DNA CONNECTIONS

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PATIENT: **Sally Sample**

DOCTOR: **Dr. Somebody**

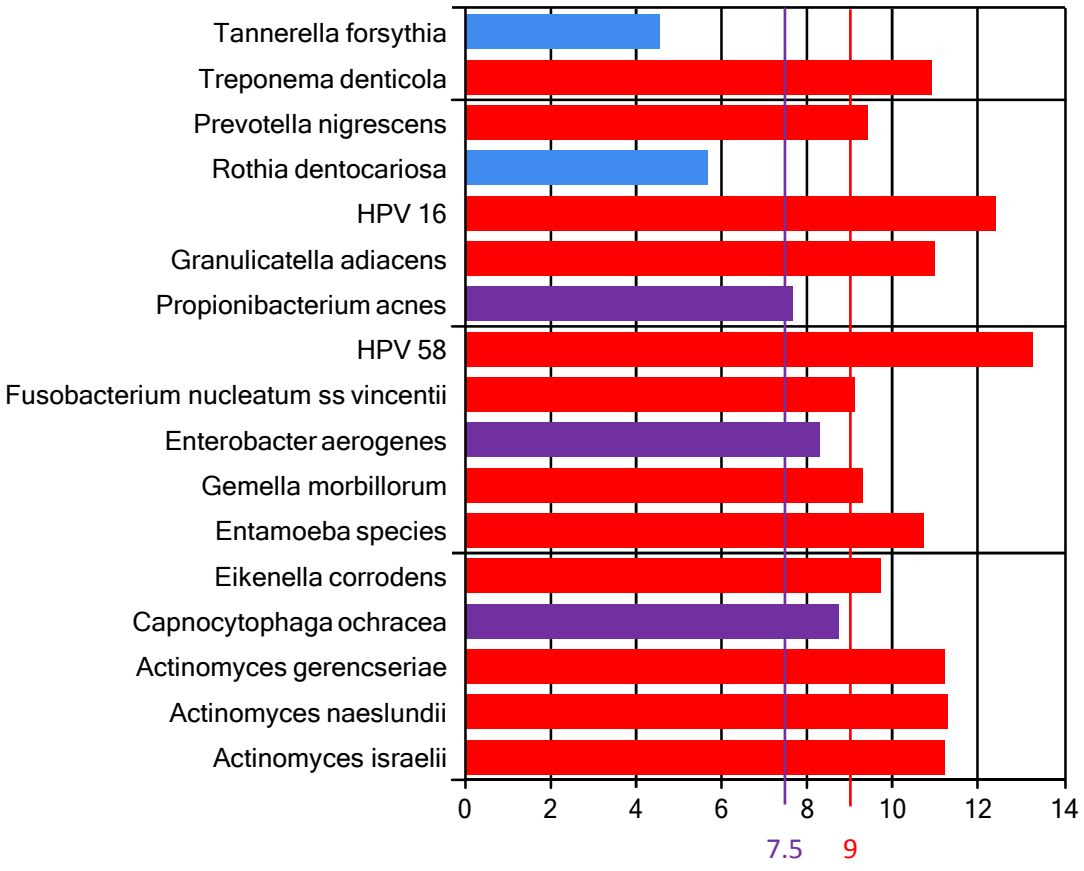
Test ID: 02944

Full View Test

Sample Collected	Sample Received	Sample Tested	Test Reported
01/01/2001	01/01/2001	01/01/2001	01/01/2001

Sample Type: Cavitation #16

The following bacteria were detected in the sample that was submitted for testing:



9 or greater indicates a serious risk

Greater than 7.5 but less than 9 indicates a moderate risk

Total Risk Factor: as reported on the chart above, is the sum of the Pathogen Risk Factor and Measured Risk Factor. Total Risk Factor equal to or greater than 9 is considered a serious risk. Total Risk Factor between 7.5 and 9 is considered moderate risk.

Pathogen Risk Factor is the innate risk of the microbe based on the biology of the organism, disease causation, and microbial antibiotic resistance. It is reported on a scale of 1-10, with 10 being most serious and 1 most benign.

Measured Risk Factor is the value given to the sample taking into account the quantity and configuration of the pathogen DNA. It is reported on a scale of 1-10, with 10 being most serious and 1 most benign.

Interpretation of Results Disclaimer: Dental DNA is not a clinical diagnostic laboratory and cannot provide a diagnosis for disease and/or subsequent treatment. These results are from DNA PCR testing, and indicate the presence of foreign DNA. The CDC recommended treatment protocol(s) are supplied as a courtesy to health care providers to aide in an overall assessment. This information alone should not be used to diagnose or treat a health problem or disease. All reported results are intended for research purposes only and a consultation with a qualified health care provider is required for diagnosis and treatment.

Microbe	Total Risk Factor	Clinical Significance
Actinomyces israelii	11.22	**General Description** Actinomyces species are Gram-positive and are normally present in the gingival area. Actinomyces israelii is one of the most common causes of infections in dental procedures. **Symptoms of Infection** Many Actinomyces species are opportunistic pathogens of humans and other mammals, particularly in the oral cavity. In rare cases, these bacteria can cause actinomycosis, a disease characterized by the formation of abscesses in the mouth, lungs, or the gastrointestinal tract. **Treatment** Actinomyces bacteria are generally sensitive to penicillin, which is frequently used to treat actinomycosis. In cases of penicillin allergy, doxycycline is used. Sulfonamides such as sulfamethoxazole may be used as an alternative regimen at a total daily dosage of 2-4 grams. Response to therapy is slow and may take months.
Actinomyces naeslundii	11.28	**General Description** Actinomyces species are Gram-positive and are normally present in the gingival area. Actinomyces naeslundii is one of the most common causes of infections in dental procedures. **Symptoms of Infection** Many Actinomyces species are opportunistic pathogens of humans and other mammals, particularly in the oral cavity. In rare cases, these bacteria can cause actinomycosis, a disease characterized by the formation of abscesses in the mouth, lungs, or the gastrointestinal tract. **Treatment** Actinomyces bacteria are generally sensitive to penicillin, which is frequently used to treat actinomycosis. In cases of penicillin allergy, doxycycline is used. Sulfonamides such as sulfamethoxazole may be used as an alternative regimen at a total daily dosage of 2-4 grams. Response to therapy is slow and may take months.

Microbe	Total Risk Factor	Clinical Significance

Actinomyces gerencseriae — **11.20**

General Description

Actinomyces species are Gram-positive and are normally present in the gingival area. A. gerencseriae is one of the most common causes of infections in dental procedures.

Symptoms of Infection

Many Actinomyces species are opportunistic pathogens of humans and other mammals, particularly in the oral cavity. In rare cases, these bacteria can cause actinomycosis, a disease characterized by the formation of abscesses in the mouth, lungs, or the gastrointestinal tract.

Treatment

Actinomyces bacteria are generally sensitive to penicillin, which is frequently used to treat actinomycosis. In cases of penicillin allergy, doxycycline is used. Sulfonamides such as sulfamethoxazole may be used as an alternative regimen at a total daily dosage of 2-4 grams. Response to therapy is slow and may take months.

Capnocytophaga ochracea — **8.75**

General Description

Capnocytophaga is a genus of thin Gram-negative bacteria. Normally found in the oropharyngeal tract of mammals, they are involved in animal bite wound infection as well as periodontal diseases. They are opportunistic pathogens that invade tissues as a result of trauma, disease or ulceration of the healthy tissue.

Symptoms of Infection

Capnocytophaga ochracea most commonly causes localized infections in healthy individuals, but can cause a wide variety of potentially serious infections in immune compromised patients. Capnocytophaga ochracea can cause overwhelming sepsis in asplenic patients, the elderly, and any other immune compromised person.

Treatment

B-lactamase-negative strains remain highly susceptible to penicillin, amoxicillin, amoxicillin / clavulanate, piperacillin, ticarcillin and imipenem. First-generation cephalosporins (cefazolin) are relatively less effective. Second-generation cephalosporins (cefuroxime, cefoxitin) are more effective but third-generation cephalosporins (cefotaxime, ceftriaxone, ceftazidime) are usually very effective. Other effective antibiotics include clindamycin, and most fluoroquinolones. Most Capnocytophaga are resistant to vancomycin, metronidazole, trimethoprim, and aminoglycosides.

Microbe	Total Risk Factor	Clinical Significance
Eikenella corrodens	9.75	

General Description

Eikenella corrodens is a fastidious Gram-negative, facultatively anaerobic bacillus.

Symptoms of Infection

Eikenella corrodens is a commensal bacterium of the human mouth and upper respiratory tract. It is an unusual cause of disease but may be found mixed with other bacteria in infection sites. Infections most often occur in patients with cancers of the head and neck. It is also common in human bite wound infections.

Treatment

Eikenella corrodens can be treated with penicillins, cephalosporins, or tetracyclines. It is innately resistant to macrolides (e.g., erythromycin), clindamycin, and metronidazole.

Microbe	Total Risk Factor	Clinical Significance
Entamoeba species	10.70	

General Description

Entamoeba species (histolytica or gingivalis) is a single cell parasite usually transmitted by fecal contamination but can be transmitted by sexual contact. Entamoeba species is typically found in areas of inadequate sanitation and can cause amoebic dysentery.

Symptoms of Infection

Entamoeba species infections sometimes last for years may be accompanied by 1) no symptoms, 2) vague gastrointestinal distress, 3) dysentery (with blood and mucus). Most infections occur in the digestive tract but other tissues may be invaded. Symptoms include ulcerative and abcess pain and in rare cases intestinal blockage. Severe ulceration of the gastrointestinal mucosal surfaces occurs in less than 16% of cases. In fewer cases, the parasite invades the soft tissues, most commonly the liver.

Treatment

For symptomatic intestinal infection and extra intestinal disease, treatment with metronidazole or tinidazole should be followed by treatment with iodoquinol or paramomycin. Asymptomatic patients infected with Entamoeba should also be treated with iodoquinol or paramomycin, because they can infect others and because 4%-10% develop disease within a year if left untreated.

Microbe	Total Risk Factor	Clinical Significance

Gemella morbillorum — **9.30**

General Description

Gemella morbillorum is a commensal anaerobic Gram-positive coccus. It is rarely the cause of disease in humans, although it may be found benignly in the oropharyngeal area.

Symptoms of Infection

Gemella morbillorum is an opportunistic pathogen, particularly in immunocompromised hosts, where it is capable of causing severe infection in previously damaged tissue. It has been isolated as a pathogen from blood cultures of patients with endocarditis, cerebrospinal fluid cultures of patients with meningitis and brain abscess, and in patients with total knee arthroplasty.

Treatment

Gemella morbillorum is usually sensitive to penicillin and vancomycin.

Enterobacter aerogenes — **8.30**

General Description

Enterobacter aerogenes is a Gram-negative, rod-shaped bacterium. Enterobacter aerogenes is found in the human gastrointestinal tract and does not generally cause disease in healthy individuals.

Symptoms of Infection

Enterobacter aerogenes is not normally pathogenic, but may cause various types of infection in immune compromised individuals. Antibiotic resistant strains are becoming increasingly common nosocomial pathogens.

Treatment

The major classes of antibiotics used to manage infections include the beta-lactams, carbapenems, the fluoroquinolones, the aminoglycosides, and TMP-SMZ. Because most Enterobacter species are either resistant to many antibiotics or can develop resistance during antimicrobial therapy, the choice of appropriate antimicrobial agents can be complicated.

Fusobacterium nucleatum ss vincentii — **9.12**

General Description

Fusobacterium nucleatum subspecies (ss) vincentii is a gram negative oral bacterium, indigenous to the human oral cavity, which plays a role in periodontal disease

Symptoms of Infection

Research has emerged implicating Fusobacterium nucleatum ss vincentii with preterm births in humans. Fusobacterium nucleatum ss vincentii has been isolated from the amniotic fluid, placenta, and chorioamnionic membranes of women delivering prematurely. Fusobacterium nucleatum ss vincentii is rarely pathogenic in healthy adults.

Treatment

Penicillin remains the treatment of choice in most cases, but the emergence of penicillin-resistant strains has complicated treatment. Cephalosporins (such as cefoxitin and cefotetan), metronidazole, or clindamycin monotherapy is also effective.

Microbe	Total Risk Factor	Clinical Significance

HPV 58 — **13.30**

General Description

Human papillomavirus (HPV) is a small DNA virus known to cause cervical and oral cancer. HPV is the most common sexually transmitted infection in the United States. HPV is considered necessary for the development of cervical cancer but by itself is not sufficient to cause cancer. HPV 58 is one of the 12 HPV strains that cause 30% of cervical intraepithelial neoplasia (CIN), Vulvar intraepithelial neoplasia (VIN), penile intraepithelial neoplasia (PIN), and/ or anal intraepithelial neoplasia (AIN). Infection of one type of HPV does not inhibit the infection of another type, Of persons infected with mucosal HPV, 5% to 30% are infected with multiple types of the virus. With unusually high resistance to common disinfectants, although less common, HPV strains can be transmitted in a nonsexual manner.

Symptoms of Infection

Most HPV infections are asymptomatic and result in no clinical disease. Clinical manifestations of HPV infection include anogenital warts, recurrent respiratory papillomatosis, cervical cancer precursors (CIN), and cancer.

Treatment

There is no specific treatment for HPV infection. Medical management depends on treatment of the specific clinical manifestation of the infection (such as genital warts or abnormal cervical cell cytology).

Propionibacterium acnes — **7.70**

General Description

Propionibacterium acnes is the relatively slow-growing, typically aerotolerant anaerobic, Gram-positive bacterium linked to the skin condition acne. This bacterium is largely commensal and part of the skin flora present on most healthy adult humans' skin. Propionibacterium acnes bacteria live deep within follicles and pores, away from the surface of the skin.

Symptoms of Infection

Propionibacterium acnes bacteria secrete many proteins, including several digestive enzymes. The cellular damage, metabolic byproducts and bacterial debris produced by the rapid growth of Propionibacterium acnes in follicles can trigger inflammation. The damage caused by Propionibacterium acnes and the associated inflammation make the affected tissue more susceptible to colonization by opportunistic bacteria, such as Staphylococcus aureus. Propionibacterium acnes is sometimes involved in chronic endophthalmitis, and rarely endocarditis.

Treatment

Propionibacterium acnes has resistance to macrolides, lincosamides, and tetracyclines. It can be treated with erythromycin, clindamycin, doxycycline and minocycline

Microbe	Total Risk Factor	Clinical Significance
Granulicatella adiacens	**11.00**	**General Description** Granulicatella adiacens shows variable Gram staining, on long chains of cocci **Symptoms of Infection** A rare cause of infections, Granulicatella adiacens has been implicated in a few cases of endocarditis and sepsis. **Treatment** Some strains of Granulicatella adiacens are resistant to beta-lactam and macrolide antimicrobial drugs. Granulicatella adiaciens shows susceptibility to vancomycin, and gentamicin.
HPV 16	**12.40**	**General Description** Human Papilloma Virus 16 is a non-enveloped DNA virus. Like all papilloma viruses, HPV 16 establishes productive infections only in keratinocytes of the skin or mucous membranes. HPV infections in a minority of cases lead to cancers of the cervix, vulva, vagina, penis, oropharynx and anus. Recently, HPV has been linked with an increased risk of cardiovascular disease. In addition, HPV 16 and 18 infections are strongly associated with an increased odds ratio of developing oropharyngeal (throat) cancer. With unusually high resistance to common disinfectants, although less common, HPV strains can be transmitted in a nonsexual manner. **Symptoms of Infection** HPV infections can cause warts (verrucae), which are noncancerous skin growths. Infection with these types of HPV causes a rapid growth of cells on the outer layer of the skin. Some people infected with HPV are asymptomatic carriers. **Treatment** Vaccination against the virus is offered. Safe sex practices tend to be the best way to stop spread of the disease, and topical anti-viral creams may limit the spread of infection.
Rothia dentocariosa	**5.70**	**General Description** Rothia dentocariosa is a species of Gram-positive, round- to rod-shaped bacteria that is part of the normal community of microbes residing in the mouth and respiratory tract. First isolated from dental caries, Rothia dentocariosa is largely benign, but can cause disease. **Symptoms of Infection** Rothia dentocariosa is largely a benign part of the normal flora within the human mouth. In rare instances it causes disease, primarily endocarditis, but this infection always occurs in individuals with previous cardiac trauma or abnormalities. **Treatment** Rothia dentocariosa is susceptible to most antibiotics including penicillin.

Microbe	Total Risk Factor	Clinical Significance

Prevotella nigrescens — **9.40**

General Description

Prevotella nigrescens are Gram-negative, anaerobic, non-motile, rod-shaped, singular cells. It is frequently found in the mouth. Prevotella nigrescens colonize infection sites by binding or attaching to other bacteria in addition to epithelial cells, exacerbating already existing infections.

Symptoms of Infection

Prevotella species cause infections such as abscesses, bacteraemia, wound infection, bite infections, genital tract infections, and periodontitis. Specific infections caused by Prevotella include the disease of tissues surrounding and associated with an individual's teeth.

Treatment

Prevotella nigrescens has penicillin resistance due to beta-lactamase production. It is susceptible to other antibiotics.

Treponema denticola — **10.90**

General Description

Treponema denticola is a Gram-negative, obligate anaerobic, motile and highly proteolytic bacterium. Treponema denticola is associated with the incidence and severity of human periodontal disease.

Symptoms of Infection

Treponema denticola levels in the mouth are elevated in patients with periodontal diseases and the species is considered one of the main etiological agents of periodontitis. Often Treponema denticola is found in a periodontal infection. There is evidence that members of the Treponema genus invade tissue that has already been damaged by other bacterial species.

Treatment

There is some evidence for antibiotic resistance, but the bacteria are not highly resistant. Treponema denticola can be treated with penicillin and other common antibiotics. As a spirochete Treponema denticola is good at evading treatment, so any regimen of antibiotics needs to be aggressive.

Tannerella forsythia — **4.55**

General Description

Tannerella forsythia is an anaerobic, gram-negative species of bacteria of the Cytophaga-Bacteroidetes family and is implicated in periodontal disease. Tannerella forsythia is commonly located on the supragingival tissue and initiates periodontitis by colonizing the subgingival tissue.

Symptoms of Infection

Tannerella forsythia causes periodontal infections and chronic inflammation of tooth supporting tissues which can lead to tooth loss.

Treatment

Tannerella forsythia is susceptible to ampicillin, amoxicillin and doxycycline.