World Health Organization

PREVENTING SURGICAL SITE INFECTIONS:
IMPLEMENTATION APPROACHES FOR EVIDENCE-BASED RECOMMENDATIONS

Preventing surgical site infections: implementation approaches for evidence-based recommendations

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CONTENTS

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ABBREVIATIONS AND ACRONYMS

CCiSC	Clean Care is Safer Care
CUSP	Comprehensive Unit-based Safety Program
Four E's	engage, educate, execute and evaluate
HAI	health care-associated infection
IHI	Institute of Healthcare Improvement
IPC	infection prevention and control
LMICs	low- and middle-income countries
OR	operating room
PDSA	plan, do, study, act
SAP	surgical antibiotic prophylaxis
SBAR	situation, background, assessment, and recommendation
SSI	surgical site infection
SUSP	Surgical Unit-based Surgical Program
UK	United Kingdom
USA	United States of America
WHO	World Health Organization

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INTRODUCTION

Among the range of avoidable harms associated with health care, health care-associated infections (HAI) have been described as a significant burden (1). Surgical site infections (SSIs) are the most frequent HAI in low- and middle-income countries (LMICs), and can affect up to one-third of surgical patients (2). In African countries, infection is the most frequent complication in surgery and up to 20% of women who have a caesarean section develop a postoperative wound infection, compromising their own health and their ability to care for their infants (3) (WHO, unpublished data, 2016). In higher income settings, SSI are the second most frequent HAI in Europe (4) and the United States of America [USA] (5). They threaten the lives of millions of patients each year and contribute to the spread of antibiotic resistance. In the USA, these infections are estimated to contribute to patients spending more than 400 000 extra days in hospital at a cost of an additional US$ 10 billion per year (6). SSI prevention is complex as the risk results from several factors arising from the surgical patient journey, including sometimes after discharge.

Similar to any other HAI, SSIs are largely avoidable and up to one-half can generally be prevented through the successful implementation of clinical practice guidelines using a multimodal improvement strategy (7). However, no health facility or country can claim to be free of avoidable infections. Infection prevention requires behavioural change interventions. Furthermore, many health facilities do not yet have the infrastructure or established infection prevention and control (IPC) programmes in place. The recommendations contained within the World Health Organization (WHO) guidelines on core components of IPC programmes (8) underpin HAI prevention and include SSI prevention as one of the building blocks for achieving impacts on patient outcomes.

In the wider context, many approaches to preventing SSI are also relevant to improving other issues around surgical safety (3, 9, 10). This is especially relevant to surgery performed in LMICs where there is both the greatest unmet need for surgical services and the most challenges for the delivery of high-quality surgical care.

The so-called "Global Surgery" agenda (9) is an ongoing challenge and a recognized international burden. To this end, the effective deployment of SSI preventive actions represents a solution, at least in part, to one aspect of this wider challenge, including also the global burden of antimicrobial resistance agenda (11).

Much progress has been made over recent decades in designing and testing new approaches to IPC. To achieve substantial and lasting behavioural changes, it is now recognized that these approaches should be grounded in social and implementation science theory. Successful health care improvement projects must be simple enough for frontline staff to understand, sufficiently limited in scope to be accomplished without significant new resources, and relevant enough so as not to require input that participating organizations are fundamentally unable to provide.

The most successful improvement projects typically embrace a multimodal approach, which requires a strong understanding of the local context. There are many descriptions of how to undertake improvement projects, including implementation models or frameworks, as well as both anecdotal and formal descriptions of local activities. For the first time, this document presents a range of examples from different settings to stimulate next steps in planning for SSI prevention strategies.

Important in informing this document, in November 2016 WHO launched its evidence-based global guidelines on the prevention of SSI (12) with the dual aim of providing guidance on a wide range of issues that influence infection risk and to overcome some inconsistencies in the interpretation of evidence and recommendations in existing national guidelines. Importantly, these guidelines have been developed to be valid for any country and amenable to local adaptation. They take account of the strength of available scientific evidence, cost and resource implications, as well as patient values and preferences. In 2017, updated evidence-based recommendations from the United States (US) Centers for Diseases Control and Prevention were also issued and deal with similar topics (13).

Figure 1.1 provides a summary of measures recommended in the *WHO Global guidelines for the prevention of SSI*.

Figure 1.1.a
Surgical Site Infection Prevention Recommendations

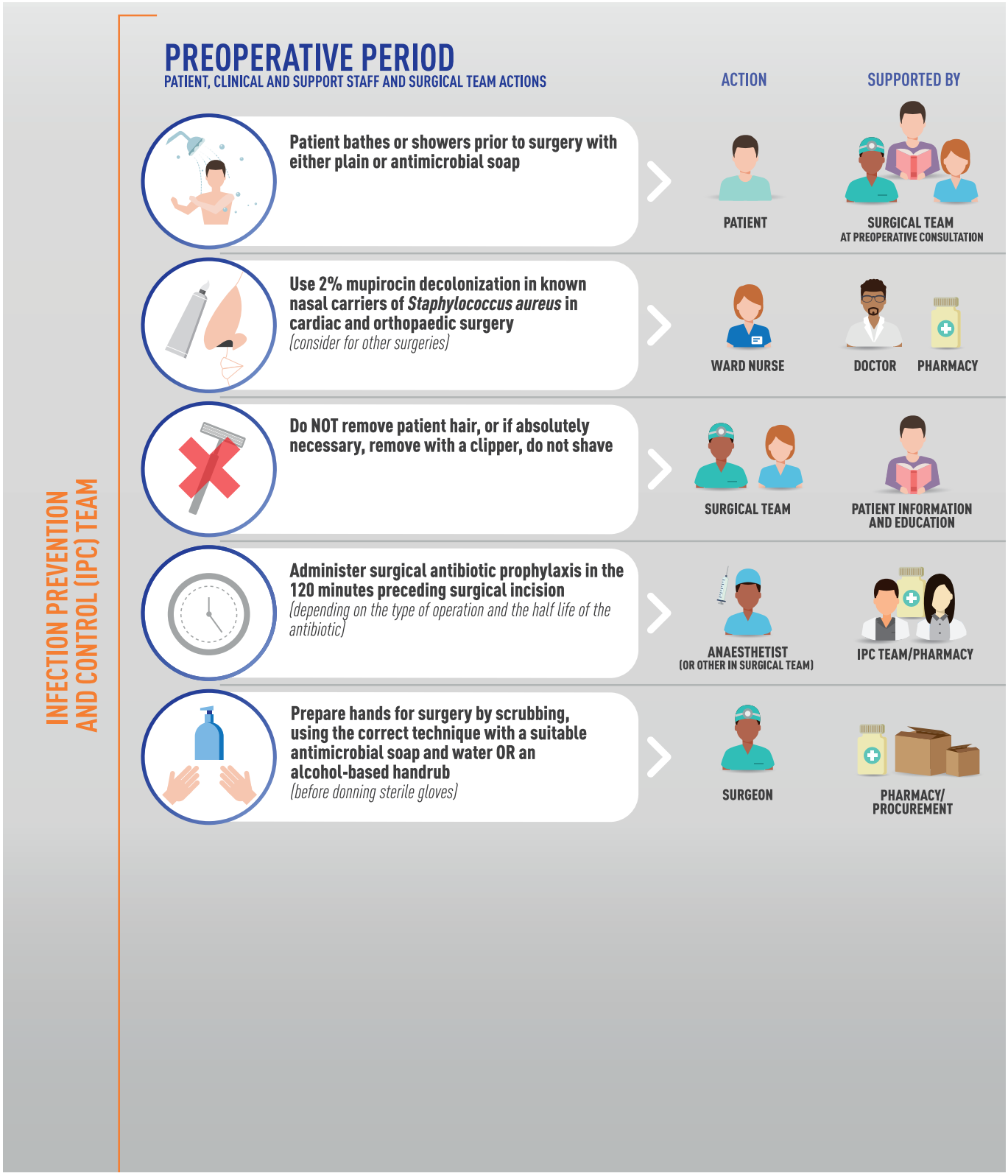

Figure 1.1.a
Surgical Site Infection Prevention Recommendations