

## النشرة الوبائية السعودية

تصدرها وزارة الصحة

الوكالة المساعدة للطب الوقائي وبرنامج الوبائيات الحقلية

المجلد العاشر - العدد الثالث - يوليو - سبتمبر ٢٠٠٣

### Measles outbreak, Al-Madinah region, KSA, January—June, 2003.

On 8/3/2003 the General Health Directorate of Al-Madinah region reported an unusual increase in measles cases. The Field Epidemiology Training Program was assigned to investigate this outbreak and recommend control measures. On reaching Al-Madinah the team visited the Regional Health Directorate, the supervisor sectors, Hospitals and Health Care Centers. At the health centers, the team interviewed the Directors of the centers and Health staff and reviewed patient records. The team also visited the School Health Units for boys and girls and one of the schools where the suspected measles cases had appeared, in order to develop a framework for further investigation.

It was decided to conduct a case control study to identify risk factors associated with the occurrence of this outbreak. A Measles case was defined according to clinical surveillance case definition of suspicious and confirmed cases. A questionnaire was prepared and distributed to all Hospitals, Primary Health Care Centers (PHCCs), and school Health Units to be filled for all measles cases; whether suspected or confirmed, old or new. All cases that met the case definition and had complete residential addresses were enrolled in the study. One control from the same family or neighborhood was selected for each case.

During the period from January first to June 15<sup>th</sup> 2003, 355 cases of clinically diagnosed measles were reported, giving an attack rate of 24/100,000 persons. Figure 1 demonstrates the epidemic curve of this outbreak. Table 1 demonstrates the demographic characteristics of cases and control. The highest age group affected was children aged 5-14 years, 171 (48.2%). Saudi nationals accounted for 297 cases (83.7%). Females constituted 53.5% and students accounted for 145 (43.7%), 110 (33%) of them were from primary schools. The mean family size of measles cases was 8 members (median 7). Most of the cases (88.3%) were the only affected family member, 10% were from families with two affected members and 1.7% were from families with three affected members.

All cases had fever followed by rash for a median duration of three days (range

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# Measles Outbreak in Al-Madinah region, cont....

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2-14 days), runny nose (62%), conjunctivitis (60%) and koplik spots (48%). Ninety eight percent of cases had presented to governmental health facilities; 31% of who were admitted into hospital for a median duration of three days (range 1-8 days). Over two thirds (69%) of blood samples were serologically confirmed (IgM).

There were 112 (32.5%) cases who had history of contact with confirmed measles cases. Schools were the major location for contact with measles infection.

The risk of measles infection was higher among non-vaccinated individuals (OR 2.33, 1.62<OR<3.35). History of measles vaccination was significantly lower among cases (57.3%) compared to controls (75%) (OR 0.45, 95% CI 0.32<OR<0.63). Among Saudis, 175 (61.0%) cases had been previously immunized compared to 228 (81.1%) controls (OR 0.36, CI 0.24<OR<0.54). Among non-Saudis 23 (28.4%) cases had been previously immunized compared to 26 (44.8%) controls (OR 0.49, CI 0.23<OR<1.05).

History of receiving two dose or more of measles containing vaccine was lower among cases (OR 0.43, CI 0.30 - 0.62), in addition to possessing a birth certificate (OR 0.47, CI 0.30-0.73).

– Reported by: Dr. Mona AlAnezi, Dr. Majed Almhaimeed, Dr. Abdullah Al Rabeah, Dr. Randa Nooh, (Field Epidemiology Training Program), Dr. Badruddin Qara (Preventive Medicine, General Directorate of Health Affairs, Al-Madinah).

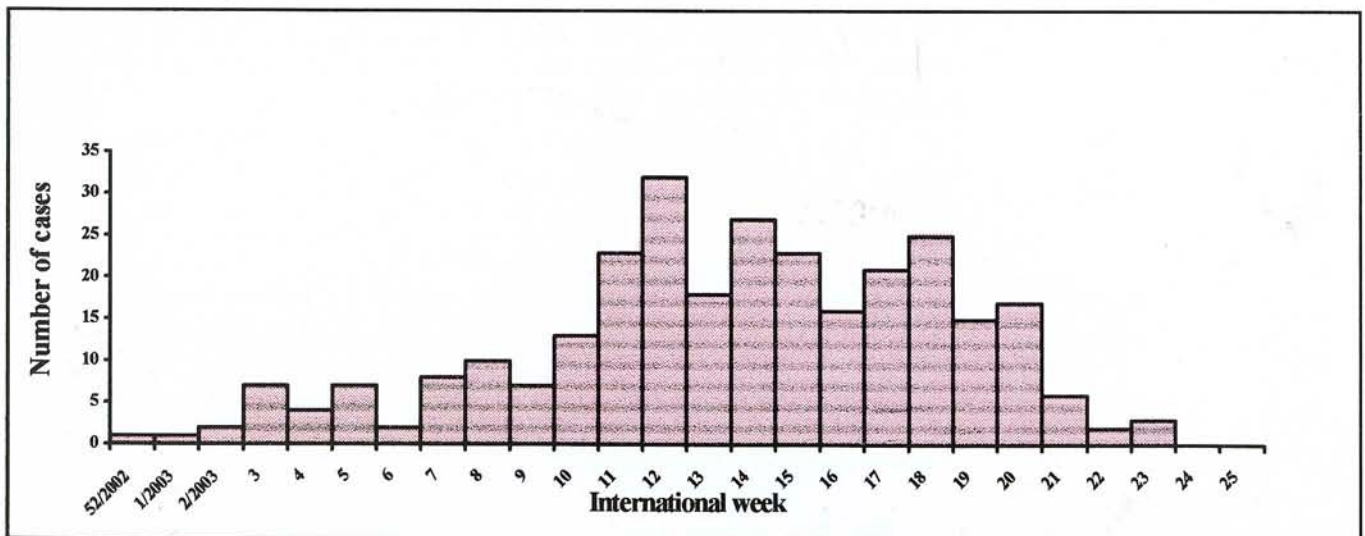
**Editorial notes:** This sporadic outbreak of measles is attributed to the accumulation of susceptible individuals. In this study, the majority of cases (48.2%) were in the 5-14 year age group, which is consistent with previous studies. Kamel et al. reported that

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**Table 1: demographic characteristics of cases and controls measles outbreak, Al-Madinah region 2003.**

	Cases		Controls	
	No.	%	No.	%
<b>Age Group</b>				
< 1 year	66	18.6	6	1.7
years 1-4	48	13.5	111	31.5
5-14 years	171	48.2	146	41.5
15 -24 years	32	9	33	9.4
25-44 years	35	9.86	43	12.2
≥45	3	0.84	13	3.7
<b>Gender</b>				
Male	165	46.5	188	53
Female	190	53.3	167	47
<b>Nationality</b>				
Saudi	297	83.7	297	83.7
Non-Saudi	58	16.3	58	16.3
<b>Occupation</b>				
Students	145	43.7	103	31.8
Pre-school Children	125	37.7	151	46.7
Housewives	33	9.9	22	6.8
Employees	12	3.6	20	6.2
Non-Employed	12	3.6	12	3.7
Self-Employed	5	1.5	8	2.4
Laborer	0	0	8	2.4
<b>Previous Measles Vaccine</b>				
Yes	198	57.4	254	74.9
No	147	42.6	85	25.1

**Figure 1: Epidemic curve of Measles Outbreak, Al-Madinah region, 2003.**





# Hand Washing practices of Health Care Workers, RMC, Saudi Arabia, 2003.

Nosocomial infections have been recognized for over a century as a critical problem affecting the quality of health care provided in hospitals. Hand washing remains the simplest, least expensive, and most important measure to prevent transmission of nosocomial infections. The present study was conducted to determine the degree of compliance of HCWs of the medical and surgical wards of Riyadh Medical Complex (RMC) with hand washing practices.

An observational descriptive cross-sectional study was conducted during a four week period by unobtrusive observation of HCWs without their knowledge. The study population included a sample of HCWs of both the medical and surgical wards. Structured observation sessions were performed at random during day shifts on weekdays for four consecutive weeks from 7:00 am – 3:00 pm each day (the nurses shifts change every 3-4 days). Each study subject was observed only once. The observation period started when the HCW washed his/her hands and ended when either he/she proceeded to wash the hands again or a coherent episode of care was completed as determined by the observer. We documented whether hand-washing was done, duration and type of antiseptic agent used, whether gloves were used for patient care procedures, and type of procedure performed. Data were collected on a pre-prepared data collection form.

On observation of the medical and surgical wards (five wards each), each ward consisted of 6-7 rooms, each room occupied by 3-4 patients according to room size. It was noticed that there was no sink in the patients' rooms but there was one sink in the nurse's station and another in the doctor's room which was located away from the patients rooms. The sink was of the manual type i.e. the taps did not have handles or foot controls or automatic shut off. Regarding available cleansing agents, there was plain soap (bar and liquid form); as for antiseptic agents there was liquid form "chlorhexidine gluconate 4%". Non-disposable brushes were available by the sinks, in addition to paper towels

for hand drying.

The study sample consisted of 230 HCWs: 10 consultants, 76 residents, 11 Interns, 23 Medical students, and 110 Nurses. Most subjects were females (56.1%). Saudis constituted 51.3%, followed by Philipinos (25.7%) and Indians (16.5%).

The overall frequency of hand washing was 32.2%. The frequency of hand washing was almost the same among HCWs of medical and surgical wards (33.9% and 30.1% respectively,  $p=NS$ ). On the whole, 9.1% of subjects washed their hands before patient activity and 32.2% after patient activity ( $p<0.001$ ).

Hand washing compliance varied significantly by job category and procedure performed. The frequency of hand washing was highest among medical students (91.3%), followed by Interns (81.8%), then nurses (29.1%), and the lowest was among consultants (10%). The duration of hand washing according to occupation was highest among medical students (6.05 sec), Interns (5.44 sec) and lowest among consultants (3.0 sec) (Table 1). Hand washing was more frequent after performing certain procedures such as suctioning (100%), wound care (52.4%), inserting peripheral IV line (40%), examining patients (31.6%), and emptying of urine bags (21.4%).

The overall frequency of wearing gloves for performing procedures was 43.9%. However, rates of gloving varied for certain procedures such as suctioning (100%), wound care

(95.2%) emptying of urine bags (82.1%), and inserting peripheral IV line (45.7%). The frequency of hand washing after removing gloves was only 38.6% (39 of 101 glove wearing incidents).

The association between occupation of HCWs who washed their hands and type of cleansing agent used was not statistically significant.

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**Editorial notes:** Hospital acquired infection prolongs hospital stays and consumes substantial hospital resources. In the United States, Hospital acquired infections affect over two million patients annually, causing substantial morbidity, contributing to mortality, and generating costs in excess of \$4.5 billion.<sup>1</sup> The U.S. Institute of Medicine ranked health care associated infection in the top ten causes of death with such infections being the primary cause of 1% of all deaths and major contributors to death in 3% of all deaths.<sup>1</sup>

Hand washing has been a universally accepted practice to reduce contact transmission of microorganisms for over a century. It is one of the few

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**Table 1: Frequency and duration of hand washing among HCWs of RMC (n=230).**

Occupation	Frequency		Duration	
	No.	%	mean	SD
Consultant	1	10	3.000	0.0
Resident	11	14.5	3.182	1.6
Intern	9	81.8	5.444	2.1
Medical student	21	91.3	6.048	1.8
Nurses	32	29.1	4.094	1.9
$\chi^2$	62.92		61.68	
p-value	<0.001		<0.001	



# Determinants of childhood nutritional status in Al-Dakhliyah region in Sultanate of Oman.

Nutrition is one of the major determinants of childhood mortality and morbidity. Poverty and non-availability of quality foods are the main underlying factors of malnutrition among young children. In a country like Oman, where absolute poverty is uncommon, the problem of malnutrition, unfortunately, still exists.

This study is a health facility case-control study with 1:3 case to control ratio. A case was defined as any child 12-47 months of age who was below 2 SD from the median weight for his/her age as plotted on the growth chart used for each child in health institutes in Oman. Health facilities were recruited via random selection from the total health facilities in the region. All the children who met the case definition were recruited in the study and controls were matched for gender and age in years. Data was collected by trained nurses by means of questionnaires translated into Arabic. To determine implicating factors, odds ratios (OR) and 95% confidence intervals (95% CI) were calculated. Multivariate logistic regression was used to eliminate the effect of confounders.

A total of 1000 children (250 cases and 750 controls) were recruited in the study. Overall, 48% were males and 52% were females. In bivariate analysis, sociodemographic factors found to have an association with nutritional status were illiterate mothers (OR 2.03, 95% CI 1.46-2.84); working mothers (OR 2.20 95% CI 1.10-4.51); and large number of people in the household (16-42 persons/house) (OR 2.30 95% CI 1.50-3.53). All nutritional factors were not statistically significant. Significant health status factors included low birth weight < 2.5 kg (OR 4.53, 95% CI 2.89-7.09); sickness in the first year of life (OR 3.81, 95% CI 2.66-5.45); sickness after the first year of life (OR 3.50, 95% CI 2.25-5.45); occurrence of >6 episodes of diarrhea in the first year of life (3.24, 95% CI 1.49-7.01); occurrence of diarrhea after the first year of life (1.52, 95% CI 1.11-2.09); repeated Acute Respiratory Infections (ARI) in the first year of life (OR 1.50, 95% CI 1.08-

2.09); ARI after the first year of life (OR 1.83, 95% CI 1.29-2.60); chronic diseases (OR 2.29, 95% CI 1.19-4.21); and admission into hospital >3 times (OR 2.28, 95% CI 1.25-4.13).

Adjusting for confounders by Multivariate logistic regression (table 1), the following factors were demonstrated to affect the association: low birth weight (OR 4.88, 95% CI 2.98 - 8.01); sickness in the first year of life (OR 2.75, 95% CI 1.76 - 4.28); sickness after the first year (OR 2.29, 95% CI 1.30 - 4.05); diarrhea after the first year of life (1 - 6 episodes/year) (OR 1.49, 95% CI 1.05 - 2.11); ARI after the first year of life (1 - 6 episodes/year) (OR 1.48, 95% CI 1.01-2.22); illiterate mother (OR 1.98, 95% CI 1.34 - 2.92); and number of people in the household (16-45 persons/house) (OR 2.12, 95% CI 1.31 - 3.44).

- Reported by: Dr. Yaqoub Salem Almaghderi, Dr. Abdul Jamil Choudhry (Field Epidemiology Training Program), MOH, Riyadh, Saudi Arabia.

**Editorial notes:** There is considerable evidence that childhood malnutrition affects growth, morbidity, mortality, cognitive development, reproduction, physical work capacity and risk for several adulthood chronic diseases. Children who are chronically malnourished exhibit behavioral changes, including irritability, apathy and decreased social responsiveness, anxiety, and attention deficits. Infants and young children with malnutrition frequently demonstrate developmental delay or permanent cognitive deficits. The degree of delay and deficit depends on the severity and duration of nutritional compromise and the age at which malnutrition occurs.<sup>1</sup>

The World Health Organization defines malnutrition as "the cellular imbalance between supply of nutrients and energy and the body's demand for them to ensure growth, maintenance, and specific functions".<sup>2</sup> Internationally, the WHO estimated in 1998 that approximately 150 million children (26.7%) younger than 5 years in developing countries are malnourished based on their low weight in

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**Table (1) Multivariate Logistic Regression analysis of all grouped factors**

Variable	Crude OR	95% CI	Adjusted OR	95% CI
Birth weight	4.53	2.89-7.09	4.88	2.98-8.01
Sick in first year of life	3.81	2.66-5.45	2.75	1.76-4.28
Sick after first year of life	3.50	2.25-5.45	2.29	1.30-4.05
Diarrhea after the first year				
1-6 times	1.52	1.11-2.09	1.49	1.05-2.11
> 6 times	2.46	0.89-6.65	1.26	0.43-3.69
ARI after the first year				
1-6 times	1.83	1.29-2.60	1.48	1.01-2.22
> 6 times	0.77	0.25-2.19	0.28	0.08-0.94
Maternal education				
illiterate	2.03	1.46-2.84	1.98	1.34-2.92
read & write	1.06	0.68-1.63	1.13	0.70-1.81
People living in household				
9-15 persons	1.31	0.93-1.85	1.25	0.84-1.86
16-42 persons	2.30	1.50-3.53	2.12	1.31-3.44



# Determinants of childhood nutritional status in Al-Dakhliyah region in Sultanate of Oman, cont.....

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relation to their age. An additional 200 million children have stunted height secondary to poor nutrition.<sup>2</sup> Also, there is a strong exponential association between severity of malnutrition and mortality.<sup>3</sup>

In Oman, the percentage of malnutrition in under-fives is 12%.<sup>4</sup> Since the gulf countries share the same cultural and financial characteristics, the rates of malnutrition among children in other Gulf countries are expected to be similar. In Saudi Arabia, according to the Family Health Survey (1997), around 14% of children under 5 years of age were malnourished.<sup>5</sup>

It is important to understand the causes of malnutrition in order to appreciate the depth of the problem, and find adequate solutions. The most

common immediate causes of malnutrition are inadequate dietary intake and sickness. However, the determinants of nutritional status of children under five in Al-Dakhliya region of Oman were mostly related to history of illness, illiteracy of mothers and presence of a large number of people in the same household. All these factors are related to the quality of care the child has and health education.

It was recommended that a comprehensive health education program be organized by the ministry of health in collaboration with other concerned partners and community support volunteers to provide necessary information and support to families, in particular women of child bearing age.

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# Measles Outbreak, AlMadinah region, 2003, cont....

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68.1% of measles cases in Saudi Arabia occurred among the 5-15 years age group.<sup>1</sup> The shift in age distribution of measles cases towards older children is one of the major effects of immunization programs on measles epidemiology due to the lowering of exposure rate in the community.<sup>2</sup>

Infants below one year (18.6%) are too young to be immunized, their source of infection could have been school-aged infected siblings or infected mothers. Young adults aged 15 to 25 may be susceptible because of their lower vaccination coverage at the start of the immunization program. They may have been too old for immunization, may have received a vaccine of low potency, or may have escaped measles infection during childhood due to a general decline in incidence rate in the community.<sup>3</sup> It has been recognized that a substantial number of individuals are now entering their adult life without having encountered the measles virus either in its wild or vaccine forms.<sup>4</sup>

The fact that 57.4% of measles cases occurred in immunized individuals is consistent with previous studies.<sup>5</sup> It was also found that 20% of immunized cases had received a sin-

gle dose of measles vaccine. Repeated experience has shown that a two-dose regimen of measles vaccine is required to eliminate measles. Pebody et al. reported that 2-4 years after receiving a first dose of MMR vaccine at 12-18 months, 19.5% of pre-school children got measles.<sup>6</sup>

School-aged children comprised the majority of cases in this study, and may have acted as an important source of infection for younger siblings. Contact between households during Eid holiday in a suitable climate may also have been responsible for the increase in cases following that holiday.

It was recommended to aim for an immunization coverage against measles of at least 95% in each successive cohort. Health education messages should be directed to mothers to promote vaccine-seeking behavior. The adult population should be considered for measles vaccination as they become at risk to develop the disease.

A Measles vaccination campaign should be conducted every 3-5 years aiming to cover all children regardless of prior disease or immunization status. Follow up studies should be conducted to update the epidemiological and immunological situation of measles, particularly in response to higher vaccination coverage.

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## ملخص باللغة العربية

### فاشية الحصبة بالمدينة المنورة ، يناير - يونيو ٢٠٠٣ م.

لاحظ المسنونون في الشئون الصحية بالمدينة المنورة زيادة في عدد حالات الاشتباه بالحصبة خلال شهر ذي القعدة عام ١٤٢٣هـ. تم تكليف برنامج الوبائيات الحقلي بإرسال فريق لعمل النقصي الوبائي لهذه الحالات ومعرفة التوزيع الوصفي لها و الاسباب المؤدية إلى هذا الارتفاع.

قام الفريق بمقابلة المسؤولين بمديرية الشئون الصحية للنقاش معهم حول ازيادة عدد الحالات وأماكن توزيعها، كما تمت زيارة بعض القطاعات الاشرافية والمراكز الصحية والمستشفيات من أجل التأكد من التبليغ للحالات وكذلك مقارنة عدد الحالات المبلغة للمديرية مع عدد الحالات الموجودة بالمستشفى، والتأكد من طريقة حفظ اللقاحات بالمراكز والاطلاع على سجل التحصين و التأكد من طريقة اعطاء تطعيم لقاح الحصبة، ونسبة التغطية للتحصين ( عدد الاطفال المستهدفين/ عدد المطعمين).

تمت زيارة مختبر مستشفى الولادة والاطفال للتأكد من عينات الدم الموجودة والمرسلة للمختبر المركزي بمجمع الرياض الطبي، ومقارنة عدد العينات المسجلة بالسجل مع عدد الحالات المبلغة للمديرية، و متابعة وصول النتائج للعينات المرسله. كما تم حصر العينات الموجودة لدى مختبر الولادة والاطفال وذلك من أجل مقارنة عدد الحالات المبلغة للمديرية مع الحالات الفعلية الموجودة في المستشفيات وكذلك الموجودة في سجل المختبر.

تم إعداد استبيان مفصل يعبأ لجميع الحالات المشتبهه والمؤكدة و تنفيذ ورشة عمل شملت جميع مسنولي القطاعات الفنية داخل المدينة المنورة لشرح طريقة تعبئة هذا الاستبيان والفئة المستهدفة. كان الهدف من هذا الاستبيان عمل دراسة حالة ضابطة (Case control study) للتعرف على عوامل الخطورة التي أدت لظهور هذه الحالات.

بلغ عدد الحالات الأجمالي التي تم رصدها بداية من شهر يناير حتى يونيو ٢٠٠٣م، ٣٥٥ حالة (معدل الاصابة ٢٤/١٠٠،٠٠٠)، منهم ٥٣،٥% من الاثناث. عدد المصابين من السعوديين بلغ ٢٩٧ حالة ( ٨٣،٧%). أعلى فئة عمرية بين الحالات ٥-١٤ سنة، ١٧١ حالة (٤٨،٢%)، عدد المصابين من الطلبة ١٤٥ حالة (٤٣،٧%)، ١١٠ (٣٣%) منهم بالمرحلة الابتدائية. كانت المدارس المصدر الرئيسي للإصابة

بالعدوى.

بالنسبة للذين طعموا ضد الحصبة من قبل فقد بلغوا ٥٧،٤% من الحالات. كان هناك فرق احصائي واضح بين الحالات و الحالات الضابطة بالنسبة للتطعيم السابق ضد الحصبة (٩٥،٠% CI ٠٠،٣٢ - ٠٠،٦٣). لوحظ أن نسبة السعوديين الغير مطعمين مرتفعة مما يستدعي معرفة اسباب تخلف هؤلاء السعوديين عن التطعيم كذلك بالنسبة لغير السعوديين يحتاج إلى التأكد من سبب عدم القيام بالتطعيم. كما ان ظهور حالات بين المطعمين يحتاج إلى مزيد من الدراسة لمعرفة اسباب الإصابة بالحصبة بينهم.

تمت التوصية على توسيع دائرة تحصين المخالطين خاصة في المدارس وتطعيم جميع الطلاب والطالبات التي تظهر بينهم حالة اشتباه للحصبة ولا يكفي بتطعيم الفصل فقط وذلك لأن الطلاب والطالبات يكونون مع بعضهم البعض اثناء فترات الاستراحة بين الحصص. وكذلك لأن أغلب الحالات بين الطلاب ظهرت في مدارس مبانيها مستأجرة، وتتسم بالضيق وصغر الحجم. لذا نرى القيام بحملة تطعيم موسعة لهذه المدارس.

نظراً لظهور حالات بين المطعمين فنرى إجراء المزيد من الدراسات لمعرفة اسباب ظهور الحالات بينهم ومراجعة سلسلة التبريد وطريقة إعطاء اللقاح في المنطقة.

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### دراسة رقابية عن غسل الأيدي بالنسبة للعاملين في القطاع الصحي بمجمع الرياض الطبي.

ان عدوى المستشفيات من العوامل الرئيسية لتدهور صحة المرضى وتزيد من مدة مكوثهم في المستشفى، وتؤدي كذلك الى استهلاك موارد المستشفى المحدودة. عرفت عدوى المستشفيات منذ أكثر من قرن كمشكله خطيرة تؤثر على نوعية الخدمات الصحية المقدمة في المستشفيات. هناك نسبة عاليه من العدوى تنتج عن طريق التلوث التبادلي، و انتقال الأحياء الدقيقة بواسطة أيدي العاملين في القطاع الصحي و الذين لهم علاقة مباشرة بالمرضى وهي الطريقة الرئيسية للانتشار. وقد أوضحت الدراسات السابقة انه من الممكن الوقاية من ثلث عدوى المستشفيات على الأقل عن طريق استخدام برامج وقائية

فعاله.

أجريت الدراسة الحالية لتحديد دقة عملية غسل الأيدي من قبل العاملين الصحيين في جناحي الجراحة العامة و الأمراض الباطنية في مجمع الرياض الطبي. وقد أجريت هذه الدراسة المقطعية من خلال مشاهدة العاملين خلال أربعة أسابيع. احتوت عينة الدراسة على جميع العاملين الصحيين في تلك الأجنحة. وقد تم جمع المعلومات عن طريق ملاحظة كل عامل صحي و تعبئة الاستبيان المعد مسبقاً للمعلومات التي تحتوي على الخدمات المتاحة، الإجراءات الطبية التي يقوم بها الأطباء و الممرضات و طريقة و مدة غسل الأيدي.

تمت ملاحظة ٢٣٠ عاملاً صحياً، وقد كان المعدل العام لغسل الأيدي ٣٢،٢%، كما وجد ان معدل غسل الأيدي قبل مباشرة (معينة) المريض ٩،١% بينما معدل غسل الأيدي بعد مباشرة المريض ٣٢،٢%. وجد ان أعلى معدل لغسل الأيدي كان بين طلبة الطب يليهم أطباء الامتياز ثم الممرضات وذلك بالنسب التالية (٩١،٣%، ٨١،٨%، ٢٩،١%).

كان معدل ارتداء القفازات الطبية في بعض الإجراءات الطبية ٤٣،٩%، ووجد ان أعلى معدل لارتداء القفازات يكون قبل العناية بالجروح (٩٥،٢%) يلي ذلك تفريغ محتوى كيس البول (٨٢،١%).

استخلصنا من هذه الدراسة الى ان العاملين في المجال الصحي والذين لهم علاقة مباشرة بالمرضى لا يقومون بالاحتياطات المطلوبة حتى في ابسطها وهي غسل الأيدي، مما يتطلب العناية الخاصة لتوعية هذه الفئات.

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## Hand Washing practices of HCW, RMC, cont....

(Continued from page 19)

infection control practices with clearly demonstrated efficacy and remains the cornerstone of efforts to reduce risk of health care associated infections.<sup>2</sup> The Centers for Disease Control and Prevention (CDC) and the Association for Professionals in Infection Control and Epidemiology (APIC) have published specific guidelines for hand washing.<sup>3</sup>

Bartzokas et al. observed that, despite frequent patient contacts, senior doctors washed their hands only twice during 21 hours of ward rounds.<sup>4</sup> Although doctors spend less time than nurses in direct patient contact and may think that they need to decontaminate their hands less often, they have many transient contacts and move from ward to ward.<sup>4</sup> The same is true for phlebotomists, physiotherapists, radiographers, and some technicians.<sup>4</sup>

There is a general perception that physicians are less inclined to follow infection control practices. In a previous study, after unobtrusive observation of doctors to obtain a baseline hand-washing rate, Tibballs asked a sample to estimate their own hand washing rates before patient contact. Their perceived rate of 73% (range 50%-95%) contrasted sharply with the observed frequency of just 9%.<sup>5</sup>

The recommended duration of hand washing should be 20 seconds. In this study the duration of hand washing was much shorter than recommended. This study reveals that the HCWs are not performing hand washing, the simplest infection control procedure, as often as they should.

It is recommended to educate HCWs on the importance and proper technique of hand washing. It is imperative that adequate facilities for hand washing be provided. Efforts to improve hand washing practice should be multifaceted and should involve both medical and administrative staff and include continuing education and feedback to staff on behavior and infection surveillance data.

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## Selected notifiable diseases by region, Jul—Sept 2003

	Riyadh	Makkah	Jeddah	Taif	Madinah	Qassim	Eastern	Hasa	Hafr AlBatin	Asir	Bisha	Tabuk	Hail	Al Shamal	Jazan	Najran	Baha	Al Jouf	Goriat	Gonfuda	Total
Measles	0	0	4	12	3	1	1	0	0	0	2	3	0	0	23	0	0	0	0	0	49
Mumps	24	8	28	12	12	6	11	7	7	13	1	9	8	1	3	1	6	2	0	0	169
Rubella	1	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	6
Varicella	1671	378	941	387	728	1361	1053	1160	474	931	395	461	258	146	301	112	151	32	119	20	10979
Brucellosis	105	4	4	50	54	166	73	11	68	215	63	12	134	14	36	31	13	11	0	5	1069
Meningitis mening	3	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Meningitis other	34	8	16	17	7	2	2	3	1	1	0	0	2	0	5	0	0	0	0	0	98
Hepatitis A	59	10	29	44	52	30	10	5	14	35	22	10	8	11	8	39	3	7	4	1	401
Hepatitis B	265	15	201	37	99	73	153	6	1	52	20	40	3	8	11	9	42	0	0	4	1039
Hepatitis C	164	5	279	5	19	25	95	12	0	35	2	12	5	3	3	1	18	0	0	0	683
Hepatitis unspecified	59	1	9	5	7	0	0	8	0	31	0	30	0	0	90	0	0	0	0	1	241
Typhoid & paratyphoid	11	2	1	0	1	8	22	29	0	13	12	1	2	8	15	0	2	0	1	0	128
Amoebic dysentery	10	0	295	14	6	2	27	10	0	98	25	0	7	0	50	15	0	0	2	0	561
Shigellosis	25	1	9	1	5	1	10	11	3	0	1	5	0	0	0	6	37	0	0	1	116
Salmonellosis	160	9	55	9	11	3	286	45	11	15	20	20	3	72	4	34	12	0	1	0	770
Syphilis	0	0	8	0	0	2	15	0	0	5	7	0	0	0	0	0	1	0	1	1	40
VD, other	9	0	24	0	0	8	28	8	4	7	3	0	3	0	12	0	0	0	4	0	110

## Comparisons of selected notifiable diseases, Jul - Sept 2002-2003

DISEASE	Jul-Sept	Jul-Sept	Change	Jan-Sept	Jan-Dec	DISEASE	Jul-Sept	Jul-Sept	Change	Jan-Sept	Jan-Dec
	2002	2003		%	2003		2002	2002		2003	%
Diphtheria	3	0	-100	2	9	Meningitis other	171	98	-43	236	753
Pertussis	14	54	286	69	42	Hepatitis A	521	401	-23	1006	2926
Tetanus neonat	6	6	0	13	28	Hepatitis B	1176	1039	-12	2189	5638
Tetanus other	3	3	0	10	21	Hepatitis C	879	683	-22	1334	4283
Poliomyelitis	0	0	0	0	0	Hepatitis unspecified	277	241	-13	540	1227
Measles	18	49	172	286	311	Typhoid & paratyphoid	83	128	54	210	390
Mumps	194	149	-23	367	976	Amoebic dysentery	913	561	-39	1260	4584
Rubella	4	5	25	14	11	Shigellosis	95	116	22	262	472
Varicella	7931	10979	38	30330	53207	Salmonellosis	739	770	4	1125	2539
Brucellosis	1259	1069	-15	2163	4687	Syphilis	26	40	54	71	187
Meningitis mening	5	7	40	18	55	VD, other	90	110	22	225	386

## Diseases of low frequency, Jul - Sept 2003

Yellow fever, Plague, Poliomyelitis, Haemolytic Uraemic Syndrome: No cases

Puerperal Sepsis: one case (Riyadh)

Rabies: one case (Jazan)

Pertussis: 54 cases (Eastern 27, Najran 6, Jazan 6, Riyadh 4, Asir 4, Makkah 3, Jeddah 2, Hasa 2)

Tetanus neonatorum: 6 cases (Makkah 5, Jazan 1)

Echinococcosis: 4 cases (Riyadh 2, Hafr Al-Batin 2)

Guillain-Barre syndrome: 19 cases (Riyadh 6, Asir 4, Eastern 2, Jazan 2, Taif 1, Madinah 1, Northern 1)