



**Towards Higher Patient Safety in EU Hospitals.  
Innovation in Hygiene and Sanification to Reduce Healthcare Associated Infections (HAIs) and  
Antimicrobial Resistance (AMR)**

TRAINING SEMINAR  
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**Moderator:** Brian Maguire, Journalist, EURACTIV

**Speakers:**

- Paola Antonioli, Specialist in Public Health – Hospital Hygiene & HAI Risk Management, Ferrara University Hospital
- Elisabetta Caselli, PhD – Section of Microbiology – Dept. Of Medical Science, University of Ferrara
- Daniele Celotto, European network to promote infection prevention for patient safety (EUNETIPS)
- Flora Kontopidou, EU Joint Action on Antimicrobial Resistance and Healthcare Associated Infections
- George Griffin, President of the Federation of European Academies of Medicine (FEAM)
- Daniela Quaggia, Senior Project Manager – Cittadinanzattiva/Active Citizenship Network
- Mariano Votta, Director of Active Citizenship Network

**Secretariat:** Manuela Amadori, Active Citizenship Network

**Welcome (by M. Votta)**

Mariano welcomes and thanks everyone for their participation to the event and asks everyone to introduce themselves.

- This training initiative is part of our commitment on the empowerment of civic and patients' associations.
- I would like to thank Copma for its support, not only for this specific EU training seminar, but more in general for having gathered civic and patients' organizations to debate on a topic which is probably underestimated by public opinion: today there are leaders of 21 associations coming from 13 countries.
- The purpose of this seminar is:
  - to provide a selected number of leaders of patients' organizations and advocacy groups across Europe with an occasion to be empowered and an updated overview about healthcare-associated infections & antimicrobial resistance and their impact on public health;
  - to become aware of the commitment provided by European institutions and experts in the field;
  - to explore a concrete example on innovation coming from the private sector.

### Infections and Antimicrobial resistance and their impact in public health (by G. Griffin)

- FEAM provides independent (commercial, political, ideological) and evidence-based science policy advice, with a European dimension, on human and animal medicine, biomedical research, education and health priorities. The objective of FEAM is to use medicines for the benefits of people in Europe.
- An infection is a clinical syndrome that occurs when humans or animals encounter a pathogen (bacteria, viruses, fungus, or parasites); consequently, antibiotics and antimicrobials come into use.
- HAIs represented the second leading cause of death in the world in 2004.
- Anti-microbial drug resistance is defined as the acquired ability of a microorganism to resist at the effects of a chemotherapeutic agent to which it is normally sensitive. Anti-microbial resistance happens when microorganisms (bacteria, fungi, viruses, and parasites) change when they are exposed to antimicrobial drugs. Indeed, bacteria and molds have the capacity to reproduce very quickly as well as to mutate, acquiring resistance to antimicrobial agents and becoming resistant to antibiotics.
- AMR is a growing public health issue. In recent times, the emergence and dissemination of drug-resistant pathogens has accelerated, proving to be global, extremely dangerous.
- By 2050, almost 400.000 death will be attributed to AMR.
- AMR has a multifactorial origin, but the main one remains the use of antibiotics. Indeed, the growth of AMR is mostly caused by the improper use, overuse, or misuse of anti-microbials in humans and animals.
- Reducing the use of antibiotics will stop the driving of resistance. It won't reduce the already resistant ones, but it will reduce the development of others.
- AMR is responsible for an estimated 33,000 deaths per year in the EU. It is also estimated that AMR costs the EU EUR 1.5 billion per year in healthcare costs and productivity losses.
- Numerous antibiotics already have a resistant clone, making infections increasingly difficult to cure.
- Since 2004, EU Commissioners have been highly aware of this issue and have been trying to figure out how to reverse such trend. Yet, it is too difficult to discover new antibiotics and to develop a new safe drug costs about a million dollars. Moreover, antibiotics (except for tuberculosis) are normally given for just a few days/weeks, so drug companies don't make a great profit from their usage.
- It is certain that the inappropriate therapeutic use and the nontherapeutic use of antimicrobials is considered to be one of the drivers for the development of resistance in human.
- We need to be aware of AMR and how this phenomenon is constantly changing – bacteria reproduce approximately every 90 minutes.
- We need new national strategies both in animal and human medicine.
- It is extremely important to wash hands in hospitals. Only about 20% of hospital workers wash their hands regularly.
- The greatest challenge is that of fighting citizens' own 'rapid diagnosis' and their abuse of antibiotics. Often people expect to cure everything with antibiotics/penicillin, but antibiotics don't work against viruses. Doctors need to reduce antibiotics prescriptions.
- Anti-microbial resistance has been recognized as a global health problem and considered by major health organizations as the top health challenge in the 21st century.

### The commitment of the EU Commission on patient safety (by F. Kontopidou)

- Approximately 700,000 health-care-associated infections (HAIs) occurred in 2011, affecting approximately 1 in 25 hospitalized patients.
- HAIs is a big problem: about 4 million patients acquire an infection each year and about 37.000 deaths directly result from these infections.

- In November 2001, the EU Health Ministers adopted the Council Recommendation on the prudent use of antimicrobial agents in human medicine (2002/77/EC). Similarly, in June 2009 they adopted the Council Recommendation on patient safety, including the prevention and control of healthcare associated infections (2009/C 151/01). These Recommendations ask Member States to adopt and implement specific strategies for the prudent use of antimicrobial agents, aiming at containing antimicrobial resistance and at improving patient safety.
- Have they succeeded so far? No. Usually, HAIs only receive public attention when there is an epidemic.
- Over 65/70% of hospital infections could be prevented by implementing appropriate protective measures.
- Solutions for the prevention of these infections are simple & low-cost but require staff accountability & behavioral change.
- Antimicrobial Resistance poses an enduring threat to the global community and, in our days, a major public health risk to developed countries.
- Joint Action has to bridge the gap between declarations/recommendation and concrete actions/actual clinical practices → Propose concrete steps enabling European countries to strengthen the implementation of efficient and evidence-based measures to tackle AMR & HAIs.
- EU Primary objectives include:
  - Bring together different networks of policy makers, experts and organizations on AMR and HAI;
  - Identify and test evidence-based measures to address AMR and HCAI in different contexts and provide recommendations to policy makers;
  - Produce concrete recommendations and promote awareness and commitment by governments and stakeholders for a European contribution to international initiatives;
  - Promote: “One Health” approach; “One Health in all policies” concept; “Health in all policies” concept.
- Implementing Infections Control Programs in hospitals is not an easy task, as it requires a lot of practice, resources and it has to be done in a very complex and confused environment. Consequently, we need a holistic approach and great coordination, but it is not easy considering that we need to operate in different countries with different healthcare systems and cultures.
- Regardless of the healthcare structure and resources, the organizational & the health professionals’ behavior arise as key factors for an effective implementation of infections control programs.
- The development of a Universal Infection Control Framework (UICF) for health professionals involves a series of three major activities: infection control policies, institutional behavior, awareness training.
- In the majority of hospitals, the basic structures and procedures exist and are functional, but major common gaps are present:
  - defined authorities, the responsibility and the leadership of hierarchy;
  - dissemination of information and its transformation to the clinical reality;
  - risk management and the promotion of a safer working environment;
  - resources;
  - training all the parties;
- The majority of health professionals are aware of HAIs and poor hygienic conditions inside healthcare facilities. Most of them believe that lack of time and of resources are not the main factors associated to infections.
- The vision is to Understand and Act. Because even if we don’t manage to fill the gap between guidelines and clinical reality, we will have succeeded in bringing the opposite sides closer and thus making a significant step towards patient safety.

### [The case history of the innovation sanitation system PCHS \(by E. Caselli\)](#)

- AMR affects people of any age all over the EU. By 2050, AMR could cause more death than cancer and banal infections could become deadly.
- In 2017, the EU “One Health Action Plan Against AMR” included for the first time hygienic conditions in hospital environments. Indeed, healthcare facilities are an important source of infections, mainly coming from patients themselves, but also from visitors, hospital workers, etc.
- So far, control of contamination addressed by conventional chemical-based sanitation cannot prevent recontamination, has a high environmental impact, and can favor selection of resistance. There is therefore an urgent need to find new effective methods able to steadily halt contamination.
- For the past 8 years, we have been working on a new system which could stably abate contamination and decrease "side effects" (AMR, environmental impact).
- The PCHS (*Probiotic Cleaning Hygiene System*) is a sanitation system based on the use of eco- sustainable detergents with spores of probiotics bacteria.
- The aim of our research was to test probiotics’ effectiveness of the system against pathogens on hospital surfaces. The effectiveness on HAI incidence was measured first in vitro and then on the field and resulted in a decrease of resistant strains (no AMR selection).
- The tested surfaces included floors, bed footboards and sinks in 3-6 randomized rooms per ward. About 32,000 total microbiological samples were analyzed.
- The study resulted in a significant reduction of pathogens, HAIs, AMR, antimicrobial consumption, and antimicrobial associated costs.
- The combined use of probiotics + phages leads to rapid, specific & stable decontamination. Yet, the system can be further improved.
- It is very important to monitor this phenomenon appropriately. It is not enough to see whether a hospital is clean or dirty to understand if its environment is really safe.
- The costs of this type of cleaning method are very low and compatible to conventional sanitation.

### [The case history of the innovation sanitation system PCHS \(by Paola Antonioli\)](#)

- The first research on the field was carried out in the in 2 medical inpatient wards and in the Polyclinic of the “S.Anna Hospital” in Ferrara in order to verify the quantitative, efficacy and efficiency of probiotic products compared to the use of traditional treatments based on chemical disinfectants.
- The experiments “on the field” were carried out by submitting two different types of hospital areas (inpatients wards and Polyclinic) to cleaning procedures using both chemicals and probiotic products and measuring the pathogenic charge.
- Results:
  - The overall average percentage reduction rate of pathogens in the case of use of the Probiotic protocol, compared to the case of use of traditional disinfectants, was more than 70-80% after 3 months of application;
  - In the case of use of traditional disinfectants, the microbial load increases from the first minutes after sanitization, doubling or tripling within just 7 hours of distance;
  - As regards Probiotic products, the increase in bacterial load over time has been significantly lower.
- The purpose was to create a safer environment for patients, workers, caregivers, visitors by reducing Healthcare Associated Infections (HAIs) shares through proven and sustainable actions implemented with a multimodal and multidimensional strategy.

- The second research was carried out at the Rehabilitation Hospital “Nuovo S.Giorgio” to conduct experimental field research for a significantly long period (14 months), continuously, monitoring the environmental microbiological status and measure the incidence of HAI.
- Since January 2013, PCHS has become our basic cleaning method, replacing manual cleaning with chemicals. However, the PCHS system cannot be used in all care units.
- Although not all HAIs are preventable, approximately 20-30% are considered preventable through structured hygiene and control programs. In particular, HAIs related to the use of invasive medical procedures and devices are more preventable.
- What we do in our hospital facilities:
  - Hand hygiene;
  - Prudent antibiotic prescription - Antimicrobial Stewardship;
  - Active research and isolation of colonized patients & Isolation of infected patients;
  - Suitable Personal Protective Equipment;
  - Enhanced Environmental Cleaning.

#### [Global infection prevention and control priorities 2018-22: a call for action \(by D. Celotto\)](#)

- EUNETIPS is part of the Global Infection Prevention and Control Network (GIPC) and has joined its call for action for 2018-2022 addressing common priorities.
- The Network of EUNETIPS was born in Berlin in 2008 from the union of 12 European Scientific Professional Societies that recognized the importance of sharing and promoting knowledge, attitudes, practices and trainings on infection prevention and control.
- Today EUNETIPS includes 30 national scientific and professional societies + groups of infection controls/hospital hygiene professionals in 22 countries.
- EUNETIPS major priorities for IPC:
  - Translation of information through enhanced communication to sustain engagement and awareness;
  - Enhanced education and training to embed IPC knowledge across all disciplines → especially within undergraduates;
  - Strengthen IPC visibility and advocacy: convince decision makers and stakeholders → Newsletter, national and international events, campaigns promotion, conferences, etc.;
  - Expand the narrative: help people visualize how IPC programs can lead to AMR risk reduction → Videos and YouTube channel available to the public;
  - Build active networks and stronger communications, ensuring that patient safety and quality improvement leaders and other healthcare workers are engaged to advocate for IPC.
- EUNETIPS has also joined the European Joint Action on antimicrobial resistance and healthcare-associated infections, which aims at fostering synergies among EU Member States (MS) by developing and implementing effective One Health policies to fight the rising threat of antimicrobial resistance (AMR) and to reduce healthcare-associated infections (HCAI).
- We are trying to measure how simple things are done in different environments, but there are great differences in the way actions are carried out in hospitals and this makes it extremely difficult to compare them (eg. how many times nurses wash their hands? How much soap do they use?).
- In order to prevent infections, EUNETIPS promotes, shares and supports training activities of its members.

## Discussion:

- G. Griffin: It is super important to “get the students early” to change wrong habits otherwise they never will.
- D. Celotto: Absolutely. However, it is difficult to go to each single school/hospital personally. We teach undergraduates proper behaviors in our hospital in Udine, but each school should understand and develop the best measures to do the same.
- B. Maguire: Is this something the European Commission should work on? Considering the risks and costs of HAIs, why doctors ignore simple actions such as washing their hands?
- G. Griffin: You can't go to every medical school in Europe, of course. You have to send them the message and hope that everyone will receive it. Often, doctors are focused on high level actions and forgot about basic, standard behaviors. Yet, it is paradoxical because high level operations depend on low level ones.

## How can the civic society be engaged on patient safety? (by D. Quaggia)

- My presentation will give you an overview on the commitment of Cittadinanzattiva, the Italian association of which Active Citizenship Network is the European branch, with regards to Patient safety and in particular on healthcare associated infections.
- Cittadinanzattiva has 250 patients' rights centers across the Italian territory through which, each year, we collect an average of 25.000 complaints and requests of information on health services. We produce an Annual Report, the “PIT SALUTE”, which we present to the institutions and relevant stakeholders. This report is a picture of the daily relationship between citizens/patients and the National Health System, it is a way to promote our political actions starting from real cases.
- We carry out projects in which the goal is not only to “photograph” or denounce problems of public services, but also to evaluate “quality” from the specific point of view of citizens.
- One of the main tools of action, which is the foundation of all our activities on health, is the EU Charter of Patients' rights. It includes, among the others, some rights linked to today's topic: the patients' right to preventive measures, the patients' right to the observance of quality standards, the patients' right to safety and the patients' right to innovation.
- Cittadinanzattiva's offices receive numerous complaints from Italian citizens, and many of these have to do with the conditions of healthcare facilities and healthcare associated infections. Therefore, the commitment of Cittadinanzattiva towards the issue of safety and the quality of care has been constant throughout the years.
- The reports that we have received have highlighted an increase in the alerts for HAIs in 2017 from the previous year (4,9% compared to 4,3% in 2016) and represent the fourth relevant figure within the whole category of “bad practice and safety of healthcare facilities”. We have also seen an increase in the number of alerts dealing with the hygiene conditions of healthcare facilities (from 30,4% in 2016 to 33,4%).
- In the last 5 years, the most frequent and constantly increasing reports deal with infections originating from surgical wounds, and then we find bacterial infections.
- In 2007 we have drafted the Charter of quality in surgery: 54 commitments that can be undertaken by any healthcare facility. In 2009, almost 2 years after the launch of this project, over 80 departments had signed the Charter, demonstrating their commitment to carry out actions to respect the 54 principles contained in the document.

- In 2011, we started working on a big project which included also a monitoring activity called “Civic recommendations on the prevention of health care-associated infections”: the aim of this monitoring was to photograph the level of attention of the various hospital departments on the prevention of HAIs. The collected data, in particular with regards to hygiene and safety, reported that:
  - Daily decontamination practices are still only manual (69% in low and medium-risk areas, 62% in high-risk areas)
  - Washing with scrubber - dryers is done only in 8% of the monitored structures
  - Poor awareness on surgical materials sterilization procedures (31%)
- One year after, in (2014), Cittadinanzattiva has produced “Operation Safety”, a guide for all citizens on what to do and what to know in case of surgery. The guide contains practical suggestions and information on the rights, norms for a better citizen-doctor cooperation.
- The last project we put in place is the Working Table On "Health Care-Related and Antibiotic-Resistance Infections" (2017/ 2018). The working table is not a project itself, but rather the starting point of a wider project/initiative that will continue to develop in the coming years, also thanks to the relationships established across time with the experts and the professionals active in the field.

### Final discussion with the audience

#### F. Kontopidou:

- The ECDC reports a lot of patients’ stories about infections contracted during hospitalization, providing very strong motivations for changing doctors’ behavior. At the same time, recommendations have to be for patients in the first place!

#### E. Moya:

- In Spain, we are very worried about this issue as we are the first country in Europe for antibiotics consumption.
- In Spanish hospitals the consumption of antibiotics has increased by 2%, and so has AMR.
- To reduce AMR, it is necessary to: avoid infections, avoid antibiotics, and train doctors and pharmaceuticals.

#### D. Celotto:

- We should teach citizens what their rights are with regards to safety and infection control. There should be a strong cooperation among all organizations and facilities on the territory.

#### A. Bytyqi:

- One of the major problems we have seen in Kosovo is that many people buy antibiotics from the pharmacies without any prescription, which should not happen. We are trying to inform our citizens and doctors on the risks of antibiotics abuse and to check conditions of hygiene when they see their doctors.

#### P. Georgeva:

- We have been organizing roundtables with healthcare organizations, doctors, and journalists to discuss about HAIs and AMR.
- We have also spoken with our country’s authorities, who promised us that in three months we will have a national program dealing with infections prevention and control.

P. Antonioli:

- As there is a European alliance for AMR, there should be an alliance between citizens and healthcare workers, allowing them to learn from each-other.
- In Ferrara we are promoting a health education and trainings for both workers and citizens' representatives, trying to create better communication tools to facilitate citizens' active participation during their care path. Indeed, when patients are aware of their rights, needs, and pathologies, they can be the first ones to manage their path of care. It is however fundamental to have a transparent doctor-patient alliance to overcome contrapositions and distrusts.

M. Pinca:

- I believe that it's time to act. We are a small company that has decided to invest in research and innovation. Our experience demonstrates that it is possible to have a long-lasting stable and standardized level of hygiene inside hospital facilities, not just during monitoring tests. We are all potential patients and we would like to find a clean and safe hospital where to be cured rather than where to encounter greater issues.

M. Prunbauer:

- We have produced a guide for citizens, as there should be a guide for patient safety in all hospitals.

G. Griffin:

- We need to fight the existing culture of buying antibiotics without prescription. This is surely an issue about which the EU could do something. Almost everywhere you go in Europe, you can easily buy an antibiotic without a valid prescription. Is it feasible to bring in a regulation on antibiotics prescription and usage? Not just pharmacists, but doctors too have to be better educated, as they prescribe antibiotics for unnecessary reasons.

E. Caselli:

- And what about those that buy drugs online? It is very easy to buy medicines and antibiotics on the web, making it harder to control their usage. We can't neglect this factor.