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A Revised Evidence Pyramid for Veterinary Clinical Resources

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Introduction: Purpose

As veterinarians are increasingly called to support clinical decisions with evidence in an imperfect information environment, new types of resources are emerging. This study provides an educational framework for clinicians and students tasked with critically analyzing and categorizing new and future resources for clinical application.

Introduction: Veterinary Evidence



- **Ask:**

- **Formulate a question** (Cockcroft P, Holmes M. Evidence- based veterinary medicine 2. Identifying information needs and finding the evidence. *In Practice* 2004;26(2):96.)

- **Acquire:**

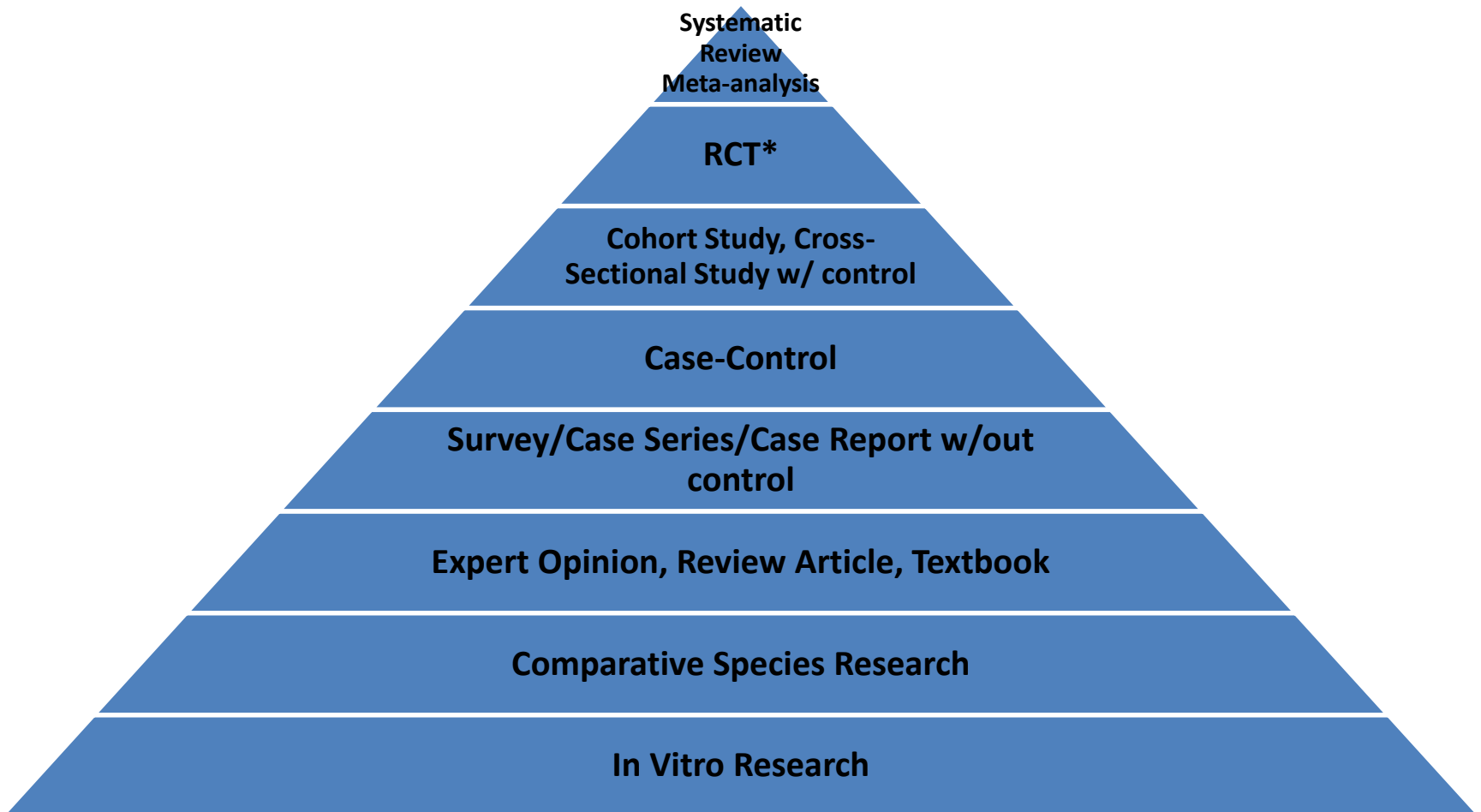
- **Interdisciplinary** (Murphy SA. Searching for veterinary evidence: strategies and resources for locating clinical research. *Vet Clin North Am Small Anim Pract* 2007;37(3):433-445.)
- **Access to evidence** (Vandeweerd JM, Kirschvink N, Clegg P, et al. Is evidence-based medicine so evident in veterinary research and practice? History, obstacles and perspectives. *Vet J* 2012;191(1):28-34.)
- **High quality evidence** (Toews L. The information infrastructure that supports evidence-based veterinary medicine: a comparison with human medicine. *J Vet Med Educ. Canada*, 2011;38(2):123-134.)
- **Search strategy** (Cockcroft P, Holmes M. Evidence- based veterinary medicine 2. Identifying information needs and finding the evidence. *In Practice* 2004;26(2):96.)
- **Time for evidence - PubMed was used only by non-clinicians** (Nielsen, T., Dean, R., Massey, A., & Brennan, M. (2015). Survey of the UK veterinary profession 2: Sources of information used by veterinarians. *The Veterinary Record*, 177(7), 172.; Vandeweerd JM, Vandeweerd S, Gustin C, et al. Understanding veterinary practitioners' decision-making process: implications for veterinary medical education. *J Vet Med Educ* 2012;39(2):142-151.)
- **Evidence systems - veterinary medicine lacks point of care decision support systems** (Toews L. The information infrastructure that supports evidence-based veterinary medicine: a comparison with human medicine. *J Vet Med Educ. Canada*, 2011;38(2):123-134.)

Introduction: Veterinary Evidence



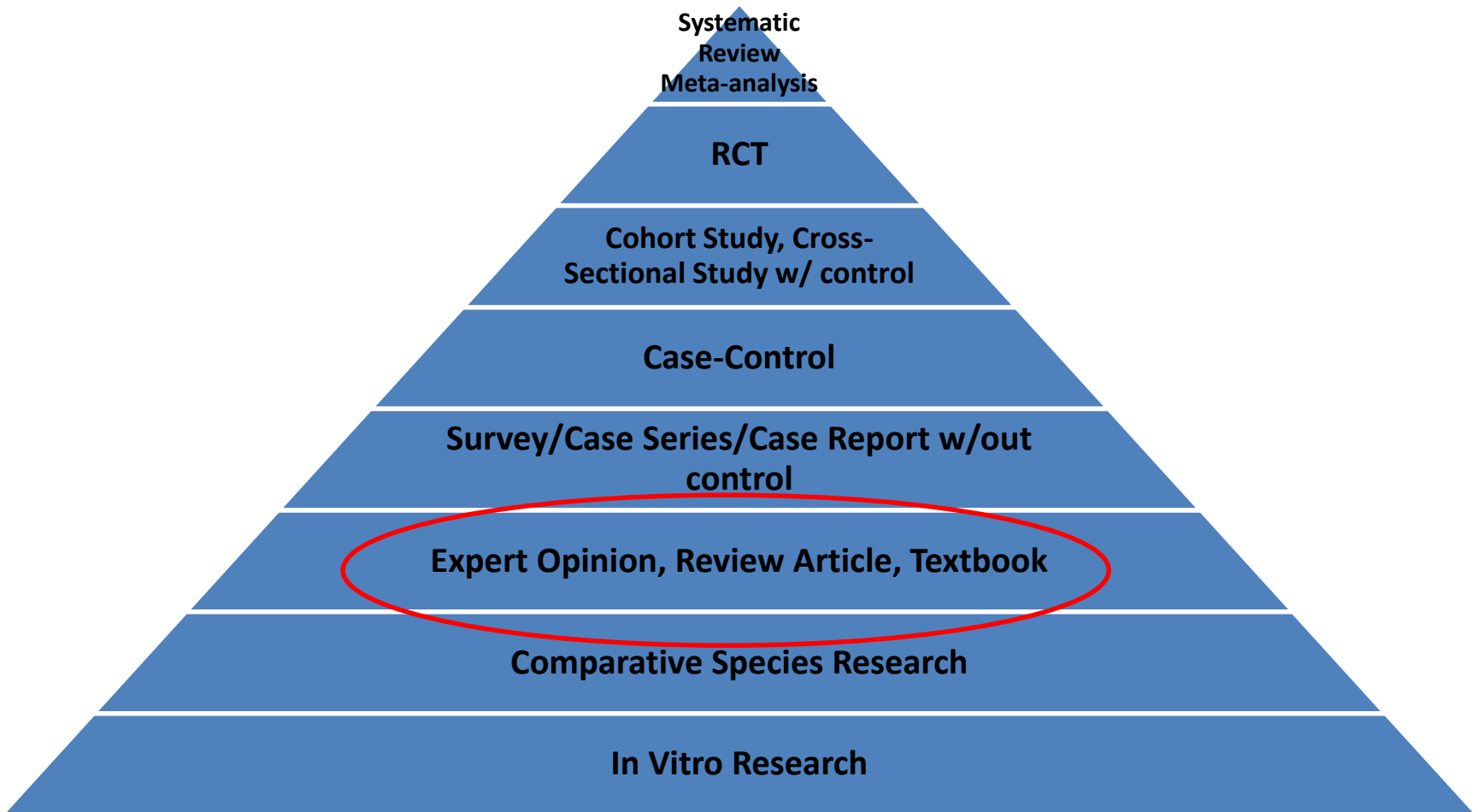
- **Appraise:**
 - **“Students should be trained to identify the hierarchy of information”** (Vandeweerd JM, Vandeweerd S, Gustin C, et al. Understanding veterinary practitioners' decision-making process: implications for veterinary medical education. *J Vet Med Educ* 2012;39(2):142-151.)
- **Apply:**
 - **Train students to use clinical guidelines** (Guyatt, G., Rennie, Drummond, Meade, Maureen, Cook, Deborah, & American Medical Association. (2015). *Users' guides to the medical literature : A manual for evidence-based clinical practice* (3rd ed., JAMAevidence). Ch. 28.1 Assessing the strength of recommendations: The GRADE approach.)
- **Assess: ? Does EBVM improve patient outcomes ?**

Background: Traditional evidence pyramid

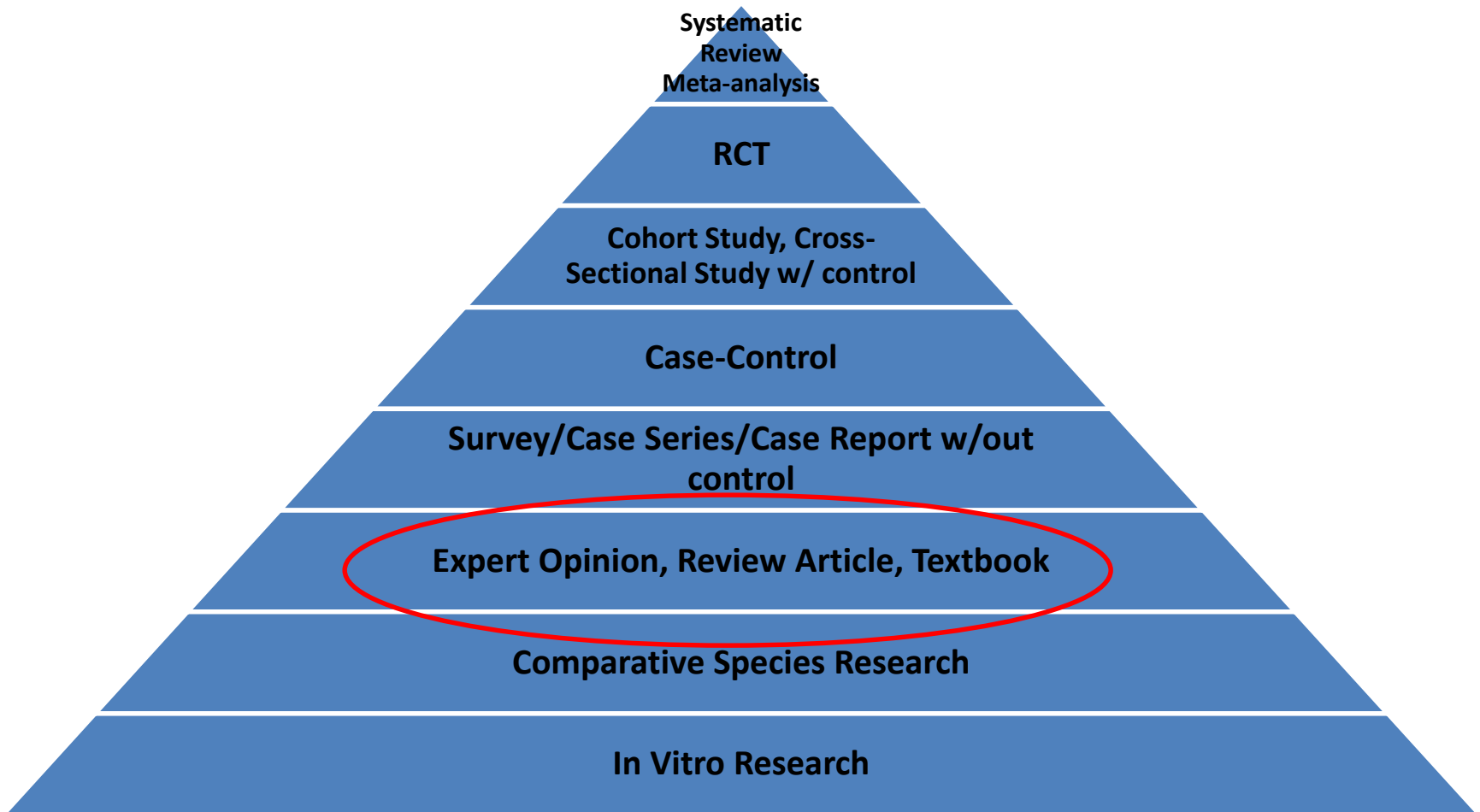


*Sargeant JM, Kelton DF, O'Connor AM. Study designs and systematic reviews of interventions: building evidence across study designs. *Zoonoses Public Health* 2014;61 Suppl 1:10-17.

Background: Traditional evidence pyramid

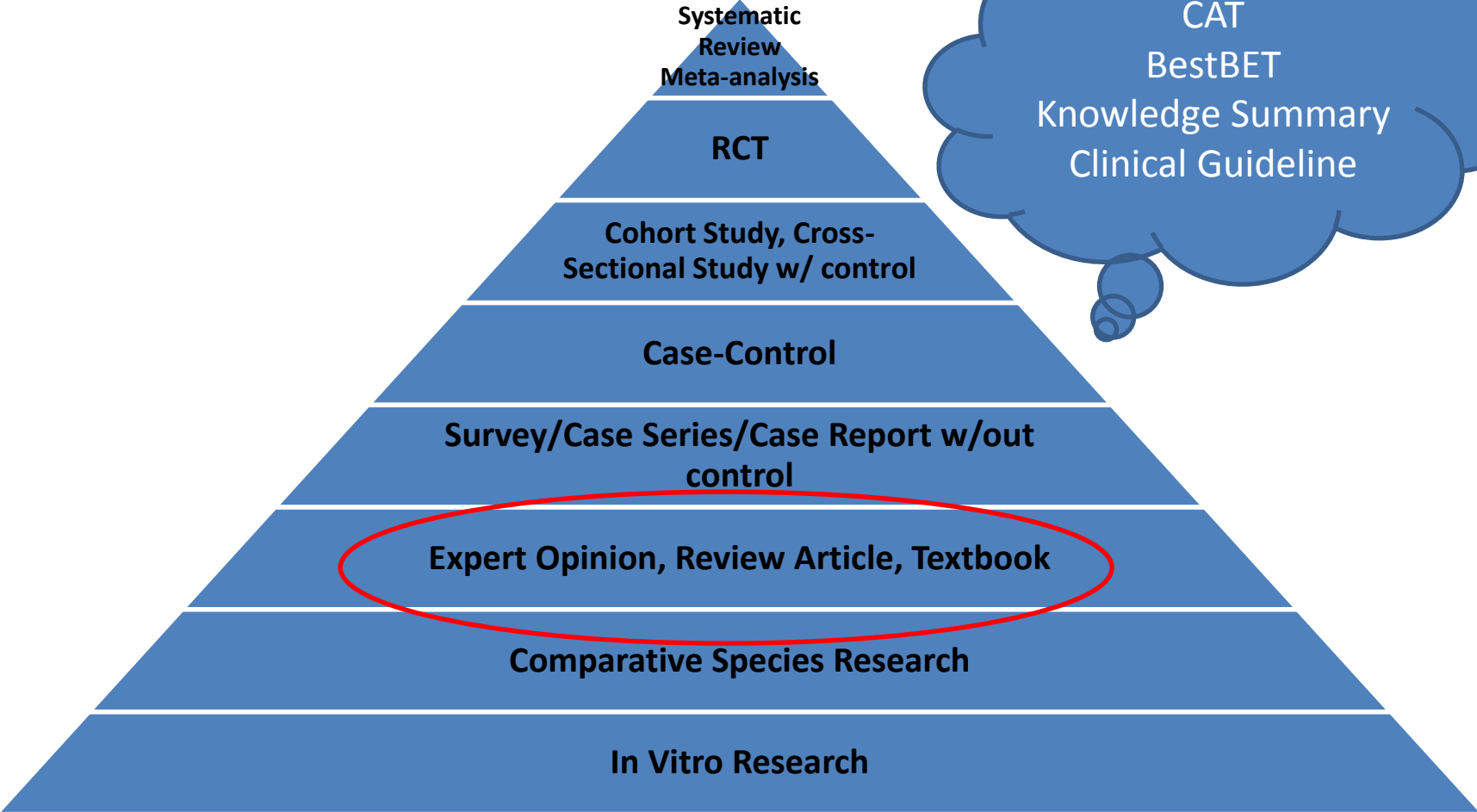


Background: Traditional evidence pyramid



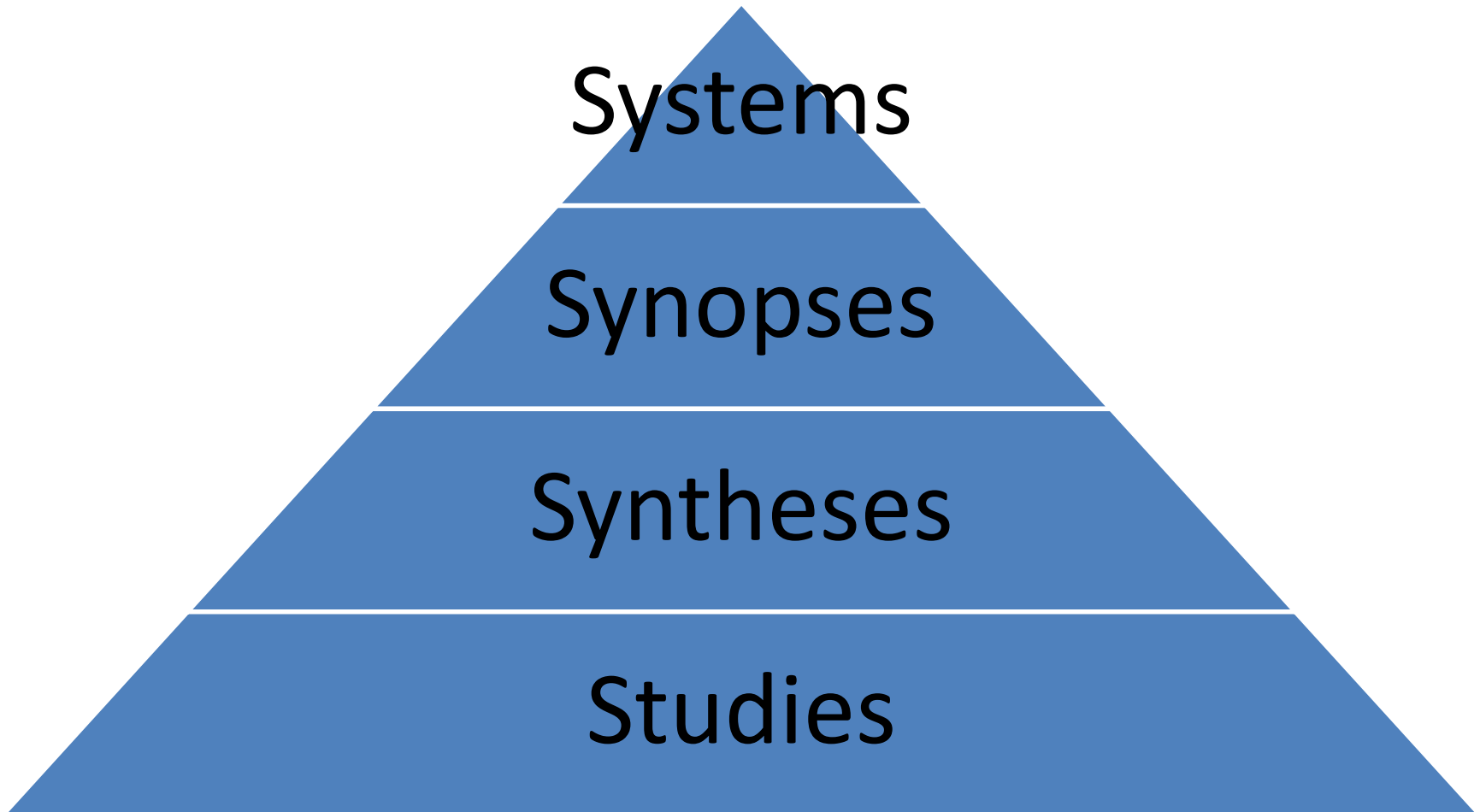
Under the pyramid: Trade publications, blogs, vendor publications, association websites, veterinary consumer websites, discussion boards, social media, Wikipedia

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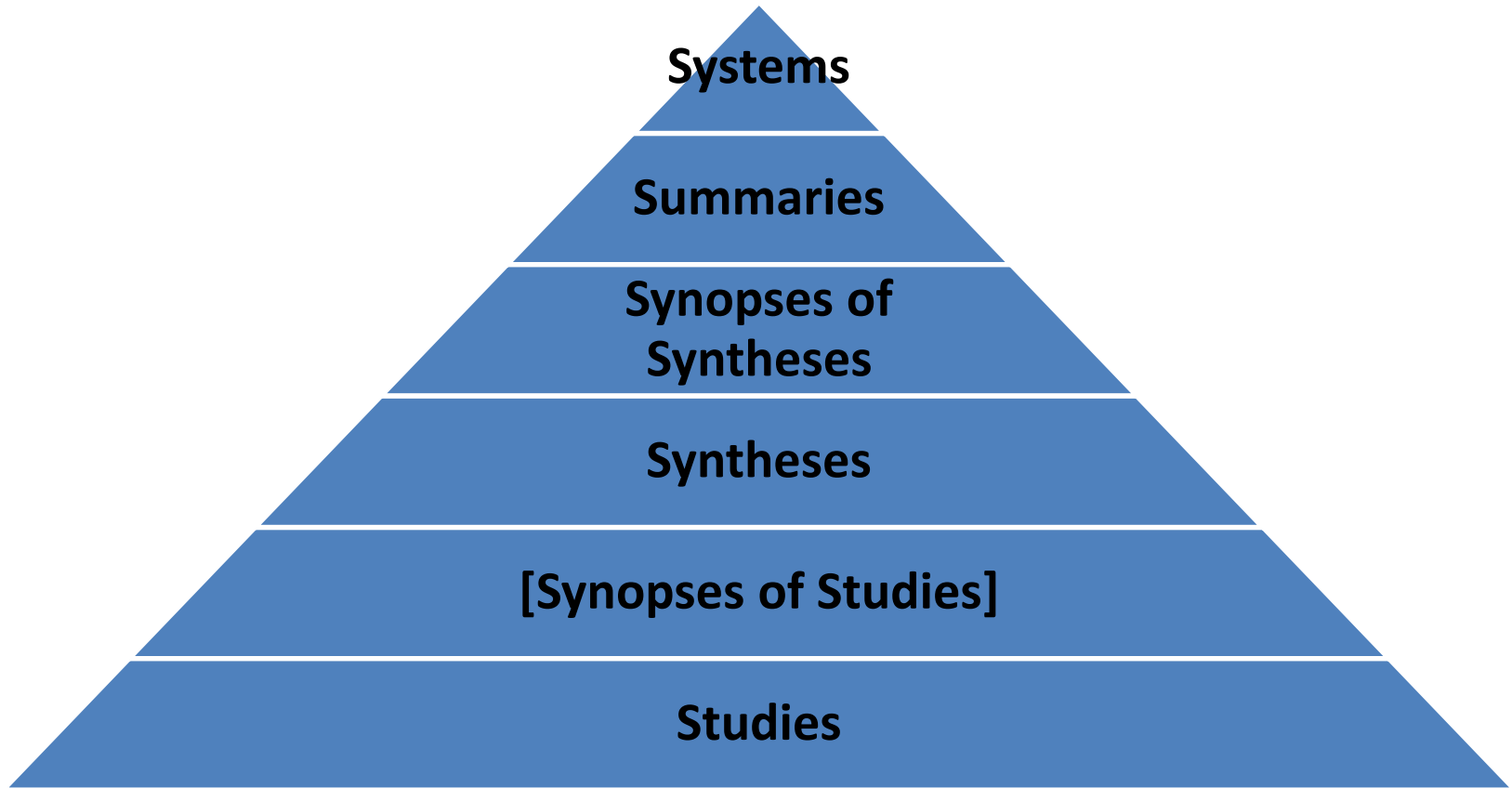
Background: 4S Pyramid



Background: The drive for systems

“But Cochrane did not go far enough: such summaries, indeed all medical discoveries, are of no use to patients and clinicians if they remain buried in the literature. It is surely an equally great criticism that the medical profession has not developed an effective, efficient system for finding relevant clinical information, extracting it, and delivering it when and where it is needed into the hands of everyone who makes medical decisions.”

Methods: 5S and 6S Pyramid

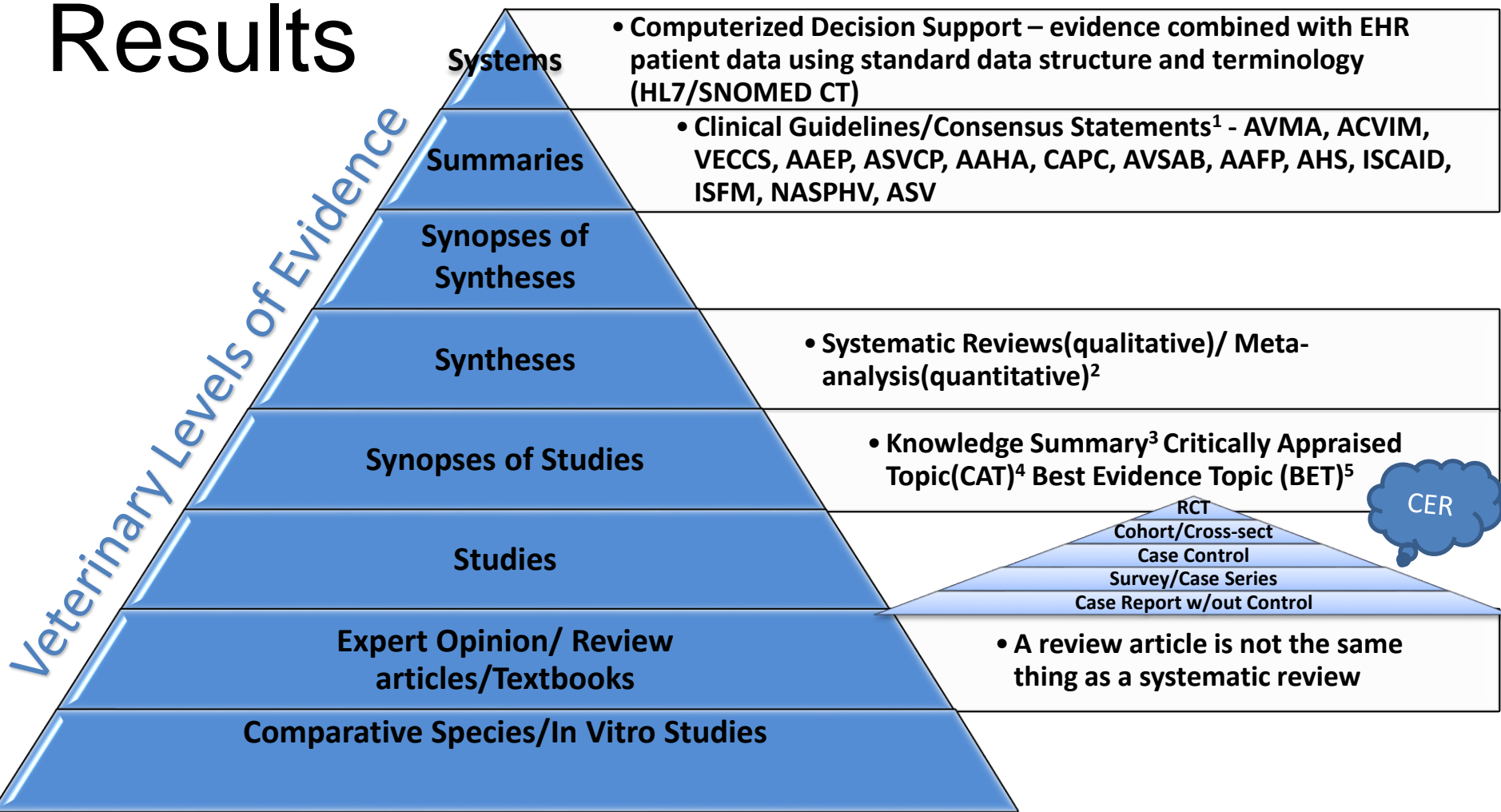


- Dicenso A, Bayley L, Haynes RB. Accessing pre-appraised evidence: fine-tuning the 5S model into a 6S model. *Evid Based Nurs.* England, 2009;12(4):99-101.
- Haynes RB. Of studies, syntheses, synopses, summaries, and systems: the "5S" evolution of information services for evidence-based health care decisions. *ACP J Club.* United States, 2006; 145(3):A8.
- Evidence Based Medicine Resources, Dartmouth Biomedical Libraries
http://www.dartmouth.edu/~biomed/resources.html#guides/ebm_resources.shtml

Methods: Assumptions

- Every study is perfect
- The pyramid will forever be in beta
- Clinical relevance trumps everything

Results



¹ www.vmdtechnology.com/veterinary-consensus-statement-survival-guide/

² VetSRev Database of Veterinary Systematic Reviews <http://webapps.nottingham.ac.uk/refbase/>

³ RCVS Knowledge <http://knowledge.rcvs.org.uk/evidence-based-veterinary-medicine/knowledge-summaries/>

⁴ Criteria for Critical Appraisal <http://www.cebm.net/?o=1040>

Banfield Applied Research and Knowledge <http://www.banfield.com/veterinary-professionals/resources/research>

⁵ BestBETS for Vets <http://bestbetsforvets.org/>

^{1,2,3,4,5} note level of evidence varies with quality and types of studies

Pyramid adapted from http://www.dartmouth.edu/~biomed/resources.html#guides/ebm_resources.shtml

Discussion: Evidence pyramid as educational framework

- Tool for lifelong **active** learning
 - Del Fiol G, Workman TE, Gorman PN. Clinical questions raised by clinicians at the point of care: a systematic review. *JAMA Intern Med.* 2014 May;174(5):710-8. doi: 10.1001/jamainternmed.2014.368.
- Information Comparison and identification of gaps
- Terminology Disambiguation –
 - CAT vs. Knowledge Summary, Review vs. Systematic Review
- Translational Medicine
 - clinically focused evidence pyramid lowers the barrier between research and practice

Discussion: Lessons learned from project

- Consistent Indexing for evidence level/strength of recommendation (GRADE, CEBM, SORT)
 - Lloret, A. (2009). The process of evidence-based medicine. *Journal of Feline Medicine and Surgery*, 11(7), 529.
- Incorporate peer-review into CATS/Knowledge Summaries/BETS (could be crowdsourced)
- Make CATS/Knowledge Summaries/BETS searchable within the broader scope and down to level of item
- Clinical Guidelines database

Conclusion

Appraisal of the literature requires revisiting the evidence pyramid

