

RESEARCH ARTICLE

Assessment of drug use pattern of nonsteroidal anti-inflammatory drugs using the World Health Organization core indicators in a tertiary care teaching hospital – A cross-sectional study

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ABSTRACT

Background: Nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly prescribed for the management of pain and inflammation. The previous studies suggest that the prescribing pattern of NSAIDs was not in accordance with the current guidelines mentioned by regulatory agencies. Irrational use of drugs can lead to ineffective treatment, adverse drug reactions, and economic burden on patients and society. To overcome this, rational use of drugs should be imperative in health-care system. Furthermore, drug utilization data can help in the formulation of guidelines on clinical use of the drugs and facilitate its rational use. The World Health Organization (WHO) prescribing indicators are used as effective tools in the assessment of drug prescribing practices in health-care facilities. **Aims and Objectives:** The objective of this study is to assess drug utilization pattern NSAIDs in a tertiary care teaching hospital using the WHO core prescribing indicators. **Materials and Methods:** This was a prospective cross-sectional, study of 3 months duration conducted in the outpatient departments (OPDs) of a tertiary care hospital during the months of March to May 2019. Patients visiting the pharmacy with the OPD drug prescriptions during the study period were randomly chosen. The data were analyzed using the SPSS software and comparison was done using Chi-square test. **Results:** A total of 600 prescriptions were analyzed, among which 253 had NSAIDs prescribed. The average number of drugs per prescription was 3.15 ± 1.2 . NSAIDs were prescribed as an injection in only 9.5% prescriptions. Percentage of drugs prescribed from the National List of Essential Medicines was 41.1%. Percentage of NSAIDs prescribed by generic name was 26.5%. **Conclusions:** Periodic monitoring of prescription pattern is mandatory to promote the rational use of drugs. There is a need for increase in generic prescribing and also to improve the adherence of prescribing drugs from the essential medicine list.


KEY WORDS: Drug Utilization; Nonsteroidal Anti-inflammatory Drugs; World Health Organization Indicators

INTRODUCTION

Drug utilization is defined as “the marketing, distribution, prescription, and use of drugs in a society, with special

emphasis on the resulting medical, social, and economic consequences.”^[1] Studies on prescription pattern monitoring are type of drug utilization research, with their main focus on rational prescribing of drugs.^[2] It compares the observed patterns of drug use with current recommendations and guidelines.^[1]

Rational use of medicines mandate that, “patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period, and at the lowest cost to them and their community.”^[3] Irrational use of medicines is a major problem and the World

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Health Organization (WHO) also estimates that more than half of all medicines are prescribed, dispensed, or sold inappropriately. Therefore, irrational use of drugs can lead to ineffective treatment, adverse drug reactions, and economic burden on patients and society. To overcome this, rational use of drugs should be imperative in health-care system.^[3] Drug utilization data can help in the formulation of guidelines on clinical use of the drugs and facilitate its rational use and it also helps us to know epidemiology of disease, pattern of drug use, indications, contraindications, and appropriate dosage of drugs to ensure its rational use.^[3]

Nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly prescribed group of drugs for the management of pain and inflammation. It is also known to cause various adverse effects. Moreover, irrational prescription of NSAIDs can further exacerbate the adverse effects.^[4] Previous studies suggest that the prescribing pattern of NSAIDs was not in accordance with the current guidelines mentioned by regulatory agencies and also emphasize the need of drug utilization study on NSAID prescription pattern and its rational use.^[2,5] Awareness of rational NSAID prescriptions should be increased among health-care providers and also strategies should be developed and implemented to promote its rational use.^[5,6] The WHO prescribing indicators are used as effective tools in the assessment of drug prescribing practices in health-care facilities.^[7] Therefore, the present study was aimed to assess the prescription pattern of NSAIDs in a tertiary care teaching hospital using the WHO prescribing indicators.

MATERIALS AND METHODS

Ethical clearance was obtained from the Institutional Human (SMVMCH-EC/48/2018) before the initiation of the study and it was conducted according to good clinical practice guidelines. Written informed consent was obtained from all the study participants before their enrolment. Prescribing pattern of NSAIDs was recorded from the patient's prescriptions. Confidentiality of the study data was maintained throughout the study. This was a prospective cross-sectional, observational study of 3 months duration conducted in the outpatient departments (OPDs) of our tertiary care teaching hospital during the months of March to May 2019. Based on the WHO document on "How to investigate drug use in health facilities?," at least 600 prescriptions were required to be analyzed in this study.^[7] Patients visiting the pharmacy with the OPD drug prescriptions during the study period were randomly chosen. Prescriptions of patients <18 years of age, seriously ill patient, patient unable to consent due to psychiatric illness and those who were not willing to participate in this study were excluded from the study. From the patients' prescriptions, demographic details and prescription data were recorded in the data collection sheet. The data were entered into Microsoft Excel sheet (Microsoft office 2007) and analyzed using the following WHO prescribing indicators modified according to the study objectives.

- Average number of drugs per encounter
- Percentage of encounters with NSAIDs prescribed
- Percentage of encounters with an injection of NSAID prescribed
- Percentage of encounters with nonselective NSAIDs prescribed
- Percentage of encounters with COX-2 selective NSAIDs prescribed
- Percentage of NSAIDs prescribed by generic name
- Percentage of encounter with NSAIDs prescribed from the National List of Essential Medicines, India (NLEM-2015)
- Percentage of encounter with fixed-dose combination (FDC) of NSAIDs prescribed
- Percentage of encounters with NSAIDs and gastroprotective agent(s) prescribed.

Furthermore, the legibility of the prescriptions was analyzed by the following grading: Grade 1 (poor), Grade 2 (Average), Grade 3 (Good), and Grade 4 (Excellent).^[8] Two independent observers graded the prescriptions for its legibility.

Statistical Analysis

Data were analyzed using the SPSS software version 24. Categorical variables were expressed as frequency and percentages. Continuous variables were expressed as mean \pm standard deviation. Association between the type of NSAID prescribed and whether it is coprescribed with gastroprotective agents(s) was analyzed using Chi-square test. P value \leq 0.05 was considered significant.

RESULTS

A total of 600 prescriptions were analyzed, among which 253 (42.2%) had NSAIDs prescribed. The number of prescriptions with NSAIDs was more among male participants (51.8%), compared to female participants (48.2%). Maximum number of prescriptions with NSAIDs (31.6%) was in the age group between 40 and 49 years. Majority of the prescriptions with NSAIDs were in brand name (73.5%). Most of the NSAIDs were prescribed twice a day (84.2%) and the average duration (in days), for which NSAIDs were prescribed, was 2.74 ± 5.5 . NSAIDs were more frequently prescribed by orthopedicians (37.9%), for indications such as osteoarthritis (10.7%), post-operative pain (8.3%), and lumbar strain (6.7%) [Table 1].

Analysis of the NSAID drug prescription data based on the WHO core prescribing indicators showed the following results. Of the total 600 prescriptions analyzed, the average number of drugs per prescription was 3.15 ± 1.2 . Among the NSAID prescriptions, percentage of encounters with selective COX-2 inhibitors was only 0.4%. NSAIDs were prescribed as an injection in only 9.5%. Percentage of drugs

prescribed from NLEM was 41.1%. The total number of drugs prescribed as FDCs was 64.8% with the most commonly used drug combination being aceclofenac and paracetamol (30%). Nearly 96.4% of the prescription with NSAIDs had coprescribed drugs such as gastroprotective agents, vitamins, and antimicrobials, with predominance of coprescribed gastroprotective agents (72.7%) [Table 2].

Among the 253 NSAID prescriptions analyzed, paracetamol (28.8%) was the most commonly prescribed NSAID followed by diclofenac, etodolac, etc. [Table 3]. Association between the type of NSAID prescribed and whether it is coprescribed with gastroprotective agent(s) showed significant association with paracetamol, FDCs ($P = 0.001$) and Aspirin ($P = 0.472$) [Table 4].

Analysis of the legibility of handwritten prescriptions showed that most of the prescriptions were graded as excellent (66.2%) and none of the prescriptions were graded as poor [Figure 1].

DISCUSSION

The WHO core prescribing indicators are used as effective tools in the assessment of rational drug prescribing practices. These indicators would aid in identification of the degree of polypharmacy, percentage of parenteral administration, extent of drugs from NLEM and generic prescribing.^[7] The data obtained from such studies can be utilized to improve the patient care and it also promotes the rational use of drugs. Hence, this study was undertaken to analyze the drug utilization pattern of NSAID using the WHO core prescribing indicators. Of 600 prescriptions, 253 (42.2%) prescriptions had NSAIDs. A total number of male (51.8%) participants were more compared to female participants (48.2%). NSAIDs were commonly prescribed by orthopedicians (37.9%). The average number of drugs per prescription was 3.15 ± 1.2 . Only minimal number of drugs (26.5%) was prescribed by generic name. About 41.1% of drugs were prescribed from NLEM. Around three-fourth of the NSAIDs were coprescribed with gastroprotective agents (72.7%) and 64.8% were prescribed as FDC.

In the present study, the average number of drugs per prescription was higher (3.15 ± 1.2) than the standard value (1.6–1.8).^[9] However, findings similar to our study were seen by the other researchers across India (3.17 in Goa and 2.91 in Uttar Pradesh).^[10,11] Divergent findings from the standard value could be due to the study being conducted in a multispecialty hospital with majority of the patients having more than one complaint. Increase in number of drugs per encounter results in polypharmacy which leads to increased incidence of adverse drug reactions and drug–drug interactions. This in turn causes unnecessary increase in cost of drug treatment for the patient.^[12–14]

Table 1: Prescribing pattern of NSAIDs and demographic details of the study participants

Demographic characteristics	Frequency (n=253)	Percentage
Age (years)		
20–29	32	12.7
30–39	66	26.1
40–49	80	31.6
50–59	32	12.6
60–69	34	13.4
70–79	9	3.6
Gender		
Male	131	51.8
Female	122	48.2
Mode of prescribing drug		
Generic name	67	26.5
Brand name	186	73.5
Frequency of the drug		
SOS (use if necessary)	7	2.8
Once a day	14	5.5
Twice a day	213	84.2
Thrice a day	19	7.5
Department		
Orthopedics	96	37.9
Medicine	58	22.9
Surgery	28	11.1
Urology	15	5.9
Other departments	56	22.2
Indications		
Osteoarthritis knee	27	10.7
Post-operative pain	21	8.3
Lumbar strain	17	6.7
Calculi renal/ureter	15	5.9
Other indications	173	68.4
*Average number of days NSAIDs prescribed	2.74±5.5	

Categorical variables were expressed as frequency and percentages.

*Continuous variables were expressed as mean±standard deviation.

n=Number of prescriptions, NSAIDs: Nonsteroidal anti-inflammatory drugs

In our study, the percentage of NSAID prescriptions was 42.4%, which is higher when compared to a study conducted in Karnataka (11.3%).^[15] This could be due to differences in the proportions of prescriptions from various OPDs between the two studies. In our study, prescriptions from Orthopedic Department (37.9%) were predominant followed by the Department of Medicine (22.9%). Furthermore, the prescribing practices of NSAIDs can vary from region to region.

Only 26.5% of NSAID prescriptions were in generic names; ideally, it should be 100%.^[9] A similar study conducted in

Table 2: World Health Organization core prescribing indicators for NSAIDs

WHO indicators (n=253)	Percentage
*Average number of drugs per encounter (n=600)	3.15±1.2
Percentage of encounters with NSAIDs prescribed	42.4
Percentage of encounters with an injection of NSAID prescribed	9.5
Percentage of encounters with nonselective NSAID prescribed	99.6
Percentage of encounters with COX-2 selective NSAID prescribed	0.4
Percentage of NSAIDs prescribed by Generic names	26.5
Percentage of encounter with NSAIDs prescribed from National List of Essential Medicines	41.1
Percentage of encounter with fixed-dose combination of NSAIDs prescribed	64.8
Percentage of encounters with NSAIDs and coprescribed drugs	96.4
Percentage of encounters with NSAIDs and gastroprotective agent (s) prescribed	72.7

*Continuous variables were expressed as mean±standard deviation; categorical variables were expressed as frequency and percentages, NSAIDs: Nonsteroidal Anti-inflammatory drugs; COX- cyclooxygenase; n=Number of prescriptions

Table 3: Drug prescribing pattern of NSAIDs

Drug name	Frequency (n=253)	Percentage
Paracetamol	73	28.8
Diclofenac	7	2.8
Etodolac	2	0.8
Ibuprofen	2	0.8
Aspirin	2	0.8
Piroxicam	2	0.8
Celecoxib	1	0.4
Fixed drug combination		
Paracetamol+aceclofenac	76	30
Paracetamol+tramadol	47	18.6
Aceclofenac+serratiopeptidase	2	0.8
Mefenamic acid+drotaverine	16	6.3
Aspirin+clopidogrel	12	4.7
Aspirin+atorvastatin	2	0.8
Paracetamol+etodolac	3	1.2
Paracetamol+ibuprofen	3	1.2
Mefenamic acid+dicyclomine	2	0.8
Aspirin+clopidogrel+atorvastatin	1	0.4

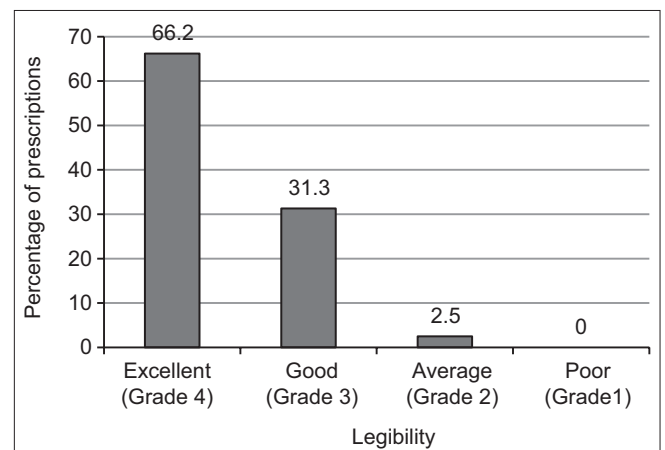
Data are expressed as frequency and percentages. n=Number of prescriptions, NSAIDs: Nonsteroidal anti-inflammatory drugs

Tamil Nadu showed that 6.42% of drugs were prescribed in generic name.^[16] The reason for higher number of drugs prescribed by brand name in our study may be due to prescribers being influenced by pharmaceutical companies and their marketing strategies. This could also be due to

Table 4: Association between types of NSAID prescribed and whether it is coprescribed with gastroprotective agent (s)

Type of NSAID	Co-prescription with gastroprotective agent (s)			*P value
	Yes	No	Total (n=253)	
Paracetamol	42	31	73	0.001
Diclofenac	4	3	7	1.000
Etodolac	2	0	2	0.564
Aspirin	1	1	2	0.472
Piroxicam	2	0	2	1.000
Ibuprofen	2	0	2	1.000
Celecoxib	0	1	1	1.000
Fixed dose combination	134	30	164	0.001

*Chi-square test was used for analysis and $P \leq 0.05$ was considered significant; n=Number of prescriptions, NSAID: Nonsteroidal anti-inflammatory drug

**Figure 1:** Legibility grading of the prescriptions

the belief among some physicians that the therapeutic efficacy might vary between generic and brand drugs due to differences in their pharmacokinetics.^[17] However, dispensing errors and economic burden of the patient can be reduced when the drugs are prescribed in generic names. The WHO also recommends generic prescription as it enables easy identification of medication and better communication between health-care providers.^[18]

The total number of encounters with injectable was 9.5%, which is lower than the standard value (13.4–24.1%).^[9] This is a positive finding since it demonstrates a reduction in unnecessary injections. In our study, about 41.1% of drugs were prescribed from NLEM which is below the recommended WHO guidelines (100%).^[9] However, a similar study conducted in Tamil Nadu showed a much higher percentages of prescription from NLEM was 90.67%.^[16] Prescribing from the NLEM is low in our study, and hence, it is required to impart training to physicians regarding the importance of prescribing from the NLEM to promote the rational utilization of medicines.^[19]

Most of the encounters had FDCs (64.8%) compared to individual drugs. FDCs evaluated in our study had a combination of either analgesic alone, analgesics with antispasmodic, hypolipidemic, antiplatelet, nutraceuticals. The combination of paracetamol and aceclofenac (30%) was the most commonly prescribed FDC followed by paracetamol and tramadol (18.6%). In comparison with a drug utilization study done in Chhattisgarh (13.51% FDCs encounters), the percentage of encounters with FDC was higher in our study.^[20] This could be because majority of the prescriptions analyzed were from the department of orthopedics, where FDCs were commonly prescribed for the management of pain and inflammation. This finding was consistent with the study by Alshakka *et al.* which showed that most common clinical conditions in orthopedic OPD for using NSAIDs were pain and infection.^[21] The rationality of FDC's must be determined before prescribing them. Factors like similar pharmacokinetics, difference in mechanism of action and absence of supra-additive toxicity should be taken into account. Otherwise rather than being beneficial, FDCs can lead to increase in the economic burden for the patients.^[22]

NSAIDs are known for its adverse effects such as gastrointestinal bleeding, nephrotoxicity and cardiotoxicity. To minimize the adverse gastrointestinal effects, either selective COX-2 inhibitor or coprescription with gastroprotective agents can be given.^[4] This study demonstrates that the percentage of encounters with non-selective and selective COX-2 NSAID was 99.6% and 0.4%, respectively. This is in accordance with the results of a similar study conducted in Chhattisgarh which showed that no COX-2 selective NSAIDs were prescribed.^[20] In our study, prescribing selective COX-2 inhibitors are limited, which could be due to extra caution taken with regard to its adverse cardiovascular effects. Thus, the risk-benefit profile should always be considered before prescribing selective COX-2 inhibitors to the patients. In this study, 96.4% of NSAID prescriptions had coprescribed drugs, of which gastroprotective agents were predominant (72.7%). Furthermore, there is a significant association between coprescription of gastroprotective agents with FDCs and paracetamol. In our study, the percentage of coprescription with gastroprotective agents is high in comparison with findings from a similar study (24.32%).^[20] According to the American College of Gastroenterology guidelines, prescribing of gastroprotective agents along with NSAIDs is required only in risky patients such as previous history of/suffering from gastrointestinal ulcer, aged more than 65 years and concomitant usage of other drugs such as corticosteroid, remove antiplatelet anticoagulant and aspirin (including low dose).^[23] However, the study done by Lee *et al.* revealed that there is inappropriate coprescription of gastroprotective agents along with NSAIDs.^[6]

Strength of the Study

The strength of the study could be its prospective study design and analysis of 600 prescribing encounters as per the WHO guidelines.

Limitation of the Study

This study was conducted in a single center and duration of the study was for a short period of only 3 months. Furthermore, the study did not assess the prescribing practices of a single department, which would have produced a more specific and enriched finding.

CONCLUSIONS

The prescribing pattern of the NSAIDs showed some deviation from the standard WHO prescribing indicators. Thus, periodic monitoring of NSAID prescribing pattern is mandatory to promote the rational use of drugs and there is also a need for training of the prescribers regarding importance of generic prescribing, prescribing drugs from the NLEM, and problems associated with polypharmacy.

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REFERENCES

1. World Health Organisation. Introduction to Drug Utilisation Research. Geneva: World Health Organisation; 2003. Available from: <http://www.apps.who.int/medicinedocs/en/d/js4876e>. [Last accessed on 2019 Jun 22].
2. Jain S, Upadhyaya P, Goyal J, Kumar A, Jain P, Seth V, *et al.* A systematic review of prescription pattern monitoring studies and their effectiveness in promoting rational use of medicines. *Perspect Clin Res* 2015;6:86-90.
3. Promoting Rational Use of Medicines: Core Components- WHO Policy Perspectives on Medicine, No. 005, Essential medicines and Health Products Information Portal. A World Health Organization Resource; 2002. Available from: <http://www.apps.who.int/medicinedocs/en/d/Jh3011e/2.html>. [Last accessed on 2019 Jun 22].
4. Risser A, Donovan D, Heintzman J, Page T. NSAID prescribing precautions. *Am Fam Physician* 2009;80:1371-8.
5. Zeinali M, Tabeshpour J, Maziar SV, Taherzadeh Z, Zirak MR, Sent D, *et al.* Prescription pattern analysis of nonsteroidal anti-inflammatory drugs in the North Eastern Iranian population. *J Res Pharm Pract* 2017;6:206-10.
6. Lee HL, Chua SS, Mahadeva S. Utilization of gastroprotective strategies for nonsteroidal anti-inflammatory drug-induced gastrointestinal events in a major teaching hospital. *Ther Clin Risk Manage* 2016;12:1649-57.
7. World Health Organization. How to Investigate Drug use in Health Facilities: Selected Drug use Indicators. WHO/DAP. Vol. 1. Geneva: World Health Organization; 1993. p. 1-87.
8. Vigneshwaran E, Sadiq MM, Prathima V. Assessment of completeness and legibility of prescriptions received at community pharmacies. *J Health Res Rev* 2016;3:72-6.
9. Isah AO, Ross-Degnan D, Quick J, Laing R, Mabadeje AF.

- The Development of Standard Values for the WHO Drug use Prescribing Indicators. ICUM/EDM/WHO. Available from: http://www.archives.who.int/prduc2004/rducd/ICIUM_Posters/1a2_txt.htm. [Last accessed on 2019 Jun 25].
10. Upendra G, Bhounsule SA. Evaluation of prescribing patterns of medical practitioners in the state of Goa, India. *Int J Basic Clin Pharmacol* 2017;6:2214-8.
 11. Hussain S, Yadav SS, Sawlani KK, Khattri S. Assessment of drug prescribing pattern using world health organization indicators in a tertiary care teaching hospital. *Indian J Public Health* 2018;62:156-8.
 12. Salwe KJ, Kalyansundaram D, Bahurupi Y. A study on polypharmacy and potential drug-drug interactions among elderly patients admitted in department of medicine of a tertiary care hospital in Puducherry. *J Clin Diagn Res* 2016;10:FC06-10.
 13. Kojima T, Akishita M, Nakamura T, Nomura K, Ogawa S, Iijima K, *et al.* Association of polypharmacy with fall risk among geriatric outpatients. *Geriatr Gerontol Int* 2011;11:438-44.
 14. Unutmaz GD, Soysal P, Tuven B, Isik AT. Costs of medication in older patients: Before and after comprehensive geriatric assessment. *Clin Interv Aging* 2018;13:607-13.
 15. Rai S, Bhuvana K, Sowmya C, Sahana HV, Yaseen M. Prescription audit at a tertiary care teaching hospital. *Natl J Physiol Pharm Pharmacol* 2018;8:1271-4.
 16. Shanmugapriya S, Saravanan T, Rajee SS, Venkatrajan R, Thomas PM. Drug prescription pattern of outpatients in a tertiary care teaching hospital in Tamil Nadu. *Perspect Clin Res* 2018;9:133-8.
 17. Kesselheim AS, Eddings W, Raj T, Campbell EG, Franklin JM, Ross KM, *et al.* Physicians' trust in the FDA's use of product-specific pathways for generic drug approval. *PLoS One* 2016;11:e0163339.
 18. Guidance on International Nonproprietary Names (INN) for Pharmaceutical Substances. World Health Organization; 1997. Available from: <https://www.who.int/medicines/services/inn/innguidance/en>. [Last accessed on 2019 Jun 25].
 19. Essential Medicines World Health Organization. Available from: https://www.who.int/medicines/services/essmedicines_def/en. [Last accessed on 2019 Jun 25].
 20. Vaishnavi PR, Gaikwad N, Dhaneria SP. Assessment of nonsteroidal anti-inflammatory drug use pattern using world health organization indicators: A cross-sectional study in a tertiary care teaching hospital of Chhattisgarh. *Indian J Pharmacol* 2017;49:445-50.
 21. Alshakka MA, Badullah WF, Alolayan SO, Mahmoud MA. Prescribing patterns of non-steroidal anti-inflammatory drugs (NSAIDs) at outpatient departments of four hospitals. *Biomed Res* 2018;29:3643-7.
 22. Gautam CS, Saha L. Fixed dose drug combinations (FDCs): Rational or irrational: A view point. *Br J Clin Pharmacol* 2008;65:795-6.
 23. Lanza FL, Chan FK, Quigley EM, Practice Parameters Committee of the American College of Gastroenterology. Guidelines for prevention of NSAID-related ulcer complications. *Am J Gastroenterol* 2009;104:728-38.

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