

IDEA TO Research question

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# Choosing a research question

Type of study

Qualitative .....What ,why and how

Quantitative..... Where and when

Mixed

SERIES - TOPICS IN CLINICAL  
RESEARCH AND METHODOLOGY



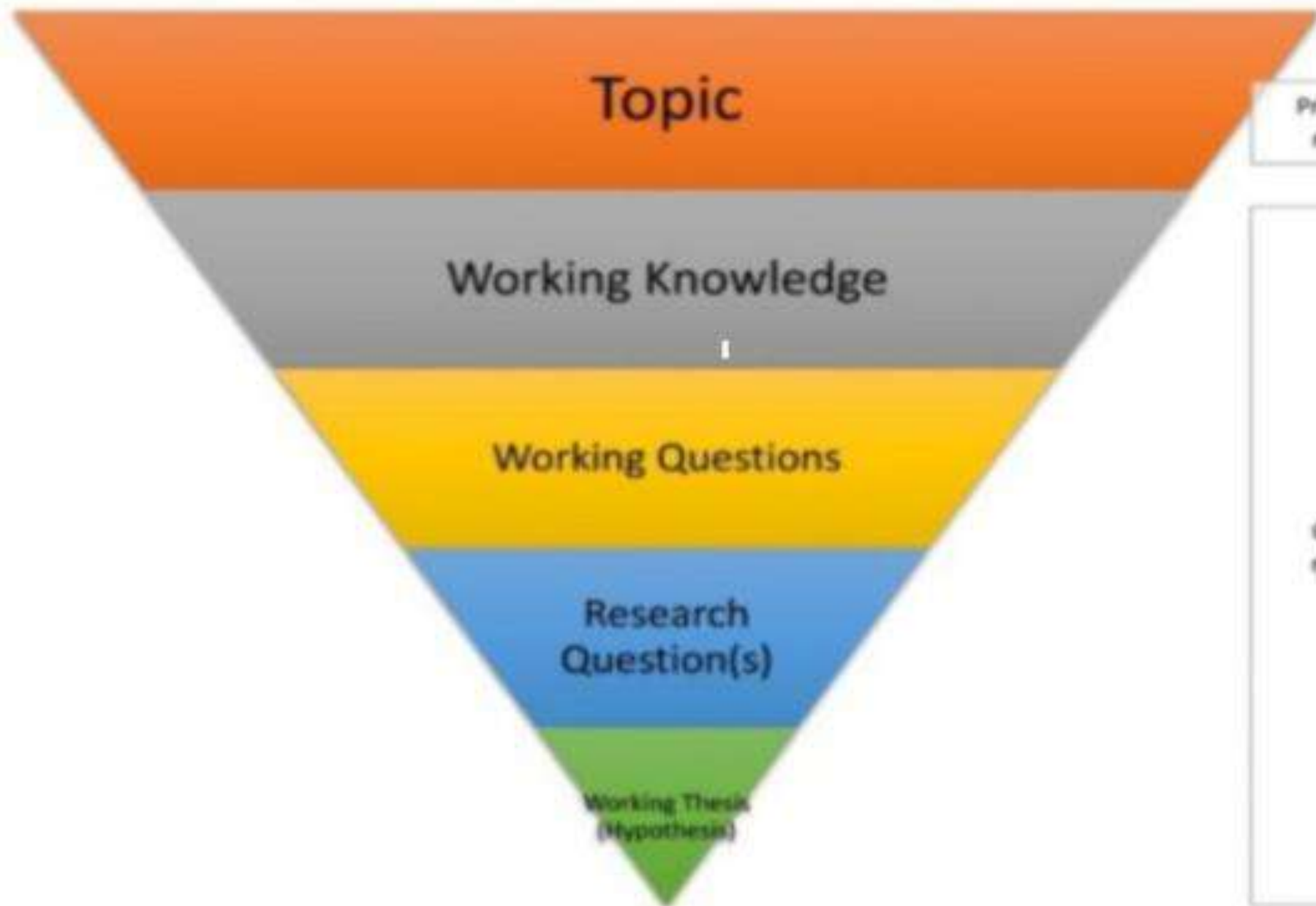
Courtesy by Cláudio Florindo Rodrigues, MD

# Research Idea

- Where do they come from : any where .  
Personnel, professional, A problem can be a research idea

Steven Jhonsons epic book : 'where good ideas come from'

- Improve ability to generate them: there is need, It will be of use to somebody
- What do we need : infrastructure  
,Participants
- What factors stimulate research ideas :  
passion and knowledge



- **Research idea** : opens up the scope

Example : interest in movies and you have a idea of unusual characters

Idea will open up broad scope

Example : no idea But research question on Zombies .This is narrow field

- **Research Idea** : stress and athletic performance

Research question

do college athletes experience greater level of stress than other college students

How do college athletes cope with stress

- Research Problem : Specific topic Eg climate change
- Research Question : Provides an area to focus on regarding research problem  
Eg How do ozone levels impact global temperature levels.

Hurdle : translation of clinical queires or problem into formal scientific investigation

# Steps and tools[ PICOT and FINER]

## Chart 1 - Key Steps in Defining a Research Idea

Choose the research idea

Find a mentor

Perform a literature review

Brainstorm options for each element in PICOT framework

Build your research question

Evaluate if the question follows the FINER criteria

Refine the research question into an answerable format



# Osteoarthritis : pain and impairment

**IDEA** :Exercise and training : Muscle strengthening

## **Research problem**

How to improve muscle strength effectively

Literature search of exercise in osteoarthritis

## **Research Question**

- In healthy individuals who are above 60 years old (P), is high resistance strength training (I) more effective than low resistance strength training (C) in improving muscle strengthening (O) after 6 weeks (T)

# PICOT [Refers to Brian Haynes]

Table 3\* - PICOT framework

Acronym	Element Definition	Description
P	Population or problem	Sample of subjects or problem that will be addressed
I	Intervention	Stands for what will be provided for the enrolled subjects. The intervention of interest may apply to therapy, prevention, diagnosis testing, and exposure/etiology
C	Comparator	Alternative intervention. Stands for what the main intervention will be compared to
O	Outcome	Corresponds to the main result the investigator plans to examine and assess
T	Time frame	Time period for data collection

# Examples

- Idea : headache
- Research question: In children with headache is paracetamol more effective than placebo against pain

Population.....

Intervention.....

Compared with.....

Outcome of interest....

PICOT : proposes specific frame work

# Finer Criteria Evaluate the research question

- Feasibility
- Interesting
- Novel
- Ethical
- Relevant

**Table 2\* Finer Criteria**

Criterion	Main questions to assess	Strategies to meet criteria
Feasibility	<p>Are there enough subjects?</p> <p>Is there enough technical expertise?</p> <p>Is the proposed time frame appropriate?</p> <p>Is there availability of facilities and equipment?</p> <p>Are there enough team members?</p> <p>Is there sufficient financial support?</p>	<p>Perform preliminary calculation of the sample size</p> <p>Estimate subject availability and lack of follow-up</p> <p>Do a pilot study to assess feasibility</p> <p>Expand inclusion criteria or eliminate unnecessary exclusion criteria</p> <p>Lengthen time frame for enrolling subjects</p> <p>Consider conducting multicenter study</p> <p>Consider using less costly study designs and common outcomes</p> <p>Develop additional sources of funding</p> <p>Reduce number of secondary questions</p>

Criteria	Main Questions to assess	Strategies to assess
Interesting	<p>Is the question interesting to the scientific and non-scientific community?</p>	<p>Make sure the questions interests:</p> <ul style="list-style-type: none"> <li>You as a researcher</li> <li>Mentors, peers, and colleagues</li> <li>Funding institutions</li> <li>General community</li> </ul>
Novel	<p>What has been done? Does the question bring innovation?</p>	<ul style="list-style-type: none"> <li>Thoroughly review the literature</li> <li>Consult experts about ongoing research</li> <li>Search internet databases for current clinical trials</li> </ul>

Criteria	Main Questions to assess	Strategies to assess
Ethical	Does the project meet the ethical standards of the research community?	Review and check required research ethics guidelines Get research ethics approval prior to initiation Consult IRB representative in case of doubts
Relevant	Does the question further medical science?	Get guidance from a mentor Discuss project with experts from the field Be up-to-date with current literature on the theme

# Research question

- Answerable inquiry into a specific concern or issues
- There is an idea

## **Example : smart phones**













- Specify your specific concern or issue
- Decide what you want to know about the specific concern or issue
- Turn what you want to know and the specific concern into a question
- Ensure that the question is answerable
- Check to make sure the question is not too broad or too narrow



# Research idea into a research question

- Identify what scope your research involves
- Formulate a general focus research question  
what and why
- Develop theory a relationship between cause and effect

# The Teltale Tail

<p>friendly and content</p> 	<p>non-threatening, unsure</p> 	<p>derisive</p> 
<p>friendly, but unsure</p> 	<p>amicable, not fearful or aggressive</p> 	<p>defensive aggression</p> 
<p>angry</p> 	<p>potentially aggressive</p> 	<p>submissive</p> 
<p>very happy to see you</p> 	<p>excited, angry or irritable</p> 	<p>alert, interested</p> 

- *Interrogative particle + research idea or sub-branch + scope or organization involved*  
*Is research question*

# Examples

- Is the risk of having breast cancer higher in symptom-free women with a positive mammography compared to symptom-free women with a negative mammography?
- Population = Women without a history of breast cancer
- Investigated test result = Positive result on mammography
- Comparator test result = Negative result on mammography
- Outcome of interest = Breast cancer according to biopsy (or not)

- References
- Geriatr Gerontol Aging, Vol. 10, Num. 3,  
p.118-25

Thank you