prevalence in non-meat foods was null (CI95% 0%-3.9%) and was 2.4% (CI95% 0.1%-12.9%) in pork meat products.

Conclusions:

HEV is rarely detected in non-meat products collected in Italy, while higher virus prevalence can be predicted for pork-based food products. Further studies are needed to improve precision of the prevalence values estimated for the different food categories.

Key messages:

- Hepatitis E virus is an emerging problem in developed countries, where transmission is mainly associated to consumption of raw or undercooked pork or game meat.
- Data collection studies are required to fill the information gaps in risk assessment of foodborne transmission of HEV.

Urinary tract infections - etiologic spectrum and susceptibility patterns of pathogens

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Background:

Urinary tract infections (UTIs) are one of the most common bacterial infections. Their etiologic spectrum and antimicrobial susceptibility patterns vary in different countries. The aim of this study was to evaluate the prevalence and the antimicrobial resistance profiles of bacteria responsible for UTIs among Bulgarian patients, in order to establish appropriate empirical treatment.

Methods:

One thousand consecutive urine samples were included in the study. They were collected predominantly from ambulatory patients. Three fourths were females. The presence of bacteria was detected using a technology based on light scattering (HB&L, Alifax, Italy). Each positive sample was cultured on CHROMagar Orientation Medium and Columbia Blood Agar. Further identifications were performed by phenotypic methods. Susceptibility testing for ampicillin, ampicillin-sulbactam, amoxicillin-clavulanic acid, cefuroxime, cefixime, fosfomycin, gentamicin, amikacin, trimethoprim-sulfamethoxazole, ciprofloxacin and levofloxacin was conducted, using the disc diffusion method.

Results:

28% of urine samples yielded significant microbial growth. Predominant pathogens were as follows: Escherichia coli, Enterococcus faecalis, Klebsiella pneumoniae, and Proteus mirabilis. Staphylococcus spp., Streptococcus beta-haemolyticus, Enterobacter spp., Pseudomonas aeruginosa, Stenotrophomonas maltophilia and Myroides spp. were rarely isolated. Considering all detected bacterial species, the most active antimicrobial agents against infectious bacteria were amoxicillin-clavulanic acid and amikacin. More than 99% of isolates of E. coli and E. faecalis were susceptible to fosfomycin.

Conclusions:

The etiological spectrum of UTIs among Bulgarian patients corresponds with that reported in the literature. Fosfomycin exhibits excellent activity against the most frequent species E. coli and E. faecalis. Data on susceptibility patterns of local uropathogens are important to support empirical therapy.

Key messages:

- Fosfomycin exhibits excellent activity against the most frequent urinary pathogens Escherichia coli and Enterococcus faecalis.
- Considering all detected bacterial species, the most active antimicrobial agents against infectious bacteria were amoxicillin-clavulanic acid and amikacin.

Potential Infectious Risk in Dialysis Water: an Italian Pilot Study

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Background:

Haemodialysis is one of the most common treatment for acute renal failure and, since a dialyzed patient every week receives a large quantity of dialysis water, almost 350 litres, it is fundamental that this fluid would have an high quality and purity. The aim of our study was to control the microbiological contamination of the water of the haemodialysis in an Italian teaching hospital.

Methods:

From January 2015 to October 2017 we conducted a cross-sectional study collecting samples of dialysis water in AOU Careggi (Florence, Italy). Samples were aseptically collected by specialized operators and then carried under ice at 4° C to a Specialized Laboratory for microbiological analyses. Results were inserted in a database and exported for statistical analysis.

Results:

In the examined period we collected 126 samples: Coliforms, E. coli, Staphylococcus aureus, enterococci were negative in all samples. Pseudomonas aeruginosa was found positive in only one sample. Multiple logistic regression showed that for CFUs at 37 °C and at 22 °C, the type of dialysis device represented the only statistically significant risk factor (OR 15.21 and OR 10.25 respectively) for contamination: in fact the SDS (Single Dialysis System) devices had a significantly higher risk of being positive for CFUs at 37° C and 22° C. The Limulus Amebocyte Lysate (LAL) test resulted in the normal range in 95% of cases. The mean LAL value in cases that exceeded the limits was 1.195 (SD 1.024).

Conclusions:

Dialysis water should be constantly monitored, because its alterations could have important consequences on patients' health. Moreover SDS devices should be controlled with a higher frequency because their discontinuous use could explain their higher contamination as demonstrated in our study.

Key messages:

- Dialysis water must maintain specific chemical and bacteriological requirements: an alteration of these parameters can have important consequences for the safety and health of patients.
- Devices with a SDS system may be subject to greater contamination.

Water birthing and infectious risks: an Italian study

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Background:

Warm water immersion during labour, including birth, used for relaxation and pain relief, has a long history in lay and clinical care, so the water births have become more and more popular in industrialized countries. In our study we investigated the effectiveness of the cleaning and disinfecting procedures used in the ''Daisy'' birth area (Careggi Hospital - Florence, Italy), where the water birth is practiced.

Methods:

From January 2016 to July 2017 we conducted a cross-sectional study: we collected swabs from the tap and from the water discharge system of the tubs used for water birthing and we collected water samples from the big pool used for pre-natal gymnastics. Samples were stored at 4 °C until testing and all samples were analyzed within 1 h of arrival at the laboratory.

The results were organized in a database and then exported for statistical analysis.

Results:

142 samples were collected from the 4 tubs for the birth in water. There was a statistically significant difference ($p = 0.01$; OR = 0.28) in the presence of Staphylococcus spp. in the 2 examined years: in 2017 their presence was significantly lower (N = 5) then 2016 (N = 23).

There was also a statistically significant difference ($p = 0.03$) in the presence of yeasts: in 2016 no one resulted positive, in 2017 six samples were positive, but with a low contamination. Water discharge system was at a higher risk of being contaminated by staphylococci ($p = 0.01$, OR = 3.08). 15 water samples were collected from the pool for pre-natal gymnastics: E. coli, Pseudomonas aeruginosa and Enterococci resulted negative in all the samples.

Conclusions:

A continuous monitoring is fundamental to avoid the onset of water-vehiculated infections for mothers and babies. Training programs are also important to improve the knowledge about the right cleaning procedures among operators.

Key messages:

- Although considered at ''low risk'' in literature there are several cases of infections due to this practice.
- It is important to implement training programs to increase the right knowledge of the right cleaning procedures by operators.

Development of a viability PCR assay for the analysis of Hepatitis E virus in food matrices

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Background:

Hepatitis E virus (HEV) infection is considered an emerging problem in developed countries, where foodborne transmission plays a key role. As for other viruses, HEV detection in food matrices is based on molecular methods (PCR) that cannot discriminate between infectious and non-infectious virus. Viability PCR (v-PCR) is based on the use of intercalating dyes that penetrate through damaged viral capsid and block PCR amplification of their genome, therefore differentiating damaged virions from intact viruses. Aim of this study was the development of a v-PCR protocol for HEV in food matrices.

Methods:

A v-PCR protocol was optimized using a standardized amount of in vitro synthesized HEV RNA and ethidium bromide monoazide (EMA). Different EMA treatment conditions (incubation time from 15 to 120 minutes and concentrations from 20 to 320 microM) were tested. Efficiency of the treatment in removing free RNA was assessed by real-time RT(q)PCR. Control reactions were included to assess inhibition effects on PCR detection. The optimized v-PCR protocol was applied on HEV deactivated by heating (90 °C for 2 minutes) and on a food matrix (bivalve shellfish) experimentally contaminated with both intact and thermally treated virus.

Results:

Results showed that a 30 minute treatment with an EMA concentration of 200 microM provided a reduction of free HEV RNA $\geq$98% with little or no inhibition in the subsequent PCR reactions. Results were confirmed in the assays on thermally treated virus, while a lower reduction ($\sim$60%) was obtained in experimentally contaminated shellfish, possibly in relation to dispersion of EMA activity onto nucleic acids resulting from the food matrix.

Conclusions:

The developed EMA-PCR protocol allows a better estimation of intact HEV particles compared to the standard real-time PCR protocol and, following optimization, can be applied for the detection of viable HEV in food matrices of animal origin.

Key messages:

- The analysis of foodborne viruses relies on molecular methods that may overestimate risk as a result of detection of free nucleic acids or damaged viral particles.
- Viabilty PCR is a promising approach to differentiate infectious and non-infectious viruses in order to improve the assessment of the risk associated to viral contamination in foods.

Travel health preparations of rock climbers travelling to India

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Background:

Low and middle-income countries (LMIC) are increasingly promoting adventure tourism activities such as rock climbing. Hampi, India is one such destination however travel there brings risks such as climbing in close proximity to wildlife and limited access to healthcare. This is the first study to evaluate rock climbers travel health preparations when travelling to an adventure tourism destination in a lower middle income country.

Methods:

A cross sectional study was conducted 18th January-1st March 2017 in the climbing destination of Hampi, India. The author visited pre-selected climbing areas and hostels for 3-5 hours each on a weekly rotation where climbers were invited to complete a self-administered questionnaire. A total of 161 responses were collected(95% response rate).

Results:

61% of participants had been on a climbing trip to a LMIC previously. 35% sought health advice in the recommended time frame (>4weeks before travel). 87% did not know the national emergency telephone number. 75% correctly identified Hampi as low risk for malaria, of those who believed it was high risk only 14% were taking malaria prophylaxis. Overall 38% participants were vaccinated against rabies. 13% were long stay travellers (>4weeks), one third of these had been vaccinated against rabies.

Conclusions:

Rock climbers travelling to India are regular adventure travellers therefore travel health risks identified here may be repeated on future trips, this includes not seeking health advice in the recommended time frame, poor recall of the national emergency number, and not taking antimalarials despite believing the area to be high risk for malaria. Rabies vaccination is recommended in India if post-exposure treatment is limited. In Hampi there is no local supply of rabies immunoglobulin (vaccine is available), and there is close proximity to dogs/monkeys whilst climbing. Rabies vaccination had poor uptake among all participants, thus rabies may be an under-recognised risk.

Key messages:

- Rock climbers travelling to India are an important subgroup as they are repeat adventure tourists who need to account for risks such as remote location, long stay, and interaction with wildlife.
- This research should encourage climbing councils, travel health websites, and health care practitioners to write climbing specific information and encourage tourist compliance with recommendations.

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ABSTRACT SUPPLEMENT

Guest editors: **Ivan Erzen, Tit Albreht and Dineke Zeegers Paget**

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