Workshop on ICMR-WHO Study of Development of a feasibility Module for Road Traffic Injuries Surveillance

Indian Council of Medical Research

DISCUSSION WORKSHOP ON

THE FINDINGS OF THE TWIN CENTRE STUDY ON

DEVELOPMENT OF A FEASIBILITY MODULE FOR ROAD TRAFFIC INJURIES SURVEILLANCE

(Funded and supported by WHO (India) Office)

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Introduction

Road Traffic Injuries has assumed alarming proportions worldwide in the last decade. It is major public health problem in South East Asian Countries especially India. In India, this increase largely due to its improving economy, rapid urbanization and industrialization, changing lifestyles, mixed traffic, slack legislation and enforcement policies and inadequate pre-hospital care services. So much so that today injuries claim one life in every 3-4 minutes in India. To work towards prevention, rehabilitation and emergency care, it is essential to build a comprehensive information system for injuries. Good quality data on road accidents, mortality and morbidity due to other injuries is still not available from most of the medical institutions and hospitals in India. The existing information is fragmented without proper linkage of police and hospital records and there is a need for a centralized agency to process and analyze the data. Since road traffic injuries is a multi-sectoral problem involving several agencies like the police, road engineering department, transport, health, emergency care services, NGOs, urban development, legislators and the community

at large, there is a definite need to bring these stakeholders on board to discuss issues related to information sharing for a sustainable data – capture

system. In order to make such a system feasible, information is needed about the current situation in terms of the list of hospitals and police booths, load of injured patients, available staff, their interest in the training and orientation programme and the overall sustainability of a system.

Indian Council of Medical Research, as an apex body for biomedical and clinical research, has been concerned about the growing burden of injuries especially Road Traffic Injuries in India. It has been making efforts in this direction by promoting intersectoral programmes and research in the area of accidents and injuries. In July 2006, a 2-day workshop was organized with the support of WHO (India Office) to identify key researchers in injuries and initiate research activities in the area of Road Traffic Injuries. As per the recommendations of this workshop, a one-year twin centre feasibility study was initiated to test the feasibility of undertaking surveillance of injuries in urban and rural settings using multiple sectors like health, police and transport. This workshop is intended to share the findings of this study with key stakeholders. The experts who attended this workshop were the Advisory Group Members, the Principal Investigators, representatives from the Vital Registration

System, Ministry of Health, consultants from orthopedics, Emergency Care and Central Bureau of Health Information.

Objectives

The purpose of this workshop was to disseminate the findings of the feasibility study. It was also essential to find out if the study was able to capture appropriate data in the prescribed format. Issues related to networking of the hospitals, linking of other agencies, data collection and compilation, data repository and government directives were also to be discussed.

A prospective surveillance module was developed and tested for its feasibility in Pune and Bangalore by ICMR during 2006-07. Concurrently, the Ministry of Health and Family Welfare conducted a pilot study on development of a retrospective surveillance module through a pilot study in four hospitals in Delhi and one in Pondicherry. Both the studies were planned to address various issues related to the mechanism of data collection and its sustainability in the existing health setup. This workshop was aimed to discuss and sort out some of these issues and bring out a set of recommendations for ongoing and future injuries research studies.

Agenda

9.30-10.00 A.M	Registration
10.00 A.M -10.05 A.M	Welcome by Dr. Bela Shah
10.05 -10.15 A.M	Address by DG/ Addl. DG ICMR
10.15-10.30 A.M	Chairman's remarks
10.30-10.45 A.M	**Retrospective Injury Surveillance – Ministry of Health study**- Dr. A.N. Sinha
10.45-11.15 A.M	Tea
	Prospective Injury Surveillance-ICMR study
11.15-11.45 A.M	Bangalore centre findings- Dr. Gururaj
11.45-12.15 P.M	Pune centre findings –Dr. M Tambe
12.15-12.30 P.M	Overall results – Dr. Geetha Menon
12.30-1.30 P.M	Lunch
1.30-2.00 P.M	Discussions on the feasibility studies
2.00-2.20 P.M	Hospitals Injury Surveillance- Lessons learnt and Future perspectives- Dr. Cherian Varghese
2.20-3.30 P.M	Overall discussions
3.30-4.00 P.M	Tea
4.00-5.00 P.M	Recommendations and conclusions

Presentations

1. Feasibility Study on Injury surveillance - A pilot project
Dr. A.N. Sinha, Consultant, WHO

Dr. Sinha presented the findings of the feasibility study on Retrospective Injury Surveillance Programme conducted by the Ministry of Health and Family Welfare. This project was done in four major hospitals in Delhi viz. Safdarjung hospital, Ram Manohar Lohia Hospital, Jai Prakash Narayan Apex Trauma Center,AIIMS, Lady Hardinge Medical College and one hospital in Pondicherry viz. Jawaharlal Nehru Institute of Post Graduate Medical Education and Research. The objective was to develop and test a standardized format for collecting information on injuries from hospitals in a retrospective manner and to examine the feasibility of setting up a Hospital Based Surveillance System. Data from the medico-legal registers, autopsy registers from the selected hospitals and admitted patients from Safdarjung hospital was collected on a format developed by WHO and modified by AIIMS. The reference period ranged from 6 months (January 1st – Jun 30th 2006) to 2 years (Jan 1st 2005-Dec 31st 2006). In different hospitals nodal officers designated faculty / researchers or trained medical record

technicians to collect the data which was entered into an electronic format developed for this purpose by AIIMS. It took 3-18 minutes to enter the required information in the prescribed format. Data from the hospital sources on 44, 857 injury cases of which 41, 764 were medico legal cases were scanned and entered into the data base and subjected to statistical analysis.

The findings from the study revealed that more men (79%) reported to the hospitals than women in almost all age groups (Figure 1). It further showed that education and occupation was not well recorded in medico-legal records. Of the available data, road traffic accidents and assaults were the main types. More cases of injured upper and lower limbs, head and face were reported. Most of these were grievous and serious injuries. Incomplete information was available on the road user category, vehicle involved and on helmet/ seat belt use and alcohol intake. Likewise the study reported that data for prehospital care, place of occurrence and details of other injuries was very difficult to retrieve from hospital records due to the poor maintenance of hospital records.

Dr. Sinha concluded that retrospective hospital based surveillance is feasible if the medico legal records and the hospital recording systems are improved by providing trained personnel to each hospital, incorporating more variables, Injury Severity Scoring and outcome measures.

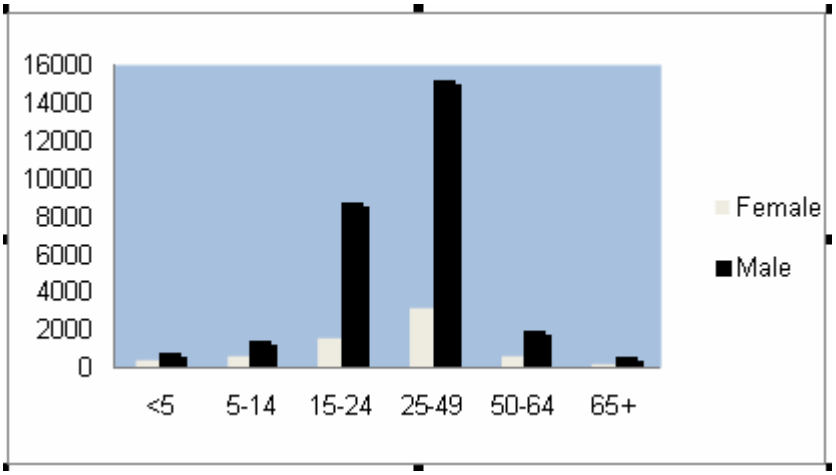

Figure 1. Age – sex distribution

He informed that in view of the increasing number of deaths and injuries, the Ministry of Health and Family Welfare, Government of India has considered injury surveillance and trauma care activities as a major public health problem. A Nodal Cell has been proposed and will be set up in the Ministry to coordinate injury surveillance and all implementation of activities across the country. The Ministry of Health and Family Welfare through their Officer have

identified three thrust areas of activities: *Establishment of a system of injury surveillance in India, Implementation of the scheme for trauma care along National Highways and Preparation of National Emergency Care Programme*.

A Steering Technical Committee under the Chairmanship of Director General of Health Services, Ministry of Health & Family Welfare, Government of India has been set up to facilitate progress of activities and to suggest appropriate areas of action. In the 11th five year plan 732.75 crores has been earmarked for development of trauma centres at various levels. This method can overcome the difficulties of a regular prospective data capture system which needs more manpower, infrastructure and other resources. He felt that the retrospective data collection could however be complemented with occasional prospective multicentric studies to determine the burden of injuries.

2. Bangalore Injury Surveillance Programme-A pilot study Dr. G. Gururaj, NIMHANS

Dr. Gururaj, shared his centre's experiences in conducting the study. In Bangalore a preparatory review of information sources viz.

- Police records
- Transportation records
- Health sector records
- Bangalore Mahanagara palike – all deaths
- Insurance records and Other Sources

There is no mechanism of linkage across these data collection agencies

The data collection mechanism, methodology and inventory of the hospitals revealed that there was a need to have focused stake holders meetings and discussions with the police and the hospital staff.

In these meetings the roles and responsibilities of the agencies in terms of finalizing the proforma, identifying nodal officers, training programmes, data sharing, quality control mechanisms, development of joint programmes, evaluation activities were discussed at length. The coordinating centre at NIMHANS provided the operational guidelines, training programmes, organized meetings with the stakeholders every three months, motivated the hospitals, facilitated data collection, prepared joint reports and feedback forms. In the urban areas 21 hospitals of

various levels participated in the programme. These hospitals are listed below:

Large Public hospitals

1. Bowring & Lady Curzon Hospital
2. Victoria Hospital
3. Sanjay Gandhi Accident Relief Centre
4. NIMHANS
5. Jayanagar General Hospital

Medical college teaching hospitals

6. Kempegowda Institute of Medical Sciences & Research Centre
7. M. S. Ramaiah Memorial Medical Hospital
8. St. John's Hospital
9. St. Martha's Hospital

Private sector hospitals

10. Bhagwan Mahaveer Jain Hospital
11. HOSMAT Hospital
12. Manipal Hospital
13. Sagar Apollo Hospital
14. Mallya Hospital
15. Sparsh Hospital

16. St.Philomena's hospital

Smaller private hospitals

17. Bangalore Baptist Hospital
18. Mallige Medical Centre
19. Ravi Kirloskar Memorial Hospital

Nursing homes

20. DG Hospital
21. KR Hospital

In the rural areas the following hospitals participated in the study:

Large Public hospitals

- Tumkur general hospital

Medical college teaching hospitals

- Siddartha medical College Hospitall

Community Health centers

- Sira
- Nidaghatta

Primary health centers (2)

Nursing homes (2)

In most of the hospitals the MLC register did not have information on education and occupation, risk factors, details of the crash etc. So a core data entry format was

developed incorporating details of the injured, type and nature of the injury and outcome. The hospitals were given the freedom to add any other variables as per their requirement. The research staff was trained on theoretical framework, data collection mechanism and validation exercises. A total of 26 training sessions to 500 hospital staff including nurses, doctors, medical record personnel and CMOs were conducted. The writers of the police staff were also trained in 8 rounds of sensitization and training programmes. 40 writers in 40 traffic stations and 123 writers from 102 law and order stations were thus trained.

It was concluded that the concerted efforts of the centre had resulted in a significant improvement in the data recording system of the hospital and the police records. It furthered sharing of the data between agencies. The study brought about a significant change in the outlook of most of the hospitals with the result that after initial supply for 4 – 6 months all hospitals began printing their own proforma, all hospitals moved from MLC to Trauma records, adopting the format for a uniform Emergency trauma care record and they all understood the importance of MLC vs Injury. The results have shown that the police have registered 780 / 794 of RTI deaths and 2246/3053 other injury deaths, the

transport agency have recorded all the 86 deaths that occurred during this period, the urban hospitals have registered 34258 injuries while the rural hospitals registered 1187 of 1544 injuries. The coverage, completeness and quality of data were also improving over time.

The monthly results from the participating hospitals were constantly sent to gain their confidence and participation. Some of the problems that the centre encountered during the study were the following:

- Co-operation from Emergency Room staff
- Heavy casualty load in public hospitals
- Filling up forms in casualty department
- Coordination in individual institutions
- Change and transfer of people – need for training
- Capacity and skills for data analysis with agencies
- Absence of coordinating bodies
- Absence of continuous networking, monitoring till system builds up
- Budgetary constraints
- Establishing the system

- Interventions – based on data

Through sustained efforts and financial thrust these problems could be overcome.

3. Pune Injury Surveillance Program-A pilot study
Dr. Murlidhar Tambe, BJMC

Dr. Tambe presented the experiences and findings of the Pune centre. The centre had its stakeholders meeting which was attended by the Deputy Commissioner of police and the heads of major hospitals. In this meeting the purpose and significance of the activity was highlighted. The hospital staff who were participants of the meeting felt that the format was lengthy and that monetary benefits should be provided for form filling. Of the major hospitals in Pune 14 hospitals with bed strength of more than 100 were approached and 12 of them consented. Of them 2 were government hospitals and 10 of them were private hospitals. These hospitals are listed below:

- B. J. Govt. Medical College
- Sancheti Hospital
- Lokmanya Hospital
- Surya Hospital

- Ruby Hall Hospital
- Yashvantrao Chavan Memorial Hospital
- Lokmanya Hospital Pradhikaran
- MIMER Medical College
- Dinanath Mangeshkar Hospital
- Sassoon General Hospital
- Hardikar Hospital
- Budhrani Hospital
- Poona Hospital
- Jehangir Hospital

The heads of the hospitals were motivated and nodal officers were identified. Training workshops for casualty doctors and nurses were conducted. Lectures and training manual were developed and disseminated. The roles of the participating hospital were to facilitate training of CMOs, nurses and doctors, quality control and evaluation activities.

The coordinating centre at BJMC developed the questionnaire and the guidelines, provided training and facilitated data collection from the hospitals. The data from the hospital was collected by the nodal person from whom it

was collected by the project staff. Weekly meetings were held in the coordinating centre and at the participating hospitals to sort out issues like transfer of staff, case definition and form filling, duplicate medico-legal number, incentives for additional workload. The feedback mechanism and data flow from the hospitals to the centre and back is depicted in figure 2 below:

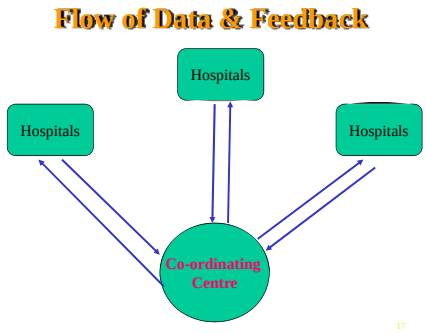

Figure 2 Data flow between coordinating centre and hospitals

Dr. Tambe felt that although prospective surveillance has been feasible in the project mode, it would require constant cooperation and support of the doctors and nurses at the emergency care in the long term programme. In addition, a strong government directive to the hospitals is essential to make the programme successful and sustainable. To conclude, he said that the programme needs strong central

and state government drive to improve hospital recording system and maintenance of hospital records.

4. Hospital Injury Surveillance- Lessons learnt and Future perspectives. Dr. C. Varghese, WHO (India Office)

Dr. Cherain Varghese presented his view of adopting a 360 degree approach to road traffic injury prevention and control (Figure 3). In this approach 30% of the share goes to engineering department and 26% to policy and legislations. Surveillance and research occupies 10% of the total share. He mentioned that to get the burden of injuries in terms of prevalence and incidence, it is essential to tap all sources for data on morbidity and mortality (Figure 4). The retrospective and prospective hospital based surveillance was pilot tested by the Ministry of Health and ICMR to study the feasibility of establishing a hospital based network of centres with data linkage from other agencies to provide standardized information on risk factors and details of injury in a timely manner in India (NISSI-National Injury Surveillance System India) in the long term.

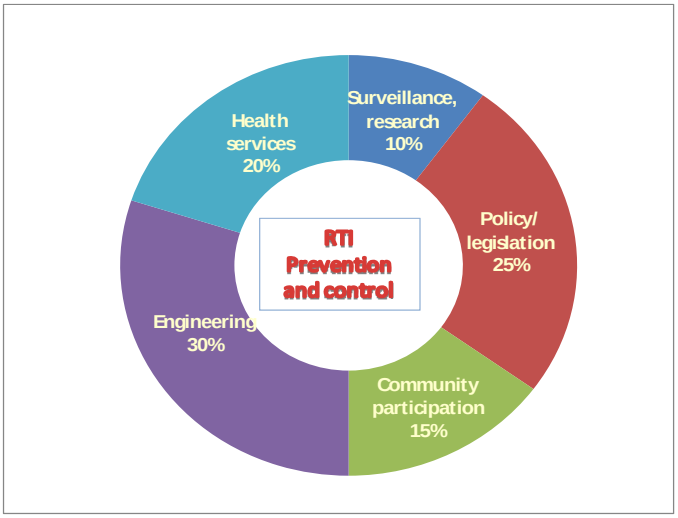

Figure 3. 360 degree approach for MVI prevention

Dr Varghese pointed out that for an effective and sustainable surveillance system to be in place the major issues to be considered were case and condition definition, data collection format, point of data collection (whether emergency services, medical records, department records), data management and feedback mechanism. He explained in detail the data sources and the completeness of existing medical records system in the participating hospitals in the retrospective study.

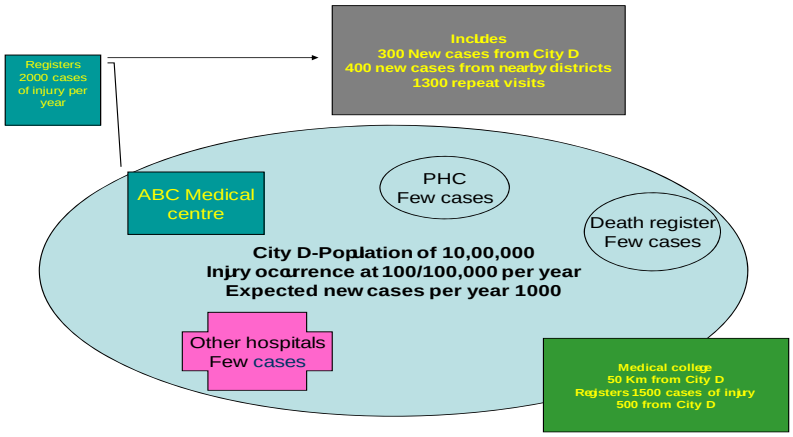

Figure 4 Sources of injury data

The data sources were medical and medico-legal records that were manually maintained in all the hospitals. The data was extracted by technicians in Safdarjung, Medical officers in RML and AIIMS, MBBS students in Lady Hardinge Medical College and trained graduates in JIPMER. Incomplete or scant information was available from the records (either in-patient or emergency and out patients) on *Brought by, activity at the, time, place, road user, collision, helmet/ Seat belt, facilities, visited, Mode of Transport, type of vehicle etc.*

None of the hospitals have included the format in their routine system and the sustainability is doubtful. The retrospective and prospective data collection has put

forward issues like, the type of injuries to be selected, severity of injuries, amount of information needed depending on the purpose, role of police, retrospective and prospective approach, data repository and a national agency responsible for monitoring and coordinating injury prevention and control activities. With the joint effort of ICMR, Ministry of Health and WHO it could be possible to set up an information system in the emergency care units and the trauma centres. The data recorded in a standardised format will be useful for planning and modifying hospital services. A Central Coordination Committee comprising of members from the Ministry of Transport and Health may be setup to coordinate data collection, analysis and use.

5. ***Overall findings of the ICMR Study, Dr. Geetha R. Menon, ICMR***

Dr. Geetha presented the outcome of the twin centre feasibility study of ICMR at Pune and Banaglore. She told the group about the efforts made by ICMR in this direction by organizing a multiple stake holder's workshop on Road Traffic Injuries in July 2006. The Twin centre study was an outcome of this workshop to test the feasibility of developing a data capture model utilizing the health, police and

transport records both in the urban and rural settings. The two Principal investigators varied in their capacity and expertise in injuries. While the Bangalore centre has a separate department for injuries and has been conducting injury research for more than a decade, the Pune centre had recently entered this field. In spite of this, the study has been conducted very smoothly within the stipulated time frame using a uniform methodology. The one year study was conducted in 4 phases viz.

Phase I: Training, Orientation, Stakeholders meetings

Phase II: Data collection by Project staff

Phase III: Data collection by the trained hospital staff under the supervision of the nodal officer

Phase IV: Data analysis and compilation

The coordinating centres independently organized training and orientation programmes and also motivated the hospitals to participate in the programme. In both the centres it was observed that more private than government hospitals were willing to participate. The mechanism of data collection from both the centres reflected that there was a need to apply government directives to set up a sustainable data capture mechanism in the hospitals. On the data

received from the two centres Dr. Geetha addressed issues of capture rates, variable completion rates and form completion rates. A total of 32546 injured cases have been registered at the two centres during the period of study. Of these 21,564 cases were from the Bangalore centre and 10982 injuries were recorded in the Pune centre. 76% of the injured were males. Persons in the age group 15-34 years constituted more than 50% of the injured. Road Traffic injuries comprised 43% of the total injuries . Falls and assaults were the other causes injuries. Most of the injuries other than road injuries occurred either at home (49%) or in the workplace (14%). Pedestrian, two wheeler riders and bicyclists were the most vulnerable road users accounting for more than 80% of the injuries.

Surprisingly alcohol was not found to be a significant factor for injuries. This observation is in contrast to the popular feeling that drinking and driving leads to road traffic injuries. The severity of injuries was more among non users of helmet and seat belt users as compared to users. In this study most of the injured were conscious at the time of admission and only 1% was brought dead. The injured were taken to the hospitals mainly by private vehicles or taxis and auto rickshaws. Fractures and abrasions were the major forms of

injury and head, face and limbs were the major body parts that were injured.

Dr Geetha further added that the data had lot of missing observations. Information on age and sex, nature of injury, place of occurrence, brought by status etc was missing from many of the records. This she felt could have been due to unavailability of information from the hospital records.

It was felt that data on all types of injuries are huge and there is a need to include serious and fatal injuries. Dr Geetha urged the members to review the items in the format for inclusion in the final version for example length of stay in the hospital, cost of treatment, road conditions etc. and to suggest parameters that would lead to action by the decision makers. She iterated the need to address issues on government directives, inclusion of other agencies, data quality and management, quality assurance points for participating hospitals, operational issues and usage of data for action for a long term surveillance program.

Discussions

The discussion focused on the two methods of data collection and the applicability of either of these in the hospitals. The group felt that data on injuries was very fragmented and a systematic approach needs to be observed to obtain good quality information. The retrospective approach is largely dependent on the existing medical records in the hospitals which are not well maintained at present. Prospective approach on the other hand requires well trained dedicated staff to perform the task of data collection. The inclusion of other injuries was also suggested by some experts.

The group discussed the role of ICMR in National Injuries Surveillance in the light of the fact that the Ministry is planning to set up an Injuries Cell with representatives from Health and Transport. The members observed that the study did not gather enough data from rural health settings. Since the causes of injury in rural areas were different from those in urban areas it was essential to address them.

The members suggested that a vertical Surveillance Programme on the lines of the feasibility study could be

initiated focusing more on rural settings and injury types like farm injuries, agricultural injuries etc. It was also felt that the study has given important leads and identified areas which need to be strengthened to put injury surveillance as a major component of health information. The economic costs involved in setting up a surveillance system were also discussed. All the members felt that except for the initial costs of setting up a surveillance system including training and infrastructure development the running cost of this system would be reasonable. About incorporating injury surveillance with IDSP, the members felt that it will require a vertical approach with strong linkages between hospitals, police and transport agencies.

Recommendations

1. A vertical injury surveillance program at the national level needs to be in place to determine the pattern of injuries, outcome of interventions and the load on the health care systems.
2. The surveillance programme needs to link all trauma care centers, medical colleges and district hospitals across the country, based on the mechanisms developed in Bangalore and Pune.
3. Need to focus on other serious injuries like farm injuries, pesticide injuries which are more common in rural areas thus extending the scope beyond RTIs and Medico-legal cases.
4. ICMR should be a member of the Nodal Injury Cell that has been proposed by the Ministry of Health to coordinate injury surveillance activities.
5. A Central Coordination Agency comprising stakeholders from public health, police, emergency medicine, transport, enforcement and service and urban planning is a primary requirement.

6. A sustainable mechanism for linking data from hospitals and other health institutions, police, mortuary and transport needs to be developed.
7. There must be targeted epidemiological studies to address specific questions related to injuries.
8. A feasibility study may be undertaken for exploring mechanisms of integrating injury surveillance with the ongoing Integrated Disease Surveillance Programme (IDSP).

Participants

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