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IFH Newsheet ([www.ifh-homehygiene.org](http://www.ifh-homehygiene.org))

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### 1. Latest from IFH

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#### Hindi and Bengali versions of the IFH/WSSCC Training Resource on home hygiene enhance the capacity of public health managers

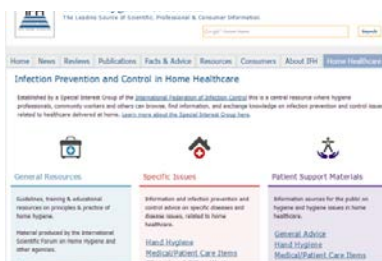


To celebrate the World Environment Day, 3rd June 2014, the International Scientific Forum on Home Hygiene (IFH) in association with the Institution of Public Health Engineers (IPHE), India launched the Hindi and Bengali versions of the IFH/WSSCC Training Resource on “Home Hygiene in Developing Countries: Prevention of infection in the home and peri-domestic settings”. Padmabhusan Dr. Bindeshwar Pathak, World Water Laureate 2009, released the Hindi version of the Training Resource while Mr. Asadur Rahman,

Chief of UNICEF, Kolkata released the Bengali version. Prof. K.J. Nath, President, IPHE and South East Asia IFH Regional Coordinator, delivered the theme address. The Home Hygiene Training Resource, which was originally published in English in 2005, has already been translated into Russian and Urdu. The Bengali and Hindi translation has been facilitated by the Sulabh International Social Service Organization and the National Academy of Sciences, India (NASI). The resource gives guidance for teachers, community nurses and workers, and other health professionals in developing countries on all aspects of home hygiene, including hand hygiene, food and water hygiene, menstrual hygiene, waste disposal, etc. It provides training and reference material to enhance the capacity of public health workers in developing countries.

The resources are available from: <http://www.ifh-homehygiene.org/training-resources-developing-countries>

#### New IFH web resource – “Infection Prevention and Control in Home Healthcare”



IFH is pleased to report that our new web resource is attracting a significant amount of use. It is already the third most visited area of the site. This is a unique resource where health professionals and others can browse, find information and exchange knowledge on infection prevention and control related to the increasing amount of healthcare delivered at home to family members who are infected or are more vulnerable to infection.

It brings together guidelines, training resources and other materials, for use by health professionals and community workers. It also contains materials which can be downloaded and given to patients. It covers issues ranging from general hygiene and specific issues such as hand washing, laundering and home water quality, to protection of specific groups such as those with HIV/AIDS or undergoing immunosuppressive treatments.

If you have any relevant materials (reviews, factsheets, teaching/self-learning resources, patient support materials) that you would be willing to share with the global IPC community, please help support us in building this resource – and help your colleagues – by [sending them to us](#) and we will place them on this site.

The resource can be accessed from the IFH website homepage [www.ifh-homehygiene.org](http://www.ifh-homehygiene.org) or from the [IFIC webpage for the SIG](#)

### **UK Food Standards Agency urge public to stop washing chicken – but what about handling?**

As part of UK Food Safety Week, the Food Standards Agency (FSA) issued a call for people to stop washing raw chicken to reduce the risk of contracting campylobacter. But why are they not giving better advice on how to prepare it safely – which is just as important? IFH gives advice on how to stop any onward spread of germs whilst preparing a chicken at: <http://www.ifh-homehygiene.org/content/june-16th-fsa-urge-public-stop-washing-raw-chicken-%E2%80%93-what-about-safe-handling-it>

## **2. News and new research**

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### **Infections and patient risk factors in home healthcare: A systematic review**

Home health care (HHC) has been the fastest growing health care sector for the past three decades. The uncontrolled home environment, increased use of indwelling devices, and complexity of illnesses among HHC patients have, however, led to increased infection risk. Shang et al of Columbia University School of Nursing, New York carried out a systematic review of adult patients receiving HHC services. Of 25 studies meeting the inclusion criteria, infection rates and risk factors for infection varied dramatically between studies. Patients receiving home parental nutrition treatments generally had higher infection rates than those receiving infusion therapy. The authors concluded that establishing a surveillance system for HHC infections, identifying patients at high risk for infections, tailoring HHC and patient education based on patient living conditions, and facilitating communication between health care facilities, will enhance infection control in HHC settings. The study can be found at: American Journal of Infection Control 42 (2014) 479-84.

### **“Are we too clean” – an outdated concept or a concept in need of clarification?**

At the UK Cheltenham Science Festival on 4<sup>th</sup> June, Professor Graham Rook discussed the issue “are we too clean”. Professor Rook focussed on outlining what is really implied by the “cover all” question “are we too clean” in the context of increased prevalence of allergies and other chronic inflammatory diseases. This includes the need to encourage natural childbirth, breastfeeding, contact with the outdoor environment and so on in order to expose us to vital microbial “old friends”. He stressed that being less clean in this context must not be confused with relaxing hygiene standards which are vital for protection against infectious disease-causing organisms. The presentation was featured in a number of UK newspapers. For example:

<http://www.dailymail.co.uk/health/article-2649014/Want-ward-allergies-Pi...>

<http://www.telegraph.co.uk/health/healthnews/10875756/Mothers-should-suc...>

A short commentary on this issue by Professor Sally Bloomfield can be found at: <http://www.ifh-homehygiene.org/review/%E2%80%9Cwe-too-clean%E2%80%9D...>

### **Pathogens on children's hands and toys during play**

A new study in Mexico has examined if children's leisure activities affect the presence of pathogens on their hands and toys. The studies revealed faecal coliforms on children's hands and toys after playing on sidewalks and in public parks. Hepatitis A and *G. lamblia* were also found on children's hands. *Staphylococcus aureus* and *Klebsiella pneumoniae* were found on children's hands at concentrations up to  $2.5 \times 10^4$  and  $1. \times 10^4$  CFU hands<sup>-1</sup>, respectively. *E. coli* and *Kl. pneumoniae* were detected on toys ( $2.4 \times 10^3$  and  $2.7 \times 10^4$  CFU toy<sup>-1</sup> respectively). Salmonella spp, Serratia spp and *G. lamblia* cysts were also present on toys. The data suggests that transfer occurred from hands to toys and vice versa. The study can be found at: Journal of Applied Microbiology 2014;116:1668-75.

### **Two people infected with tuberculosis after contact with domestic cats – how should we respond?**

Evidence of TB spreading to humans from cats has been found in the UK, Public Health England (PHE) has announced. Two human cases were reported in the English counties of Berkshire and Hampshire, and are now being treated. However, PHE says that the overall risk of contracting TB from domestic animals is very low. Prof Bertie Squire, of the Liverpool School of Tropical Medicine, said it was important to put the two unusual cases in perspective:

“The real problem of TB in the UK is caused by *M. tuberculosis* which arises in humans and is transmitted from person to person. In 2012, there were 8,130 cases of human tuberculosis in England, but only 26 notified cases of *M. bovis* (the TB strain found in the infected cats), so *M. bovis* accounts for less than 0.5% of all human TB cases. If we are to control human TB, we need to focus on curing the human TB, we need to do this much better than we do at present.” Read more:

<http://www.bbc.co.uk/news/health-26766006>. Read more about the importance of respiratory hygiene in preventing spread of infection: <http://www.cdc.gov/flu/protect/covercough.htm>

## **3. Conference**

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60th Anniversary Yrjö Jahansson Medical Symposium, “Chronic Inflammation, Environment and Lifestyle” 20<sup>th</sup>–22<sup>nd</sup> August, 2014, Hotel Hilton Kalastajatorppa, Conference & Events Center, Helsinki.

The conference will review current thinking on allergies and other chronic inflammatory diseases in relation to the need for human interaction with our human and environmental microbiome.

## **4. Recent publications**

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### **Topic 1 – Infectious Disease Incidence**

Khatib R, Sharma M, Iyer S, Fakhri MG, Obeid KM, Venugopal A, Fishbain J, Johnson LB, Segireddy M, Jose J, Riederer K. Decreasing incidence of Staphylococcus Aureus bacteremia over 9 years: greatest decline in community-associated Methicillin-susceptible and hospital-acquired Methicillin-resistant isolates. American Journal of Infection Control 2013; 41:210-213. DOI: 10.1016/j.ajic.2012.03.038.

Tong SYC, Kearns AM. Community-Associated MRSA from the Indian subcontinent. Lancet, 13(9), 734-735, September 2013. DOI:10.1016/S1473-3099(13)70231-7Cite.

Nichol KA, Adam HJ, Roscoe DL, Golding GR, Lagace-Wiens PRS, Hoban DJ, Zhanel GG. Changing epidemiology of Methicillin-resistant Staphylococcus Aureus in Canada. J Antimicrob Chemother. (2013) 68(suppl 1): i47-i55. DOI:10.1093/jac/dkt026.

Duffy J, Dumyati G, Bulens S, Namburi S, Gellert A, Fridkin SK, Lessa FC. Community-onset invasive Methicillin-resistant Staphylococcus Aureus infections following hospital discharge. *American Journal of Infection Control* – September 2013 (Vol. 41, Issue 9, Pages 782-786, DOI: 10.1016/j.ajic.2012.10.020).

Wazny K, Zipursky A, Black R, Curtis V, Duggan C. Setting research priorities to reduce mortality and morbidity of childhood diarrhoeal disease in the next 15 years. *PLoS Med* 10(5): e1001446. DOI:10.1371/journal.pmed.1001446.

Cho SJ, Cox-Ganser JM, Kreiss K, Park J. Evaluation of individual-based and group-based exposure estimation of microbial agents in health effects associated with a damp building. *Journal of Exposure Science and Environmental Epidemiology* (2013) 23, 409-415. DOI:10.1038/jes.2012.89

Chopra M, Mason E, Borrazzo J, Campbell H, Rudan I, Liu L, Black RE, Bhutta A. Ending of preventable deaths from pneumonia and diarrhoea: an achievable goal. *Ls Series* – Published Online April 12, 2013. [http://dx.doi.org/10.1016/S0140-6736\(13\)60319-0](http://dx.doi.org/10.1016/S0140-6736(13)60319-0).

Gosbell IB, Van Hal SJ. Staphylococcus Aureus colonisation: some questions answered. *The Lancet Infectious Diseases*, 13 (5) 380-381, 2013. DOI:10.1016/S1473-3099(13)70048-3.

Nair H, Simões EA, Rudan I, Gessner BD, et al. Global and regional burden of hospital admissions for severe acute lower respiratory infections in young children in 2010: a systematic analysis. *Lancet*. 2013 Apr 20;381(9875):1380-90. DOI: 10.1016/S0140-6736(12)61901-1. Epub 2013 Jan 29.

Payne DC, Vinjé J, Szilagyi PG, Edwards KM, Staat MA, Weinberg GA, Hall CB, Chappell J, Bernstein DI, Curns AT, Wikswo M, Shirley H, Hall AJ, Lopman B, Parashar UD. Norovirus and medically attended gastroenteritis in U.S. children. *N Engl J Med* 2013;368:1121-30. DOI: 10.1056/NEJMsa1206589.

## **Topic 2 – Infection Transmission**

Gibson KE, Crandell PG, Ricke SC. Removal and transfer of viruses on food contact surfaces by cleaning cloths. *Applied and environmental microbiology* 02/2012; 78(9):3037-44.

Verhaelen K, Bouwknegt M, Carratala A, Lodder-Verschuur F, Diez-Valcarce, Rodriguez-Lazaro D, De Roda Husman AM, Rutjes SA. Virus transfer proportions between gloved fingertips, soft berries, and lettuce, and associated health risks. *International journal of food microbiology* 08/2013; 166(3):419-425.

Torres K, Sampathkumar P. Predictors of Methicillin-resistant Staphylococcus Aureus colonization at hospital admission. *American Journal of Infection Control* – November 2013 (Vol. 41, Issue 11, Pages 1043-1047, DOI: 10.1016/j.ajic.2013.02.013).

Curran ET. Outbreak column 10: what causes outbreaks – questions of attribution. *Journal of Infection Prevention* 2013,14,182-187.

Köck R, Cuny C, Walther B. MRSA in companion animals: the impact for humans. *Hygiene & Medizin* 2013;7+8:22-23. This is a review of the literature which shows that MRSA can be transmitted from humans to companion animals and vice versa.

Pal P, Roy A, Moore G, Muzslay M, Lee E, Alder S, Wilson P, Powles T, Kelly J. Keypad mobile phones are associated with a significant increased risk of microbial contamination compared to touch screen phones. *Journal of Infection Prevention* March 2013 14: 65-68. DOI:10.1177/1757177413475903.

Johnson DL, Mead KR, Lynch RA, Hirst DVL. Lifting the lid on toilet plume aerosol: a literature review with suggestions for future research. *American Journal of Infection Control* 41 (2013) 254-8.

Woodford N, Wareham DW, Guerra B, and Teale C. Carbapenemase-producing enterobacteriaceae and non-Enterobacteriaceae from animals and the environment: an emerging public health risk of our own making? *J. Antimicrob. Chemother.* first published online October 3, 2013. DOI:10.1093/jac/dkt392.

Nichol KA, Hoyland Lohr I, Rettedal S, Natås OB, Naseer U, Oymar K, Sundsfjord A. Long-term faecal carriage in infants and intra-household transmission of CTX-M-15-producing *Klebsiella Pneumonia* following a nosocomial outbreak. *J Antimicrob Chemother.* (2013) 68(5): 1043-1048 first published online January 3, 2013. DOI:10.1093/jac/dks502.

Sifuentes LY, Gerba CP, Weart I, Englebrecht K, Koenig DW. Microbial contamination of hospital reusable cleaning towels. *American Journal of Infection Control – October 2013 (Vol. 41, Issue 10, Pages 912-915, DOI: 10.1016/j.ajic.2013.01.015).*

Gandolfi-Decristophoris P, Pentrini O, Rugger-Bernardi N, Schelling E. Extended-spectrum  $\beta$ -lactamase-producing enterobacteriaceae in healthy companion animals living in nursing homes and in the community. *American Journal of Infection Control – September 2013 (Vol. 41, Issue 9, Pages 831-835, DOI: 10.1016/j.ajic.2012.11.013).*

Julian TR, Pickering AJ, Leckie JO, Boehm AB. Enterococcus spp on fomites and hands indicate increased risk of respiratory illness in child care centres. *American Journal of Infection Control – August 2013 (Vol. 41, Issue 8, Pages 728-733. DOI: 10.1016/j.ajic.2012.10.013).*

Gallagher L, Soyemi K, Conover C, Austin C, Saathoff-Huber L, Nelson S, Chodoba M, Vernon M. Outbreak of *Escherichia Coli* O157:H7 in a child care center in Cook County, Illinois, with prolonged shedding and household transmission. 41, 936-938, October 2013.

Ahmed D, Islam MS, Begum YA, Janzon A, Qadri F, Sjoling A. Presence of enterotoxigenic *Escherichia Coli* in biofilms formed in water containers in poor households coincides with epidemic seasons in Dhaka. *Journal of Applied Microbiology* ISSN 1364-5072. DOI:10.1111/jam.12109.

Dogen A, Kaplan E, Oksuz Z, Serin MS, Ilkit M, Sybren De Hoog G. Dishwashers are a major source of human opportunistic yeast-like fungi in indoor environments in Mersin, Turkey. *Medical Mycology* July 2013, 51, 493–498. DOI: 10.3109/13693786.2012.738313.

Ferens WA, Hovde CJ. *Escherichia Coli* O157:H7: animal reservoir and sources of human infection. *Foodborne Pathogens and Disease* Volume 8, Number 4, 2011. DOI: 10.1089=fpd.2010.0673.

Marks LR, Reddinger RM, Hakansson AP. Biofilm Formation Enhances Fomite Survival of *S. Pneumoniae* and *S. Pyogenes*. *Infect Immun.* DOI:10.1128/IAI.01310-13.

Pees M, Rabsch W, Plenz B, Fruth A, Prager R, Simon S, Schmidt V, Munch S, Braun PG. Evidence for the transmission of salmonella from reptiles to children in Germany, July 2010 to October 2011. *Eurosurveillance* Edition 2013: Volume 18/ Issue 46 Article 4, Euro Surveill. 2013;18(46):pii=20634.

D'Antonio NN, Rihs JD, Stout JE, Yu VL. Computer keyboard covers impregnated with a novel antimicrobial polymer significantly reduce microbial contamination. *American Journal of Infection Control* 41 (2013) 337-9. DOI:10.1016/j.ajic.2012.03.030.

Duffy J, Dumyati G, Bulens S, Namburi S, Gellert RN, Fridkin SK, Lessa FC. Community-onset invasive Methicillin-resistant *Staphylococcus Aureus* infections following hospital discharge. *American Journal of Infection Control* 41 (2013) 782-6. <http://dx.doi.org/10.1016/j.ajic.2012.10.020>.

Flores GE, Bates ST, Caporaso JG, Lauber CL, Leff JW, Knight R, Fierer N. Diversity, distribution and sources of bacteria in residential kitchens. *Environmental Microbiology* (2013) 15(2), 588-596. DOI:10.1111/1462-2920.12036.

Heelan K, Murphy A, Murphy LA. Panton-Valentine leukocidin-producing *Staphylococcus Aureus*: report of four siblings. *Pediatr Dermatol*. 2012 Sep-Oct;29(5):618-20. DOI: 10.1111/j.1525-1470.2011.01522.x. Epub 2011 Sep 9.

Mizumachi E, Kato F, Hisatsune J, Tsuruda K, Uehara Y, Seo H, Sugai M. Clonal distribution of enterotoxigenic *Staphylococcus Aureus* on handles of handheld shopping baskets in supermarkets. *J Appl Microbiol*. 2011 Feb;110(2):562-7. DOI: 10.1111/j.1365-2672.2010.04910.x.

Roux D, Aubier B, Cochard H, Quentin R, Van der Mee-Marquet N, HAI Prevention Group of the Réseau des Hygiénistes du Centre. Contaminated sinks in intensive care units: an underestimated source of extended-spectrum beta-lactamase-producing enterobacteriaceae in the patient environment. *J Hosp Infect*. 2013 Oct;85(2):106-11. DOI: 10.1016/j.jhin.2013.07.006.

Borràs-Santos A, Jacobs JH, Täubel M, Haverinen-Shaughnessy U, Krop EJ, Huttunen K, Hirvonen MR, Pekkanen J, Heederik DJ, Zock JP, Hyvärinen A. Dampness and mould in schools and respiratory symptoms in children: the HITEA study. *Occup Environ Med*. 2013 Oct;70(10):681-7. DOI: 10.1136/oemed-2012-101286.

Dunn RR, Fierer N, Henley JB, Leff JW, Menninger HL. Home life: factors structuring the bacterial diversity found within and between homes. (2013). *PLoS ONE* 8(5): e64133. DOI:10.1371/journal.pone.0064133.

Gabriel EM, Coffey A, O'Mahony JM. Investigation into the prevalence, persistence and antibiotic resistance profiles of staphylococci isolated from Euro currency. *Journal of Applied Microbiology* ISSN 1364-5072. DOI:10.1111/jam.12247.

Ijaz MK, Talukder KA, Aslam M, Haque R, Ganguly S, Azmi IJ, Hossain MS, Mukherjee AK, Raj D, Ahmed I, Kamal J, Rubino JR, Nur-E-Kamal A. Natural contamination of human hands with enteric parasites in Indian subcontinent. *World J Clin Infect Dis* 2013 May 25; 3(2): 13-19 ISSN 2220-3176. DOI:10.5495/wjcid.v3.i2.13.

Norbäck D, Zock JP, Plana E, Heinrich J, Svanes C, Sunyer J, Künzli N, Villani S, Olivieri M, Soon A, Jarvis D. Mould and dampness in dwelling èlacs, and onset of asthma: the population-based cohort ECRHS. *Occup Environ Med*. 2013 May;70(5):325-31. DOI: 10.1136/oemed-2012-100963.

Stapleton K, Hill K, Day K, Perry JD, Dean JR. The potential impact of washing machines on laundry malodour generation. *Lett Appl Microbiol*. 2013 Apr;56(4):299-306. DOI: 10.1111/lam.12050.

Boxman IL, Verhoef L, Dijkman R, Hägele G, Te Loeke NA, Koopmans M. Year-round prevalence of norovirus in the environment of catering companies without a recently reported outbreak of gastroenteritis. *Appl Environ Microbiol*. 2011 May;77(9):2968-74. DOI: 10.1128/AEM.02354-10.

Eyre DW, Cule ML, Wilson DJ, Griffiths D, Vaughan A, O'Connor L, Camilla LC, Golubchik T, Batty EM, Finney JM, Wyllie DH, Didelot X, Piazza P, Bowden R, Dingle KE, Harding RM, Crook DW, Wilcox MH, Peto TEA, Walker AS. Diverse sources of *C. Difficile* infection identified on whole-genome sequencing. *N Engl J Med* 2013; 369:1195-1205. DOI: 10.1056/NEJMoa1216064.

Gerba CP, Maxwell S. Bacterial contamination of shopping carts and approaches to control. *Food Protection Trends*, vol. 32, no. 12, pp. 747-749, December 2012 Volume 32, Issue 12.

Kim TS, Kim MJ, Kim SH, Kee H-Y, Seo J-J, Kim E-S, Moon, Y-U, Ryu PY, Ha D-R. Profile of antimicrobial resistance of *Staphylococcus Aureus* and molecular epidemiologic characterization of Methicillin-resistant *Staphylococcus Aureus* (MRSA) isolated from hands of people using multitude facilities. *Infect Chemother*. 2012 Aug;44(4):289-298. Korean. <http://dx.doi.org/10.3947/ic.2012.44.4.289>.

Oxford J, Berezin EN, Courvalin P, Dwyer D, Exner M, Jana LA, Kaku M, Lee C, Letlape K, Low DE, Mandani TA, Rubino JR, Saini N, Schoub BD, Signorelli C, Tierno PM, Zhong X. An international survey of bacterial contamination and householders' knowledge, attitudes and perceptions of hygiene. 2013 14: 132 *Journal of Infection Prevention*. DOI: 10.1177/1757177413483346.

Stokholm J, Schjørring S, Pedersen L, Bischoff AL, Følsgaard N, Carson CG, Chawes B, Bønnelykke K, Mølgaard A, Krogh KA, Bisgaard H. Living with cat and dog increases vaginal colonization with *E. coli* in pregnant women. *PLoS One*. 2012;7(9):e46226. DOI: 10.1371/journal.pone.0046226.

### **Topic 3 – Hygiene Procedures**

Bloss R, Fehling S, Hopfstock, Kampf G, Wendt C. Rapid disinfection of mobile electronic devices – is it possible without damage? *Hygiene un Medizin* 2013, 38-10:420-426.

Engelbrecht K, Ambrose D, Sifuentes L, Gerba C, Weart I, Koenig D. Decreased activity of commercially available disinfectants containing quaternary ammonium compounds when exposed to cotton towels. *American Journal of Infection Control* – October 2013 (Vol. 41, Issue 10, Pages 908-911, DOI: 10.1016/j.ajic.2013.01.017).

Petti S, Polimeni A, Dancer SJ. Effect of disposable barriers, disinfection, and cleaning on controlling Methicillin-resistant *Staphylococcus Aureus* environmental contamination. *American Journal of Infection Control* - September 2013 (Vol. 41, Issue 9, Pages 836-840, DOI: 10.1016/j.ajic.2012.09.021).

D'Antonio NN, Rihs JD, Stout JE, Yu VL. Computer keyboard covers impregnated with a novel antimicrobial polymer significantly reduce microbial contamination. *American Journal of Infection Control* – April 2013 (Vol. 41, Issue 4, Pages 337-339, DOI: 10.1016/j.ajic.2012.03.030).

Abreu AC, Tavares RR, Borges A, Mergulhão F, Simões M. Current and emergent strategies for disinfection of hospital environments. *J Antimicrob Chemother* 2013; 68: 2718–2732. DOI:10.1093/jac/dkt281.

Cadnum JL, Hurless KN, Kundrapu S, Donskey CJ. Transfer of *Clostridium Difficile* spores by nonsporicidal wipes and improperly used hypochlorite wipes: practice + product = perfection. *Infect Control Hosp Epidemiol*. 2013 Apr;34(4):441-2. DOI: 10.1086/669871.

Gold KM, Hitchins VM. Cleaning assessment of disinfectant cleaning wipes on an external surface of a medical device contaminated with artificial blood or *Streptococcus Pneumoniae*. *Am J Infect Control*. 2013 May 2. pii: S0196-6553(13)00192-2. DOI: 10.1016/j.ajic.2013.01.029.

Martin H, Soumet C, Fresnel R, Morin T, Lamaudière S, Le Sauvage AL, Deleurme K, Maris P. Comparison of the virucidal efficiency of peracetic acid, potassium monopersulfate and sodium hypochlorite on Hepatitis A and enteric cytopathogenic bovine orphan virus. *Journal of Applied Microbiology* ISSN 1364-5072. DOI:10.1111/jam.12297.

Meakin NS, Bowman C, Lewis MR, Dancer SJ. Comparison of cleaning efficacy between in-use disinfectant and electrolysed water in an English residential care home. *Journal of Hospital Infection* (Impact Factor: 3.01). 12/2011; 80(2):122-7. DOI:10.1016/j.jhin.2011.10.015.

Liu P, Yuen Y, Hsiao HM, Jaykus LA, Moe C. Effectiveness of liquid soap and hand sanitizer against norwalk virus on contaminated hands. *Appl Environ Microbiol*. 2010 Jan;76(2):394-9. DOI: 10.1128/AEM.01729-09.

Ackerley L. Mixed messages in food safety: killing us softly? *Royal Society for Public Health* 2013, ISSN 1757-9139. DOI: 10.1177/1757913913507168.

Gebel J, Exner M, French G, Chartier Y, Christiansen B, Gemein S, Goroncy-Bermes P, Hartemann P, Heudorf U, Kramer A, Maillard JY, Oltmanns P, Rotter M, Sonntag H-G. The Role of surface disinfection in infection prevention. *GMS Hygiene and Infection Control* 2013, Vol. 8(1), ISSN 1863-5245. DOI: 10.3205/dgkh000210.

Julian TR, Macdonald LH, Guo Y, Marks SJ, Kosek M, Yori PP, Pinedo SR, Schwab KJ. Fecal indicator bacteria contamination of fomites and household demand for surface disinfection products: a case study from Peru. *Am J Trop Med Hyg.* 2013 Nov;89(5):869-72. DOI: 10.4269/ajtmh.12-0425.

MacIntyre CR, Cauchemez S, Dwyer DE, Seale H, Cheung P, Browne G, Fasher M, Wood J, Gao Z, Booy R, Ferguson N. Face mask use and control of respiratory virus transmission in households. *Emerging Infectious Diseases* www.cdc.gov/eid Vol. 15, No. 2, February 2009. DOI: 10.3201/eid1502.081167.

Tung G, Macinga D, Arbogast J, Jaykus LA. Efficacy of commonly used disinfectants for inactivation of human noroviruses and their surrogates. *J Food Prot.* 2013 Jul;76(7):1210-7. DOI: 10.4315/0362-028X.JFP-12-532.

Liu P, Macinga DR, Fernandez ML, Zapka C, Hsiao HM, Berger B, Arbogast JW, Moe CL. Comparison of the activity of alcohol-based handrubs against human noroviruses using the fingerpad method and quantitative real-time PCR. *Food Environ Virol* (2011) 3:35–42. DOI 10.1007/s12560-011-9053-x.

Brown J, Sobsey MD. Boiling as household water treatment in Cambodia: a longitudinal study of boiling practice and microbiological effectiveness. *Am J Trop Med Hyg.* 2012 Sep;87(3):394-8. DOI: 10.4269/ajtmh.2012.11-0715.

Ghareeb PA, Bourlai T, Dutton W, McClellan WT. Reducing pathogen transmission in a hospital setting. Handshake versus fist bump: a pilot study. *J Hosp Infect.* 2013 Dec;85(4):321-3. DOI: 10.1016/j.jhin.2013.08.010.

Margas E, Maguire E, Berland CR, Welander F, Holah JT. Assessment of the environmental microbiological cross contamination following hand drying with paper hand towels or an air blade dryer. *Journal of Applied Microbiology* ISSN 1364-5072, DOI:10.1111/jam.12248.

Zhang A, Nerandzic MM, Kundrapu S, Donskey CJ. Does organic material on hospital surfaces reduce the effectiveness of hypochlorite and UV radiation for disinfection of *Clostridium difficile*? *Infect Control Hosp Epidemiol.* 2013 Oct;34(10):1106-8. DOI: 10.1086/673148.

#### **Topic 4 – Intervention Studies**

Allegranzi B, Gayet-Ageron A, Damani N, Bengaly L, McLaws ML, Moro ML, Memish Z, Urroz O, Richet H, Storr J, Donaldson L, Pittet D. Global implementation of WHO's multimodal strategy for improvement of hand hygiene: a quasi-experimental study. *The Lancet Infectious Diseases*, Volume 13, Issue 10, Pages 843-851, October 2013. DOI:10.1016/S1473-3099(13)70163-4.

#### **Topic 5 – Behaviour Change**

Borchgrevink CP, Cha J, Kim S. Hand washing practices in a college town environment. *J Environ Health.* 2013 Apr;75(8):18-24.

Rossvoll EH, Lavik R, Ueland O, Jacobsen E, Hagtvedt T, Langsrud S. Food safety practices among Norwegian consumers. *J Food Prot.* 2013 Nov;76(11):1939-47. DOI: 10.4315/0362-028X.JFP-12-269.

#### **Topic 6 – Microbial Resistance**



Eurosurveillance Editorial Team. Special eurobarometer: use of antibiotics declining in the European Union but much work still needed. *Euro Surveill.* 2013;18(47):pii=20641.

Silveira E, Freitas AR, Antunes P, Barros M, Campos J, Coque TM, Peixe L, Novais C. Co-transfer of resistance to high concentrations of copper and first-line antibiotics among enterococcus from different origins (humans, animals, the environment and foods) and clonal lineages. *Journal of Antimicrob Chemother.* 2014 Apr;69(4):899-906. DOI: 10.1093/jac/dkt479.

Oliveira PS, Souza SG, Campos GB, da Silva DC, Sousa DS, Araújo SP, Ferreira LP, Santos VM, Amorim AT, Santos AM, Timenetsky J, Cruz MP, Yatsuda R, Marques LM. Isolation, pathogenicity and disinfection of *Staphylococcus Aureus* carried by insects in two public hospitals of Vitória da Conquista, Bahia, Brazil. *Braz J Infect Dis.* 2013 Nov 8. pii: S1413-8670(13)00242-0. DOI: 10.1016/j.bjid.2013.06.008.

Coelho JR, Carriço JA, Knight D, Martínez JL, Morrissey I, Oggioni MR, Freitas AT. The use of machine learning methodologies to analyse antibiotic and biocide susceptibility in *Staphylococcus aureus*. *PLoS ONE* 2013, 8(2): e55582. DOI:10.1371/journal.pone.0055582.