Twenty Years and Still Going Strong!

This publication has been going continuously for 20 years. It has seen many changes during that time. The biggest change has probably been that it went from a product being turned out on an IBM electric typewriter to a computerized one. This has allowed us to put all kinds of fancy pictures and graphics in it. Now it goes out by email rather than “snail mail” giving us the opportunity to reach the entire world and, believe me, we do.

The vast majority of feature articles that appear in our Infectious Disease Update come about because somebody asked for them.

Often at meetings or during informal conversations, somebody will say: “Why don’t you write something about this particular subject?” Invariably, if it’s important enough for one person to be interested in it, then there’s an excellent chance that additional readers would like to hear about that subject.

Additionally, you might come across an article in a journal that you feel should be brought to the attention of other professionals. Just let us know the name of the journal, the volume, the month, and the page and we’ll try to include it in a forthcoming issue.

Oh, by the way, I had a lot more hair when this publication first started than I do now! I was thinking of sneaking in a picture from those days, but decided against it. Oh well…

If you wish to contact the Editor directly, just click here.

An Overview of Cryptococcal Infections
William F. Vincent, Ph.D.
Clinical Microbiologist Consultant
Quest Diagnostics
Wallingford, CT

Historical
The first case of Cryptococcus infection was studied by Busse in Germany who isolated the organism (a yeast) from the tibia of a 32-year old woman. The following year, a surgeon by the name of Buschke found the same organism in the same patient. As a result, the first name used for infections caused by Cryptococcus was the “Busse-Buschke disease”.

In the ensuing years very few cases of infection were reported. Before 1946, there were only 200 cases reported in the medical literature. With the development of the use of corticosteroids and longer patient survival with many malignant diseases, the incidence increased considerably. Today, most cases of Cryptococcus infection occur among HIV-infected patients. In 2005, the incidence was 19 cases per million person-years among males and 2.6 cases per million person-years among females. The incidence of the disease has decreased significantly in recent years with effective antiviral therapy.
The Microorganism
Cryptococcus is a yeast and, at present, more than 50 species have been identified. Most cases of human disease, however, are caused by two species—Cryptococcus neoformans or Cryptococcus gattii.

Cryptococcus neoformans growing on SABHI agar
Courtesy of CDC

C. neoformans is found in the droppings of wild birds such as pigeons. C gattii is found in soil and in areas around trees.

Transmission and Epidemiology
For the most part, transmission occurs via the inhalation of aerosolized droplets containing the organism. The incubation period can be from two to 11 months for C. gattii. The incubation period for C. neoformans, however, is not known.

Although C. neoformans is found worldwide, C. gattii is for the most part confined to tropical and subtropical areas. It can be isolated from certain species of eucalyptus trees and the area beneath them. Recently, however, C. gattii emerged on Vancouver Island, British Columbia, Canada. The most common place to find C. neoformans is in old pigeon feces.

Risk factors for cryptococcosis include:
- HIV infections/AIDS
- Corticosteroids and other immunosuppressants
- Organ transplantation
- Heart, lung and liver diseases
• Diabetes
• Pregnancy

Naturally occurring cryptococcosis occurs in animals but there is no evidence of transmission to humans. Also, there is no evidence of human-to-human transmission. There appears to be no relationship between occupation and/or race in the distribution of this disease. The disease, however, is usually more common among men than women. Two-thirds of cases are among patients over 40 years of age. In the case of patients over 50 years of age, the disease is more than three times more common among men than women.

Cryptococcus neoformans cutaneous lesions on the hand
Courtesy of the National Institutes of Health

Approximately 7 to 15 % of all patients with AIDS will acquire the disease. Along the same lines, about 80 to 90 % of all patients with cryptococcosis will occur in patients with AIDS.

Symptoms
The disease often starts as a pneumonia-like illness with shortness of breath, coughing and fever.

Cryptococcosis is one of the most common life-threatening fungal diseases among persons with AIDS. In persons with normal immune systems, there may be no symptoms exhibited.

Symptoms, when they occur, include the following:
• Pneumonia (the most common)
• Blurred or double vision
• Bone pain especially tenderness of the sternum
• Chest pain
• Confusion
• Dry cough
• Fatigue
• Fever
• Headache
• Nausea
• Skin rash including petechia, ulcers and other skin lesions
• Sweating especially at night
• Swollen glands
• Weight loss

Diagnosis
Physical examination may indicate a number of symptoms indicative of cryptococcosis such as abnormal breath sounds, Biopsies are also useful.

A case of cryptococcosis in a cat
 Courtesy of MedicalFreeDictionary.com

This photomicrograph of a lung lesion tissue specimen, revealed some of the cytoarchitectural morphology associated with the infiltration of Cryptococcus neoformans. Courtesy of CDC
There are a number of laboratory tests available to diagnose this disease including *Cryptococcus* antigen screening and *Cryptococcus* antibody titers.

**Treatment**
Some infections require no treatment but the patient should be followed carefully for at least a year. In cases where there are lesions in the lung or the disease spreads, the following drugs are usually prescribed:

- Amphotericin B desoxycholate
- Flucytosine
- Fluconazole

Medications may need to be administered for a long period of time. Before the advent of Amphotericin, cryptococcal meningitis and disseminate diseases were almost always fatal.

**Infection Control Practices**
The best way to prevent cryptococcosis is for persons with weakened immune systems to avoid areas that may be contaminated with bird droppings, particularly those from pigeons. Outside air conditioning units should be given special consideration since pigeons and other birds may roost on them. The dried droppings may become aerosolized and sucked into the inside environment.

Other prevention practices include:

- Take the lowest doses of corticosteroid medications possible,
- Practice safe sex to reduce the risk of getting HIV and the infections associated with a weakened immune system,
- Treatment of HIV infections since this helps maintain effective immunity.

**Selected references**
Benson C.A. *et al.* Treating Opportunistic Infections Among HIV-Infected Adults and Adolescents:

Recommendations from CDC, the National Institutes of Health, and the HIV Medicine Association/Infectious Diseases Society of America. [Full Text].

Centers for Disease Control and Prevention. 2012. *C. neoformans* cryptococcosis. Click here to go to website.

Centers for Disease Control and Prevention. 2010. Healthy Pets, Health People. What is *Cryptococcus* infection (cryptococcosis)? Click here to go to website.


**Other Infectious Disease News**

**Effects of Norovirus Infections on Hospitalizations and Deaths among Nursing Home Residents**
Each year, there are more than 1,000 GI outbreaks in nursing homes that are reported to CDC. Most of these are caused by the Norovirus. The deaths due to this virus hits the elderly disproportionately.

Researchers at the University of Chicago in Illinois studied 407 Norovirus outbreaks that occurred in 308 nursing homes over a two-year period. Several had multiple outbreaks as follows:

- 230 facilities had but a single outbreak in the two-year period,
- 60 had two outbreaks,
- 15 reported three outbreaks
- Three facilities had four outbreaks

Overall, the outbreaks involved 67,730 residents of which approximately 26 thousand died during the two years of the study.

The hospitalization rate was 124.0 per home-years during periods when outbreaks were occurring as compared with 109.5 during non-outbreak periods.

Death rates were 53.7 per home-year during outbreak periods as compared to 41.9 during non-outbreak periods.

One interesting observation was the observation that facilities with fewer registered nurse hours per resident had higher mortality rates as compared to those with
more nurses. Hospitalization rates, however, were not affected by the number of RN hours. LPNs. Certified nursing assistants (CNAs) were not counted here.

Transmission electron micrograph (TEM) revealed some of the ultrastructural morphology displayed by norovirus virions. Courtesy of CDC.


**Urinary Tract Surveillance Criteria from The Revised McGeer Criteria (2012)**

The so-called “McGeer Criteria” has been used for classifying nosocomial infections among the elderly in long-term care since 1992.

The original McGeer criteria were actually adapted from existing surveillance definitions that were being used for acute-care facilities (i.e. hospital) at the time and really weren’t intended for nursing homes. Additionally, in 1991, not a great deal was really known about infections in the elderly. As a consequence, the criteria were formulated after consensus discussions with infection control physicians, geriatricians and infection control practitioners with experience in LTCFs. Probably the best way to describe the process would be to say that the committee decided “That sounds good, let’s use it” type of approach. At that time, there was no evidence-based information available at the time and the criteria were never really validated.

When the original criteria were developed, nursing homes were much different than they are today. A few examples of the differences are:

- LTCFs rarely provided intravenous therapy,
- Rarely did a facility have any on-site laboratory or radiology services, Usually, only urine dipsticking was available,
- Diseases such as methicillin-resistant *S. aureus* (MRSA) and shiga-producing *E. coli* were rare,
- Many infections, such as vancomycin-resistant enterococci (VRE), Extended-spectrum beta-lactamase producers (ESBLs), multi-drug resistant tuberculosis (MDR-TB), *Clostridium difficile* and Norovirus were still topics for future discussion.

In 2009, The Society for Healthcare Epidemiology of America (SHEA) agreed that the McGeer criteria definitely needed updating because of the following:

- There has been a substantial increase in the evidenced-based literature about infections in the elderly in LTCFs,
- Very much improved diagnostics procedures are now available that can be used in surveillance programs. In 1992, we hardly knew what “EIA” stood for and “PCR” was still a dream for the future,
- The population “mix” in nursing homes has changed dramatically in the last two decades. We now have units designated as Subacute, Hospice, etc. No longer are nursing homes just a place where the elderly can receive some assistance with daily chores commonly referred to activities for daily living (ADLs).

**Surveillance Definitions for Urinary Tract Infections**

This month, we will concentrate on the surveillance definitions for urinary tract infections. It is appropriate that we should kick off discussions with this group of infections since month-in and month-out, they represent the “largest percentage” of nosocomial infections in LTCFs.

The new surveillance definitions for UTIs vary substantially from the ones in the old McGeer criteria. Several new criteria have been added as follows:

- Leukocytosis – this means an increase in white cells (notably neutrophils) in the peripheral blood. As a result, it will usually be necessary to obtain a complete blood count (CBC) when diagnosing a UTI,
- Bacterial Colony Counts – colony counts were not used in the old criteria because it was felt that their use would lead to over-counting and hence over-treating “asymptomatic bacteriurias”. In the new guidelines, there are two colony count ranges depending on whether the patient has a catheter or not (see page 6).
## Revised McGeer 2012 Definitions

### Surveillance Definitions for Urinary Tract Infections (UTIs) in LTC

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Comments</th>
</tr>
</thead>
</table>
| A. For residents with an indwelling catheter (both criteria 1 and 2 must be present)  
1) At least one of the following signs or symptoms subcriteria  
a) Acute dysuria or acute pain, swelling or tenderness of the testes, epididymis or prostate  
b) Fever or Leukocytosis (see table on reverse) and at least one of the following localizing urinary tract subcriteria  
i. Acute costovertebral angle pain or tenderness  
ii. Suprapubic pain  
iii. Gross hematuria  
iv. New or marked increase in incontinence  
v. New or marked increase in urgency  
vi. New or marked increase in frequency  
c) In the absence of fever or leukocytosis, then two or more of the following localizing urinary tract subcriteria  
i. Suprapubic pain  
ii. Gross hematuria  
iii. New or marked increase in incontinence  
v. New or marked increase in frequency | UTI should be diagnosed when there are localizing genitourinary signs and symptoms with a positive culture result. A diagnosis of UTI can be made without localizing symptoms if a blood culture isolate is the same as the organism isolated from the urine and there is no alternate site of infection. In the absence of clear alternate source of infection, fever or rigors with a positive urine culture result in a non-catheterized resident will often be treated as a UTI. However, evidence suggests that most of these episodes are likely not to be used to infection of a urinary source. |
| 2) One of the following microbiologic subcriteria  
a) At least $10^5$ (> 100,000) cfu/mL of no more than two species of microorganisms in a voided urine specimen  
b) At least $10^2$ (> 100) cfu/mL of any number of organisms in a specimen collected by in-and-out catheter (e.g. "straight" catheter) | Urine specimens for culture should be processed as soon as possible, preferably within one to two hours. If specimens cannot be processed within 30 minutes of collection, they should be cultured within 24 hours. |
| B. For residents with an indwelling catheter both criteria 1 and 2 must be present and  
1) At least one of the following signs or symptoms subcriteria  
a) Fever, rigors, or new-onset hypotension, with no alternate site of infection  
b) Either acute change in mental status or acute functional change, with no alternate diagnosis and leukocytosis  
c) New-onset suprapubic pain or costovertebral angle pain or tenderness  
d) Purulent discharge from around the catheter or acute pain, swelling or tenderness of the testes, epididymis or prostate  
2) Urinary catheter specimen with a least $10^5$ cfu/mL of any organism(s) | Recent catheter trauma, catheter obstruction or new-onset hematuria are useful localizing symptoms that are consistent with a UTI but are not necessary for diagnosis. Urinary catheter specimens for culture should be collected following replacement of the catheter (if the current catheter has been in place for > 14 days). |

**NOTE:** Pyuria does not differentiate symptomatic UTI from asymptomatic bacteriuria. Absence of pyuria in diagnostic tests excludes symptomatic UTI in residents of long-term care facilities. "cfu" refers to "colony-forming units" in the urine. Bold, italicics and underlined words were added by the Editor.
### Table 1
DEFINITIONS FOR CONSTITUTIONAL CRITERIA IN RESIDENTS OF LONG-TERM CARE FACILITIES (LTCFs)

#### A. FEVER
1) Single oral temperature > 100°F (>37°C)  
   **OR**
2) Repeated oral temperatures >99°F (>37.2°C) or rectal temperatures 99.5°F (>37.5°C)
3) Single temperature > 2°F (> 1.1°C) over baseline from any site (oral, tympanic, axillary)

#### B. Leukocytosis
1) Neutrophilia (> 14,000 leukocytes /mm³)  
   **OR**
2) Left shift (> 6% bands or > 1,500 bands/mm³)

#### C. Acute change in mental status from baseline (all criteria must be present: see tables on back)
1) Acute onset
2) Fluctuating course
3) Inattention
4) Either disorganized thinking or altered level of consciousness

#### D. Acute Functional declines
1) A new 3-point increase in total activities of daily living (ADL) score (range 0-28) from baseline, based on the following seven ADL items, each scored from 0 (independent) to 4 (total dependence)
   a) Bed mobility
   b) Transfer
   c) Locomotion within LTCF
   d) Dressing
   e) Toilet use
   f) Personal hygiene
   g) Eating

### Table 2
CONFUSION ASSESSMENT METHOD CRITERIA

<table>
<thead>
<tr>
<th>Acute Onset</th>
<th>Evidence of Acute Change in Resident’s Mental Status from Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluctuating</td>
<td>Behavior fluctuating (e.g. coming and going or changing in severity during the assessment)</td>
</tr>
<tr>
<td>Inattention</td>
<td>Resident has difficulty focusing attention (e.g. unable to keep track of discussion or easily distracted)</td>
</tr>
<tr>
<td>Disorganized Thinking</td>
<td>Resident’s thinking is incoherent (e.g. rambling conversation, unclear flow of ideas, unpredictable switches in subject)</td>
</tr>
<tr>
<td>Altered level of</td>
<td>Resident’s level of consciousness is described as different from baseline (e.g. hyperalert, sleepy, drowsy, difficult to arouse, nonresponsive)</td>
</tr>
<tr>
<td>Consciousness</td>
<td></td>
</tr>
</tbody>
</table>

McGeer Criteria – Continued
• Patients with no catheter: 10^5 per mL or 100,000 colony forming units (CFUs) per mL
• Patients with a catheter: 10^2 per mL or 100 CFUs per mL

On the previous pages are the actual surveillance definitions for UTIs. These pages can be printed and used as such as a check sheet for nosocomial UTIs.

On the second page are the criteria that have been set up for (1) the definitions of constitution criteria for residents in long-term care facilities and (2) assessment of confusion. Both these tables will be important and needed when assessing potential nosocomial UTIs.


Moro, M.L. 2012. Commentary: A significant step forward: new definitions for surveillance of infections in long-term care. *Infection Control and Hospital Epidemiology* 33: 978-980. Click here to go to the entire commentary.


**New Tickborne Disease emerges in Switzerland**

Hitherto, there have only been two pathogens in Switzerland and surrounding countries that are transmitted by ticks – Lyme borreliosis and early-summer-meningoencephalitis (caused by a virus).

Starting in 1999, a new pathogenic microorganism known as *Candidatus neoehrlichiosis mikurensis* has been found in Europe and some parts of Asia. This organism is tickborne and causes a disease known as “neoehrlichiosis”. Thus far, eight patients have been described with the disease, three of whom live in the Zurich, Switzerland area. The patients suffered from relapsing fevers with temperatures up to 40°C, weight loss and general malaise. Almost all of the patients thus far were immunocompromised in some way. All recovered fully after treatment with tetracycline.


**Topical Ivermectin for Head Lice**

Ivermectin is a broad-spectrum antiparasitic drug that has been used for some time now to treat infestations of parasitic worms such as strongyloidiasis, ascariasis, trichuriasis, filariasis and enterobiasis to mention a few. It is sold in the U.S. under the brand name Stromectol® and in Europe under the name Ivomec®.

In recent years, its use has expanded to treating mites such as scabies. In these cases, the use of Ivermectin is usually limited to treating cases that have been shown to be resistant to other treatments such as permethrin.

The FDA recently approved it to treat head lice in patients six months and older. In this case instead of being administered orally, a 0.5 % topical solution is applied.

A recent study published in the *New England Journal of Medicine* reported that a single, 10-minute, at-home application of Ivermectin was very effective in eliminating head lice.

Image depicts five head lice, *Pediculus humanus* var. *corporis*, which from left to right included three nymphal-staged lice, beginning with a stage N1, then N2, and thirdly a N3-staged nymph, followed by an adult male louse, and finally an adult female louse. Courtesy of CDC


New CDC Recommendations for The Use of Pneumococcal Vaccines for Immunocompromised Adults

In June of last year, CDC’s Advisory Committee on Immunization Practices (ACIP) recommended the use of the 13-valent pneumococcal conjugate vaccine (PCV 13; Prevnar 13®) along with the 23-valent pneumococcal polysaccharide vaccine (PPSV23; Pneumovax®). Both of these vaccines protect against the various serotypes of *Streptococcus pneumoniae*. Roughly 4,000 persons (mostly adults) die annually from this microorganism.

About 50% of the invasive pneumococcal disease among immunocompromised adults are caused by serotypes that can be found in the 13-valent vaccine. Another 21%, however, are caused by serotypes found only in the 23-valent vaccine. It stands to reason, therefore, that using both the vaccines in these patients would be a prudent move.

Here are the recommendations from CDC as they now stand:

- PCV 13 should be administered at the earliest possible opportunity to those persons who are eligible for the pneumococcal vaccine,
- Patients who have never previously received a pneumococcal vaccine should receive a dose of PCV 13 followed by a dose of the PPSV 23 at least eight weeks later,
- In the case of those patients who had previously received PPSV 23, they should be given a dose of PCV 13 at least one year after the last PPSV 23 dose,
- If additional doses of PPSV 23 are needed after that, they should be administered at least eight weeks after a dose of PCV 13 and at least five years after the most recent PPSV 23 dose.

The chances of a person with a high-risk medical condition developing an invasive pneumococcal disease is up to 20 times higher than in the case of adults with no high-risk conditions. Cost effectiveness models set up by CDC indicate that the use of these two vaccines together is very cost-effective and will increase the quality of life in these individuals.


Which Kind of Swab is Best for Influenza Testing?
Researchers collected both nasal and nasopharyngeal swabs from 240 adult patients with acute respiratory illness. They found that the sensitivity of the nasal swab was 89% whereas the sensitivity of the nasopharyngeal swab was 94%.

Their conclusion was that the difference in sensitivity between the two collection procedures was *not* significant.


Is there Such A Thing as A “Relapse” of Lyme Disease?
This argument has been going on for some time. Most experts feel that there is no such thing (or very rare) as a “relapse” in Lyme disease. There are others (small minority) that insist that it may be necessary to treat the patients for months/years if the symptoms persist.

In a study involving 17 persons with active Lyme symptoms within 5 years of being treated, researchers found not a single person who was infected with the *same* strain the second time.

Their concluding statement was as follows: “Although *B. burgdorferi* infection may persist for years in untreated patients, the weight of evidence is strongly against persistent infection as the explanation for persistent symptoms in antibiotic-treated patients with Lyme disease.”


FDA Approves First Seasonal Flu Vaccine manufactured using Cell Culture Technology

FDA News Release Dated 20 November 2012

The U.S. Food and Drug Administration announced 20 November 2012 the approval of “Flucelvax™”, the first seasonal influenza vaccine licensed in the United States produced using cultured animal cells, instead of fertilized chicken eggs. Flucelvax is approved to prevent seasonal influenza in people ages 18 years and older.

The manufacturing process for Flucelvax is similar to the egg-based production method, but a significant difference is that the virus strains included in the vaccine are grown in animal cells of mammalian origin instead of in eggs. Cell culture technology has already been in use for several decades to produce other U.S. licensed vaccines.

“This approval represents the culmination of efforts to develop a seasonal influenza vaccine using cell culture as an alternative to the egg-based process,” said Karen Midthun, M.D., director of the FDA’s Center for Biologics Evaluation and Research.

Cell culture technology is another manufacturing alternative to conventional egg-based influenza vaccine production. Advantages of cell culture technology include the ability to maintain an adequate supply of readily available, previously tested and characterized cells for use in vaccine production and the potential for a faster start-up of the vaccine manufacturing process in the event of a pandemic.

Flucelvax was evaluated in a randomized controlled clinical study conducted in the United States and Europe that involved about 7,700 people ages 18 to 49 years who received either Flucelvax or a placebo. The study showed that Flucelvax was 83.8 percent effective in preventing influenza when compared to placebo. The use of Flucelvax in people older than 49 is supported by antibody responses in about 1,700 adults which showed it to be comparable to Agriflu, an egg-based seasonal influenza vaccine approved by FDA for use in people 18 years and older.

The safety evaluation included about 6,700 individuals who received Flucelvax in controlled clinical studies. Injection site and general reactions to Flucelvax were typical of those seen with current influenza vaccines. Pain, redness and soreness at the injection site and headache and fatigue were the most common reactions. Getting vaccinated each year remains one of the best ways to prevent seasonal influenza. The Centers for Disease Control and Prevention recommends that everyone 6 months of age and older receive an annual influenza vaccine.

There doesn’t seem to be any contraindications for this vaccine in the case of patients allergic to eggs.

Flucelvax is manufactured by Novartis Vaccines and Diagnostics GmbH, Marburg, Germany.

For more information:

Flu.gov: consumer site for flu information
FDA: Influenza Vaccine Safety & Availability
CDC: Seasonal Influenza – Who should get vaccinated against influenza (Flu)
Flu Vaccine Finder

Ask The Experts

Endolimax nana

Question: I recently had a stool specimen examined which indicated that I have a “few” trophozoites of Endolimax nana in my stool. My physician says that this is perfectly harmless but I have read that it can cause disease. Could it be related to intermittent diarrhea?

Answer: Yes it can. However, in the vast majority of cases, Endolimax nana (and several other amoebae) are usually harmless sojourners but there are documented cases of illness. It can cause intermittent or chronic diarrhea.


**New Test Offerings from Quest Diagnostics**

**HIV-1 Coreceptor Tropism, Proviral DNA**

*Clinical Significance*

The use of CCR5 antagonists requires screening for viral tropism to exclude patients harboring X4 or D/M virus. The Proviral DNA tropism test is useful for determining viral tropism in patients with undetectable HIV-1 viral RNA (virologically suppressed).

*Specimen requirements*

- 2 mL whole blood collected in a K₂ EDTA (lavender-top) tube.
- Blood: collect blood in a K₂ EDTA (lavender-top) tube. Peripheral blood mononuclear cells: collect blood in BD Vacutainer® CPT™ tube. After collection, store the tube upright at room temperature for not longer than two hours before centrifugation. Remix blood sample immediately prior to centrifugation by inverting 10 times. Centrifuge at 800 X g for 30 minutes, room temperature with brake off.
- Immediately remove plasma (> 3 mL) from top layer without disturbing cell layer. Add 0.5 mL of phosphate-buffered saline to retain layer of plasma/cells. Cap tube and gently mix by inversion 10 times. Transfer the upper layer of cells (up to 3 mL) in plasma/phosphate-buffered saline to a sterile K₂EDTA tube. Store and ship frozen at < 60°C. Do not send original glass CPT™ or plasma supernatant to the laboratory.

*Transport temperature*

Room temperature

*Specimen Stability*

Room temperature and refrigerated: 7 days

Frozen: 28 days

*Set-up/Analytic Time*

Set up: Monday and Thursday
Report available: 4 to 8 days

*Reference Ranges*

Accompanies report

*Methodology*

PCR and DNA sequencing

*Performing Site*

Quest Diagnostics Nichols Institute, San Juan Capistrano, CA

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FROM THE EDITOR’S DESK

Fall Foliage in New England

At no time of the year is New England more beautiful than in fall with its magnificent foliage. Just how magnificent it will be depends on a number of factors - the amount of rain and heat during the summer and early fall, sunlight, frost, etc.

In the fall of 2012, all of these factors came nicely together to give us one of the most beautiful falls in many decades and it stretched out over several weeks. We were fortunate enough to be able to take several days off and make a number of trips up into the Berkshires (the Western end of Massachusetts just below Vermont) and into Vermont itself. Vermont and New Hampshire are generally considered to be the “crown jewels” in the fall foliage display.

Best shot of the year – We were driving along a dirt road in the Berkshires when we came across this little country pond. We didn’t realize it until after we looked at our pictures on the computer that this picture took the prize for the year.
Going up Rockwell Road on Greylock Mountain, the highest mountain in Massachusetts. In the 19th century, some literary notables would to get high on cocaine and race up this road in their horse drawn carriages. When the Editor first read this when he was teenager, he didn’t know what cocaine was.

A New England “Pumpkin Patch”. It is quite traditional in many small New England towns for the school children at a Church to sell pumpkins at their church to raise money for youth activities. This is a picture of South Congregational Church in Granby, CT

A photo of the mountains adjacent to Mt. Greylock. This is a picture looking out over Saddleback Mountain, the second highest mountain in the State. Picture courtesy of Bruce and Julie Mason