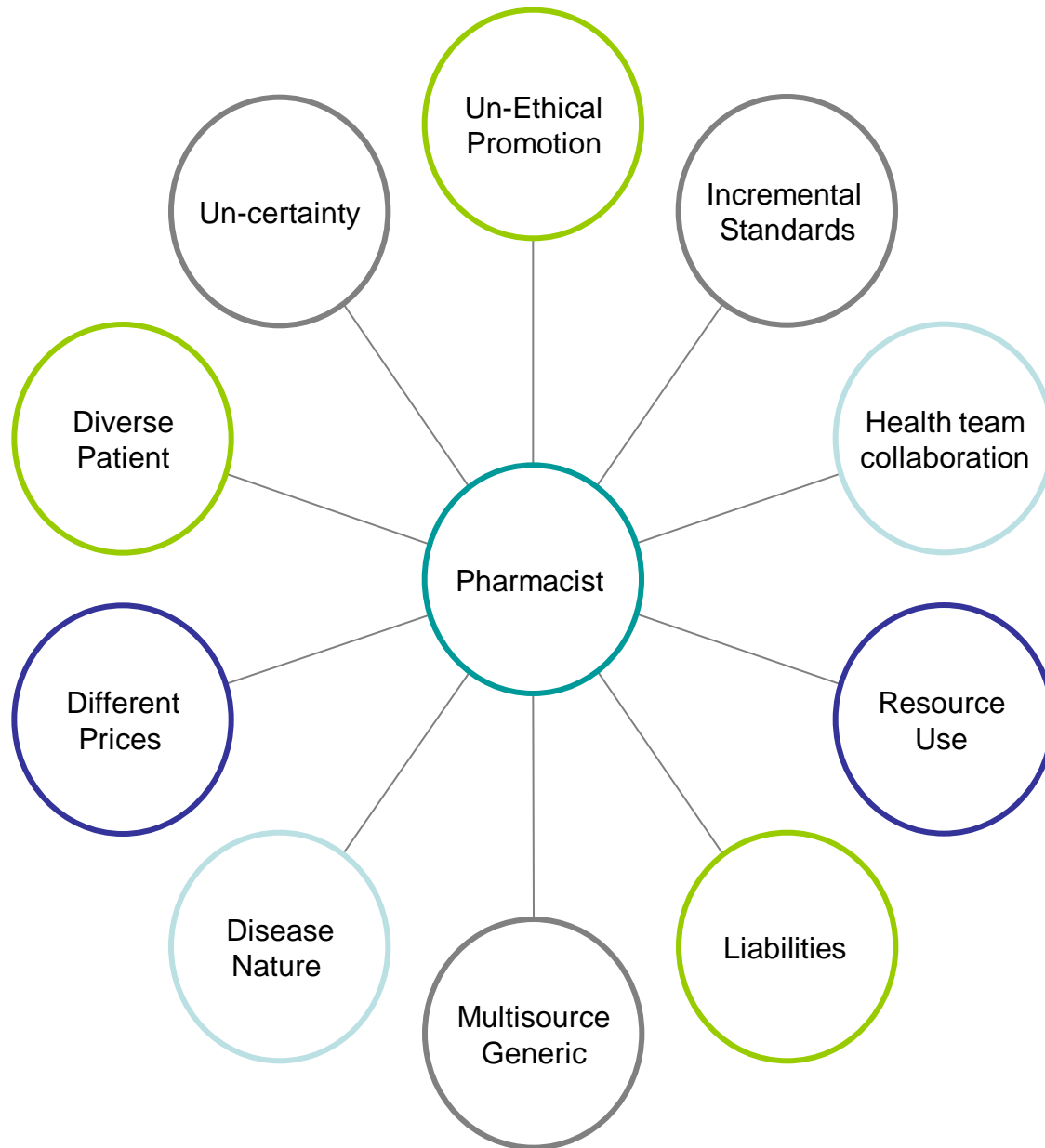# (CPOS)Guidance policy for Drug substitution & Interchangeability in community pharmacy Practice .

Pharmacist-Economist

Sub-specialty in Financial leverers .

Dr Mohamed Al-nuzili.

Back Ground

Pharmacist

- Un-Ethical Promotion
- Un-certainty
- Incremental Standards
- Diverse Patient
- Health team collaboration
- Different Prices
- Resource Use
- Disease Nature
- Multisource Generic
- Liabilities

Basic principle of PE planning is (ECHO) Economic , clinical , Humanistic , Outcomes ..

ECHO Model:
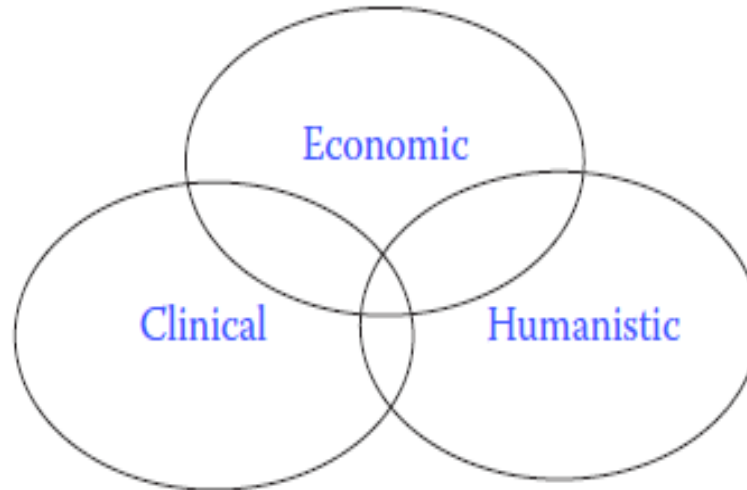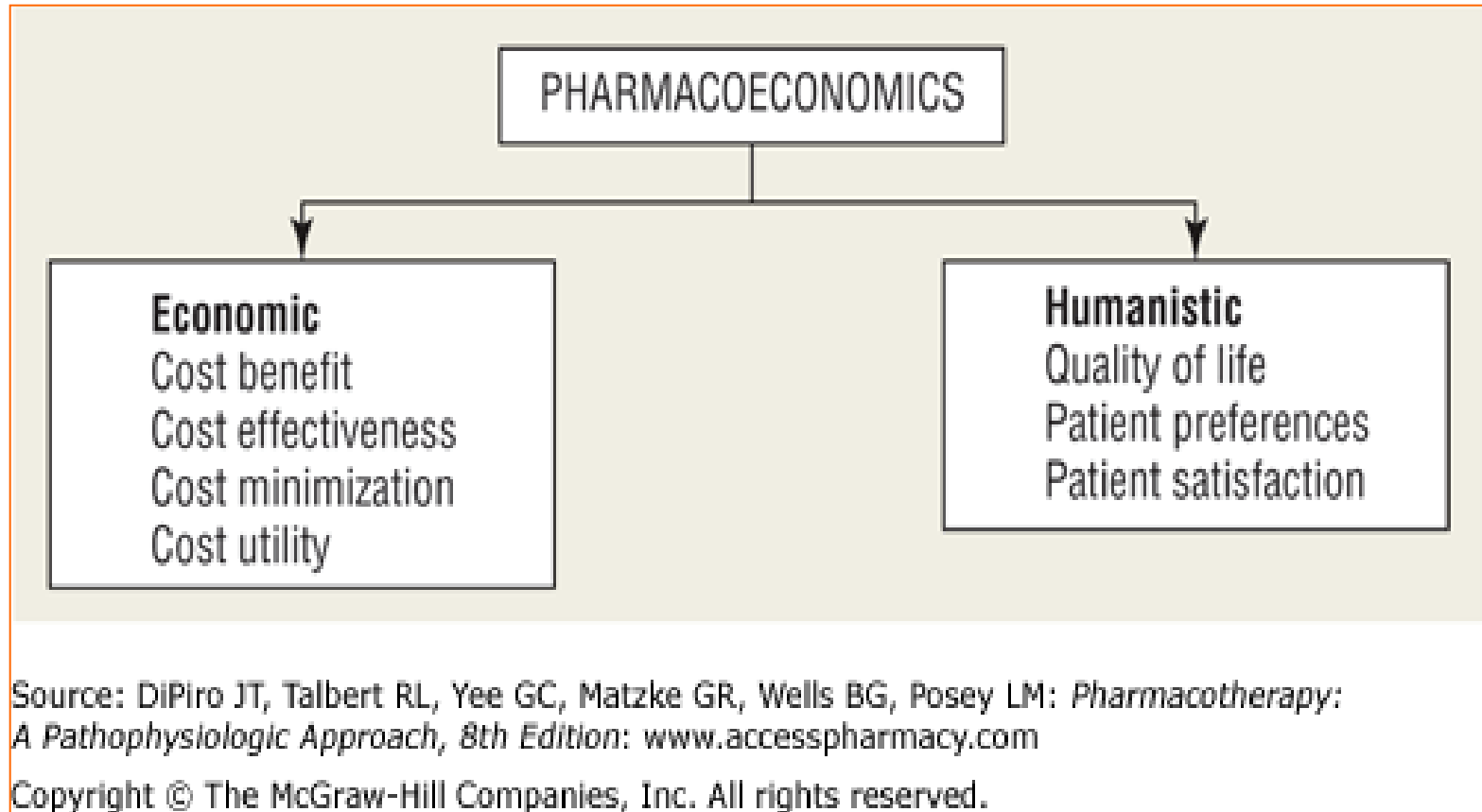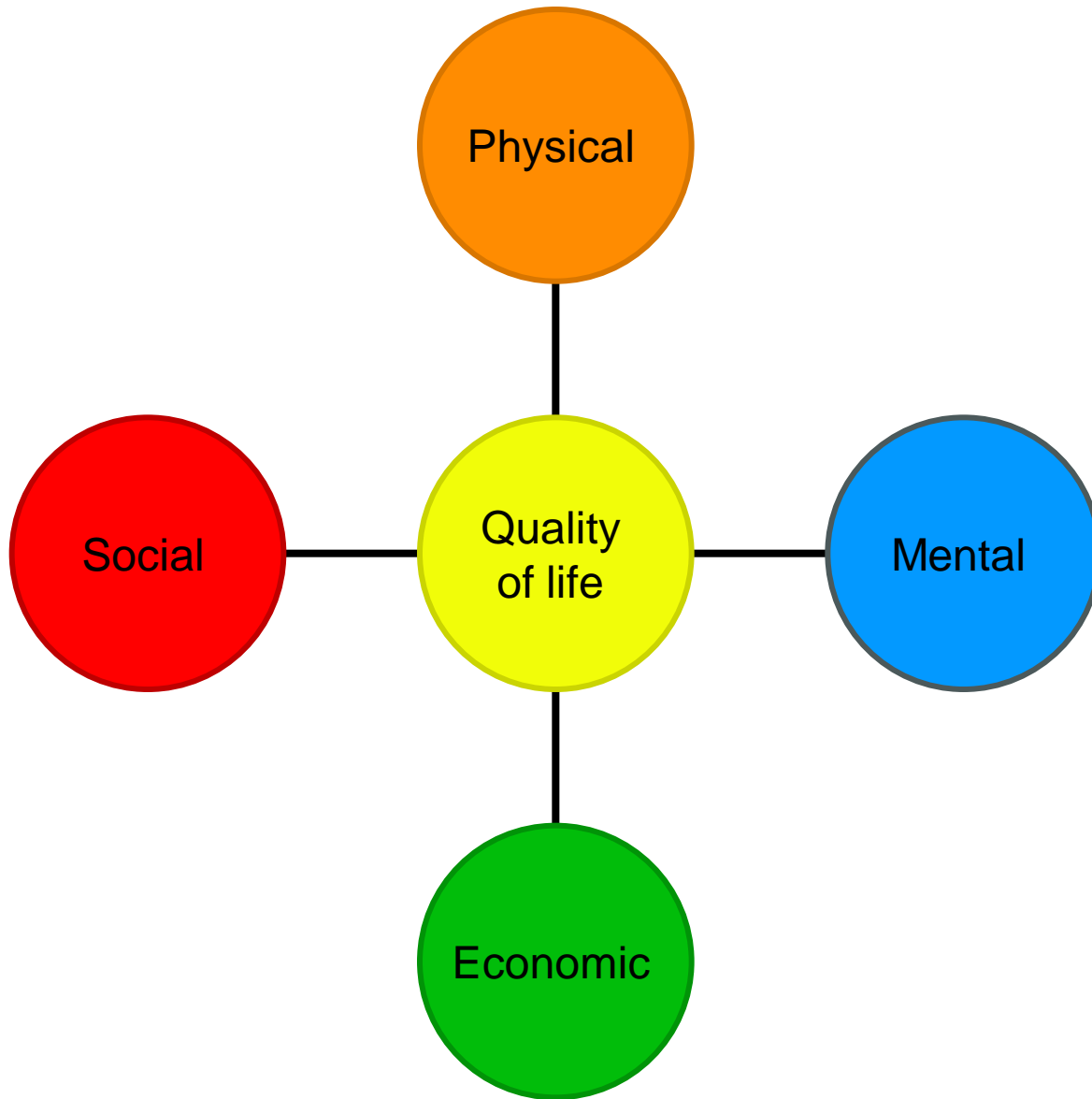Economic, Clinical, and Humanistic Outcomes

FIGURE 1.1 ECHO Model. (Kozma, CM et al. Economic, clinical, and humanistic outcomes: A planning model for pharmacoeconomic research. *Clin Ther.* 15: (1993): 1121–32.)

Basic principle of PE is (ECHO)

Economic , clinical , Humanistic , Outcomes ..

PHARMACOECONOMICS

Economic
Cost benefit
Cost effectiveness
Cost minimization
Cost utility

Humanistic
Quality of life
Patient preferences
Patient satisfaction

Source: DiPiro JT, Talbert RL, Yee GC, Matzke GR, Wells BG, Posey LM: *Pharmacotherapy: A Pathophysiologic Approach, 8th Edition*: www.accesspharmacy.com

Problem statement

Hundred of Generics are lunched from multi-source producers with different prices ,different quality measures in un-ethical competitive market , make Pharmacist confused how to deal with like situations to optimize patient outcomes from treatment .

Goal of the study :

Apply HTA to construct a policy Guidance that minimize Risk & uncertainty in Community pharmacy Practice regarding Generic substitution ,Therapeutic Interchange & Interchangeability .That ensure Patient centricity concept .

Study Design& methodology

Based on ECHO model principles & Patient center care we use Heuristic ID3(Quinlan 79)

rule to minimize local impurity and un-certainty in regards ,through modeling the problem by constructing Decision tree to simplify Decision through Quantitative methods that study Attribute of Decision by measuring Entropy , Entropy after partitions & information Gain for Each Attribute to reclassify Process of Drug substitution ,Therapeutic interchange & Interchangeability in Community Pharmacy Daily practice .

Study Design& methodology
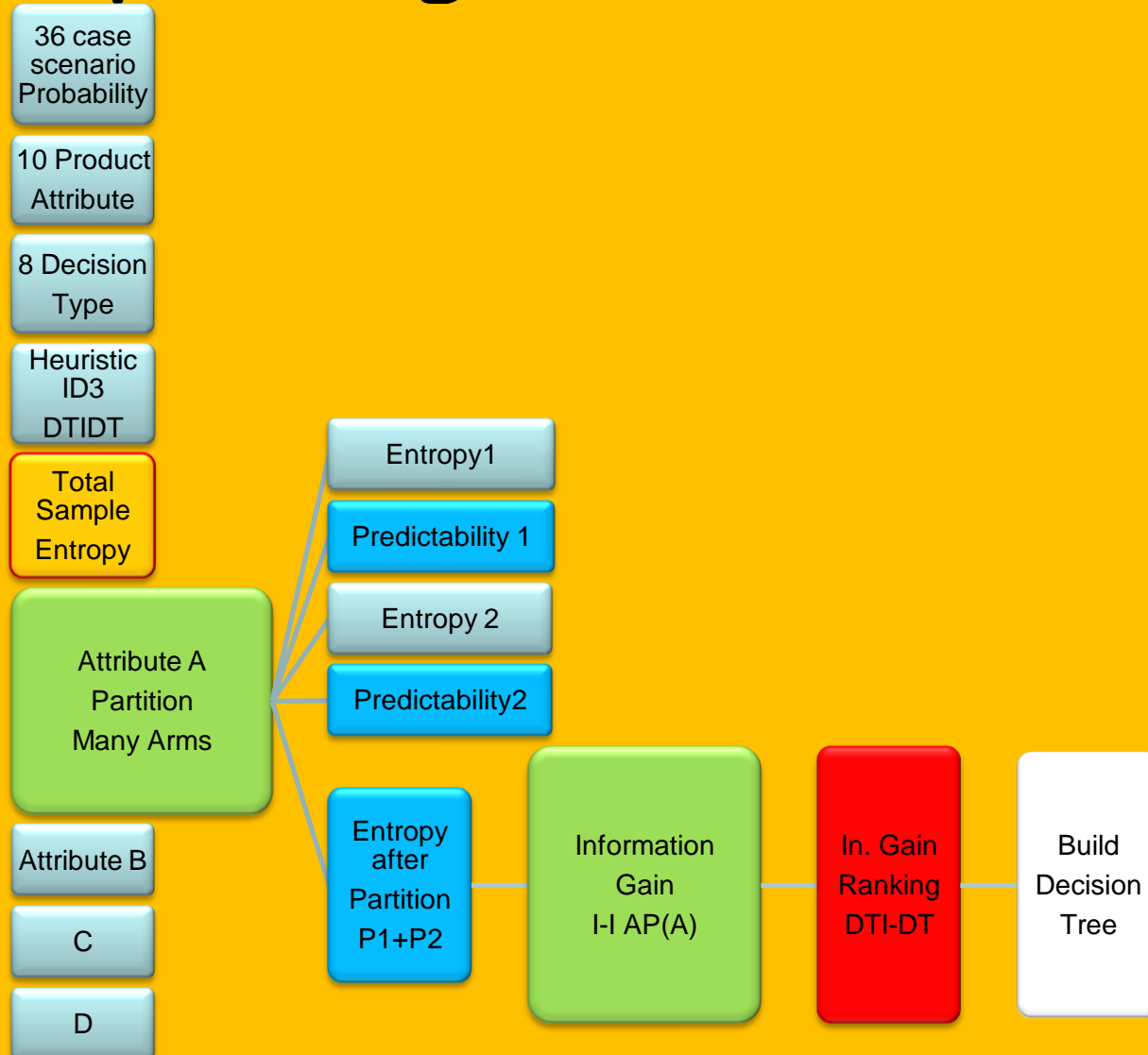
Decision to be made

Decision	Note
Substitute	Brand By Generic with the same API
Therapeutic interchange	Brand by Generic or other Brand from another therapeutic class
Call DTC	You have a Dilemma that could be solved through CPOS Drug therapeutic committee
Refer to specialist	You must contact specialist or refer the patient to get specialist permission
No Action	You must dispense the Rx as it written by physician
Switch ability	State when you have PBE study to Safely switch from Brand To Generic with the Same API
Prescribeability	State when you have IBE study to Safely start treatment with Generic instead of Brand of the Same API
Interchangeable	Biosimilarity : Interchangeability between Biologic product
Dispense Brand	Brand can not be substitute by that Generic

Product Attribute

| D	Humanistic	Ph.E	price	Biowaver	Biologic		Clinical.E	Physi.Note	Product	Indiation.Patency	Outcome
	yes	Yes	Yes	Yes	Yes	ABE	Yes	Yes	Broad.TW	Yes	
	No	No	No	No	No	PBE	No	NO	Potent	No	
						IBE			H.Variable		
						No			Non.Applicable		

Result &calculations

Entropy :

I=-7/36log2(7/36)-4/36log2(4/36)-7/36log2(7/36)-10/36log2(10/36)-1/36log2(1/36)-1/36log2(1/36)-2/36log2(2/36)-4/36log2(4/36)

2.6554 Bites

Result Summary

General Decision Entropy Index	2.6554 Bites In presence of 10 attributes to reach one of the 8 listed Decision making for the Outlined scenario cases which , are 36 different state .				
	Entropy after partition	Information Gain	%of I. Gain	After Partition Ranking (Down top ranking)	
Humanistic	2.6491	0.07989	7.98%	Humanistic (8%)	1
Pharmaceutical Equivalency	2.319	0.3358	33.58%	Price (25%)	2
Price	2.4080	0.2474	24.74%	Indication Patency (31%)	3
Bio -waver	2.2210	0.4344.	43.44%	Pharmaceutical Equivalency(34%)	4
Biologic	1.91648	0.73892	73.89%	Bio-equivalence (43.41%)	5
Bio-Equivalence	2.2213	0.4341	43.41%	Bio-waver(43.44%)	6
Clinical Equivalence	2.1643	0.4911	49.11%	Clinical Equivalence(49%)	7
Physician note	1.74794	0.90746	90.75%	Pharmacokinetic of product (69%)	8
Pharmacokinetic of product	1.97	0.69	69%	Biologic (74%)	9
Indication patency	2.34376	0.31164	31.16%	Physician note (91%)	10

Discussion & Conclusion
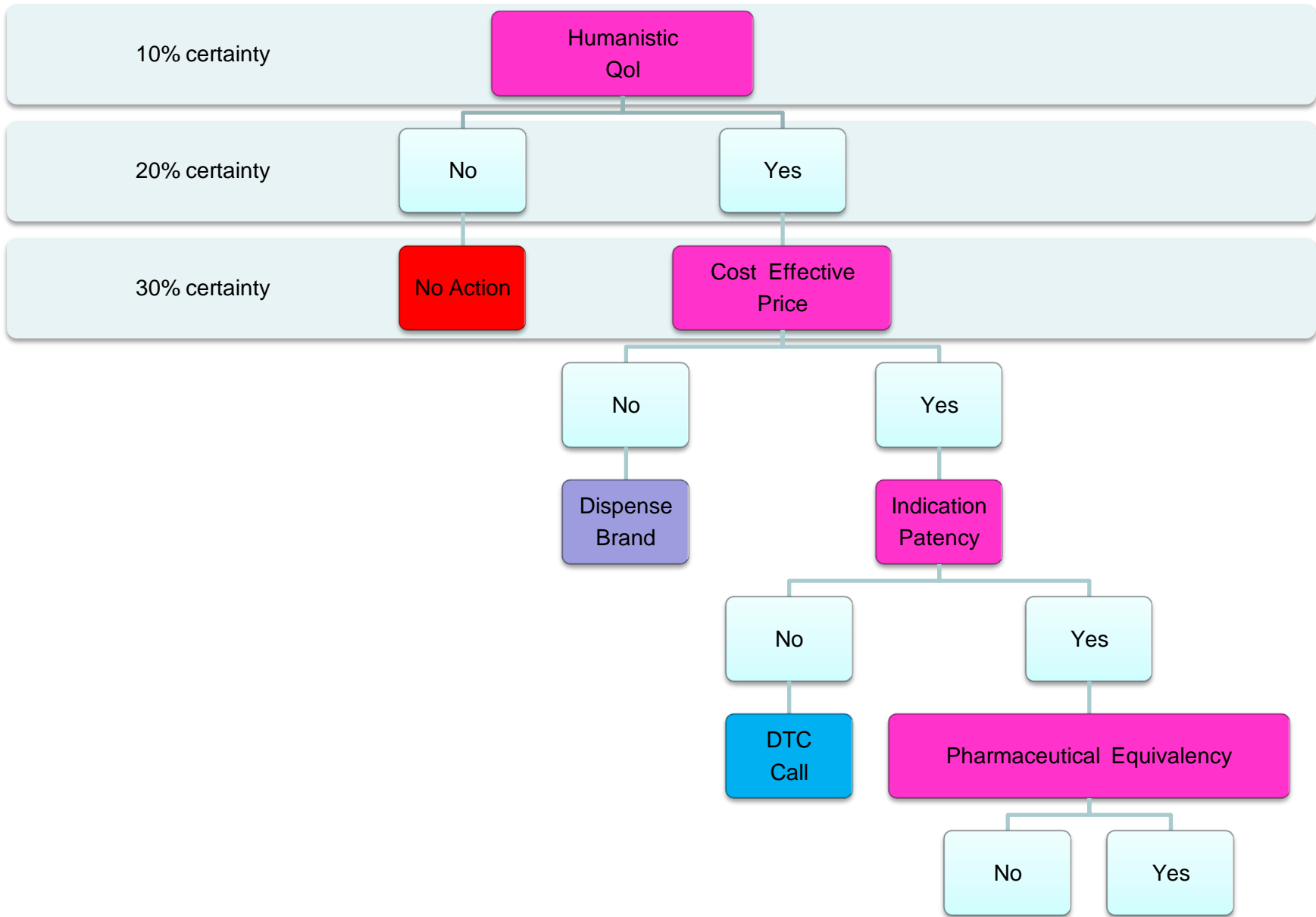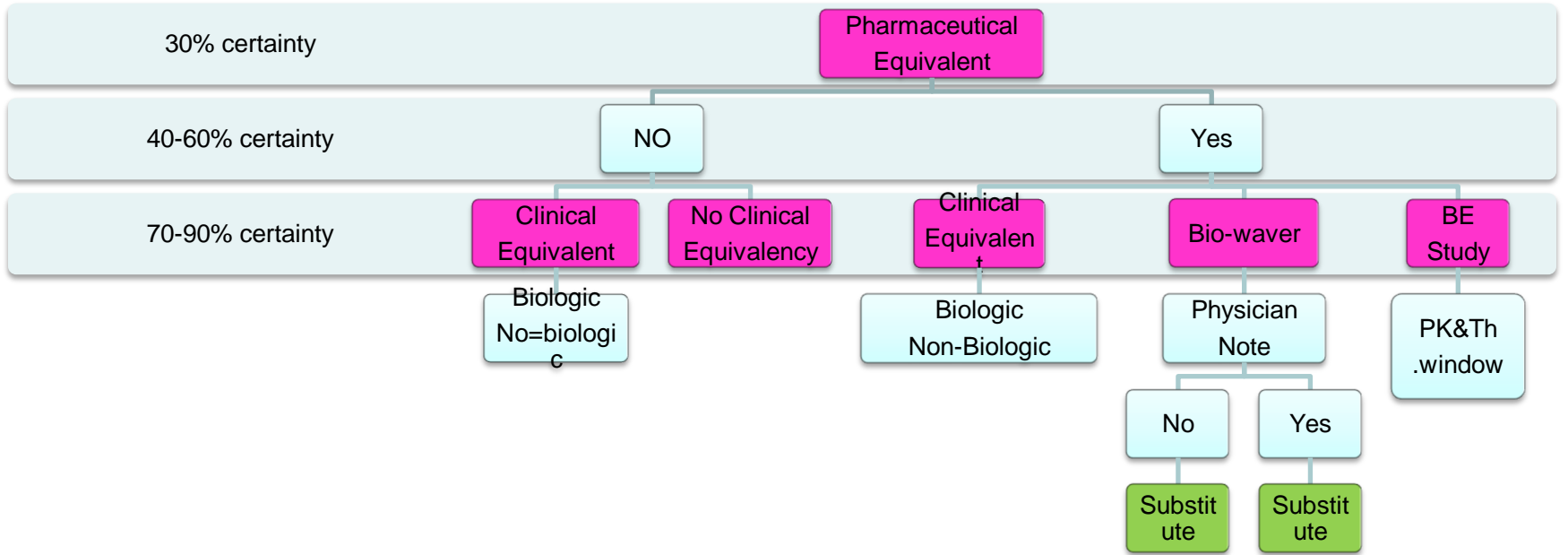
40%	BE
60%	IBE — PBE — ABE
90%	Wide Therapeutic — Potent Variable

- BE
  - IBE
  - PBE
  - ABE
    - Wide Therapeutic
      - Physician Note
        - No → Substitute
        - Yes → Substitute
    - Potent Variable
      - Refer to His Specialist
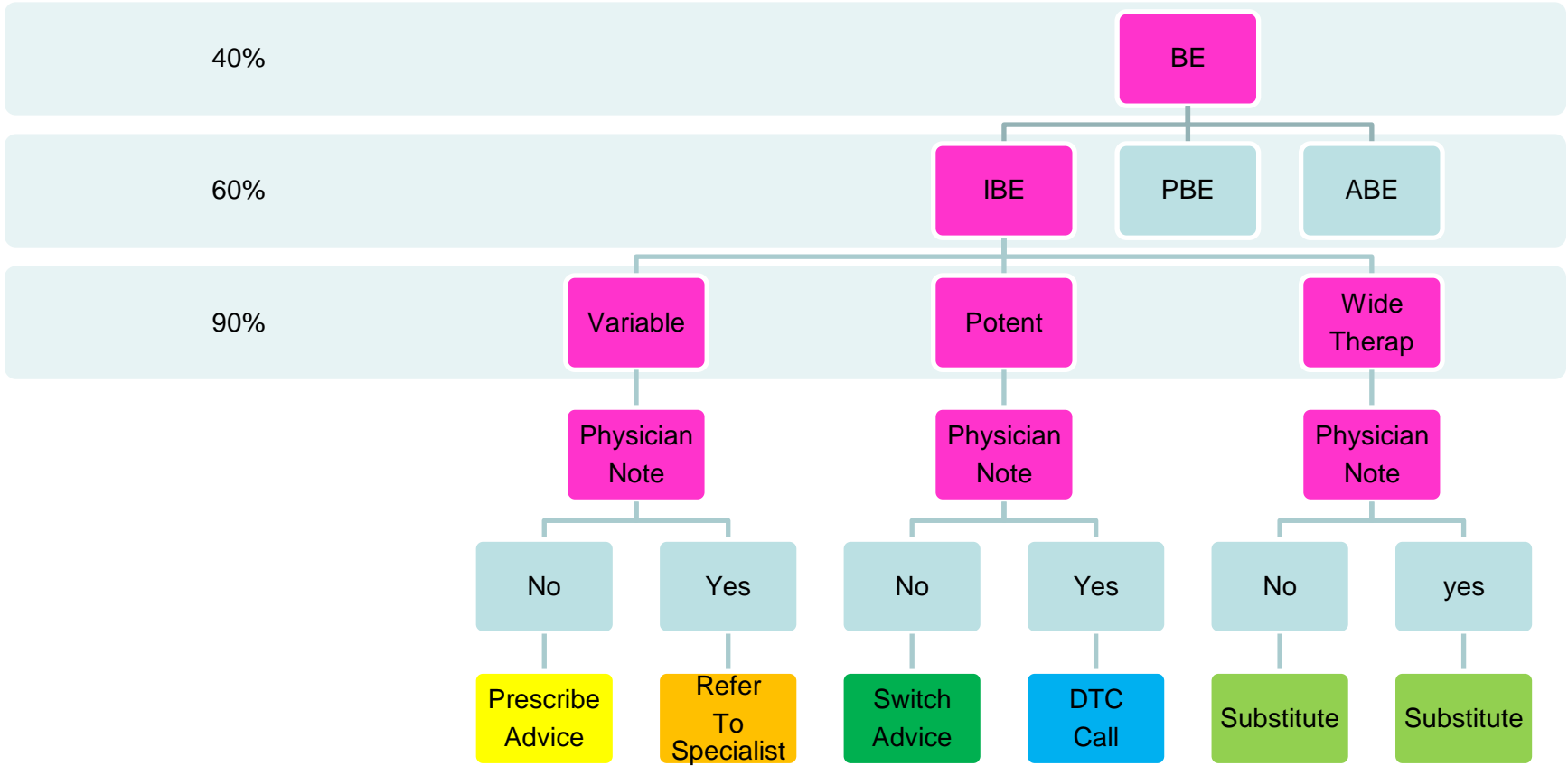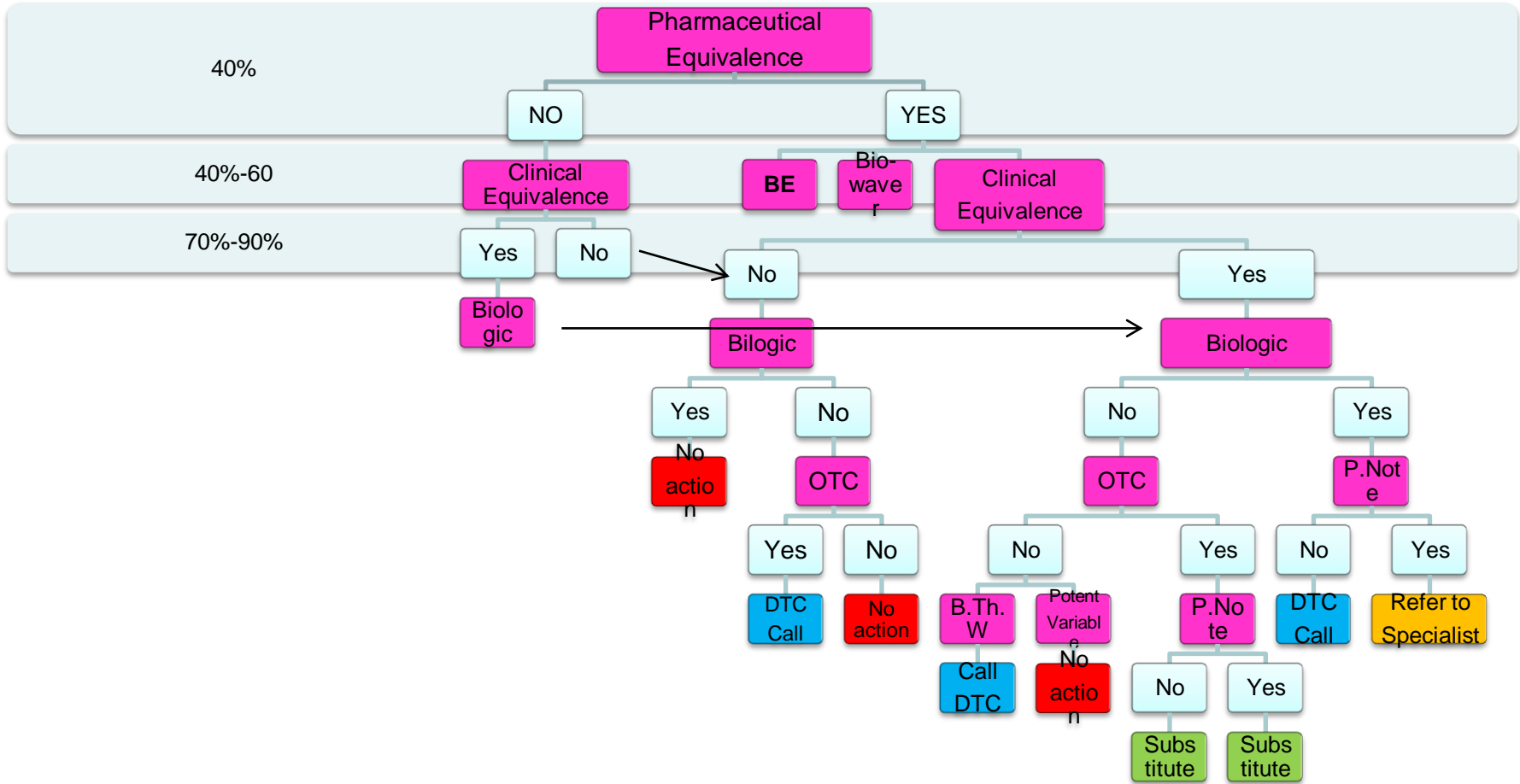
Conclusion

We build **Community Pharmacy ,Guidance policy for** Drug interchange ,Substitution & Therapeutic interchange by Heuristic ID3-Decision tree method ,which uncover Decision **uncertainty** in pharmacy practice which, will

1- **<u>Optimize</u>** health resource use & fulfill patient centric principles

2- free the   Pharmacist from suspected liabilities.

3-This Guidance policy will help, Both <u>Heath authorities in Generic registration</u> & <u>Inter-collaboration between Clinician –Pharmacist</u>   as a common back-ground for Decision making in regards during practice.

4-Could be used as Decision tool by Insurance provider – Patient & Third party like (Physician or pharmacy)

Outcomes Research Societies
Every Penny is counted &Patient center care

Thank You