World Health Organization

EXECUTIVE BOARD
136th session
Provisional agenda item 10.1

EB136/27
28 November 2014

Strengthening emergency and essential surgical care and anaesthesia as a component of universal health coverage

Report by the Secretariat

1. The Executive Board at its 135th session agreed to include strengthening emergency and essential surgical care and anaesthesia as a component of universal health coverage on the provisional agenda of its 136th session and that a new version of the report that it had noted would be prepared.[1]

GLOBAL BURDEN OF SURGICAL CONDITIONS

2. Every year, more than 234 million surgical procedures are performed globally for a wide range of conditions involving patients of all age categories and in every Member State. The many conditions requiring surgical care – including obstructed labour, congenital anomalies, diabetes, cancer, cardiovascular disease, hernias, cataracts, road traffic injuries, and injuries due to burns and falls – are common and affect people in all socioeconomic and ethnic groups.

3. Surgically treatable diseases are among the top 15 causes of disability worldwide. Conservative estimates find that 11% of the world's burden of disease stems from conditions that could be treated successfully through surgery, with higher proportions in low- and middle-income countries. As a result of such conditions going untreated, rates of maternal mortality are high, minor surgical pathologies become lethal and treatable injuries result in death. Surgical intervention is a potential treatment at some point for virtually every disease included in the Global Burden of Disease Study 2010.

4. Based on high mortality rates, the surgical conditions most in need of better surgical and anaesthesia services are accidental trauma (bone and soft-tissue injuries), tumours, obstetrical complications (including obstetrical fistula), cataracts and glaucoma, perinatal conditions and congenital anomalies, male circumcision (for prevention of HIV transmission) and other conditions including hernia and gall bladder disease. The conditions for which surgery is one of the primary clinical solutions are expected to become increasingly common in the coming years, with a rising volume of more than 45% expected for common conditions such as heart disease, cancer, diabetes and road traffic injuries between now and 2030.

[1] See document EB135/2014/REC/1, summary record of the first meeting of the Executive Board at its 135th session, section 7.

5. Services, including surgical care, for these conditions are often provided through independent disease-specific initiatives rather than through a more sustainable approach of integration into comprehensive surgical services. There is a need for safe, effective and affordable antibiotics to avoid infection resulting from surgery and an urgent need to address antimicrobial resistance. The integrated delivery of surgical care is an important and growing need for the treatment of various health conditions across the life-course.

THE IMPORTANCE AND COST-EFFECTIVENESS OF SURGERY

6. Strengthening surgical capacity, particularly at the district hospital level, has been identified as a highly cost-efficient means of reducing the global burden of disease. Notably, strengthening local surgical capacity is an approach that would both provide a high degree of financial protection to populations and lower the disability-adjusted life years lost in a cost-effective manner. The benefit/cost ratio for the expansion of the surgical capacity at district hospitals has been found to be 10, with every US$ 1 spent on strengthening local surgical capacity generating US$ 10 through improved health and increased productivity. Timely access to safe surgical care is curative and also prevents disability from obstetric fistula and congenital anomalies such as clubfoot. Thus surgical care and anaesthesia should be considered as a core aspect of universal health coverage.

GAPS IN SURGICAL SERVICES

7. *The world health report 2008* notes that surgical care is an integral component of the continuum of primary care,[1] yet it is estimated that more than 2000 million people in the world lack access to even basic surgical care.[2] In addition, the delivery of anaesthesia, which is an essential component of surgical services, is limited by deficiencies in human resources, equipment availability and system capacity.[3]

8. In many parts of the world, access to essential and emergency surgical services is extremely limited, with less developed countries concentrating available surgical care in urban centres. A baseline assessment of the current situation of surgical and anaesthesia services is needed in order to understand better what effective measures need to be taken to fill the gaps identified. Assessments using one element of the WHO Integrated Management for Emergency and Essential Surgical Care toolkit, namely the situational analysis tool to assess emergency and essential surgical care, have identified major inadequacies in numerous countries in the relevant infrastructure and human resources, and in surgical interventions, skills and equipment.[4]

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[1] The world health report 2008. Primary health care – now more than ever. Geneva: World Health Organization; 2008.

[2] Weiser TG, Regenbogen SE, Thompson KD et al. An estimation of the global volume of surgery: a modelling strategy based on available data. Lancet 2008;372:139–144. Funk LM, Weiser TG, Berry WR, Lipsitz SR, Merry AF, Enright AC et al. Global operating theatre distribution and pulse oximetry supply: an estimation from reported data. Lancet 2010;375:1055–1061.

[3] Country assessments for Afghanistan, Democratic Republic of the Congo, Ethiopia, Gambia, Ghana, India, Indonesia, Liberia, Malawi, Mongolia, Myanmar, Niger, Nigeria, Pakistan, Papua New Guinea, Sao Tome and Principe, Sierra Leone, Solomon Islands, Somalia, Sri Lanka, Uganda, United Republic of Tanzania and Viet Nam, see http://www.who.int/surgery/publications/topic_publications/en/index3.html (accessed 24 October 2014).

[4] WHO Integrated Management for Emergency and Essential Surgical Care e-learning toolkit, http://www.who.int/surgery/publications/imeesc/en (accessed 24 October 2014), English only.

9. Recently, the largest cross-sectional survey to date on the availability of caesarean delivery, one of the most basic surgical procedures, in 26 low- and middle-income countries found that 23.2% of the facilities surveyed did not perform the procedure and 2.9% did not provide complete information (data points) on the survey tool. The lack of skilled professionals and absence of adequate equipment were significant barriers to providing this surgical procedure. Even facilities that reported performing caesarean deliveries lacked sufficient skilled providers of anaesthesia and obstetric and surgical care. A background paper for *The world health report 2010* recognizes that timely caesarean sections should be offered to women in need while advocating a more rational use of caesarean sections in countries where this procedure was used excessively and unnecessarily.[1] Gaps in access to essential surgical care are further broadened by communities' acute needs in the wake of disasters and emergencies.

10. Numerous assessments of surgical interventions in low- and middle-income countries have identified major inadequacies in infrastructure and human resources, skills, functioning equipment, medicines and other supplies. One assessment in 22 such countries demonstrated that 35% of health care facilities surveyed had no access to oxygen supplies and only 53% had continuous access to anaesthesia machines. Another assessment in 26 such countries revealed that lack of skills (53%) and non-functioning equipment (43%) were the most common reasons for caesarean deliveries not being performed and patients being referred.

11. Ketamine is widely used as an anaesthetic in human (and veterinary) medicine, especially in low- and middle-income countries in surgical care and in crisis or emergency situations. The ease of parenteral administration gives ketamine a major advantage when anaesthetic gases are impossible to use owing to limited equipment and lack of appropriately trained specialists. In addition, it carries a wide margin of safety compared with other anaesthetic agents. However, access to ketamine was reported in only 71% of the surveyed health facilities in 22 low- and middle-income countries. In many countries there is no suitable alternative that is affordable.

12. Data on access to ketamine are reported, but less is known about the availability of other medicines required for the safe conduct of emergency and surgical care. Depending on the levels of care and procedures performed, WHO has identified the needs for inhalational anaesthetics (halothane and isoflurane), local anaesthetics (lidocaine and bupivacaine hydrochloride), agents for spinal anaesthesia, preoperative and sedative medication (atropine, diazepam), muscle relaxants (neostigmine, suxamethonium chloride and vecuronium) as well as medicines for resuscitation, cardiovascular and respiratory support (adrenaline, calcium chloride, hydralazine hydrochloride, furosemide and aminophylline), and electrolyte imbalances.[2]

13. The quality and safety of surgical care are also areas of concern. The Second Global Patient Safety Challenge: Safe Surgery Saves Lives focuses on the safe delivery of surgical care.[3] Findings

[1] Gibbons L, Belizán JM, Lauer JA, Betran AP, Merialdi M, Althabe F. The global numbers and costs of additionally needed and unnecessary caesarean sections performed per year: overuse as a barrier to universal coverage. The world health report 2010, background paper No. 30, 31 pp (http://www.who.int/healthsystems/topics/financing/healthreport/30C-sectioncosts.pdf, accessed 24 October 2014).

[2] World Health Organization 2012. Guide to infrastructure and supplies at various levels of health care facilities: emergency and essential surgical care (EESC) http://www.who.int/surgery/publications/s15983e.pdf?ua=1 (accessed 24 October 2014).

[3] World Alliance for Patient Safety. The Second Global Patient Safety Challenge: Safe surgery saves lives, document WHO/IER/PSP/2008.07, reprinted 2009 (http://www.who.int/patientsafety/campaigns/en/ (accessed 24 October 2014).

from WHO's work suggest that globally surgery still involves high rates of morbidity and mortality: at least seven million people a year experience disabling surgical complications, from which more than one million die.

ACTIONS AT COUNTRY LEVEL

14. The value of incorporating surgical care into health services as a step towards providing universal health coverage has been implicit in numerous previous resolutions adopted by the Health Assembly.[1] Strengthening emergency and essential surgical care and anaesthesia services will strengthen health services overall and improve outcomes, for instance, for mothers and children.

15. Although some work has been done to start to close the gaps in the coverage and quality of essential and emergency surgical care and anaesthesia, many actions can still be taken at country level to strengthen surgical services. Priority areas are discussed below.

16. **Raising awareness and building political commitment.** Awareness needs to be raised and sustained in Member States about the existence of low-cost interventions that reduce death and disability through improved access to safe surgical care and anaesthesia. Member States need to encourage the integration of surgical services at the district and subdistrict levels of care as a move towards the achievement of universal health care. As part of this effort, multidisciplinary stakeholders, including policy-makers, health providers and the media, need to be persuaded of the value of making the necessary investment to establish a firm evidence base and of providing sustainable emergency and essential surgical care services.

17. Political commitment is essential for integrating surgical care initiatives into national health plans. Political priority should be given to supporting essential surgical care and anaesthesia within primary health care and universal health care in all countries.

18. **Expanding access to emergency and essential surgical services where needed.** Member States should expand efforts to close gaps, in both infrastructure and human resources for essential and emergency surgical care. Improving workforce distribution, with special attention being given to rural areas, should be a priority, although regular assessment and assuring the availability of functioning equipment and medicines are also essential. Necessary steps would include making ketamine accessible in all facilities where anaesthesia is needed, in order to ensure safe and affordable surgical care.

19. **Improving the quality and safety of emergency and essential surgical services.** Action in this area should be a joint priority, along with improving access to surgical care, so as to eliminate

[1] See resolutions WHA50.29 Elimination of lymphatic filariasis as a public health problem, WHA57.1 Surveillance and control of *Mycobacterium ulcerans* disease (Buruli ulcer), WHA57.12 Reproductive health: strategy to accelerate progress towards the attainment of international development goals and targets, WHA57.18 Human organ and tissue transplantation, WHA58.23 Disability, including prevention, management and rehabilitation, WHA58.31 Working towards universal coverage of maternal, newborn and child health interventions, WHA59.23 Rapid scaling up of health workforce production, WHA60.22 Health systems: emergency-care systems, WHA61.16 Female genital mutilation, WHA62.1 Prevention of avoidable blindness and visual impairment, WHA62.12 Primary health care, including health system strengthening, WHA63.17 Birth defects, WHA64.27 Child injury prevention, WHA65.20 WHO's response, and role as the health cluster lead, in meeting the growing demands of health in humanitarian emergencies, and WHA66.7 Implementation of the recommendations of the United Nations Commission on Life-Saving Commodities for Women and Children.

surgery-related inequities and differences in mortality and morbidity. Even though perioperative and anaesthetic-related mortality rates have progressively declined over the past 50 years, partially as a result of efforts to improve patient safety in the perioperative setting, they still remain two to three times higher in developing countries than in developed countries.

20. **Strengthening the surgical workforce.** Member States should include consideration of the surgical workforce in designing their overall strategies on health system planning. They should also foster training in surgical care and anaesthesia through exchange of knowledge and expertise, using networks and global partnerships that encourage surgical capacity-building with a special focus on first-referral health facilities and primary health care. Efforts to train locally specialists, surgeons and anaesthesiologists as well as general practitioners, nurses and clinical medical officers through various programmes have been successful in low- and middle-income countries.[1] Collaborations and partnerships with professional associations and organizations could assist in task shifting in primary health care in order to redress shortage of surgical health workforce and to help to strengthen health systems.

21. Educational institutions need to review curricula for training in surgery and anaesthesia so as to ensure that health facilities adapted to meet the growing use of surgical services and the provision of continuing education for the surgical workforce.

22. **Improving data collection, monitoring and evaluation for policy and decision-making.** Evidence-based plans and policies need to be implemented to ensure the successful expansion of access to essential surgical services. Monitoring and evaluation are necessary to ensure and sustain both improved access to surgical services and their quality and safety. Proper surgical records and adequate follow-up are crucial to ensuring safe procedures and their monitoring.

23. **Fostering global collaboration and partnerships.** Coordination between international organizations, national governments, health ministries, professional bodies, nongovernmental organizations and academic institutions is needed in order to sustain viable capacity-building in education, training and research.

ACTION BY THE SECRETARIAT

24. In a global collaborative effort with Member States, the Secretariat elaborated the WHO Integrated Management for Emergency and Essential Surgical Care toolkit in order to guide policies and research for evidence-based planning and improvement of the quality and safety of surgical services, including the training of health care workers in essential procedures. The Secretariat will expand its work on capacity-building through the use of this toolkit.

25. Approaches and tools, such as the WHO CHOICE project for choosing interventions that are cost-effective[2] and the WHO global database on emergency and essential surgical care,[3] will be used to provide evidence-informed analyses for investment planning and identifying the financial resources needed to strengthen surgical services.

[1] Johnson WD. Surgery as a Global Health Issue. Surg Neurol Int. 2013 April;4:47

[2] Cost effectiveness and strategic planning (WHO-CHOICE), http://www.who.int/choice/cost-effectiveness/en/ (accessed 24 October 2014).

[3] WHO EESC Global Database, http://who.int/surgery/eesc_database/en/ (accessed 24 October 2014).

26. The Secretariat will work with Member States to ensure that surgical services at district and subdistrict levels of care – such as those for emergencies, trauma, obstetrics and anaesthesia – are assessed and monitored with standardized tools such as the WHO Integrated Management for Emergency and Essential Surgical Care toolkit, which includes recommendations on minimum standards for surgical and anaesthetic services.

27. The WHO Global Initiative for Emergency and Essential Surgical Care[1] continues to be the cornerstone of the Secretariat's work in this area. The continuing work of this global forum provides a solid foundation for collaboration and partnerships to support Member States in strengthening their surgical care systems.

ACTION BY THE EXECUTIVE BOARD

28. The Board is invited to note this report.

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[1] http://who.int/surgery/globalinitiative/en/ (accessed 24 October 2014).