significantly higher after the handrub application (39.1% vs 49.2%, $p<0.000$). The two brands of alcohol-based handrub were having similar effect on skin moisture (post-rub result: 49.0% vs 49.5%, $p>0.05$).

The boxplot was prepared for visual comparison of the results of pre-rub and post-rub (Fig.3). The lower and upper boundary represented 25th and 75th percentile of the skin moisture level while the line inside the box was the median (Norusis, 1998). The medians of both results were quite close to the mean values. However, there were more outliners (O) and extreme values (*) in the pre-rub result. The descriptive summary of the skin moisture level of pre-rub and post-rub was tabulated in Table 1.

Fig.3: Boxplot of skin moisture level on pre-rub and post-rub

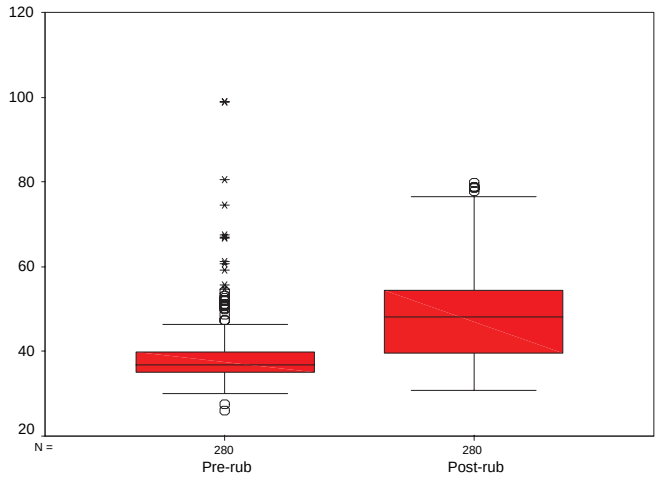


Table 1: Summary of pre-rub and post-rub results

	Pre-rub	Post-rub	P-value
No. of data	280	280	-
Range	72.9	48.9	-
Mean (%)	39.1	49.2	<0.000
Standard deviation	8.67	11.4	-
Median	36.9	48.1	-

Discussion

The random skin checking showed that certain proportion (38%) of hospital staff had dry skin. Habitual hand care, especially for healthcare workers, is needed to emphasize as part of the hand hygiene programme.

Using alcohol-based handrub as a routine hand antisepsis is recommended by World Health Organization (WHO, 2006). To make the hand hygiene campaign successful, staff acceptance of using alcohol-based handrub is crucial. Based on the communication with frontline colleagues, their perception of the drying effect of using alcohol-based handrub was real because of their previous experience of drying effect from ordinary alcohol.

This exercise was introduced to allow hospital staff to experience the effect of the alcohol-based handrub on skin moisture. The means of skin moisture level before and after the application of alcohol-based handrub showed to have significantly increased from 39.1% to 49.2%. The actual observation let them know the alcohol-based handrub was not a drying agent to their skin. It is hoped that this educational exercise can convince them to use the alcohol-based handrub comfortably.

Acknowledgment

The author would like to thank the support of Ivy, Rick and Peter from J&J (HK) Ltd. to conduct this educational activity.

References

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Applying for Research Grant : 2007-2008

Online application - http://www.hkicna.org

Introduction

Research provides a base of evidence-based practice in infection control and prevention. Therefore, HKICNA developed a research grant in September 2003.

The achievement will highly depend on members' concerted effort. Therefore, HKICNA cordially invites every member to participate in this application, so as to exhaust the knowledge of infection control and prevention.

Online Application

All active HKICNA members of any type of membership are eligible for application for the research grant. You are welcome to visit http://www.hkicna.org for the details of application.

Funding for Application

Maximum HKD$100,000 per proposal, the amount granted is subject to the panel's decision.

Vetting Criteria

Assessed by the followings-

1. **FRIEND** –**F**easible, **R**elevant, **I**nteresting, **E**thical, **N**ovel, **D**eliverable.
2. **Theme** –Related to infection control.

Closing date for application

30th May 2007

Result of the Application

Applicants not notified by **30th August 2007** should consider their applications unsuccessful. The result will be released at home page and the coming issue of this newsletter by September 2007 too.

Undertaking

The successful candidate is required to sign an undertaking with HKICNA.

Members of Research Review Panel

1. Professor Paul CHAN, Associate Professor, Department of Microbiology, The Chinese University of Hong Kong, Hong Kong.
2. Professor Joanne CHUNG, Professor, School of Nursing. The Hong Kong Polytechnic University, Hong Kong.
3. Professor A M EMMERSON, Former Professor of Medical Microbiology, University of Nottingham and co-organizer of Diploma of Hospital Infection Society, UK.
4. Ms Glenys HARRINGTON, Infection Control program co-ordinator, Alfred Health Hospital, Australia.
5. Professor William JARVIS, Clinical Associate Professor, School of Medicine, Emory University; Adjunct Assistant Professor, Rollins School of Public Health, Emory University, and private consultant , USA.
6. Ms Patricia LYNCH, Chair, International Federation of Infection Control, USA.
7. Professor Didier PITTET, Director, Infection Control Program, The University of Geneva Hospitals, Switzerland; Lead, WHO, World Alliance for Patient Safety.
8. Dr Wing-hong SETO, Infection Control Officer, COS of Department of Microbiology, Queen Mary Hospital, Hong Kong.
9. Dr Wing-kin TO, Infection Control Officer, Yan Chai Hospital, Hong Kong.
10. Professor Samson WONG, Assistant Professor, Microbiology. The University of Hong Kong, Hong Kong.

Members of Council : 2007-2008

HKICNA has to thank all ordinary members for participating in the election exercise held in October 2006. Your participation made the election a success.

The results were endorsed in the Annual General Meeting held on 11th November 2006. The terms of each council member is two calendar years which started on 1st January 2007 and will be ended on 31st December 2008.

Members of the 2007-2008 council are listed below:

Executive members	Other members	Alternate members
Chairman : Patricia CHING (QMH)	Elizabeth CHEUNG (HKSH)	Siu-sheung LAM (PMH)
Vice-Chairman : Conita LAM Hung-suet (YCH)	KAN Chun-hoi (TMH)	Amy SIT (TPH)
Secretary : Annie LEUNG (CMC)	Shirley LEE (QEH)	
Treasurer : Agnes OR (KH)	TSOI Wai-lun (UCH)	
	Isadora WONG (DKCH)	
	Ida YIP (PYNEH)	

Members of council of 2007-2008 (from left to right) :

Back row - LAM Siu-sheung (PMH), Shirley LEE (QEH), Annie LEUNG (CMC), Isadora WONG (DKCH), Conita LAM Hung-suet, (YCH), KAN Chun-hoi (TMH).

Front row - Agnes OR (KH), Ida YIP (PYNEH), Amy SIT (TPH), Patricia CHING (QMH), Elizabeth CHEUNG (HKSH), TSOI Wai-lun (UCH).

HKICNA has to acknowledge 2 ex-council members: Ms Regina CHAN (PWH) and Mr YU Man-kit (QEH) for their dedication to HKICNA.

Erratum : Issue 10

Page 6, row 6 of conclusion should be read as negative **pressure** room for patients with airborne infections.

17th Annual General Meeting

Introduction

17th Annual General Meeting (AGM) was held successfully on 11th November 2006 in Royal Garden Hotel, TST.

Pre-AGM Seminar

HKICNA is highly honored to have Professor Gabriel M. LEUNG (Associate professor in Translational Public Health , Department of community Medicine and School of Public Health, The University of Hong Kong), to speak on " Mathematical models and preparedness for pandemic influenza" and Professor Yuguo LI (Associate Professor, Department of Mechanical Engineering , The University of Hong Kong) to present Optimizing naturally-ventilated ward for airborne "isolation" use

About 150 members attended this seminar.

AGM, Dinner and Lucky Draws

Adding the honorable guests and members together, we had about 180 participants participating our 17th annual general dinner. Registration fee for the dinner was $ 100 per member.

The Scholarship for the infection control course 2006 was presented to Ms LI Kit-yi (RN, KH) who was also a lucky one of the grand prize.

In addition to each of the members was gifted a table-prize, there were about 70 surprising draws. The grand 5 prizes included a Saint Gallen disinfectable watch costs about $8800, 2 GOLD coins cost $ 4900 each and 2 digital camera. The rest included I-pod, MP3, electrical appliances like telephones, $500 lucky money, $1000-1500 cash coupons, $ 100 supermarket coupons & etc.

HKICNA has to acknowledge the sponsors including Adaltis (Ansell Healthcare) , B Braun Medical, Honey Clave, Johnson & Johnson Co, Kimberly Clark (Adaltist Healthcare), Mekim , 3M Co, MV Destination Management , Schmidt BioMedTech, St Gallen Horology and many more---------- . Without their support, our AGM dinner could not be exactly the same. Wish to have their continuous support in our future events.

Besides, we are highly honored to have invited 2 pairs of distinguished dancers to celebrate our anniversary with their excellent dancing. They are the Champions of Hong Kong Open Competition of Latin dance of group ⩽ 8 years : Gary & Miscelle (8 years old) and group ⩽ 11 years :Ernest & Joyce (11 years old).

To share the happy hours with all our members, HKICNA unveils the pictures of the happy hours as follows :

Wonderful dancing of Gary & Miscelle

Excellent dancing of Ernest & Joyce

Presentation of souvenir to speaker : Professor Gabriel LEUNG (right) by Vice-chairman : LAM Hung-suet, Conita (left).

Presentation of souvenir to speaker : Professor Yuguo LI (right) by Vice-chairman : LAM Hung-suet,Conita (left).

Council members and honorary auditor (left to right): Regina CHAN (PWH), Annie LEUNG (CMC), Agnes OR (KH), Isadora WONG (DKCH), LAM Hung-suet ,Conita (YCH), Elizabeth CHEUNG (HKSH), Patricia CHING (QMH), Amy SIT (TPH), TSOI Wai-lun (UCH) and Mr PEH (honorary auditor).

Lucky ones of the 4 grand prizes

Finally, HKICNA has to thank all of you participating in this celebration party, without your participation, the party could never be the same. Wish to meet you again.

HONG KONG INFECTION CONTROL NURSES' ASSOCIATION Founded 30 April 1989 香港控制感染護士會
http://www.hkicna.org

Chairman's Report

Patricia CHING

Dear members of HKICNA,

On behalf of the council, I would like to report a very successful year of 2006. We have organised the Second International Conference in June 2006. The theme of the conference is "Evidence and reality" which was very well attended with more than 800 participants from 23 countries. World-renowned speakers have shared with us the latest cutting edge information. We have also completed one training course for the front-line healthcare workers and several seminars.

We would continue to promote infection control and research. The HKICNA newsletter is at the eleventh edition and they are free for members. This is an appropriate podium for exchange of experience and knowledge. We welcome submission of free paper to report your valuable data and information.

The plan for 2007 is the enhance communications. HKICNA has just made our home page available to form a platform for sharing of information locally and also internationally.

I would like to take this opportunity to thank our advisers, honourable editors and council members for their great commitment and contribution to put together such a successful program for our association. I would also like to thank all of you for your zealous support to HKICNA.

News and Information

A. Congress / Symposium :

1. 9th Patient Safety Congress by Annual National Patient Safety Foundation (NPSF)
   2-4 May, 2007
   Washington, DC ,USA
   http://www.chica.org/ific/070502conf.pdf
   8-11 July, 2007
   Kuala Lumpur, Malaysia
   http://www.apsic2007.com

2. 37th Annual Infection Control Conference
   24 -26 September 2007
   Brighton,England
   http://www.comtec-presentations.com/icna

3. 5th World Congress of the World Society for Pediatric Infectious Diseases
   15-18 November, 2007
   Bangkok, Thailand
   http://www.kenes.com/wspid

B. Guidelines

1. CDC, Management of Multidrug-Resistant Organisms in Healthcare Settings, 2006
   http://www.cdc.gov/ncidod/dhqp/pdf/ar/mdroGuideline2006.pdf

2. National Evidence-Based guidelines for preventing Health-care Associated Infections in NHS Hospitals in England.
   Journal of Hospital Infection 2007; 65S, S1-S64.

C. Scholarship

Ms LI Kit-yi (RN, KH) was awarded the scholarship ($ 1000 cash) of the infection control course 2006.

D. Sponsorship

Sponsoring members participating APSIC 2007 in Malaysia has been organizing. Please refer to the attached or visit home page for the details.

E. Infection Control Course 2007

It is coming up by Q3. Please visit home page for the most up-to-date information of the course.