Infection control in the dental setting is a fundamental topic in terms of patient safety and regulatory compliance. However, in a European context, it is very difficult to have a consensus across the member states as each country has its own directives.

This is where the Association for European Safety & Infection Control in Dentistry (AESIC) comes in. Recently established, AESIC is a European organisation for information on infection prevention, infection control and hygiene within dentistry. The AESIC mission statement is to be the leading European source of information on safety, infection prevention and infection control for academia, corporations, policy-makers and clinicians alike.

Even though the organisation is still in its infancy, it is bringing together the leading minds in the arena of infection control to campaign for consistency in infection control policy across the European member states. Such a mind is Mikael Zimmerman, one of the foremost academics behind quality assurance in Swedish dentistry. He is the author of more than 50 papers on cross infection control and has on several occasions been an advisor to the Swedish Foreign Ministry on hygiene and infection control. Mikael has also worked as advisor to the Swedish Armed Forces in the development of the new Medical Care System to be used by The Nordic Battle Group.

Speaking to Dental Tribune about the founding of AESIC, Mikael was very pleased with how the organisation was shaping up: “We have been talking about the need for a European organisation to focus on infection control for several years – we have been meeting and talking to industrial companies and academics about the idea for a while. Infectious diseases are a very big issue and healthcare associated infections are a big issue. And maybe the biggest issue of all is the development of antibiotic resistance and we have a lot of European norms giving us information about what infection control ought to be in all 27 member countries. And although we have many common norms and directives, there are also 27 different national recommendations.

“It’s a bit strange that we can’t get European countries to work together on the issue of infection control and antibiotic resistance so we thought that AESIC was a good idea to get some common ground where can we start the discussion – what do we agree about?”

Mikael calls AESIC an ‘interimistic’ association as although it now exists, AESIC won’t be fully established until its first meeting in Leeds on November 19th, where a board will be elected. Mikael said: “So far it has been a lot of discussion – what do we agree about?”

Mikael added: “The most important thing though this year is the meeting in November: we are planning on top of meeting to establish a board and formulate a constitution that we will run a one-day conference with a clinically-orientated topic for one half and a more industrial aspect for the other half of the day. Of course both of them will focus on getting the best feedback from members so we know we are going in the right direction.”

The plan for AESIC is that it will be an all-inclusive community for dental professionals and manufacturers across Europe to come together and have a place to be able to discuss issues surrounding infection control. “We have been talking about this for a long time and we want to include everybody concerned with infection control who works within the dental team. At the moment we are targeting mainly dental professionals, but we have good feedback from users, producers, academics and those working in a regulatory capacity to come together and work with each other to contribute towards the best practice for infection control.”

To find out more about AESIC and to become a member, go to www.aesic.eu.
Simple Ideas for eliminating the risk of cross-infection

Kathy Porter, Senior Dental Nurse (Decontamination) at Birmingham Dental Hospital, describes the common cross infection threats faced by everyone in the dental practice and “Best Practice” for eliminating them.

When and how microbes are transmitted

- **Hands** - probably the most important vector for the transmission of infection between patients and the practice’s team members.
- **Indirect contact** - via an intermediate carrier (e.g. crawling insects or an inanimate object) which has become contaminated with infected organisms.
- **Inhalation** - whereby pathogenic microorganisms are exhaled or discharged into the atmosphere by an infected person and then inhaled by another person (e.g. the common cold).
- **Direct contact** - when one person infects another person by direct person-to-person contact (e.g. chickenpox).
- **Ingestion** - when microorganisms capable of infecting the gastro-intestinal tract are ingested (e.g. “common” stomach bugs).

What are these risks?

- Virtually every person is exposed to countless millions of microorganisms which are entirely safe and present no threat to anyone. However, there are also a multitude of pathogenic microorganisms which can cause infections, also circulating in the population. These microorganisms can be transferred from one individual to another in a variety of ways. The most likely routes within the dental practice environment are:
  - Hands - probably the most important vector for the transmission of infection between patients and/or the practice’s team members.
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  - Direct contact - when one person infects another person by direct person-to-person contact (e.g. chickenpox).
  - Ingestion - when microorganisms capable of infecting the gastro-intestinal tract are ingested (e.g. “common” stomach bugs).

Although some of these transmission mechanisms are relatively easy prevented by taking appropriate basic hygiene precautions, these include washing hands between patients and wearing appropriate protective clothing (disposable gloves, face masks, etc.). Some precautions protect the patient from the dentist and vice versa. However, not all of them! Some of the above, those involving intermediaries eg inanimate objects, necessitate the thorough implementation of appropriate and effective cleaning regimes in between patients.

The Chain of Infection

The Chain of Infection was first described by Storr and Clayton-Kent in 2004. It consists of the source of the infection, the mode by which it is spread, the person at risk and any potential points of entry. The easiest way to break this chain is by interrupting the mode by which it is spread.

Because hands represent the most important vector for the transmission of infection between patients and members of the practice team, the single most effective way to prevent the spread of pathogenic microorganisms within any clinical environment is effective hand washing. This should be performed for at least two minutes when entering and leaving the clinical area, between patients, after visiting the toilet, when changing gloves and whenever one's hands are visibly soiled. Alcohol gels can be used on visibly clean hands, but if insufficiently wet they can cause a build up. Therefore, they should never be used solely, as an alternative to effective hand washing with soap and water, and it is never acceptable to wash or gel gloves with a view to reusing them. Gloves should always be replaced in between patients.

Best Practice for hard surfaces

Ideally, all basic decontamination processes for small items of equipment etc should take place away from any other activities, preferably in two dedicated decontamination rooms with a clearly defined route from dirty to clean. This is not possible for larger items of equipment, fixtures and furnishings however. Therefore, whenever possible, any work surfaces and equipment should be impermeable and easily cleanable. The work surfaces and floor coverings should be continuous, non-slip and ideally seamless. Wherever possible, carpets should be avoided within any clinical or associated areas. Goying should be used between the floors and walls to prevent any dust and dirt accumulating in corners and crevices, with any unavoidable joints welded or sealed shut.

A thorough and effective cleaning protocol can be easily based upon utilising simple techniques employing disposable cloths moistened with either clean water or a suitable alcohol-based or alcohol-free disinfectant. Alcohol-free wipes are particularly suitable for alcohol susceptible surfaces eg the leather and synthetic upholstery of dental chairs, plastics, vinyl’s etc. Wherever possible, cleaning using dry cloths should be avoided because this creates dust, which can form another hazard.

Should any blood contamination occur, one per cent sodium hypochlorite with a yield of 1,000 ppm free chlorine is recommended (unless the PCT policy advises something else). However an even higher free chlorine yield of 10,000 ppm is used in sterilisation. Care should be taken to avoid corrosive damage to medical fittings etc. Use of alcohol within the same cleaning process is not recommended because it binds blood and protein to metal surfaces.

Even if they appear uncontaminated, all clinical areas should be cleaned in between patients using disposable cloths or microfiber materials. The areas and equipment to be cleaned in between patients include all the work surfaces, chairs, curing lights, inspection lights, keyboards and mice, hand controls, X-ray units, trolleys, spittoons and aspirators. Disposable single-use protective covers are available for use on many of these items, but they should not be considered or used in place of implementing a thorough and regular cleaning protocol. Therefore, in between patients they should still be removed and the underlying surfaces cleaned.

The main areas and items of equipment to be cleaned after each session include taps, drainage points, splashbacks, cupboard doors and sinks. While items of furniture that need to be cleaned regularly include window blinds, door handles, incidental chairs and furniture. Hard surface disinfectants

Nowadays, more environmentally-friendly materials (eg Ammonium Chlorides and Ethanol) are available compared with the unpleasant smelling and aggressive chemicals (glu-
terials and phenols, etc.) that practices used previously. These newer materials are safer and more pleasant to use, yet still provide a 100 per cent reliable cross infection control.

Ammonium Chlorides are effective against HBV, HIV, HCV, BVDV, vaccinia, bacteria and fungidal microorganisms within one minute. Ethanol is extremely effective against pathogens (including HBV, HIV, HCV, BVDV, vaccinia, bacteria and fungidal microorganisms) which are all deactivated within 30 seconds. It also facilitates efficient Tuberculocidal and Hospital prophylaxis within one minute too. Both can be used in either alcohol-based or alcohol-free solutions. Alcohol-based disinfectants are suitable for treating alcohol resistant surfaces and handpieces etc. Alcohol-free disinfectants are used on alcohol sensitive surfaces and equipment, including leather and synthetic upholstery, acrylic, glass, inventory and medical products. Many different brands are available, with many supplied either odourless or with a choice of scents and in either disinfectant spray, mousse or wipe presentations.

Some disinfectant wipes are made from non-woven material rather than paper. The non-woven material type hold the disinfectant on their surfaces, enabling surgeries to clean contaminated surfaces effectively and without the inconvenience and mess often experienced with paper wipes, which frequently become soggy. However, they are still to be used for single use only and must be disposed of after every patient.

Some disinfectant brands are available in a non-drip foam presentation too, which stays precisely where it is applied. This eliminates the waste, mess and inconvenience associated with aerosol spray disinfectants.

Finally

To implement best practice for infection control, dental surgeries must identify all the potential sources of infection and transmission routes within their practices, and adopt appropriate protocols to break the chain. To ensure these protocols are actioned properly it is vitally important that all new staff members are thoroughly trained in this essential component of practice life. This training must be accurately documented, along with the practice infection control policy, and made available for external audit upon request. Both the policy and the training must be updated and reviewed regularly, at least once a year, and these reviews documented too. Correct implementation of these protocols should also be monitored regularly to ensure that standards are maintained throughout the practice. This should involve undertaking audits and assessments which should be retained for inspection if requested. All of these audits should be carried out in compliance with appropriate local PCT policies.

Introducing our NEW versatile range of

Extra Large Microfibre & Economy Wipes

Powerful antibacterial action for all sensitive and non-sensitive surfaces within treatment and decontamination areas!

About the author

Kathryn (Kathy) Porter has been a qualified and non-registered Dental Nurse for nearly 40 years, mainly spent in various guises at Birmingham Dental Hospital. Her title now is - Senior Dental Nurse (Decontamination). She is a member of the editorial board of the “Dental Nursing” Journal and also writes articles for them. She has had a book, entitled “The Dental Nurses Guide to Infection Control and Decontamination”, published in the spring of 2008. Kathy is a trained Infection Prevention and Control Link Practitioner and co-ordinates the group of Link Practitioners at Birmingham Dental Hospital. She is a Fellow of the BADN.

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The pictures used to illustrate this article show examples of some of the many products available in this field. The author does not endorse these or any other product, this must be a decision made by the user.
Cleaning up

One way of making sure infection control procedures are carried out properly is to delegate the management of the process to a company dedicated to providing a guaranteed decontamination service. Ken Turley explains

Infection control is an essential element of any modern dental practice. It is also part of the duty of care: there is a legal obligation to ensure that when a patient consents to dental treatment they receive a standard of care that puts them above any reasonable risk of contamination.

As practice managers will be aware, staff have a statutory duty of care to ensure that all instruments and equipment are safe for use, have undergone a thorough process of cleaning/disinfection, sterilisation and storage, and that any instrument is free from contamination from blood or other body fluids.

The practice’s infection control policy, which all staff should be familiarised with and guided by at all times, forms the basis of a training and reference guide for staff, particularly during their inductions. There should also be a nominated lead member of staff responsible for infection control and decontamination. If the practice has yet to draft their Infection Control policy, it is advised to consult with an expert provider of decontamination services who can help formulate the document correctly.

Follow the rules

Within the policy, the correct procedure for decontamination of instruments should be recorded. There is the need for a clearly defined cycle that ensures reusable items are rendered safe for further use and for staff to handle this method of reprocessing is detailed in the HTM 01-05 document. It is essential that there is a systematic approach to this process by having clear ‘dirty’ and ‘clean’ zones in the surgery to avoid the cross contamination of used instruments with clean ones.

HTM 01-05 states that, wherever possible, disposable items should be used. Single use items will be clearly marked as such, and reusing such items can seriously affect their safety, performance and effectiveness. Instruments that are difficult to clean, such as matrix bands, saliva ejectors, aspirator tips and three-in-one tips should be considered for replacement by single-use items if appropriate.

Where single-use items are not practical, instruments and appliances must be processed using the correct procedure. This is the only way of ensuring the equipment is free of any possible contamination and therefore safe to use.

The decontamination process

Any instrument contaminated with blood or saliva must be completely clean before it can be sterilised. Manual cleaning is considered to be unsuitable, primarily because of the lack of reproducibility of the conditions. There is, however, still the need for manual inspection after the decontamination process has been completed, to ensure the instruments have been successfully reprocessed.

Washer disinfectors are considered to be the best solution to the cleaning process because they offer a validated, controlled and efficient process of cleaning instruments compared with manual cleaning and most ultrasonic baths. These machines are fully automated and provide a reproducible and validated cycle of cleaning and disinfection. Always consult with a reputable manufacturer on type, requirement, installation etc to ensure you have the right machine and that you and your team fully understand how to gain the most from their use.

Careful loading of the instrument is required, as incorrect loading will inhibit the machine’s ability to clean effectively:

- Do not overload instrument carriers or overlap instruments.
- Open instrument hinges and joints fully. Attach instruments that require irrigation to the irrigation system correctly, ensuring filters are in place if required.

The sterilisation process can only take place once the instruments have been successfully disinfected. A record needs to be kept of the temperature (optimally 134° 137°C) and pressure achieved during the cycle and modern machines will do this automatically; there is one solution to storing data, with a wireless data logger that can be connected directly to the practice’s computer system.

For dentistry, the two standard types of autoclaves are Type N (non-vacuum) and Type B (vacuum). There is one UK manufacturer who has developed a “hybrid” B and N steriliser, giving practices greater flexibility in their decontamination options.

Safe storage

Once satisfied that the instrument has been successfully cleaned, storing it safely is vital in preventing the recontamination by pathogens. This is an area of instrument decontamination that must be rigorously controlled and a dedicated storage area, separate from the clinical area, is required to meet ‘best practice’ standards. There needs to be a clear rotation system of ‘first-in first-out’ so instruments are used within the time limit stated in HTM 01-05.

Using trays covered with lids is a practical way for storing and transporting instruments, while pouches are useful for instruments that are used less frequently. By organising instruments into treatment bundles, it is possible for the surgery to identify the cost of decontamination for specific services. This could become a useful method of business cost diagnostics.

The reprocessing of instruments is an integral part of the decontamination procedures of a surgery. Naturally, the new regulations that apply to dentistry will entail a greater burden of administration upon an already busy management team. One solution is to delegate the manage- ment of the process to a company dedicated to providing a guaranteed decontamination service to the surgery that covers all aspects, from supplies to sur- gery design.

About the author

Ken Turley is the founding director of the YoYo Dental Practice Group, following a 15-year military career, Ken worked globally in the mobile telecommunications industry until 2005 when he became a managing director of Salpharma, a 35-year-old hospital autoclave company providing decontamination equipment which he later acquired and re-branded as YoYo in 2008.