

## Opinion

# Surgeries and surgical site infection in India: A analysis of Health Management Information System 2019–2020

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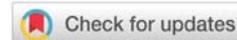
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## Introduction

Surgical site infection is defined as an infection occurs within 30 days after the operation if no implant is left in place or within one year if implant is in place and the infection appears to be related to the operation and infection involves deep soft tissue (e.g. fascia, muscle) of the incision and/or the infection appears to be related to the operation and infection involves any part of the anatomy other than the incision that was opened or manipulated during an operation (e.g. organs and spaces) [1]. The World Health Organization (WHO) defined that Surgical Site Infection (SSI) is the most surveyed and frequent type of Healthcare-Associated Infections (HAI) in low- and middle-income countries which affects one third of patients who have undergone a surgical procedure. SSI incidence is the second most frequent type of HAI [2]. It is one of the most common postoperative complications and causes significant postoperative morbidity, mortality, prolongs hospital stay, and increases hospital costs also (Anderson DJ, 2014). The global estimates of SSI have varied from 0.5% to 15%, studies in India have consistently shown higher rates ranging from 23% to 38% [3]. The incidence of SSI may be influenced by factors such as pre-operative care, the theatre environment, post-operative care and the type of surgery. Many other factors influence surgical wound healing and determine the potential for, and the incidence of, infection [4,5]. As it is a rare event and also it is complicated to maintain the data at national level as well as tracking of such incidents is also difficult. In this context we have tried to enlighten on the SSI rate through available data in the Health Management Information System (HMIS) portal which was launched by the Government of India. The HMIS portal provides the data on surgeries conducted at public

health institutions throughout India, which includes major and minor surgeries with post-operative surgical site infections. As per HMIS major surgeries/operations are defined as surgeries requiring spinal or general anesthesia (alternative definition –surgeries that take more than 30 minutes to complete). Similarly, minor surgeries are defined as minor surgical care and should be available even where there is no surgeon. Draining abscesses, stitching injuries, hemorrhoids management etc. would be counted here (alternative definition –surgeries that take less than 30 minutes to complete). The limitation of the study is whatever the data is available in the HMIS web-portal that has been considered for the analysis. The data shows that in India, total 1,88,82,734 surgeries were carried out during 2019–20 in the public health facilities. Of them 48,51,788 and 1,40,30,946 were major and minor surgeries respectively. Among operated surgeries 23,286 people had experience with surgical site infections during the reference period at national level.

The data reveals that, at national level 123 persons had experienced surgical site infection per 100 000 surgeries, Further, as high as SSI were reported in Meghalaya (923 Persons), Assam (669 persons), and Dadra & Nagar Haveli (611 persons), Daman & Diu (597) followed by Arunachal Pradesh (380 persons), Karnataka (364 persons) and Uttar Pradesh (419 persons). The least number of infections were reported in Kerala, Nagaland, Odisha and Rajasthan. The quality of surgeries can be assessed based on the SSI rate. The reporting of least number of SSI cases itself indicates that quality of surgeries is better and it is vice versa. For policy makers it helps to rectify the factors which are associated with performance as well as focus on the inputs for enhancing the quality through providing infrastructure facilities and skilled human resources.



Sub-national surgeries performed in the public health facilities in India, 2019-20.

States	Operation major (General and spinal anesthesia)	Operation minor (No or local anesthesia)	Total surgeries	Number of post-operative Surgical Site infection	Surgical site infection per 100 000 surgeries
Andhra Pradesh	160271	1283642	1443913	2218	153
Arunachal Pradesh	9330	13802	23132	88	380
Assam	63625	66969	130594	873	668
Bihar	259008	1089483	1348491	430	31
Chhattisgarh	34579	106077	140656	245	174
Goa	8184	24786	32970	90	273
Gujarat	167873	518304	686177	696	101
Haryana	61394	103523	164917	322	195
Himachal Pradesh	38018	126909	164927	95	57
Jammu & Kashmir	127200	563417	690617	1311	189
Jharkhand	85361	143816	229177	107	46
Karnataka	498233	666254	1164487	4246	364
Kerala	335181	820184	1155365	112	9
Madhya Pradesh	132969	457890	590859	801	135
Maharashtra	324213	501377	825590	2105	255
Manipur	19932	38749	58681	3	5
Meghalaya	14425	27497	41922	387	923
Mizoram	14187	26345	40532	25	61
Nagaland	11019	29203	40222	7	17
Odisha	151275	1295416	1446691	249	17
Punjab	90233	265531	355764	373	104
Rajasthan	273528	860088	1133616	324	28
Sikkim	639	17284	17923	6	33
Tamil Nadu	720399	2327574	3047973	494	16
Telangana	90401	280818	371219	373	100
Tripura	27386	60015	87401	1	1
Uttar Pradesh	267809	430400	698209	2926	419
Uttarakhand	21785	25142	46927	59	125
West Bengal	359037	575298	934335	1282	137
A & N Islands	3577	1314	4891	1	20
Chandigarh	74285	303592	377877	287	76
Dadra & Nagar Haveli	6653	10528	17181	105	611
Daman & Diu	2343	1511	3854	23	596
Delhi	379781	845985	1225766	2609	212
Lakshadweep	587	9327	9914	0	0.0
Puducherry	17068	112896	129964	13	10
India	4851788	14030946	18882734	23286	123

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**Data availability statement:** The data used for the study is obtained from the web portal of Health Management Information System (<https://nrhm-mis.nic.in/SitePages/Home.aspx>).

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