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State to Discontinue Routine EEC Serotyping

Beginning November 1, 1978, the Regional State Laboratories will cease routine serotyping of *Escherichia coli* to determine enteropathogenic strains. Serotyping will be done only when recommended by the state epidemiology unit and at times when it might prove useful epidemiologically, for example during outbreaks of infantile diarrhea where control groups can be established.

The reason for this change is that it is now clear that the isolation of a classic "enteropathogenic strain" of *E. coli* (EEC) from a single patient with diarrhea cannot be interpreted as representing the etiologic agent causing diarrhea. Recent studies have shown these "enteropathogenic strains" can be isolated from patients with and without diarrhea at equal frequency (1,2). Similarly, it is clear that these classic serotypes rarely identify the more recently recognized enteroinvasive or enterotoxigenic strains of *E. coli* (3). Therefore, the routine laboratory identification of EEC serotypes is of little diagnostic value.

Physicians and other health care providers should be aware that for the above reasons serotyping can lead to false negative and false positive results. A false negative result would occur when serotyping fails to identify EEC when the enteritis is caused either by toxin producing or an invasive strain of *E. coli*. False positive results occur when a classic strain is identified but is not truly the etiologic agent responsible for the enteritis. In this case a false sense of security arises and may lead to late recognition of the real pathogen, for example *Giardia lamblia*, and therefore a delay in appropriate therapy.

It should also be noted that frequently *E. coli* are reported by labs as being "enteropathogenic" when in truth they are not. This occurs because shortcuts are taken in serotyping and confirmatory steps. These simplified procedures are inadequate and only confuse the issue. Those physicians and others who decide to continue to request *E. coli* serotyping from private laboratories should assure themselves that the lab does adequate serotyping with presumptive identification of O and K antigens and confirmation of strains with specific O antiserum. The appropriate steps to proper serotyping are clearly spelled out in a recent editorial by Farmer, et. al. (4).

In summary, although it is clear that strains of EEC are occasionally still associated with localized outbreaks of infantile diarrhea, the mechanism of this diarrhea is unexplained. Importantly, however, these classic strains are not invariably pathogenic and therefore cannot be assumed to be the etiology in sporadic cases of diarrhea. Evidence suggests that whatever the mechanism is in EEC-produced diarrhea, it is probably plasmid mediated. This would also explain why currently the classic strains are only randomly found to be pathogenic. Hopefully, precise easily available methods of determining pathogenicity of *E. coli* strains will be developed - unfortunately that time has not yet arrived.

1. Orskov F: *Escherichia coli* strains isolated from cases of infantile diarrhea and from healthy infants: serological and biochemical study. **Acta Pathol Microbiol Scand** 39:137-146, 1956
2. Solomon P, Weinstein, L, Summer MJ: Studies of the incidence of carriers of enteropathogenic *Escherichia coli* in a pediatric population. **J Pediatr** 58:716-721, 1961.
3. Gangarosa EJ, Merson MH: Epidemiologic assessment of the relevance of the so-called enteropathogenic serogroups of *Escherichia coli* in diarrhea. **NEJM** 296:1210-1213, 1977.
4. Farmer JJ, Et. al.: "Enteropathogenic serotypes" of *Escherichia coli* which really are not. **J Pediatr** 90:1047-1049, 1977.