networks. Installation of 100 PUFs in high-risk areas represents the most effective option to ensure patient safety (100% efficacy declared by the filters validation guides), but costs were high at €27,600 per year. In contrast, TFTs without chemical disinfection do not reduce water colonization because they are not a disinfection treatment (efficacy of 0%). However, they can usefully supplement the efficacy of chemical disinfection, and appear effective in controlling legionella at local outlets. The cost of eight TFT units, installed in dead-end branches, comprised an installation cost of €570, and an ongoing cost of €800 per year.

Legionella control strategies need to be tailored to the individual hospital setting. In high-risk areas, integration of chemical disinfection with chlorine dioxide and the application of PUFs represents the best choice for certainty of prevention of water-borne Legionnaires' disease. In medium- and low-risk areas, the hospitals may choose to supplement chlorine dioxide disinfection with TFTs, especially in areas where water flow is limited (e.g., low-use outlets or presence of dead ends). This strategy may be a sustainable and cost-effective method to improve water quality by reducing biofilm proliferation in water pipelines.

Conflict of interest statement
All authors have no conflicts of interest to declare.

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A new approach to put isolation precaution guidelines into practice

Sir,

A recent article from Lynch *et al.* raised the question whether guidelines for the control of multidrug-resistant Gram-negative organisms can be put into practice [1]. In North Zealand Hospital (NOH), a Danish 570-bed hospital, we have worked hard to ensure that isolation precautions are implemented promptly when needed according to our guidelines. We were quite happy with our results, until we realized that isolation precaution removal was not always timely. Thus, patients were confined to single rooms longer than necessary according to guidelines. This resulted in impaired flow of patients, blocked beds, more work for staff, unnecessary costs, and, perhaps most importantly, a less comfortable hospital stay for the patients involved. The Department of Quality and Improvement worked together with the Infection Control Unit to address this problem. Accordingly, an experienced infection control nurse was hired part time to review the electronic health records of all isolated patients seven days a week. The reason(s) for isolation precautions was audited and possible non-compliance cases of guidelines identified. The wards in question were contacted and inconsistencies resolved. An action card comprising guidelines for most causes of isolation was drafted, tested by two wards, revised, and accordingly published and distributed hospital-wide. Furthermore, education of nurses and healthcare assistants was initiated, focusing on isolation precaution guidelines.

During January through April 2019, 6026 patients were isolated in single rooms at NOH. In 169 (3%) cases isolation was not indicated according to guidelines and could safely be terminated. We estimate that the 169 cases corresponded to a minimum of 338 isolation-days, and a cost–benefit analysis showed that the intervention proved economically beneficial. The most frequent causes of non-compliance were unawareness of cessation of symptoms of gastroenteritis or influenza and of negative screening tests for multidrug-resistant bacteria in patients transferred from non-European hospitals. Nurses

and healthcare assistants found the daily intervention helpful, and, in general, awareness of infection control guidelines was heightened. Staff were satisfied using the local action card, as they found the regional and national guidelines voluminous and complicated.

In conclusion, we found that daily evaluation by an experienced infection control nurse improved compliance of infection control guidelines and was helpful to both patients and staff. This approach improved patient flow and was cost-effective.

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Challenges remain for nosocomial infection control in China

Recent events in several Chinese hospitals have raised the public's awareness of nosocomial infection. On April 23rd, 2019, a father whose neonate died during hospital stay posted in his WeChat social media account his suspicion of the 'infection outbreak' in Shunde Hospital of Southern Medical University, southern China. On May 11th, after investigation an official declared that there had been five neonatal deaths out of 15 infections due to echovirus 11 infection in the hospital. On April 22th, 2019, 69 out of 161 patients who had received haemodialysis treatment in Dongtai People's Hospital, Jiangsu, eastern China, were reported to have hepatitis C virus (HCV) infection. In response to these incidents, the Chinese

Table I
Reported nosocomial infection events in China, 1993–2019

Location, year	Pathogen	No. of deaths/ infections/ receiving treatment	Reason
Shunde Hospital of Southern Medical University, Guangdong, 2019	Echovirus 11	5/15/NA[a]	NA
Dongtai People's Hospital, Jiangsu, 2019	HCV	0/69/161	NA
Zhejiang Provincial Hospital of Traditional Chinese Medicine, 2017	HIV	0/5/NA	Injection syringe shared
An outpatient in Donggang, Liaoning, 2013	HCV	0/99/NA	Injection syringe shared
A health centre in Chaoyang, Guangdong, 2009	Rapid growing *Mycobacterium* sp.	0/18/38	Surgical instrument sterilization failed
A hospital in Huoshan, Anhui, 2009	HCV	0/19/58	NA
A hospital in Shanxi, 2008–2009	HCV	0/20/47	Repeated use of one-off haemodialyser
A maternal and child care service centre in Jixian, Tianjin, 2009	*Enterobacter cloacae*	5/6/NA[a]	NA
The First Affiliated Hospital of Xi'an Jiaotong University, 2008	NA	8/NA/94	Incorrect disinfection and hand washing
Shenzhen Maternity & Child Healthcare Hospital, 1998	*Mycobacterium chelonae*	0/166/292	Glutaraldehyde concentration mistake
Shenyang Maternity & Child Healthcare Hospital, 1993	Coxsackievirus B	15/44/NA[a]	Cross-infection

HCV, hepatitis C virus; HIV, human immunodeficiency virus; NA, not applicable or no reported data.
[a] Neonate.