Creating an Effective Poster Presentation

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Outline

- Purposes of Academic Posters
- What Makes a Poster Effective?
- Common Easy to Fix Problems
- Presenting Your Poster
- Resources and References

LEARNING OUTCOMES

- Identify the primary uses of academic posters
- Describe steps in making an effective poster
- List common easy to correct poster problems
- Discuss considerations related to poster presentations
- Critique sample posters
- Review resources and references

Purposes of Academic Posters

- A visual representation and summary of your research/ideas
- A conversation starter with peers, mentors
- Allow you to share your research effectively and efficiently
- Excellent for building your CV

Overview: What Makes a Poster Effective?

- An effective poster is …

1. Focused on a single message – aim for 300-800 words
2. Uses graphics - let graphics and images tell the story and use text sparingly
3. Is well organized - keeps the sequence well-ordered and obvious

Consider This…

- Poster sessions are often in a large loud congested rooms – often held during coffee/lunch breaks or receptions

Your poster needs to be interesting and visually slick if you hope to attract viewers

To Start - Know Your Message

- Your goal is to convey a clear message and support it with a compelling combination of graphics, images and short blocks of text
- What is the one thing you want your audience to learn?
- If an element doesn't support your message leave it out

Should your Abstract be on Your Poster?

- Not unless required in the poster guidelines
- Your poster includes all elements of your abstract
- You might bring copies of your abstract to distribute

Nine Steps to Creating an Effective Poster

- Effective posters requires planning, art, science, and attention to detail (check, check, check punctuation, spelling, spacing etc.)
- Give yourself lots of time and then add a month
- Read and re-read the poster directions (Landscape or portrait? Single sheet or multi-panel? Velcro or pins? Dimensions? Hard copy or e-poster?)

1. Planning

- Before starting work on your poster, consider message, space, budget, format and deadlines
- Budget determines quality of paper, colours, do it yourself or contract it out
- Who will print your poster?
- How will you transport your poster?
- Group posters --- require milestones and extra planning

2. Focus

- Stay focused on your message and keep it simple
- Simplify verbiage, reduce sentence complexity
- A person should be able to fully read your poster in under 10 minutes

3. Layout: Mock it Up

- Use a column format
- Use organization cues like numbers or letters
- Use headings to help readers find your main points
- Balance the placement of text and graphics to create visual appeal
- Include white space

Examples of Good Balance

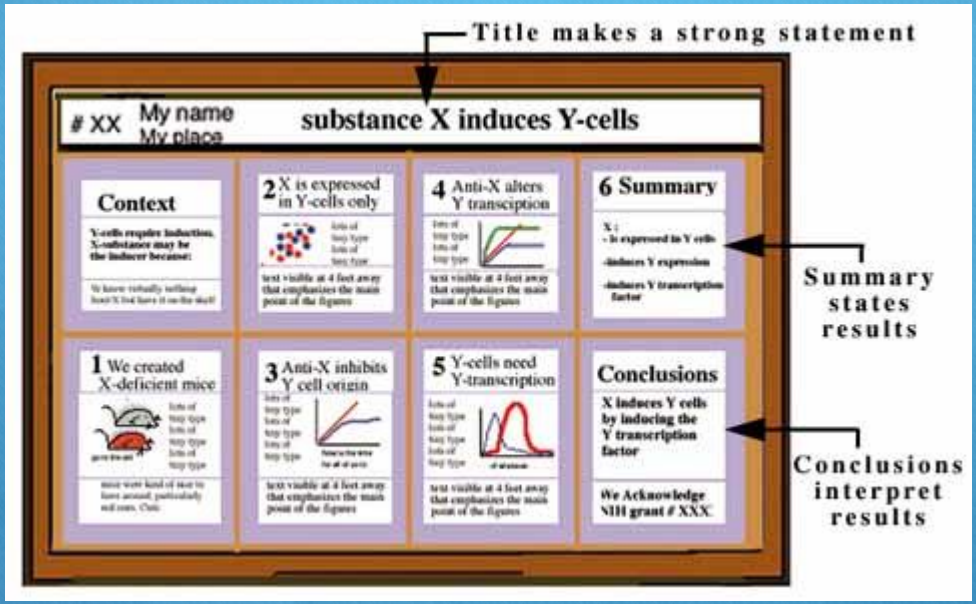
4. Headings

- Use headings to orient readers and convey major points. Use headings to summarize key points. Viewers should be able to just read headings and get your message.

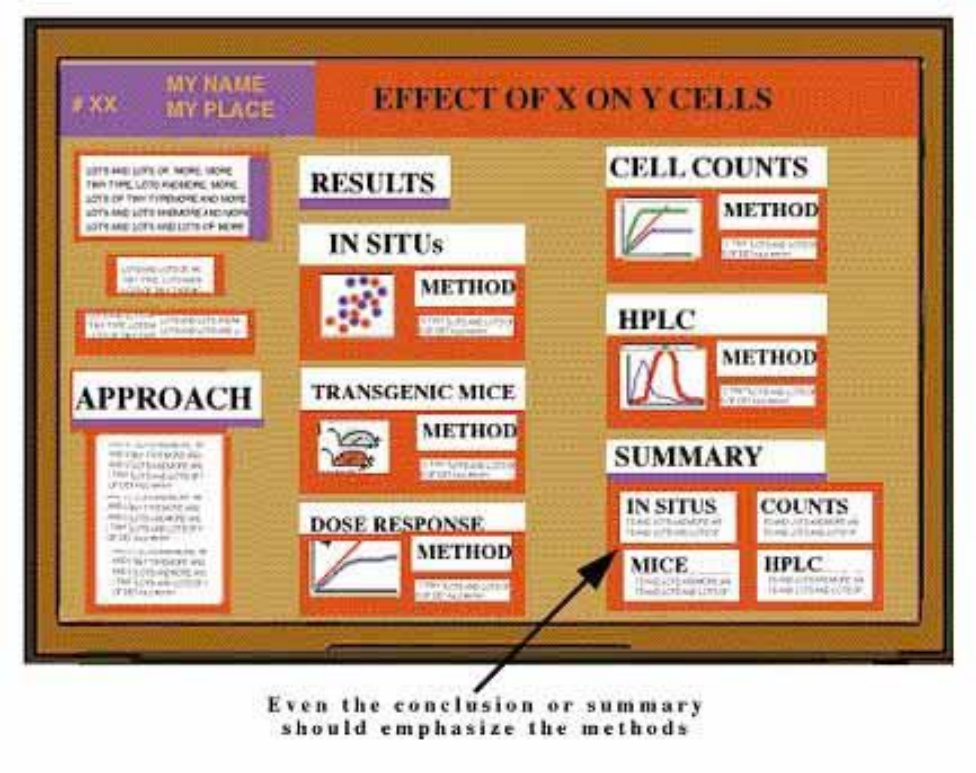
The more important the point – the larger the font

Be Bold and Explicit

- Title should clearly identify you and your organization and make the strongest statement your data will support



What Could be Improved?



5. Graphics

- Simple, clean graphics communicate relationships quickly (give your graphics titles)
- Graphs, illustrations, photos - are the centerpiece of your poster
- Use high quality photos (Flickr) –with permission – thin line around
- Use simple 2-dimensional line graphs, bar graphs, pie charts

6. Text

- More graphics than text
- Keep text elements to 50 words or fewer. Use phrases rather than full sentences
- Avoid jargon
- Left-justify text
- Use a serif font (e.g., Times) easier to read
- Text should be at least 24 point in text, 36 for headings – readable 1 meter away and attract viewers at 5 meters

7. Colours

- Use a light color background and dark color letters for contrast (graphics don’t show up on dark backgrounds)
- Avoid dark backgrounds with light letters - very tiring to read
- Stick to a theme of 2 or 3 colours - much more will overload and confuse viewers
- Overly bright colors will attract attention - and then wear out readers' eyes—and off they go

8. Edit

- Edit ruthlessly – reduce text and focus on key message
- Have others critique your draft poster – print small copies to circulate, pdfs, and a large one to hang for review
- There is little more humbling than standing in front of a poster with a glaring error!!!

9. Consider Software and Templates

- There are many software programs and poster templates that can help your organize your content, choose colours, balance element
- But - you can't depend on a computer for text and graphic choices

Common Easy to Fix Problems

- Lack of graphics – keep it visual
- Poor organization- main points hard to find
- Font too small
- Hedging – using words like probably, perhaps, may, might in abundance
- Too much focus on the method
- Will readers be able to contact you?
- Concluding with – “further research is required”

Present Your Poster

1. Arrive early at the display site, bring supplies and a friend to help you hang your poster -- neatly
2. Be at your poster during your assigned presentation time
3. Bring miniature versions of your poster and business cards

Present Your Poster

4. Consider leaving a pen and pad inviting comments from viewers
5. Prepare short and shorter “tours” of your poster
6. Look enthusiastic and professional

Sample Posters

H-114

Therapeutic vaccination with Remune induces CD8+ HIV-1 specific cytotoxic responses in patients with chronic HIV-1 infection

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Introduction

In a phase II clinical trial, STIR-2102, using an inactivated HIV-1 Immunogen (Remune™) in combination with ART, we have demonstrated that therapeutic immunization plus ART can influence virologic control (see references).

Cytotoxic T-lymphocyte (CTL) activity is well known as a critical factor involved in controlling viral replication in the course of HIV-1 infection. We hypothesized that the administration of Remune in combination with ART could influence the generation of $CD4^+$and $CD8^+$ HIV-1-specific T-cell responses that could impact the control of patient's viral replication.

Keywords: Therapeutic vaccination, Remune™, CTL

Patients and Methods

We evaluated a total of 54 patients, who had participated in a randomized, double blind, placebo (IFA) controlled study (STIR-2102) receiving either immunization with Remune (n=27) or IFA (n=27) in combination with ART, every 3 months (m) for 36m, for the following parameters:

•CFSE (5,6-carboxyfluorescein diacetate succinimidyl ester) assays were used to evaluate precursor frequencies and percentages of proliferating $CD4^+$and $CD8^+$ HIV-1-specific T-cells.

•IFN-γ production by $CD4^+$/$CD8^+$ T-cells against HIV-1 antigens and by $CD8^+$ T-cells against gag/pol antigens was measured by ELISpot assays.

•Specific cytotoxicity against gag/pol and env antigens was analyzed by ^{51}Cr release assays using autologous BLCL infected with vv-luc (negative control), WR-gag/pol and vv-env as target cells.

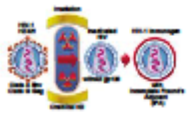

Fig.1. HIV-1 Immunogen (Remune™)

Results

I. HIV-1 specific $CD4^+$ and $CD8^+$ T-cell proliferation by CFSE assays

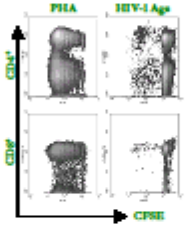

Fig.2. PBMCs of a representative patient immunized with Remune showing $CD4^+$and $CD8^+$ specific proliferation against HIV-1 antigens.

Table 1. Precursor frequencies and percentages of proliferating $CD4^+$and $CD8^+$ T-cells to HIV-1 antigens in Remune group vs. IFA group.

Group						
Remune						
IFA						
p						

HIV-1-specific $CD4^+$ and $CD8^+$ T-cell precursor frequencies were increased in Remune group as compared to IFA

Increased $CD4^+$ and $CD8^+$ T-cell HIV-1-specific responses in Remune group compared to IFA group

Table 2. Correlations between proliferating HIV-1 specific $CD8^+$, $CD4^+$and $CD8^+$ T-cells and viral load in Remune group vs. IFA group.

Group						
Log VL vs. Precursors						
p						
Log VL vs. CPE						
p						

Negative correlation between VL and $CD4^+$ precursor frequencies in Remune group (p=0.042)

Negative correlation between VL and $CD4^+$ (p=0.025) and $CD8^+$ (p=0.020) lymphoproliferative responses in Remune group compared to IFA group

II. HIV-1-specific $CD8^+$ T-cell IFN-γ production by ELISpot

Table 3. Comparison between $CD4^+$ and $CD8^+$ HIV-1-specific responses in Remune group vs. IFA group.

Group			
Remune			
IFA			
p			

Increased numbers of IFNγ producing $CD4^+$ and $CD8^+$ T-cells to HIV-1Ags and of IFNγ producing $CD8^+$ T-cells to gag/pol (WR-gag) in the Remune group compared to the IFA group

III. HIV-1-specific T-cell citotoxic activity by ^{51}Cr release assay

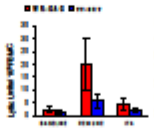

Fig. 3. Cytotoxicity of specific T-cells against gag/pol is increased (10 times) in Remune immunized patients compared to baseline and to IFA at month 24 post-immunization.

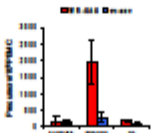

Fig. 4. Frequency of gag/pol HIV-1-specific cytotoxic T-cell precursors is increased in Remune immunized patients compared to baseline and to IFA at month 24 post-immunization.

Gag/pol-specific memory CTL precursors were strongly increased in Remune group as compared to IFA group (p<0.05)

There is a significant strong negative correlation between the frequency of gag/pol HIV-1-specific CTL precursors and viral load in Remune group (r=-0.788; p<0.005)

Conclusions

•Therapeutic vaccination with Remune™ induces strong lymphoproliferative $CD4^+$ and $CD8^+$ T-cell responses against HIV-1 antigens that correlated negatively with viral load.

•Therapeutic vaccination with Remune™ increased the number of IFN-gamma-producing $CD8^+$ T cells in response to gag/pol and of IFN-γ-producing $CD4^+$ and $CD8^+$ T-cells against HIV-1 antigens.

•We observed in the Remune™ group a significant increase of CTL activity against gag/pol antigens.

In summary, this data suggests that long-term therapeutic vaccination (36 months) with Remune™ induces T-cell lymphoproliferative responses and $CD8^+$ HIV-1-specific cytotoxic responses that correlated negatively with viral load in patients with chronic HIV-1 infection.

Literature cited

Fernandez-Cruz E, Moreno S, et al. Therapeutic immunization with an inactivated HIV-1 Immunogen plus antiretrovirals versus antiretroviral therapy alone in asymptomatic HIV-infected subjects. Vaccine. 2004 Aug 13; 22 (23-24): 2966-73.

Fernandez-Cruz E, Moreno S, et al. The potential role of the HIV-1 Immunogen (Remune) as a therapeutic vaccine in the treatment of HIV infection. Expert Rev Vaccines. 2003 Dec; 2(4): 516-32. Review.

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Improvements…

- Title could be more specific – a simple answer to one central question
- Red color makes (take away messages) harder to read - a darker colour perhaps?
- Improve white space by removing the box lines around the sections
- Left justified – easier to read and also justifying makes natural box lines

Optimal Expansion of HIV-1 Field Isolates Using Human CD4+Cell Substrate Derived from Selected Blood Donors

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From 1. University of California, San Francisco, CA, 2. San Francisco State University, CA, and 3. Lifeblood Biological Services, Memphis, TN.

Introduction

Clonally-derived HIV DNA or proteins are genetically limited to induce broadly neutralizing antibodies (NAB) capable of preventing HIV infection. We postulate that NAB against HIV-1 prevalent in the population (pHIV) can be elicited using inactivated virions' proteins, which represent the genetic diversity of viral quasi-species of the field isolates co-cultivated in primary CD4+cell substrate (CD4+CS). Prerequisite to testing this concept is the selection of blood donors whose CD4 cells have a biological capacity for uniformly replicating different pHIV-1 isolates and thus provide an optimal pool of CD4+CS for ultimately making an inactivated HIV vaccine candidate (HIVACC).

Materials and methods

Five pHIV-1 isolates (clade B), derived from infected plasma of donations testing positive for HIV nucleic acid test (NAT) but negative for anti-HIV, were individually cultured in pooled peripheral blood mononuclear cells (PBMC) from four random blood donors. Multiple 50ul aliquots of the seed lots were stored in liquid nitrogen for a single use in subsequent co-culture experiments. Fifteen samples from Leukapheresis donations that tested negative for HIV, HCV or HBV infection were shipped overnight from Memphis to San Francisco. The Ficoll-separated PBMC were depleted of CD8+ T lymphocytes by magnetic beads coated with anti-CD8 (Dynal Biotech, Brown-Deer, WI). Every CD4+CS was stimulated with PHA for 3 days and then infected with 50 ul each of the seed isolates of pHIV-1 for evaluating *in vitro* expansion. The aliquots of $1x10^{4}$ cells were inoculated with each pHIV-1 and co-cultured for 10 days in 2mL of RPMI, supplemented with 10% FBS and IL-2. The cell-free supernatants were tested for p24 antigen by ELISA (Perkin Elmer, Boston, MA) as a measure of virus expression.

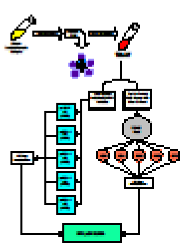

Figure 1: Experimental Design

Results

Donor ID	1280	1281	1282	1283	1372	Donor Mean	Range
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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Table 1: Raw data collected from p24 ELISA.
Each donor was tested against the 5 isolates of pHIV-1 (1280-1372). The mean and range was calculated to evaluate the capability of each donor to produce HIV *in vitro*. All measurements are in pg/mL.

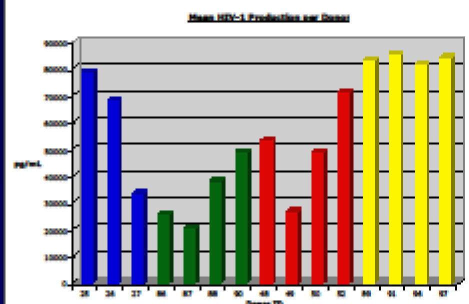

Figure 2: Graph of mean p24 production.
The graph shows the marked variability between each donor's individual ability to produce pHIV-1 as measured by the amount of p24 in culture supernatant.

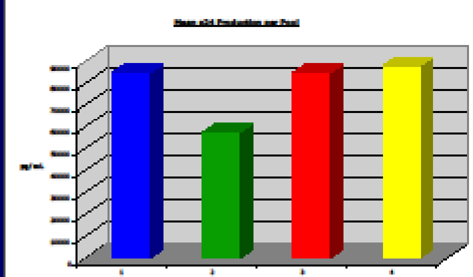

Figure 3: Graph of mean p24 production of donor pools.
The data shows the decrease in variability of p24 production when the donors PBMC's are in pool culture. Interestingly, pool #1 contains only 3 donors, yet it is able to produce approximately the same amount of virus as the pools of four donors.

Pools	1280	1281	1282	1283	1372		Pool Mean	Pool Range
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
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Table 2: Raw data of PBMC pool P24 ELISA.
Like the individual donors, the pools were tested against each isolate. The mean and range is given. All values are in pg/mL.

Conclusions

It is feasible for blood services to provide CD4+CS from donors pre-selected for leukapheresis on the basis of their biologic capacity to uniformly propagate different pHIV-1 isolates. Yields of pHIV-1from the 15 CD4+CS showed considerable variation ranging between 2.6 – 174.6 ng per million cells. Donors #89, 91, 96, and 97 uniformly produced high mean virus yields, viz. 166, 171, 168, and 169 ng, respectively. In contrast, donors #86, 87, 88, and 90 produced relatively poor mean yields, viz. 51, 41, 76, and 98 ng, respectively. The pool of CD4+CS from donor #89, 91, 96, and 97 was optimal for highest yields of each of the 5 pHIV-1 isolates, i.e. 177.5, 177.5, 174.5, 176.5, and 175.0 [mean 176.2] ng per million cells. Since leukapheresis can be performed at weekly intervals on 4 selected blood donors, the blood service can provide the CD4+CS for HIVACC R&D. Thus, it is possible that $4x10^{10}$ CD4+CS at the rate of 175 ng/million cells can yield 7000 ug of pHIV-1. Such a service for optimal cell substrate would enable advancement of research and development of a HIVACC designed to induce broadly neutralizing antibodies, as well as providing large amounts of intact pHIV-1 for other fields of HIV research.

References

• DNIAID *et al*, *Virology Manual for HIV Laboratories*, Jan. 1997
• Wu, C.-R., (2002) Evaluation of CD4-enriched cell substrate for culturing primary isolates of HIV, MS Thesis, San Francisco State University
• Levy, J., *HIV and the Pathogenesis of AIDS*, 2nd edition, ASM Press, 1998

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Comments…

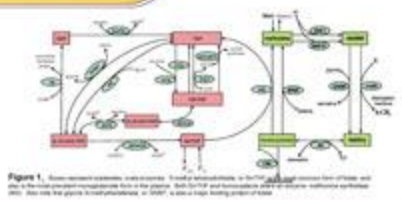
- Should be left-justified
- Graphics need large, readable “headline” titles (like you would see in a newspaper) that communicates the “takeaway” for the graphic
- The dark blue background detracts from the overall white space - the blue background forced to use of light text for the title

A Compartment Model for the Transport and Storage of Folate

Mentor: Dr. H. Frederik Nijhout Biology Department, Duke University
Tiffany J. Chen

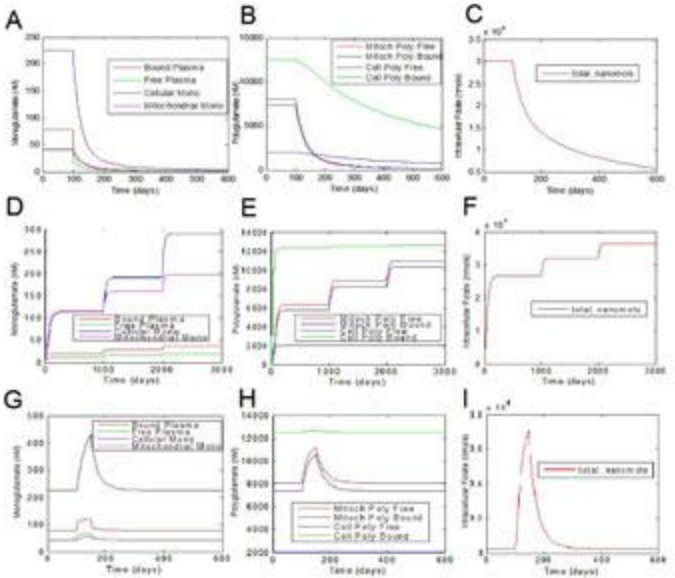
Objectives:

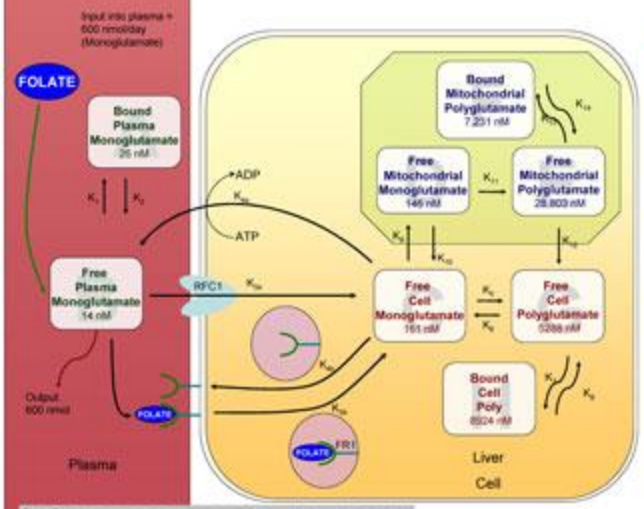
- To estimate the average pool sizes of folate distributed within the plasma, the cell, and the mitochondria.
- To develop mathematical models that represent these pool sizes and mimic real bodily responses to day-to-day changes in diet and metabolism.
- To test these models against experimental data, as well as make predictions.



Background:

Folate, or vitamin B9, is important for the synthesis of thymidine, a pyrimidine, and purines. Deficiency in folate is associated with megaloblastic anemia, cancer, cardiovascular disease, neurological disorders, and neural tube defects in infants. Folate metabolism provides the rate-limiting step for DNA synthesis and DNA and histone methylation (Fig. 1). Reduced folate status affects these critical cellular activities and also increases the level of homocysteine, a highly reactive amino acid that is associated with cell damage. It has been shown that increased folate intake by pregnant women can help reduce the risk of infant neural tube defects, presumably due to a reduction in plasma homocysteine levels. Folate metabolism occurs within cells, but their levels are typically measured in the plasma. It is therefore critical to understand the relationship between the concentrations of folate in the plasma and the cell.





Methods:

Various pool values for plasma and intracellular folate were collected from experimental data (Figure 2). We made predictions for pool values that are not readily available. These predictions were based on known distribution of the various folate pools within the body. For example, 50% of body folate is stored in the liver – the liver contains 2 compartments. These are the cytosol and the mitochondria, each containing three general pools, monoglutamate, free polyglutamate, and bound polyglutamate. These individual pools have different proportions in the cytosol and the mitochondria.

After pool values were established, we assumed that transport of molecules between pools were based on first-order mass-action kinetics. We used Michaelis-Menten equations for the bound polyglutamate pools, because there is a limited amount of protein that will bind to folate – mainly glycine N-methyltransferase (GNMT), one of the enzymes in the methionine cycle (Fig. 1). In addition, we used Michaelis-Menten kinetics for the transport of folates in and out of the cell via Reduced Folate Carrier 1 (RFC1), Folate Receptor 1 (FR1), and an ATP-dependent exporter (Fig. 2).

Rate constants, or k-values, were calculated by assuming certain fluxes between pools. These fluxes were determined by known rates of gain and loss of folate in different compartments where these rates were known, and by adjusting the relative rates of input and output to obtain the right pool sizes between compartments in cases where the absolute rates were not known.

Experiments were performed by varying folate input. These were performed to determine half-lives of the pools, as well as to determine how the pools reacted to example experimental conditions from the literature.

Results:

1. The Model

The model correctly simulates the sizes of the folate pools in the various compartments, including the cytosol, the mitochondria and the fractions bound to proteins in those compartments.

2. Predicted half-life of folate.

After we removed the constant input of folate into the system, all pools diminished over time, some more quickly than others (Figures 3A, 3B). We can also see in figure 3C that the approximate half-life for total intracellular folate is 80 days, which is close to predicted values of around 80-100. Bound polyglutamate seems to decrease at a much slower rate than the other pools.

3. Reaching steady-state values.

The time for the total intracellular pools to reach steady-state typically ranged from 300 to 500 days, which corresponds well with data from the literature. Consistent with the idea that there is a correlation between intracellular folate pool size, polyglutamation, and protein binding, all types of polyglutamate pools do in fact take longer to reach a steady-state value (Figures 3D, 3E).

4. Response to pulsed folate input.

The input of folate was increased to 1000 nmol/day for 50 days. Model plasma levels were quick to rise and fall with the sudden changes, which predicts that free as well as loosely bound monoglutamates will react quickly to changes in folate intake (Fig. 3G). Out of the polyglutamate pools, the model predicts that both bound pools will take longer to return to steady-state, although the mitochondrial bound polyglutamate will take the longest of all of the pools (Fig. 3H).

Conclusions:

We have constructed a mathematical compartment model for folate that takes into account the different methods of transport, as well as retention in the plasma, cell, and mitochondria. We have compared the output of this model with results from current experiments, and have found that the model accurately simulates data from the literature. This model will for the foundation for future studies on the metabolism, transport and sequestration of folates under various genetic and environmental conditions.

Many thanks to Dr. H.F. Nijhout for his guidance and his patience, as well to both Dr. Nijhout and Dr. M.C. Reed for the use of their folate and methionine cycle programs and diagrams! Initial research was supported (in part) by a Howard Hughes Summer Research Fellowship.

Comments?

- Layout?
- Graphics?
- Colours?
- Titles?
- Organization?
- Amount of text?
- Justification?

An Exploration of the Experience of Compassion Fatigue in Clinical Oncology Nurses

Beth Perry RN, PhD, Athabasca University, Canada

Introduction

Oncology nurses are at risk for compassion fatigue (CF) an emotional state with negative psychological and physical consequences that emanate from caregiving to people experiencing intense trauma, suffering, or misfortune (Bush, 2009).

Material and Method

- phenomenological study
- research question - How do clinical oncology RNs describe their experiences of CF?
- purposive sample of 19 clinical oncology RNs
- online survey and narratives describing experiences with CF
- thematic analysis

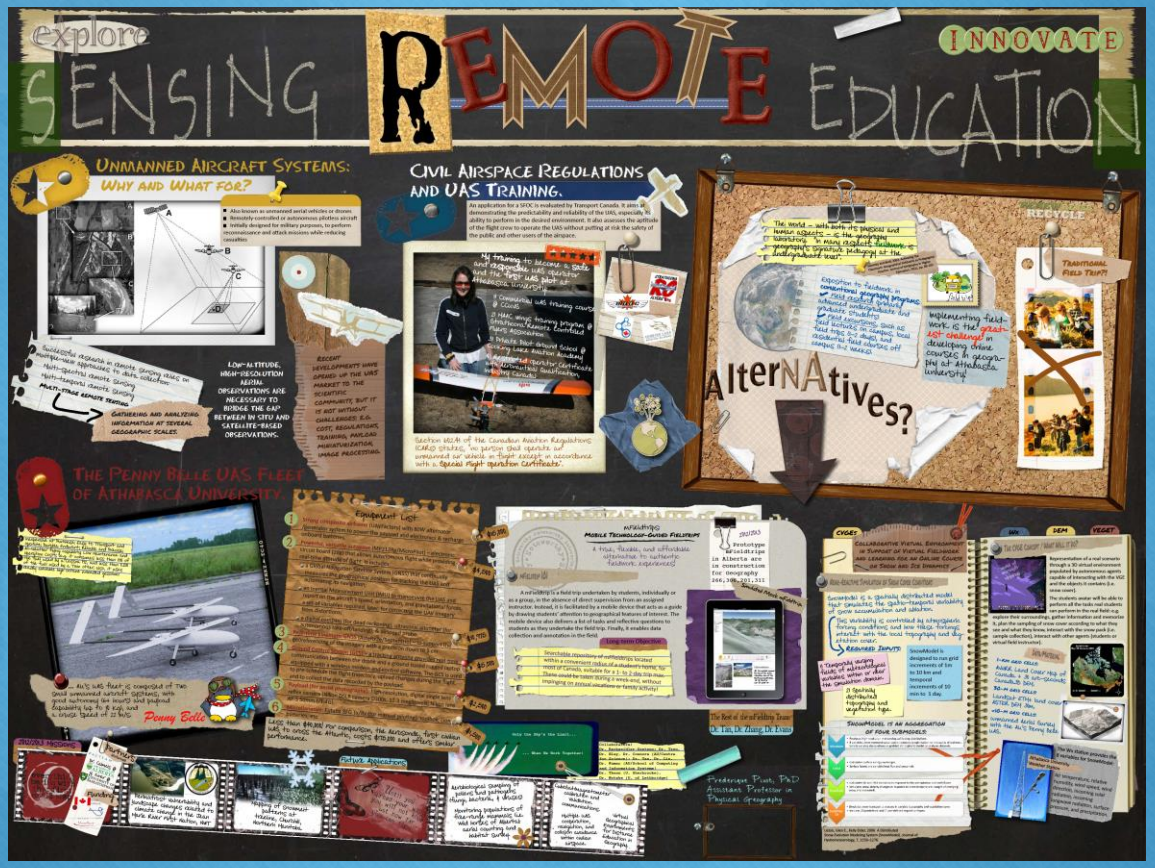
Reference

Bush, N., 2009. Compassion fatigue: are you at risk? *Oncology Nursing Forum*, 36(1), pp.24-28.

Acknowledgements – funding CANO, photo – O.Mahler

Results and Discussion

1. **Recognizing CF** – RNs had limited knowledge regarding CF *["I knew something was wrong but I didn't know what it could be"]*
2. **Causes of CF** - lack of support and lack of time/ability to provide high quality care. ['when *I can't do my best for my patients it really burdens me*"]
3. **Exacerbations of CF** – co-existing physical and emotional stresses, and excessive emotional attachment and involvement made CF worse. ["*I can cope when things are going ok for me at home but when I have trouble with my kids it makes everything at work much worse too.*"]
4. **Outcomes of CF** - profound fatigue of mind and body, negative effects on personal relationships, and considering leaving the profession. ["*I knew I had to get out. I couldn't do it anymore*."]
5. **Interventions for CF** - colleague support, work-life balance, recognition, and maturity and experience. ["*Working as a team – that is what gets me through.*"]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RECYCLE
Traditional Field Trip?
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The Penny Belle UAS Fleet of Athabasca University
Penny Belle
Equipment List
Mobile Technology-Based Fieldtrips
Collaborative Virtual Environments in Support of Virtual Fieldwork and Learning for an Online Course on Snow and Ice Dynamics
Remote Sensing
Network Applications
Dr. Tan, Dr. Zhang, Dr. Evans
Frederique Pivot, PhD
Assistant Professor in Physical Geography

Poster Creation Details….

- Poster - Adobe Illustrator
- Edited the photos to give them an old style look (e.g. instants of the 1970s or 1980s) or other effects using Adobe Photoshop and BeFunky (this one is a free online software: http://www.befunky.com/)
- Used digital scrapbook material - some free (http://freedigitalscrapbooking.com/) and others inexpensive (http://digitalscrapbookpages.com/).
- Blackboard background was a PowerPoint background downloaded from http://www.pptbackgrounds.net/blackboard-backgrounds.html

Dr. Frédérique Pivot <fpivot@athabascau.ca>

Resources

1. Computer programs - MicroSoft PowerPoint, Adobe Illustrator, InDesign, MicroSoft Excel, DeltaGraph, Open Offic, Adobe Photoshop
2. Making an effective powerpoint poster - video - http://www.youtube.com/watch?v=MqgjgwIXadA
3. Flickr poster sessions - http://www.flickr.com/groups/postersessions/pool/with/3724559375/#photo_3724559375

Resources

1. F1000 Posters - The Open Repository for Posters and Slides. Retrieved from http://f1000.com/posters/browse/summary/1090256

References

Hess, G., Tosney, K., & Liegel, L. Creating effective poster presentations. Retrieved fromhttp://www.ncsu.edu/project/posters/NewSite/

Making Academic Posters. http://www2.napier.ac.uk/gus/writing_presenting/academic_posters.html#good_poster_question

PhD Poster Gallery. Retrieved from http://phdposters.com/gallery.php