


<b>Proper Assessment, Diagnosis and Management of Female Genital Tract Bacterial Flora</b>			<b>Healthcare</b>
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<b>Abstract</b>			
<p>The microbiological flora of the lower female genital tract provides a dynamic, complex example of microbial colonization, the regulation of which is not fully understood. When an exogenous bacterial species, with its array of virulence factors, is introduced into the host, disease does not always occur. Conversely, under selected conditions, commensal endogenous bacteria, for example; <i>Gardnerella vaginalis</i> and group B streptococci can participate in disease processes. Disease caused by both exogenous and endogenous bacteria correlates positively with a markedly increased level of bacterial replication. The key question is what determines the quantity of a given bacterium at any given time. For disease to occur, exogenous or endogenous bacteria that possess pathogenic prerequisites must attain replicative dominance. Their ability to do so is potentially governed by inhibitory or synergistic interrelationships with other microbes. In conclusion, better understanding of bacterial flora of female genital health, proper assessment and collaboration with microbiologist is the best approach toward an excellent medical care to female population by women health care specialists.</p>			

## Introduction

The healthy human vagina is dominated by lactobacilli, which play an important role in protecting the host from urogenital infections. Furthermore, it is widely recognized that the microbial balance between lactobacilli as the dominating flora and other, mainly gram-negative anaerobes can be upset and frequently result in the syndrome of bacterial vaginosis. Consequently, the microbial status of the healthy human vagina has to be defined in any study of vaginal lactobacilli. The clinical criteria of Amsel et al. 1993, and/or the set of scores defined by Nugent et al. 1991, for Gram-stained smears of vaginal fluid help to define the concept of bacterial vaginosis. These scores are generally considered to be useful in treating patients with bacterial vaginosis but can also be used to define a healthy vaginal status by excluding bacterial vaginosis and by combining the results with a short medical history and examination for sexually transmitted diseases.

## Discussion

### *Quantitative Microbiology*

The microbiological flora of the lower female genital tract is a dynamic, complex example of microbial colonization, the regulation of which is not fully understood. Much of what we know about the bacterial composition of the female genital tract is derived from qualitative, descriptive studies [1,2]. The fund of information that such studies have provided with regard to the microbial flora of the lower female genital tract is weakened by the intrinsic technical limitations that are inherent in the studies.

Often, even the usefulness of qualitative data is negatively affected by inappropriate or suboptimal methods of data collection, failure to use appropriate transport systems or enriched method, or a lack of stringent anaerobic technique in the processing and culture of specimens. The importance of using specialized method is illustrated in a study of *Clostridium difficile* by Bramley et al. 1977. These investigators evaluated cultures of vaginal specimens obtained from 522 women who made a total of 902 visits to a family planning clinic, and they found this organism in only 1 patient. However, when a specialized medium that contained 0.2% para cresol was used, a higher rate of isolation (11%) was obtained.

One can only speculate as to how many more microbial species would have been recovered if truly optimal methods had been used for all studies reported in the literature prior to the 1970s. Isolation techniques used prior to the 1970s resulted in a gross underestimation of the importance of anaerobic bacteria as major constituents of the normal flora of the female genital tract. Failure to use appropriate transport systems as well as failure to use optimal media and anaerobic culture techniques have compromised the results of many studies with regard to the delineation of the bacterial constituents present.

Although anaerobic bacteria had been identified previously, it was not until publication of the work of Gorbach et al. 1969 and, Baker 1972, Mehta and Kamath 1983, Hill et al. 1983 that the role of anaerobic bacteria both in maintaining health and in causing disease became more clearly defined. Gorbach et al. 1986 demonstrated that, in women of reproductive age, anaerobic bacteria outnumbered aerobic bacteria in a ratio of approximately 10:1. This ratio clearly reflects a dynamic colonization process. For example, although adolescent subjects appeared to have a greater prevalence of anaerobic bacteria, aerobic bacteria appeared to become more abundant with advancing age, onset of sexual activity, and parity. A study of postmenopausal women who were either receiving or not receiving estrogen replacement therapy found that such therapy had no effect on facultative organisms; however, anaerobic isolates tended to be less prevalent among women who received such therapy. A notable exception, however, were anaerobic lactobacilli, which appeared to be more prevalent in the tissue of women receiving estrogen therapy [3].

### ***Quantitative Microbiology***

Combined qualitative and quantitative studies require a quantum increase in technical effort and, as a consequence, tend to be limited in scope despite yielding richer information. Recent studies have begun to focus more on the fact that the density of microbial colonization appears to be relevant not only to the condition of asymptomatic individuals but, also, to the initiation of disease states, in which it is a critical factor [4, 5]. The microbial load for a given organism appears to influence the relative risk of symptomatic infection; however, in the absence of quantitative data, data that have been extrapolated from qualitative studies (e.g., the prevalence rates of individual species) are used as a surrogate for quantitative data. The concept exploited is that organisms of which there are a great number are readily found in cultures, whereas those species that are fewer in number may not be noticed during primary isolation.

Quantitative studies of upper and lower female genital tract disease due to exogenous bacterial species (e.g., *Neisseria gonorrhoeae*) and endogenous bacterial species (e.g., *Gardnerella vaginalis*) have demonstrated one common finding: increased numbers of bacteria are found during the course of disease. The studies that have been published to date, although technically imperfect, do provide some information regarding the dynamics of the bacterial flora of the female genital tract.

### ***Normal Female Genital Tract Flora***

Studies of the normal bacterial flora of the female genital tract are primarily limited to characterization of the types of bacteria present in women who do not have identifiable disease. Studies by Bartlett et al. 1978, Sautter R L et al. 1976, and Gopplerud et al. 1976, and to recent studies [4, 7, 8, 9] have effectively delineated the principal bacteria that reside in the female genital tract, although they have not delineated their quantitative interrelationship. In terms of planning empirical therapy, it may be just as important to know which organisms are not isolated with high frequency as it is to know which organisms are commonly isolated.

Recognition that one microbial species can inhibit a different species of microbe has generated an interest in the exploitation of this phenomenon for the benefit of the well-being of humans or animals [8, 9]. A term related to probiotics is *prebiotics*, which refers to the feeding of substrates that promote the development of a benign microflora. For example, it is known that consumption of fructo-oligosaccharides selects for the development of an intestinal flora dominated by *Bifidobacterium* species [8, 9].

### **Conclusions**

Many studies have shown that microbiological environment may supersede the selected virulence of a given bacterial species in the production of disease. The observations that suggest the importance of environmental factors are knotted with the issue of microbial replication. Although the lactobacilli are key regulators when they are dominant in number, their ability to maintain governance is influenced by other bacterial species within the microflora of the genital tract. So, it is important to have properly collected material by the medical staff for microbiological studies, accurate interpretation and understanding the significance of close collaboration of laboratory microbiology specialist and women health care specialist, respectively, gynecologist for e quality health care delivery to female population.

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