

# Multidrug-resistant bacteria infection and nursing quality management application in the department of physical examination

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**Abstract:** The main problem of clinical prevention and control of multi drug resistant bacteria infection is to strengthen the monitoring of pathogenic bacteria spectrum, this study research on the multi drug-resistant bacteria infection and nursing quality management application in the department of physical examination. The results of this study showed that the number of patients with multiple drug resistant infections showed an increasing trend. Therefore, once the patients with multiple drug-resistant bacteria infection are found, the prevention and control of the patients with multiple drug-resistant bacteria should be strictly followed, and the patient's medication care should be highly valued. Also, the nurses need to be classified based on the knowledge and skill characteristics of the nurses in the department of physical examination, and compare the nursing effect before and after classification and grouping. The physicians and individuals receiving physical examinations in the department of physical examination had a higher degree of satisfaction for nursing effect after classification compared with those before classification. Classification and grouping management helps improve the nursing quality and overall quality of the nurses in the department of physical examination.

**Keywords:** Drug-resistant bacteria, physical examination, nurse management.

## INTRODUCTION

With the extensive use of broad-spectrum antibiotics, the hospital multi drug resistant organism (MDRO) infection is becoming more and more serious, and has become a prominent public health problem (Antonova *et al.* 2015). In recent years, multi drug resistant bacteria have gradually become an important pathogen of nosocomial infection, which results in frequent occurrence of major nosocomial infections (Apostolakis *et al.* 2015). In order to effectively prevent and control the spread of multi drug-resistant bacteria in hospitals, we carried out effective nursing interventions to prevent and control the transmission of multi drug-resistant bacteria in patients with multiple drug resistant infections, and achieved good results (Hase *et al.* 2016; Liapis *et al.* 2015; Manzat *et al.* 2015). Multi drug resistant bacteria (MDR) mainly refer to the 3 or more than 3 kinds of antimicrobial agents that are resistant to bacteria when they are cultured and identified. So far, multidrug resistance has become one of the most important pathogens of nosocomial infection (Gao *et al.* 2015; Han *et al.* 2015; Ostojic *et al.* 2015).

Once the multi drug resistant bacteria infection patients, inspection department should report immediately and inform clinical departments directly by treating physicians, in order to make the clinical treatment and quarantine measures in a timely manner, to sign "isolation contact" at the foot of the bed, while the patients medical records with the same sign (Aldea *et al.* 2016). Department of infection prevention and control personnel should strictly

implement the disinfection measures for patients in accordance with the management system of hospital for multi drug resistant bacteria, the control of each link, to take effective measures to prevent and control the spread of multi drug resistant bacteria (Baikoussis *et al.* 2015; Breitenbuecher *et al.* 2015).

In recent years, the application of the classification and grouping management in nursing during physical examinations has been attracting increasing attention, as it is able to facilitate the work of the department (Cahill *et al.* 2015). Based on the situations in the Department of Physical Examination of our hospital, and the nurses' knowledge and skill characteristics, the nurses were classified and grouped to compare the nursing effect before and after classification and grouping (Cetean *et al.* 2015).

## MATERIALS AND METHODS

### General data

315 cases of multiple drug resistant inpatients were selected from January 2015 to December 2016, and the infection sites, department, distribution and hospitalization time were collected and summarized. Methods Retrospective investigation and literature research were used to collect and analyze the data of nosocomial infection patients. SPSS17.0 statistical software was used to process all the data. Descriptive statistics analysis was used to analyze the basic data of the cases, and chi square 2 test was used to compare the situation of multi drug resistant bacteria infection over the years. The Department of Physical Examination of our

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hospital had a total of 9 nursing personnel aged 23-46 years with median age of 32 years. They comprised the following: 2 nurses, 4 senior nurses, and 3 supervisor nurses. 626 individuals were subjected to physical examinations in our hospital from January 2016 to June 2016, and were selected as the research subjects. All projects were approved by the ethics committee of the hospital, signed with informed consent. Ethical Approval number as 2015XQDDSQ.

### ***Nursing measures***

As far as the implementation of a single similar multi drug resistant bacteria isolation or infection or colonization in patients with the same arrangement of the implementation of ward bed isolation, but not the multi drug resistant bacteria infection or colonization in patients with deep venous catheter, endotracheal intubation, open wounds or inhibit the immune function of the patients placed in the same room. Keep the ward suitable temperature and humidity, 2 to 3 times daily to maintain indoor ventilation; keep the indoor surface and ground surface cleaning, pollution timely disinfection. Strengthen oral care, oral pH value according to the selected oral cleaning liquid, pH value of alkaline boric acid solution to clean the mouth, acidic when cleaning oral sodium bicarbonate solution, using physiological saline to clean the mouth in general, to reduce oral bacteria colonization.

Based on the knowledge and skill characteristics of the nurses in the Department of Physical Examination of our hospital, the nurses within the department were grouped evenly into three groups: (1) physical examinations of organizations, (2) physical examinations of students, and (3) physical examinations of individuals. Grouping was performed based on the type of physical examination, complexity, working hours, work load etc. In each group, the supervisor nurse was designated as the leader in charge of the management and organization of the nursing personnel in the Department of Physical Examination. All groups were alternated each month and each group was required to master the relevant guidance and coordination for physical examinations.

### ***Strict aseptic technique***

Strict aseptic technique operation procedures in the treatment and nursing process, especially in the nursing care of central venous catheter, tracheotomy, endotracheal intubation, indwelling catheter, suction operation, strict aseptic operation and eliminating quarantine measures, reduce the risk factors for infection. Strict implementation of the basic principles of clinical use of antibacterial drugs, correct and reasonable implementation of administration of antibiotics, early correct sputum bacterial culture and drug sensitive test, and according to sputum culture and drug sensitivity results of selection of drugs.

The patient uses disposable medical supplies whenever

possible so as to prevent cross infection effectively. Patients frequently contact objects, equipment, facilities, surfaces, cleaned and wiped daily. Ordinary medical products should be sterilized by one person at one time. Contact with damaged skin and mucous membranes should be sterilized by one person at one time. The oxygen inhalation device is changed every 24h for disinfection. Medical waste shall be uniformly classified and collected, managed strictly, and handled properly.

### ***Evaluation method***

300 individuals subjected to physical examinations in the Department of Physical Examination of our hospital from January 2016 to June 2016 were selected randomly and compared with 300 individuals subjected to physical examinations before classification and grouping. Our aim was to investigate the satisfaction levels of the physicians in the Department of Physical Examination and the individuals subjected to physical examinations. The vocational assessment for the nursing personnel before and after classification and grouping in the form of written examinations and skill operation, with a total score of 100 points for each.

## **STATISTICAL ANALYSIS**

SPSS 13.0 software for Windows version was used for statistical analyses. The difference was considered significant when  $P < 0.05$ .

## **RESULTS**

### ***Multi drug-resistant bacteria infection***

The results of this study showed that the number of patients with multiple drug resistant infections showed a trend of increasing year by year. On the one hand, the nurses themselves do not know much about the routes of transmission and the prevention and control requirements of the patients with multi drug-resistant bacteria, but the main reason is the increasing resistance of bacteria and the widespread use of antimicrobial agents. Epidemiological investigation showed that the total dose and treatment type, the use of antibiotics were associated with multi drug resistance. The detection rate was positively as the direct nursing care of patients with multi drug resistant bacteria infection, in strict accordance with the prescribed dose, dose accuracy, administration time interval, the method to give the medicine, drug treatment, drug effects observation, it is particularly important. Medication care is the guarantee of the improvement of the patient's treatment. Therefore, usually to the training of the nursing staff, once found multi drug resistant bacteria infection in patients should not only strictly control, multi drug resistant bacteria infection in patients submitted to the process system, also attaches great importance to medication nursing care of patients with multi drug resistant bacteria infection. The patient was

**Table 1:** General situation of multiple drug resistant infections

project		number	2015	2016	$\chi^2$	P
Age	<55	132	54	78	.373	0.024
	$\geq 55$	183	92	91		
Gender	male	175	83	92	0.015	0.813
	female	140	76	64		
Hospitalization days	<7d	86	43	42	15.462	0.018
	7~15d	107	55	52		
	>15d	122	67	55		

**Table 2:** Site of infection in multiple drug resistant patients

year	number	breathing	blood	Urinary	Wound
2015	146	54	11	59	22
2016	169	46	13	83	27

**Table 3:** The physicians showed higher levels of satisfaction for the nursing work after classification and grouping

	Satisfaction of doctor
Before classification and grouping	71
After classification and grouping	98
P value	<0.05

**Table 4:** The individuals showed higher levels of satisfaction for the nursing work after classification and grouping

	Satisfaction of individuals
Before classification and grouping	81
After classification and grouping	99
P value	<0.05

**Table 5:** The vocational assessment scores of all nurses improved after classification and grouping

	Vocational assessment scores
Before classification and grouping	78
After classification and grouping	96
P value	<0.05

diagnosed as multi drug resistant bacteria infection, should be the first time reported to the office of hospital infection management and medical services, and actively inform the unit staff, drew attention, at the same time start of multi drug resistant bacteria management mechanism for the management of patients.

### ***Nursing professional evaluation***

The physicians of department of physical examination and the individuals subjected to physical examinations showed higher levels of satisfaction for the nursing work after classification and grouping. The vocational assessment scores of all nurses improved after classification and grouping.

## **DISCUSSION**

Clinical prevention and control of multi drug resistant bacteria infection in the primary issue is to strengthen the monitoring of pathogens spectrum, attached bacteria

detection and drug sensitivity test, to keep abreast of changes in groups, number of patients with respiratory tract bacteria, pay close attention to antimicrobial treatment sensitivity (Pistevou-Gombaki *et al.* 2015; Saglam *et al.* 2015). The treatment of multiple drug resistant bacterial infections must be guided strictly according to the guidance of the bacterial culture test, and timely rotation of the drug. We should master the method of administration according to the half-life and the latter effect of antibiotics. To cut through the way of family communication, on the visit to set time, number, enter the room to wear gowns, hats, masks, bedside by hand disinfectant hand hygiene. Objective surveillance of multi drug-resistant bacteria should be strengthened, timely detection and early diagnosis of multi drug-resistant bacteria and colonization of patients will be carried out, and antimicrobial susceptibility and drug resistance monitoring of multi drug-resistant bacteria should be strengthened (Tsiambas *et al.* 2015).

The classification and grouping management in the Department of Physical Examination has the following advantages. Firstly, it can significantly improve the nursing quality of the Department of Physical Examination. All nursing personnel had a good command of personnel classification, procedures, material preparation etc (Tsoucalas *et al.* 2015). Department of Physical Examination can facilitate the coordination with the physicians in the department, reduce unnecessary errors and delays, and improve nursing quality (Vekov *et al.* 2015). Nursing personnel can systematically master relevant professional knowledge and also reduce their work load to some extent by maintaining contact with a specific department of physical examination and the personnel within the department for a period of time. This effectively improves the satisfaction of the individuals subjected to physical examinations and the physicians in the department for nursing, thus significantly improving the nursing quality (Dagher *et al.* 2016; Dobson *et al.* 2015; Duzagac *et al.* 2015).

Secondly, it can significantly improve the overall quality of the nurses (Abu 2017; Fang and Ruan 2017; Liu *et al.* 2017; Takahashi 2017). The nurses may receive systematic training in an organized and planned manner, and actively learn knowledge related to physical examinations to meet work demands and improve their professional skill within a period of time (Wojtukiewicz *et al.* 2015; Yamada *et al.* 2015). Thus, they were able to achieve the standardization of coordination capacity and systematization of knowledge. During classification and grouping, the nurses alternated between different groups at a fixed interval, thus improving their vocational levels in various aspects. It also ensured that nurses were not overly focused on one group, and neglected the work in other groups.

Thirdly, it can establish a harmonious interpersonal relationship in the Department of Physical Examination. Implementation of classification and grouping management contributes to overall planning of the work arrangement for the personnel in the Department of Physical Examination (Jia *et al.* 2015; Lee *et al.* 2015). It is beneficial to the development of an efficient, ordered, and coordinated management system. Strengthening contact with intra-group colleagues and the physicians in department can enhance mutual understanding and communication, thus effectively alleviating unnecessary disputes between physicians and nurses. It can also heighten teamwork and cohesiveness (Yazilitas *et al.* 2015; Wang *et al.* 2015; Wu *et al.* 2015).

## CONCLUSION

Classification management can deepen the nurses' understanding of common problems that occur to the individuals subjected to physical examinations. This will

allow for proficient handling of such problems during work, and improve the nurse-patient relationship.

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