# Question Development
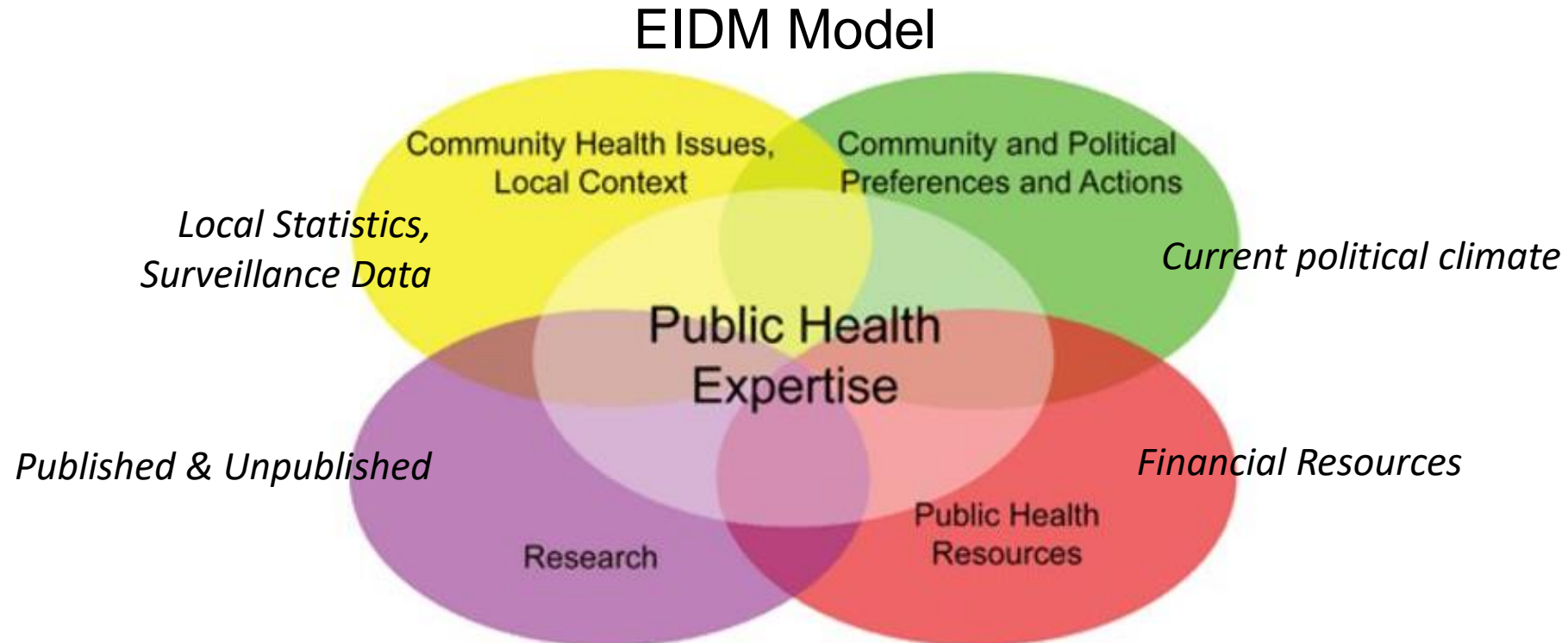


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# Evidence Informed Decision Making in Public Health

## EIDM Model

Local Statistics, Surveillance Data

Community Health Issues, Local Context

Community and Political Preferences and Actions

Current political climate

Public Health Expertise

Published & Unpublished

Research

Public Health Resources

Financial Resources

# 7 Stages of EIDM

Today's Focus ➡ **1**   Define .........................Clearly define your question or problem

**2**   Search ......................Efficiently search for research evidence

**3**   Appraise ...................Critically appraise the research sources

**4**   Synthesize .................Synthesize & form recommendations

**5**   Adapt ......................Adapt the information to a local context

**6**   Implement.....Decide whether (and plan how) to implement the evidence into practice or policy

**7**   Evaluate...Evaluate the effectiveness of the implementation efforts (and disseminate your findings)

*The National Collaborating Centre for Methods and Tools (NCCMT) identifies seven stages of EIDM. For more information on each stage please visit http://www.nccmt.ca/eiph/index-eng.html*

# Today's Goals

- Things to consider before selecting a review type
- Understand the importance of developing a research question
- Introduction to concept mapping and frameworks

# Review Types

- What type of review are you conducting?

- What type of review(s) might answer your research question?

# Sample Review Types

**Rapid Review** is "a type of knowledge synthesis in which components of the systematic review process are simplified or omitted to produce information in a short period of time"[1]

Narrative Review or Literature Review "Legacy model of a review criticized during the early years of the systematic review movement for its lack of transparency. Serves continuing role, when performed more systematically, in orienting research within a wider field" [2]

Umbrella Reviews "bring together multiple pre-existing reviews, all conducted using a shared methodology (e.g. Cochrane reviews), facilitating comparison and analysis"[2]

Mapping/Scoping Reviews "assessment of potential size and scope of available research literature. Aims to identify nature and extent of research evidence (usually including ongoing research)" [3]

**Living/Systematic Reviews** "seek to systematically search for, appraise and synthesize research evidence, often adhering to guidelines on the conduct of a review" [3]

*Regardless of review type – being systematic in your approach, and transparent with your methods provides credence to your work*

# What type of Review is best for you?

Meta-Analysis, Systematic Review, Scoping Review, Rapid Review, Narrative Review, Mapping Review, Realist Syntheses…

**Resources to explore:**
- Meeting the review family: exploring review types and associated information retrieval requirements
- What is a Literature Review?
- Summary of 5 types of reviews
- Systematic and Scoping Reviews
- Determining the scope of the review and the questions it will address
- Systematic Review Workshop Series: Home
- Right Review

# Before You Start …

**Before starting a research project, consider the following questions:**

1. What has already been done / is being done on this topic?

2. Is the scope of the question matched to the timeframe?

3. Do I have the necessary resources? *(time, staff, access to software)*

4. Do I have the skill level required? *(Do I need support? Training? Who else might be able to assist with this project?)*

5. What is this review trying to answer? *(To Describe, To Analyze, To Explore)*

6. How will the research impact health unit activities?

7. What will the final product be? Who is the audience? *(i.e., Briefing Report, Article, Program Implementation, Presentation)*

8. Will the final product be disseminated*? (How widely? Forwarded to colleagues provincially? Where will the information live internally?)*

9. What type of data will be included? *(Statistics? Peer Reviewed Articles? Grey Literature? Graphics?)*

10. What happens if there isn't any research available? Is the research generalizable to your population?

11. What happens if the research is in opposition to (community, health unit, individual) beliefs?

12. Do I have any preconceived ideas or biases? *(apply a [health equity impact assessment tool](#))*

13. What is the risk? *(**R**eputation?, **A**cademic?, **F**inancial?, **T**ime?)*

# Risk?

## Reputation

Will it undermine relevance of your results?
Impact your conclusions and actions?
Question the health unit as a source of credible information?

## Academic

Jeopardize your publication efforts?

## Finance

What is the financial impact of the decision being made from your research?
Are you implementing a costly program?

## Time

How much time and resources will go into completing the review?
How much time may be lost if the review cannot be utilized to provide a recommendation?

# Strengths & Weaknesses

| Sample Review Types | Strengths | Weaknesses | Most Commonly Used For: |
|---|---|---|---|
| Background Reading | Enhances personal knowledge on a topic | High bias, low methodological rigor | Gathering information before beginning a review or for verifying a single fact |
| Rapid Review | Aim to be rigorous and explicit in method but make concessions to breadth or depth by limiting aspects of the review process | Pending which concessions are made, fast-tracking may result in publication bias, poor quality assessment or overlooked inconsistencies in synthesis | To inform policy and program decision making |
| Systematic Review | Seeks to draw together all known knowledge on a topic area | Requires adherence to strict methodologies and may take long periods of time and resources to complete | Complex search questions (i.e. why a particular intervention is effective) |

# Question Development

- Be sure you ask an answerable question *(do not make a statement)*

- Consider the type of question are you asking (qualitative, quantitative)?

- Only ask one question at a time *(larger projects may have sub-questions)*

- Document your reasoning *(remind yourself why you made a decision)*

- Is each concept in your question definable? *(best practice)*

- If you could describe a magical article that answered your question, what would it be about?

**Resources to explore:**
- [PHAC use of Promising Practices versus Best Practices](#)

**What type of question are you posing?**

*Effectiveness of an intervention?*

*Cost/economic burden of a disease?*

*Prevalence of disease?*

*Policy effectiveness?*

*User experience?*

*Risks, protective factors, treatment options?*

**What types of studies will best answer your question?**

*Therapy = RCT, Systematic Review*

*Prevention = RCT, Cohort Study, Case Control Study, Case Series*

*Cost = Economic Analysis*

# Really, what's the worst that can happen?

**An ill-formed question can result in:**

- An inconclusive answer
- Irrelevant results
- A biased answer
- Confusion during title/abstract screening
- Inconsistent team approaches to synthesizing the literature
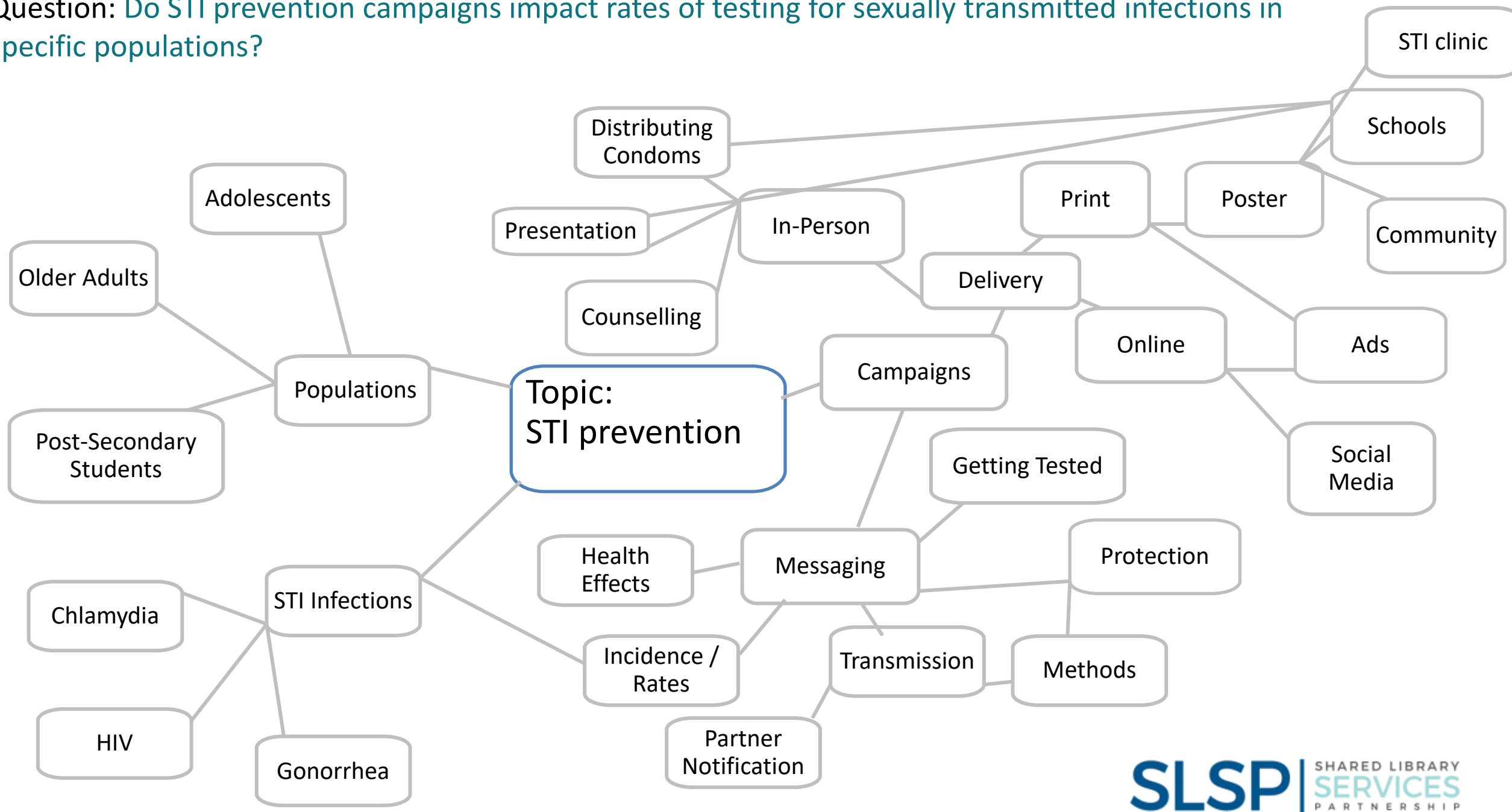- Wasted time
- Poor final product

*Remember: developing the question and search strategy is an iterative process*
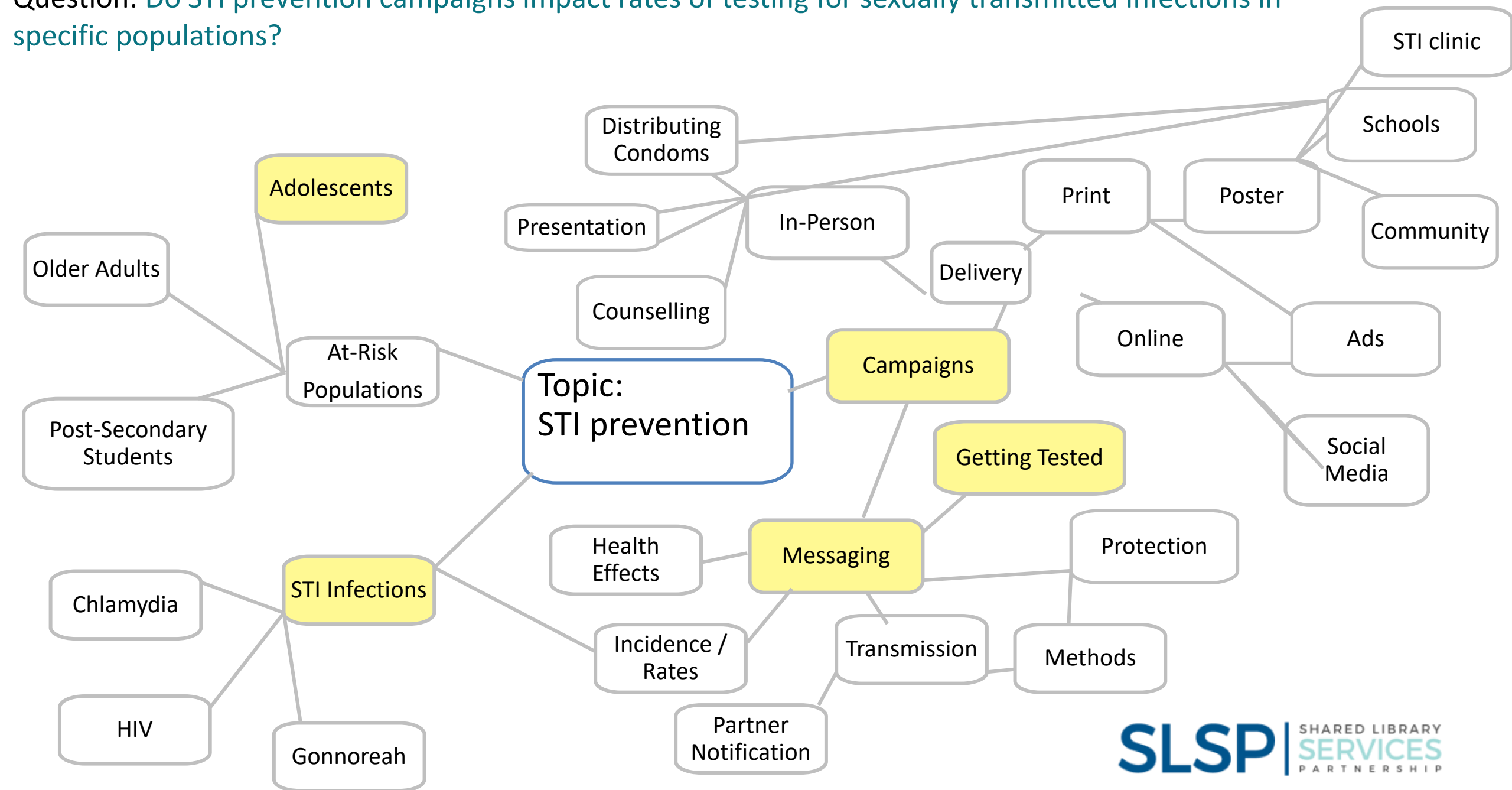
# Concept Mapping

—

- Can be applied to any question
- Best for visual learners
- Helps focus your question and parameters
- Generates group discussion & consensus
- Brainstorming tool – get creative!

**Question:** Do STI prevention campaigns impact rates of testing for sexually transmitted infections in specific populations?



Topic: STI prevention

- Populations
  - Adolescents
  - Older Adults
  - Post-Secondary Students
- STI Infections
  - Chlamydia
  - HIV
  - Gonorrhea
  - Incidence / Rates
- Campaigns
  - Distributing Condoms
  - Presentation
  - In-Person
  - Counselling
  - Delivery
    - Print
    - Poster
    - Community
    - Online
    - Ads
    - Social Media
    - STI clinic
    - Schools
  - Getting Tested
  - Messaging
    - Health Effects
    - Transmission
      - Partner Notification
    - Methods
    - Protection

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**Question:** Do STI prevention campaigns impact rates of testing for sexually transmitted infections in specific populations?



- Topic: STI prevention
  - At-Risk Populations
    - Adolescents
    - Older Adults
    - Post-Secondary Students
  - Campaigns
    - Distributing Condoms
    - Presentation
    - In-Person
    - Counselling
    - Delivery
      - Print
      - Poster
      - Online
      - Ads
      - Social Media
    - STI clinic
    - Schools
    - Community
  - Getting Tested
  - Messaging
    - Health Effects
    - Protection
    - Transmission
    - Methods
    - Partner Notification
  - STI Infections
    - Chlamydia
    - HIV
    - Gonnoreah
    - Incidence / Rates

# What's the Difference?

**Q: What public health interventions have been implemented to affect the rate of gun violence?**

**vs.**

**Q: Do public health interventions affect the rate of gun violence?**

[PUBLIC HEALTH INTERVENTIONS] + [GUN VIOLENCE]

[PUBLIC HEALTH INTERVENTIONS] + [GUN VIOLENCE]

- This question does not require the literature to 'evaluate' the effect of the intervention. Articles on public health interventions and gun violence may also focus on:
  - How is the intervention structured?
  - What is required to implement the program?
  - Who did the intervention target?
  - What was the outcome? (e.g., evaluation of effectiveness, gathered analysis of participant views, etc.)
- This question is broad and scoping in nature

- This question requires the literature to 'evaluate' the effect of a public health intervention
- It narrows the results to studies which have measured gun violence before and after an intervention
- Interventions and prevention techniques which have not measured population statistics (before/after) but have described efforts and potential effects using other markers such as social determinants of health would be excluded
- This question is narrower and focused in nature

# Frameworks

- Manage and break down research questions
- Help identify key concepts in your question
- Determine your inclusion and exclusion criteria
- Set the foundation for your search strategy

# What is PICO?

| PICO | |
|---|---|
| **P** | Patient or Population |
| **I** | Intervention (exposure, prognostic factor, or test) |
| **C** | Control /Comparison/Comparator |
| **O** | Outcome you would like to measure or achieve |

# The Many Variations of PICO

| Framework | Components |
|---|---|
| PICO | Population, Intervention, Control/Comparison/Comparator, Outcome |
| PICOT | Population, Intervention, Comparison, Outcome, Time |
| PICOC | Population, Intervention, Comparison, Outcome, Context |
| PO | Population/Phenomena Outcome |
| PESICO | Population, Environment, Stakeholders, Intervention, Comparison, Outcome |
| EPICOT | Evidence, Population, Intervention, Comparison, Outcome, Timestamp |
| PICOTT/ PICOTS | Population, Intervention, Comparison, Outcome, Type of question, Type of study design<br>Population, Intervention, Comparison, Outcome, Study type |
| PECODR | Problem, Exposure/Intervention, Comparison, Outcome, Duration, Results |
| PISCO | Population, Intervention, Setting/Comparison, Outcome |
| PIPOH /S | Population, Intervention, Professionals, Outcome, Healthcare/Setting |
| PCC | Population, Concept, Context |

# Even More Frameworks

| Framework | Components |
|---|---|
| ECLIPSe (formerly CLIP) | **E**xpectation, **C**lient group, **L**ocation, **I**mpact, **P**ractitioner/Professional **Se**rvice |
| SPICE | **S**etting, **P**erspective, **I**ntervention, **C**omparison, **E**valuation |
| SPIDER* | **S**ample, **P**henomenon of **I**nterest, **D**esign, **E**valuation, **R**esearch type |
| CIAO | **C**lient characteristics, **I**ntervention, **A**lternate intervention, **O**utcome **C**ontext, **I**nteraction, **a**nd **O**utcome |
| PEO | **P**opulation and their problem, **E**xposure, **O**utcome and themes |
| PS | **P**opulation, **S**ituation |
| MIP | **M**ethodology, **I**ssues, **P**articipants |
| PIE | **P**atient/Problem/Population, **I**ntervention/Issue, **E**ffect/Evaluation |
| CIMO | **C**ontext, **I**ntervention, **M**echanism, **O**utcome |
| PCC | Population, Context, Comparison |

# Frameworks by Discipline or Study Type

| Framework | Discipline | Type of research |
|---|---|---|
| PICO, PICOTT, PICOT, PICOC, PECODR, EPICOT, PO, PS, EPICOT | Various (largely based on clinical settings) | Quantitative |
| PIPOH | Guidelines | Quantitative |
| PESICO | Speech Language Pathology | Quantitative |
| PISCO | Public Health | Qualitative/Mixed methods |
| ECLIPSE (formerly CLIP) | Health policy & management | Evaluation |
| Concept mapping | Any | Any |
| SPIDER, PIE | Social Sciences | Qualitative |
| CIAO | Social Work | Qualitative/Mixed methods |
| SPICE | Social Sciences | Mixed methods |
| PEO, PO, PS | Various | Qualitative |
| CIMO | Management / organization | Qualitative / Mixed methods |
| MIP | Medical ethics | Qualitative |

# Today's Focus

- PICO Framework
- PISCO Framework
- PS Framework

*Reminder: this is an introduction to frameworks – don't hesitate to reach out for support!*

# PICO

| PICO | |
|---|---|
| P | Patient or Population |
| I | Intervention |
| C | Control /Comparison/Comparator |
| O | Outcome you would like to measure or achieve |

# PICO Example

**Topic**: Human Milk Feeding Rates

**Question**: Are human milk feeding rates higher in online post-natal support groups or traditional in-person support groups for adolescent parents/caregivers?

Concept 1 →
Concept 2 →
Concept 3 →
Concept 4 →

| PICO | |
| --- | --- |
| **Patient or Population** | Adolescent Parents/Caregivers |
| **Intervention** | Online post-natal support groups |
| **Control** | In-person post-natal support groups |
| **Outcome** | Human Milk Feeding Rates |

# PISCO

| PISCO | |
|---|---|
| **P** | Population |
| **I** | Intervention |
| **S *OR*** | Setting *(if appropriate)* OR |
| **C** | Comparison *(if appropriate)* |
| **O** | Outcome you would like to measure or achieve |

# PISCO Example

**Topic**: Older Adults and Physical Activity

**Question**: Does access to parks in cities impact the amount of physical activity of older adults (65+)?

| PISCO | |
|---|---|
| **Population** | Older Adults 65+ |
| **Intervention** | Access to Parks |
| **Setting *or*** | Cities |
| **Comparison** | N/A |
| **Outcome** | Amount of Physical Activity |

Concept 1 ⟶ Population

Concept 2 ⟶ Intervention

Concept 3 ⟶ Setting *or*

Concept 4 ⟶ Comparison

Concept 5 ⟶ Outcome

# PS

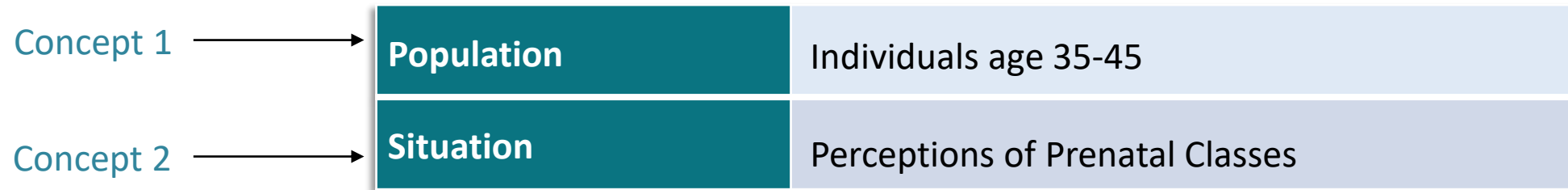| PS | |
|---|---|
| **P** | Population |
| **S** | Situation (phenomenon or situation you want to find out more about) |

# PS Example

**Topic**: Individuals Attending Prenatal Classes

**Question**: What are the perceptions of individuals aged 35-45 who attend prenatal classes?

Concept 1 ⟶

Concept 2 ⟶

| Population | Individuals age 35-45 |
|------------|----------------------|
| Situation | Perceptions of Prenatal Classes |

# Does hand washing among healthcare workers reduce hospital acquired infections?

## Broader Interpretation

| PICO | Main Concepts |
|---|---|
| Patient or Population | Healthcare Workers |
| Intervention | Hand Washing |
| Control | No hand washing / Usual Practices |
| Outcome | Reduced Infections |

## Narrower Interpretation

| PISCO | Main Concepts |
|---|---|
| Population | Healthcare Workers |
| Intervention | Hand Washing |
| Setting | Hospitals |
| Comparison | No hand washing / Usual Practices |
| Outcome | Reduced Infections |

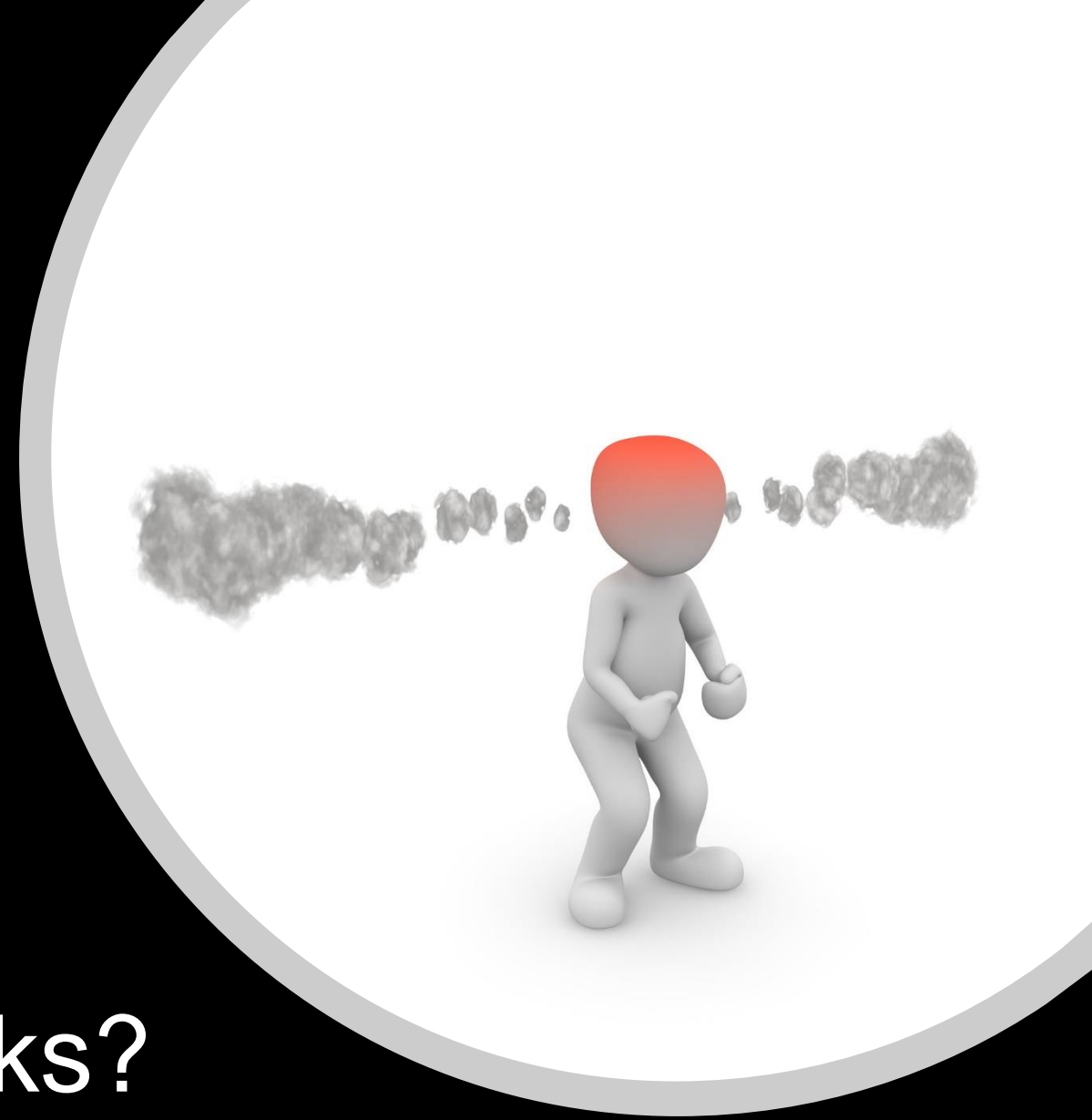SLSP | SHARED LIBRARY SERVICES PARTNERSHIP

# Expanding and Narrowing

Put simply: the more concepts you 'AND', the narrower your focus

*Caution: narrowing too far may exclude relevant results*

Feeling overwhelmed? Not sure where to start?

Trying to jam your question into a framework?

# What if I Hate Frameworks?

# Solution

Start by using a simple table, pull the main concepts from your question into it:

| | Concept 1 | Concept 2 | Concept 3 | Concept 4 | Concept 5 |
|---|---|---|---|---|---|
| **Main Concepts** | | | | | |

# Recap

1. Consider the Type of Review you are Writing

[Before You Start…](#)
[RAFT](#)

2. Develop your Question

[Concept Mapping](#)
[Frameworks](#)

3. [Contact](#) your Library for Assistance

# References

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