CUMED 4/10/2018 *Meeting was called to order at 8:03 am*

Attended: *R. Christensen, M. Conlon, K. Diebel, P. Fernandez-Funez, A. Greminger, R. Harden, R. Heuer, N. Jauss, K. Nelson (TC), R. Michaels,* K. *Nordgren, E. Onello, J. Pearson, A. Shaw, G. Simmons, M. Statz, G. Trachte*

Absent: *J. Boulger, A. Johns*

Welcome:

- Dr. Shaw entertained a motion to approve the March 15th meeting minutes.
- Dr. Nordgren seconded the motion: All in favor of approval: none-opposed.

March Follow-up:

- Dr. Shaw began to tag sessions in Blackbag. She is unclear of definitions when trying to tag to assessment methods. Dr. Diebel indicated the definition of a student specific assessment or narrative feedback is considered an exam/quiz, clinical/physical exam and written feedback. If there was no assessment method for the session, the tagging should be attested as "0".
- Dr. Diebel has tagged his sessions in Blackbag. It was approximately 4 minutes for every session.
- The Office of Medical Education emailed faculty on April 9th with the link to the AAMC Curriculum Inventory Standardized Vocabulary. This document provides definitions to help faculty tag their sessions in a standardized fashion. The Blackbag developer will work to update the broken link in Blackbag.
- Clinical Course Directors should coordinate with the Course Director on tagging clinical faculty sessions.

Student Updates:

- Megan Conlon, MS II: Students are excited to be done with the end of year 2.
- Rachel Heuer, MS I: Nothing to report.

CRRAB II Annual Course Report:

- CRRAB II is a 9-week course (October/November each year) and covers renal, acid-base and respiratory. There is 168 hours with an average of 18.7 hours per week. The course contains 45% of lectures, 11% of quiz/exams, 24% of PBL, and 24% of SIM/Lab/ILT.
- 10 students received Honors, 3 No Pass with 2 successful remediation, 1 failed and will need to repeat.
- The anatomy does not align with the CRRAB II course content, students are revisiting the thoracic anatomy taught in August.
- Students are given an assessment every Monday. The goal emphasizes on generative learning, effortful learning, spaced retrieval, elaboration, reflection and interleaving (from "Making it Stick").
- The assessments have an equal number of questions (respiratory, renal, acid-base). The mid-term exam is renal and the final exam is a comprehensive exam (77% respiratory, 23% renal. Disciplines are divided equally.
- The student course evaluation identified the need for more practice questions. Test questions were not optimal.
- Over the past three years, the course content was relatively the same. The student classes were very different along. A new Clinical Course Director, Dr. Greminger made a difference along with the student representatives.

History of Categories:

Category	2017 N = 21/60	2016 N = 27/63	2015 N = 42/59
Objectives	4.2	3.4	3.8
Assignments	4.2	3.3	3.7
Resources	4.0	3.3	3.6
Self assessments	3.6	2.7	3.1
Course & session objectives	4.0	2.7	3.3
Accuracy of Graded assessment	3.8	2.7	2.8
Understand stated objectives	3.9	3.5	4.0
Integrated basic & clinical	4.3	3.3	3.9
Found course useful	4.4	3.4	4.1
Public health	3.9	3.3	3.7
Quality improvement	3.4	3.3	3.0
Interprofessional education	3.2	3.2	3.0

- The Pathology content was not optimal. The students have the major diseases covered in the PBL cases.
- Pathology content will be updated for the coming year.
- Respiratory content is dominant in PBL format and student scores are high on the Step 1 exam.

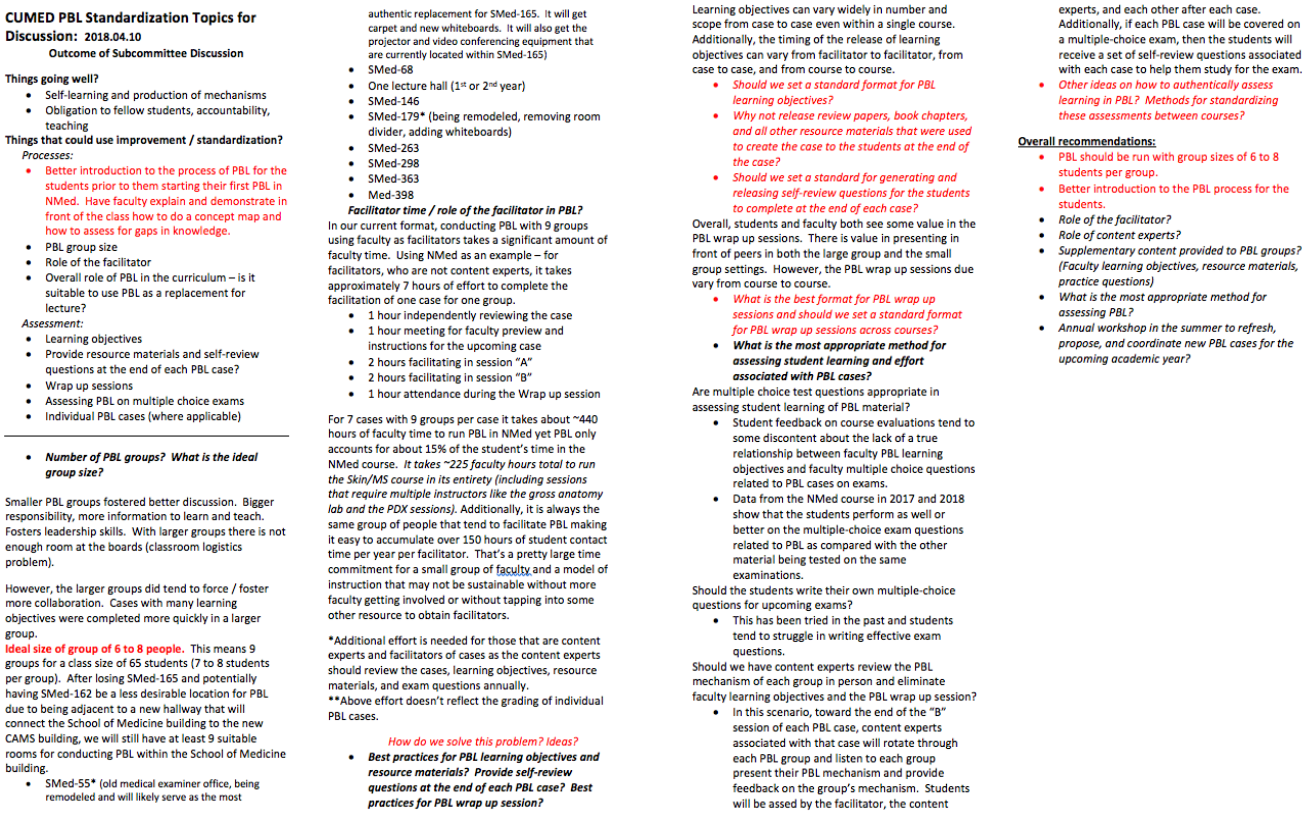
- Renal has had improvements. Drs. Greminger and Muster are developing new renal PBL cases.
- Students had positive comments regarding PBL cases.
- In AY 2018-19, Dr. Nordgren will be the CRRAB II Course Director/ Dr. Greminger, Clinical Course Director.

Discussion:

- The CRRAB I & II content is being revised to eliminate gaps and redundancies. The assessments will assess a student's knowledge showing they are competent in both renal and respiratory.
- Dr. Michaels indicated students do not always remember the histology and suggests the pathologist cover the normal and abnormal side-by-side. This intentional redundancy will help students better understand pathology. Dr. Greminger indicated Dr. McGary does identify the normal and abnormal in his sessions.
- Dr. Pearson reminded members of the 1-Button studio option for the difficult high yield board concepts of pathology-physiology concept: i.e. acid-base.
- Dr. Greminger and Dr. Muster will be developing student practice question opportunities. Dr. Muster's observation is students are given the tools in how to do "X", however, the National Board of Medical Examiners is asking the question in a different way that makes it difficult for students. One aspect of this is students will be assessed on their math skills. This is good for the clinical perspective. Students need to know math even if they use a calculator in practice.
- Dr. Nordgren will be asking all faculty involved in teaching in the CRRAB course to provide 8-10 questions. These will be used for practice questions.
- Dr. Diebel reiterated the concise high yield resources (video, worksheet, etc.) to help students get unstuck is ideal.

PBL Standardization Topic:

- Dr. Diebel indicated PBL is a major component in 4 of the 8 basic science courses. PBL cases currently have different twists and takes a lot of faculty resources to run. Along with multiple Course Directors, a standardized process of PBL cases will help students as they move through the curriculum.
- There was a subcommittee discussion that came up with key points for PBL Standardization. The areas in "red" are the subcommittee's recommendations for standardized process:



CUMED PBL Standardization Topics for Discussion: 2018.04.10

Outcome of Subcommittee Discussion

Things going well?

- Self-learning and production of mechanisms
- Obligation to fellow students, accountability, teaching

Things that could use improvement / standardization?

Processes:

- Better introduction to the process of PBL for the students prior to them starting their first PBL in NMed. Have faculty explain and demonstrate in front of the class how to do a concept map and how to assess for gaps in knowledge.
- PBL group size
- Role of the facilitator
- Overall role of PBL in the curriculum – is it suitable to use PBL as a replacement for lecture?

Assessment:

- Learning objectives
- Provide resource materials and self-review questions at the end of each PBL case?
- Wrap up sessions
- Assessing PBL on multiple choice exams
- Individual PBL cases (where applicable)

- ***Number of PBL groups? What is the ideal group size?***

Smaller PBL groups fostered better discussion. Bigger responsibility, more information to learn and teach. Fosters leadership skills. With larger groups there is not enough room at the boards (classroom logistics problem).

However, the larger groups did tend to force / foster more collaboration. Cases with many learning objectives were completed more quickly in a larger group.

Ideal size of group of 6 to 8 people. This means 9 groups for a class size of 65 students (7 to 8 students per group). After losing SMed-165 and potentially having SMed-162 be a less desirable location for PBL due to being adjacent to a new hallway that will connect the School of Medicine building to the new CAMS building, we will still have at least 9 suitable rooms for conducting PBL within the School of Medicine building.

- SMed-55* (old medical examiner office, being remodeled and will likely serve as the most authentic replacement for SMed-165. It will get carpet and new whiteboards. It will also get the projector and video conferencing equipment that are currently located within SMed-165)
- SMed-68
- One lecture hall (1st or 2nd year)
- SMed-146
- SMed-179* (being remodeled, removing room divider, adding whiteboards)
- SMed-263
- SMed-298
- SMed-363
- Med-398

Facilitator time / role of the facilitator in PBL?

In our current format, conducting PBL with 9 groups using faculty as facilitators takes a significant amount of faculty time. Using NMed as an example – for facilitators, who are not content experts, it takes approximately 7 hours of effort to complete the facilitation of one case for one group.

- 1 hour independently reviewing the case
- 1 hour meeting for faculty preview and instructions for the upcoming case
- 2 hours facilitating in session "A"
- 2 hours facilitating in session "B"
- 1 hour attendance during the Wrap up session

For 7 cases with 9 groups per case it takes about ~440 hours of faculty time to run PBL in NMed yet PBL only accounts for about 15% of the student's time in the NMed course. *It takes ~225 faculty hours total to run the Skin/MS course in its entirety (including sessions that require multiple instructors like the gross anatomy lab and the PDX sessions).* Additionally, it is always the same group of people that tend to facilitate PBL making it easy to accumulate over 150 hours of student contact time per year per facilitator. That's a pretty large time commitment for a small group of faculty and a model of instruction that may not be sustainable without more faculty getting involved or without tapping into some other resource to obtain facilitators.

*Additional effort is needed for those that are content experts and facilitators of cases as the content experts should review the cases, learning objectives, resource materials, and exam questions annually.
**Above effort doesn't reflect the grading of individual PBL cases.

How do we solve this problem? Ideas?

- ***Best practices for PBL learning objectives and resource materials? Provide self-review questions at the end of each PBL case? Best practices for PBL wrap up session?***

Learning objectives can vary widely in number and scope from case to case even within a single course. Additionally, the timing of the release of learning objectives can vary from facilitator to facilitator, from case to case, and from course to course.

- *Should we set a standard format for PBL learning objectives?*
- *Why not release review papers, book chapters, and all other resource materials that were used to create the case to the students at the end of the case?*
- *Should we set a standard for generating and releasing self-review questions for the students to complete at the end of each case?*

Overall, students and faculty both see some value in the PBL wrap up sessions. There is value in presenting in front of peers in both the large group and the small group settings. However, the PBL wrap up sessions due vary from course to course.

- *What is the best format for PBL wrap up sessions and should we set a standard format for PBL wrap up sessions across courses?*
- ***What is the most appropriate method for assessing student learning and effort associated with PBL cases?***

Are multiple choice test questions appropriate in assessing student learning of PBL material?

- Student feedback on course evaluations tend to some discontent about the lack of a true relationship between faculty PBL learning objectives and faculty multiple choice questions related to PBL cases on exams.
- Data from the NMed course in 2017 and 2018 show that the students perform as well or better on the multiple-choice exam questions related to PBL as compared with the other material being tested on the same examinations.

Should the students write their own multiple-choice questions for upcoming exams?

- This has been tried in the past and students tend to struggle in writing effective exam questions.

Should we have content experts review the PBL mechanism of each group in person and eliminate faculty learning objectives and the PBL wrap up session?

- In this scenario, toward the end of the "B" session of each PBL case, content experts associated with that case will rotate through each PBL group and listen to each group present their PBL mechanism and provide feedback on the group's mechanism. Students will be assed by the facilitator, the content experts, and each other after each case. Additionally, if each PBL case will be covered on a multiple-choice exam, then the students will receive a set of self-review questions associated with each case to help them study for the exam.
- *Other ideas on how to authentically assess learning in PBL? Methods for standardizing these assessments between courses?*

Overall recommendations:

- PBL should be run with group sizes of 6 to 8 students per group.
- Better introduction to the PBL process for the students.
- *Role of the facilitator?*
- *Role of content experts?*
- *Supplementary content provided to PBL groups? (Faculty learning objectives, resource materials, practice questions)*
- *What is the most appropriate method for assessing PBL?*
- *Annual workshop in the summer to refresh, propose, and coordinate new PBL cases for the upcoming academic year?*

- Dr. Diebel would like to have a consensus on the number of (6-8) small groups. We can then work on problem solving and what that means.
    - Dr. Shaw supports the smaller group size. Students have already communicated the need for smaller group sizes.
    - Dr. Nordgren indicated smaller groups help facilitators know if students are fulfilling their role and responsibility in the PBL case (reader, recorder, etc).
    - Dr. Christensen said smaller groups allow for cross discussions with all members.
    - Dr. Michaels indicated 5-7 students in a small group is the ideal number for teaching and student learning.
- The consensus is PBL groups would be 9 PBL groups. Dr. Diebel indicated we have the space for 9 groups. The Neuro PBL session takes about 15% of the student time. Faculty effort is double that. PBL is a big investment of time.
- We agree it is beneficial to have facilitators at PBL sessions.
    - What does the facilitator have to look like?
    - Does it have to be a faculty member?
    - Can we train post docs or other individuals interested in the process?
    - A facilitator does not need to be a content expert.
- Dr. Michaels indicated LCME requires all teaching be done by faculty or the teaching individual must be specifically trained with documentation of their training.

Discussion:

- Students have commented the learning objective of generating the mechanisms was the most valuable process she completed learning the basic science material.
- Students have made several comments regarding a better introduction to the PBL process. Dr. Fernandez-Funez did provide a better PBL introduction in the Neurology Medicine course.
- The PBL Introduction should include a mechanism to truly understand what the PBL process is. Identifying the learning objectives and creating a mechanism is a piece that could be more robust, i.e. video tutorial etc.
    - Rachel Heuer, MS I, did identify the need for an in-depth introduction. Dr. Fernandez-Funez did have do a PBL introduction but an example case or video was not included. Having a video tutorial would help.
    - Dr. Shaw indicated the Foundations of Medicine class could implement a PBL Introduction.
    - Dr. Nordgren indicated there was an introduction to PBL a few years ago. Faculty provided a mini version of a case for student. Student observed. Creating a mechanism was not shown. Dr. Pearson added there hasn't been a faculty PBL training in a few years. Because PBL has increased, there is a need for faculty PBL training. This can be a PBL faculty group that can help other faculty keep to a consistent PBL process. The PBL faculty group can provide PBL oversight to know if faculty refreshers are needed or if the process needs revisions.
    - Dr. Onello, indicated inconsistencies is one of the issues between facilitators. Knowing the ground rules before starting PBL will help provide stability. Dr. Fernandez-Funez met with the Neuro facilitators prior to PBL to insure all were doing the same process. Each facilitator was given a PowerPoint with the course PBL process. This dialog needs to occur each year as an opportunity for faculty feedback and getting to a common place.
    - Dr. Greminger understands smaller PBL groups are best, however, it was/is difficult to find facilitators for course PBL's. With the CRRAB II course, it was very difficult to find facilitators for their 13 PBL cases. It's challenging for Course Directors and students when using multiple facilitators throughout their cases as well.
    - Dr. Nordgren indicated faculty are very busy during the fall semester. She may take a few PBL cases and formatting them into a TBL type or guided active learning type of activity to help relieve PBL burnout. The balance to find consistent facilitators for a stable dynamic is a challenge and not sure what the solution will be.
    - Dr. Fernandez-Funez supports the use of facilitators during PBL. Facilitators are oversight that keep students on pace and focused on the important pieces of the case. Students are not as efficient when a facilitator checks in on the group. Facilitators are watching and listening to how the group interacts with each other.
    - Dr. Diebel indicated there are up to 11 PBL cases between Neuro and the IHO courses. PBL is growing within the curriculum as it is a powerful tool for teaching and learning.
    - Dr. Michaels indicated curriculum is introduced during the student orientation. Orientation can host an introduction to PBL More detail could be provided prior to course PBL sessions. Students are alert and not exhausted during Orientation.

Dr. Harden indicated there are medical schools that do all PBL sessions. It may be valuable to know more about their process. Dr. Trachte indicated Dr. Fernandez-Funez did attend an all PBL medical school.

- Dr. Nordgren has the old PBL training prepared by Dr. Wittmers. The PBL training then was a full weekend and there were undergrad students to serve as the PBL groups. Faculty had practice time with video recording that were reviewed for feedback and critiques. This was a true training. At the time there was a financial investment and other resources to make this happen.

- Dr. Trachte indicated the need to include discussions with Department Heads regarding faculty expectations. He likes the idea of Post Docs doing PBL as it is proven the less experience the better the teaching outcomes are. There is data to support Post Docs are better instructors. This Post Doc activity also enhances their potential in their careers.
- Dr. Greminger indicated using Post Docs would require frequent training. Dr. Diebel adds there is potential we will have new faculty coming in each year. We can spread the time across faculty to make facilitation easier.
- Dr. Nordgren feels there are enough faculty to cover PBL. The challenge is getting all faculty to participate. There needs to be an accountability from administration that faculty must have "x" number of teaching hours. Only a portion of current faculty participate in PBL.
- Dr. Nordgren reminded members Post Docs are being paid through grant funding and facilitating PBL has a big-time commitment. If used, the Medical School will need to compensate the Post Doc for their time facilitating PBL. Dr. Fernandez-Funez indicated grants do have a career development component but not necessarily for the teaching time needed for PBL.
- Dr. Nordgren, as a Post Doc, facilitated PBL under Dr. Wallace. When she facilitated for the CRRAB PBLs, she was being paid by the Dean's Office and not the grant. How many current Post Docs do we currently have? Out of the Post Docs, how many PI's would be willing to release their time for this. Using Post Docs for facilitation does not sound sustainable.
- Dr. Fernandez-Funez indicated having faculty sign up for "a" PBL case does *not* work. This works for faculty but not for students. Megan Conlon, MS II and Rachel Heuer, MS I indicated it is not ideal having multiple faculty for a case. Facilitation was not equal among groups this past year. Students have had worries the facilitator did not have the expertise to facilitate.
- Dr. Greminger indicated Dr. Wirta is an excellent PBL facilitator and is the least content expert. She has a lot of education expertise. Sometimes having a content expert as a facilitator may be a barrier for student. Dr. Greminger indicated as a clinician, it was difficult at times because of her advanced knowledge of a case.
- Dr. Pearson indicated using non-content experts standardizes PBL. Groups also recognize when the Course Director and Clinical Course Director are facilitators, they know what questions will be on an exam and students in their groups look at this as a benefit. To standardize this, you need to take those faculty out of the mix.
- Dr. Nelson (TC) indicated their 3rd and 4th year students do a rotation of teaching. This could be an opportunity for the Duluth 3rd and 4th year students to facilitate. This can also serve as a peer model and provide mentorship on the student facilitators. Dr. Michaels indicated having a 3rd and 4th year student along with a faculty during facilitation is OK for peer model and mentorship, however, these students would still need a facilitator. These students would still need to go through a facilitator certification program and with a 4-week rotation may be disruptive for students. Dr. Nelson indicate the integration of a near peer model are being asked for by students and this could be a good pairing for that.
- Dr. Fernandez-Funez indicated Duluth is at limited capacity with previously trained PBL faculty. We have bodies in the building but no volunteers and is the challenges. There are faculty that commit for sessions but are not able to commit for the full case or course do to other commitments.
- Dr. Diebel met with Dr. Lynne Bemis, BioMed Department Head, for a preliminary discussion about PBL facilitation. Dr. Bemis is amenable to having the BioMedical faculty sign-up sheet for PBL. Faculty would be required to participate in 7 PBL cases throughout the academic year. This is along the line of what Dr. Shaw did by signing up where it fits within a faculty schedule. This process needs to be backed with an enhanced facilitating training program.

- Dr. Diebel advocated that faculty who are content expert for a given case *cannot* be a facilitator for that particular case. Dr. Diebel reviewed the Neuro questions for the PBL groups and most of the groups are spaced out appropriately. This year, however, he noted a particular group that was facilitated by a content expert. Those students scored 10% higher than the other groups. The translation is about 1 additional question. This is the justification why he advocates not having a content expert on a case of their expertise. Instead of the content expert being in the roll of a facilitator, they could spend more time on exam questions for the case, be available to students and participate in the wrap-up sessions.
- Dr. Statz asked if the Cathy McCarty, Department Head for the FMED and BioBehavioral Health, has been contacted? The term "by-in" seems like there needs to be Administrator push. Dr. Statz indicated there are different restriction on junior faculty time. There is a large gap where faculty are not senior or junior and working hard. Where is the middle faculty that are available? Dr. Greminger indicated Family Medicine is a challenge because of various logistics that include; clinic schedules, participating in RMSP, RPAP etc.
- Dr. Onello added with the search for the new FMED and BioBehavioral Department Head, this is a topic that should be addressed during the interview process. This is a large issue with a merged department. Dr. Diebel indicated with this type of recommendation it does force negotiations with the Department Heads.
- Dr. Trachte indicate faculty committing to more than 240 hours an academic year is too much. The process has to have realistic expectations.

Dr. Diebel recommended a special CUMED meeting in the next few weeks. The special meeting will be an opportunity for further discussing and to draft a proposal for review and vote at the May 15th.

Meeting adjourned at 9:01 am. Next CUMED meeting**: Tuesday, *May15th @ 8 am (165 Med)***.
Minutes transcribed by Brenda Doup and reviewed by Dr. Diebel (Chair) & Dr. Johns (ex-Officio)