

Communicable Disease Prevention

Skagit County



Public Health Communicable Disease Prevention Team



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Table of Contents

Preface: Bacteria, Vectors and Viruses on the Move	1
Demographics of Communicable Disease	2
Preventing Communicable Disease	3
Reportable Communicable Diseases	5
Vaccine Preventable Diseases	6
Tuberculosis in Washington State and Skagit County	7
Our Immune System.....	8
Sexually Transmitted Diseases	10
Food and Water.	11
Bloodborne Diseases	12
HIV/ AIDS	13
New and Emerging Infectious Diseases	14
Conclusions	16



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Thanks to all Hospital Infection Control Staff and our laboratories for timely reporting of communicable diseases.

Consistent with the policy objective of prevention, the Skagit County Public Health Department publishes periodic reports on demographic and health issues relevant to Skagit County residents.

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BACTERIA, VECTORS AND VIRUSES ON THE MOVE

Our report is intended to share information which will help you protect yourself from contracting a communicable disease--a major source of illness.

Everybody is aflutter about the dreaded bird flu. It has us making emergency plans for a disease which we are unsure if it will come, when it will come or how virulent it will be. It has a lot of people scared; it has a lot of us preparing and we hope some of this preparation will pay off for other disease threats.

Unfortunately the threat from communicable disease is not limited to bird flu. Visualize the world of communicable disease as a crowded restaurant. Since 2000 alone the world population has grown by 410 million. We have moved a little closer to each other, and are a little more prone to catch diseases due to globalism, increased trade activity and shortened travel times.

Although the threat of bird flu cannot and should not be dismissed, existing reality is that there were 3.1 million AIDS deaths in 2005 worldwide with close to 5 million persons newly infected with the virus. Two million persons die annually of TB with more than twice that number of new TB cases emerging yearly. SARS, Mad Cow and Marburg Disease--all relatively new emerging diseases--have given us no comfort about the prospects for communicable disease in the US.

Prior to the twentieth century, communicable diseases such as diphtheria killed huge numbers of people in this country and throughout the world. The history of preventing infectious diseases with vaccines goes back about one hundred years. Vaccinations reduce fatalities by about two thirds. Vaccinations of millions of sheep and cattle against anthrax and the inoculation of a child bitten by a rabid dog are testimony to major improvements.

As we continue to be vaccinated against many infectious diseases and our life expectancy increases in the US, the emergence of chronic diseases demands our attention. We begin to think infectious diseases are gradually being eliminated or well-

controlled. Yet, we know better.

In fact, we increasingly find infectious disease processes can exacerbate chronic disease. For example, hepatitis B and C can lead to chronic liver disease.

Some diseases are veritable champion communicators. Contamination can occur in various ways: from human to human, environment to human, animal to human, and from bird to human.

What is Public Health's role in communicable disease?

1. To trace the source and extent of a disease and to track over 60 reportable diseases in cooperation with the State Department of Health (pg 5).
2. To conduct an epidemiological investigation, identifying and promptly treating individuals who have come into contact with the bacteria, viruses or other infectious agents.
3. To prevent the further spread of a disease. In special cases, this might require isolating individuals to protect the community from being infected with a serious illness and/ or to educate the individual how to prevent the spread of their disease.
4. Finally, the steady, quiet daily prevention activities of immunizations and education to assure disease does not spread out of control from the many 'ready-made incubators' such as child care, schools, churches, hospitals and other places where children and adults congregate, eat and otherwise are in close contact. Our nurses answer an endless stream of questions from the public, health care providers, child care providers--anyone concerned with preventing and treating communicable disease.

DEMOGRAPHICS OF COMMUNICABLE DISEASE

UNEQUAL RISK

We are not equally at risk for communicable disease.

Our immune systems are weak as we first come into this world, strengthen in our teens and weaken again as we grow old.

In response to this life cycle, we immunize our babies and educate the population not to take unnecessary risks. We immunize again as we age and become more prone to catch diseases when our immune response weakens.

Beyond this general propensity for diseases, there are many risk groups with vectors and viruses ever ready to attack.

We protect our children from disease through a series of immunizations. Based on estimates from the National Immunization Survey in 2003, children's immunization percentages ranged from about 70 to 95 percent.

From time to time we may have to revaccinate due to outbreaks. Recent examples are the outbreaks of mumps in Iowa or whooping cough in Washington State.

Other communicable diseases increase and ebb according to changing health behavior, changing age structure, influx of migration, strain of virus, exposure to disease, and vaccinations.

Skagit Population 2005 by Five Year Age Groups by Sex

Age	Male	Female
0-4	3,574	3,401
5-9	3,748	3,615
10-14	4,128	3,959
15-19	4,391	4,025
20-24	3,485	3,282
25-29	3,031	3,019
30-34	3,191	3,137
35-39	3,533	3,460
40-44	3,915	4,089
45-49	4,321	4,318
50-54	4,048	4,149
55-59	3,480	3,595
60-64	2,794	2,832
65-69	2,063	2,224
70-74	1,849	1,972
75-79	1,471	1,684
80-84	1,058	1,551
85+	884	1,619
Total:	54,967	55,933

PUBLIC HEALTH'S ROLE IN COMMUNICABLE DISEASE

What do we do for you?

From watching TV and listening to the radio, one could get the impression that all we do is wait for the dreaded bird flu to arrive, so we can 'show our stuff' in a disease disaster.

We do have an active role in emergency preparedness, in considering a range of possible emergency scenarios and in determining what resources we can realistically deploy under what circumstances.

Our "bread and butter" work in communicable disease touches daily lives and responds to daily needs. It is the basis for effective and early response to potential emergencies.

PREVENTION

Public Health provides health education through press and other media, immunization education, limited testing and screening (e.g. for water and septic, hepatitis, TB, HIV), and education/monitoring about appropriate food preparation. We encourage healthy behaviors like handwashing, testing for STD, and not sharing needles.

We try to get the word out to Skagit County residents about communicable disease risks and preventive measures. This is done by various technological and personal means:

- ◆ Satellite broadcasts hosted by CDC
- ◆ Adolescent health conference for all Skagit providers
- ◆ Vaccines for Children (VFC) program conference for providers
- ◆ The media
- ◆ Site visits as needed to provide education and/or assistance with vaccine storage and handling

We take our disease-free health status for granted. The reality is, our country would be like many developing countries if we would not have such high immunization rates. This is one of the most fundamental reasons we are protected from communicable disease.

VACCINES FOR CHILDREN

Today's immunization schedule has newborns getting their first dose of vaccine before they leave the hospital. Fully immunized children receive 25 doses of vaccine by the time they enter kindergarten.

Childhood vaccinations include DTaP, hepatitis A, hepatitis B, Hib, MMR, PCV, polio and varicella, administered according to the age of the child. The newest in the childhood vaccine repertoire include protection from rotavirus, HPV and meningococcal disease.

It's not all over at Kindergarten, either. Colleges try to assure students have had their second shot of measles and inform them about protection against meningococcal disease.

In Skagit County, 43,000 doses of children's vaccine were distributed to health care providers in 2005. Our Public Health Department clinic administered approximately 1,800 doses to children.

VACCINES FOR ADULTS

Adults need routine immunizations as well. Tetanus shots should be updated every 10 years--sooner if an injury exposes you to tetanus. Added this year we now have pertussis (whooping cough) protection in tetanus vaccine.

Hepatitis A & B vaccines are now recommended for all, with no need for booster shots once the initial series is completed.

Pneumonia vaccine is recommended as a one-time vaccine for those age 65 or older. Some people get it sooner, due to other health factors and should have it repeated at age 65.

Flu shots are offered every fall. They are now recommended for everyone. The optimal time to get a flu shot in Washington is mid-October through mid-November. Flu shots are now more widely available (barring any shortages) from health care providers, pharmacies, etc. The Public Health Department typically restricts flu vaccine to high risk people in the first weeks of vaccine availability to assure those vulnerable to complications or death from the flu can be protected.

A new vaccine, Zostavax, prevents the development of

shingles after having had chicken pox as a child. It is recommended for people age 60 and older.

The Public Health Department administers approximately 7,000 doses of adult vaccine, 5,000 of which are flu shots each year.

Other vaccines may be recommended for people with certain work-related exposures or for people whose "immunization memory" may be lost, after transplants, spleen removal or chemotherapy.

Travel Vaccines

We administer about 2,500 doses of travel vaccine yearly to protect both the travelers and those here at home from diseases which may be prevalent in the countries travelers pass through.

In addition, we conduct approximately 300 travel consultations, providing individualized health advice and vaccine recommendations.

Approximately 1,800 clients receive travel health recommendations via the phone. "Our goal is to keep disease out of the general population in Skagit County by protecting the individual traveler," according to Amie Tidrington, immunization clinic coordinator.

WASHING HANDS FREQUENTLY

IS STILL THE BEST PROTECTION AGAINST COMMUNICABLE DISEASE, ACCORDING TO THE CENTERS FOR DISEASE CONTROL

There is some resistance to immunizations in our country as well as in our county. Some have read about the occasional but extremely rare reaction to one or the other immunization and thus feel they want to avoid the risk.

Every so often we are reminded of how quickly we can slide down the slope of communicable disease, like recently when several states experienced active cases of TB--which has grown quite costly to local health jurisdictions.

Another reminder of "disease communication" occurred in Iowa in May of 2006 where they had over 1,800 confirmed, probable and suspect cases of mumps reported to the Iowa Department of Public Health. This mumps outbreak quickly spread to neighboring Illinois, Minnesota, Nebraska, Missouri, and Wisconsin. Most of these cases were reported in college-age students.

Also, Washington State has experienced measles outbreaks in past years at Clark Community College in Vancouver and at Western Washington University in Bellingham. One account of a campus-related disease explained that "college students in general have a higher risk of sharing saliva."



CHEAP METHOD OF PREVENTION: WASHING HANDS

Keeping communicable disease under control is tough for physicians as well. Much of the following information was taken from an article in the *New England Journal of Medicine* in 2004 in which a physician describes how difficult it is to get clinicians to consistently wash their hands.

"The worst place is under the fingernails. Hence the recent Centers for Disease Control and Prevention guidelines requiring hospital personnel to keep their nails trimmed to less than a quarter of an inch and to remove artificial nails."

A Gawande, M.D.

Handwashing is not exactly a new scientific discovery! Semmelweis at age 28, in 1847 deduced that by not washing their hands consistently or well enough, doctors were themselves to blame for puerperal fever, the leading cause of maternal deaths in hospitals.

The death rate from puerperal fever immediately fell from 20 percent to 1 percent - dramatic proof of his theory. His colleagues 'rewarded' him by firing him from his job -- offended over his claim they might be killing their patients.

Handwashing today still is a major means of preventing communicable disease whether hospital, work or home contracted.

Washing your hands may seem elementary, but stay with us for a quick bacterial count: 5,000 to 5 million colony-forming units per square centimeter; it's crowded on your palm! The hair, axillae, and groin harbor greater concentrations. On the hands, deep skin crevices trap 10 to 20 percent of the flora, making removal difficult, even with scrubbing.

So we continue to preach repeating the Medical Journal's recommendations. To wash hands properly:

Remove your watch, rings, and other jewelry (which are notorious for trapping bacteria), lather up for 15 to 30 seconds, rinse for 30 seconds and use a disposable dry towel. In fact, use the towel to turn off the faucet.

Now, don't worry, most of us have a hard time adhering to such a strict regimen, but you should at least know how best to protect yourself and others. This becomes especially critical when we experience some outbreak of a communicable disease such as methicillin-resistant staphylococcus aureus (MRSA) or the flu.



 WHY REPORT DISEASE?

Reporting of diseases goes back to 1878, when Congress authorized the US Marine Hospital Service (the forerunner of the Public Health Service) to collect morbidity reports regarding cholera, smallpox, plague, and yellow fever from US overseas consults. The intent was to use this information to institute quarantine measures to prevent the introduction and spread of these diseases in the United States. Today, recommendations for additions and deletions of reportable diseases are made annually by the Centers for Disease Control and Prevention (CDC). Reporting also identifies outbreaks which may be happening within the state and/ or the nation.

There are currently over sixty infectious diseases classified as notifiable to the CDC. Severity of the disease and/ or ease of spread govern the timeframe of reporting.

The purpose of notification is to obtain regular, frequent and timely information for the prevention and control of disease.

We submit such notifications routinely to the State Department of Health, which in turn passes them on to the National Notifiable Diseases Surveillance System (NNDSS) which is operated by the CDC.

"NOTIFIABLE" INFECTIOUS DISEASES IN WASHINGTON STATE

<i>Acquired Immunodeficiency Syndrome (AIDS)</i>	<i>Leptospirosis</i>
<i>Anthrax (bioterrorism origin)</i>	<i>Listeriosis</i>
<i>Arboviral neuroinvasive & non-neuroinvasive diseases</i>	<i>Lyme disease</i>
<i>Botulism</i>	<i>Lymphogranuloma venereum</i>
<i>Brucellosis</i>	<i>Malaria</i>
<i>Chancroid</i>	<i>Measles (Rubeola & Rubella)</i>
<i>Chlamydia trachomatis, genital infection</i>	<i>Meningococcal disease</i>
<i>Cholera</i>	<i>Mumps</i>
<i>Cryptosporidiosis</i>	<i>Pertussis</i>
<i>Cyclosporiasis</i>	<i>Plague (bioterrorism origin)</i>
<i>Diphtheria</i>	<i>Psittacosis</i>
<i>Enterohemorrhagic E. Coli (including 0157:H7)</i>	<i>Q fever</i>
<i>Giardiasis</i>	<i>Rabies, animal or human</i>
<i>Gonorrhea</i>	<i>Rubella</i>
<i>Haemophilus influenzae, invasive disease</i>	<i>Rubella, congenital syndrome</i>
<i>Hantaviral pulmonary syndrome</i>	<i>Salmonellosis</i>
<i>Hemolytic uremic syndrome, postdiarrheal (HUS)</i>	<i>Severe acute respiratory syndrome-associated coronavirus (SARS-CoV) disease</i>
<i>Hepatitis A, acute;</i>	<i>Shigellosis</i>
<i>Hepatitis B, acute; chronic (initial diagnosis only)</i>	<i>Smallpox (bioterrorism origin)</i>
<i>Hepatitis B, perinatal infection</i>	<i>Syphilis, including congenital</i>
<i>Hepatitis C, acute and chronic</i>	<i>Tetanus</i>
<i>Herpes Simplex</i>	<i>Trichinosis</i>
<i>Human Immunodeficiency Virus (HIV) infection</i>	<i>Tuberculosis</i>
<i>Legionellosis</i>	<i>Tularemia</i>
	<i>Typhoid fever</i>
	<i>Typhus</i>
	<i>Vibriosis (paralytic shellfish poisoning)</i>
	<i>Yellow fever</i>
	<i>Yersiniosis</i>

More information about the respective diseases can be accessed via the CDC website, listed on the back cover of this report.

IMMUNIZE AGAINST IMPORTS

The average life expectancy in the early 1900's was 47. Now it is 78. A good share of this improvement is credited to the decrease in vaccine-preventable disease.

We can now protect ourselves from many serious diseases. Yet diseases seen 50 years ago remain a threat to our society--especially for our children and seniors.

Along with the importation of goods into the US, we also import diseases that are no longer endemic in our country but can result in indigenous transmission.

Measles, preventable by vaccination, is a highly infectious, acute viral illness which can cause severe pneumonia, diarrhea, encephalitis, and death. Measles has been a reportable disease since 1912. Endemic transmission had been eliminated in the US; in 2004, twenty-seven cases were imported by US residents with multiple cases picked up while traveling abroad in China, India, Bangladesh and Thailand.

Currently 93% of the nation's children under age two are vaccinated once against measles, mumps, and rubella, according to the CDC's National immunization Survey. More than 95% of the nation's children are fully vaccinated by the time they enter school.

Polio still circulates in Asia and Africa, paralyzing the world's most vulnerable children. In a shrinking world, polio and other vaccine-preventable diseases remain only a plane ride away.

Diphtheria is easily spread through coughing or sneezing, and can cause paralysis, breathing and heart problems, and death.

Tetanus (lockjaw) occurs when a tetanus germ, usually found in soil, dust or manure, enters the body through a cut or puncture wound. It can cause muscle spasm, breathing and heart problems, and death.

Pertussis (whooping cough) is spread through respiratory droplets, and can cause spasms of coughing which make it hard for a child to eat, drink, or even breathe. Pertussis can cause lung problems, seizures, brain damage and death, especially in infants less than one year of age. We still document 10 to 30 cases per year in Skagit County. And we now have a pertussis vaccine booster for ages 10 to 64.

Pneumococcal disease can cause bacterial meningitis (swelling of the brain and spinal cord). It can also cause serious infections of the lungs (pneumonia) and the blood (bacteremia). The disease is spread from person to person through respiratory droplets.

Hepatitis A is a liver disease

caused by the hepatitis A virus. The virus is shed in the stool of infected persons. It is usually spread by close personal contact or by eating contaminated food or drinking water containing the virus. A person with hepatitis A can easily pass the disease to others within the same household. Handwashing is important in preventing the spread.

Hepatitis B is an infection of the liver. It can be passed from an infected mother to her newborn during childbirth and from one person to another through blood or body fluids or by intimate contact. The hepatitis B virus can cause liver damage, liver cancer and death.

Varicella (chickenpox) is a very contagious disease causing rash and fever, spread by coughing and sneezing or direct contact with drainage from the rash. Having had disease, could result in the development of shingles when older.

Haemophilus Influenzae Type b (Hib) disease can cause meningitis (inflammation of the brain and spinal cord), infections of the joints, skin and blood, brain damage, and death. It is most serious in infants under one year of age.

Reviewing this list of diseases underscores the point why immunizations are one of the greatest medical success stories in human history. Unimmunized people risk getting diseases routine vaccinations can prevent.

TUBERCULOSIS IN WASHINGTON STATE AND SKAGIT COUNTY

TB DEFINED

Tuberculosis (TB) is a slow growing bacterial infection which most often grows and multiplies in the lungs, and can be spread in the air to others by coughing, sneezing, talking, singing. When ill with TB a person develops a nagging cough which gradually worsens, along with night sweats, weight loss, increased fatigue, chest pain, shortness of breath and even coughing up blood. TB can also move out of the lung through the lymph and the blood system and can spread to other parts of the body. A person is infectious to others only when it is in the lungs.

Worldwide, TB killed 1.6 million people in 2005. TB in our country is largely a 'foreign import' (70%), brought primarily by immigrants from Asia, Africa, Latin America, and Eastern Europe. The remainder in the US is largely found in homeless people.

Sometimes even when persons are treated in their country of origin, they do not complete or they deviate from the treatment regimen and can become multi-drug resistant.

There were 14,874 cases of TB reported in the US in 2003. The TB rate has gone down nationally as well as within our state.

In 2005, Washington State reported 256 new cases of tuberculosis for a rate of 4.0 per

100,000 persons marking the end of a continued decrease in rates since 2001. Of 39 counties, 23 had at least one new case of TB. There were ten counties with five or more cases of TB. Among these the five highest county-specific incidence rates were King (7.0), Yakima (5.6), Skagit (5.4), Snohomish (3.6), and Pierce (3.5).

Local health departments incur substantial costs for patients requiring intensive treatment over an extended time.

TB CASE HISTORIES

Prevention of TB once a person becomes infected saves dollars. Active TB cases are very expensive to treat. Circumstances differ slightly from case to case. To illustrate the point, Skagit County during the past calendar year had six infectious cases, four of which were foreign-born. Following are approximate cost breakdowns (Staff time, contact tracing and testing, history, State Department of Health requirements, etc. are not accounted for):

Patient One: Treated for eight months:

- Isolation, room and food	\$5,000
- Medication	\$2,800
- Home Visiting	\$1,160
- Medical Procedures	\$ 600
	\$9,560

Patient Two: Treated six months.

- Isolation, room and food	\$8,500
- Home Visiting	\$2,320
- Medication	\$1,200
- Medical Procedures	\$ 700

\$12,720

Patient Three: Client with multidrug-resistant TB (MDR) isolated at home. Treatment for MDR disease is prolonged. A patient with MDR TB is expected to treat from 18 to 24 months.

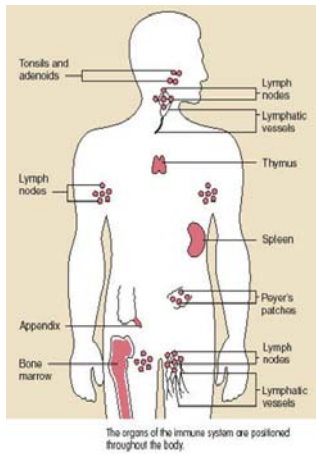
Treatment cost for four months only:

Medication	\$3,260
Medical Procedures	\$2,000
Home visits	\$2,320
	\$7,580

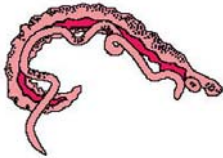
The expense of treating an active case strains the Public Health Department budget and emphasizes the need for preventive treatment.

Unless we vigorously pursue each case, we increase the likelihood of spreading TB in our community. Federal funding decreased in our state, leading to potentially significant implications for our ability to provide the best possible care to patients with active TB. The development of a national strategic plan to address TB control is important to focus program priorities.

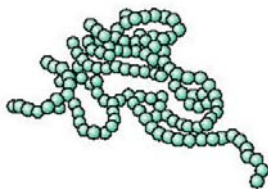
OUR IMMUNE SYSTEM



The human body provides an ideal environment for tiny, infection-causing organisms such as bacteria, viruses, parasites and fungi.



Schistosome parasite



Bacteria
Streptococci

Our immune system is amazing! It defends against attacks on our bodies and is remarkably effective - most of the time.

It could make military strategists turn green with envy. Our body is a battle zone. In fact, it is a miracle we do not die within the first week of life.

Our army of cells manages to recognize its enemies: bacteria, parasites, viruses, tumor cells. These army cell types are housed in various organs and lymph nodes of the body. They work in concert emitting chemical signals, destroying microorganisms, causing symptoms of allergy, swallowing and digesting microbes. Some slay on contact and some directly attack cancerous cells - in all cases setting in motion certain domino effects.

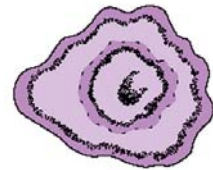
Immunity occurs or is acquired in different ways, active natural (contact with disease), active artificial (immunization), passive natural (transplacental, i.e. mother to child).

For example, one organ through which immunity occurs - the spleen - can be visualized as a filter. It is made up of B cells, T cells, macrophages, dendritic cells, natural killer cells and red blood cells.

The lymph nodes function as an immunologic filter for the bodily fluid known as lymph. They promote the production of antibodies through B cells and T cells in response to foreign substances, proteins, viruses, bacteria and tumor cells.

We live in a physical world where contacts have become closer and diseases can spread faster. The scientific ability to fully disentangle the mysteries of the immune system remain a challenge in a research environment. It is changing rapidly and with "invaders" that have a remarkable ability to mutate.

The immune system is amazingly complex. It can recognize and remember millions of different enemies -- and wipe out each one of them!



Herpes virus

Once immune cells receive the alarm, they undergo tactical changes and begin to produce powerful chemicals. These substances allow the cells to regulate their own growth and behavior, enlist their fellows, and direct new recruits to trouble spots.



fungus:
penicillin mold

Information summarized from "Understanding the Immune System; How it Works". U.S. Department of Health & Human Services, National Institutes of Health, 2003



A dog's tongue is a wash rag and toilet paper at the same time. Wash your face and hands after Fifi licks you!

The key to a healthy immune system is its remarkable ability to distinguish between the body's own cells - self - and foreign cells - nonself.

When immune defenders encounter cells or organisms carrying markers that say "foreign", they quickly launch an attack. Anything triggering this immune response is called an antigen (i.e. a virus or tissues or cells from another person). This explains why tissue transplants may be rejected.

Keeping the Immune System Strong: Although immunity naturally declines with age, there is much we can do to preserve this awesome arsenal of disease-fighting cells.

We cannot always tell what causes breakdowns of the immune system resulting in disease. The immune system and its many components are not always easily understood. Immune system breakdown may be the result of an emerging disease, stress, or simply excessive demands on our body.

If not managed well stress can kill you! Chronic stress has been linked to high blood pressure, faster heart rate and breathing, tense muscles and migraine headaches. It is also strongly suspected there is a link between stress and cancer. When you have chronic stress your body produces too much cortisol and adrenalin, two major stress hormones which, if elevated over time, can lower your immunity to disease.

Maintaining a healthy immune system can help ward off both infectious and chronic diseases such as heart disease, liver disease and cancer.

Scientists have learned much about the immune system and continue to study how the body launches attacks to destroy invading microbes, infected cells, and tumors while ignoring healthy tissues. New technologies for identifying individual immune cells are now letting scientists quickly determine which targets are triggering an immune response.

It is clear some of the old strategies are the best prevention against compromising our immune system.

We can boost the system through:

- ◆ **Vaccinations**
- ◆ **Proper diet**
- ◆ **Intake of vitamins**
- ◆ **Good hygiene (handwashing)**
- ◆ **Sufficient Sleep**
- ◆ **Physical activity**

In abnormal situations, the immune system can mistake self for non-self and launch an attack against the body's own cells or tissues. The result is called an autoimmune disease. Some forms of arthritis hepatitis and diabetes are autoimmune diseases. In other cases, the immune system responds to a seemingly harmless foreign substance such as ragweed pollen. The result is allergy, and this kind of antigen is called an allergen.



SEXUALLY TRANSMITTED DISEASES

Since sex is not a new invention, sexually transmitted diseases (STDs) have been with us throughout history. Syphilis reached epidemic proportions as far back as 1495 among French soldiers waging war in Naples and spread rapidly from there. Like many other diseases, countries blamed it as foreign imports. The French called it the "English disease", the Italians called it the "Spanish disease", the Russians called it the "Polish disease" and the Arabs called it the "Disease of the Christians". A long list of famous and infamous people throughout history are speculated to have contracted syphilis including Howard Hughes, Al Capone, Adolf Hitler, Joseph Stalin, Meriwether Lewis, Columbus, Henry VIII and Pope Alexander VI.

Chlamydia is the most commonly reported communicable disease in the US, as well as in our state and county.

Screening of young women is especially important. Most cases are reported in women ages 15 - 25 who are about four to five times more likely than men to be carriers of the disease.

Up to 70 percent of women with chlamydia infection show no symptoms. Symptoms include abnormal discharge from the urethra or vagina and pain during urination. Untreated chlamydia can lead to pelvic inflammatory disease, infertility and ectopic pregnancy. When treatment is rendered it is important to include sexual partners to avoid re-infection.

Prevention of STD begins with changing the sexual behaviors which place persons at risk for infection.

CHLAMYDIA SKAGIT COUNTY 2001-2005

Year	Cases	Rate
2001	201	193.1
2002	229	217.9
2003	270	253.0
2004	327	330.6
2005	294	265.1

Gonorrhea has symptoms similar to chlamydia, when/if symptoms appear. It too, can lead to serious and permanent health problems. Gonorrhea **increased from 13 (rate: 12.5) to 32 (rate: 28.9) cases in Skagit County between 2001 and 2005 and peaked among 15 through 19 year olds.**

Herpes Simplex is a viral infection characterized by localized primary lesions - with a tendency to reoccur. Sexually-transmitted infections usually occur in the genital tract (genital herpes). Herpes lesions around the mouth are less likely to be sexually-transmitted, but both strains of the virus can appear in either area.

The number of persons newly diagnosed with herpes in Skagit County has gradually increased from 27 in 2001 to 65 in 2005. This increase is likely due to better screening in teen clinics and generally better diagnostics.

Syphilis, a genital ulcer and systemic disease, is spread by direct contact with lesions or by perinatal transmission. The first two of three stages are infectious. Untreated tertiary syphilis may cause damage to the central nervous system, heart or other organs. Syphilis facilitates HIV transmission.

Skagit County only has about 1 case a year, but nearby counties are seeing increases in syphilis in men who have sex with other men. The seriousness of the disease calls for vigilance and protective measures on the part of both partners.

The prevention and control of STDs are based on five strategies:

- *Education and counseling of persons at risk on ways to avoid STDs through changes in sexual behaviors*
- *Identification of asymptomatic infected persons and of symptomatic persons unlikely to seek diagnostic and treatment services*
- *Effective diagnosis and treatment of infected persons*
- *Evaluation, treatment, and counseling of sex partners of persons who are infected with an STD*
- *Pre-exposure vaccination of persons at risk for vaccine-preventable complications of an STD*
- *Patient delivered partner therapy to prevent re-infection*

Human Papillomavirus (HPV) is a major risk factor for cervical cancer. More than 6 million people in the US become infected with HPV every year, and nearly 10,000 women are diagnosed with cervical cancer. A vaccine is now available to protect against 4 strains of HPV.

FOOD AND WATER

FOOD AND WATER AS DISEASE SOURCES

Contaminated drinking water, improper preparation of food, improper solid or human waste disposal can all contribute to disease. Environmental health staff work closely with our communicable disease nurses to prevent the spread of disease from food or water sources.

After eating contaminated food, people can develop anything from a short, mild illness, often mistakenly referred to as “food poisoning,” to life-threatening disease. CDC estimates that each year 76 million Americans get sick, more than 300,000 are hospitalized, and 5,000 people die from foodborne illnesses.

If we see a cluster of disease caused by a single food source, we kick into ‘detective mode’ to determine the origin of the illness. Then we take measures to prevent any more people from becoming infected. For instance, a food worker with Hepatitis A would be excluded from working with food until he/she is no longer infectious, and those exposed would be given immune globulin to prevent illness. We can now also prevent Hepatitis A with vaccine.

As consumers, we make increasingly higher demands - for fruits and vegetables out of season which are imported from all over the world. This brings with

it increased risks of contamination. Food inspections are necessarily limited due to volume, demand for low prices, and the impracticality of inspecting all perishable foods. According to the Centers for Disease Control (CDC), the food supply in the US is remarkably safe and improving. Nevertheless, food can

Food Permits Issued by Year and Type

Permits	2000	2006
Food Service Establishments	893	914
Food Booths	209	278
Food Workers' Cards	6,236	8,427

become contaminated with a variety of germs as the recent e-coli outbreak from spinach in California shows. Almost two hundred people in 26 states got sick, half of them had to be hospitalized and one died.

Our food safety program works to assure our restaurants, supermarkets, fair booths and the ‘homecook’ understand the simple measures which should be taken to prepare food safely. **Cleanliness and proper temperature control keep food safe.**

A food handler’s card is a prerequisite for those working in restaurants and other food establishments. Thirty minutes of training and testing are required to ensure a basic understanding of safe food handling to prevent the spread of disease.

Sewage systems and waste control are important prerequisites

to disease-free food and water. **There are approximately 20,000 on-site septic systems in our county**, and new systems going in every year. This creates a lot of potential for damage to the environment and to our health. Waterborne illnesses come from agents such as viruses, bacteria and parasites that contaminate recreational or drinking water.

Environmental Health staff have responsibilities for safe recreational shellfish beds. We investigate shellfish-

borne diseases and issue warnings and advisories in coordination with the Washington State Department of Health.

BACTERIOLOGICAL LABORATORY

We have a small water testing laboratory on site to test for bacteria in your water. In 2005 we processed almost 4,000 drinking water samples! Some of these samples are taken from public drinking water systems (one source serving multiple homes) and some from individual wells

(one source serving one home). If bacteria are found in the drinking water, we provide safe drinking water advice.



BLOODBORNE DISEASE

BLOODBORNE PATHOGENS

Bloodborne pathogens are microorganisms such as viruses or bacteria carried in the blood and can cause disease in people. There are many different bloodborne pathogens including malaria, syphilis, and brucellosis, Hepatitis B (HBV), Hepatitis C, Human Immunodeficiency Virus (HIV) and viral Hemorrhagic Fever (includes Ebola and Marburg). In this report we are focusing on Hepatitis B and C and HIV.

HEPATITIS B (HBV)

The symptoms for HBV are deceiving. They mimic a mild flu, with a sense of fatigue, loss of appetite and possible nausea.

As the disease progresses the urine may turn brown, the skin and eyes yellow. Frequently people who are infected with HBV will not show symptoms for some time. It can take 3-6 months for symptoms to develop after exposure. Loss of appetite and stomach pain may occur in the first three months.

In the United States, approximately 300,000 people are infected with HBV each year. Of these cases, a small percentage are fatal.

“Hepatitis” means “inflammation of the liver,” and, as its name implies, Hepatitis B is a virus that infects the liver. While there are several different types of hepatitis, HBV is transmitted primarily through

“blood to blood” contact. It can lead to more serious conditions such as cirrhosis and liver cancer over time.

We have a vaccine to prevent infection with Hepatitis B. There is no “cure” or specific treatment for HBV, but there is treatment to decrease the carrier state. Many people who contract the disease will develop antibodies. Only 10-15% of people with Hepatitis B become carriers and can pass it to others through blood contact. It is important to note, however, that there are different kinds of hepatitis, so infection with HBV will not stop someone from getting another type.

The Hepatitis B virus is durable and can survive up to seven days in dried blood. This means that the virus is of concern to employees such as housekeepers, laundry personnel and others who come in contact with blood or potentially infectious materials.

HEPATITIS C (HCV)

Hepatitis C is a liver disease caused by the Hepatitis C virus. HCV is spread by contact with the blood of an infected person. There is no vaccine for the prevention of HCV infection. Blood tests can be done to determine if you have been infected with HCV.

HCV is spread primarily by direct contact with human blood. Drug injection, kidney dialysis (shared supplies, equipment that had someone else’s blood on them), accidental needle sticks,

less likely transferred through sex with a person infected with HCV, co-habitation with somebody and sharing tooth brushes, razors that might have his/her blood on them--all are possible sources of exposure to HCV.

According to the CDC: Although biologically possible when poor infection control practices are used, there is no evidence the hepatitis C virus has been spread through tattooing. Presently there is no oversight on proper sterilization and cleaning of equipment between clients.

NEEDLE EXCHANGE

This is a program allowing injection drug users to exchange dirty needles for clean needles. This harm reduction program reduces the spread of HIV and Hepatitis B & C. The program also facilitates referring people into drug treatment programs. Additionally, we offer condoms in an effort to reduce indiscriminate spread of disease. Repeatedly, addicts who have successfully gone through drug treatment tell us the encouragement of our needle exchange staff was the reason they entered into treatment.

In 2005, we exchanged 100,000 needles. Needle exchange is available every Tuesday afternoon between 1-4 at our main office and the first Wednesday of each month from 2-4:30 p.m. at the County Upriver Services Office.

HIV

HIV (Human Immunodeficiency Virus) is a retrovirus causing HIV infection and AIDS (Acquired Immunodeficiency Syndrome) disease in humans. This pathogen is transmitted from person to person through unprotected sexual contact, sharing of injection equipment and transfusion/transplantation with infected blood or tissue or from mother to baby at time of delivery..

AIDS

AIDS is the advanced stage of HIV-disease and is characterized by severe suppression of immune response. Persons with AIDS have increased susceptibility to opportunistic infections, degradation of major organ systems and eventual death.

Like many other communicable diseases, contracting HIV depends heavily on our unhealthy behavior.

GLOBAL DATA

Worldwide the number infected with HIV/AIDS was over 40 million in 2005, including 2.3 million children under the age of 15. In 2005 alone, a total of 3.1 million people died of HIV/AIDS-related causes.

People Living with HIV/AIDS
(adults and children) 2005
Selected Countries

Country	# of Persons
India	5,700,000
South Africa	5,500,000
Nigeria	2,900,000
Mozambique	1,800,000
Zimbabwe	1,700,000
Tanzania	1,400,000
Kenya	1,300,000
United States	1,200,000
Zambia	1,100,000
Uganda	1,000,000

HIV/AIDS IN THE US

Since 1999 the number of persons living with AIDS in the US has steadily increased from 311,205 to 405,926 in 2003. The increase is most likely due to more effective medications. Almost 5,000 new cases of HIV/AIDS, in addition to the 9 million cases of STD, occurred in 15-24 year olds annually.

SKAGIT COUNTY

According to the State Department of Health, 90 HIV/AIDS cases have been reported for Skagit County since data collection began. These data are approximate because these numbers include both dead and presumed living. People ONLY get reported when under a physician's care. Many people who are HIV-positive may not be in care, so they are not reported.

MODES OF TRANSMISSION

Myths still abound about how this terrible disease is spread, so here is a brief refresher course:

Blood: Before 1985, blood was not tested for HIV antibodies prior to transfusion, so HIV was commonly transmitted. However, the current transmission rate is estimated to be less than 1 infection per 500,000 donations. This rare case of HIV transmission from a transfusion can happen if a newly infected person donates blood in the "window" period prior to their HIV test turning positive. Sharing needles or occupational needle sticks remain an important means of HIV transmission.

Sexual Transmission: can occur through anal and vaginal sex. The presence of another STD makes HIV infection 2 to 4 times more likely. There have been no documented cases of transmission of HIV through oral sex.

Mother to Child Transmission: We rarely see babies born with HIV in the US due to routine prenatal testing and anti-retroviral medications HIV-positive mothers can take while pregnant. Babies born to HIV-positive mothers are tested at birth and then again when they have developed their own immune system, at 18 months.

INFECTIOUS DISEASES ARE HERE TO STAY

It's not just the movies that get reinvented... Only a decade ago it was perfectly accepted in public health to speak about how we have moved from the era of infectious disease to chronic disease. Today we talk more about emerging and re-emerging infectious disease.

Increasingly effective public health measures, broadened use of a growing number of vaccines, and the judicious application of powerful and ever more sophisticated antimicrobial drugs have helped stem the toll of infectious diseases. Smallpox and polio are only two examples. For a while it looked like we had a smooth transition from the era of infectious diseases to the newly emerging era of chronic diseases. Not so. Ever increasing life expectancies and lifestyle issues in industrialized nations emphasized the chronic diseases to the point of neglecting infectious diseases.

There are other reasons for the rise of infectious diseases in industrialized nations, for example, globalism. More specifically, world population growth and increased contact between people. As recently as 1970 there were 3.7 billion people in the world. In 2005 that count was 6.4 billion. And everyone is as close as a 24 hour plane ride!

Infectious diseases are the leading cause of death worldwide

and the third leading cause of death in the United States. Some of these infectious diseases are re-emerging while others are newly emerging in our country.

EMERGING DISEASES

We are facing a litany of emergent diseases, unique in that they are a danger to all people regardless of age, gender, lifestyle, ethnic background or economic status. They are putting an increasing strain on public health. It is our task to prevent diseases and to prepare for diseases whose course we only have limited knowledge about and can be costly. SARS, West Nile, hantavirus, monkey pox, avian flu are a few examples.

Globalization has contributed to greater awareness of worldwide diseases, but it also brought diseases - formerly not so mobile to this country. The potential terrorism threat has placed greater prevention responsibilities on public health departments - largely without appropriate funding to do this.

The following describes some of the emerging diseases of concern:

Methicillin-resistant *S. aureus* (MRSA) an emerging cause of skin and soft tissue disease. So-called "staph bacteria" live on the skin and in the nose - usually without causing harm. However, some strains are particularly virulent - and impervious to standard antibiotics. It

used to be most often acquired in the hospital. In recent years, MRSA has become community acquired, primarily through the drug population in and out of our jails.

Many of the emerging diseases are transmitted by animals. **Mad Cow Disease** is a rare, degenerative, fatal brain disorder. The British government became aware of this disease in cows in 1986. The connection to humans though, did not become apparent until ten years later, when people began dying of Creutzfeldt-Jakob disease, which is a human version of mad cow disease. To date in England, there have been 117 deaths. The disease can lie dormant from five to 40 years, and there is no known cure. There is currently one case in the US, a 22 year old woman in Florida who was born and lived in England until the age of 13. It is not transmitted between humans.

Lyme Disease was identified in as transmitted through a tick and now is the most common vectorborne disease in the US. It became reportable in Washington State in 1987. It is a bacteria transmitted from a tick when it feeds on humans and isn't removed before 36-48 hours, starts with a telltale rash, then can lead to chronic arthritis, heart irregularities and neurological problems. An average of 12,000 cases are reported annually in the US. It can be treated successfully with antibiotics if found early. A vaccine

was developed in 1998, but has since been discontinued due to adverse side effects.

Avian Influenza: This disease first surfaced in Hong Kong in 2003 and since then in a variety of countries. It is a type of flu virus common to chickens, ducks, pigs and horses. Up to this point transfer to humans occurred only through direct contact with infected animals. These are deadly flu viruses to which humans have no immunity and which could potentially develop into a pandemic. If they develop the ability to transfer from human to human, quick and determined action will be required to contain the disease at the source.

West Nile Virus (WNV): This disease is spread via birds bitten by mosquitoes who in turn bite humans transmitting the disease to us. Bird migration routes describe the gradual spread throughout the country. WNV was first reported in the US in 1999 when allegedly a rare bird imported into the US from Israel was brought to the New York Zoo. In 2005 there were 4,500 cases diagnosed with infection in 39 States. It has been found in surrounding counties in birds, horses and humans who have traveled to other states. One was acquired this summer in Washington State.

Severe Acute Respiratory Syndrome (SARS): This highly contagious viral illness

surfaced in Hong Kong in 2003 and has been traced to the Civet cat which Chinese eat as a delicacy.

SARS spreads easily like a cold through droplet secretions and is most virulent. Worldwide there have been 8,442 cases reported with 812 deaths.

Monkey Pox: Endemic in Ghana and Gambia, this disease was imported via rodents (rope and tree squirrels, rats and striped mice) from Africa. It was first identified in Wisconsin in 2003. The transmittal to humans occurred through direct contact with a prairie dog which was bitten by a Gambian rat. People develop blister-like rashes similar to smallpox. One to ten percent of the cases could die, as opposed to smallpox where 30% of the cases die. There have been no deaths so

far. CDC has now embargoed all sale, movement or transfer of these animals in the US and stopped importation of these animals. Through 2005, 81 people have been ill in nine states. People who have recently received smallpox vaccine may be protected from this disease. There is no evidence of human to human transmission.

RE-EMERGING TB

More unsettling to public health than newly emerging diseases are those returning with a vengeance like TB. It is perhaps the most typical of our increasingly global world, a disease that was largely confined to developing countries but with increased migration and travel is constantly re-introduced to our country (and our County) because there are inadequate checks at our borders and ineffective or no treatment in their own countries.

Sixty-seven percent of TB cases in Washington State in 2005 were in the foreign-born. We are not only seeing multi-drug resistance (MDR), which is resistance to the first-line TB drugs, but are now seeing extensive drug resistance (XDR) which means resistance to the first and second-line drugs used to kill TB. Skagit County has had one MDR and zero XDR cases.

**New TB Cases and Deaths 2005
Selected Countries**

Country	New Cases	Deaths
India	1,788,043	352,085
China	1,334,066	236,377
Indonesia	627,047	143,178
Nigeria	362,819	105,311
Bangladesh	360,747	83,533
Pakistan	278,392	66,503
Ethiopia	251,685	56,146
South Africa	241,537	32,794
Philippines	236,537	38,872
Kenya	195,207	42,660
Mexico	34,409	not avail.
Canada	1,745	not avail.
U.S.	14,093	not avail.

CONCLUSIONS

Communicable Disease has an easy time in an increasingly mobile world with a steadily growing population.

Visualize a restaurant with a seating capacity of 40 suddenly adding tables and chairs to seat 120 in the same space. It is plausible if someone sneezes in such crowded space, your chances of catching the next table's cold increases. Are we exaggerating? Let the numbers speak for themselves.

Word Population - actual and projected (in billions)	
1950	2.5
1960	3.0
1970	3.7
1980	4.4
1990	5.2
2000	6.0
<hr/>	
2010	6.8
2020	7.5
2030	8.2
2040	8.7
2050	9.2

In 1950 we faced a world with a mere two and half billion people in it. Today we have four billion more people in the same space with a vastly expanded transportation net and a global economy. Small wonder then, we are facing new communicable diseases and re-emerging diseases.

Along with global imports of products, we are also "importing" more people and unfortunately along with them, frequently more germs and viruses adding up to more diseases. This is the story of our report - and why early detection, investigation, education and treatment are so important.

We tried to explain how we contract communicable diseases and how we prevent them. Because they use the machinery of their host cells to reproduce, viruses are difficult to kill. The most effective medical approaches to viral disease, thus far, are vaccination to provide protection from infection, and drugs that treat the symptoms of viral infections. Effective antibiotic use is important. Always take medications as prescribed by your doctor to prevent the development of antibiotic resistance.

Our society is approaching a major aging surge with the baby boomers - born between 1946 and 1964 - entering retirement age in growing numbers. The percentage of persons 65 and over will rise nationally from currently 13 percent to 18.5 percent by 2025. This is accompanied by rising health care needs, and personal, social and economic costs. As we age, our immune system weakens and we may become more prone to any communicable diseases we are exposed to. This gives rise to the key question, how can we protect ourselves from such exposure?

Public Health's role is to prevent disease, provide surveillance, statistical information and early detection of disease, and disseminate education and treatment to prevent the spread of disease.

There are some basic principles all of us can follow:

- Get immunizations when they are recommended, for example, flu vaccines
- Practice good handwashing. Useful as they are, your hands are also the most efficient distributors of germs and viruses to your own body.
- Minimize stress (get enough sleep, find healthy supports, pet your cat or dog)
- Limit or don't use alcohol
- Eat regular meals with a variety of healthy foods
- Control your weight
- Do not smoke
- Be physically active

The Boy Scout motto "Be Prepared", says it best. This is what we've tried to emphasize throughout the report. **Prevent what you can and prepare for what you can't prevent.**

WHERE HAVE YOUR HANDS BEEN TODAY?



Where else have your hands been today?

Go wash them!

Support bacteria. They are the only culture some people have...



Tuberculosis

Death Rate from this disease per 100,000 population:

2006	0.2
1967	3.5
1915	140.1

What Every Child Knows...

When doctors in Paris as recently as a century ago called for washing yourself at least once a month they were ridiculed; every child knew that washing yourself was most unhealthy...

The Silent Disease

Chlamydia is one of the most widespread bacterial sexually transmitted infections (STI) in the US. Chlamydia bacteria live in vaginal fluid and in semen. About 70 percent of chlamydial infections have no symptoms, thereby naming it the "silent" disease.

Occult Infection

Medical terminology for a "hidden" infection, that is, one which presents no symptoms.

What's the Difference between Soil and Dirt?

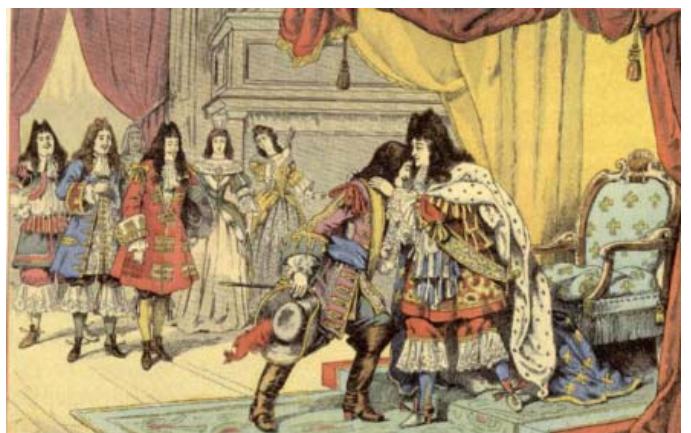
Dirt is what you find under your fingernails. Soil is what you find under your feet. Think of soil as a thin living skin that covers the land; it goes down into the ground just a short way. Even the most fertile topsoil is only a foot or so deep.

Stinkey at the Court

There were times in history when washing yourself was considered unhealthy. King Louis VIX instructed his court not to wash for a whole month. Instead of soap they dusted themselves with powder and sprayed perfume.



A strong body odor was considered healthy. This opinion was taken over from the Middle Ages when a "dirt crust" on the body was thought to be protection against communicable disease. People washed rarely and were worried that the "plague-contaminated air" would infiltrate the body's pores.



Recommended Childhood and Adolescent Immunization Schedule UNITED STATES • 2006

Vaccine ▼	Age ►	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	24 months	4–6 years	11–12 years	13–14 years	15 years	16–18 years
Hepatitis B ¹	HepB		HepB	HepB ¹		HepB						HepB Series			
Diphtheria, Tetanus, Pertussis ²			DTaP	DTaP	DTaP		DTaP			DTaP		Tdap		Tdap	
<i>Haemophilus influenzae</i> type b ³			Hib	Hib	Hib ³	Hib									
Inactivated Poliovirus			IPV	IPV		IPV				IPV					
Measles, Mumps, Rubella ⁴						MMR				MMR			MMR		
Varicella ⁵						Varicella						Varicella			
Meningococcal ⁶												MCV4		MCV4	
Pneumococcal ⁷			PCV	PCV	PCV	PCV				PCV		PPV			
Influenza ⁸						Influenza (Yearly)						Influenza (Yearly)			
Hepatitis A ¹										HepA Series					

For more details and current schedule, see:
www.cdc.gov/nip/recs/child-schedule.htm#Printable

COMMUNICABLE DISEASE RESOURCES & INFORMATION

Centers for Disease Control & Prevention www.cdc.gov
 Coughing Etiquette www.coughsafe.com/media.html
 Washington State Department of Health--Notifiable Conditions www.doh.wa.gov/notify

EMERGENCY PREPAREDNESS

WA State Department of Health www.doh.wa.gov/phepr
 American Red Cross--Mount Baker Chapter (Skagit County) www.skagitredcross.org (360-733-3290)
 American Red Cross--Anacortes Chapter www.anacortessanjuan.redcross.org (360-293-2911)
 Skagit County Department of Emergency Management www.skagitcounty.net/emergencymanagement
 Federal Emergency Management Agency www.fema.gov

IMMUNIZATION RESOURCES & INFORMATION

Skagit County Public Health Department 336-9477
 Skagit County Flu Hotline 419-3315
 CHILD Profile www.childprofile.org
 WA State Department of Health www.doh.wa.gov/cfh/immunize
 Immunization Call Center 1-800-CDC-INFO (1-800 232-4636)
 Traveler's Health www.cdc.gov/travel