

AGROMEDICINE PROGRAM UPDATE

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PROGRAM NOTES

>Greetings to all as we come within a week of Spring!

I appreciate your support of the Agromedicine Program and your continued consultations and invitations to speak. Please don't hesitate to call with questions—if we don't have the answer, we're happy to do research to get it.

Dr. James Lessenger, reports that his editing of the manuscript of the upcoming textbook—Handbook of Agricultural Medicine—is complete. He expects publication by fall 2005.

It has taken longer than anticipated to complete our mailing list for our survey of SC primary care practitioners regarding their experience with serious spider bites, tick-borne diseases and fire ant stings. The survey has been approved by the IRB, but mailing labels won't be complete until sometime in April. If you are a PCP, look for the survey in April, I hope!

RECENT CONSULTS

>Persistent swelling—a spider bite?

A retired college professor called with questions about prolonged symptoms after a presumed spider bite. After working on his “old home place” in a state in the deep South, he developed nausea, abdominal cramping and axillary pain. At around the same time he noted an inflamed area on his finger which became swollen. The swelling and inflammation persisted for over a month.

Systemic symptoms resolved over a matter of hours, and local symptoms have very gradually improved, despite being treated twice with a course of antibiotics. There has been no death of skin tissue and no pus drainage. The area was explored once, looking for a foreign body. A culture obtained at that time was negative.

The history of working in an old home that has been unoccupied for some time, a presumed bite site that has minimal symptoms initially

followed by systemic symptoms that include muscle cramping and pain in the area of lymph drainage of the bite site all suggest a black widow spider envenomation. The slow resolution of swelling is often reported, with local symptoms sometimes persisting for six months or more.

>Bed bugs

A 24 year old woman called on referral from Dr. Eric Benson, Clemson Entomologist (and co-host of **Got Bugs?** on SC educational radio). Bed bugs had been found in her home. The problem had been successfully treated, but she had questions regarding the risks of bed bugs to humans.



Cimex lectularius, the common bed bug, is a blood-sucking parasite about 5mm long, yellow to reddish-brown in color. It feeds at

night and hides in crevices such as seams in mattresses, behind loose wall paper, etc.

Bites from the bugs often produce hives and local inflammation, probably due to allergy to salivary proteins injected during feeding. Bed bug bites are generally self-limited, requiring only general hygiene to prevent infection. Antihistamines may be required for itching. While bed bugs have been found to be infected with some disease causing organisms (anthrax, plague, typhus), they rarely, if ever, transmit these diseases to humans.

Control of bed bugs is difficult and usually requires a professional pest control operator. There are several excellent sources of information on bed bugs on the web. One of the best is <http://hgic.clemson.edu/pdf/HGIC2511.pdf> a two-page handout that can be printed for patients.

FROM THE LITERATURE

>BT Cotton and Farmer Health

Researchers at Rutgers and the Center for Chinese Agricultural Policy in Beijing report on health effects of the use of BT cotton in northern China from 1999-2001.¹ 33% of farmers who exclusively used non-Bt cotton reported pesticide poisoning, but only 9% of those who exclusively used Bt cotton reported such cases. This is the first study

This is the first study to show a direct link between the adoption of a genetically modified crop and improvements in human health.

¹ Hossain F, Pray CE, Lu Y, et al. Genetically modified cotton and farmers' health in China. *Int J Occup Environ Health* 2004;10:296-303.

>Airborne Drug-resistant Bacteria in a Swine CAFO

Air from a single swine concentrated animal feeding operation (CAFO) was sampled on two days of routine operation using standard methodology.²

There were 40,000 colony forming units per cubic meter of air. 34% were *Enterococcus*, 32% were *Staphylococci* and 33% were *Streptococci*.

98% of isolates were resistant to at least two antibiotics commonly used in swine production (erythromycin, clindamycin, virginiamycin or tetracycline-all approved for use in swine production for growth promotion) and 93% were resistant to three antibiotics used in the process. None were resistant to vancomycin (which has never been approved for use in swine production in the US).

The study authors suggest that inhalation of air within or near swine operations may serve as another exposure pathway for the transfer of multidrug-resistant

bacteria from swine to humans.

Editorial comment:

While the authors use the word "may" in their conclusion, there are still many questions that need to be answered before accepting this assumption. This is data from a single operation on two days (60 minutes of sampling time, actually). Is this level of airborne bacteria present consistently in this facility, in other similar facilities? What does 40,000 CFU/M3 mean? What is the level of bacteria in the air in a barn, a bathroom, or outside air? Is there an association between exposure to these bacteria at these concentrations and human or animal disease?

The answers to all of these questions are unknown as far as I can tell from current literature. Much more research needs to be done. For the present, the move to cease the use of antibiotics purely for growth promotion seems reasonable and prudent. Worry about possible transfer of multidrug-resistant bacteria from swine to humans working in CAFO's or living in the vicinity of these operations is very likely not.

²Chapin A, Rule A, Gibson K et al. Airborne multidrug-resistant bacteria isolated from a concentrated swine feeding operation. *Environ Health Perspect* 2005; 113:137-142