Maximizing Credit Pathway Options for Students Enrolled in Pre-Health Science Programs at Ontario Colleges

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What is Pre-Health Science?

- Historically - mandate “to prepare students for a health career program at *respective/home* College and Universities”
- Transition between high school and health programs
  - Not to replace high school
  - Mapping places PHS somewhere between 11C – 12U and first year University

Project Rationale

- Applicants
  - To PHS and Health career programs has increased
  - Students aren’t staying at their ‘home’ college as much
  - Increase number of students who take PHS then decide to apply to University

Health Career Programs

- Scope of Health career programs is also changed:
  - Independent practice; Self regulated; University transfer credits
  - Increased level of rigor in prep program
  - Bridge the “gap” from College level HS curriculum to University preparation

- This same level of preparedness is not necessary for all Health/College programs

= Program Fit

Questions Posed

- How do we meet this increased demand and still keep students successful?
- How do we increase transferability options for students? How do we standardize, but still meet the needs of the “home” college programs
- How do we prepare students interested in university or advanced diploma program? Does this affect university articulation agreements? Can we increase university articulation agreements?

Current Pre-Health Delivery Models

- Each of the 24 Ontario Colleges offer a preparatory health program
  - Pre-Health Sciences
  - Health Option
  - Pre-Nursing

- Variety of Pre-Health delivery models
  - Nine colleges offer two streams (diploma or ‘regular’ stream, and degree or advanced diploma stream).
  - The remainder offer only one stream.

- Variety of Learner Needs
  - Students are a blend of direct admission from high school and mature applicants.
  - Academic profile of students ranges from no senior level high school science to undergraduate degrees.
  - Aboriginal and visible minorities

Current Pathways for Pre-Health Students

Summary of Pathways or Arrangements from Pre-Health to Career Programs

Programs	Internal Health Science Diplomas	Other Internal Diplomas	Internal Advanced Health Sciences Diplomas	Bachelor of Science in Nursing (BScN)
Pre-Health Sciences	35	15	18	18 (9 of 18 have 2 streams, 4 of which are specific to BScN)

Finding Program Commonalities among Ontario Colleges offering Pre-Health Sciences

- Representative colleges gathered to discuss program outcomes and find commonalities through program mapping.
- Core competencies were generally similar.
- Discussed with stakeholders to establish essential program content.
- Discovered that core outcomes are more similar between colleges than expected.

First Steps

- College representatives agreed on the essential skills for all Pre-Health students.

- For those outcomes that are considered essential employability skills, Pre-Health focuses on the relation to healthcare.
  - Example: communication in relation to medical terminology and charting.

Program Learning Outcomes

Pre-Health Sciences

- Apply scientific principles and concepts in the essential science subjects required for the further study of health sciences.
- Apply mathematical concepts and principles to solve problems that will be required as foundation in the study of health sciences.
- Relate knowledge gained across a wide range of subjects to self and society.*
- Communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of audiences.*
- Employ critical thinking processes and problem solving techniques.*
- Develop a career plan for a future career in the health sciences, including educational requirements and opportunities for employment.

* These are included in the essential employability skills required for all programs.

Pre-Health Course Content

- Greatest degree of divergence among colleges is among individual course content and delivery.
  - Number of delivery hours
  - Resources
  - Time in lab
  - Content

- All Pre-Health programs offer biology and anatomy/physiology, chemistry, math, and physics.

- Additional courses offered to supplement core skills
  - Medical terminology
  - Health careers
  - Success in Post-Secondary Education
  - Critical Thinking

Methodology

- Provincial college representatives divided into working groups by core discipline.
  - Biology
  - Math
  - Chemistry
  - Physics
- Worked with stakeholders and faculty members to determine minimum learning outcomes.
- Constant process of stakeholder feedback and input from relevant faculties.

Summary of Results

Biological Sciences

- Approximately 120 - 150 hours of in-class time.
- Focus on human anatomy and physiology.
- In-depth coverage of organ systems and homeostasis in the human body.
- Examination of microbiology (viruses, bacteria, eukaryotes)
- Discussion of pathology to improve understanding of content only.

Summary of Results

Chemistry

- Approximately 80 to 120 hours of in-class time.

- General Chemistry
  - Periodic table and elements
  - Nomenclature
  - Scientific notation & units of measure
  - Stoichiometry
- Organic Chemistry
  - Including biochemistry

- Where possible, inclusion of lab time to supplement in-class material.

Summary of Results

Math

- Approximately 80 to 120 hours of in-class time.
- Emphasis on numeracy, problem solving and critical thinking skills necessary in the health sciences.
- Inclusion of statistics, algebra (polynomials & functions), and possibly geometry and trigonometry, where necessary.

Summary of Results

Physics

- Approximately 40 to 80 hours of in-class time
- Not all Pre-Health programs offer Physics
- Overview of essential concepts relevant to the health sciences
- Coverage of mechanics, matter, electricity, magnetism and waves

Highlights

- Overall, Pre-Health Science courses are more similar than different in delivery and course content.
- Differences, such as delivery hours, can be overcome.
- Some differences between Colleges can be beneficial (program uniqueness and autonomy).
- Generally, Pre-Health Science students are well-prepared and are successful in a goal program.

Ongoing Discussions

- What level of math is needed?
- Course exemplars in development
- How to implement changes?
- Who’s onboard?

If you build it, will they come?

- Pre-Health Science Programs
  - If it ain't broke, why fix it?
    - What about current articulation agreements?
  - One stream or two?
    - How are we going to do this?
  - Retention - Can the students handle it?
  - We'll play, but who will pay?

If you build it, will they come?

- College Health Science Programs
  - One size fits most?
  - Is one student better than the other?
  - Can’t take them all?

If you build it, will they come?

- University Health Science Programs
  - Big difference in entry requirements for different universities and different programs (especially for math!!!)
  - How will standards and rigor be maintained?

Where do we go from here?

- Discussion continues
  - We’re the same, but different
  - Process for maintaining consistency
- Need help getting College and University Health Science programs to recognize Pre-Health programs as meeting or exceeding entry requirements
- Trying to expand the number of opportunities for students without impacting our own communities
- Focus remains on preparing students the best we can for whatever lies ahead of them

Summary

- Developed common course exemplars
  - Detailed course learning outcomes
  - Common language
  - Formalize what we already do
- Are some implementation challenges
  - College size, funding, needs
- Streaming model
  - Prepares for different scopes of Health
  - Flexibility
  - Best program fit

Creates pathways for success