Supplemental Materials
for
Implementation of a Service-learning Module in Medical Microbiology and Cell Biology Classes at an Undergraduate Liberal Arts University
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Service Learning Assignment – Student Handout

General Information

The service-learning assignment you will do this semester will require that you volunteer at an under-served clinic in the city for a total of 10 hours throughout the semester (you may do more if you wish and if the clinic can accommodate you). You will identify top infectious diseases or ailments treated at the medical facility at which you volunteer, and once you pick one, you will research the disease using primary literature, review articles, and your textbook. Additional sources of information should be relevant and can include the CDC webpage (www.cdc.gov), the US Department of Health (www.hhs.gov) and the Texas Department of Health (www.dshs.state.tx.us). Working in your groups, you will turn in two separate assignments focusing on the disease or ailment you chose:

1. You will create a brochure or display designed to educate patients
2. You will present your research on the disease to the class in the form of an oral presentation

Additionally, you will each be required to keep a reflective journal of your volunteering experience in the form of a blog. Please see more details on each of these assignments below.

You will be assessed using the blog (individual work, 50 points), the educational materials and oral presentation (group work, 20 and 25 points, respectively for a combined 45 points), and a peer evaluation (5 points, awarded by your team-members) for a total of 100 points (20% of your final grade for this course). This assignment is designed to expose you to clinic situations in Houston. It will also offer you the opportunity to enhance under-served patient lives by providing them with educational materials to improve their health. You will receive Service Learning credit for this course.

I. Volunteering

You do not need any prior experience or clinical preparation to participate in this volunteering effort. The clinics where you work will be responsible for training you and most will require that you attend an orientation session prior to beginning your work.

You are responsible for setting up your own volunteering commitment. To do so, you can do one of three things:

1. Contact one of the under-served clinics in Houston that has agreed to work with us for this project (list with contact information for each clinic is provided as a separate handout). Please bear in mind that each clinic will cater to a very different section of the population, and that you should look for volunteering opportunities in places that you find the most interesting. Please make it a point to research each clinic before you contact them. Also, depending on where you will volunteer, you will have to go through their specific process for handling volunteers (e.g., some places will ask that you fill out
an application form, some places require you to sign a confidentiality agreement, some places will not let you deal with patients directly, etc.). All clinics require a background check prior to volunteering. Contact the clinic for more information about this process.

2. Set up your own volunteering at a clinic of your choice, as long as the facility serves the under-represented. You may choose to contact any of the clinics designated as an HPSA (Health Professional Shortage area) or a MUA/P facility (Medically Underserved Area or Population) in the city. The US Health Resources and Services Administration (HRSA) determines whether or not a geographic area, population group or facility falls into this designation. You can research HPSA and MUA/P facilities by location at the HRSA website (http://hpsafind.hrsa.gov/).

3. If you are already volunteering at a medical facility, see me about having this count towards the volunteering portion of this assignment.

Once you have set up your volunteering, make sure you keep track of your hours. You will need a letter from the clinic certifying the time served once you complete the 10 hrs minimum. Remember, that is the minimum requirement – you can certainly do more!

II. Reflective Blog (50 points)
You will maintain a reflective writing piece about your volunteering experience. This part of the assignment is completely free and you are encouraged to be as creative as you want. The only requirement is that your writing be published on the web in the form of a weekly blog. A blog (or web log) is a web-based means of communication where people post regular entries on the web. Readers follow your comments and can post comments. You will be required to write about your experience on a weekly basis (you may do so more often if you wish to but you MUST post one blog every 7 days). You can also add pictures, music, or video to your blogs. Be as creative as you like! Some of you may already be familiar with blogging – setting up a blog is very simple. There are a wide variety of free blog services and you are welcome to use any of them that you find most user-friendly. Some popular blog services include blogger (www.blogger.com), weebly, wordpress, blog.com and yahoo 360, to name only a few. You are welcome to use whichever service you like. Once you set up your blog, send me the link via email so I can start following it.

To get the exercise rolling, you can start writing about what your expectations are for this experience. You can write about what you think you can contribute, what the significance of your involvement might be, and what you expect to get from all this.

III. a) Health-related Educational Brochure or Display (20 points)
Through your interactions at the clinic, you will identify the main infectious diseases or ailments that are treated by the clinic, and in groups of 4, you will design a brochure to educate the patients on relevant information pertaining to the ailment. Alternatively, your group might chose to come up with a display that can be placed in the patient waiting area in the clinic. Some points to consider when working on this assignment:
1. Think about the information that will be useful to include. Patients do not want to know if a causative agent for their infection is Gram positive or that a particular disease inhibits a certain cascade pathway.
2. Make sure your materials are not too text-dense. Nobody reads the brochure if there is too much information, and the point is to educate the patient, so you want them to actually read it!
3. Make your brochure attractive and interesting so that patients will want to pick it up and read it. Use figures, bullets and color to make it more interesting to potential readers.
4. Sections that would be useful to include:
   a. Brief description of disease or ailment, including causative agent if relevant (what is it and why do I get it)
   b. Symptoms (how does my body react if I have it)
   c. Diagnosis/tests available (how can doctors tell if I have it)
   d. Treatment or prophylaxis (what can I do if I have it)
   e. Prevention (how do I avoid getting it)
   f. Links to further sources of information (where can I read more about it)

b) Oral presentation on disease or ailment (25 points)
Your team will also be responsible for an oral presentation on the disease or ailment that you chose which you will deliver to the class at the end of the semester. This assignment is meant to be more scientific and technical than the brochure. You should include a minimum of 3 primary references and at least one review article in your reference list. Presentations will be 15 minutes long, with an additional 5 minutes for questions from the audience. Your presentation should include the following material:
   1. A detailed example of the causative agent (pathogen) or of the cellular or molecular cause of an ailment.
   2. A detailed explanation of the mode of action of disease, including molecular and cellular pathways involved.
   3. A description of the effects of the disease on the organism/cell and why these effects occur.
   4. A contextual explanation of the relevance of the disease/ailment to the community (mortality/morbidity information, biostatistics data if available, etc.).
   5. The biotechniques used in diagnosis and treatment of the disease/ailment.

c) Peer evaluation (5 points)
Each person will evaluate their group members in regard to their particular contribution to the project.

All students are also required to take a survey about the service-learning experience at the end of the semester. This data gathered from this survey gives us valuable feedback and information that help make this project better. Thank you for participating.

I hope you have a wonderful and rewarding experience!
Service Learning Project - Examples of student blogs

EXAMPLES OF EXCELLENT BLOGS

TUESDAY, APRIL 14, 2009

"Treating the Labs"

When I was shadowing, I noticed that the doctor prescribed doses of medications which seemed lower than I typically see in my neighborhood - 250 mg of cipro instead of 500 mg of cipro, for example. I asked him about this and he told me that he preferred the lowest dose of medication necessary. To me, this is a stance which benefits the patient who now does not take more medication then they need. However, there was one case in particular, where he prescribed amoxicillin to a patient who had no labs done. He told me that he always "treated the patient, not the labs." He told me that amoxicillin has anti-inflammatory effects in addition to its antibiotic action and said that even if the patient did not have an infection it wouldn't hurt. He said that even if he had sent the patient for labs, based on what he had seen they could not have an infection which warranted more than amoxicillin, so he just prescribed it. It was an interesting experience to contrast analyzing the choices a doctor makes based on the charts and prescriptions (in the pharmacy) with the choices a doctor makes based on his experience and the individual patient's needs. I really enjoyed this doctor's attitude because he utilized his experience in conjunction with other resources (a PDR looking text) and not the other way around. I think that working in the pharmacy really allowed me to understand what he was talking about when he said he treated the patients, not the labs. You don't hear doctors often proclaiming that they aren't exactly going by the book but paradoxically it gives me more confidence in their abilities if they do not have to consult dosing schedules. It's a fine line between confidently presenting yourself and getting it right which only experience can provide.

POSTED BY RYAN AT 4:12 PM
these are all the pictures that my friend took for me while I was assisting today. Due to four volunteers working on the same day I usually get to assist one procedure and get to observe the other procedures. Today I assisted for an extraction which was quite easy and no complications :) and then we planned for Cherie (volunteer coordinator) farewell party. I love drawing smiley faces almost everywhere so I did one on the schedule board. I do this not that I have good drawing skills but I know whenever people look at it they will smile at least. This can give patients a comic relief from their depressed lives and have something to talk about when they enter the room. The last picture is from the farewell party, I will miss Cherie as she was the one who helped get into this program and I will be thankful to her for this opportunity that help me become a better person and realize that dentistry is for me ;}
WEDNESDAY, DECEMBER 1, 2010

Last Blog post :

I will like to start with thanking Dr. Rosell for making the service learning project a part of our class. This project not only helps us give back to our community but also helps us learn so many real life lessons and become a more humble person.

Once again I got to meet another interesting yet sad personality. This person was getting his composite and while waiting to get numb for the procedure we had a little conversation. He told me he has a son who lives with his grandma and the patient will try to get him a gift for Christmas. He told me he doesn't have enough money to buy anyone else gifts :( and was asking my opinion that just giving cards would be enough or not?

Before I could give him my opinion the dentist came in and we started our procedure of composite/filling. While assisting I thought about it, this person who cannot afford to pay for his dental treatment expenses is worrying about what people will think if he gives his relatives cards instead of gifts. I mean this is sad but true that we are all turning into materialistic people. We don't care about the feelings and emotions instead we would judge a person from the price tag of the gifts. I don't know about others but I am like that sometimes (all of us are like that but we don't want to accept it) and after thinking about this person and his condition again I was reminded about the fact that I am privileged to have so many luxuries in my life and I should be thankful for that. Also it made me appreciate the people around me and now I will try to think more about the emotions behind the gifts rather than the price tag. I never got time to talk to the patient afterwards but I would have thanked him to make me realize the importance of the people around me.

Once again I am soo happy I got to share my experiences with my teacher and it truly helped me love and appreciate my volunteer position more than ever :)


Blog 10: It's Not The End

This is the last blog (I think)! I have not been to volunteer at San Jose since their last event, Art With Heart. I've been catching up with end-of-semester-madness, but I will make this last blog be a reflection, or try to. My past times volunteering at San Jose Clinic as part of this Service Learning Project, I have learned a lot. I have been exposed to things I have never thought I would be exposed to, meeting a different range of people through this project, and giving a helping hand that I probably took advantage of. This was my first time volunteering in a medical facility, and it was a great experience. It made me look back and see how much I have learned, endured, and gained. I will remember these days when I move on into my medical profession and see how much progress it has given to me then. I have learned that there are so much more less fortunate people out there who need my help. Not exposing myself to the needed help, I will never know. But with this project, I have realized that there is much need out there and seeing that I was one to lend a hand, I am proud of myself. San Jose Clinic has taught me that busy work means more than what it seems in reality, that the less fortunate really appreciate what volunteers do, and that everything little task getting accomplished means so much. In such an environment that San Jose is in, I am most happy that they are moving to a new facility. It would provide so much more for the patients, employees, volunteers, and guests. They really do need and deserve an environment that reflects the attitudes and welcoming characteristics of those people. This is not the last of me at San Jose, I plan on continuing my time there hoping to learn more and more each time. Thank you, Dr. Larios, for letting this project become part of my path in pursuing my career. I enjoyed it so much!
Good day ladies and gents.

The semester is almost over! I'm about to graduate from the University of St. Thomas. Wowwwwwww....

I speak of this because I was talking to patients today and they were asking me about where I am attending college and what I was going to do with my life after college. Everyone smiled and spoke kindly of me - saying that I'll make it as a doctor. It sucks that I didn't get in this year, but I not gonna to let it bring me down. I will take advantage of this year off to learn more, and grow as a person. Like Rachel Wilhelm told me earlier, its not like my drive to become a doctor isn't there. I just have to tap into it more.

Volunteering at the homeless clinic has really helped me find where I want to be. I feel the so comfortable in this type of environment, that it becomes very difficult to think of what life would be like were I to choose a different profession. I don't know what else to say...this is probably the last post of for the year.

I want to thank my followers for reading and commenting on my posts. I do read them, and they do mean a lot to me. As for this assignment, it truly was a great experience. I never really expressed my feelings/thoughts into words. It was usually music - so that was a change. A change for the better I say! Well adios amigos. Take care and God bless!

Quote of the day:
"There are no failures - just experiences and your reactions to them."
-Tom Krause
EXAMPLES OF GOOD BLOGS

Hard Hats for Little Heads

Yesterday, Saturday the 20th, I volunteered at San Jose's partnered event with the Texas Medical Association: Hard Hats for Little Heads. Certain patients with ages ranging from 4-13 were mailed letters informing them that they were selected to receive a free helmet from the TMA as well as a helmet sizing. Pediatricians from Texas Children's Childhood Injury Prevention Program were there to size the children with the appropriate size helmet and to offer safety tips when riding bikes, roller blading, skate boarding, or riding a scooter. The children were also filling out pledge cards that stated that they promised to wear their shiny new red and white helmets. There was also an arts and crafts table where they were coloring Christmas ornaments to put on the San Jose Tree. Some kids were even playing jump rope and hula hoops with some representatives from the American Heart Association. It is so important to get kids used to living healthy and active lifestyles from such a young age, especially in a country in which the childhood obesity rate is at an all-time high. Obesity-related illnesses such as type II diabetes have been placing a significant burden on patients as well as the healthcare system in general, and it is unfortunate because obesity is definitely preventable. It was my job to check in the families according to their letters, hand out the goody bags, and “sort” the children to the proper age-group stations. It was awesome to see how excited the children were to get their helmets. A lot of proud older siblings were proclaiming that they were going to teach their younger siblings how to ride a bike now that (in certain cases) got their first helmet. But of course, some of the parents started to roll their eyes when their kids came up to them and told them that they wanted Santa to bring them a new bike for Christmas to go along with the new helmet :)

Posted by Jenine at 11/22/2010 12:51:00 AM
I have to admit, I am one of those people who lock their car doors secretly when pulling up next to a homeless person at a stop light. I can help it, but I do it anyways. I do it because I am scared. Thats the same way I felt when I pulled into the parking garage at HHH on San Jacinto. As I pulled into a parking space in my old, rusty, two door Honda Accord, I said to myself, "What am I so scared of? These are just people, they have more things in life to be scared of and here I am scared of another person because they live on the street." At that instant, I knew that my short amount of time at HHH would impact my life in the greatest way possible.

At HHH’s website: http://www.homelesshouston.org you will see the following mission statement:

THE COALITION FOR THE HOMELESS OF HOUSTON/HARRIS COUNTY IS A PRIVATE, NONPROFIT ORGANIZATION WHOSE MISSION IS TO LEAD IN THE DEVELOPMENT AND IMPLEMENTATION OF COMMUNITY STRATEGIES TO PREVENT AND END HOMELESSNESS.

When I first got there, I met with Cherie, the Volunteer Coordinator, she was so welcoming and sweet. She introduced me to a few of the workers. I was surprised to find many of them worked there double time, half the time being paid and would come back on a different shift as a volunteer! It just amazes me how amazing people can be. Cherie explained that she needed some filing to be handled, so that is what AJ and I will be working on for the Learning Service Project. Cherie is allowing us to sit with Elizabeth (a student from St. Thomas that works at the reception area) every once in a while to get a feel of what it is like interacting with the patients. Although we will be in a small filing room, I named my blog, "Small Door, Big Vision," because I know we will be hearing and seeing the great things that HHH offers to our community from inside a small door.
Playing Receptionist vol. 2

Well this week I worked helping the girls scheduling patients. It was a very hectic couple of hours because many of the doctors were not able to see their patients on their usual schedule, so everything just piled up! On top of calling to re-schedule appointments, we had to call to remind other patients of their upcoming visits. I did several doctors' worksheets and occasionally I found myself on a long over the phone conversation with one or two patients. It is amazing how many of the patients do not remember their doctor's appointment, or their doctor at all!! In the meantime, I became friends with the girls who work so hard keeping the clinic on schedule. For sure, I am seeing receptionists, and other people who keep offices, clinics, practices running smoothly with so much respect after these past weeks.'
Monday, May 4, 2009
The beginning of the end...

The end of the school year is fast approaching and sadly, this will be my last post in this blog. I truly enjoyed this project and the course, in general, because it was very dynamic. The volunteer aspect of this project allowed us to experience Med Micro in the 'real-world' setting. The online blogging allowed us to express our personal thoughts and reflections without feeling constrained. The presentation and brochure allowed us to implement the knowledge we have gathered throughout this entire course and semester. Overall, this project lived up to my expectations - it definitely did not disappoint! I feel and I know that I have learned a lot of new and useful things about how diseases arise and develop. Especially with the current flu scare, I have been able to use what I have learned to better understand the disease and to help explain it to others. The volunteer experience itself was a great learning experience - both educationally and personally. It helped me come to understand the workings of the pharmacy much better and helped me make a huge decision in regards to my future career plans. I will definitely continue volunteering at San Jose this summer!
Sunday, October 31, 2010

Love Being at the Dental Clinic

Due to a scheduling conflict, I had to volunteer in the morning instead of in the afternoon. Since I was needed in the dental clinic again anyways, it didn't make much of a difference what time I volunteered. Once again, while I was writing down patient information, there were dentists that roamed in and out of the office while they waited for their patients to arrive. This time, one of the dentists was a permanent dentist who worked at the clinic everyday, and the other dentist volunteered about 3 times per year. I learned that the permanent dentist was a mechanical engineer before he chose to enter dentistry, and the other dentist was a hygienist before she became a dentist. After learning about my interest in dentistry, they both could not stress the importance of having fun in dental school. As with any professional school, the amount of work that students get hit with is unimaginable. They told me that there is no way to prepare for it until I'm actually in the situation. They told me that I absolutely CANNOT, no matter how much work I have, lock myself in my room and study because I'll go insane! They stressed that I should force myself to schedule time for...myself. Whether it's exercising for an hour a day, going out with friends, or joining sororities, there is something I must do to keep me well-rounded and away from studying.

With all of the advice that I have been receiving from experienced dentists over the past few weeks, I am excited to volunteer every week. When I used to shadow dentists, I mainly learned about technical dental procedures and how to run a successful office. Although learning this information is pertinent to me becoming a successful dentist, the advice I am receiving at San Jose is also critical. I'm learning about what dental school used to be like, the journeys all of these dentists have been through, and what I need to do in dental school to succeed. The information I'm learning at San Jose is definitely irreplaceable and hopefully I'll be able to utilize them in the future.
EXAMPLES OF AVERAGE BLOGS

Monday, March 23, 2009

**Wow what an experience**

Sorry for the late update. I was able to volunteer 10+ hours during the spring break for SEARCH health care for the homeless. I have to say what a great experience. I did probably more than I needed but I was very into the work. I started the first day in the SEARCH van as we drove to places outside the limits to hand out blankets, food and support for the homeless. The cold front had just came to town and I was freezing. While I was shivering, I felt so bad for all those living on the streets who have weaker immune systems and unhealthier lifestyles. How could they withstand this and survive? When we handed out the supplies we asked if they want assistance in medical assistance, identification assistance, job search or even just a place to bathe. Most of the people I met said they don’t need the assistance which shocked me. I really felt bad and hurt to see those people struggle through life.

I asked myself why they wouldn’t accept the free help. As I hear more and more

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THURSDAY, APRIL 29, 2010

**Yay!...stuffing...**

Last Saturday, I actually volunteered with a partner. He is a high school student, who just reminded me of those old days when I had to volunteer for credit. That was long ago! Anyways, there was sadly not much to do, again. The nurses are always very nice, and they try to find something for us volunteers to do, but it is often with difficulty. We did a lot of stuffing biohazard specimen bags with blood test kits or alcohol swabs. I also brought the nurses’ mail to the mail room for them. The other volunteer and I then went around all the rooms and refilled them with linens and went around all the printers to refill paper. I finally sorted their room files in numerical order. It was basically busy-work. I do very much wish I understood Spanish though! I would probably be able to learn so much more.
EXAMPLES OF POOR BLOG ENTRIES

MONDAY, MARCH 29, 2010

Manilla Monday
So today Rachel C. and I volunteered together! It was nice to have another student volunteering with me at the same time :) because usually it is just me all alone on Monday mornings :( But not today!! Today Rach and I worked in medical records filing and rummaging through boxes full of medical records. Today I left early because Rachel was my ride (I only stayed 2 hours). But it was okay because I think we got a lot accomplished! We put away files, got out more and also pulled all of the files needed for the eye clinic today. Overall I feel like it was a good volunteer morning! Have a good Easter!! :)

WEDNESDAY, APRIL 28, 2010

A video??
So far we have finished about four brochures that shows problems with being overweight, how to prevent it. We created one for adults and one for kids and teens with games to grab their attention. Now we have a new challenge and that’s creating a video to also address the problem. In this challenge we must create a video that tells kids and teens that they might be overweight with them ignoring the problem, how they become overweight, and how to prevent it. Also, we have to grab their attention in doing so, and be “hard” in addressing the problem. To do so I decided to incorporate Darth Vader in addressing the problem using segmented photos from the film starwars, captions, and the famous classic song “emporer march.” this way I can be cute while saying “hey, Your fat because of this and that” while using a fictional evil character as an escape goat and also giving the clip a bit of a comedy spirit to it. This video should attract teens and english/spanish audiences.
Service Learning Project:
Patient Education Materials and Oral Presentation

Final Total Score_______

Group: _______________________
Student Name: _____________________________________
Title/disease chosen: _______________________________________

Educational materials are assessed using the rubric below. Each student will receive an individual score, which will be added to the final group score for a maximum total of 50 points. The comments section will be used to justify the addition of additional points or to detract points from the raw score based on merits not accounted for by the original ranking criteria. You are being graded on three main categories:

Brochure/Educational Materials  20 points
Oral Presentation              25 points
Peer evaluation                5 points

BROCHURE/EDUCATIONAL MATERIALS GRADING RUBRIC (20 pts)

<table>
<thead>
<tr>
<th>Content of educational material (10 pts)</th>
<th>Excellent</th>
<th>Good</th>
<th>Average</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good quality and quantity of information; Appropriate level of information for intended audience (10)</td>
<td>Few inadequacies in information; Minor problems with content level (8-9)</td>
<td>Some gaps in information; Material is too advanced or overly simplified for audience (5-7)</td>
<td>Serious gaps in or incorrect information; Material unrelated to subject (0-4)</td>
<td></td>
</tr>
</tbody>
</table>

| Organization/Flow of educational material (5 pts) | Information is clearly presented, well organized; Good readability for intended audience; Sections clearly labeled (5) | Most information is clearly presented; Some reduced readability for intended audience; Order of sections generally good (4) | Awkward presentation of information; Somewhat poor readability for intended audience; Sections somewhat disorganized (3) | Confusing presentation of information; Serious problems with readability; Disorganized (0-2) |

<p>| Quality of design (5 pts) | Creative; Engages reader; Attractive layout; Good balance between figures and text; good choice of images: (5) | Less imaginative but attractive; Somewhat wordy or not enough text; could be improved by better choice of images (4) | Little creativity; Bland; Excessive or insufficient text; Irrelevant or inappropriate images (3) | Unimaginative; Unappealing; Uninteresting text and images; Poor quality and/or selection of images (0-2) |</p>
<table>
<thead>
<tr>
<th>ORAL PRESENTATION OF MATERIALS (25 PTS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content of presentation</strong></td>
</tr>
<tr>
<td><strong>Excellent</strong></td>
</tr>
<tr>
<td>Well researched and referenced;</td>
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<tr>
<td>Excellent quality and quantity of</td>
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<tr>
<td>information; Excellent incorporation of</td>
</tr>
<tr>
<td>scientifically relevant information;</td>
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<tr>
<td>Effectively integrated information from</td>
</tr>
<tr>
<td>the coursework (10)</td>
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<tr>
<td><strong>Good</strong></td>
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<tr>
<td>Good quality and quantity of</td>
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<tr>
<td>information; Adequate references;</td>
</tr>
<tr>
<td>Good incorporation of scientifically</td>
</tr>
<tr>
<td>relevant information; Minor problems</td>
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<tr>
<td>with content level; Some integration to</td>
</tr>
<tr>
<td>course material (8-9)</td>
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<tr>
<td><strong>Average</strong></td>
</tr>
<tr>
<td>Average quality and quantity of</td>
</tr>
<tr>
<td>information; Insufficient or</td>
</tr>
<tr>
<td>inappropriate references; Average</td>
</tr>
<tr>
<td>incorporation of scientifically</td>
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<tr>
<td>relevant information: Minimal</td>
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<tr>
<td>integration of coursework (5-7)</td>
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<tr>
<td><strong>Poor</strong></td>
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<tr>
<td>Serious gaps in information;</td>
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<tr>
<td>Inadequate or poor references;</td>
</tr>
<tr>
<td>Material unrelated to subject: No</td>
</tr>
<tr>
<td>integration of coursework (0-4)</td>
</tr>
<tr>
<td>**Organization/Flow/Delivery of</td>
</tr>
<tr>
<td>presentation**</td>
</tr>
<tr>
<td><strong>Excellent</strong></td>
</tr>
<tr>
<td>Excellent organization; Presentation</td>
</tr>
<tr>
<td>flows nicely; Poised, clear articulation;</td>
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<tr>
<td>Engaged audience throughout; Clearly</td>
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<tr>
<td>well-rehearsed (10)</td>
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<tr>
<td><strong>Good</strong></td>
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<tr>
<td>Needs better transition between ideas;</td>
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<tr>
<td>Clear articulation but needs more</td>
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<td>confidence; Maintained audience interest</td>
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<tr>
<td>most of time (8-9)</td>
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<tr>
<td><strong>Average</strong></td>
</tr>
<tr>
<td>Poor transitions between ideas;</td>
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<tr>
<td>Moderately uncomfortable or ill-prepared;</td>
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<tr>
<td>Lost audience attention frequently (5-7)</td>
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<tr>
<td><strong>Poor</strong></td>
</tr>
<tr>
<td>Presentation is choppy; no logical</td>
</tr>
<tr>
<td>organization; Uncomfortable/</td>
</tr>
<tr>
<td>unprepared; Audience could not follow</td>
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<td><strong>Quality of slides</strong></td>
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<td>Slides and graphics explain and reinforce presentation; all slides clear and readable, uncluttered and informative (5)</td>
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<td><strong>Good</strong></td>
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<td>Slides relate to text and presentation;</td>
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<td>most slides are clear and well designed (4)</td>
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<td>Slides often not useful in supporting</td>
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<td>presentation; many slides poorly</td>
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<td>designed (3)</td>
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<td><strong>Poor</strong></td>
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<td>Inadequate use of slides and figures;</td>
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<td>most slides poorly designed; slides</td>
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<td>not readable (0-2)</td>
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**Service Learning Project - PEER EVALUATION FORM**

**Group Name:** ___________________________

**Reviewer’s Name:** ______________________

Please review each of your group members in the space below. **Be objective and fair, but also honest.** Evaluate **each person in the team** for a total of 5 points on the basis of:

- Dependability (1 pt)
- Performance/quality of his/her share of the work (1 pt)
- Understanding of the subject matter and overall project goal (1 pt)
- Contribution to the project (2 pts)

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**Grading Rubric for Service Learning Blogs-Weekly Reflections**

Name:  
Volunteer Site:  

**Points possible per week: 5**

Your blog will be graded on a weekly basis based on the following three criteria: insightfulness, creativity, and quality of writing (see rubric below for a break down of points awarded for each category).

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<td>exhibits perceptiveness,</td>
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<td>sensitivity to others,</td>
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<td>compassion, empathy</td>
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<td>Shows some meaningful reflection but lacks fails to expand</td>
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<tr>
<td>Shallow, lacks depth, lacks relevance</td>
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<td>No insight: entry does not pertain to volunteering or service learning</td>
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<tr>
<td><strong>Creativity</strong></td>
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<td>Shows originality in design and expression</td>
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<td>Text is flat or boring</td>
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<td><strong>Quality of writing</strong></td>
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<td>Grammatically correct, good syntax</td>
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<td>Poor grammar, spelling or style</td>
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Staphylococcus and Streptococcus Infections
The Gram Positive Cocci

- Diverse group in the division Firmicutes
  - low-GC group, in contrast to the Actinobacteria
  - cocci or rod-shaped forms
- Firmicutes include
  - the Mollicutes or Mycoplasmas (lack cell walls, include important human pathogens like *M. pneumoniae* and *M. genitalium*)
  - Genus *Bacillus* (includes *B. anthracis*)
- Many Firmicutes produce endospores
  - Neither *Staphylococcus* nor *Streptococcus* do
The Gram Positive Cocci

- Distinguished by presence or absence of catalase activity
  - *Staphylococcus* is aerobic, catalase positive
  - *Streptococcus* is aerobic, catalase negative
Staphylococcus

- Halophilic (10% NaCl)
- 40 species, many associated with humans
- Some have specific niche:
  - *S. aureus* colonizes anterior nares
  - *S. capitis* is found near sebaceous glands (e.g., forehead)
  - *S. haemolyticus* and *S. hominis* found near apocrine glands (axilla)
- Cause wide spectrum of disease
  - Infections of the skin, soft-tissues, bones, urinary tract
  - Opportunistic infections
  - Most common pathogenic species: *aureus, epidermidis*
**Staphylococcus aureus**

- Only species found in humans known to produce coagulase
- makes many different toxins
- causes a variety of suppurative (pus-forming) infections and toxinoses in humans
  - superficial skin lesions such as **boils**, **styes** and **furuncules**
  - more serious infections such as **pneumonia**, **mastitis**, **phlebitis**, **meningitis**, and **urinary tract infections**
  - deep-seated infections, such as **osteomyelitis** and **endocarditis**
- Is a major cause of **hospital acquired (nosocomial) infection**
  - surgical wounds and infections associated with indwelling medical devices
- Causes **food poisoning** by releasing toxins into food, and **toxic shock syndrome** by release of superantigens into the blood stream
Isolation of Staph from site of infection:
1 less than 10% positive cultures
2 10-50% positive cultures
3 50-90% positive cultures
4 More than 90% positive cultures
MRSA

- Methicillin-resistant Staph aureus (MRSA) have been entrenched in hospital settings for several decades.
- Recently emerged outside the hospital setting becoming known as community associated- MRSA (CA-MRSA) or superbug.
  - now account for the majority of staphylococcal infections seen in the ER or clinic.
S. aureus expresses many potential virulence factors:

- **Surface proteins**
  - promote colonization of host tissues
- **Invasins**
  - promote bacterial spread in tissues (leukocidin, kinases, hyaluronidase)
- **Surface factors**
  - inhibit phagocytic engulfment (capsule, Protein A)
- **Biochemical properties**
  - enhance their survival in phagocytes (carotenoids, catalase production)
- **Immunological disguises** (Protein A, coagulase, clotting factor)
- **Membrane-damaging toxins**
  - lyse eukaryotic cell membranes (hemolysins, leukotoxin, leukocidin)
- **Exotoxins**
  - damage host tissues or otherwise provoke symptoms of disease (SEA-G, TSST, ET); and
- inherent and acquired resistance to antimicrobial agents
S. aureus virulence factors
Staying in the host

- **Capsule**
  - Inhibits phagocytosis, proliferation of mononuclear cells

- **Slime layer**
  - Facilitates adherence to foreign bodies

- **Adhesion proteins**
  - Provide adherence to host matrix proteins
  - Covalently bound to cell wall peptidoglycan
  - MSCRAMM (microbial surface components recognizing adhesive matrix molecules)
    - Bind to fibrinogen (soluble plasma glycoprotein involved in clotting)
      - include clumping factor A (ClfA), fibronectin binding protein A (FnbpA)
    - protein A binds IgG
Staying in the host - Protein A

- Surface protein that binds immunoglobulin G molecules by the Fc region
- In serum, bacteria will bind IgG molecules the wrong way round
  - In principle this will disrupt opsonization and phagocytosis
- Mutants of *S. aureus* lacking protein A are more efficiently phagocytosed in vitro
  - Studies with mutants in infection models suggest that protein A enhances virulence
Staph Toxins

- Produces many!
- Five cytolytic (membrane damaging) toxins
  - alpha, beta, gamma, and Panton-Valentine leukocidin
  - Can lyse neutrophils, releasing lysosomal enzymes that damage surrounding tissue
- Two exfoliative toxins
  - A and B
- Eight enterotoxins
- Toxic shock syndrome toxin-1 (TSST-1)

- Exfoliative toxin A, enterotoxins and TSST-1 known as superantigens
  - Trigger massive release of cytokines by macrophages and T-cells
  - Causes hypotension, shock and fever
Exfoliative Toxins

• Cause Staphylococcal scaled skin syndrome (SSSS)
• Toxins identified are ETA and ETB
  • ETA – chromosome encoded, heat stable
  • ETB – heat labile, plasmid encoded
• Both are serine proteases
  – Split desmoglein which forms intracellular bridges in skin tissue
Enterotoxins

- Superantigens
- Produced by 30-50% of all *S. aureus* strains
- Distinct family of toxins (A-E, G-I)
  - Enterotoxin A most commonly associated with food-poisoning
- Ideally suited for food-poisoning
  - Stable at high temps (even 100 °C for 30 min)
  - Resistant to hydrolysis by gastric and jejunal juices
- The most common way for food to be contaminated with *Staph* is through contact with food workers who carry the bacteria or through contaminated milk and cheeses
  - *Staphylococcus* is salt tolerant and can grow in salty foods like ham
  - Foods at highest risk of contamination are those that are made by hand and require no cooking
    - sliced meat, puddings, potato salad, pastries and sandwiches
TSST-1

• Heat and proteolysis-resistant exotoxin
• Chromosome encoded superantigen
• Expression of TSST-1 requires elevated oxygen concentrations and neutral pH
  – May be why this is more rare than S. aureus wound infections
TSS

- Characterized by sudden onset of fever, chills, vomiting, diarrhea, muscle aches and rash
- Can rapidly progress to severe and intractable hypotension and multisystem dysfunction
- Desquamation, particularly on the palms and soles can occur 1-2 weeks after onset of the illness
- Common cause of TSS is menstruation-associated
  - annual incidence is 1-2/100,000 women 15-44 years of age (last active surveillance done in 1987)
Staphylococcus epidermidis

- Coagulase negative
- Cause infection of prosthetics, damaged heart valves, catheters and shunts
  - Tricky to detect, pain usually limited and low counts of bacteria in blood make culturing difficult
Streptococcal Infections
Streptococci

- Diverse group of organisms
  - Arranged in pairs or chains
- Many are facultative anaerobes
- They are all catalase-negative
- Widely distributed among humans, but most hosts are asymptomatic
  - Only acute infections spread the pathogen and transmission occurs via respiratory droplets, and direct or indirect contact
- Characterized on the basis of serologic properties, hemolytic patterns and biochemical properties
  - Some of these overlap, making differentiation of species difficult
Clinical diagnosis mostly by hemolytic patterns

- Incomplete hemolysis (alpha)
- Complete hemolysis (beta)
- No hemolysis (gamma)
Beta hemolytic Strep Groups

- **Group A (GAS)**
  - responsible for most cases of streptococcal illness
    - *S. pyogenes*
  - Virulence determined by
    - avoidance of opsonization and phagocytosis
    - Adherance factors
    - A variety of toxins and enzymes

- **Group B (GBS)**
  - cause pneumonia and meningitis in neonates and the elderly
  - occasional systemic bacteremia
    - *S. agalactiae*
Diseases caused by *Streptococcus pyogenes*

- **Cellulitis** - a diffuse, spreading infection of subcutaneous skin tissue
  - results in inflammation characterized by erythema (defined area of redness) and edema (accumulation of fluid)
  - The most common infection is impetigo, a superficial cutaneous infection common to children characterized by crusty legions and vesicles surrounded by a red border

- **Erysipelas** - an acute infection and inflammation of the dermal layer of the skin
  - Occurs primarily in infants and individuals over thirty with a history of streptococcal sore throat
  - characterized by painful reddish patches that enlarge and thicken with a sharply defined edge
Diseases caused by Streptococcus pyogenes

- **Scarlet Fever** - a scarlet rash on the upper chest that spreads to the remainder of the body
  - other symptoms include sore throat, chills, fever, headache, and a strawberry-colored tongue
  - caused by a strain of Streptococcus pyogenes that carries a lysogenic bacteriophage which codes for the production of an erythrogenic or rash-inducing toxin that causes a shedding of the skin

- **Streptococcal Sore Throat**
  - bacteria in the throat/tonsils stimulate an inflammatory response and the lysis of leukocytes and erythrocytes causing inflammation
  - Symptoms include general feeling of discomfort or malaise, fever, headache with the physical manifestations of redness, edema and lymph node enlargement in the throat
Symptoms of Invasive Strep Infection

• There are four principal symptom categories:
  – Fever with shock and light-headedness
  – Fever with a sunburn rash
  – Fever with a cough and difficulty breathing
  – Fever with cellulitis that can progress to necrotizing fasciitis or myositis
Necrotizing fasciitis

- Streptococcal gangrene
- Severe infection that leads to necrosis of the subcutaneous tissue and adjacent fascia
- Can be also caused by mixture of aerobic and anaerobic organisms
- The organisms reach the subcutaneous tissue by extension from a contiguous infection or trauma to the area, including surgery
- Widespread damage to the surrounding tissue
  - Occlusion of small subcutaneous vessels leads to dermal gangrene
Treatment

• Extensive surgical incision and debridement is the mainstay of treatment, with concomitant antibiotic therapy

• Antibiotic usually penicillin and derivatives
  – Cephalosporin or vancomycin used in allergic patients
Streptococcal TSS

• Patients at higher risk
  – HIV positive, cancer, diabetes, heart and pulmonary disease, intravenous drug users

• Strain of pyogenes responsible for TSS is different than strains causing strep throat
  – Production of pyrogenic exotoxins (SpeA and SpeC) prominent feature of disease
Alpha hemolytic Strep

• *Streptococcus pneumoniae*
  – Major cause of pneumonia
  – Despite the name, the organism causes many other diseases including acute sinusitis, otitis media, meningitis, bacteremia, osteomyelitis, septic arthritis, endocarditis, peritonitis, pericarditis, cellulitis, and brain abscess

• *S. pneumoniae* is the most common cause of bacterial meningitis in adults and children, and is one of the top two isolates found in ear infections
Please remember to consult your physician before making any changes in your current treatment.

INFORMATION PROVIDED BY
Avert.org
AIDS Info from the US Department of Health and Human Services

PREGNANCY AND HIV
Preventing mother-to-child transmission.
Preparing for Conception

If you or your partner is HIV positive, there are certain precautions that you can take to prevent transmission of HIV to your partner and fetus while conceiving.

- Having unprotected sex only during ovulation reduces the risk of infecting your partner.
- Artificial insemination or in vitro fertilization eliminates the possibility of infecting your partner.
- If the HIV positive partner is male, sperm washing separates seminal fluids from the sperm which can later be used in artificial insemination. This technique is the only effective way to eliminate the risk of infecting your partner as well as the fetus.
- If BOTH partners are infected with HIV, it is not recommended to engage in unprotected sex. There is the possibility of re-infecting each other with different strains of the virus.

Prevention during Pregnancy

What Drugs are best?

- Current NIH research shows Zidovudine (ZDV) greatly reduces the risk of mother-to-child transmission (MTCT). ZDV (also known as AZT) can be taken during pregnancy and labor.
- Combination drug therapy is recommended for further reducing the risk of MTCT.

How do I know which drugs to take?

Choosing the correct antiretroviral drug therapy depends on:

- Your health risks
- Your child's health risks
- The possibility of side effects harming you or your child
- Availability of drugs

By determining your viral load and CD4 count, you and your physician can make the decision on which regimen is best for your situation.

If your CD4 count is high and/or viral load is low:

It is possible for you to use AZT as part of combination or monotherapy. It is recommended that the regimen begin after the 1st trimester in order to allow the child's vital organs to develop without the risk of harmful side effects.

If your CD4 count is low and/or viral load is high:

You and your physician can decide which therapy is best for your situation. You might also want to start treatment after the 1st trimester to allow the fetus to develop.

Prevention during Labor

There are precautions during labor that can reduce MTCT:

- Planning a Caesarian-section will keep the child from passing through the vaginal walls and being exposed to HIV.
- While no longer necessary for women on combination therapy, it is still suggested for women who are only taking AZT or those who have not received any prenatal care.
- Taking drugs during labor is highly recommended. AZT and a single dose of NVP can greatly reduce your child's risk. If you are currently on a regimen, your doctor may instruct you to take your pills at their regular times.

Prevention in Newborns

Are antiretroviral drugs safe to give to a newborn?

- It is recommended to give the newborn AZT every six hours for the first six weeks of life if the mother took AZT during pregnancy.
- If the mother took AZT and 3CT during labor, the child should be given both for the first week of life.
- If these are not available, a single dose of AZT and NVP, or just NVP can be used to prevent transmission.

Can I breastfeed my child?

HIV is present in breast milk and it is not recommended that infected mothers breastfeed their newborns. If possible, avoid breastfeeding and instead practice replacement feeding (feeding with formulas).
CHLAMYDIA

What is it?
Chlamydia is a Sexually Transmitted Disease (STD) that can be passed from an infected person to an un-infected person during vaginal, anal or oral sex and to a fetus during vaginal birth. The infection is caused by the bacteria Chlamydia Trachomatis, which can establish a long-term association with the host (human) cells and perpetuate the infection. Bacteria can colonize the genital areas as well as the eyes, internal organs and throat. Relative to other STDs, Chlamydia can be easily treated if diagnosed in its early stages. However, certain factors contribute to Chlamydia going undetected by an infected person, and so it is more easily transferred to sexual partners.

What happens?
Chlamydia is known as a "silent" disease because about 75% of women and about 50% of men who are infected do not experience any symptoms. If there are symptoms, they usually occur 1 to 3 weeks after transmission.

Women may experience:
- abnormal vaginal bleeding
- abnormal vaginal discharge
- pain during urination
- pain during intercourse
- lower abdominal pain
- lower back pain
- nausea
- fever

Men may experience:
- abnormal discharge from the penis
- irritation at the tip of the penis
- pain during urination
- painful swelling of the testicles

Both men and women can become infected in the rectum, which causes pain, discharge and bleeding. Chlamydia can also infect the throat, eyes, joints and fetuses of pregnant women.

What is next?

Diagnosis: For the detection of Chlamydia the doctor or health care practitioner may carry out the following examinations:
- Examination of the genital area
- Urine analysis
- Samples will be taken from infected areas with cotton or spongy swabs.

Treatment:
- Chlamydia can be easily treated and cured with antibiotics (tablets & intravenously).
- All sex partners should be tested and treated.
- Persons with Chlamydia should abstain from sexual intercourse until they are completely cured and treated.

If left untreated: Women will develop pelvic inflammatory disease and men will develop an inflammation of the urine tube. Both men and women will experience severe pain from these complications, and they can result in infertility.
References

• CDC website: http://www.cdc.gov/std/Chlamydia/STDFact-Chlamydia.htm
• http://www.chlamydiae.com
• Deviant Art. Deviant Art. 1 May 2009

For additional educational information on Chlamydia and other STDs talk with your doctor or healthcare practioner, visit the following websites or call:

• CDC National STD and AIDS Hotlines
  • English: 1-800-227-8922 OR 1-800-7432 (24 hours a day, everyday)
  • Spanish/Espanol: 1-800-344-7432 (8am-2am ET, every day)
  • TTY Service: 1-800-243-7889 (10am-10pm)

• CDC website: http://www.cdc.gov/Chlamydia/STDFact-Chlamydia.htm

• American Social Health Association (ASHA) website:
  • www.asha.org
  • www.iwannaknow.org (for teens)
Everything you need to know about the SEASONAL FLU

Get it while you can!

There are two types of vaccines:

- Flu shot is a vaccine given with a needle to ages 6 and up
- Nasal-spray flu vaccine contains weak viruses. They do not cause the flu, so don’t worry!

When to get vaccinated?
Get your yearly flu vaccination as early as September, which will last until season ends.

Who should not get vaccinated?

- Individuals who are allergic to chicken eggs and have severe reactions to influenza vaccinations
- People who have developed Guillain-Barré syndrome (GBS) within 6 weeks of receiving a flu vaccine
- Children younger than 6 months of age
- Individuals who have a moderate-to-severe illness partnered with a fever

EVERYONE ELSE GET VACCINATED!!

Sources

- http://www.flupandemic.info/flu-symptoms.html
- http://www.cdc.gov/Flu/protect/keyfakey.htm

Look inside to find information on:

- Causes of the flu
- Symptoms
- Prevention Skills
- Vaccines

Brochure created by
Joseph Nessary
Sarah Zubair
Miriam Lagos
Brenda Amaya
Adriana Kalinchuk
What is the seasonal flu?

By definition, the flu is a respiratory illness caused by the influenza virus. The flu starts when the virus enters the respiratory tract. After entering the respiratory tract, the virus starts to replicate itself. The respiratory tract then becomes swollen and inflamed. Once inside the respiratory system, the virus enters the bloodstream and the first symptoms begin to show. These symptoms, although uncomfortable, are generally not dangerous. However, the flu weakens the immune system, leaving it vulnerable to more serious infections.

What causes the flu?

The influenza virus types A, B, and C causes the seasonal flu. The overall majority of the population is more likely to contract influenza type A and B. Although type C causes milder symptoms, there are no available flu vaccines that help prevent it. There are, however, vaccines available to help prevent type A and B.

What are the symptoms of the seasonal flu?

Keep an eye out for:

- Fever over 101° Fahrenheit
- Feeling more tired than usual
- Stuffy nose
- Severe body aches particularly in the legs and lower back
- Sore throat
- Irritated eyes
- Frequent headaches

Seasonal flu symptoms are very sudden and may last up to 4-5 days, so watch out!

How can I prevent myself from getting sick?

The best way to prevent from getting sick is to get the influenza vaccine! However, taking the following steps can greatly help reduce the chances of getting sick:

- Wash your hands FREQUENTLY and THOROUGHLY!
- Avoid touching your eyes, nose, and mouth
- Avoid close contact with ill individuals
- Practice good health habits such as exercising regularly, eating healthy foods, and drinking plenty of fluids!

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