SJP Sarawak Journal of Pharmacy

Journal Homepage: http://jknsarawak.moh.gov.my/spj/

Review of the prescribing pattern in post circumcision in Hospital Kanowit: retrospective cross sectional study

Loo Shing Chyi[1];Ngo Swee San[1]

[1]*Pharmacy Unit, Hospital Kanowit, Sarawak, Malaysia*

INTRODUCTION: Male circumcision is one the most common and long existed surgical procedures performed globally and locally in government hospital. Although circumcision is a relatively safe surgical procedure, but this procedure is still carries risk of possible complications. According to a systematic review done by WHO (World Health Organization) 2010, bleeding and wound infection are the most common complications in circumcision.

OBJECTIVE: To explore the cost and medications prescribed and complications of post circumcision in Hospital Kanowit

METHODS: This is a cross sectional epidemiological study to determine the prevalence of the commonly prescribed medications and complications in post circumcision patients from 21st November 2015 to 31st January 2016.

8700 prescriptions screened and 164 prescriptions with the diagnosis of circumcision, post circumcision, and complications secondary to circumcision included in this study.

Independent T-test use to comparison of the cost of oral antibiotic before switch of practice by the prescribers (21st till 30th November) and after (1st-31st December) analysed using the Statistical Package for the Social Sciences (SPSS) version 15.

RESULTS & DISCUSSIONS: Commonly prescribed medications include Paracetamol prescribed 156 (98.73%), Chloramphenicol (CMC) eye ointment 103(65.18%),Prolase 76(48.10%), Cloxacillin 51(32.27%), Ascorbic acid 38(24.05%), acriflvin lotion 30(18.90%), Phenoxymethylpenicillin 15(9.49%) and others.

The main problems found was the used of oral antibiotics in all circumcision patient which are not encourage by any study found. These are the main contribution to the medications cost. The possible factors found was lack of guidelines for all prescribers on managing post circumcision, no post circumcision wound inspection or follow up given to patients, and logistic issues.

Before the switch of practice by the prescribers mean antibiotic cost was RM12.71; while after the switch mean cost was RM1.53, cost different was RM 11.18. This show significant reduction in the medication cost after the intervention (p value <0.001).Post circumcision complication found only 1 case (0.67%).

CONCLUSION: Suggested medications prescribed for post circumcision are CMC eye ointment 1tube, with wide range coverage on gram-negative and gram-positive organisms, prolase 20tablets, and paracetamol 20 tablets which only cost RM 2.65 per patient, while current mean cost per patient was RM7.89 (RM15.29 mean cost before switch of practice).

KEY WORDS: Prescribing pattern; Post circumcision

Introduction:

Male circumcision is one the most common and long existed surgical procedures performed globally. According to a review done by WHO (World Health Organisation), it estimated one in three males worldwide circumcised for social, cultural and medical reasons (improved penile hygiene or reduced risk of infection) [1]. There is currently increased interest in male circumcision services, since three randomised controlled trials have confirmed that circumcision reduces the risk of acquiring HIV infection in males [1][2]. On top of that circumcision brings multiple health benefits, including lower risks of urinary tract infections, lower risk of Phimosisand of invasive penile cancer [1][3][4].

Although circumcision known as a relatively safe surgical procedure, but this procedure is still possible lead to complications. According to a systematic review done by WHO 2010, bleeding and wound infection is most common complications in circumcision [1][3].

Generally, from the WHO reviews it shows that circumcising males at a younger age have lower risk of complications, faster healing and a lower medical cost. Other factors which affect the risk of complication were the experiences of the circumcision providers, equipment and supplies in providing the services. Cost of procedures is main consideration in choice of providers [1].

According to the systemic review done by WHO year 2010, circumcision is prevalent in Muslim Asian countries which including Malaysia. Circumcision performed mainly in Muslim community for the cultural and religious purposes. As Circumcision is known in Arabic as al-Tohour and practised as a confirmation of the relationship with God; the practice also known as ‘tahera’, meaning ‘purification’. In other writings circumcision ordered as one of five behaviours that men should follow to attain a high degree of respectability and dignity [1].

In our hospital, commonly we will have a lot of cases of circumcision during year end school long holiday which started from November till December. Due to lacking of guideline and clear selection of antibiotic use in Malaysia, lead to multiple practices occurs in different part of the country.

One of the most serious issues is the prescribed of oral antibiotic to all patient with post circumcision, possible lead to increase of medical cost and possible emerged of antibiotic resistances. From all the studies and systemic review done, they are no recommendation use of oral antibiotic in post circumcision, only few of them suggest covering with topical antibiotic [5][6]. On top of that, there are seldom comparisons or discussions on the medications use or prescribed to patients post circumcision.

Thus our study is to explore the medications use in post circumcision patients, how often they are being prescribed with oral antibiotic, topical products, analgesia, and others items which available in our Hospital. Then we would try to look into the average cost of the medications prescribe to post circumcision patients. And from this review we would try to formulate the best medications practice/use based on the cost and rational in medication use. However there are still further studies in confirming the effectiveness and necessity of the formulated medication practice/use in post circumcision.

Methods:

This is a cross sectional epidemiological study epidemiological study to see the prevalence of the common medications prescribed and complications in post circumcision patients from 21 November 2015 till 31 January 2016. The date chosen was according to the year end schools holiday for primary and secondary school in Malaysia, besides we also extend one month in January and collected data for any complications for post circumcision.

However, on 1st of December onwards, as we found that there are drastic reductions in prescribing oral antibiotic to patients with post circumcision. There is a switch of practice among the prescribers, which not planned by our study. Thus we classified pre intervention prescription as prescription collected from 21thNovember 2015 till 30th November 2015, while post intervention as prescription collected from 1st December 2015 till 31th December 2015.

All prescription with the diagnosis of post circumcision, and the medications prescribed by the medical assistant or medical officer prior interventions included in this study.

All prescription with the diagnosis of circumcision, post circumcision, and complications secondary to circumcision included for this study. Prescriptions which have incomplete diagnosis, diagnosis that cannot identify, and prescriptions that is not within the study period were excluded.

Reliability and Validity of the measurement tools

The data collecting form created base on the objective of this research, to collect the medications prescribed to post circumcision patients. Pre-testing done for the data collection form to assure the reliability and validity of the data collection form.

Statistical Analysis

Medications prescribed and incident of prescribing errors in post circumcision patients analysed by using the Statistical Package for the Social Sciences (SPSS) version 15. Independent T-test is use to comparison of the cost of oral antibiotic pre intervention and post intervention analysed by using the Statistical Package for the Social Sciences (SPSS) version 15.

Risk and benefit to study participants

There is no involvement of any human subject and there is no intervention done to the treatment received by patients. We only report what we observed, thus this study does not involved any risk to the subjects. However, the data collected served as a guideline for us in the future to improve our practice which might potential benefit all our patients. All data only restricted to the principal investigators and only used for research purposed. Study conducted in compliance with ethical principles outlined in the Declaration of Helsinki and Malaysian Good Clinical Practice Guideline.

Subject's names kept on a password-protected database and linked only with a study identification number for this research. The identification number instead of patient identifiers used on subject data sheets. All data entered a computer that password protected. On completion of study, data in the computer copied to CDs and the data in the computer

erased. CDs and any hardcopy data stored in a locked office of the investigators and maintained for a minimum of three years after completing the study. The CDs and data will be destroyed after that period of storage. This is a study looking at prescriptions for patients with the diagnosis of post circumcision and there is no direct interaction with study subjects. Hence, subjects will not be informed of the study data.

Results:

General statistic

There are total of 158 prescriptions collected and 150 patients involved in this study, mean age of circumcision found was 12 years old. The numbers of patients came for follow up was only seven of them, and only one post circumcision complication wound break down detected during the data collection period. There are 60% prescribing errors found from all the prescription collected. These are all summarised in table 1.

Table 1: General statistic

Variables	Frequency (n)	Mean(SD)
Total number of prescription collected	164	
Total number of patients	156	
Age*		12.03
Number of patients follow up	7	
Number of patient(S) had post circumcision complication	1	
Prescribing errors found	97	

***According to 156 patients, there are 8 prescriptions which without age thus the mean age based on 148 patients**

Frequency of items prescribed to post circumcision patients

All the items prescribed to patients post circumcision summarised in the table 2 and graph 1. Generally all the items categorised into 4 categories analgesia, oral antibiotic, topical product, and others medications. The only analgesia prescribed was Paracetamol and two main oral antibiotics prescribed to patients which are phenoxymethylpenicillin and Cloxacillin. Topical products product of choice is Chloramphenicol (CMC) eye ointment, followed by acriflavin lotion, and calamine lotion. Lastly others medications prescribed to patient were prolase, ascorbic acid, and chlorpheniramine tablet.

Table 2: Frequency of items prescribed to post circumcision patients

	Items prescribed	Frequency prescribed before intervention (%)	Frequency prescribed after intervention(%)	Frequency prescribed before intervention (n)	Frequency prescribed after intervention(n)
Topical products	CMC Eye Ointment	14.02	48.78	23	80
	Acriflavin Lotion	11.59	6.71	19	11
	Calamine Lotion	0.00	0.61	0	1
Other Medications	Prolase	7.32	39.02	12	64
	Ascorbic acid	6.71	16.46	11	27
	Chlorpheniramine	0.00	0.61	0	1
Analgesia	Paracetamol	32.31	66.46	53	109
Antibiotics	Cloxacillin	25.61	5.49	42	9
	Phenoxymethylpenicillin	6.71	2.44	11	4

Graph 1: Frequency of items prescribed to post circumcision patients

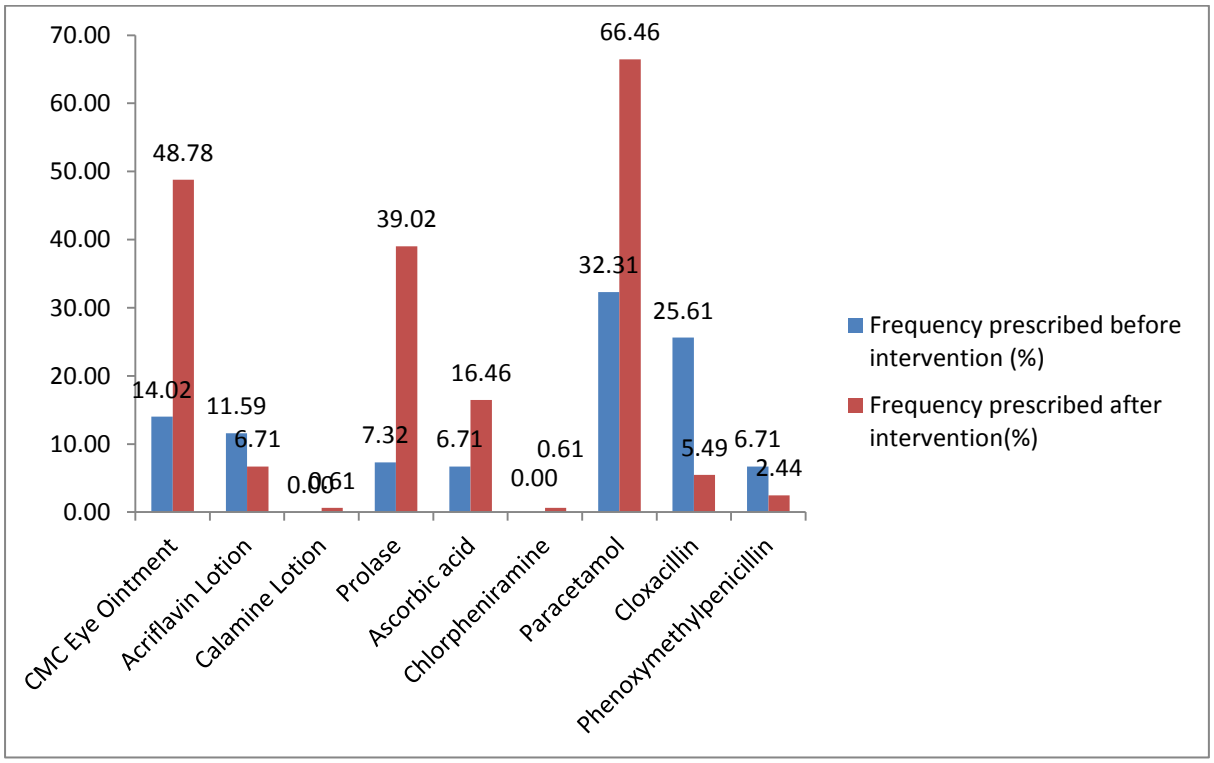


Table 3 and graph 2 shows the total cost of medications prescribed to post circumcision patients was RM 1247.15, while cost for oral antibiotic with RM 834.76 occupy 67.08% of the total expenditure, follow by topical antibiotics RM 230.96(18.56%), other medications RM120.28(9.67%), and Analgesia RM 58.41(4.69%).

Table 3: Medications cost for all post circumcision patients

Variables	Cost (RM)	Percentage (%)
Total medications cost for all circumcision patients	1247.15	100.00
Oral Antibiotics	834.76	66.93

Topical products	230.96	18.44
Analgesia	61.15	4.90
Other Medications	120.28	9.64

Graph 2: Medications cost for all circumcision patients

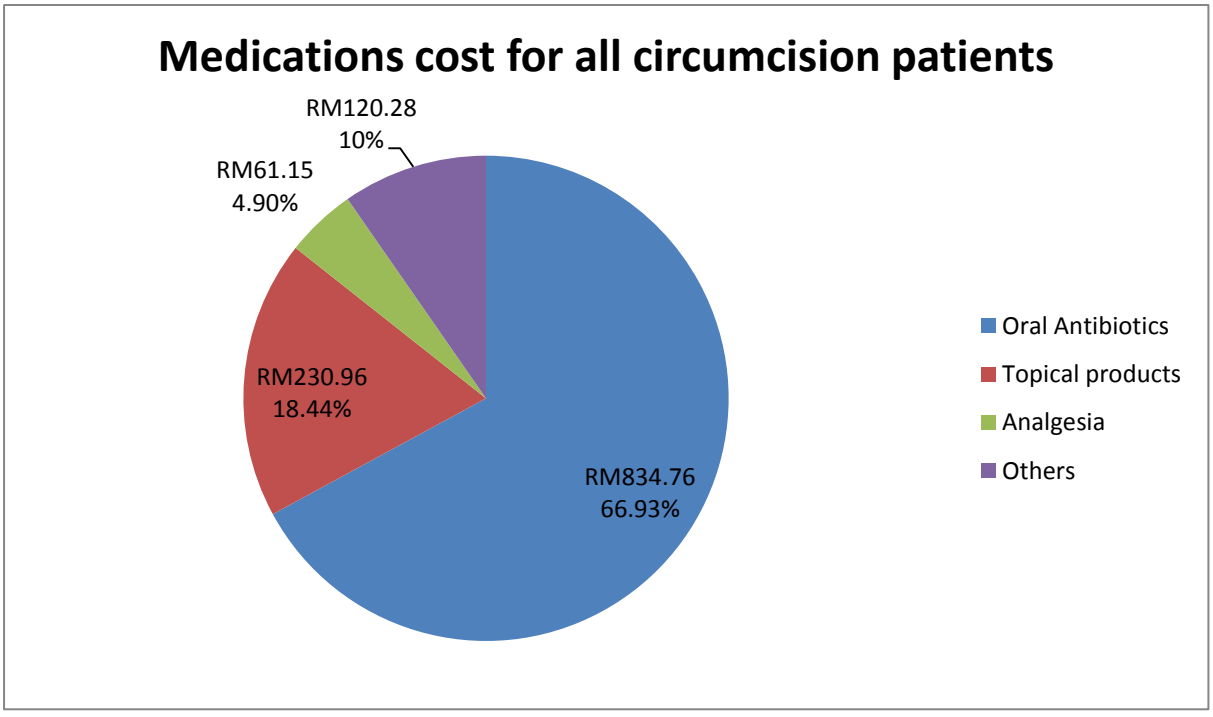


Table 4 and graph 3 shows breakdown of oral antibiotic cost into pre and post intervention. We found that pre intervention oral antibiotic cost was RM 673.73 while post intervention was RM 161.03.

Table 4: Pre and post intervention antibiotic cost

	Pre-intervention (number of patient)	Post-intervention (number of patient)
Total Antibiotic Cost	RM673.73 (53)	RM161.03 (12)
Cloxacillin	RM467.81 (42)	RM86.15 (8)
Phenoxymethylpenicillin	RM205.92 (11)	RM74.88 (4)

Graph 3: Pre and post intervention antibiotic cost

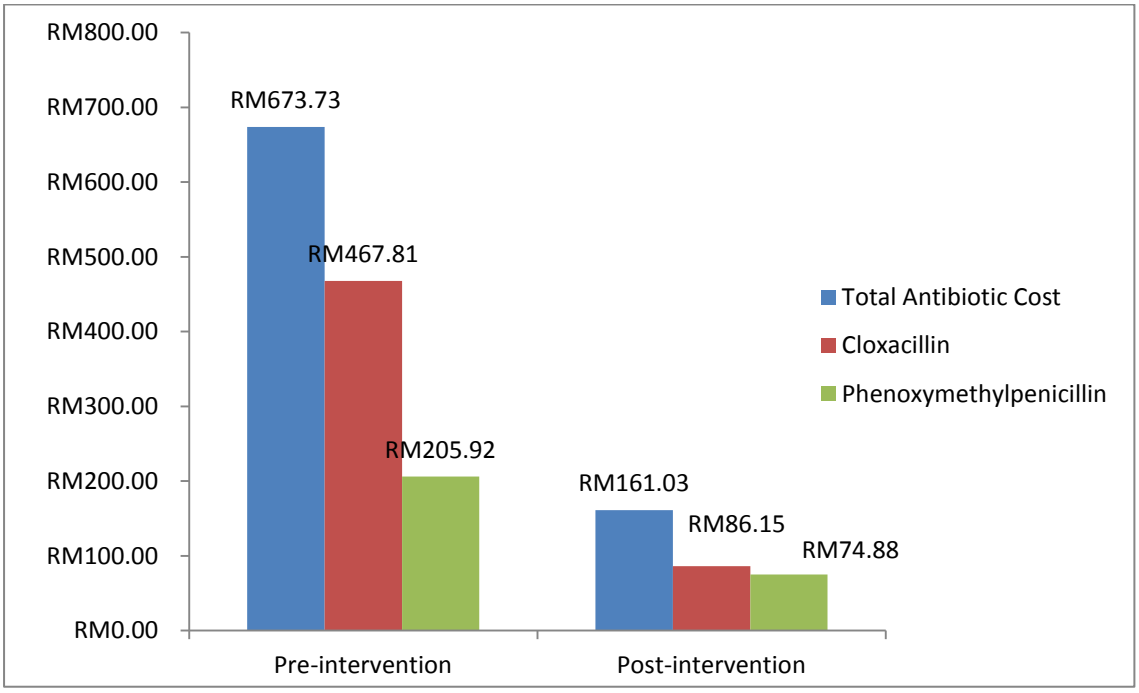


Table 5 shows pre intervention total antibiotic cost was RM12.71 (5.06); post interventions total antibiotic cost was RM1.46 (4.49), while the mean cost different was RM 11.26 which show significant reductions in the medications cost after intervention (p value <0.001).

Table 5: Change of antibiotic cost after the intervention

Variables	Pre-interventions (n=53) Mean (SD)	Post-interventions (n=111) Mean (SD)	Mean differ. 95% CI	*t* statistic(df)[a]	P value
Antibiotic cost(RM)	12.71(5.06)	1.45 (4.49)	11.26 (9.64 ; 12.88)	13.81(92.23)	<0.001

[a]Independent *t* test

Discussion:

The prevalence of oral antibiotic use in post circumcision in Hospital Kanowit is high. Out of 53 prescriptions, we collected pre-interventions, 53 of them prescribed with oral antibiotics. First line antibiotic for wound infections, or prophylaxis of wound infections is Cloxacillin, however phenoxymethylpenicillin which is heavily use in circumcision cannot cover for *Staphylococcus Aureus* according to our own hospital bacterial culture and sensitivity as well as in accordance to national antibiotic guidelines 2014 [7]. This is irrational use of antibiotics is not being intervened due to common practice among medical assistant in our Hospital all this years. We believe that, in all other district hospital are facing the similar situations.

The main factors lead to these problems is mainly due to lack of guidelines to all prescribers regarding management of post circumcision. Even there is a guideline for the medical assistant regarding circumcision, however the guidelines not being updated according to the latest antibiotic guidelines, and there are not mentioning details enough on the use of antibiotic in post circumcision and medications prescribed for post circumcision.

According to the review article done by Sabzehei M et.al. 2012, suggested that for post circumcision wound infections most of the time will be resolvedby topical antibiotic [4]. None of the articles or guidelines found suggests to prescribe oral antibiotic for prophylaxis purposes [4][5][8][9]. And most of the articles only suggest analgesia and topical product such as Vaseline ointment for pain and patient discomfort post circumcision [8][9]. Apart from that we also found an online e-book recommended that Chloramphenicol topical ointment used for post circumcision [10].

One of the possible reasons why all post circumcision patient prescribed antibiotic due to before the intervention done all prescribers practice discharge patient with oral antibiotics and not asking them to come back for wound inspections. This might due to there are no proper clinical guidelines or circular in enforcing the need of wound inspection in managing post circumcision.

From our observation there are changes in prescribing pattern for post circumcision patient since 1st of December 2015. This clearly observed that, the number of oral antibiotic prescribed to patient with post circumcision is reducing. After investigation, we found that all medical officers had a meeting and discussion with all assistant medical officers in regarding the use of oral antibiotic in post circumcision. These are the interventions done, all patients with post circumcision should not be prescribed antibiotic unless it is necessary, or those who stay far from Hospital Kanowit or hardly to get access to our Hospital. All patients need to be given a follow up date post circumcision.

Even though post intervention, from our observation only 7 patients came back for follow up post circumcision out of 103 patients, the numbers are still low mainly was due to logistic issues. Besides, some of the patients are unwilling to come back to Hospital just for wound inspections. This is also urgent issue which need to be overcome, as what we could do is to have proper wound care educations and cover them with topical antibiotics.
This study limitation we are only able to show there is significant cost reduction, but we cannot clearly show that, with the reductions of oral antibiotic used (cost), there is not increase the risk of post circumcision complications. As most of the patients not given a follow update or themselves defaulted for wound inspections post circumcision.

We could only assume that if there is no incident detected post 1 month of circumcision by tracing the prescription, we would consider as no incidents of complication post circumcision. From our study we only got 1 case (out of 156 patients) of wound break down secondary to post circumcision, if our assumption is correct the percentage of post circumcision 0.64%, and this indicated that, in reductions use of oral antibiotic it does not increase the risk of complications of post circumcision, which corresponding to review article done by Sabzehei M et.al. 2012

The use of topical antiseptic for circumcision, according to studies done by Bennett J 1999, they suggest that use of topical oral antibiotic able to prevent rate of post circumcision complications cause by tetanus [5]. Besides that, they also mentions the use of antiseptic in our case are acriflavine lotion is a possible alternative to topical antibiotic in reduction of post circumcision complications. However, they mention there is a need to carry out further studies in determined the efficacy of it. There are not any other studies which we could find in mentioning it. The only concern on using acriflavine in post circumcision was the pain or tingling sensations which cause by acriflavine itself when it applied to the wound post circumcision.Hence, we feel that it is not appropriate to prescribed acriflavine lotion for post circumcision with current available evidence. Acriflavine lotion cost us about RM3.04 per bottle which is obviously not a cost effective treatment option in compared with CMC eye ointment which is RM 1.30 per tube.

Prolase prescribed for post circumcision, there is no evidence in supporting nor go against the use of it in post circumcision. Further study need to be carry out to see the effectiveness and efficacy of prolase in reducing inflammation and reduce swelling of the penis post circumcision. According to the indications in ministry of health drug formulary prolase indicated for oedema and inflammation in conjunction with other physical or chemotherapeutic measures. The cost one tablet of prolase only cost us about RM 0.032, thus we feel that it is appropriate to use prolase in post circumcision after judging by its proven indications and cost.

Ascorbic acid prescribed for patient wound healing post circumcision; we cannot found any relevant evidence. However, there are article link that ascorbic acid in wound heals, and suggested high dose of ascorbic acid use in promoting wound healing [11]. There is an animal studies shows that ascorbic acid associated with early resolution of inflammation and tissue remodelling and promote wound proliferation and healing [12]. However, there is lack of clinical trials conducted and the studies to defined dose that promote wound healing.

Limitation

Some patients not given a follow update to review the progress of patients post circumcision, and those who given follow update are not coming back to review thus we cannot compare the outcome that patient given topical antibiotic with or without oral antibiotic. At the same times, this also restrains us from collecting data for complication post circumcision. We could only assume that if there is no incident detected post 1 month of circumcision by tracing the prescription, we would consider as no incidents of complication post circumcision.

Conclusion:

We would conclude that, there is limited role of oral antibiotic in patient post circumcision. If wound infections occur, the 1st line oral antibiotic would still be Capsule cloxacillin. Most of the time a topical antibiotic would be sufficient to prevent any wound infections.

Moreover we would suggest most appropriate medications prescribed for patient with post circumcision from our observations are CMC eye ointment 1 tube, prolase 30 tablets, and paracetamol 20 tablets which only total cost of RM 2.65 per patients, while current mean cost per patients was RM7.60 (RM15.29 pre-intervention mean cost).Further study needed to carry out especially in comparing the outcome of using oral antibiotic and topical antibiotic and proper follow up in detecting post circumcision complications that occurs.

Acknowledgment:

We thank CRC Miri Sarawak for assistance with this write up and for comments that greatly improved the manuscript.

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