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DEAR COLLEAGUES,

VITAMIN D: MORE THAN CALCIUM AND BONE

Global research indicates that vitamin D deficiency is a common worldwide health problem (Mosekilde, 2005). The current recommended daily dose is inadequate for many Canadians - especially the elderly (Bishoff-Ferrari, 2005).

Vitamin D is a fat-soluble vitamin essential for maintaining normal calcium metabolism. Most organs including the gut, brain, heart, pancreas, skin, kidneys, and immune system have receptors for 1,25(OH) vitamin D, and have the capacity to synthesize the hormone from vitamin D. Clinical consequences of deficiency include degenerative bone disease, but may also contribute to neuromuscular dysfunction, falls and fractures. Cancer studies show that vitamin D may be involved with cell proliferation and differentiation (Staud, 2005).

Sources of Vitamin D:

- Vitamin D₃ is produced in the skin by conversion of 7-dehydrocholesterol by UVB. [Sunscreens with an SPF greater than 8 can prevent skin synthesis. From November to February in Canada there is insufficient UV light to induce synthesis even if skin is exposed.]
- Food – fortified milk, fortified cereal, fatty fish
- Supplements

Vitamin D Measurement:

- Serum level of 25-hydroxycholecalciferol [25(OH) vitamin D]
- Severe deficiency <12 nmol/L; moderate 12.5-24 nmol/L; mild 25-49 nmol/L
- Healthy young lifeguards at outdoor pools have levels over 80 nmol/L

Vitamin D Deficiency:

- Falls
- Muscle weakness and diffuse muscle pain
- Osteomalacia with neuropathy and severe myopathy
- Osteoporosis
- Increased risk of some cancers
- Rickets in children
- Hypotheses under investigation - neuromuscular degeneration (as in MS), seasonal depression, autoimmune diseases, and type 2 diabetes

Vitamin D Toxicity:

- Hypervitaminosis D results in hypercalcemia
- Toxicity is unlikely in normal people with intake levels less than 10,000 IU/d
- Hyperparathyroidism, sarcoidosis, tuberculosis, and lymphomas may increase the risk of hypercalcemia
- Vitamin D toxicity has never been observed as a result of sun exposure (Staud, 2005)

Who Needs Supplementation?

- Children and adolescents who are not sun exposed and do not consume vitamin D enriched food/beverages
- Older adults whose skin and other organs do not synthesize vitamin D as efficiently as younger people (Particularly the very old and institutionalized.)
- People with higher melanin content in skin - they require much more exposure to sun to synthesize enough vitamin D
- Persons with limited sun exposure such as the homebound and those living in northern latitudes (e.g., Canada, Alaska)
- Persons with fat malabsorption - for example, pancreatic enzyme deficiency, inflammatory bowel disease, celiac disease, surgically shortened bowels or those on medications that may interfere with fat absorption (anti-epileptics)

Supplemental Vitamin D:

The current recommended adult daily oral dose of 400 IU/d is not sufficient to give adequate blood levels in many people.

Since there is a biomarker, plasma 25-hydroxyvitamin D (25OHD), it is now possible to titrate the supplemental dose to achieve a serum level of 50 or greater.

Various studies have used a variety of routes and levels of supplementation. The review articles seem to be recommending supplementation levels of about 800-1000 IU daily for mild and moderate deficiency, and 2000 IU daily for severe deficiency.

References

Bischoff-Ferrari, H.A., Willett, W.C., Wong, J.B., Giovannucci, E., Dietrich, T., & Dawson-Hughes, B. (2005). Fracture prevention with vitamin D supplementation. *Journal of the American Medical Association*, 29, 2257-2264.

Moskilde, L. (2005). Vitamin D and the elderly. *Clinical Endocrinology*, 62, 265-281.

Staud, R. (2005). Vitamin D: more than just affecting calcium and bone. *Current Rheumatology Reports*, 7, 356-364.

Yours truly,

Hazel Lynn, M.D., FCFP, MHSc
Medical Officer of Health

MONITORING COMMUNITY ILLNESS IN GREY-BRUCE

Alanna Leffley, Public Health Epidemiologist

Susan Shular, Control of Infectious Diseases

To identify and control outbreaks of illness in the community, the Grey Bruce Health Unit monitors three sources of surveillance data:

- School Absenteeism – all schools in Grey-Bruce are urged to report each day that they calculate a student absenteeism rate above ten percent.
- Over-the-Counter (OTC) Sales – as a pilot project for the Public Health Agency of Canada, Public Health receives weekly summary reports of OTC sales of anti-diarrhea and anti-nausea medications sold at a sample of Grey-Bruce pharmacies.
- Early CBRN (Chemical, Biological, Radiological, Nuclear) Attack Detection by Computerized Medical Record Surveillance (ECADS) – is a new computer application that assigns chief complaint data reported by Grey-Bruce ER patients to one of eight syndromic categories. When the number of patient visits for any category exceeds a predetermined baseline ECADS notifies Public Health. Consequently, the exceedance is examined using a risk assessment protocol based on the syndrome, population demographics, geographic location (pt. postal code FSA or hospital), standard deviation, and other statistics.

Together, these data sources enable Public Health to “take the pulse of the community”. During the past four months, each has alerted Public Health to a potential outbreak. In particular,

considerable “traffic” on ECADS has prompted Public Health to establish a new communications protocol with all Grey-Bruce hospital emergency rooms. As a result, the *Physician Advisory* informs physicians of what illness profile they may see in the immediate future. Or, an action oriented *Physician Alert* may request a course of action (ask specific interview/history details or obtain various diagnostic laboratory tests) to assist Public Health to identify and control an outbreak of illness in the community.

TUBERCULOSIS UPDATE

*Debby Minielly, Public Health Nurse
Tuberculosis Control Program*

Tuberculosis (TB) is the world’s leading cause of death from infectious disease. Each year in Canada there are 1,700 new cases of active TB (PHAC, 2003). Half are in Ontario with approximately 680 located in Toronto; most are foreign born individuals (Vik, 2003).

In 2005, Public Health conducted approximately 50 TB investigations based on a positive Mantoux. With no active cases, these involved inmates of correctional institutions, health care employees, newcomers, and international visitors with possible latent TB infection.

Physician Action Regarding a Positive Mantoux

1. measure positivity (in mm) of induration
2. further evaluate to rule out active disease:
 - history and physical examination
 - chest x-ray
 - sputum for smear for AFB and culture if symptomatic

INH prophylaxis should be considered for individuals with a recent TB skin test conversion. TB meds are free through Public Health.

Public Health has a continuing mandate to prevent and control TB. For further information and resources, please call 1-800-263-3456.

New TB Screening Test: QuantiFERON®

The QuantiFERON® - TB Gold (QFT-G) is a new screening test that measures the concentration of interferon-gamma antibody produced when whole blood is mixed with synthetic TB antigens (CDC, 2005). QFT-G was approved in the United States in 2005, but is unavailable in Canada.

References

Centres for Disease Control and Prevention. (2005). Guidelines for the Use of QuantiFERON® - TB Gold. Retrieved April 2006 as <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5415a4.htm>

Public Health Agency of Canada. (2003). Notifiable Diseases On-Line: Tuberculosis. Retrieved March 2006 as: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/diseases/tubr_e.html

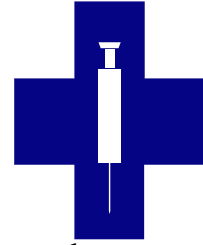
Vik, J. (2003). Epidemiology of Tuberculosis in Ontario, 1999-2001. *Public Health and Epidemiology Report Ontario*, 14, 105-115.

VACS FACTS

HEPATITIS A VACCINE: REQUIRED FOR CRUISE SHIP TRAVEL?

Corrie Marshall, Public Health Nurse

Vaccine Preventable Diseases Program



Although cruise ship passengers are at low risk for hepatitis A, risk can increase when travellers leave the vessel to consume meals ashore (CATMAT, 2005). Therefore, the entire trip should be assessed, as a whole, to determine the need to administer hepatitis A vaccine.

Travel to regions where hepatitis A is endemic (Central America, parts of the Caribbean, & Southeast Asia) is a risk factor. Others include: consumption of raw or partially cooked shellfish, and the use of contaminated water to prepare ready-to-eat foods such as salads, ice, and fruit.

Public Health can assist with a full risk assessment consultation. Call the Vaccine Preventable Diseases Program (519) 376-9420.

Reference

Committee to Advise on Tropical Medicine and Travel. (2005). Statement on Cruise Ship Travel. Canada Communicable Diseases Report, 31 Advisory Committee Statement 8. Public Health Agency of Canada. Retrieved March 2006 as http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/05vol31/acs-dcc-8-9/8_e.html

SCHOOL SUSPENSIONS AND QUADRACEL®

Kathryn Whitehouse, Public Health Nurse

Vaccine Preventable Diseases Program

Public Health maintains an up-to-date record of immunization for each school student in Grey-Bruce. Each child's record is reviewed on a yearly basis. If a record is incomplete, Public Health will send two successive letters of notice to parents. If necessary, a school suspension will be issued by the Medical Officer of Health.

One hundred and forty-five suspension notices were sent during February 2006. Parents were required to respond within one month. On March 21, 2006, thirty students were suspended from school. Subsequently, most were rescinded.

During the record review period, we noted that several children who were 7 years of age or older were immunized with QUADRACEL®. Just a reminder, QUADRACEL® should not be administered *after* a child's 7th birthday because the quantity of diphtheria toxoid and pertussis antigens may provoke enhanced local reactions, fever and malaise (Aventis Pasteur, 2004). The alternative is the Td Polio Adsorbed vaccine.

Reference

Aventis Pasteur Canada. (2004). QUADRACEL®. Retrieved April 2006 as <http://www.sanofipasteur.ca/sanofi-pasteur-ca/front/templates/index.jsp?codeRubrique=53&lang=EN>

COLD CHAIN UPDATE: MISHANDLING IS COSTLY

*Corrie Marshall, Public Health Nurse
Vaccine Preventable Diseases Program*

In 2005, Public Health completed 115 cold chain inspections (physicians' offices, hospitals, long-term care establishments, and jails) throughout Grey-Bruce. Ninety-three percent of premises complied with the vaccine storage and handling requirements from the Ministry of Health and Long-Term Care. However, despite this compliance rate, the cost of wasted/unusable vaccine was valued at \$75,037. In 2004, the value of wasted vaccine was \$21,642. This clearly demonstrates the importance of following the protocols regarding vaccine management – especially the critical need to preserve the cold chain.

Vaccine Storage and Handling: Guidelines is available at:

<http://www.publichealthgreybruce.on.ca/Immunization/HealthProsInfo/AttentionPhysicians.html>

TWINRIX® and TRAVELLERS

*LeAnn White, Public Health Nurse
Vaccine Preventable Diseases Program*

- The first dose of single antigen hepatitis A vaccine will protect travellers even if administered very close to the departure date.
- Single antigen hepatitis B vaccine requires 3 doses for high seroprotective levels.
- An adult dose of Twinrix® requires 3 doses for high seroprotective levels of both HAV and HBV.

If the traveller is at risk for hepatitis B, the single antigen can be given in an accelerated course to provide sufficient protection within one month.

For those departing on a “last minute” tropical vacation, we recommend the single antigen hepatitis A vaccine for the best protection against hepatitis A.

COMMUNICABLE DISEASE TEAM REFERRAL LIST

376-9420 or 1-800-263-3456

CONTACT:

J. Reason, PHI /C. Milani, PHI /S. Anderson, PHI

- Amebiasis
- * Anthrax
- * Botulism
- * Brucellosis
- Campylobacter enteritis
- Cholera
- * Cryptosporidiosis
- * Cyclosporiasis
- * Food poisoning, all causes
- * Gastroenteritis, institutional outbreaks
- * Giardiasis, except asymptomatic cases
- * Hantavirus pulmonary syndrome
- * Hemorrhagic fevers, including,
 - i. Ebola virus disease
 - ii. Marburg virus disease
 - iii. Other viral causes
- * Hepatitis, viral
 - i. Hepatitis A
- Lassa Fever
- * Legionellosis
- * Listeriosis
- Lyme disease
- Paratyphoid Fever
- * Plague
- Psittacosis/Ornithosis
- * Q Fever
- * Rabies (see below)
- * Respiratory Infection Outbreaks in Institutions
- * SARS
- Salmonellosis
- * Shigellosis
- * Smallpox
- Trichinosis
- * Tularemia
- Typhoid Fever
- * Verotoxin-producing E. coli infection indicator conditions including Haemolytic Uraemic Syndrome (HUS)
- * Yellow Fever
- Yersiniosis

Rabies contact:

District Public Health Inspector
Owen Sound: 376-9420
Walkerton: 881-1920

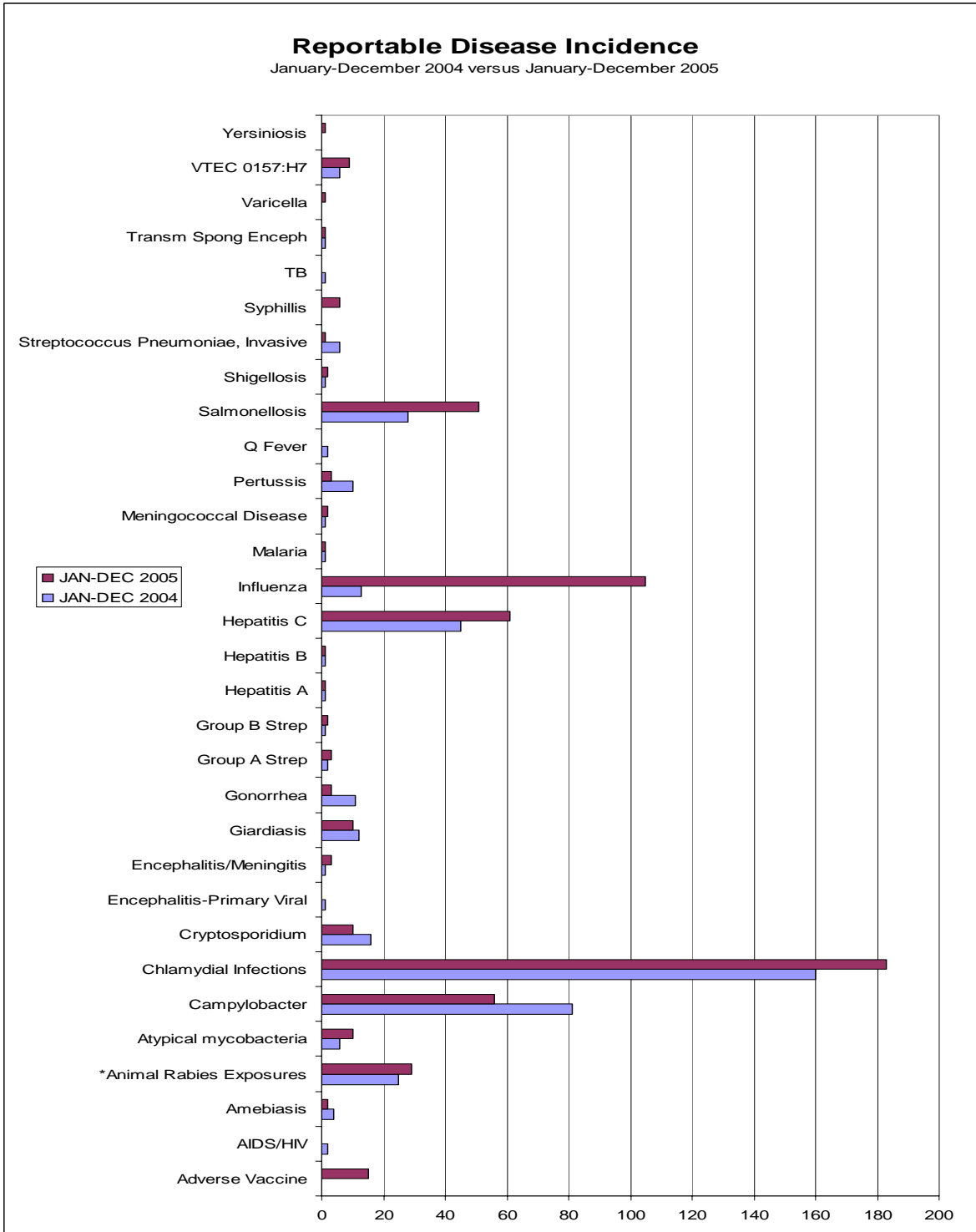
CONTACT:

D. Minielly, PHN /C. Haines, PHN /J. Dobisz, PHN

- Chickenpox (Varicella)
 - Cytomegalovirus infection, congenital
 - * Diphtheria
 - * Encephalitis, including:
 - * i. Primary, viral
 - ii. Post-infectious
 - iii. Vaccine-related
 - iv. Subacute sclerosing panencephalitis
 - v. Unspecified
 - * Haemophilus influenza b disease, invasive
 - Hepatitis, viral
 - * i. Hepatitis B
 - ii. Hepatitis C
 - iii. Hepatitis D (Delta hepatitis)
 - Influenza, Types A, B, and C
 - Leprosy
 - Malaria
 - * Measles
 - * Meningitis, acute
 - * i. bacterial
 - ii. viral
 - iii. other
 - * Meningococcal disease, invasive
 - Mumps
 - Pertussis (Whooping Cough)
 - * Poliomyelitis, acute
 - * Respiratory infection outbreaks in institutions
 - Rubella
 - Rubella, Congenital Syndrome
 - * Severe Acute Respiratory Syndrome (SARS)
 - * Smallpox
 - * Streptococcal Infections, Group A invasive
 - * Streptococcal Infections, Group B neonatal
 - * Streptococcus Pneumoniae, invasive
 - Tetanus
 - Transmissible Spongiform Encephalopathy (TSE)
 - i. Creutzfeldt-Jakob Disease, all types
 - ii. Gerstmann-Sträussler-Scheinker Syndrome
 - iii. Fatal Familial Insomnia
 - iv. Kuru
 - Tuberculosis
 - * West Nile Virus Illness
- STD contact: Sexual Health Clinic (519) 376-9420**
 AIDS (Acquired Immunodeficiency Syndrome)
 Chancroid, Chlamydia trachomatis infections
 Gonorrhoea, Herpes, neonatal
 Ophthalmia neonatorum, Syphilis

Diseases marked with an * and respiratory infection outbreaks in institutions should be reported **IMMEDIATELY** to Public Health. Other diseases are to be reported the next working day.

Grey Bruce Health Unit



*Number of people who received rabies vaccine

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