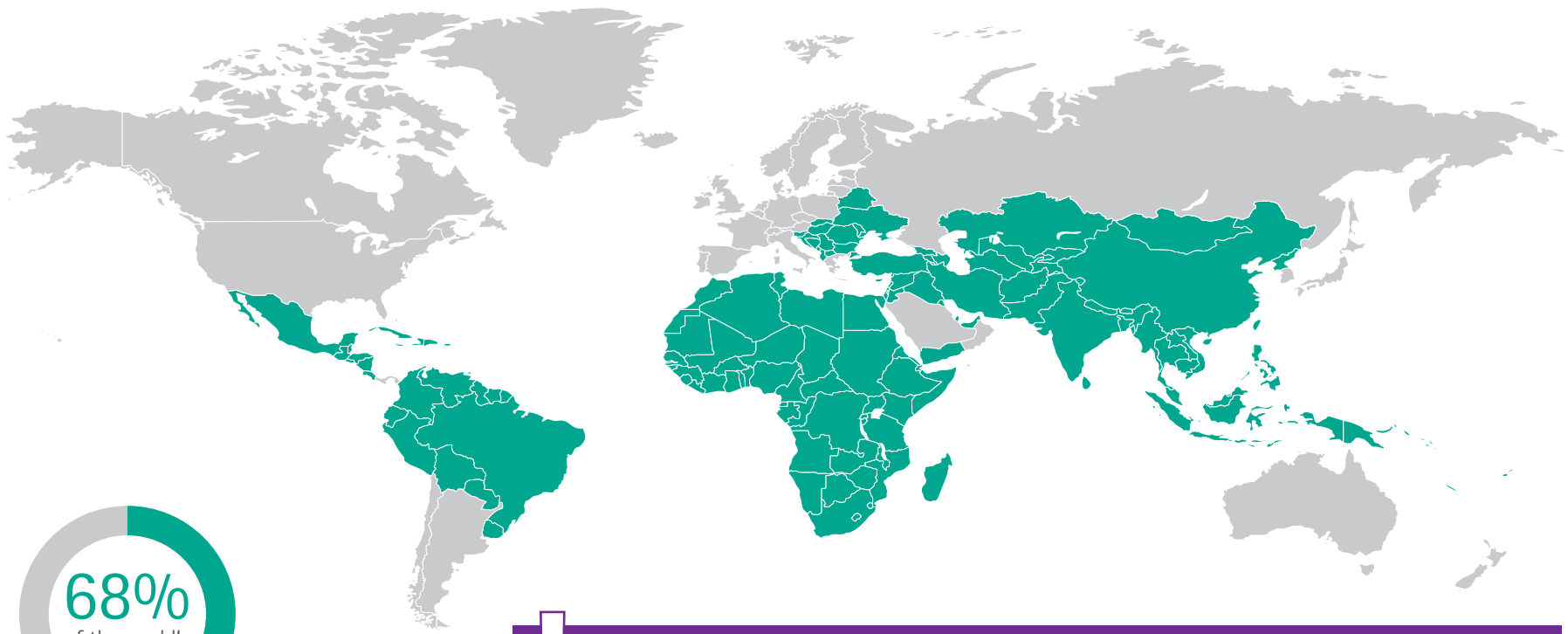
THE GLOBAL PROBLEM OF POST-OPERATIVE INFECTIONS

B|BRAUN SHARING EXPERTISE

Surgical site infection (SSI) is the most frequent type of health care-associated infection (HAI) in low- and middle-income countries, LMICs,[1] (68% of the world's countries[6]). According to WHO reports, approximately 1 in 10 people who have surgery in LMICs acquire SSIs. In addition to the risk and discomfort for the patient, SSIs dramatically increase the direct and indirect cost of treatment and reduce health-related quality of life.[2]

Low- and middle-income countries



68% of the world's countries

People's risk of SSI in low- and middle-income countries is considerably higher than in high-income countries.

In a recent meta-analysis report of 220 international studies investigating SSI rates in developing countries (or LMICs):

Pooled cumulative incidence was 11.8 per 100 patients in low- and middle-income countries[3]

Compared to:

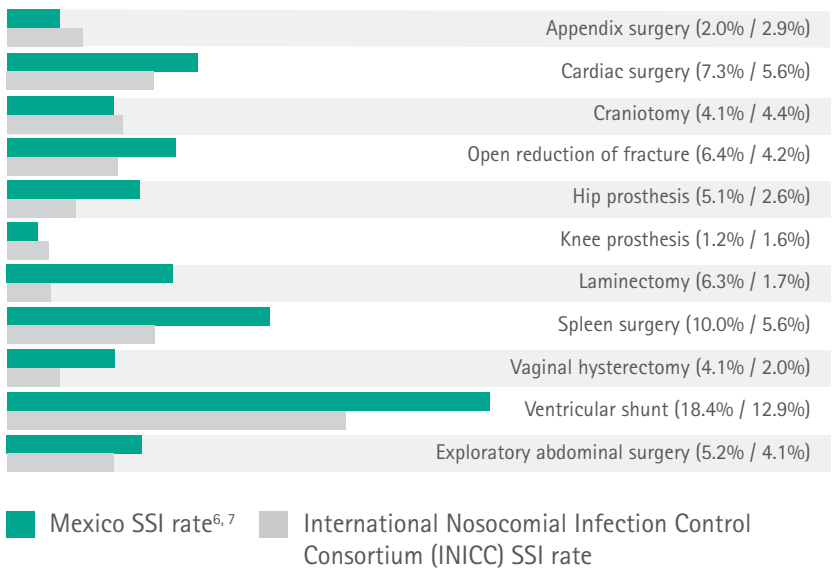
2.6 per 100 surgical procedures in the US (cumulative incidence of SSIs)[4]

1.6 per 100 surgical procedures in Germany[5]

SSI incidence in Latin America – Example Mexico

When compared to the International Nosocomial Infection Control Consortium data, SSI rates in Mexico were significantly higher in 73% of the analyzed surgical procedures.[7]

This may result from the typical hospital situation in limited-resource countries where there is often a lack of standard procedures, local differences in guidelines and poor infrastructure.[8,9]



Procedure-related factors promoting SSIs[10]

- surgery duration
- technique, quality of preoperative skin preparation
- inadequate sterilization of surgical instruments
- duration of surgical scrub
- preoperative shaving
- antimicrobial prophylaxis
- operation room ventilation
- poor hemostasis
- use of surgical drains
- foreign material in the surgical site
- tissue trauma

Surgical instruments pose risk of contamination

Surgical instruments could act as fomites for the pathogens of surgical site infection even if the surgical field is not evidently contaminated.[11]

The avoidance of SSIs protects patients from serious complications

The average SSI leads to approximately 1 week of additional hospitalization and increases the risk of death 2- to 11-fold compared to uninfected surgical patients.[6]

of the SSIs may be prevented with current evidence-based strategies like use of alcohol-based skin preparation, postoperative surveillance and controlling blood glucose levels.[12]

Sterilization of surgical instruments is recommended as one of the fundamental and classical measures against SSI.[11]

1 WHO Protocol for surgical site infection surveillance with a focus on settings with limited resources, 2018; www.who.int/infection-prevention/en
2 Umscheid CA, Mitchell MD, Doshi JA, Agarwal R, Williams K, Brennan PJ. Infect Control Hosp Epidemiol. Estimating the proportion of healthcare-associated infections that are reasonably preventable and the related mortality and costs. 2011 Feb;32(2):101-14. doi: 10.1086/657912.
3 Allegranzi B Bagheri Nejad S, Combescure C, Graafmans W, Attar H, Donaldson L et al. Burden of endemic health-care-associated infection in developing countries: systematic review and meta-analysis. Lancet. 2011 Jan 15;377(9761):228-41.
4 Gaynes RP, Culver DH, Horan TC, Edwards JR, Richards C, et al. (2001) Surgical site infection (SSI) rates in the United States, 1992–1998: the National Nosocomial Infections Surveillance System basic SSI risk index. Clin Infect Dis 33: 69-77.
5 Gastmeier P, Geffers C, Brandt C, Zuschneid I, Sohr D, et al. (2006) Effectiveness of a nationwide nosocomial infection surveillance system for reducing nosocomial infections. J Hosp Infect 64: 16-22.
6 Rosenthal VD, Richtmann R, Singh S, Apisarnthanarak A, Kübler A, Viet-Hung N et al. Surgical Site Infections, International Nosocomial Infection Control Consortium Report, Data Summary of 30 Countries, 2005–2010. Infect Control Hosp Epidemiol. 2013 Jun;34(6):597-604.
7 Portillo-Gallo JH, Miranda-Novales MG, Rosenthal VD, Sánchez M, Ayala-Gaytan JJ, Ortiz-Juárez VR et al. Surgical site infection rates in four Mexican cities: Findings of the International Nosocomial Infection Control Consortium (INICC). J Infect Public Health. 2014 Nov-Dec;7(6):465-71.
8 Charry L, Andrade PC, Cabra H. Systematic Review of Clinical and Economic Outcomes Related to Surgical Site Infections in Latin America. Value in Health 2016 Nov;19(3), A223.
9 WHO Health care-associated infections FACT SHEET (www.who.int)
10 Poggio JL. Perioperative Strategies to Prevent Surgical-Site Infection. Clin Colon Rectal Surg. 2013 Sep; 26(3): 168-173.
11 Saito Y, Kobayashi H, Uetera Y, Yasuhara H, Kajiura T, Okubo T. Microbial contamination of surgical instruments used for laparotomy. American Journal of Infection Control , Volume 42, Issue 1, 43 – 47.
12 Conway LJ1, Pogorzelska M, Larson EL, Stone PW. Surgical Site Infection Prevention Policies and Adherence in California Hospitals, 2010. Infect Control Hosp Epidemiol. 2012 Jun; 33(6): 640-1.