

A Study on Prescribing Adherence for Surgical Antibiotic Prophylaxis Protocol in a Rural Hospital in India

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ABSTRACT

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Background: There is an increasing concern about the spread of antimicrobial resistance among hospitalized patients due to the inadequate use of antibiotics. Surgical antibiotic prophylaxis (SAP) protocols are useful for rationalizing the use of antibiotics while surgical interventions. The objective of this study was to evaluate the adherence to a protocol for surgical prophylaxis at a Surgical Department in a rural district hospital in South India. **Methodology:** It's a retrospective observational study conducted for a period of 6 months (July to December 2011). Terminally ill and immunocompromised patients were not included in the study. **Result & Discussion:** A total of 512 cases were screened. The overall adherence rate to the hospital protocol was 39.84%. Maximum adherence scores were found in cholelithiasis (100%) and hernia (98.4) surgeries, and minimum adherence scores were found in appendicular (5.26%) and urological (13.3%) surgeries. Adherence to protocol was higher for children and lower for older patients. **Conclusion:** Adherence to the SAP protocol was low, suggesting more studies to find out the reasons for fewer adherences. The challenges of infections are much higher in rural population with less sanitization and lack of awareness. It was also recommended to revise the protocols as per local needs.

Keywords: Surgical protocol, protocol adherence, surgical prophylaxis, antibiotics, prescribers

INTRODUCTION

Clinical guidelines and protocols are gaining increasing acceptance in medical practice as a mean to implement evidence based medicine in healthcare facilities and to obtain cost efficiency.¹ However in order to reach these goals, protocols need to be of high quality. Factors like ambiguity and incompleteness appear frequently in medical protocols.² Medical protocols often presume its users to have certain background knowledge, not having to explain everything in complete detail. Presently the medical world is facing two major problems. First of all an increasing amount of information for making clinical decisions resulting from modern equipment becomes available and paradoxically this makes the decision making more difficult.³ Secondly, there exists a need to improve the quality of health care through increased awareness of proper disease management techniques.⁴ Medical protocols can help to overcome these problems. Clinical practice guidelines can be defined as: systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances.⁵ They can be viewed as reusable skeletal base that is applied based on the patient factors.⁶

However guidelines will not address all the uncertainties of current clinical practice and should be seen as only one strategy that can help improve the quality of care the patient's receive.⁷ Evidences generated in high resource health care settings may not be applicable in a resource limited health care setting.

METHODOLOGY

The study was conducted to assess the prescribers' adherence to protocol. It is a retrospective study performed in the surgical department of secondary level care, rural, resource limited hospital in south India. The hospital is a working on a charity mission since 2000 and the charges on patients are minimal or nil. In 2011 hospital formulary and treatment protocols were implemented as part of the hospital policy. The surgical antibiotic prophylaxis (SAP) protocol was prepared by a committee formed in the Department of Surgery and it was reviewed by infection control committee in the hospital. All the patients who have undergone surgical procedure and are on antibiotics for surgical prophylaxis were included in the study except terminally ill and immune-compromised patients. All the patients included had undergone surgery, which may be minor or major using prophylactic antibiotic to prevent infection. Data of 6 months was collected from July 2011 to December 2011 from medical records and then percentage adherence was measured from the patient medication chart. Any deviation in prescribing the drug(s), which was suggested in the protocol, was considered as a non-adherence of protocol.

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RESULTS

There were 512 prescriptions of SAP reviewed; of those 364 were males and 148 were females. All patients were studied and there were no cases above 90 years of age.

Table 1: Adherence on different age groups for antibiotic surgical prophylaxis

Sl. No.	Age group (yrs)	No. of patients	Adherence (%)
1	0-15	52	61.5
2	16-30	151	36.4
3	31-45	95	47.37
4	46-60	81	51.8
5	61-75	87	25.6
6	76-90	46	13

Adherences to protocol on different surgeries were different (Table 2). Percentage adherence was calculated for the surgeries, bite cellulites and Lithiasis was found to be 100%. Adherence was high in hernia case, 61 out of 62 followed protocol (Adherence=98.4%). In esopagogastrodeodenal surgeries 12 prescriptions followed protocol out of 80 (adherence=15%). In Diabetes induced foot ulcers 75 prescriptions followed protocol out of 99 (Adherence=75.8%). In colon and rectal surgeries, 12 prescriptions followed protocol out of 22 (Adherence=54.54%). In Breast surgeries, 10 out of 19 cases followed protocol (Adherence=52.6%). In biliary surgeries, 5 out of 10 followed protocol (Adherence=50%). In esopagogastrodeodenal surgeries, 12 out of 80 prescriptions followed protocol (Adherence=15%). In urological surgeries, only 15 out of 113 prescriptions followed protocol (Adherence= 13.3%). In appendicular surgeries, only 4 out of 76 prescriptions follow protocol (Adherence=5.26%). Among 512 patients overall surgical prophylaxis 204 treatments were followed the protocol and 308 treatments were out of protocol. Overall percent adherence of protocol was found to be 204 (39.84%).

DISCUSSION

In our rural hospital, where high input of rural patients is seen there are increased chances of infection due to lesser hygiene and low levels of awareness. Higher infectious control measures and multi-professional approach is needed. Results showed low adherence to the protocol, it may be because of patient specific factors, different approaches by prescribers towards the specific conditions. In some cases there may not be a need of the medication or sometime an extra medication to be added to the condition considering the limited resources of infection control and low hygiene of rural patients, may lead prescribers to prescribe out of protocol. Rapid turnover of prescribers in the hospital may be a reason for fewer adherences. It is advisable to revise the protocols as per the local needs. In a Swedish study from 2002 to 2007 using enhanced recovery after surgery (ERAS) protocol, promising results were obtained. Improved adherence to the standardized multimodal ERAS protocol is significantly associated with improved clinical outcomes following major colorectal cancer surgery, indicating a dose-response relationship.⁸ The success of surgical antibiotic prophylaxis shall depend on; selection of appropriate antibiotic, timing of administration, dosage, sensitivity, duration of prophylaxis, and route of administration. A global review in 2012 reported that the surgical antibiotic prophylaxis range from 0% to 71.9%.⁹

CONCLUSION

Clinical protocols are useful tools in incorporating the best quality evidences to the real practice with local requirements. SAP protocols shall be difficult to follow as there are considerable variations on the risk of infections based on multiple factors. Protocol adherence was found to be high in some surgeries and low in others. It was proposed to revise the protocol as per local needs more practically feasible to follow. Also, specific studies are planned to find out the reasons for less protocol adherence.

Table 2: Comparison of antibiotic protocol adherence versus different surgeries

Sl. No.	Type of surgery	No. of cases	Non-adherence	Adherence%	Adherence
1	Esopagogastrodeodenal	80	68	12	15
2	Biliary	10	5	5	50
3	Appendicular	76	72	4	5.26
4	Colon And Rectal	22	10	12	54.54
5	Inguinal Hernia	62	1	61	98.4
6	Urological	113	98	15	13.3
7	Lithiasis	10	10	0	100
8	Nose, Mouth, Pharynx	21	12	9	42.9
9	Breast surgery	19	9	10	52.6
10	Diabetes induced ulcers and cellulites	99	24	75	75.8

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