Proceedings of the First Maltese Conference on Infection Control & Antibiotic Therapy

organised by the Infection Control Unit
St. Luke's Hospital

under the auspices of the CME Committee
Faculty of Medicine & Surgery

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Edited by
M.A. Borg
INTRODUCTION

Infectious diseases threaten to become the major medical challenge of the new millennium. As a new century commences, ever more concerning reports make their way into the medical literature. Multi-resistant Gram negative infections have been followed by glycopeptide resistant Enterococci. The discovery of vancomycin-intermediate Staphylococcus aureus in Japan last year and subsequently also in the USA raises the spectre of untreatable serious infections - turning the clock back to the pre-Fleming era. Experience has shown that bacteria develop resistant at a much faster rate than science and technology can develop and market new antimicrobials. The emphasis must therefore be placed on the prevention and control in both hospital and community settings as well as the appropriate use of the antibiotics currently available in order to limit the development and spread of resistance.

The First Maltese Conference on Infection Control & Antibiotic Therapy tackled a variety of topics aimed to interest the widest spectrum of health care professions and included plenary sessions on multi-resistant organisms and their management as well as looking at the importance of a multi-disciplinary approach to the prevention and control of infection in both hospital and community settings. Workshops were also held to discuss how basic infection control interventions and sensible antibiotic prescribing measures can be undertaken in local situations and limitations.

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Consultant (Hospital Infection Control)
RESISTANCE IS FUTILE - OR IS IT?

Dr. B.D. Cookson.

Director - Laboratory of Hospital Infection
Central Public Health Laboratory, PHLS, UK

Dr. Cookson started his keynote presentation by reminding the delegates that the global threat of antimicrobial resistance and potentially untreatable infections is a matter that is being considered seriously by the WHO and many countries throughout the world.

Dr. Cookson then went on to present alternative scenarios that may be facing us. Mankind's "nightmare" was perhaps that there may soon be no effective therapy for infections caused by antimicrobial resistant organisms and that these would occur at such frequency that we would in effect have returned to the pre-antimicrobial era. As a number of antibiotics are now ineffective for certain infections, physicians are having to face another nightmare scenario: doing their patients harm with toxic antibiotics rather than their dying from infection. Is this scenario inevitable, asked Dr. Cookson, is it futile to resist?

One of the few benefits of the emergence of antimicrobial resistance is that more resources have been devoted to research genetic aspects and biochemical basis. We are increasingly amazed by the ingenuity with which they have amassed an armory of mechanisms to avoid destruction by many different groups of antimicrobial agents. They often "improvise" calling upon existing mechanisms within their own or other microbial species or even develop new ones by mutation. Microbes exist in their countless billions and are capable of multiplying at rates several orders of magnitude greater than our own; their potential
to explore mutational events when stressed is awesome. Resistance is often described before antimicrobials are used clinically and occurs even where these agents are totally, or partly, synthesised. Their reservoir of resistance genes extends across veterinary and human therapeutic boundaries. Our adversaries adopt a variety of such strategies in a way that has similarities to guerrilla warfare. Early on, it was thought (or perhaps hoped) that antibiotic resistance would compromise microbial pathogenicity. However, this generalisation appears to be untrue. Microbes might, of course, evolve to become less virulent but we cannot rely on any such prediction. Enterococci, once considered the cockroach of bacteria, are capable of causing infections especially in immuno-suppressed patients and transfer of resistance to “genuine” pathogens such as S. aureus is well documented in-vitro and in-vivo.

It is unlikely that Ehrlich’s magic bullet (the microbes nightmare) will ever be realised; neither is it likely to be our favoured strategy, unless such therapy can be prevented from affecting our own commensal flora. Perhaps our being in a Nirvana-like state contributed to our delusions in this century that we had won the battle against the microbes, ignoring the evidence that resistance would become a significant problem. We prescribed antimicrobials in a haphazard or at best a poorly co-ordinated manner and in some countries even made them available over-the-counter. We have abused the amazing therapeutic arsenal made available to the health care community and under-estimated opponents with far more tricks up their sleeves (or rather inside or on their surfaces).

Dr. Cookson said that has at last dawned on “us” that the academic and pharmaceutical communities do not have any new classes of antimicrobials that will be available in the near future and that if and when they do arrive, there is the real threat we will again misuse them as we did their predecessors. However, microbes do have an Achilles heel, by and large they are pragmatic and a little lazy, merely responding as necessary to the prevailing environmental pressures.

He closed his presentation by proposing that that our two major weapons in the control of antimicrobial resistance are antibiotic prescribing control (to reduce the advantages to organisms of becoming resistant) and effective infection control practices, to stop these organisms spreading. We must write evidence-based guidelines, design, review and audit standards and policies for infection control and antimicrobial prescribing. These processes should have “top-down” and “bottom up” input. The EU has recently shown its commitment to this by funding several projects in this field. These strategies must encompass the human and veterinary/agricultural therapeutic “communities”. A global strategic approach must be developed taking into consideration each country’s particular “drivers” for resistance development. In addition, we must also encourage a healthy debate with patients and their advocates as to what needs to be done to reduce the problem.

Mankind must fight against the microbes and its own failings. We will not win the battle by relying on our ingenuity to develop new antimicrobials. If we explore as a matter of some urgency how best to address these failings our descendants will perhaps see us as having made the first steps to a “Nirvana” of sorts, a heavenly state where organisms are again susceptible to antimicrobials. How to establish and maintain correct reflexive infection and prescribing control practices to emerge victorious from the battle against antimicrobial resistant microbes and ourselves is uncertain. This needs as much investment as has been put into other areas of research into this vitally important matter, Dr. Cookson concluded.
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MEDICAL EQUIPMENT AND INFECTION CONTROL

Ms. L. Taylor

Head - Infection Control
Central Public Health Laboratory, PHLS, UK

Ms. Taylor argued that any instrument, apparatus, appliance, material or other article, whether used alone or in combination intended by the manufacturers to be used for human beings in the diagnosis of disease or injury, investigation, replacement or modification of the anatomy or of a physiological process or control of conception carried a potential risk inherent with its use.

Common factors associated with adverse incidents included inadequate training or knowledge, lack of awareness of previous incidents, inferior quality, worn-out or obsolete equipment, inadequacies or mistakes in servicing and/or maintenance. She emphasised the need for effective equipment management to ensure that what is used is suitable for its intended purpose, understood by users, was in a safe and serviceable condition and met safety and quality standards. Equipment management, must look at a number of different issues including justification of its need and acceptance by users who must receive adequate training in its use.

A quantitative measure of hazard must be undertaken by a process of risk identification, analysis, control and funding. It was important to predict what could go wrong, how could it happen and what could be the effect? A risk analysis should evaluate how often are these risks likely to happen, how severe would the effect be and what were the likely costs? Finally risk control measure should be implemented to elucidate how the risk can be eliminated or avoided and how it can be made less likely and less costly.

CURRENT STATUS OF INFECTION CONTROL AND ANTIMICROBIAL RESISTANCE IN THE MALTESE ISLANDS

Dr M.A. Borg

Consultant - Hospital Infection Control
Dept of Health - Malta

Dr. Borg began by discussing why hospital-acquired infections should be prevented, emphasising that nosocomial infections are common and carry a 5% incidence and 10% prevalence. In addition they carry a 1% direct mortality and also contribute to another 3% of hospital deaths. They also carry substantial physical, psychological and social morbidity. He also stressed that nosocomial infections are costly, increasing hospital stay by an average of 4 days and resulting in significant direct costs ($10,000,000,000 / year in the USA).

He said that prevention of hospital-acquired infections can be undertaken by removing the source of infection or reducing microbial load. He particularly concentrated on initiative undertaken in the past year in improving local sterilisation practices. Special emphasis was placed on the risks of passive displacement sterilisers and their unsuitability for packed items and narrow lumen instruments and the need for regular maintenance, daily checks and quarterly & yearly testing. He also discussed measures taken in Malta to reduce multi-resistant organisms, stating that multi-resistant bacteria result in delays in diagnosis, significant costs in treatment quoting a daily cost of Lm100 per day for treating patients suffering from serious MRSA infections. He said that past experience in St. Luke's Hospital showed that overcrowding was an important factor for MRSA incidence in general wards.

Dr. Borg then went on to review the importance of preventing
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Dr. Borg then went on to review the importance of preventing
cross infection given that more than 80% of hospital acquired infections are transmitted by contact means. Isolation and hand hygiene were discussed particularly local problems of infrastructure and mentalities which were stumbling blocks to achieve the required results. Regular use of alcoholic hand rub in situations where hand washing facilities are not readily available as well as the importance of a team approach using intensive training and link staff was emphasised. He

Finally the speaker reminded the audience of the importance that all healthcare workers are adequately vaccinated against Hepatitis B. He said that there was still much that needed to be done, quote a local study showing that 63% of the Operating Theatre staff studied were not fully immunised against Hepatitis B. He also said that more attention by health care workers was needed in proper disposal of contaminated sharps. The speaker presented data indicating that sharps containers were being insufficiently used even when available.

Dr. Borg reiterating that attention to measures as hand hygiene to reduce contact spread, improved surveillance and antibiotic prescribing and most importantly empowerment of all health care workers and concluded that a successful infection control is achievable even in the background of limited financial resources.

THE THREE MAJOR ISSUES IN INFECTION CONTROL.

Ms. C. Perry.

Senior Infection Control Nurse
United Bristol Healthcare Trust

When first addressing this subject, Ms. Perry argued that there are many issues that could be considered important, however, this importance varies depending on the setting in which they are being considered yet three span countries and health care settings. These issues were: education and empowerment of staff; infection control in the community; and research availability and utilisation.

Ms. Perry pointed out that all staff employed in a health care setting have a responsibility to practice in a manner which reduces the risk of patients in their care acquiring an infection. In order to do this, staff require knowledge of good infection control practice and the ability to apply this in a clinical setting yet health care staff, including medical and nursing personnel, domestic staff and professions allied to medicine, lack knowledge of infection control procedures. Without this basic knowledge, staff are not adequately equipped to carry out their role safely. It is vital that microbiology and infection control are included in education curriculums and reflect current practice and opinion. A multidisciplinary approach to this learning may also help to balance infection control responsibility.

Link nurse systems are one strategy that has been used to reinforce learning. These staff attend courses designed to prepare a "practitioner who is able to create an environment which will ensure the safety of the patient, relative and health care workers". They can then act as a positive role model to other staff. Link nurse systems have been demonstrated to be successful in a
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number of settings. Link nurses can also play a role in empowering staff to perform good infection control practice, by motivating and enabling ward staff, and by reinforcing the 'ownership' of infection control by ward staff.

With an increasingly elderly population and a culture which encourages care in the community, infection control can no longer be considered solely a hospital issue. Nursing homes are providing care for clients who require increasingly technical and invasive procedures, and would have previously been cared for in a hospital setting. Additionally, General Practitioners are performing minor surgery which requires practices to have the facilities, knowledge and ability to sterilise equipment. These staff are also frequently overlooked in guidelines and books. The focus on care in the community is likely to continue and it is imperative that infection control is addressed in these settings. The importance of infection control knowledge and advice to the community in general has been reinforced recently by the publicity surrounding outbreaks of infections such as meningitis and Eschericia coli 0157. The public also require education on prevention of infection, from food safety to basic preventative measures such as good hand washing. With evidence that hand washing by adolescents is less than optimal, this education should begin before schooling commences and continue throughout adulthood. A collaborative approach between health care, social services, educational services and government agencies is needed to ensure that community public health remains important and the public are informed and educated about infection risk reduction.

With an increased emphasis on evidence based practice, there is a need for all health care professionals to ensure that their practice is based on the amalgamation of clinical expertise and judgement with the best available evidence from systematic research. This poses difficulties in relation to infection control practice, where much is based on personal and anecdotal experience as opposed to thorough methodical research evidence. These difficulties must be overcome and emphasis placed on providing a body of evidence from which staff can deliver infection control practice.

There are some areas of infection control practice where good methodical research is available, for example hand washing, however it is widely acknowledged that this research is not applied in the clinical setting. The implementation of research findings is hampered by staff not knowing about them; not understanding them; not believing them; not knowing how to apply them; and not being allowed to use them. As health care becomes more cost conscious, this also creates a dichotomy in that cost effectiveness of an innovation or service often takes precedence over an improvement in quality of care. Health care workers will need to become proficient in negotiating and justifying advances in practice and acting as advocates to ensure the quality of care delivered to patients. This is particularly so in infection control where evidence of an actual problem is often required rather than action being taken if a potential hazard exists. The cost to the patient cannot, however, be ignored, as hospital acquired infection can have tremendous impact physically, psychologically and financially.

All health care staff should base their practice on the best, current available evidence despite difficulties in implementation of advances in practice due to cost and staffing pressures.

If strategies are implemented to address the issues discussed, these should have an effect on infection control in general. Educating staff will provide them with the knowledge needed to practice safely; reinforcing the role of all staff in the prevention of infection will help empower them to implement knowledge gained. Link nurse systems, which utilise clinically based practitioners,
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should be encouraged to enable infection control to be seen as of maximum importance in all areas of clinical care.

Focusing the emphasis on infection prevention across the continuum of hospital and community settings will help to create a seamless approach to infection control. This focus must also include informing and educating the general public, in infection prevention, from early years through adulthood. Nurses are ideally placed to provide advice and information on infection control and the development of Community Infection Control Nurses can only be a positive move to support the increasing numbers of elderly and sick patient being cared for in their own homes and in residential care.

In order to provide the optimum health care and advice, knowledge of current best and evidence based practice is of great importance. All health care professionals should be striving towards the provision of a good research base on which to found practice. Dissemination of information and supporting advances in practice are important to underpin the knowledge and information provided to health care staff and the general public. Adequate levels of staff must be provided to allow optimum delivery of care. These issues are all pertinent to more specific issues such as MRSA, *E. coli* and meningitis. By addressing them and raising the profile of infection prevention and control, the safety of the public in general and persons being cared for in hospitals and the community could be improved.

A NURSE’S PERSPECTIVE TO INFECTION PREVENTION AND CONTROL

Ms. N. Farrugia.
Manager - Nursing Service
Health Department - Malta

Ms. Farrugia started her presentation by giving an overview of infection control development through the ages. Its roots, she said, can be traced back to "quarantine" introduced during the Venetian era, followed by "fever nursing" during Florence Nightingale reign, moving towards “universal precautions” in the early 1980’s, and progressing to "body substance isolation", in the late 1980’s. The established nursing rituals and lavish expenditure on disinfectants, sterilisers, and so on, are assumed to provide a general level of safety for patients. However a literature search reveals that this may not necessarily be true, as often the use of rituals may distract nurses, midwives and other health professionals from taking important infection control measures.

Ms. Farrugia quoted a survey on Nursing Officers and Deputy Nursing Officers’ awareness on infection control carried out at St. Luke’s Hospital, it was revealed that only 35% regularly consulted the Infection Control Manual or read the Infection Control Newsletter, and only 18% of them regularly attended the weekly in-service lectures. Nurses are the most valuable mediums in preventing cross infection as they spend most of their time in direct contact with patients, she argued.

Future programmes on infection control have to challenge the way nurses think on these issues, re-focus on people, and for nurses executing infection control measures, to have knowledge, skills, care, patience, effort and unrelenting attention to the details of hospital hygiene.
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A PHYSICIAN'S PERSPECTIVE
TO THE PREVENTION OF INFECTION

Dr. Karen Vella
Infectious Diseases Unit
Sir Paul Boffa Hospital, Floriana

Dr. Vella dealt with the importance of notification of infectious diseases citing that this is legally required through the Prevention of Disease Ordinance. Notification allows early prevention of further infection through control or removal of source or administration of prophylaxis, tracing and early treatment of asymptomatic cases, identification and control of outbreaks as well as allowing surveillance (including sentinel surveillance) and epidemiological studies to be carried out.

She quoted local study among 50 doctors in health centres and private practice whereby only 70% of responders were aware of legal obligation. Only 41.3% of respondents notified immediately, many relying on others to notify (84.8% rely on hospital doctors; 32.6% on laboratory reporting). Amongst the reason quoted for under-notification were the expectation for hospital colleagues or the laboratory to notify, lack of feedback from Public Health Department, the concept that certain diseases were not considered hazardous or that the disease list was too outdated, concerns regarding patient confidentiality as well as pressures of work allowing no time to notify. Dr. Vella argued that introduction of remuneration for notifiers or conversely penalties for non-notifiers may improve local notification figures.

WORKSHOP REPORTS

SENSIBLE ANTIBIOTIC PRESCRIBING

Convenors: Dr. M.A. Borg
Dr. B.D. Cookson

Dr. M.A. Borg, workshop co-moderator, introduced the session indicating the paucity of data currently available on antibiotic prescribing in Malta. He stated however that from what statistics are available it was clear that the situation needed urgent rectification – antibiotic expenditure data as well as sample case studies were used as examples. He argued that on a broad basis it was important to:

♦ Define & implement institutional guidelines
♦ Monitor & provide feedback on resistance
♦ Optimise antimicrobial prophylaxis
♦ Optimise choice & duration of empiric treatment
♦ Improve antibiotic prescribing practices by educational & administrative means

Dr. B.D. Cookson then proceeded to chair the second part of the workshop and dealt with possible approaches to achieve these objectives. There was broad consensus on the importance of revamping the currently dormant Antibiotic Committee following an agreement of all parties on its way of working. The workings of the Antibiotic Committee and the attendance of its members should be subject to regular review. The first initiative would be an audit of antibiotic prophylaxis followed by the drafting of a universally agreed policy on antibiotic prophylaxis. A re-audit in would then be undertaken in 6 months to assess improvements in practices and cost-savings. Reviews were also indicated for:

♦ Antibiotic usage and resistance data
♦ New targets for antibiotic policy
A PHYSICIAN'S PERSPECTIVE
TO THE PREVENTION OF INFECTION

Dr. Karen Vella
Infectious Diseases Unit
Sir Paul Boffa Hospital, Floriana

Dr. Vella dealt with the importance of notification of infectious diseases citing that this is legally required through the Prevention of Disease Ordinance. Notification allows early prevention of further infection through control or removal of source or administration of prophylaxis, tracing and early treatment of asymptomatic cases, identification and control of outbreaks as well as allowing surveillance (including sentinel surveillance) and epidemiological studies to be carried out.

She quoted local study among 50 doctors in health centres and private practice whereby only 70% of responders were aware of legal obligation. Only 41.3% of respondents notified immediately, many relying on others to notify (84.8% rely on hospital doctors; 32.6% on laboratory reporting). Amongst the reason quoted for under-notification were the expectation for hospital colleagues or the laboratory to notify, lack of feedback from Public Health Department, the concept that certain diseases were not considered hazardous or that the disease list was too outdated, concerns regarding patient confidentiality as well as pressures of work allowing no time to notify. Dr. Vella argued that introduction of remuneration for notifiers or conversely penalties for non-notifiers may improve local notification figures.

WORKSHOP REPORTS

SENSIBLE ANTIBIOTIC PRESCRIBING

Convenors: Dr. M.A. Borg
Dr. B.D. Cookson

Dr. M.A. Borg, workshop co-moderator, introduced the session indicating the paucity of data currently available on antibiotic prescribing in Malta. He stated however that from what statistics are available it was clear that the situation needed urgent rectification - antibiotic expenditure data as well as sample case studies were used as examples. He argued that on a broad basis it was important to:

- Define & implement institutional guidelines
- Monitor & provide feedback on resistance
- Optimise antimicrobial prophylaxis
- Optimise choice & duration of empiric treatment
- Improve antibiotic prescribing practices by educational & administrative means

Dr. B.D. Cookson then proceeded to chair the second part of the workshop and dealt with possible approaches to achieve these objectives. There was broad consensus on the importance of revamping the currently dormant Antibiotic Committee following an agreement of all parties on its way of working. The workings of the Antibiotic Committee and the attendance of its members should be subject to regular review. The first initiative would be an audit of antibiotic prophylaxis followed by the drafting of a universally agreed policy on antibiotic prophylaxis. A re-audit in would then be undertaken in 6 months to assess improvements in practices and cost-savings. Reviews were also indicated for:

- Antibiotic usage and resistance data
- New targets for antibiotic policy
Future initiatives by the Committee would involve assessment of novel issues in antibiotic prescribing such as:

- Restricted Policies
- Automatic Stop dates
- 24 - 48 hour Consultant signing
- ID Physician / Medical Microbiologist endorsement

BACK TO BASICS

Convenors:  Ms. L. Taylor
            Ms. C. Perry

This workshop discussed the various standard precautions required in clinical settings. Possible approaches to a number of practical situations pointed out by members of the audience were discussed. On the issue of uniforms, Ms. Perry explained that there is still no clinical evidence that uniforms were the cause for any outbreaks. Nevertheless cleanliness and frequent changing were important and nurses should avoid running outside hospital grounds with their uniform. Isolation precautions were also discussed, particularly means of reducing anxiety to the patient. It was agreed that the patient should be encouraged to express his feelings and anxieties will lessen the burden of isolation.

In response to a question concerning the screening of health care workers for colonisation of MRSA particularly for those working with MRSA patients, Ms. Perry explained that the benefit on both clinical as well as individual level were negligible. She indicated that such swabbing exercises should only be carried out in cases of outbreaks. The speaker spoke at length against the routine swabbing of staff and explained in detail the hospital policies adopted in the U.K. regarding this issue.