Adequacy of completion of clinical microbiology laboratory request forms in a Jordanian hospital

Nasser M. Kaplan, MBChB, MPhil.

The clinical microbiology laboratory request form performs a pivotal role between the physician and the laboratory, and it is indeed surprising that very little appears to have been written regarding this rather important document. Providing appropriate information will help the referral laboratory do the top-notch work the clinician wants. Providing better clinical information will help the microbiologist produce an improved interpretative report and include comments with a beneficial effect on diagnosis and treatment. This study was designed to evaluate the appropriateness with which the Clinical Microbiology Laboratory request forms were completed, and to make recommendations aimed at improving information given on such forms. A 3 phase prospective study was conducted from 1 May through to 31 July 2003 in Princess Iman Research and Laboratory Sciences Centre of King Hussein Medical Centre, Amman, Jordan, an 800 bed general hospital. In the first month (Phase 1), out of 1376 request forms observed for defects in their completion, 243 (17.7%) were defective. Each inappropriately completed request form was counted as one, regardless of the number of defects it contained. A baseline descriptive analysis of the defects observed in completion of these request forms was performed (**Table 1**). In the second month (Phase 2), a quality improvement plan was designed and implemented to improve the adequacy of completion of request forms. The plan included educational and administrative interventions such as presentations, telephone calls, ward visits and corridor discussions, strict application of rejection criteria of the defective request forms and the inappropriate specimens, distribution of instructive written memoranda illustrating the ideal completion of the request forms and requiring the clinician to sign these forms. In the third month (Phase 3), out of another 1389 request forms observed for defects in their completion, only 28 (2%) were defective. It was noted that a substantial proportion of the defective request forms were completed and signed by unauthorized nonphysicians. The overall defects observed before and after the implementation of the quality improvement plan were compared. The Chi square test showed a statistically significant difference ($p<0.0001$). There was approximately 16% reduction in the rate of inappropriately completed request forms after the interventions. We concluded that application of this plan to encourage the adequate completion of clinical microbiology laboratory request forms is effective and highly recommended because of its cost-effectiveness and the resulting better clinical microbiology service. Such plan is laboratory cost-effective as a result of the implementation of strict specimen rejection criteria, the rational targeted diagnostic approach, the omission of unnecessary laboratory procedures and minimizing the production of duplicate reports requested in cases of omission of patient's details such as patient's ward or consultant's name. The plan is also hospital cost-effective as early diagnosis and use of proper antibiotic will shorten the patient's hospital stay and reduce cost of unnecessary antibiotics. Nevertheless, cost savings cannot be the sole rationale of an intervention on test orders and the primary goal should be improvement of clinical relevance of the ordering. The simplest, easiest, cheapest, and probably most effective way to guide physicians to use microbiology laboratory correctly is by designing test request forms properly. The design of new request form is a low cost intervention that combines both economic and clinical requirements in reducing the ordering of unnecessary laboratory tests. Microbiologist should decide on the type, quantity, and quality of information that is required to reflect a clinical consultation.[1] The creation of necessary, efficient forms at the lowest cost is possible and the salient points of forms analysis, design, and control have been recently addressed.[2] Several studies have shown that 25-40% of all tests sent to the laboratory are unnecessary.[3] Demand management is ordering the most appropriate tests that will facilitate good clinical management of the patient with minimal wastage of resources. Review of the literature suggests that some of the greatest

Table 1 - Comparison between the defects in microbiology laboratory request forms before (first month) and after (third month) the implementation of quality improvement plan.

Defects	First month (n=243)	Third month (n=28)
Unauthorized nonphysicians signature	211	23
Omission of patient's details such as location	68	7
Omission of source of specimen	179	21
Absence of clinical information	156	17
Illegible entries	45	5
Unconventional abbreviations	17	2

gains of demand management have been in the field of microbiology whose request forms offer the greatest potential. Additional assistance to clinician may be rendered by the current trends in clinical microbiology practice to limit the processing of inappropriate specimens. Good communications between the medical, nursing, infection control, and laboratory staff proved vital for safe and successful implementation of the strategy of performing only a very limited range of microbiological tests in patients with hospital acquired diarrhea.[4] However, it should be emphasized that the selective reduction of test ordering should not result in underutilization or failure to order a potentially indicated test. The availability of information technology and greater acceptability of evidence based medicine will probably be the most important factors in making demand management a reality. Therefore, it is highly recommended to routinely and regularly inspect both the Clinical Microbiology Laboratory request forms for proper completion before their recording, and the accompanying specimens for appropriate quality before their processing. In our institution, all necessary measures to increase awareness of the importance of clinical microbiology laboratory request forms between healthcare workers should be applied. These measures should include institutional surveys, active enhanced communications, laboratory user's manual, education and audit. A survey of laboratory users focused clinicians' attention on the microbiology service, raised the profile of the laboratory, and resulted in improved communications and a better understanding of customer needs. The direct participation of laboratory professionals in discussions on patient care resulted in an enhancement of the overall quality of the health care provided to the patient.[5] It is also advantageous to produce and distribute a regularly updated microbiology laboratory user's manual or handbook including guidelines for completion of microbiology request form, specimen collection, rejection criteria of defective incomplete forms and inappropriate specimens, specimen transport arrangements, turnaround times and availability of interpretative and medical advice. Continuing medical education such as regular clinico-pathological meetings for hospital doctors and interactive induction courses for junior doctors are recommended. The clinical skills laboratories or centers are new promising trends in medical education.[6] Medical audit is the systematic, critical analysis of the quality of medical care, including the procedures used for diagnosis and treatment, the use of resources, and the resulting outcome and quality of life for the patient. Medical audit has been established for many years in most of the pathology disciplines and has been reviewed specifically with regards to medical microbiological audit. The re-design of microbiology request form, the demand management strategy, the increased awareness plan and the computerization of the laboratory are pivotal measures for the development of the diagnostic and clinical microbiology service in our institution.

Received 23rd December 2003. Accepted for publication in final form 13th March 2004.

From the Microbiology Section, Princess Iman Research and Laboratory Sciences Centre, King Hussein Medical Centre, Amman, Jordan. Address correspondence and reprint requests to Dr. Nasser M. Kaplan, Consultant Microbiologist, PO Box 140746, Amman 11814, Jordan. Tel. +962 (6) 5821636. Fax. +962 (6) 5820803. E-mail: nassermkaplan@hotmail.com

References

1. Heard SR, Roberts C, Furrows SJ, Kelsey M, Southgate L. Corridor consultations and the medical microbiological record: is patient safety at risk? ***J Clin Pathol*** 2003; 56: 43-47.
2. Campbell CA, Carroll A. Forms management for the health care supervisor. ***Health Care Superv*** 1999; 17: 41-48.
3. van Walraven C, Goel V, Chan B. Effect of population-based interventions on laboratory utilization: a time-series analysis. ***JAMA*** 1998: 280: 2028-2033.
4. Rao GG, Ozerek AE, Jeanes A. Rational protocols for testing faeces in the investigation of sporadic hospital-acquired diarrhoea. ***J Hosp Infect*** 2001; 47: 79-83.
5. Garcia-Irure JJ, Sanchiz JR, Valcayo A, Astier P. Enhanced quality in a hospital microbiology laboratory: from automation to clinical advice. ***Enferm Infect Microbiol Clin*** 2002; 20: 326-331.
6. Sebiany AM. New trends in medical laboratories. The clinical skills laboratories. ***Saudi Med J*** 2003; 24: 1043-1047.

Outbreak of multidrug resistant *Acinetobacter* in the neonatal intensive care unit

Shabih Manzar, *MD, FAAP.*

Nosocomial or hospital acquired infection rates are higher in the intensive care areas of the hospitals and newborn nurseries. The possible reasons could be the age, decrease immunity, use of invasive measures like intubation, central lines, total parenteral nutrition, catheters and wide spread use of antibiotics.[1,2] Although, both gram positive and gram-negative organisms are reported to be involved, recent reports have suggested the emergence of the rare gram-negative organisms. One example is the recent report of outbreak of *Enterobacter claocae species* in a neonatal intensive care unit.[3] This report describes a rapid spread of another rare gram-negative multi-resistant