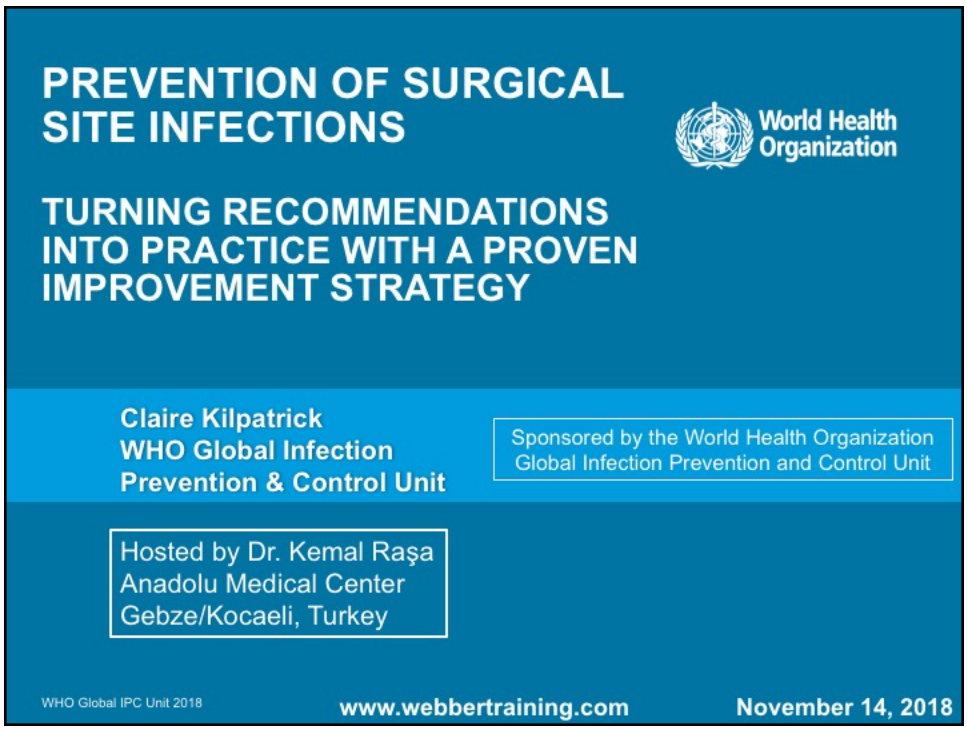
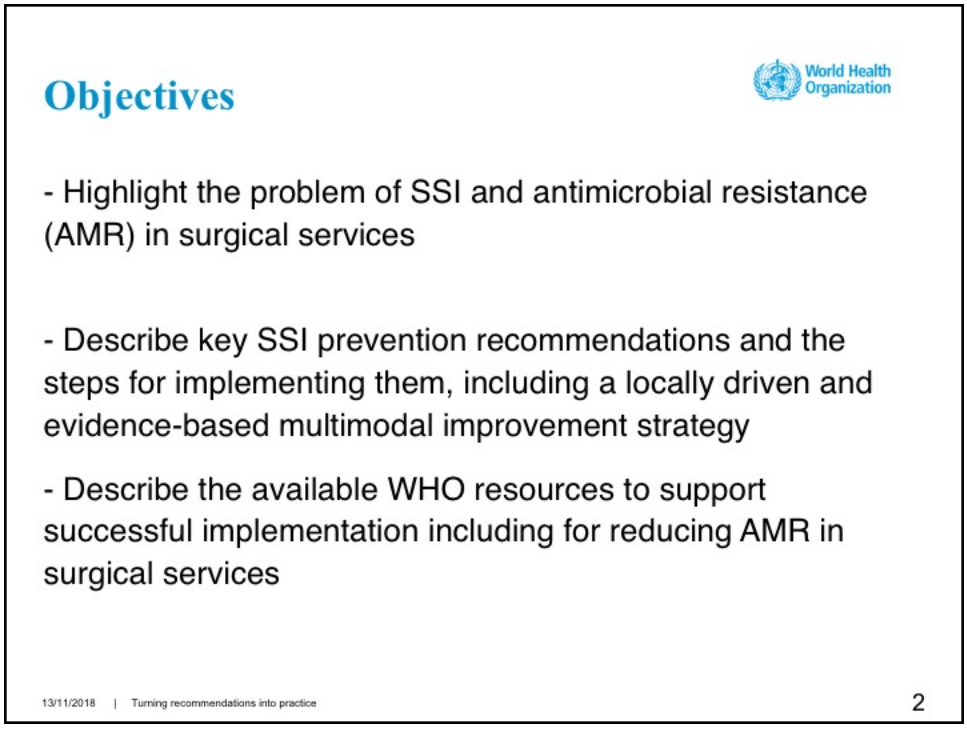
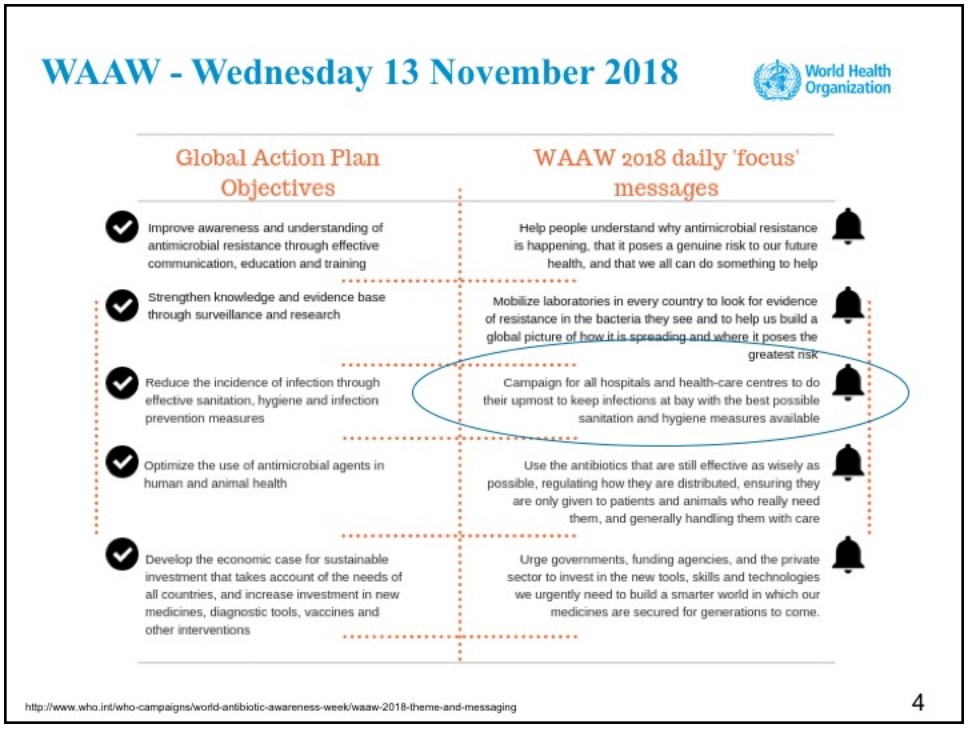
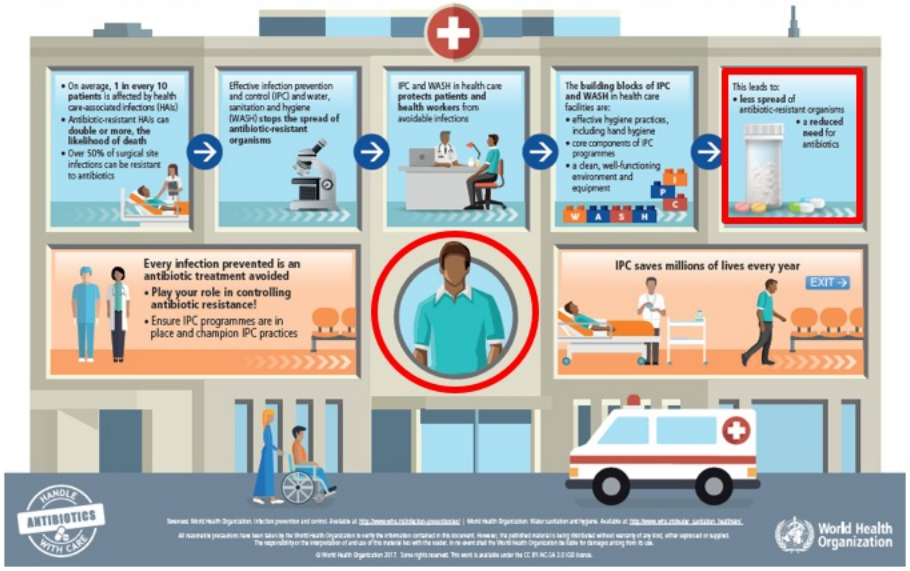

PREVENTION OF SURGICAL SITE INFECTIONS
World Health Organization
TURNING RECOMMENDATIONS INTO PRACTICE WITH A PROVEN IMPROVEMENT STRATEGY
Claire Kilpatrick
WHO Global Infection Prevention & Control Unit
Sponsored by the World Health Organization Global Infection Prevention and Control Unit
Hosted by Dr. Kemal Raşa
Anadolu Medical Center
Gebze/Kocaeli, Turkey
WHO Global IPC Unit 2018
www.webbertraining.com
November 14, 2018


Objectives
World Health Organization
- Highlight the problem of SSI and antimicrobial resistance (AMR) in surgical services
- Describe key SSI prevention recommendations and the steps for implementing them, including a locally driven and evidence-based multimodal improvement strategy
- Describe the available WHO resources to support successful implementation including for reducing AMR in surgical services
13/11/2018 | Turning recommendations into practice
2


World Health Organization
Health Topics
Countries
News
Emergencies
About Us
Home / WHO Campaigns / World Antibiotic Awareness Week
World Antibiotic Awareness Week
12-18 November, 2018
HANDLE ANTIBIOTICS WITH CARE
13/11/2018 Title of the presentation
3


WAAW - Wednesday 13 November 2018
World Health Organization
Global Action Plan Objectives
WAAW 2018 daily 'focus' messages
Improve awareness and understanding of antimicrobial resistance through effective communication, education and training
Help people understand why antimicrobial resistance is happening, that it poses a genuine risk to our future health, and that we all can do something to help
Strengthen knowledge and evidence base through surveillance and research
Mobilize laboratories in every country to look for evidence of resistance in the bacteria they see and to help us build a global picture of how it is spreading and where it poses the greatest risk
Reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures
Campaign for all hospitals and health-care centres to do their upmost to keep infections at bay with the best possible sanitation and hygiene measures available
Optimize the use of antimicrobial agents in human and animal health
Use the antibiotics that are still effective as wisely as possible, regulating how they are distributed, ensuring they are only given to patients and animals who really need them, and generally handling them with care
Develop the economic case for sustainable investment that takes account of the needs of all countries, and increase investment in new medicines, diagnostic tools, vaccines and other interventions
Urge governments, funding agencies, and the private sector to invest in the new tools, skills and technologies we urgently need to build a smarter world in which our medicines are secured for generations to come.
http://www.who.int/who-campaigns/world-antibiotic-awareness-week/waaw-2018-theme-and-messaging
4



http://www.who.int/infection-prevention/en/

5

World Antibiotic Awareness Week * IPC activities

World Health Organization

- **Presentation** by Claire Kilpatrick on implementation strategies and resources for SSI prevention, hosted by Webber Training **on 14 November, 2:30-3:30 pm CET** (https://webbertraining.com/schedulep1.php?command=viewClass&ID=1424)
- New **technical infographic** on how to improve use of antibiotics in surgical services (http://www.who.int/infection-prevention/tools/focus-amr/en/)
- **E-learning** version of the recently released **SSI prevention training module** (http://www.who.int/infection-prevention/tools/surgical/training_education/en/)
- New **animation video** on best practices for insertion and maintenance of urinary catheters (http://www.who.int/infection-prevention/tools/core-components/en/)
- Announcement of the **2019 IPC Global Survey**

*http://www.who.int/who-campaigns/world-antibiotic-awareness-week/waaw-2018-theme-and-messaging

6

World Antibiotic Awareness Week * IPC activities

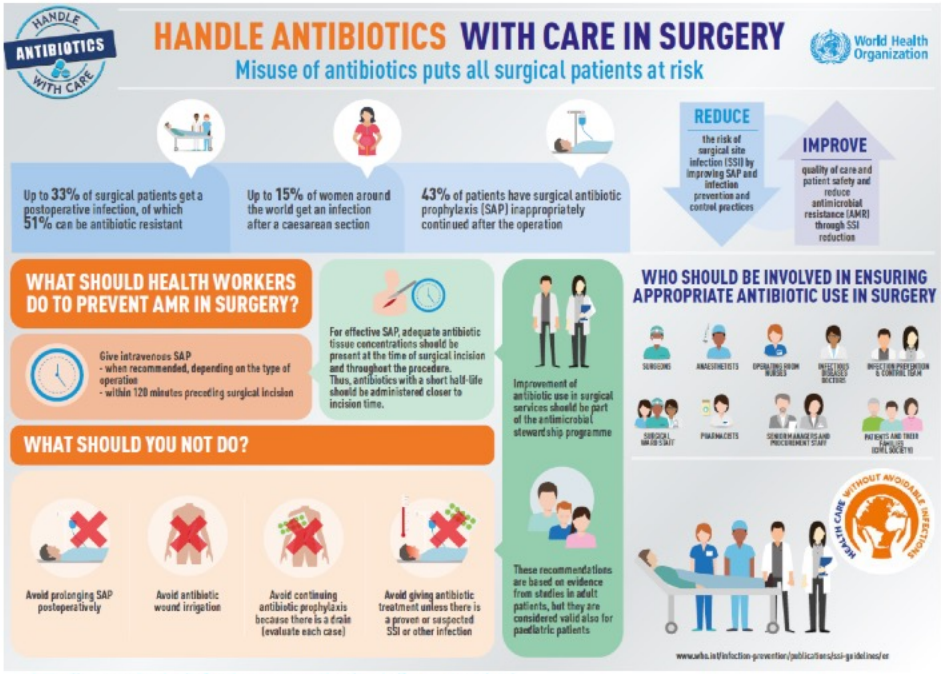
World Health Organization

- **Presentation** by Claire Kilpatrick on implementation strategies and resources for SSI prevention, hosted by Webber Training **on 14 November, 2:30 - 3:30 pm CET** (https://webbertraining.com/schedulep1.php?command=viewClass&ID=1424)
- New **technical infographic** on how to improve use of antibiotics in surgical services (http://www.who.int/infection-prevention/tools/focus-amr/en/)
- **E-learning** version of the recently released **SSI prevention training module** (http://www.who.int/infection-prevention/tools/surgical/training_education/en/)
- New **animation** video on best practices for insertion and maintenance of urinary catheters (http://www.who.int/infection-prevention/tools/core-components/en/)
- Announcement of the **2019 IPC Global Survey**

*http://www.who.int/who-campaigns/world-antibiotic-awareness-week/waaw-2018-theme-and-messaging

Disseminate Use Participate

7



http://www.who.int/infection-prevention/tools/focus-amr/en/

8

The problem of SSI and AMR in surgical services

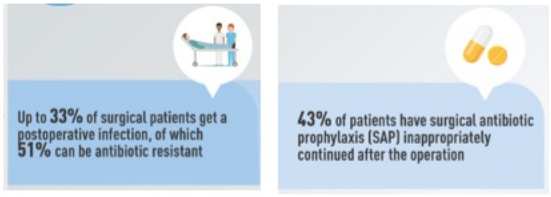
World Health Organization

- Up to 33% of surgical patients get a postoperative infection, of which 51% can be antibioitc resistant

- 43% of patients have surgical antibioitc prophylaxis (SAP) inappropriately continued after the operation

- More than 1 in 10 people who have surgery in low and middle income countries get surgical site infections

- Surgical site infections threaten the lives of millions of surgical patients each year and contribute to the spread of antibioitic resistance



http://www.who.int/infection-prevention/publications/ssi-prevention-guidelines/en/

9

SSI burden – an overview (1)

World Health Organization

- **<u>Second most frequent</u> type of HAI in Europe and the USA**
- Most frequent type of HAI on admission (67% in the USA, 33% in Europe)
  - **SSI incidence** (per 100 procedures)
    - USA 2014: 1.9%
    - Europe 2013–14: 0.6–9.5%
  - Incidence varies according to type of procedure (very low in clean procedures, such as arthroplasty; higher in contaminated/dirty procedures, such as colon surgery)
  - **Most frequent pathogens**: Gram-positive cocci (such as *Staphylococcus aureus* (*S. aureus*) at 17–30%), followed by Gram-negative bacilli
  - **AMR**: 39–51% of SSI pathogens are resistant to standard prophylactic antibiotics in the USA

Sources:

- Mu Y, Edwards JR, Horan TC, Berrios-Torres SI, Fridkin SK. Improving risk-adjusted measures of surgical site infection for the national healthcare safety network. Infect Control Hosp Epidemiol. 2011;32(10):970-86.
- National and state healthcare-associated infections progress report. Atlanta (GA): National Center for Emerging and Zoonotic Infectious Diseases, Centers for Disease Control and Prevention; 2016 (http://www.cdc.gov/HAI/pdfs/progressreport/hai-progress-report.pdf, accessed 10 August 2016).
- ECDC. Annual epidemiological report 2016 – surgical site infections. Stockholm: European Centre for Disease Prevention and Control; 2016 (https://ecdc.europa.eu/en/publications-data/surgical-site-infections-annual-epidemiological-report-2016-2014-data)
- Sievert DM, Ricks P, Edwards JR, Schneider A, Patel J, Srinivasan A et al. Antimicrobial-resistant pathogens associated with healthcare-associated infections: summary of data reported to the National Healthcare Safety Network at the Centers for Disease Control and Prevention, 2009–2010. Infect Control Hosp Epidemiol. 2013;34:1–14.

10

SSI burden – an overview (2)

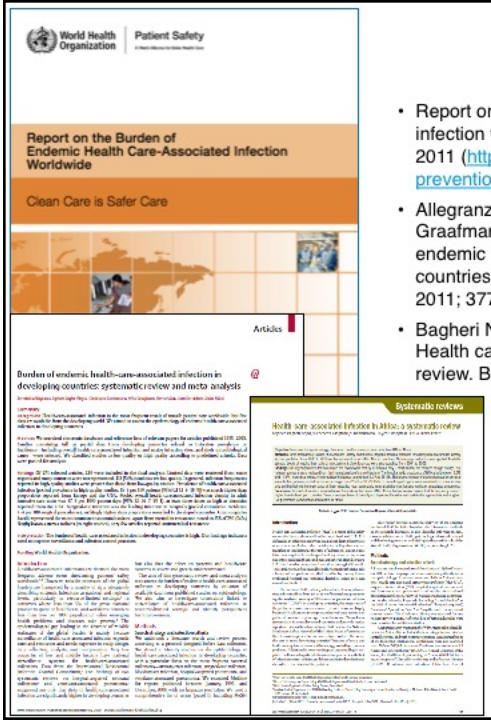
World Health Organization

- **Most frequent type of HAI in LMICs**
- **Infection is the most frequent complication of surgery** in Africa
- **Pooled SSI incidence in LMICs** (WHO unpublished data, 2017)
  - 5.9 per 100 procedures
  - 11.2 per 100 surgical patients
- A few studies from LMICs report SSI rates by surgical procedure and data on microbiological causes of SSI
- **Most frequent pathogens** are *S. aureus* (20.3%) and *Escherichia coli* (*E. coli*) (20.3%)
- Average methicillin resistance among *S. aureus* isolates (MRSA): **54.5%**
- SSI pooled incidence in South-east Asia: 7.7%
- **Surgical sepsis = 30% of all patients with sepsis**

Sources:

- 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; 377:228–41.
- Ling ML, Apisamthanarak A, Madriaga G. The burden of healthcare-associated infections in Southeast Asia: a systematic literature review and meta-analysis. Clin Infect Dis. 2015;60(11):1690–9.
- Bruce M Biccard, Thandinkosi E Madiba, Hyla-Louise Kluyts, Dolly M Munlemvo, Farai D Madzimbamuto, Apollo Basenero, et al. Lancet published online January 3, 2018 http://dx.doi.org/10.1016/S0140-6736(18)30001-1.

11



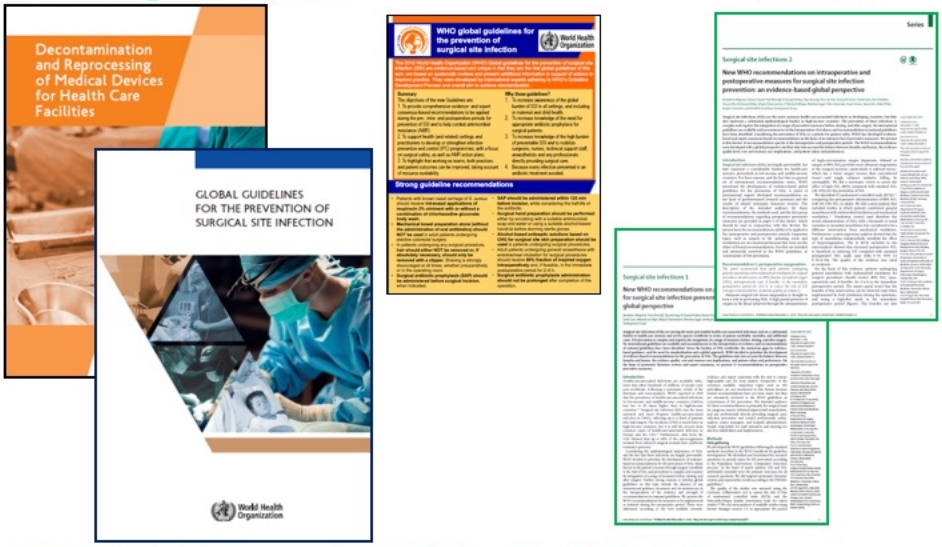
World Health Organization

- Report on the Burden of endemic health care-associated infection worldwide. Geneva: World Health Organization; 2011 (http://www.who.int/infection-prevention/publications/burden_hcai/en/);
- 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; 377:228–41;
- Bagheri Nejad S, Allegranzi B, Syed SB, Ellis B, Pittet D. Health care-associated infection in Africa: a systematic review. Bull World Health Organ. 2011; 89:757–65.

12

WHO global guidelines for SSI prevention

World Health Organization



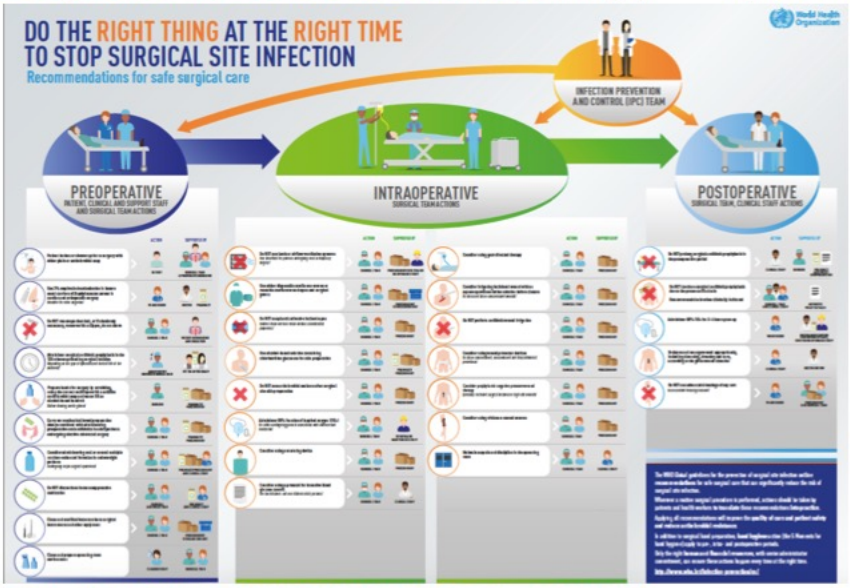
http://who.int/infection-prevention/publications/ssi-guidelines/en/

Allegranzi B at al. Lancet Infect Dis, 2016

13

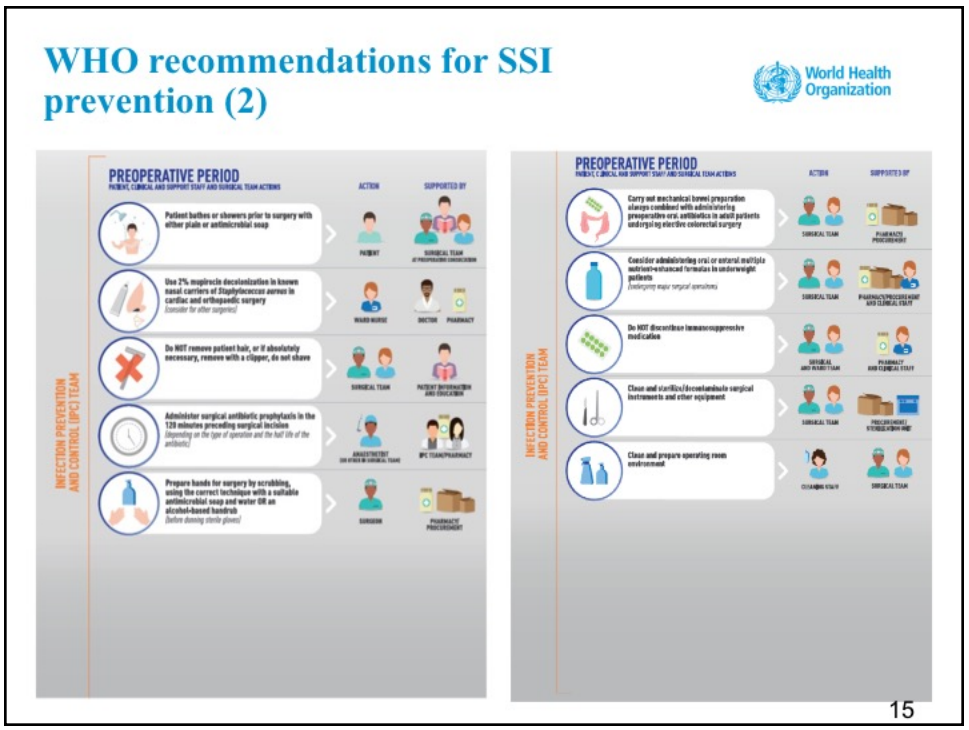
SSI prevention recommendations (1)

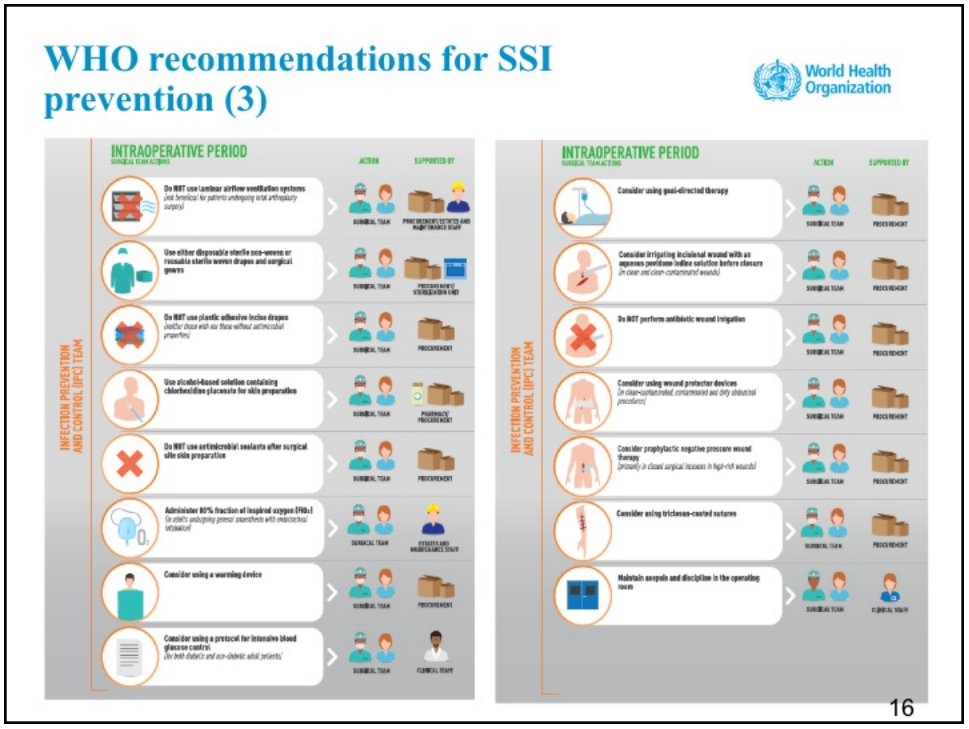
World Health Organization



http://www.who.int/infection-prevention/tools/surgical/reminders-advocacy/en/

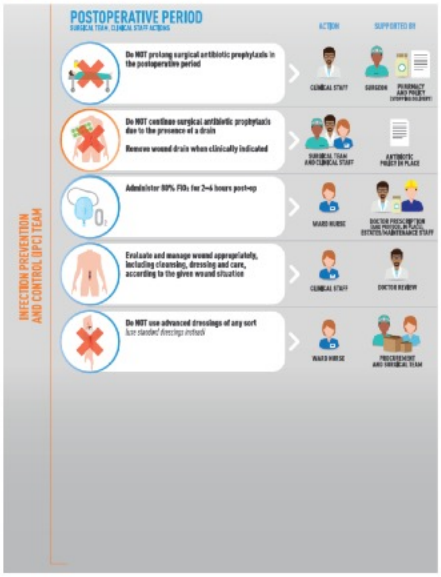
14


WHO recommendations for SSI prevention (2)
World Health Organization
PREOPERATIVE PERIOD
INFECTION PREVENTION AND CONTROL (IPC) TEAM
PREOPERATIVE PERIOD
INFECTION PREVENTION AND CONTROL (IPC) TEAM
15


WHO recommendations for SSI prevention (3)
World Health Organization
INTRAOPERATIVE PERIOD
INFECTION PREVENTION AND CONTROL (IPC) TEAM
INTRAOPERATIVE PERIOD
INFECTION PREVENTION AND CONTROL (IPC) TEAM
16

WHO recommendations for SSI prevention (4)

World Health Organization



17

World Antibiotic Awareness Week 2018 Highlighting WHO strong and conditional recommendations

World Health Organization

18

Translating guidelines to action

World Health Organization

19

WHO hand hygiene strategy impact

World Health Organization

Meta-analysis from 22 studies confirmed that the **WHO hand hygiene strategy is effective at increasing health care workers compliance** and results of 19 studies showed **reduction of health care associated infections**

- *Allegranzi B et al, Lancet ID 2013*
- *Luangasanatip N et al, BMJ 2015*

WHO Global Infection Prevention and Control Unit

Evidence of hand hygiene as the building block for infection prevention and control

Core component 5 - Multimodal strategies for implementing IPC activities

5a. Health care facility level

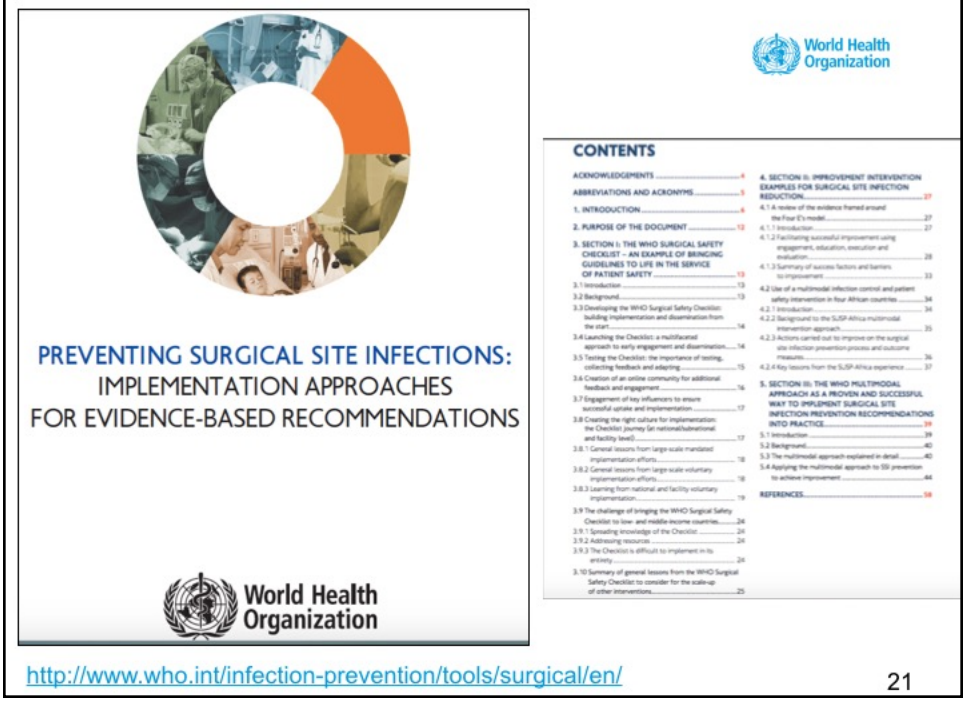
RECOMMENDATION

The panel recommends that IPC activities using multimodal strategies should be implemented to improve practices and reduce HAI and AMR.

(Strong recommendation, low quality of evidence)

Type of evidence	Description of evidence on hand hygiene supporting the recommendation	Key study findings
Primary (EPOC) (3, 5, 8, 10, 12, 24-40, 42-47)	○ 28 of 44 studies (64%) comprising: • 10 non-controlled before-after (3, 24-32) • Five interrupted time series (5, 37-39, 40) • Four non-controlled cohort trials (33-36) • Three randomized controlled trials (42-44) • Two controlled before-after (10, 45) • Two mixed methods (12, 46) • One qualitative (8) • One stepped wedge trial (47) ○ 26 studies from high or upper-middle income countries (3, 5, 8, 10, 12, 24, 25-29, 31-40, 42-47) and only one from a low income country (30)	○ In 28 studies, multimodal strategies showed an improvement in hand hygiene compliance among health care workers (3, 5, 8, 10, 12, 24-40, 42-47). ○ Leveraging leadership commitment and the use of opinion leaders and champions were critical components in some multimodal strategies (25, 28, 32, 43, 45, 47). ○ Four studies used positive reinforcement for health care workers when correctly performing hand hygiene as one element of their strategies (37, 44) by applying principles of product marketing to encourage staff to choose their own intervention (29) and offering financial incentives to hospital units or wards for high-level hand hygiene performance (40). ○ Accessibility to handrub, role models, a personal sense of responsibility and emotional involvement were some factors identified as barriers affecting hand hygiene compliance (8).

20



http://www.who.int/infection-prevention/tools/surgical/en/

21

Prevention surgical site infections - implementation document

World Health Organization

The purpose of this document is to present a range of tested approaches to achieve successful SSI prevention implementation at the facility level, including in the context of a broader surgical safety climate.

TARGET AUDIENCE

The target audience of this document are all those working in the surgical and IPC fields, including patient safety and quality improvement teams.

22

Section I - summary of strategies to facilitate implementation of the Checklist

Strategy	National/state level applications	Hospital level applications
Leverage existing communication channels, networks and relationships	• Use existing meetings to present the work and convene participants. • Disseminate information through professional organizations, (not-for-profits and others).	• Re-purpose teams that work on other quality improvement projects. • Share information about the project at every opportunity, staff/physician meetings, grand rounds, and within existing committees.
Develop and support clinical champions	• Build a state-level committee that consists of representatives from disciplines touched by the work and a variety of facility types. • Offer a variety of programme activities for individuals to learn about the project. • Create materials to walk organizations through the key steps of implementation and offer advice on how to overcome common barriers. • Convene facility champions so that they can share their experiences and help each other solve problems.	• Build a multidisciplinary team that consists of at least one representative from every discipline touched by the project. • Provide clinical champions with resources and time to implement the project.
Support implementation through coaching	Conduct hospital site visits to learn about implementation and provide feedback to organizations. Remember coaches need to be trained in how to give feedback.	Create a coaching programme leveraging your implementation team and clinical champions. Remember coaches need to be trained in how to give feedback.
Encourage incremental change	Provide guidance on how to implement the project in smaller parts or how to put some components into place when an organization is not ready for the entire project.	If needed, implement parts of the project instead of the entire programme.
Build in implementability; modification of interventions to meet the local context should be encouraged and supported through guidance	• Plan an intervention that can be implemented and modified. • Create templates and programme materials that meet the needs specific to your environment. Consider culture, resources, and prior quality improvement projects that may inform the work.	Modify programme materials to meet your organization's culture and workflow following guidance provided by national and state programme teams.
Build leadership support	• Gather a national leadership team to guide the work.	Create a facility-level leadership team to guide the work and provide resources for it.

World Health Organization

TARGET AUDIENCE

The target audience is intended to be any discipline introducing, leading or supporting SSI prevention and safer surgical care including: surgeons; surgical nurses and technical support staff; IPC focal points and teams; senior administrators; anaesthetists; clinical research project staff; any professionals directly providing surgical care, including individuals who are creating or supporting surgical quality improvement programmes at the system or country level.

23

Section II - improvement intervention examples

Describes the key evidence- and practice-based elements identified as being successful in improving processes and practices that contribute to preventing SSI in a range of countries.

World Health Organization

TARGET AUDIENCE

The target audience is intended to be any team introducing, leading or supporting SSI prevention through improvement strategies including: IPC professionals or health workers with responsibility for IPC monitoring or improvement; sterile services; maintenance/ engineering staff; surgeons; surgical nurses; technical support staff; anaesthetists; senior managers; and any professionals directly providing surgical care or involved in quality improvement programmes.

24

Implementation example


Articles

A multimodal infection control and patient safety intervention to reduce surgical site infections in Africa: a multicentre, before–after, cohort study

Supplementary appendix

5 Hospitals

Allegranzi B, et al. Lancet Infect Dis. 2018 Mar 5

25

Impact on preventive measures

	Baseline (n=1604)	Follow-up (n=1827)	p value	Sustainability period (n=891)
Preoperative patient bathing (n=4321, 0·02%)	1238 (77·2)	1544 (84·5)	<0·0001	799 (89·7)
Appropriate hair removal (n=4310, 0·3%)	1169 (73·1)	1702 (93·5)	<0·0001	880 (98·8)
Appropriate skin preparation (n=4307, 0·3%)	330 (20·7)	1644 (90·2)	<0·0001	845 (94·8)
Quality of surgical hand preparation (n=4223, 2·3%)	1213 (78·7)	1694 (94·4)	<0·0001	865 (97·4)
Appropriate use of antibiotic prophylaxis (n=4322, 0%)	205 (12·8)	714 (39·1)	<0·0001	635 (71·3)
Theatre discipline				
Theatre door openings per hour of operation time (n=4031, 6·7%)	14·8 (17·8)	14·2 (16·1)	0·3771	19·0 (21·6)
Number of individuals present at the start of the operation (n=4313, 0·2%)	8·3 (3·4)	7·7 (2·5)	<0·0001	7·4 (2·5)
Number of entries during the operation (n=4236, 2·0%)	5·0 (4·1)	4·8 (4·9)	0·1758	4·2 (2·7)

Data are mean (SD). Data per variable and percentage missing data are also given. SSI=surgical site infection.

***Table 2*: Process indicators for SSI prevention intervention measures across study periods in four (baseline and follow-up) and three (sustainability period) hospitals**

26

Impact on SSI

World Health Organization

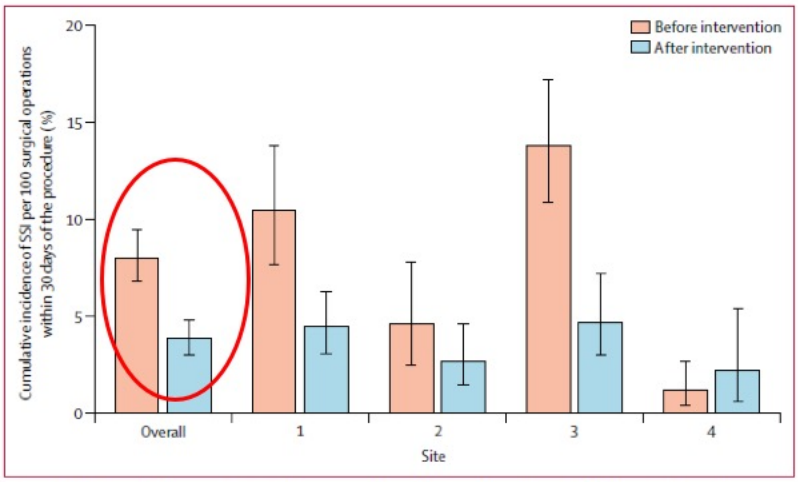


Figure 2: **Unadjusted SSI cumulative incidence overall and by site at baseline and follow-up in four sites**
Error bars show 95% CIs. SSI=surgical site infection.

27

Summary of success factors

World Health Organization

- **Use of multimodal strategies (this does not mean checklists and bundles)**
- Having a step-wise action plan
- Mapping recommendations according to the surgical patient journey
- Empowering teams and involving front-line staff
- Engaging leadership
- Letting teams take the lead on adaptation
- Catalysing collective and individual ownership
- Using data to create awareness
- Awarding teams and work demonstrating a safety culture spirit

28

Section III - The WHO multimodal approach as a proven and successful way to implement SSI prevention recommendations

World Health Organization

Describes the features of a multimodal strategy that WHO proposes for the implementation of SSI prevention recommendations.

TARGET AUDIENCE

The target audience is intended to be any discipline introducing, leading or supporting SSI prevention; IPC and quality improvement focal points and teams; senior administrators; surgeons; surgical nurses; technical support staff; anaesthetists; and any professionals directly providing surgical care or involved in quality care improvement.

29

Practical application of proven implementation and improvement approaches

World Health Organization

Implementation manual to prevent surgical site infections at the facility level – turning recommendations into practice

30

SSI prevention recommendations (1)

World Health Organization

http://www.who.int/infection-prevention/tools/surgical/reminders-advocacy/en/

31

Bringing improvement to life

World Health Organization

Example Scenario – ***surgical staff would like to establish a standard preoperative bathing regimen for all patients undergoing surgery***

What is the presenting problem – ***no standard protocol, procedures or guidance for preoperative bathing exist***

Case study – ***The surgical team received a call from a nurse on a surgical ward saying that a patient had been admitted, asking questions about preoperative bathing. The nurse said she wasn't clear how to answer these questions. The surgeon told the nurse that all patients should bathe prior to surgery and had thought this was standard procedure. When informed that it was not, the surgeon met with colleagues to establish a protocol for preoperative bathing for both inpatients and outpatients. The surgical and nursing teams met with the IPC team to understand challenges and pose questions. The IPC team noted that plain soap would be sufficient for preoperative bathing but the nursing teams highlighted that soap is not routinely available and that patients are not counseled on perioperative bathing when presenting for surgery as an out-patient. The IPC team provides WHO information on the guidelines recommending preoperative bathing, and reinforced that outpatients should be counseled to bathe and all inpatients should be routinely bathed the night before surgery.***

What has to be addressed to make the improvement required?	Why? Reinforcing evidence based recommendations	When? Help teams know exactly when to act	Who should be involved to make sure improvement happens?	How should you make the improvement?

32

Summary of a multimodal improvement strategy

World Health Organization

In other words, the WHO multimodal improvement strategy addresses these five areas:

1. Build it (system change)

What infrastructures, equipment, supplies and other resources (including human) are required to implement the intervention?

Does the physical environment influence health worker behaviour? How can ergonomics and human factors approaches facilitate adoption of the intervention?

Are certain types of health workers needed to implement the intervention?

Practical example: when implementing hand hygiene interventions, ease of access to handrubs at the point of care and the availability of WASH infrastructures (including water and soap) are important considerations. Are these available, affordable and easily accessible in the workplace? If not, action is needed.

2. Teach it (training & education)

Who needs to be trained? What type of training should be used to ensure that the intervention will be implemented in line with evidence-based policies and how frequently?

Does the facility have trainers, training aids, and the necessary equipment?

Practical example: when implementing injection safety interventions, timely training of those responsible for administering safe injections, including carers and community workers, are important considerations, as well as adequate disposal methods.

3. Check it (monitoring & feedback)

How can you identify the gaps in IPC practices or other indicators in your setting to allow you to prioritize your intervention?

How can you be sure that the intervention is being implemented correctly and safely, including at the bedside? For example, are there methods in place to observe or track practices?

How and when will feedback be given to the target audience and managers? How can patients also be informed?

Practical example: when implementing surgical site infection interventions, the use of key tools are important considerations, such as surveillance data collection forms and the WHO checklist (adapted to local conditions).

4. Sell it (reminders & communications)

How are you promoting an intervention to ensure that there are cues to action at the point of care and messages are reinforced to health workers and patients?

Do you have capacity/funding to develop promotional messages and materials?

Practical example: when implementing interventions to reduce catheter-associated bloodstream infection, the use of visual cues to action, promotional/reinforcing messages, and planning for periodic campaigns are important considerations.

5. Live it (culture change)

Is there demonstrable support for the intervention at every level of the health system? For example, do senior managers provide funding for equipment and other resources? Are they willing to be champions and role models for IPC improvement?

Are teams involved in co-developing or adapting the intervention? Are they empowered and do they feel ownership and the need for accountability?

Practical example: when implementing hand hygiene interventions, the way that a health facility approaches this as part of safety and quality improvement and the value placed on hand hygiene improvement as part of the clinical workflow are important considerations.

Figure 5.1 The five components of the WHO multimodal hand hygiene improvement strategy

1a. System change – alcohol-based handrub at point of care
+
1b. System change – access to safe, continuous water supply, soap and towels
+
2. Training and education
+
3. Evaluation and feedback
+
4. Reminders in the workplace
+
5. Institutional safety climate

Source: http://www.who.int/infection-prevention/tools/core-components/cc-implementation-guideline.pdf?ua=1

33

New WHO implementation package for SSI prevention

World Health Organization

Infection prevention and control

- Home page
- About us
- Campaigns
- Implementation tools and resources
- Evidence, guidelines and publications
- Work in countries
- News and events

Surgical site infections tools and resources

A range of tools exist for you to adopt and adapt to support local improvement. They are proven to achieve change if used as part of a multi-modal strategy as represented in the 5 components listed here.

- System change
- Communications for awareness raising
- Training and education
- Institutional safety climate and culture
- Evaluation and feedback

Link to Global guidelines on the prevention of surgical site infection publications page

34

Understanding the multimodal strategy for SSI prevention (1)

World Health Organization

System change
"Build it"

- *Ensuring that the health care facility has the **necessary infrastructure and resources in place** to allow for steps to be taken to prevent SSI based on the known modifiable risk factors*
- The right infrastructure and available resources can streamline interventions for consistent delivery of care and make execution easier and safer.

Source: Preventing surgical site infections: implementation approaches for evidence-based recommendations. Geneva: World Health Organization; 2018 (http://www.who.int/infection-prevention/tools/surgical/en/).

35

System change - *"Build it" (cont')*
Necessary infrastructure and resources

World Health Organization

- Allocated budget
- Standard operating procedures, protocols, local policies and tools/mechanisms for training
- An IT system (or paper) for monitoring and feedback on infrastructure and resources and other improvement steps
- Laboratory services
- Surgical services/human resources including a dedicated, competent team for ensuring SSI prevention activities working to an action plan
- Supplies for surgical hand preparation* - ABHR, antimicrobial soap

* Procurement vs local production

- Sterile drapes and gowns
- The correct antibiotics for SAP (and if need to be given with MBP) - easily accessible
- Clippers (if hair removal essential)
- Chlorhexidine- alcohol-based (skin prep) solution*
- Mupirocin 2% ointment
- Oxygen
- Standard postoperative wound dressings

To consider:

- Antimicrobial-coated sutures
- Negative pressure wound therapy devices
- Nutritional formulas
- Warming devices
- Fluid therapy
- Aqueous povidone iodine solution (irrigation)

36

System Change: Modified WHO formulations for surgical hand preparation

World Health Organization

Formulation I

Final concentrations: ethanol 80% wt/wt, glycerol 0.725% vol/vol, hydrogen peroxide 0.125% vol/vol.

Ingredients:

1. ethanol (absolute), **800 g**
2. H_2O_2 (3%), 4.17 ml
3. glycerol (98%), **7.25 ml** (or 7.25 x 1.26 = 9.135 g)
4. top up to **1000 g** with distilled or boiled water

Formulation II

Final concentrations: isopropanol 75% wt/wt, glycerol 0.725% vol/vol, hydrogen peroxide 0.125% vol/vol.

Ingredients:

1. isopropanol (absolute), **750 g**
2. H_2O_2 (30%), **4.17 ml**
3. glycerol (98%), **7.25 ml** (or 7.25 x 1.26 = 9.135 g)
4. top up to **1000 g** with distilled water

Source: Suchomel M KM, Kundi M, Pittet D, Rotter ML. Modified World Health Organization hand rub formulations comply with European efficacy requirements for preoperative surgical hand preparations. Infect Control Hosp Epidemiol. 2013; 34(3):245–250.

37

System change - considering decontamination

World Health Organization

http://who.int/infection-prevention/publications/ssi-guidelines/en/

38

Understanding the multimodal strategy for SSI prevention (2)

World Health Organization

Training and education – *"Teach it"*

- *Practical **training and education** methods aligned with the recommendations for SSI prevention*

- Onsite hospital courses
- Bolus (single relatively large) sessions
- Simulation sessions for skills training
- Use of locally made or online videos
- Online e.learning courses and webinars
- Focus groups and workshops
- Bedside training
- In-person sessions, e.g. during ward or grand rounds, town hall meetings, coaching visits
- Pre and post knowledge and perception tests
- Training support materials (handouts, e-learning, etc.)

39

Education and training improving surgical hand preparation

World Health Organization

1. **Local production of modified WHO formulation for ABHR**

2. Surgical hand preparation
   - **Antimicrobial soap + water** = 2–5 minutes
   - **Alcohol-based** = 1.5–3 minutes
   - The right technique is crucial
   - Nailbrushes are <u>not</u> recommended.

40


Education and training - surgical hand preparation
World Health Organization
YouTube
Search
Surgical Handrubbing Technique
Handwash with soap and water on arrival to OR, after having donned theatre clothing (cap/hat/bonnet and mask).
Use an alcohol-based handrub (ABHR) product for surgical hand preparation, by carefully following the technique illustrated in Images 1 to 17, before every surgical procedure.
If any residual talc or biological fluids are present when gloves are removed following the operation, handwash with soap and water.
Put approximately 5ml (3 doses) of ABHR in the palm of your left hand, using the elbow of your other arm to operate the dispenser.
Dip the fingertips of your right hand in the handrub to decontaminate under the nails (5 seconds).
Video
https://www.youtube.com/watch?v=h16JPBcOIGs
Hôpitaux Universitaires Genève
University of Geneva Hospitals and Faculty of Medicine, Geneva, Switzerland
WHO Collaborating Centre on Patient Safety Infection Control & Improving Practices
41


Education and training - skin site preparation
World Health Organization
How to perform
PREOPERATIVE SURGICAL SITE SKIN PREPARATION
An educational video produced by the World Health Organization
0:02 / 5:03
42

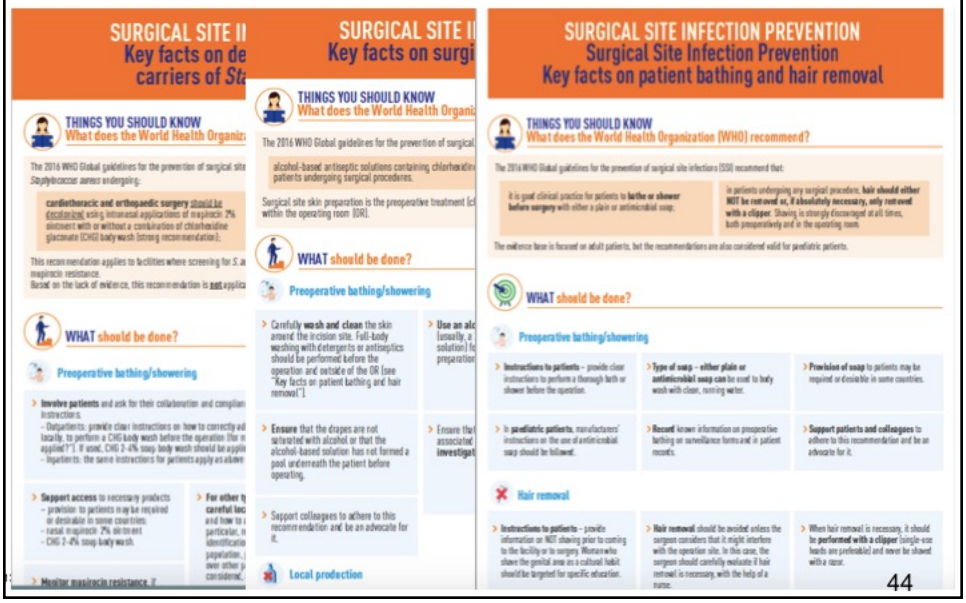
Education and training - wound management

World Health Organization

13/11/2018 | Title of the presentation 43

Education and training - key facts documents

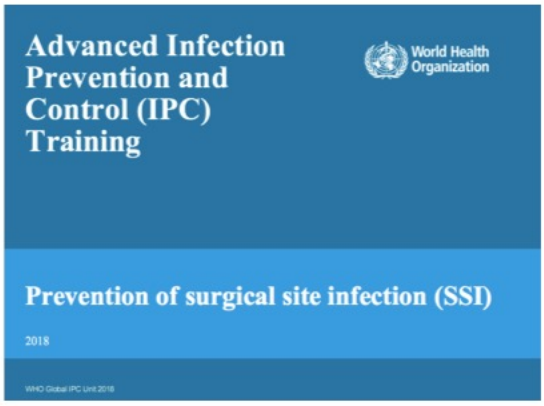
World Health Organization



44

Education and training - training package

World Health Organization



- Slides deck
- Trainer's manual
- Student's handbook
- E-learning module

http://www.who.int/infection-prevention/tools/core-components/en/

45

Understanding the multimodal strategy for SSI prevention (3)

World Health Organization

Evaluation and feedback

"Check it"

*Regular **monitoring** and timely **feedback** of:*

- *risk factors for SSI;*
- *compliance with recommended procedures and practices;*
- *infrastructures and available resources and supplies;*
- *knowledge and perception of the problem;*
- *SSI rates.*

It should not be seen as a component separate from implementation or only to be used for scientific purposes. Targeted tools and use of observations are inherent.

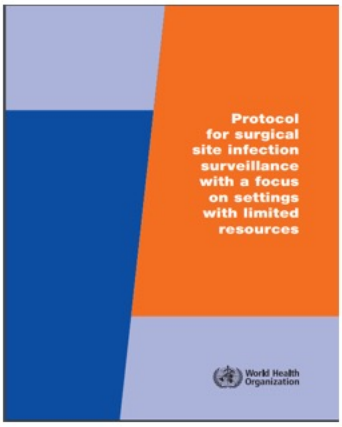
This is an essential step in:

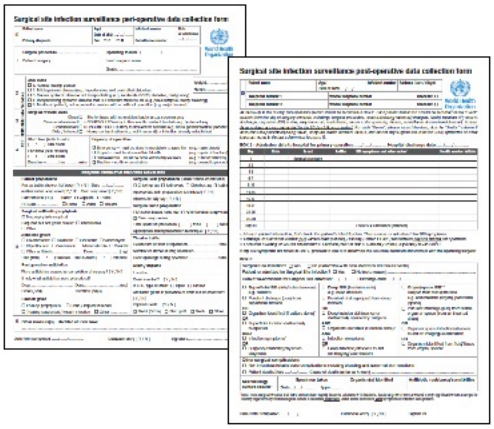
- identifying areas deserving major efforts and feeding crucial information into development of local local action plan;
- measuring the changes induced by improvement efforts and ascertaining whether interventions have been effective;
- engaging staff in deciding upon different formats for providing feedback (real time and personalised feedback have proven beneficial).

46

Monitoring example - recording SSIs

World Health Organization





http://www.who.int/infection-prevention/tools/surgical/SSI-surveillance-protocol.pdf?ua=1

47

The WHO approach to SSI surveillance in settings with limited resources

World Health Organization

Adapted approach that has been used in settings with limited resources to conduct surveillance in the context of interventions to reduce SSI.

The protocol is based on the widely accepted US Centers for Disease Control and Prevention –National Healthcare Safety Network (CDC-NHSN) definitions for SSI but **definitions based on clinical signs and symptoms should be prioritized**, given the lack of quality microbiology laboratory support.

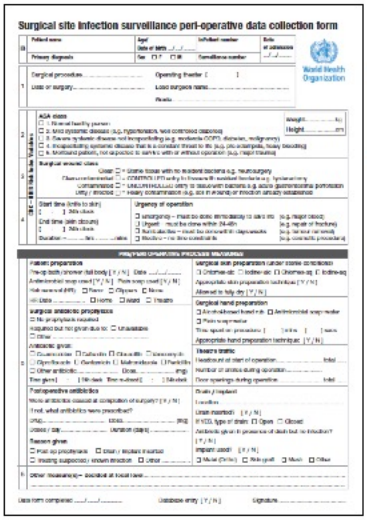
For feasibility reasons, this protocol is based on **post-discharge surveillance up to 30 days** only.

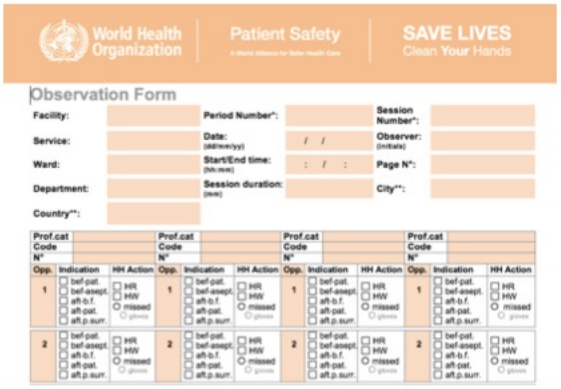
Patient follow-up after discharge includes **phone calls and involvement of the patient** in recognizing signs and symptoms of SSI.

48

Monitoring example – tools

World Health Organization


Surgical site infection surveillance peri-operative data collection form


World Health Organization | Patient Safety | SAVE LIVES Clean Your Hands

Observation Form

Facility: | Period Number*: | Session Number*:
Service: | Date: (dd/mm/yy) | Observer: (initials)
Ward: | Start/End time: (hh:mm) | Page N°:
Department: | Session duration: (mm) | City**:
Country**:

Prof.cat Code N°				Prof.cat Code N°				Prof.cat Code N°				Prof.cat Code N°			
Opp.	Indication	HH Action		Opp.	Indication	HH Action		Opp.	Indication	HH Action		Opp.	Indication	HH Action	
1	bef.pat. bef.asept. aft.b.f. aft.pat. aft.p.surr.	HR HW missed gloves		1	bef.pat. bef.asept. aft.b.f. aft.pat. aft.p.surr.	HR HW missed gloves		1	bef.pat. bef.asept. aft.b.f. aft.pat. aft.p.surr.	HR HW missed gloves		1	bef.pat. bef.asept. aft.b.f. aft.pat. aft.p.surr.	HR HW missed gloves	
2	bef.pat. bef.asept. aft.b.f. aft.pat. aft.p.surr.	HR HW missed gloves		2	bef.pat. bef.asept. aft.b.f. aft.pat. aft.p.surr.	HR HW missed gloves		2	bef.pat. bef.asept. aft.b.f. aft.pat. aft.p.surr.	HR HW missed gloves		2	bef.pat. bef.asept. aft.b.f. aft.pat. aft.p.surr.	HR HW missed gloves	

Source: http://www.who.int/infection-prevention/tools/hand-hygiene/evaluation_feedback/en/

49

Understanding the multimodal strategy for SSI prevention (4)

World Health Organization

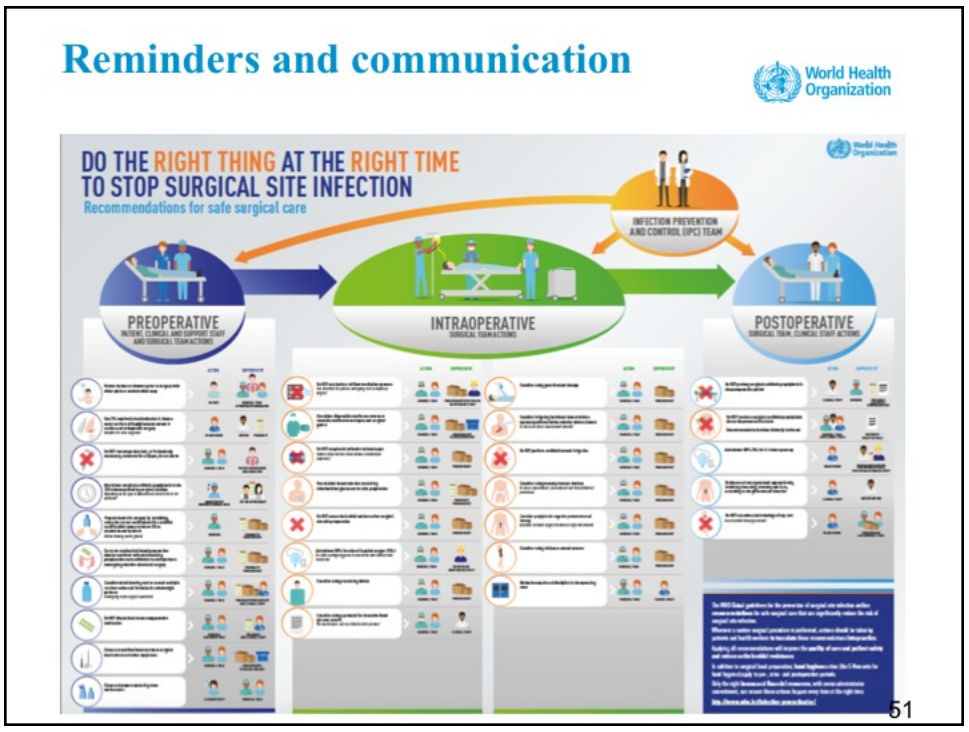
Reminders and communications

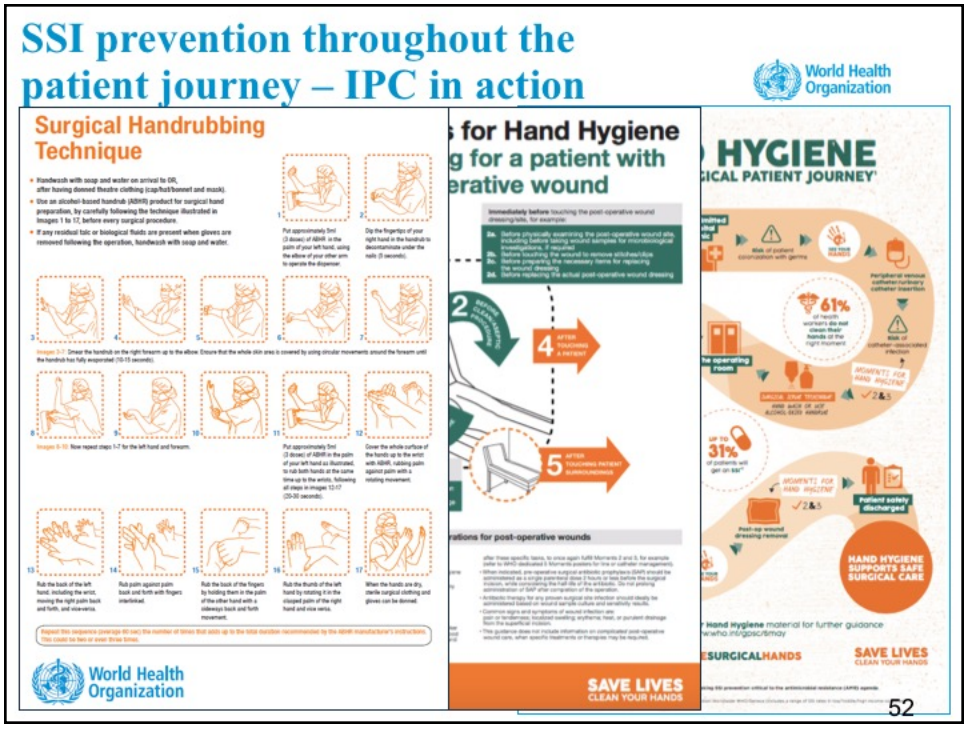
"Sell it"

- ***Reminding and prompting*** *health care workers about the importance of practices to prevent SSI when they are working at the point of care*
- ***Informing*** *patients and their visitors of the standard of care that they should expect to receive*
- ***Communications*** *to inform senior leaders and decision-makers regarding the standards that they should assure*

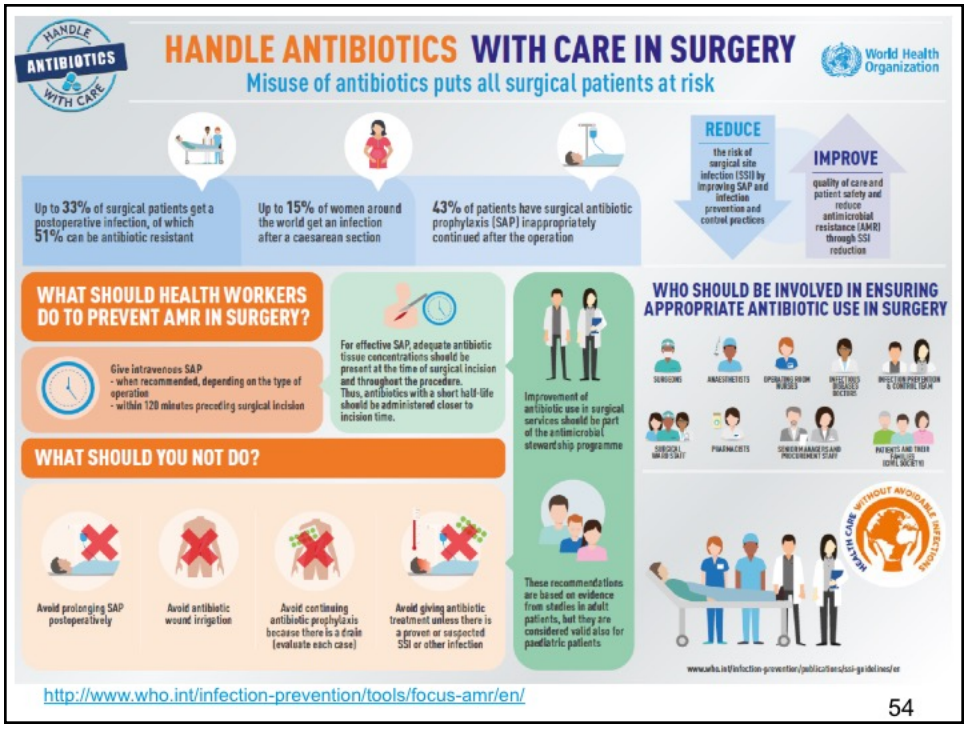
- Posters
- Leaflets
- Banners
- Stickers
- Flowcharts
- Infographics
- Letter templates
- Advocacy messages suitable to the local setting, e.g. memos
- Manuals
- Electronic reminders (built in to hospital IT system)
- Telephone call (including for patient reminders)

50


Reminders and communication
World Health Organization
DO THE RIGHT THING AT THE RIGHT TIME
TO STOP SURGICAL SITE INFECTION
Recommendations for safe surgical care
INFECTION PREVENTION AND CONTROL (IPC) TEAM
PREOPERATIVE
INTRAOPERATIVE
POSTOPERATIVE
51


SSI prevention throughout the patient journey – IPC in action
World Health Organization
Surgical Handrubbing Technique
for Hand Hygiene
for a patient with
erative wound
HYGIENE
CAL PATIENT JOURNEY
SAVE LIVES
CLEAN YOUR HANDS
SURGICALHANDS
SAVE LIVES
CLEAN YOUR HANDS
52


Embedding hand hygiene in a surgical patient's journey
World Health Organization
WHAT'S THE SOLUTION?
A range of precautions - before, during and after surgery - reduces the risk of infection
BEFORE SURGERY
Ensure patients bathe or shower
Do not shave patients
Only use antibiotics when recommended
Use chlorexidine alcohol-based antiseptic solutions to prepare skin
Surgical scrub technique: hand wash or alcohol-based handrub
DURING SURGERY
Limit the number of people and doors being opened
Ensure all surgical equipment is sterile and maintain asepsis throughout surgery
AFTER SURGERY
Do not continue antibiotics to prevent infection – this is unnecessary and contributes to the spread of antibiotic resistance
Check wounds for infection and use standard dressings on primary wounds
SEE YOUR HANDS
HAND HYGIENE SUPPORTS SAFE SURGICAL CARE
Surgical patients are IN your hands. See what's ON your hands.
Practice hand hygiene for surgical patients
FROM ADMISSION TO DISCHARGE.
World Health Organization
#SAFESURGICALHANDS
SAVE LIVES
53


HANDLE ANTIBIOTICS WITH CARE
HANDLE ANTIBIOTICS WITH CARE IN SURGERY
Misuse of antibiotics puts all surgical patients at risk
World Health Organization
Up to 33% of surgical patients get a postoperative infection, of which 51% can be antibiotic resistant
Up to 15% of women around the world get an infection after a caesarean section
43% of patients have surgical antibiotic prophylaxis (SAP) inappropriately continued after the operation
REDUCE
the risk of surgical site infection (SSI) by improving SAP and infection prevention and control practices
IMPROVE
quality of care and patient safety and reduce antimicrobial resistance (AMR) through SSI reduction
WHAT SHOULD HEALTH WORKERS DO TO PREVENT AMR IN SURGERY?
Give intravenous SAP
- when recommended, depending on the type of operation
- within 120 minutes preceding surgical incision
For effective SAP, adequate antibiotic tissue concentrations should be present at the time of surgical incision and throughout the procedure. Thus, antibiotics with a short half-life should be administered closer to incision time.
Improvement of antibiotic use in surgical services should be part of the antimicrobial stewardship programme
WHO SHOULD BE INVOLVED IN ENSURING APPROPRIATE ANTIBIOTIC USE IN SURGERY
WHAT SHOULD YOU NOT DO?
Avoid prolonging SAP postoperatively
Avoid antibiotic wound irrigation
Avoid continuing antibiotic prophylaxis because there is a drain (evaluate each case)
Avoid giving antibiotic treatment unless there is a proven or suspected SSI or other infection
These recommendations are based on evidence from studies in adult patients, but they are considered valid also for paediatric patients
http://www.who.int/infection-prevention/tools/focus-amr/en/
54

Understanding the multimodal strategy for SSI prevention (5)

World Health Organization

Institutional safety climate and culture

"Live it"

*Creating an **environment and the perceptions** that facilitate awareness-raising about SSI prevention at all levels:*

- *a climate that understands and prioritizes surgical safety issues;*
- *team spirit and cohesion;*
- *awareness of self-capacity to make a change, ownership of the intervention.*

- Motivated, multidisciplinary well functioning teams
- Champions
- Role models
- Visible leadership including on ward/grand rounds, through photographs and signatures
- Morbidity and mortality meetings including senior hospital staff – to learn from defects and facilitate sharing for improvement
- Advocacy messages from leaders (delivered in a timely manner)

55

Example adaptive tools – addressing the culture

World Health Organization

CUSP for Safe Surgery
Perioperative Staff Safety Assessment

Purpose of this form: The purpose of this form is to tap into your experiences at the frontlines of patient care to find out what risks jeopardize patient safety in your clinical area.

Who should complete this form: All staff members.

How to complete this form: Provide as much detail as possible when answering the 4 questions. Drop off your completed safety assessment form in the location designated by the SUSP team.

When to complete this form: Any staff member can complete this form at any time.

CUSP for Safe Surgery (SUSP)
Safety Issues Worksheet for Senior Executive Partnership

Date of Safety Rounds:

Unit:

Attendees:

1. 5.
2. 6.
3. 7.
4. (Please use back of form for additional attendees.)

CUSP for Safe Surgery (SUSP)
Executive Safety Rounds Kickoff Template

The Learning From Defects Tool

World Health Organization

JOHNS HOPKINS MEDICINE
Armstrong Institute for Patient Safety and Quality

World Health Organization

JOHNS HOPKINS MEDICINE
Armstrong Institute for Patient Safety and Quality

Sources: Toolkit to promote safe surgery [website]. Rockville, MD: Agency for Healthcare Research and Quality; 2018 (https://www.ahrq.gov/professionals/quality-patient-safety/hais/tools/surgery/index.html); http://www.who.int/infection-prevention/tools/surgical/en/

56

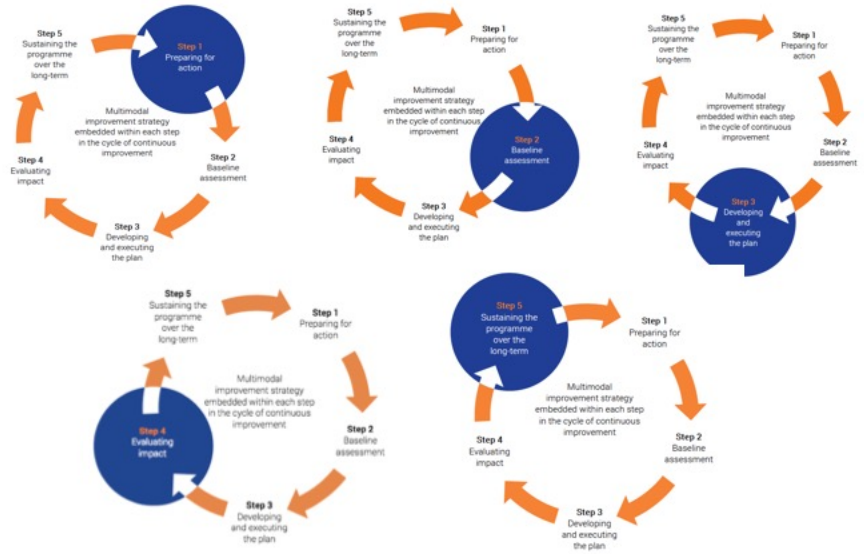
Leadership videos - in local context supports culture change

World Health Organization

57

Helping health facilities prepare for implementation

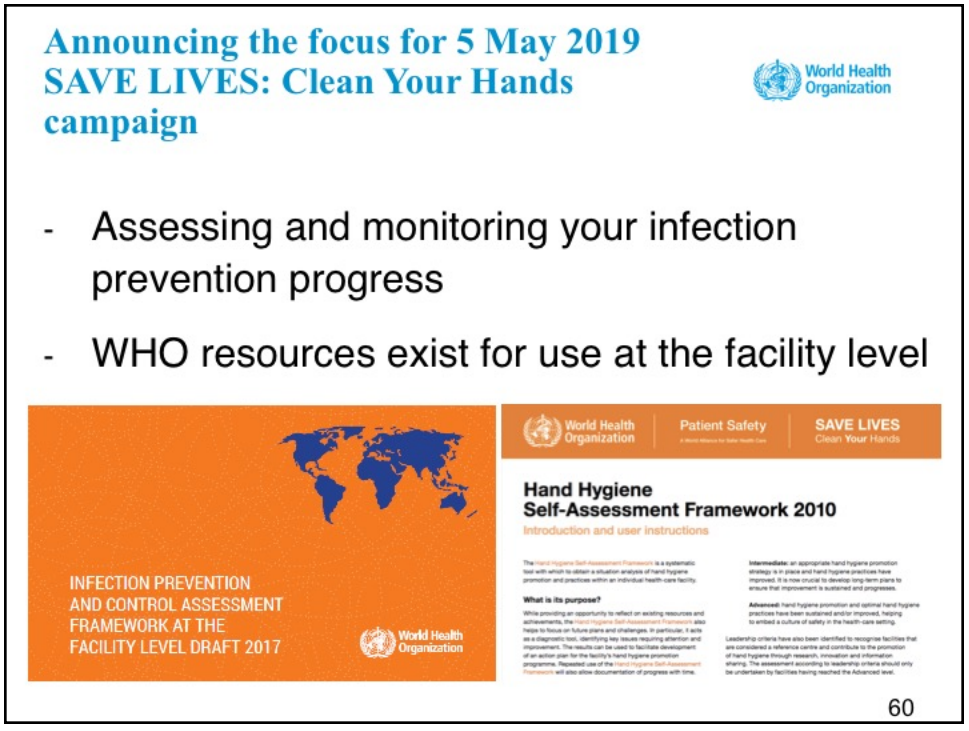
World Health Organization



13/11/2018 | Title of the presentation

58


New WHO SSI Prevention Implementation Package
World Health Organization
PREVENTING SURGICAL SITE INFECTIONS: IMPLEMENTATION APPROACHES FOR EVIDENCE-BASED RECOMMENDATIONS
Protocol for surgical site infection surveillance with a focus on settings with limited resources
http://www.who.int/infection-prevention/tools/surgical/evaluation_feedback/en/
WHO SSI Prevention Facility Implementation Manual (launch, Dec 2018)
WHO Adaptive Tools to Support SSI Prevention Implementation
SURGICAL SITE INFECTION PREVENTION
Key facts on decolonization of nasal carriers of Staphylococcus aureus
Fact sheets on SSI recommendations
DO THE RIGHT THING AT THE RIGHT TIME TO STOP SURGICAL SITE INFECTION
NEW IMPLEMENTATION PLATFORM
Launching Soon!
http://www.who.int/infection-prevention/tools/surgical/en/
59


Announcing the focus for 5 May 2019
SAVE LIVES: Clean Your Hands campaign
World Health Organization
- Assessing and monitoring your infection prevention progress
- WHO resources exist for use at the facility level
INFECTION PREVENTION AND CONTROL ASSESSMENT FRAMEWORK AT THE FACILITY LEVEL DRAFT 2017
World Health Organization
Patient Safety
SAVE LIVES Clean Your Hands
Hand Hygiene Self-Assessment Framework 2010
Introduction and user instructions
60

The spirit of assessments

World Health Organization

- Regular assessments of IPC programmes are essential for **continuous quality improvement.**
- Assessment helps to create a **sense of urgency** for the changes needed to improve IPC, taking account of the WHO core component guideline recommendations.
- Assessment also helps to identify **existing strengths** and take stock of achievements made so far to convince decision-makers that success and **progress is possible.**
- By using a **validated tool** (e.g. WHO IPCAT2), you can be confident that the information collected is meaningful and will support improvement.

13/11/2018 | Title of the presentation 61

WHO IPC global survey 2019
Use the two tools*, calculate your score, show your progress, act on your gaps!

Prepare: Read the tools and documents[1-4]	Take part in WHO webinars, hear more about using the tools and how to take part in the global survey[5]	Jan-Feb - complete IPCAF[3], act on your results and submit your results to WHO online	Mar-Apr – complete HHSAF[4], act on your results and submit your results to WHO online

Be part of the WHO global survey starting Jan 2019!
the report will be launched end of 2019)

*Facility level tools to be used: IPC Assessment Framework (IPCAF), Hand Hygiene Self Assessment Framework (HHSAF)
1. http://www.who.int/infection-prevention/tools/core-components/en/
2. http://www.who.int/infection-prevention/tools/hand-hygiene/en/
3. http://www.who.int/infection-prevention/tools/core-components/IPCAF-facility.PDF?ua=1
4. http://www.who.int/gpsc/country_work/hhsa_framework_October_2010.pdf?ua=1
5. Find more here soon http://www.who.int/infection-prevention/news-events/current-news/en/

62

World Health Organization

Survey: Practice variation perioperative O_2 use

Perioperative high FiO_2 may help prevent SSI

WHO, CDC & ACS recommendation on high FiO_2 sparked debate

Research indicates a large global practice variation may exist

Survey to quantify the problem and guide potential implementation efforts – led by the University of Amsterdam (The Netherlands) & supported by WHO

Contribute by filing in the survey via the link and forward it to your colleagues!

https://goo.gl/forms/5POsbT4eK9xTGSmd2

63

World Health Organization

WHO Infection Prevention and Control Global Unit

Thank you

64

www.webbertraining.com/schedulep1.php	
November 15, 2018	HEPATITIS C IN PRISONS - FROM INDIVIDUAL CARE TO VIRAL ERADICATION STRATEGY: A BENEFIT FOR THE COMMUNITY Speaker: **Dr. Roberto Ranieri** and **Dr. Ruggero Giuliani**, Penitentiary Infectious Diseases Unit, Santi Paolo e Carlo Hospital, University of Milan, Italy
November 22, 2018	*(FREE Teleclass)* NEONATAL SEPSIS PREVENTION IN LOW-RESOURCE SETTINGS Speaker: **Prof. Dr Angela Dramowski**, Stellenbosch University, Cape Town
December 6, 2018	INFECTIOUS DISEASE HIGHLIGHTS AND LOWLIGHTS IN 2018, AND WHAT TO EXPECT IN 2019 Speaker: **Dr. Larry Madoff**, ProMED Editor, Director, Division of Epidemiology and Immunization, Massachusetts Dept. of Public Health
December 12, 2018	*(South Pacific Teleclass)* CONTROL OF CARBAPENEMASE-PRODUCING ENTEROBACTERIACEA IN AN ENDEMIC SETTING: DO CLASSICAL IPC METHODS WORK FOR NEW AGE BUGS? Speaker: **Dr. Kalisvar Marimuthu**, Tan Tock Seng Hospital, Singapore
December 13, 2018	*(FREE Teleclass)* THE BEST WAYS TO GET YOUR HOSPITAL TO TALK ABOUT INFECTION CONTROL Speaker: **Prof. Andreas Voss**, Radboud University, The Netherlands

Thanks to Teleclass Education

PATRON SPONSORS

Diversey — www.diversey.com

VIROX — www.virox.com

GOJO — www.gojo.com

World Health Organization — Infection Prevention and Control Global Unit — www.who.int/gpsc/en