An Infographic Assignment to Translate Self-Care Therapeutics into Practical Application
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ABSTRACT
Innovation: An infographic assignment was developed and integrated into an advanced self-care therapeutics elective course in a School of Pharmacy to facilitate practical communication of dynamic and innovative approaches to patient care while supporting diversity in assessment.

Description: The ‘Spotlight on Self-Care’ assignment required pharmacy students to develop three infographic deliverables detailing comprehensive care for one minor ailment. The three deliverables were: 1) a magazine insert for healthcare professionals, 2) a patient-friendly handout, and 3) a pharmacists’ companion practice tool. All deliverables were assessed by rubrics using consistent criteria, including: clinical content, logical presentation, research quality, visual elements and formatting. The five highest-scoring magazine inserts were offered publication in the Pharmacy Practice and Business Magazine after peer review.

Critical Appraisal: The submitted infographics put clinical content from the course into action by leveraging recent trends in effective communication. As an assessment, the infographic assignment recognized a unique profile of skills in the students that was statistically different from the profile of skills that was evaluated by the multiple-choice examinations. The key issues to address include reducing grading time requirements and developing strategies to detect copyrighted materials. Future investigations into the nature of the skills gained by the students through the exercise, as well as their perceptions regarding the professional value of the exercise, are important for refining the administration of this assignment.

Keywords: Infographic, Self-Care, Pharmacy Practice

RATIONALE FOR THE INNOVATION
Infographics (a clipped compound of "information" and "graphics") are visual representations of information, data or knowledge that are intended to communicate content quickly and clearly. Infographics appeal to the busy professional and are gaining popularity in business, government and healthcare for public advocacy. As an example, the Journal of the American Medical Association (JAMA) began publishing an infographic series in 2015 aimed to help healthcare professionals visualize trends and data relevant to health policy.1,2

Assignments to create infographics related to healthcare have been integrated into university courses in social work, nursing and public health.3-5 These exercises have demonstrated utility for teaching students effective ways to present data. The final products often feature graphs, statistics and pie charts. In pharmacy practice, there is utility of infographics as an expansion to present approaches to patient care. In an infographic format, information becomes dynamic, engaging and quickly understood. The logical order is communicated clearly, visual aids enhance understanding at critical points and vibrant colors prioritize clinical information. Further translating these benefits into patient-friendly language will engage patients in pharmacies and clinics with communication materials of a kind often unavailable in healthcare.

While infographic assignments leverage trends in modern and effective communication, they also offer an opportunity to support diversity in assessment. It is the responsibility of the educator to develop assessments that are directed toward developing the skills that are needed in practice. An infographic assignment that is centered on communicating approaches to patient care may assess valuable professional skills in students that are not otherwise evaluated by traditional computer-based examinations. Well-rounded assessment in higher education drives the development of well-rounded professionals.6

STATEMENT OF THE INNOVATION
An infographic assignment was developed and integrated into an advanced self-care therapeutics elective course for third year students to facilitate practical communication of dynamic and innovative approaches to patient care while supporting diversity in assessment.

Since the assignment was designed in part to give students a unique way to demonstrate therapeutic principles, the prevailing hypothesis was that the infographic assignment would recognize skills different from those assessed in conventional multiple choice examinations.

DESCRIPTION OF THE INNOVATION
The ‘Spotlight on Self-Care’ assignment was introduced in January 2019. Conceptualization, design and implementation were accomplished by collaboration between the course coordinator and the pharmacist teaching assistant. The focus of the three-part assignment was on minor ailments and patient self-care.
Each student was assigned one minor ailment that would typically be treated from the self-selection area of the pharmacy, such as constipation or headache. The assignment was completed by students individually. Each student created three infographics to guide pharmacists and other healthcare professionals in innovative, evidence-based and financially sustainable ways of providing medical care on that topic. The three deliverables for the assignment were: 1) a magazine insert for healthcare professionals, 2) a patient-friendly handout, and 3) a pharmacists’ companion practice tool. Special emphases were placed on practicality, raising the bar on current practice standards and provision of clear approaches for integration of the students’ proposals into the general community pharmacy environment.

At the beginning of the course, students were given an assignment brief that explained the rationale for the assignment, the learning objectives and the specific expectations for each of the three deliverables. The total assignment weight was 20% of the course grade. Students were allotted 8 weeks of out-of-class time to complete the work. Instructors were available by office hours and by email for questions about creation of the infographics. Out of 53 students, 4 students contacted the instructors for clarification of specific details prior to submission.

The magazine insert was targeted toward healthcare professionals and aimed to communicate an innovative approach to patient self-care in dynamic graphical form. While innovations were defined broadly as new advances in conventional self-care, over-the-counter medication use or other non-prescription therapy, the innovations were required to be evidence-based. The insert was expected to fill two 8.5” x 11” pages, or a full magazine spread.

The patient handout was intended to evaluate the students’ abilities to educate patients regarding self-care with meaningful written and visual content. Patient-friendly language was defined as vocabulary at a fifth grade reading level. Instructors hypothesized that infographics would be particularly effective because images can supplement the vocabulary to increase understanding. A special focus was placed on ensuring that the handout could be used independently to assist patients in making decisions for their own self-care. As a result, the document had to be clear regarding how the information applied to special populations, such as children and geriatrics, and when to seek medical assistance from a pharmacist or physician.

Finally, the pharmacists’ companion was described as a one-page practice tool aimed to streamline the patient interaction and ensure that no key questions, recommendations or messages to patients were missed. In addition, students were encouraged to provide options for comprehensive care, which could increase sales of non-prescription products for the pharmacy. For example, while a patient with a plantar wart would normally be recommended a wart remover preparation, the pharmacist should also remember to recommend the appropriate bandages and coverings to prevent the patient from picking at the wart or spreading it to others, and perhaps petroleum jelly to protect the skin around the wart.

To encourage creativity, few restrictions were placed on the formatting. Since the assignment was academic in nature, no copyrighted or trademarked materials were permitted, including brand names of medications. References to primary literature were required to support any clinical recommendations.

Very little coaching was provided to students on methods for infographic creation. In the assignment brief, students were directed to websites hosted by Piktochart (Bayan Baru, Malaysia) and Canva (Surry Hills, Australia) for training and resources. These websites provide a free and user-friendly interface for infographic creation. They also supply a number of images that can be used without copyright infringement. There were no restrictions on the software that could be used if a more flexible approach was desired.

The rubrics for evaluation of the deliverables were available to the students in the course directory (available on request). All deliverables had several consistent assessment variables, including: clinical content, logical presentation, research quality, visual elements and formatting (e.g. spelling and grammatical errors, adherence to assignment instructions). In addition, the magazine insert was assessed for innovative content, the patient handout was assessed for employing patient-friendly language and the pharmacists’ companion was assessed for provision of comprehensive care.

Grading was completed by two independent evaluators for 10% of the submissions and since the results were in close agreement, the remainder of the grading was completed by one evaluator. The time investment required for grading was high. In this administration of the assignment, 53 submissions (159 infographics) were graded. On average, each assignment (totaling 3 deliverables) required 30 minutes of grading time, with brief feedback provided to students in writing.

The five highest-scoring submissions for the magazine insert deliverable were offered publication in the Pharmacy Practice and Business Magazine after peer review to showcase the innovations. Following completion, the pharmacists’ companion practice tools were collated into one document covering over 20 minor ailments and distributed to students for use in their professional futures. Written consent was obtained from any students whose work was publicly shared. No ethics approval was required for analysis and reporting of deidentified student grades.
CRITICAL APPRAISAL

Overall, 53 submissions were received. From the perspective of the instructors, the buy-in from students was strong and the assignments were all of high quality. While there were multiple students assigned to each ailment, the submissions were each uniquely focused on engaging subtopics or trends in self-care. For example, under the general topic of ‘warts,’ the submissions were focused on subtopics such as ‘plantar warts’ and ‘prevention of wart transmission in children.’ A minority of the assignments used a traditional, text-heavy, magazine article approach, while the majority featured dynamic workflows and bright images to draw out the messages.

By offering publication of the top five magazine inserts in the Pharmacy Practice and Business magazine, a healthy sense of competition was instilled in the classroom and students became highly engaged in the assignment. The instructors suspect that motivation for synthesizing practice innovations and completing the assignment would have been lower had this competition not been present.

With a few exceptions, students were able to adhere to the assignment instructions. Students had difficulty reporting references on infographics that were particularly busy or utilized vibrant colors. For evaluators, it was difficult to identify copyrighted materials without checking every image individually. Two students submitted images that were not created as their own work or otherwise available in the public domain. The images were referenced.

Two examples of the magazine insert are provided in Appendix 1 featuring an approach to using honey for treating cough in children and a practice guideline for implementing rapid Streptococcus antigen testing in a community pharmacy.

Across all 53 students, the mean grade was 82.3% and the standard deviation was 8.6%. The grade distribution passed the test for normality. Four students requested individual appointments with the instructors to revisit and discuss their grading.

To test the hypothesis that the Spotlight assignment assessed skills that were different from those assessed in conventional examinations, each student’s Spotlight grade was contrasted with that individual’s average exam grade in the same course. The examinations were administered at the midpoint and at the conclusion. Both exams featured multiple choice questions and were administered using Examplify (ExamSoft, Dallas, Texas, United States). One student who had a late submission and two students who submitted copyrighted materials were excluded from the analysis since the associated grade penalties would confound the ability to answer the research question (N = 50). Among the remaining 50 students, the average Spotlight grade was 82.1% and the average exam grade was 81.4%.

A very weak positive correlation was detected between the Spotlight grade and the corresponding exam grade for each student (Pearson linear correlation coefficient $R^2 = 0.15$, Figure 1A). The spaghetti plot in Figure 1B highlights the variable class rankings and grades between the Spotlight assignment and the examinations. The differences in student performances across the two assessments support the hypothesis that the Spotlight assignment may be assessing skills that are different from those assessed in conventional examinations. Future investigations are required to determine the exact nature of these skills and whether they are predictive of professional success or are useful in pharmacy practice.

Figure 1 Statistical comparisons of Spotlight grade and average exam grade suggest that the Spotlight assignment may be assessing skills that are different from those assessed in conventional examinations.
A subgroup analysis was also performed to evaluate whether the assignments were graded without bias toward specific ailments. No statistically significant differences in Spotlight grade were detected among the cosmetic, digestive, infectious, pain, irritant or lifestyle minor ailment subgroups (two-sample t-test).

All things considered, the key issues to address before subsequent administrations of the assignment include reducing grading time requirements and developing strategies to detect copyrighted materials. Provisionally, grading time may be reduced by eliminating the third component of the assignment (the pharmacists’ companion tool), which was often a representation of the content from the magazine insert. However, this decision must be weighed against the observation that the companion tools were especially valued by students since they were designed to guide practice and were distributed to students at the conclusion of the course. Another alternative is moving the assignment from being completed individually to being completed in a small group. An anticipated challenge that did not present was the possibility that students would have a difficult time differentiating their work from the existing practice standards laid out in tertiary resources, such as the Compendium of Therapeutics for Minor Ailments. However, all of the submissions were encouragingly unique.

Future investigations into the nature of the skills gained by the students, as well as their perceptions regarding the professional value of the exercise would be important when deciding to apply this assessment in the course consistently. It is anticipated that the assignment helped students to develop communication skills that will engage audiences beyond oral and written language, namely by approaching communication dynamically with graphics. Future investigations could also examine whether performance on the assignment may be a reflection of the depth of knowledge possessed by the student, whereas multiple-choice examinations tend to select for superficial recognition memory. Summarizing vast amounts of clinical content into a succinct and powerful infographic requires strategic processing, critical thinking and thorough comprehension of the literature.3

CONCLUSION
The infographic tools put clinical content from the course into action by leveraging recent trends in effective communication. As an assessment, the infographic assignment recognized a unique profile of skills in the students that was statistically different from the profile of skills that was evaluated by the multiple-choice examinations. The diverse spectrum of assignments submitted suggests that each student took ownership over their topic.

Conflicts of Interest: None.

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Appendix 1

TIME IS HONEY
THE BUZZ ABOUT COUGH

Pharmacists are often the first line of defense when patients suffer from cough. Among the many products available for cough relief, honey has been shown to be effective, and it is among the most popular products used worldwide. This article will provide an overview of honey’s use in cough management.

THE FACTS

- Cough is the most common reason women seek medical care.
- Pharmacists are primary health care providers sought to manage cough.
- Over 70% of Canadians use natural health products, with a projected 12-20% global annual increase.
- There is limited evidence in Canada on the counter-regimens for cough management.

Dry vs. Productive Cough - Let it bee

One of the first questions we ask our patients is to describe the nature of their cough; dry or productive. This misclassification leads back to a time where identifying a phlegm cough was critical in avoiding the development of tuberculosis.

With today’s modern day medicine, recognizing dry versus productive, our assessment should shift to focus on duration, and ruling out potential red flags, including a persistent cough lasting over 3 weeks, or a cough accompanied by altered breathing such as wheezing or shortness of breath.

Treatment should be aimed at distinguishing the cough in itself, rather than over-prescribing with medicating cough & cold products found on the counter. Not only are these non-prescription products cautioned for use in children, many have failed to show benefit in adults. In addition, and according to the Canadian Pharmacists Association, in children aged 12 months to 10 years, there is no evidence to support the use of over-the-counter cough medicines in children.

What’s all the buzz about honey?

A Cochrane review comparing honey to decongestants and antihistamine for cough in children, revealed honey to be equally effective, and no need to decongestant and antihistamine in children aged 12 months to 10 years.

Additional benefits to honey include:
- Availability & accessibility - you can find honey anywhere
- Low cost
- Not interact with other medications
- Takes a while longer up
- Can be used in 3 years old (pectinized only up to 14a)
- Safe use in diabetes & pregnancy
- Fewer side effects, limited to moderate interactions with antihistamines and antibiotics
- No abuse potential

Children’s Dosing (1-2 years old): 0.5 to 2 teaspoons of honey at bedtime
Adult Dosing: 20-30g of honey/2-3 days, dissolved in warm water

How does it work?

1. Stimulation of salivation lubricates the airway
2. Sweet taste promotes innate analgesic system
3. Demulcent effect contributes to anti-inflammatory action

The Bee’s Knees Cough Practices of the World

Honey has long been recognized by the medical professionals, and embedded throughout the ancient history for centuries and civilizations across the globe. With growing scientific evidence supporting its therapeutic benefits, along with its appeal for safety profile, honey is often seen as a natural alternative to cough medicines.

Honey was the first prominent drug in ancient Egypt, present in nearly all preparations of that period, with widespread use listed in ancient texts and cough remedies.

The Indian Ayurvedic civilization regarded honey as the most effective for its use in relieving cough, and digestive complications.

It was the Chinese Kim Dynasty in the 16th century who hailed honey as a medicinal product, and saw it being used in many recipes to treat coughs.

Traditionalists, the ancient Greek philosophers, also used honey in various concoctions to treat ailments such as eye disease, burns and coughs.

Staying Innovative in the Changing Landscape of Pharmacy

Think towards the future; our population is moving towards higher natural health products use with women and those with higher educational status, among the main drivers of this increase. We should be looking into movement to promote a cough treatment that is supported by scientific evidence, and one which addresses an under-represented population, currently leading in sales and effective products to manage cough.

As our profession continues to be valued for its trust among Canadians, let us uphold this title by recommending the most evidence-based practices, whether these be honey or alternative.

“Yes, honey” is often the safest, and most appropriate answer.

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PHARYNGITIS MANAGEMENT IN YOUR COMMUNITY PHARMACY

By Michelle Lemanovic, PharmD Candidate 2023

Pharyngitis is an inflammation of the pharynx due to infectious or non-infectious causes. The most common infectious etiology is from respiratory viruses. Bacterial pharyngitis infections can also occur, which is mostly caused by group A streptococcus (GAS) bacteria.1, 2

GAS pharyngitis is usually self-limiting, with symptoms resolving in 3-10 days.3 Antibiotics can be used.4-6

- Prevent rare complications like rheumatic fever (RF).
- Decrease transmission, and
- Shorten duration of symptoms by 1 day.

IF rates are approximately 3 cases per million a year in Canada, although higher rates are seen in the First Nations population. When the etiology of pharyngitis is likely due to GAS, throat swab cultures and rapid antigen detection tests (RATD) can be performed to confirm GAS infection and requirement for antibiotics.

Community pharmacists are ideally positioned to help in the identification and management of patients with GAS pharyngitis. In order to prevent unnecessary antibiotic use, pharmacists should follow these 3 steps in pharyngitis management.

1. Confirm patient has signs & symptoms of GAS pharyngitis.

- GAS pharyngitis signs & symptoms
  - Sudden and painful sore throat
  - Fever >38°C
  - Swollen & tender cervical lymph nodes
  - Exanthemata pharyngeal and tonsillar+
  - Scarletina/nas rash, palatal petechiae

- Viral pharyngitis signs & symptoms
  - Sore throat with cough
  - Rhinorrhea, conjunctivitis
  - Hoarseness
  - Oral ulcers
  - Diarrhea
  - Exanthema

Red Flags - refer patient to physician/hospital:
- Sudden onset of symptoms
- Temperature >39°C
- Difficulty swallowing
- Difficulty breathing
- Severe headache
- Uncontrolled fever
- Misery index

2. Use Centor Score to determine if GAS pharyngitis is likely.

Centor Score shown likelihood of GAS pharyngitis:
- 1 lower likelihood
- 2-3 medium likelihood
- >4 higher likelihood

Keep in mind: Patients are not routinely assessed for swollen lymph nodes and exudative/vesicular tonsils. This is an important limitation to consider while determining the Centor score and making recommendations to patients.7

3. Use Centor score to determine need for detection tests and antibiotics.

- Rapid antigen detection test (RADT): Point of care test for GAS pharyngitis. Results available in minutes. High specificity (~95%), positive results confirm GAS pharyngitis diagnosis. Low sensitivity (80-97%) - children should have negative RADT confirmed with culture.4

- Throat swab culture: Gold standard. High specificity (99%), high sensitivity (97%). Results available in 24-48 hours. Can identify less common bacteria that cause pharyngitis.4

- Allowing for antibiotic susceptibility testing if needed.4

- Note: GAS pharyngitis should only be performed to confirm GAS pharyngitis, not other symptoms. These tests cannot be used to diagnose GAS pharyngitis. Remember to perform a physical examination and confirm other symptoms may be present. If symptoms persist, refer to physician.

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