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SHORT COMMUNICATION

Accuracy of Diagnosis and Relationship with Quality of Emergency Medicine Training Program

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ABSTRACT

An indicator for emergency room performance is the ability to establish the correct diagnosis within the emergency room over the years. The authors chose to examine the non-congruence of Emergency Room diagnoses to that established after hospital stay for three selected years. A total of 8488 records were reviewed and all disparate diagnosis were recorded and categorized. Retrospective chart reviews were done from July 2008 to February 2009 at the Aga Khan University Hospital, Karachi. A substantial reduction in the percentage of disparate diagnoses was seen over the years from 41% in the initial year to 14% in the last year evaluated. It was concluded that over the years there has been an improvement in the reliability of Emergency Room diagnoses at the Aga Khan University Hospital, Karachi.

Key words: *Quality. Reliability. Diagnoses. Emergency medicine.*

Emergency Medicine is a new specialty throughout the world, which has evolved over the last quarter of century.[1] In most countries, this specialty is either non-existent or is in an early stage of development.[2] There are no formal undergraduate or postgraduate training programs in many countries.[3] However, there is a rapidly growing interest in emergency medicine throughout the world.[4] This is due to the establishment of emergency medicine residency programs in different countries, formation of national and international emergency medicine societies and global transmission of relevant television series.[5,6] However, many countries are not ready for the specialty of emergency medicine.[2] Many illnesses like myocardial infarction, cerebro-vascular accidents, road traffic injuries and infections along with other diseases are very common in Pakistan and come to the emergency departments of different hospitals of Karachi.[7] Their early and appropriate diagnosis and management has a significant positive impact on the patients' survival. There is virtually no good indicators on the accuracy of diagnosis from the emergency departments of Pakistan. Therefore, congruence and non-congruence of diagnoses, although a minor indicator is important in these circumstances. To the best of our knowledge this is the first study from Pakistan looking at this vital indicator.

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The objective of the study was to determine the non-congruence between the diagnoses made in the Emergency Room (ER) and the final diagnoses recorded at the time of discharge from the hospital.

This study was conducted in the Aga Khan University Hospital (AKUH), Karachi, from July 2008 to February 2009. It was a medical chart review study. Review of diagnoses of all the patients (above the age of 14 years) admitted through the ER of AKUH to the Department of Medicine was done for the years 1995, 2000, and 2007. The reason of selecting these 3 years was to observe any changes in the disparate diagnoses prior to and after introduction of residency program in emergency medicine. The data collected included patient's medical record numbers along with their admitting diagnosis and the principal diagnosis. All disparate diagnoses were noted. In areas of confusion/ambiguity, the authors deliberated on each individual case and arrived at a consensus decision. Subsequently the disparities were categorized according to major organ systems (infectious diseases, cardiology, neurology, gastro-enterology, nephrology, pulmonology, endocrinology, rheumatology, haematology, oncology, psychiatry and others). Data was tabulated into total number of incongruent cases by specialty and is presented in Table I.

The total number of admissions in the Department of Medicine through ER in the 3 years analyzed was 1155, 1051, and 6282 for the years 1995, 2000 and 2007 respectively. The overall percentage of 30.6% disparate diagnoses was noted. The mismatched diagnoses was 471 for 1995 (41%), 394 for 2000 (37%) and 875 for the year 2007 (14%). Over the 3 years the number of disparate diagnoses was the lowest for 2007. We then categorized disparate diagnoses of Medicine by the various specialties. A substantial decrease in the number of disparate diagnoses was observed in cardiology and endocrinology over the 3 years of review.

Table I: Comparison of incongruent diagnoses in the years 1995, 2000 and 2007.

	Year 1995, n=1155, total number of disparities= 471 (41%)			Year 2000, n=1051, total number of disparities= 394 (37%)			Year 2007, n=6282, total number of disparities= 875 (14%)		
Specialties	Incongruent diagnoses (X)	Percentages X x 100 total number of disparities	Percentage X x 100 n	Incongruent diagnoses (X)	Percentages X x 100 total number of disparities	Percentage X x 100 n	Incongruent diagnoses (X)	Percentages X x 100 total number of disparities	Percentage X x 100 n
Cardiology	110	23.3	9.52	96	24.3	9.13	50	5.7	0.79
Inf. disease	70	14.8	6.06	64	16.2	6.35	235	27	3.7
Neurology	56	11.8	4.84	15	3.8	1.43	91	10.4	1.4
Endocrinology	50	10.6	4.32	38	9.6	3.62	34	3.8	0.54
Pulmonology	49	10.4	4.24	51	12.9	4.85	106	12.1	1.68
Gastroentrology	39	8.2	3.37	30	7.6	2.85	119	13.6	1.89
Nephrology	36	7.6	3.11	36	9.1	3.43	74	8.4	1.17
Haem/ Oncology.	26	5.5	2.25	23	5.8	2.19	63	7.2	1.0
Rheumatology	12	2.5	1.03	13	3.2	1.24	21	2.4	0.33
Psychiatry	04	0.8	0.35	08	2.0	0.76	17	1.9	0.27
Others	19	4.0	1.64	20	5.0	1.90	45	5.1	0.71

The top four contributors to the disparities in 1995 were cardiology, infectious diseases, endocrinology and neurology. In 2000, they were cardiology, infectious diseases, pulmonology and endocrinology. In 2007, the major contributor was infectious diseases, followed by gastroenterology, pulmonology and neurology listed in order of number of cases.

The major finding is that there has been a marked reduction in the percentage of disparate diagnoses. As stated by the Accreditation Council for Graduate Medical Education (ACGME), patient care and medical knowledge are the two important components, out of the six components, which the resident must have.[8] It is important that the curriculum of education for emergency medicine residents is designed in such a manner that the medical knowledge and patient care are enhanced. In a cross-sectional study conducted in the United States, 5 emergency medicine department residents (n=150) were evaluated on core competencies including patient care and medical knowledge.[9] The data was stratified by year of residency training and consistently year 3 residents scored higher on components of the general competency score. We did not conduct a stratified analysis by year of training of emergency medicine residents; it is likely that we would have seen the same trend.

There are certain limitations in this study, the primary one being that it is a retrospective analysis and information has been gathered through patient's records, in some of these the documentation may have been inadequate. The assumption that the discharge diagnosis is accurate is very likely but cannot be validated in a retrospective study.

Establishing a training program in emergency medicine has served as a very effective catalyst in the studied institution in improving the delivery of care in the ER. Emergency Medicine is a crucial area of medical care with high stakes and impact; it should be a priority area in any institution providing secondary and tertiary level of care. Further studies needs to be done in other institutions of Pakistan having emergency medicine training program using different parameters. These results suggest that well designed emergency medicine residency training programs can reduce the number of incongruent cases substantially. However, patient care and medical knowledge are simply two components of the general competency model proposed by ACGME. A more comprehensive assessment should be carried that should include all components of general competencies.

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