REX HEALTHCARE

Laboratory Bulletin...

Updates and Information from Rex Healthcare and Rex Outreach

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Monitoring Antibiotic Resistance

Enclosed with this issue you will find the antibiotic susceptibility data for Rex Healthcare for 1997. The table reports the percent susceptible for bacteria isolated at Rex from 1/27/98 to 12/31/98.

Susceptibility testing results tend to vary among geographic areas and even among hospitals in the same areas. The results will depend upon the patient population and to some extent, the testing methods used. Some general trends are worth noting.

National trends reported using 1996 data include vancomycin and penicillin resistant *enterococci*, penicillin resistant *S. pneumonia*, methicillin resistant *S. aureus*, amp C and ESBL (extended spectrum beta lactamases) resistances in *Enterobacteriaceae species*, and multidrug resistance in *P. aeruginosa.*[1]

Enterococci can be separated into two species, *faecalis* and *faecium*. At Rex, the *faecium* species tend to be significantly more resistant than the *faecalis* isolates. Ampicillin resistance is significant and vancomycin resistance is increasing.

The results for the staphylococci continue to document the association of Oxacillin (methicillin) resistance with cross-resistance to other antimicrobial agents (clindamycin, erythromycin, gentamicin, trimethoprim/sulfamethoxazole).[1] The MRSA rate for 1997 at Rex was 36%.

Penicillin resistance in *Streptococcus pneumonia* continues to show increases. In 1997, 9% of isolates were fully resistant to penicillin and another 54% were intermediate. Similarly, rates of resistance to the third-generation cephalosporins (cefotaxime, ceftriaxone), macrolides, clindamycin and sulfonamides is increasing.[1] Vancomycin remains active against all reported pneumococcal isolates.

Resistance among the enterobacteriaceae species does not seem to be a significant problem as yet. *Pseudomonas aeruginosa* continues to be a problem with resistance to beta lactams and fluoroquinolones. *Xanthomonas maltophilia* isolates cannot be tested using routine methods and are sent to Mayo Reference Labs.

Rex has recently instituted the testing of *viridans group streptococci* from sterile body fluids for penicillin resistance (see page 3). Penicillin resistance is starting to be reported in this group of organisms.

[1]1996 ASCP Susceptibility Testing Group Report, *American Journal of Clinical Pathology,* February, 1998.

Karl T. Kleeman, PhD

The Last Nail (DNA Ploidy in Breast Cancer)

A year ago, the Pathology Department discontinued flow cytometric evaluation of breast carcinoma as literature evidence was accruing suggesting a lack of benefit.[1] A recent article detailing the largest prospective study of flow cytometry in breast carcinoma reported to date supports that decision. A multicenter national study from the Netherlands correlated the DNA content (diploid vs. nondiploid) from 1301 breast cancer patients with overall survival and disease free survival.[2] The neoplastic tissue was obtained between 1987 to 1990 and subjected to flow cytometry at a central laboratory. The average length of follow up was 55 months. While univariate analysis showed DNA ploidy to be a statistically significant factor in both overall and disease free survival, this was lost in multivariate analysis. Specifically, when tumor size and lymph node status were included, DNA ploidy added no statistically significant prognostic information. The authors suggested that previous conflicting reports regarding the utility of DNA ploidy were the result of insufficient sample size. Regrettably, the issue of S-phase fraction or "proliferative index" was not addressed in this paper (perhaps additional reports will follow). The current ancillary studies protocol for **invasive** breast carcinoma at Rex remains: estrogen receptors, progesterone receptors, and C-ERB-B2 (Her-2-neu) oncogene by immunohistochemistry (at least until further notice).

[1]Nance KV. Update on Prognostic Indicators for Breast Carcinoma. *Rex Healthcare Laboratory Bulletin*, No. 19, April 1997.
[2]Bergers E *et al*. Prognostic Value of DNA Ploidy Using Flow Cytometry in 1301 Breast Cancer Patients: Results of the Prospective Multicenter Morphometric Mammary Carcinoma Project. *Mod Pathol* 10:762, 1997.

John D. Benson, MD

Testing Strep pneumoniae and viridans group streptococci for resistance

In the past few years we have seen increasing *S. pneumoniae* resistance to penicillin. We are now seeing resistance to penicillin in the viridans group streptococci.

At Rex we routinely test *S. pneumoniae* isolates for penicillin resistance. For respiratory isolates, we perform an Oxacillin screen, which is the most sensitive way to detect penicillin resistance. If the screen shows resistance, we test the isolate using a quantitative (E test) procedure to verify resistance and determine if the bacteria is partially or fully resistant. We also test the isolate for resistance to ceftriaxone, chloramphenicol, clindamycin, erythromycin and vancomycin. As of March, 1998, we have added levofloxacin to the test panel. To speed reporting, isolates from blood and CSF cultures are not screened but are tested immediately using the full test panel.

Viridans group alpha hemolytic streptococci are important pathogens in endocarditis. Generally, these infections are treated with penicillin or a combination of penicillin and gentamicin. We are now seeing some penicillin resistance in these organisms. Accordingly, starting in April, we will be testing these isolates when recovered from multiple positive blood cultures for penicillin resistance. We will be using the E test procedure and will report the isolates as susceptible, intermediate or resistant. We will also test viridans group streptococci when recovered as a pure culture or as the predominant organism from normally sterile body fluids.

Karl T. Kleeman, PhD

Robert E. Kanich, MD to Retire

After 25 years of service to Rex Hospital and Raleigh, Bob Kanich will retire at the end of this month. A native Virginian, Bob majored in psychology at the University of Virginia and obtained his medical degree from the Medical College of Virginia. He received anatomic pathology training at the Brigham Hospital in Boston and completed clinical pathology residency at Upstate Medical Center in Syracuse, NY. Bob had additional training in virology and electron microscopy and served in the Infectious Disease Branch of the Armed Forces Institute of Pathology. Following three years of academic pathology at the University of Vermont Medical Center, Bob came to

Raleigh to join Drs. Tom Wilson, Al Chasson, and Art Davis in the Pathology Department at Rex in 1972. In addition to assisting in the anatomic pathology workload, he served as director of the Microbiology Laboratory. He became Pathology Department Chairman and Medical Laboratory Director in 1979, remaining in those positions until 1997. He was President of Wake Blood Plan (now Rex Blood Plan) from 1976-1995. He was instrumental in the computerization of both the Laboratory and the Hospital, serving as Director of Medical Informatics from 1988-1995. Bob's legacy extended beyond the confines of Rex Hospital. He is an Adjunct Professor in Microbiology at NC State, and a State Commissioner in the College of American Pathologists (CAP) Laboratory Accreditation Program. He was President of the NC Society of Pathologists from 1994-1995 and has represented North Carolina pathologists in both the CAP and the American Society of Clinical Pathologists. He has served as a Wake County Medical Society delegate on several occasions and was a member of the NC Medical Society committees on telemedicine and membership.

Under Bob's leadership, and with the support of both the Hospital Administration and the laboratory staff, the Laboratory at Rex flourished. Laboratory turnaround time for Emergency Department patients was addressed initially with a dedicated Stat Laboratory which ultimately evolved into a Core Laboratory (Rex was one of the first laboratories in the region to develop the Core Laboratory concept, a practice now emulated throughout the country). In collaboration with the Dept. of Anesthesiology, point of care blood gas testing was implemented in the Operating Room. The Early AM laboratory service was created to improve the availability of laboratory data for physicians rounding in the morning at Rex. With administrative support, the Laboratory has enjoyed state of the art technology and skilled technical staff resulting in an expanded test menu, decreased turnaround time, and improved service for physicians and patients. In recent years, Bob has devoted much of his time exploring ways to improve service to physician office practices while operating the Laboratory in a cost efficient manner.

Throughout his tenure here, Bob has met external and internal challenges with honesty, professionalism, integrity and a rare sense of balance. The Laboratory has stood up well to the requisite scrutiny of accrediting and regulatory agencies and rolled with the punches accompanying "managed care." The pressures associated with the aforementioned activities cannot be overstated. The door to his office was always figuratively "open" to physicians, hospital staff, and laboratory staff. Those who entered generally profited from the experience. He patiently mentored his younger colleagues. (His background in psychology has been put to practical use on occasion during meetings with some of his more ebullient associates.) A loyal fan of the Virginia Cavaliers, Bob handled the ascendance of the UNC athletic program (thanks Mack, Marion, Mia, Michael and Dean!) with grace. A lover of classical music, he learned to endure Van Halen power chords when returning intradepartmental consultations. No one has worked harder to position the Laboratory to respond effectively to the many challenges that await down the road. His time off is well earned. Like Dean, he has set a high standard for those who remain. We wish him health, happiness, tranquility, and the return of competitive college basketball to Charlottesville.

John D. Benson, MD

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