April/May 2011

Spring Issue

Gulf Coast Society of Health-System Pharmacists

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Inside this issue:

President's Report

Monica Green, PharmD, BCPS

Welcome GCSHP members to a brand new year! I am excited to serve as your President for 2011-2012.

I recently returned from the TSHP Annual Seminar and various ideas were shared to increase membership and improve membership satisfaction. This year the board members are very excited to offer you alternatives to continuing education program events.

We will continue our live events, but would also like to give our membership the opportunity to participate in webinars and other online educational activities and improve our communication utilizing Facebook and Twitter.

One of the many breathtaking views from the TSHP/Alcalde Conference meeting in San Antonio, Texas.

We will still continue to support our students from Texas Southern University and University of Houston, as well as promote the TSHP mentorship program. We will also continue supporting our technician members. We are looking to expand and therefore are in search of leaders! If you are interested in participating as a New Practitioner Liaison, Organizational and Professional Affairs Council Chair, or Legal and Public Affairs Council Chair, I would like to hear from you.

If any of the above positions interest you or if have any ideas to improve our membership, please email me at Monica_Green@hchd.tmc.edu.

Monica

Leaders Wanted

Legal and Public Affairs Council Chair

This Council shall:

- Identify community resources available to the Society
- Coordinate requests from the community for guest speakers and information pertaining to pharmacy
- Coordinate the release of any public relations material to the news media and to the public regarding the Society or the profession of pharmacy
- Coordinate all official awards made by the Society

Organizational and Professional Affairs Council Chair

This Council shall:

- Review the organizational structure of the Society
- Analyze its effectiveness, and making recommendations for improvements
- Draft proposed amendments to the Constitution and Bylaws

June 2011

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

Schedule of Events

- May 4
  GCSHP CE
  ACS Management
  530-630
- May 5 Cin-co De Mayo
- May 8
  Mothers' Day
- May 17
  Houston Read Commission
  Literacy Leadership
  Awards
- May 30
  Memorial Day
- June 19
  Father's Day
- July 4
  Independence Day

July 2011

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
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24	25	26	27	28	29	30
31						

Images from Alcalde: (1) Dr. Adetola Ademolu, Ali-Reza Shah-Mohammadi and Ryan Roux prepare to be dazzled by resident podium presentations. (2) GCSHP President Monica Green catches up with Jodie Gee and Quyen Nguyen. (3) Ketal Patel, Kandi Icenhower and Kristine Phansana relax after resident podium presentations.

GCSHP Supports the Houston READ Commission

to assist in the mission to lead and mobilize a coalition of literacy providers and resources to improve the literacy landscape of Houston

For more information visit www.houread.org

The Houston READ Commission (HRC) is a nonprofit organization whose mission is to lead and mobilize a coalition of literacy providers and resources to improve the literacy landscape of Houston.

On Tuesday, May 17, 2011, the HRC held the 2011 Mayor's Literacy Leadership Award Breakfast at The Briar Club in Houston, TX. Dr. Jennifer Christensen (HRC Advisory Board Member) and Dr. Ali-Reza Shah-Mohammadi from the Gulf Coast Society of Health System Pharmacists (GCSHP) were in attendance with the goal of furthering the profession's role in advancing literacy in Houston.

GCSHP is forming a partnership with the HRC in hopes of expanding pharmacists' exposure in the community and promoting health literacy. Mayor Annise Parker encouraged involvement of the community to help advance literacy within our city. GCSHP hopes to continue to support the Mayor's efforts and HRC's goal of improving literacy within the city of Houston.

For more information on how to get involved, please email Dr. Christensen at jchriste@bcm.edu.

STUDENT SECTION

University of Houston SSHP
Sunaina Rao, President

It's hard to believe that summer has already arrived! Although the spring semester was very busy for all students, we truly feel that it's been very successful for UH SSHP!

At the 6th annual UH/TSU Residency Mentoring Social in January, we had 35 residents and 20 directors/preceptors from 13 different programs and 76 students from both schools. All students found this event to be very helpful in terms of networking and exposure to local residency programs. The grand success of the event could not have been possible without the financial support from GCSHP for which we cannot be more thankful!

We started working on our TSHP initiative this semester by presenting 2 posters about Antibiotic Awareness and Medication Safety to college students during the lunch hour. We conducted a Brown Bag medication review at an assisted living facility with Dr. Cottreau and Dr. Matthew Wanat (TMC PGY1) as our preceptors. Our chapter also participated in the American Heart Association's Vestido Rojo Health screening, Stride4Stroke walk, and American Diabetes Association Feria de Salud health screening. Besides our usual campus meetings and journal clubs, we developed training sessions for the Clinical Skills and Disease State Management competitions to promote active participation during TSHP Annual Seminar.

All of the 34 students who attended TSHP Annual Seminar at San Antonio in April thoroughly enjoyed the student programming, competitions as well as the pro-health system pharmacy atmosphere present through the entire weekend! From UH, 8 teams composed of 16 students participated in the Clinical Skills Competition, 24 students in the Disease State Management Competition, and 9 students presented posters. We are happy to announce that our chapter won the Student Involvement Award presented by the TSHP Student Section Executive Council and our Immediate Past President, Amy Moss, won the Glenda Lawson McRee Pharmacy Student Award for commitment to the profession through service, practice, education or research.

While our school is still collecting Residency Match information from our P4 applicants, our chapter knows of at least 14 students who matched to programs throughout Texas, Kentucky, Massachusetts, and Florida.

This year, a major part of the success of this organization is credited to our outgoing President, Avani Desai, who's tremendous efforts, time, dedication and passion has set high standards! We concluded the semester with elections and held a New Officer Induction and Retreat. Finally, we would like to thank GCSHP President 2011-2012, Dr. Monica Green for visiting with us and inducting the following new officers!

President: Sunaina Rao
President Elect: Amy Lehnert
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VP of Communications: Twisha Patel
Secretary: Melanie Laine
Treasurer: Allan Ray Barizo
Historian: Saroosh Lodhi
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Service Chairs: Holly Murray and Carly Discher
Convention Chairs: Gregg Morgan and Jessica Preston
Fundraising Chairs: Tham Pham and Vaidehi Bhatt
Social Chairs: Kasey Kellar and Sarah Jung

RESIDENT SECTION

Are there other Mycobacterium diseases besides tuberculosis?

Lauren Biehl, PharmD, RPh
St. Lukes Episcopal Hospital

Yes! There are approximately 100 species of *Mycobacteria*. These gram-positive, catalase-positive bacteria are shaped like rods or filaments and belong to the family *Mycobacteriaceae*. Mycobacteria are considered acid-fast, meaning that they resist decolorization by acids when staining. The two most common species of Mycobacteria causing human disease are *M. tuberculosis*, which causes tuberculosis, and *M. leprae,* which causes leprosy. [1]

Nontuberculous mycobacterial organisms (NTM) are widespread throughout the environment in water, soil, milk, and food. NTM diseases are often a diagnosis of exclusion. After an acid-fast culture returns with a positive result, other pathologies such as tuberculosis and lung malignancy should be ruled out. [2]

M. leprae is the cause of the disease leprosy, also known as Hansen's disease, and is the second most common mycobacterium pathogen worldwide after *M.tuberculosis*. [3] There were 245,000 new cases diagnosed in 2009, but only approximately 100 of these cases were in the United States.[4,5]

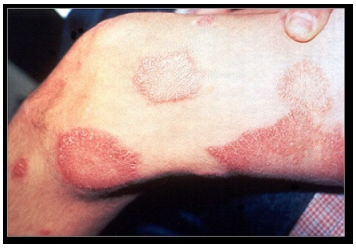

Figure 1. Hansen's disease, leprosy. U.S. Public Health Service.

This disease dates back thousands of years and is first mentioned in writing in 600 B.C. Despite the age of this disease, the mechanism of transmission remains unknown.[4] From 1873 when the bacteria was discovered, patients with leprosy were quarantined in leper colonies. The invention of new drug therapies for treatment of the disease in the 1940's likely made isolation unnecessary. However, this quarantine was not legally lifted in 1969.[6]

Leprosy most commonly affects the skin, peripheral nerves, upper respiratory tract, and eyes.[4] The word "leprae" is derived from the Greek "lepros" meaning "scaly" or "rough."[7] *M. leprae* can remain latent for up to twenty years prior to symptom onset.[4] Leprosy can be classified based on clinical manifestations. Pauci-bacillary leprosy is defined as one to five skin lesions and multi-bacillary leprosy is defined as more than five skin lesions. Pauci-bacillary leprosy requires a two drug regimen for six months, while multi-bacillary leprosy requires a three drug regimen for twelve months, as described in Appendix A. [8]

Mycobacterium avium complex (MAC) is caused by *M. avium* or *M. intracellulare* and is the most common NTM in the United States. The source for most MAC infections appears to be natural water sources. MAC can present as a localized pulmonary disease, but is often seen as disseminated in AIDS patients. Disseminated MAC has a high morbidity and mortality rate if left untreated.[9] The Center for Disease Control recommends MAC prophylaxis for AIDS patients with CD4+ <50, which consists of a macrolide, with no preference for azithromycin or clarithromycin.[10] Treatment of MAC in AIDS patients should be continued lifelong, or until the patient is asymptomatic and CD4+ >100 for 12 months. [9] (Appendix A—see page 7).

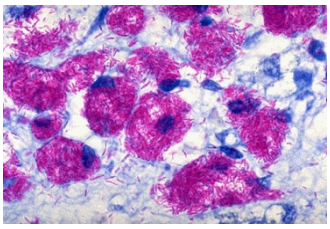

Figure 2. MAC. University of Utah School of Medicine.

Mycobacteria kansasii is a mycobacterium endemic to Texas and is commonly found in tap water. Risk factors for *M. kansasii* include chronic obstructive pulmonary disease, previous Mycobacterial disease, malignancy, and alcoholism. It presents in a similar manner to tuberculosis including cavitary infiltrates on chest x-ray as seen in Figure 3. Like MAC, *M. kansasii* can present as disseminated disease in HIV patients, however, there is no prophylaxis regimen for *M. kansasii*. Patients should continue to receive drug therapy for *M. kansaii* until on anti-retroviral therapy and sputum culture negative for 1 year.[9]

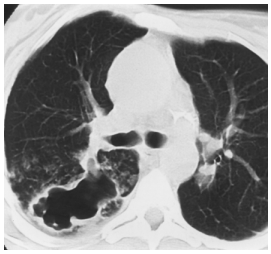

Figure 3. *m. kansasii*. Erasmus JJ, et al.

M. marinum can be found in swimming pools and fish tanks as well as fresh and salt water environmental sources. It was first discovered in diseased fish, and was named to reflect its marine source.[16] It causes granulomatous soft tissue infections involving skin and bone in both healthy and immunocompromised hosts. Organisms are introduced through previous abrasions, scratches, or puncture wounds. The lesions typically appear on elbows, knees, feet, and hands. Most (84%) patients are exposed through fish tanks. Recommended treatment includes clarithromycin and ethambutol, with the addition of rifampin if osteomyelitis or other deep infection. It is recommended to treat with two active agents for 1-2 months after resolution of symptoms, and usually 3-4 months in total. [9] (Appendix A—see page 7).

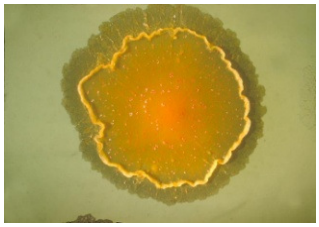

Figure 4. M. marinum. Shepard CC.

Nontuberculous Mycobacterial organisms are widespread in the environment, and can cause significant clinical infection. Research continues to provide evidence of efficacy for the regimens currently in use as well as to develop new treatment options for these pathogens.

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What's So Scary About NDM-1 Bacteria?

By Carla Jardin, PharmD
PGY1 Pharmacy Practice Resident
St. Luke's Episcopal Hospital

Background

Resistance to antimicrobial agents is increasing around the world. Multi-drug resistant (MDR) Gram-negative organisms are becoming more prevalent.[1,2] Carbapenems are considered the drugs of choice for Extended-Spectrum Beta-Lactamases (ESBLs), which are resistant to most other β-lactams.[2] However, *Klebsiella Pneumoniae* Carbapenemases (KPCs) have been identified in the US, Israel, Turkey, China, India, UK, and Nordic countries.[2]

NDM-1: New MDR Kid on the Block

A new carbapenem-resistant gene, *bla*$_{NDM-1}$, has been identified and is thought to have originated in New Delhi, India.[1] NDM-1 (New Delhi metallo-beta-lactamase) bacteria are spreading throughout the world in patients who receive medical treatment in India or Pakistan and then travel to another country (Sweden, United Kingdom, Australia, United States).[1,2,3,4] One published case was a 59-year-old male native to India who lived for several years in Sweden and was found in a Swedish hospital to have NDM-1 *Klebsiella pneumoniae* that was sensitive only to colistin.[2] The patient had previously traveled to India and was treated in a hospital for a large gluteal abcess in India in December of 2007 and was transferred to Sweden for further care in January 2008.[2]

Cases of NDM-1 in the US

From January to June 2010, three cases of NDM-1 *Enterobacteriaceae* isolates were identified in three states in the USA (Table 1—below).[4]
NDM-1 has been shown to be resistant to all β-lactam agents with exception of aztreonam.[4]

Table 1. CDC Case Reports on NDM-1 in US[4]

	Enterobacteriaceae
Case 1	*Escherichia coli*
Case 2	*Klebsiella pneumoniae*
Case 3	*Enterobacter cloacae*

The three US cases of NDM-1 pathogens displayed resistance to aztreonam which was thought to be attributed to other mechanisms.[4]

Pharmacotherapeutic Approach to NDM-1

Due to resistance of NDM-1 to β-lactams, only a few drugs remain that may provide activity against NDM-1 *Enterobacteriaceae*. These agents include: colistin, polymyxin B, tigecycline, and fosfomycin.

Colistin and Polymyxin B:

Colistin and polymyxin B demonstrate concentration-dependent bacterial cell death by binding to the anionic lipopolyscarrharide molecules on the outer cell membrane of Gram-negative bacteria and displacing calcium and magnesium which increases the permeability of the cell envelope and allows cellular contents to leak out.[5] Colistin has activity against most Gram-negative bacteria, including *Pseudomonas aeruginosa* and *Acinetobacter*.[5] Polymyxin B has activity against all Gram-negative bacteria except for *Proteus* and *N. gonorrhoeae* and *N. meningitidis*.[5]
Adverse effects most commonly associated with colistin and polymyxin B include: nephrotoxicity, neurotoxicities (transient numbness and tingling in extremities, pruritis, vertigo, dizziness, slurring of speech), and neuromuscular blockade resulting in respiratory tract paralysis and acute respiratory failure.[5,6] For patients presenting with NDM-1 bacteremia, colistin or polymyxin B are the drugs of choice.

Tigecycline:

Tigecycline is a bacteriostatic drug that binds to the 30S ribosomal subunit and inhibits bacterial translation in protein synthesis.[5] Tigecycline should not be used to treat blood stream infections due to its large volume of distribution to tissues.[5] Tigecycline does not have activity against *Pseudomonas*.[5] A loading dose of 100 mg should be administered to all patients, followed by 50 mg every 12 hours.[5] The side effect profile is minimal with gastrointestinal upset and decreased fibrinogen levels.[5] Tigecycline may be useful for the treatment of NDM-1 bacterial infections that are not blood-stream related.[5]

Fosfomycin:

Fosfomycin is only indicated for treatment of urinary tract infections caused by *E. coli* or *E. faecalis*.[5] However, it is used to treat other pathogens in some cases due to a lack of other viable antimicrobial agents. Fosfomycin exhibits bactericidal activity by inactivating the pyruvyl-transferase enzyme which synthesizes peptidoglycans for bacterial cell wall formation.[5] The main adverse effect associated with fosfomycin is mild to moder-

ate gastrointestinal upset.[5] Fosfomycin may be effective in treating NDM-1 bacterial urinary tract infections.[5]

Conclusion – What's so scary about NDM-1?

Although NDM-1 is not endemic to the US, NDM-1 forces us to face a harsh reality - the incidence of NDM-1 is likely to increase as MDR becomes more prevalent. It is important to emphasize that pharmacists should strive to perform optimal antimicrobial stewardship by closely monitoring orders for appropriate dosing and monitoring drug levels closely in order to minimize the development of resistance. Future therapies must be developed for MDR Gram-negative pathogens before all of our antibiotics are ineffective.

Until new drug therapies are developed, there are few options for treating NDM-1. Colistin or polymyxin B are the preferred treatments for NDM-1 bloodstream infections. However, if a NDM-1 bacterial infection is located in tissue, either colistin or tigecycline may be considered. If a patient suffers a NDM-1 urinary tract infection, fosfomycin may be the preferred treatment.

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(Biehl—continued from page 5)

Appendix A	Treatment	Duration
M. leprae	**Pauci-bacillary** : Rifampicin 600 mg monthly AND Dapsone 100 mg daily **Multi-bacillary**: Rifampicin 600 mg monthly AND Clofazimine 300mg monthly AND Dapsone 100 mg daily AND Clofazimine 50 mg daily	6 months 12 months
MAC (disseminated)	**Prophylaxis in HIV patients with CD4+ <50:** azithromycin 1200 mg/week OR clarithromycin 500 mg BID **Treatment:** clarithromycin 500 mg BID OR azithromycin 500 mg daily AND ethambutol 15 mg/kg/day +/- rifabutin 300 mg daily	Prophylaxis: Until CD4+ >50 Treatment: lifelong or CD4>100 for 12 months and asymptomatic
M. kansasii	Isoniazid 5mg/kg/day AND rifampin 10mg/kg/day AND ethambutol 15 mg/kg/day AND pyridoxine 50 mg daily	Until sputum culture negative for 1 year
M. marinum	Clarithromycin and ethambutol Add rifampin if osteomyelitis or other deep infection (Doses unspecified)	1-2 months after resolution of symptoms, typically 3-4 months in total

(Jardin—continued from page 6)

Table 2. Polymyxin B and Colistin IV Dosing

CrCl (ml/min)	Polymyxin B[5,6]		Colistin[6]
	Loading Dose	Maintenance Dose	
> 80	N/A	2.5-5.0 mg/kg/day divided in 2 doses	5 mg/kg/day divided q8h
30-80	2.5 mg/kg	1.0-2.5 mg/kg daily	2.5-5 mg/kg/day divided q8h
< 30	2.5 mg/kg	1.0-1.5 mg/kg q2-3days	1.25-2.5 mg/kg/day divided in 1-2 doses
anuric	2.5 mg/kg	1.0 mg/kg q5-7days	1.25 mg/kg q24-36h

Congratulations !!

GCSHP would like to congratulate

everyone who secured a position with a residency program.

Let us know who you are and where you are going!

Send your information to Ogechi_Eshleman@hchd.tmc.edu.

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Submit contributions to

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