

Physician Perceptions of Consumer Health Technology

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Department of Biomedical
Informatics

Research Funded By NIH Grant:
T15LM011271

About Me:

- 5th Year Public Health and Biology Major
- Gain research experience in a collaborative lab
- Interests:
 - U.S. Healthcare System
 - Big Data in the Clinical Setting
 - Physician Wellness



Outline

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01

Define consumer
health technology

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02

Discuss the process
of a systematic
review

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Discuss the process
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03

Investigate key
findings from
empirical studies

Consumer Health Technology

- Genetic testing
- Microbiome testing
- Blood and other biomarker tests
- Environmental testing
- Wearables



Why Care About Consumer Health Technology?

- Products are popular + promote health
- Disruptive technology
 - Innovations that create a new market and value network + eventually disrupts an existing market and value network
 - Estimated to be a \$536.6 billion market by 2025
- Ethical, legal, social, + privacy implications
- Massive amount of data being generated
- Data permeates into the clinical setting
- Potential for clinical utility
 - Relevant and useful intervention

Research Question

What is the impact of DTC products, testing, and screening and the large amounts of data they generate on physicians?

More specifically, how is it impacting the patient-physician relationship?

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Systematic Review

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Synthesize current info into a convenient evidence based summary

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Efficient mode to communicate info to busy physicians + researchers

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Part of evidence based healthcare

Systematic Review

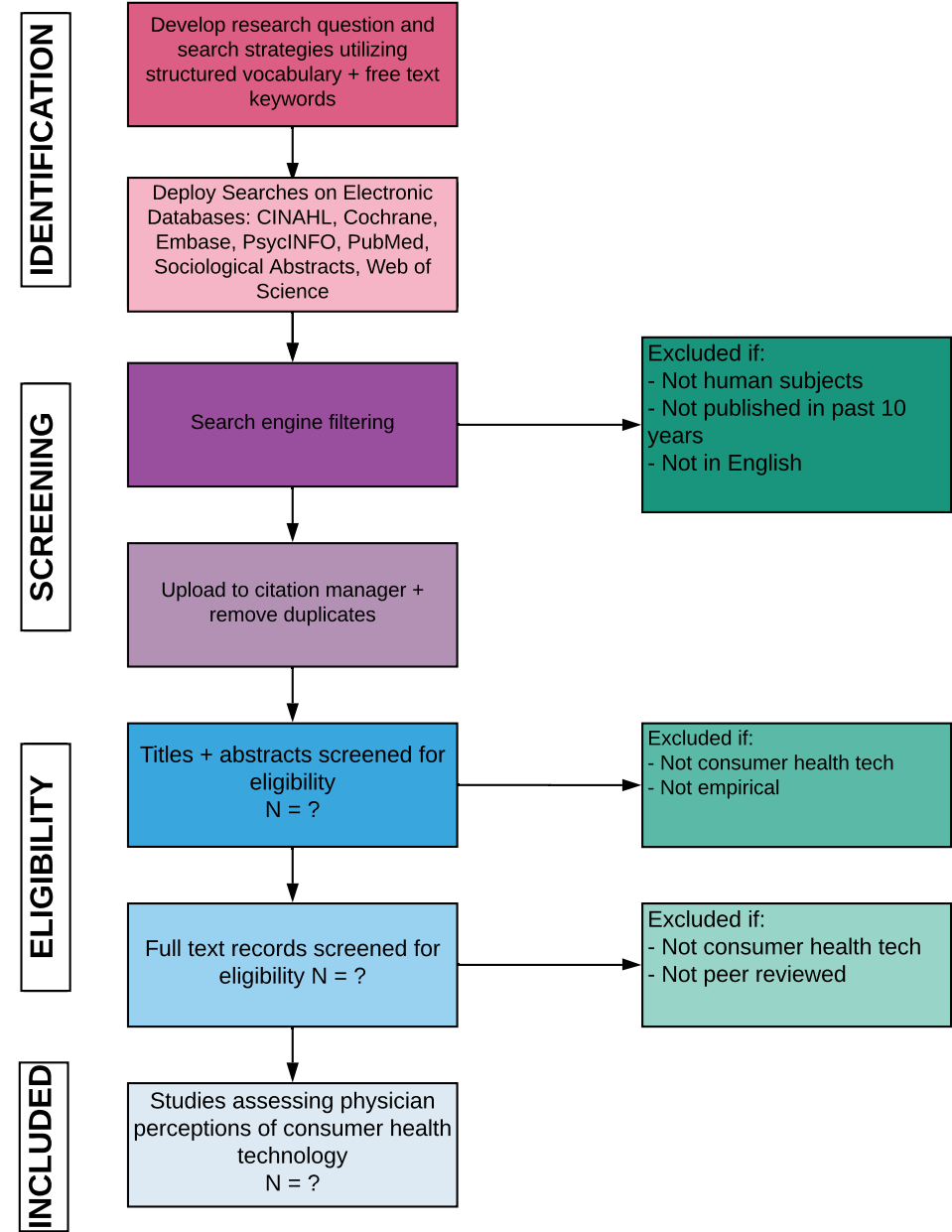
Synthesize current info into a convenient evidence based summary

Efficient mode to communicate info to busy physicians + researchers

Part of evidence based healthcare

Starting point for development of best practice guidelines

Systematic Review Flow



IDENTIFICATION

Develop research question and search strategies utilizing structured vocabulary + free text keywords



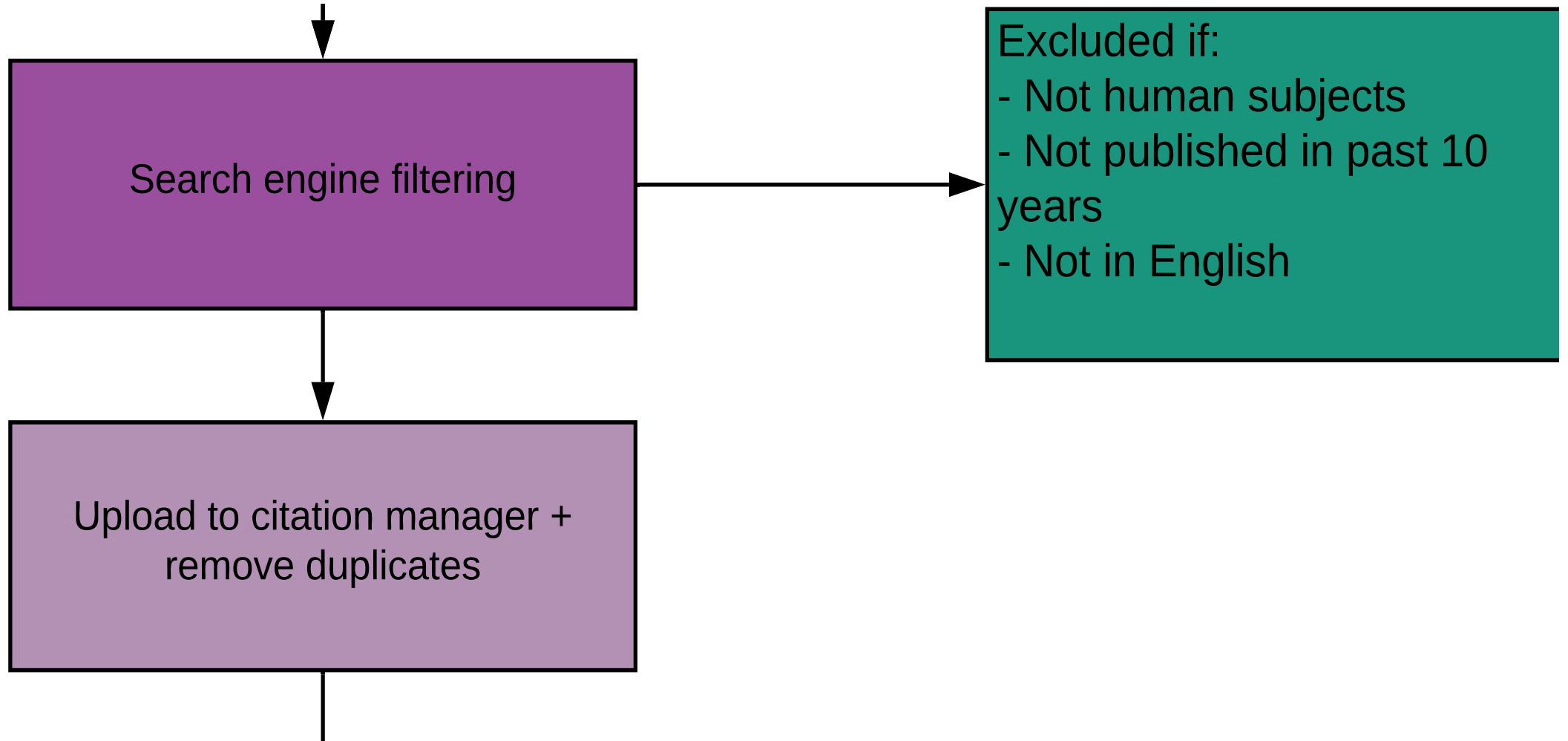
Deploy Searches on Electronic Databases: CINAHL, Cochrane, Embase, PsycINFO, PubMed, Sociological Abstracts, Web of Science

"physician* patient* relation*" OR "patient* physician* relation*" OR "doctor* patient* relation*" OR "patient* doctor* relation*" OR "provider* patient* relation*" OR "patient* provider* relation*" OR "clinician* patient* relation*" OR "patient* clinician* relation*" OR "physician* patient* communication*" OR "patient* physician* communication*" OR "doctor* patient* communication*" OR "patient* doctor* communication*" OR "provider* patient* communication*" OR "patient* provider* communication*" OR "clinician* patient* communication*" OR "patient* clinician* communication*" OR "physician* patient* contact*" OR "patient* physician* contact*" OR "doctor* patient* contact*" OR "patient* doctor* contact*" OR "provider* patient* contact*" OR "patient* provider* contact*" OR "clinician* patient* contact*" OR "patient* clinician* contact*" OR "physician* patient* interaction*" OR "patient* physician* interaction*" OR "doctor* patient* interaction*" OR "patient* doctor* interaction*" OR "provider* patient* interaction*" OR "patient* provider* interaction*" OR "clinician* patient* interaction*" OR "patient* clinician* interaction*" OR "physician* patient* encounter*" OR "patient* physician* encounter*" OR "doctor* patient* encounter*" OR "patient* doctor* encounter*" OR "provider* patient* encounter*" OR "patient* provider* encounter*" OR "clinician* patient* encounter*" OR "patient* clinician* encounter*" OR "physician* patient* alliance*" OR "patient* physician* alliance*" OR "doctor* patient* alliance*" OR "patient* doctor* alliance*" OR "provider* patient* alliance*" OR "patient* provider* alliance*" OR "clinician* patient* alliance*" OR "patient* clinician* alliance*" OR "physician* patient* trust*" OR "patient* physician* trust*" OR "doctor* patient* trust*" OR "patient* doctor* trust*" OR "provider* patient* trust*" OR "patient* provider* trust*" OR "clinician* patient* trust*" OR "patient* clinician* trust*" OR "physician perception*" OR "doctor* perception*" OR "provider perception*" OR "clinician perception*" OR "physician* attitude*" OR "doctor* attitude*" OR "provider* attitude*" OR "clinician* attitude*" OR "physician* belief*" OR "doctor* belief*" OR "provider* belief*" OR "clinician* belief*" OR "physician* opinion*" OR "doctor* opinion*" OR "provider opinion*" OR "doctor opinion*" OR "physician* reaction*" OR "doctor* reaction*" OR "provider* reaction*" OR "doctor* reaction*" OR "physician* response*" OR "doctor* response*" OR "provider* response*" OR "doctor* response*" OR "physician* authority*" OR "doctor* authority*" OR "provider* authority*" OR "doctor authority*" OR "shared decision* making*" OR "joint decision making" OR "medical decision making" OR "professional self regulation" OR "profession* identity" OR "primary care physician*" OR "primary care doctor" OR "primary care provider" OR "general practitioner" OR "medical communication challenge*" OR "clinical communication challenge*" OR "medical service delivery" OR "clinical service delivery" OR "professional authority" [Title and Abstract Only] OR "Physician-Patient Relations"[Mesh] OR "Professional Autonomy"[Mesh] OR personal autonomy [Mesh] OR "Paternalism"[Mesh] All Fields

AND

"direct to consumer" OR "direct to consumer* screening*" OR "direct-to-consumer* screening*" OR "direct to consumer* test*" OR OR "direct-to-consumer* test*" OR "advantage* direct to consumer" OR "disadvantage* direct to consumer" OR "direct to patient* screening*" OR "direct to patient* test*" OR "direct to individual* screening*" OR "direct to individual* test*" OR "PGHD" OR "patient generated data" OR "patient generated clinical data" OR "consumer generated health data" OR "CGHD" OR "consumer generated data" OR "consumer generated clinical data" OR "self generated health data" OR "self generated data" OR "self generated clinical data" OR "individual generated health data" OR "individual generated data" OR "individual generated clinical data" OR "consumer* test*" OR "consumer based test*" OR "consumer driven test*" OR "consumer driven lab* test*" OR "direct access test*" OR "wearable tech*" OR "wearable device" OR "wearable*" OR "consumer health" OR "consumer health informatics" OR "biomed* tech*" OR "health* tech*" OR "health care tech*" OR "clinical tech*" OR "med* tech*" OR "health monitor* tech*" OR "digital health" OR "mobile health" OR "mHealth" OR "eHealth" OR "patient* participation rate*" OR "patient participation" OR "patient* involvement" OR "patient* empowerment" OR "patient* activation" OR "patient* engagement" OR "without physician* consent" OR "test* self interpretation*" OR "gen* test*" OR "ancestry test" OR "transcriptomic* test*" OR "proteonomic* test*" OR "metabolomic* test*" OR "microbio* test*" OR "return of result*" OR "return of research" [Title and Abstract Only] OR "Direct-To-Consumer Screening and Testing"[Mesh] OR "Patient Generated Health Data"[Mesh] OR "Wearable Electronic Devices"[Mesh] All Fields

SCREENING



ELIGIBILITY

Titles + abstracts screened for
eligibility
N = ?

Excluded if:
- Not consumer health tech
- Not empirical

Full text records screened for
eligibility N = ?

Excluded if:
- Not consumer health tech
- Not peer reviewed

INCLUDED

Studies assessing physician
perceptions of consumer health
technology
N = ?

Outline

03

Investigate key
findings from
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2012 Survey Study: Physician Awareness + Preparedness of DTC Genetic Testing

Powell et al. Primary care physicians' awareness, experience and opinions of direct-to-consumer genetic testing. Journal of Genetic Counseling.

2012 Survey Study: Physician Awareness + Preparedness of DTC Genetic Testing

Convenience
sample of internists
and family medicine
physicians (N = 382)

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N = 148 (38.7%)
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N = 59 (15%) felt
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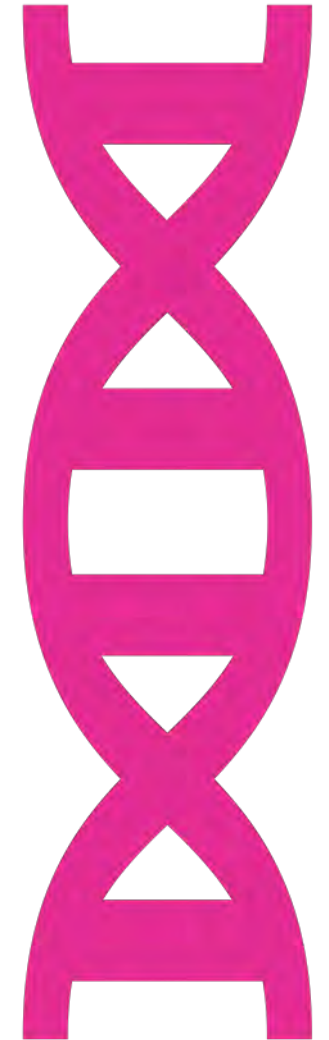
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41 + = 2x more likely
to be aware of DTC
testing > 40 -



2012 Survey Study: Incorporating DTC Info into Patient Care

Bernhardt et al. Incorporating direct-to-consumer genetic
information into patient care: attitudes and experiences of
primary care physicians

2012 Survey Study: Incorporating DTC Info into Patient Care

502 family
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40% believed
genetic results =
have clinical utility

Research Funded by Grant T15LM011271

Bernhardt et al. Incorporating direct-to-consumer genetic
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Conclusions

Physician awareness and preparedness is low



If (and it did) DTC genetic testing becomes more widely used:

Increased transparency
around test technology

Increased test efficacy

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Education!

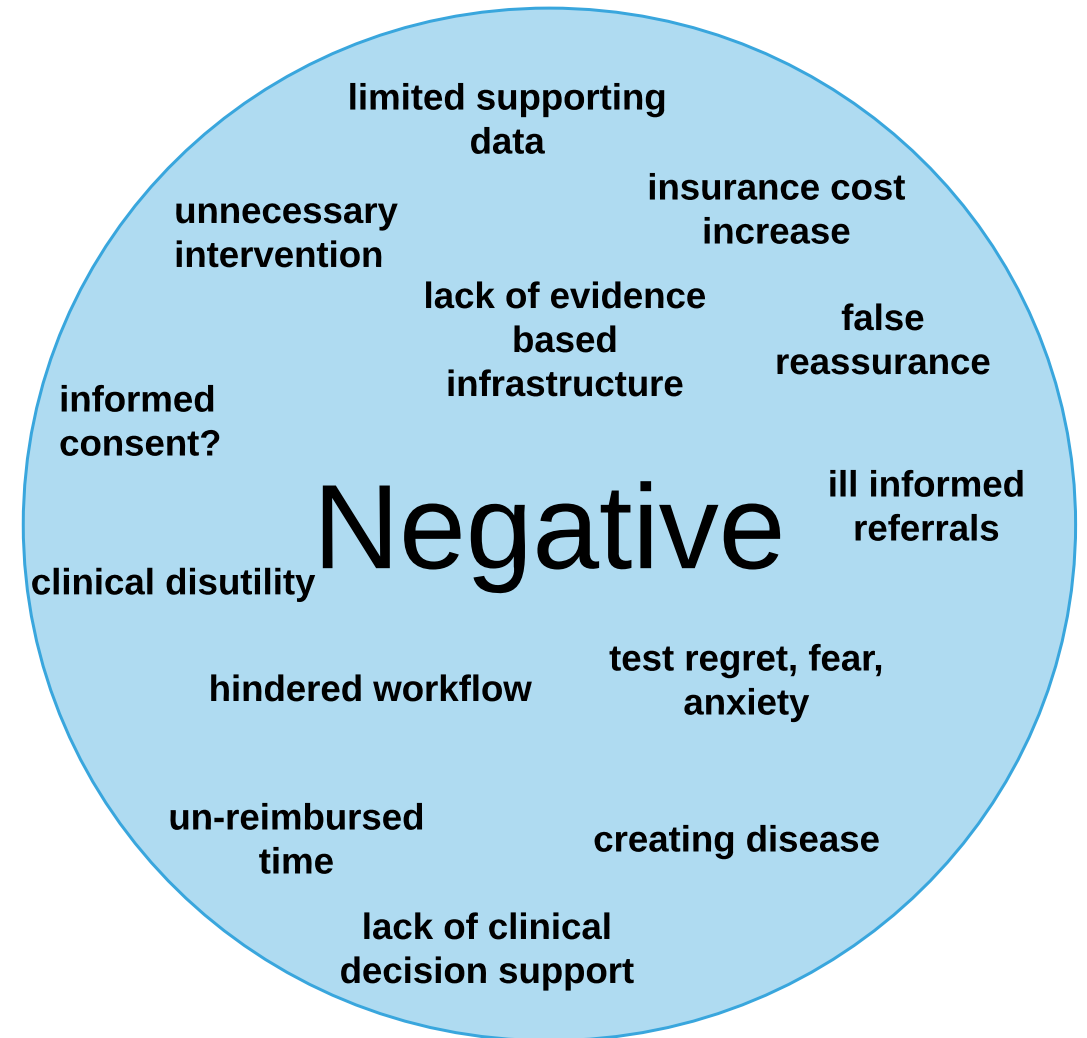
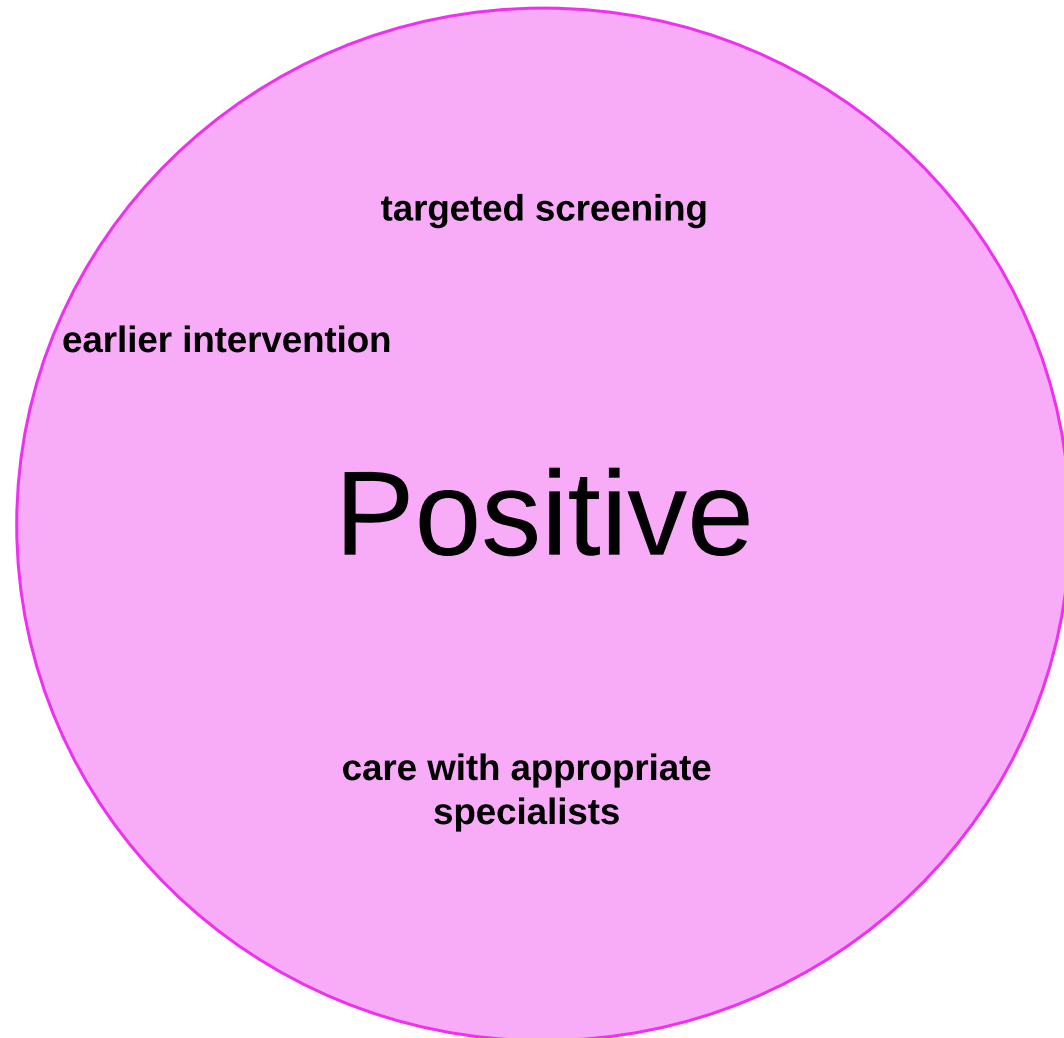
2019 Interview Study: Physicians' Perspectives on Unsolicited Genomic Results (UGRs)

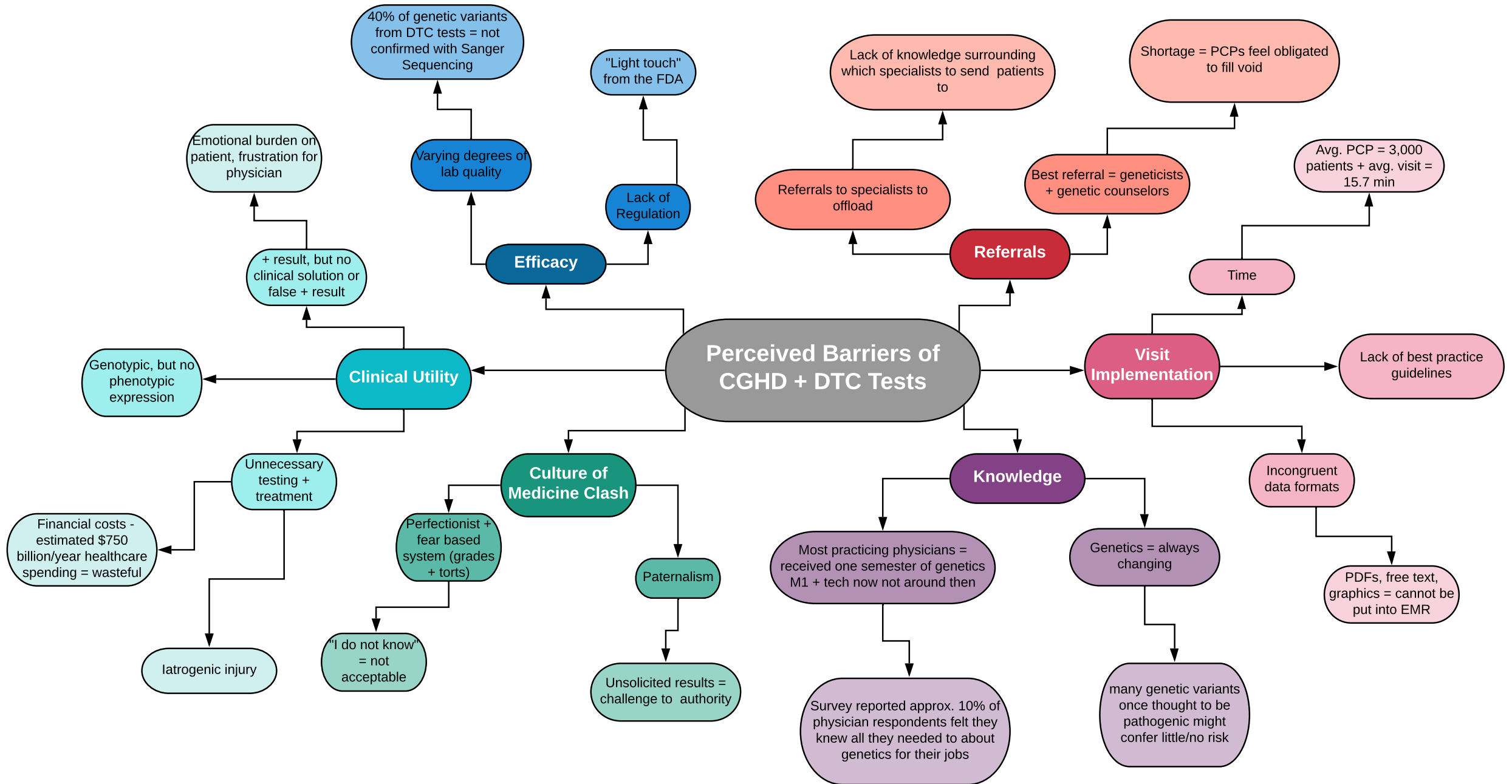
Adult and pediatric primary care + subspecialty physicians
Semi structured interviews

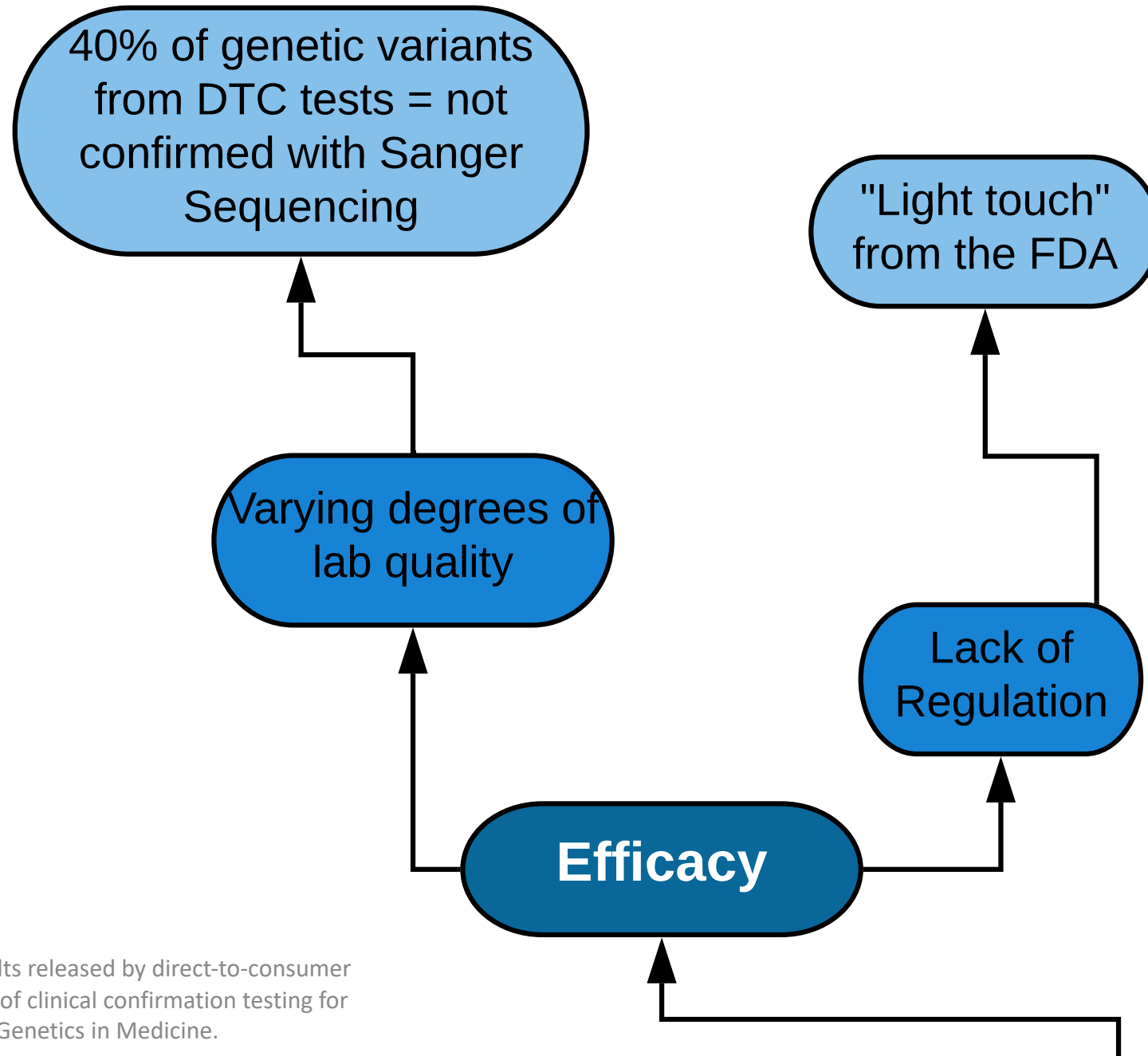
Semi structured interviews Across

Across four sites

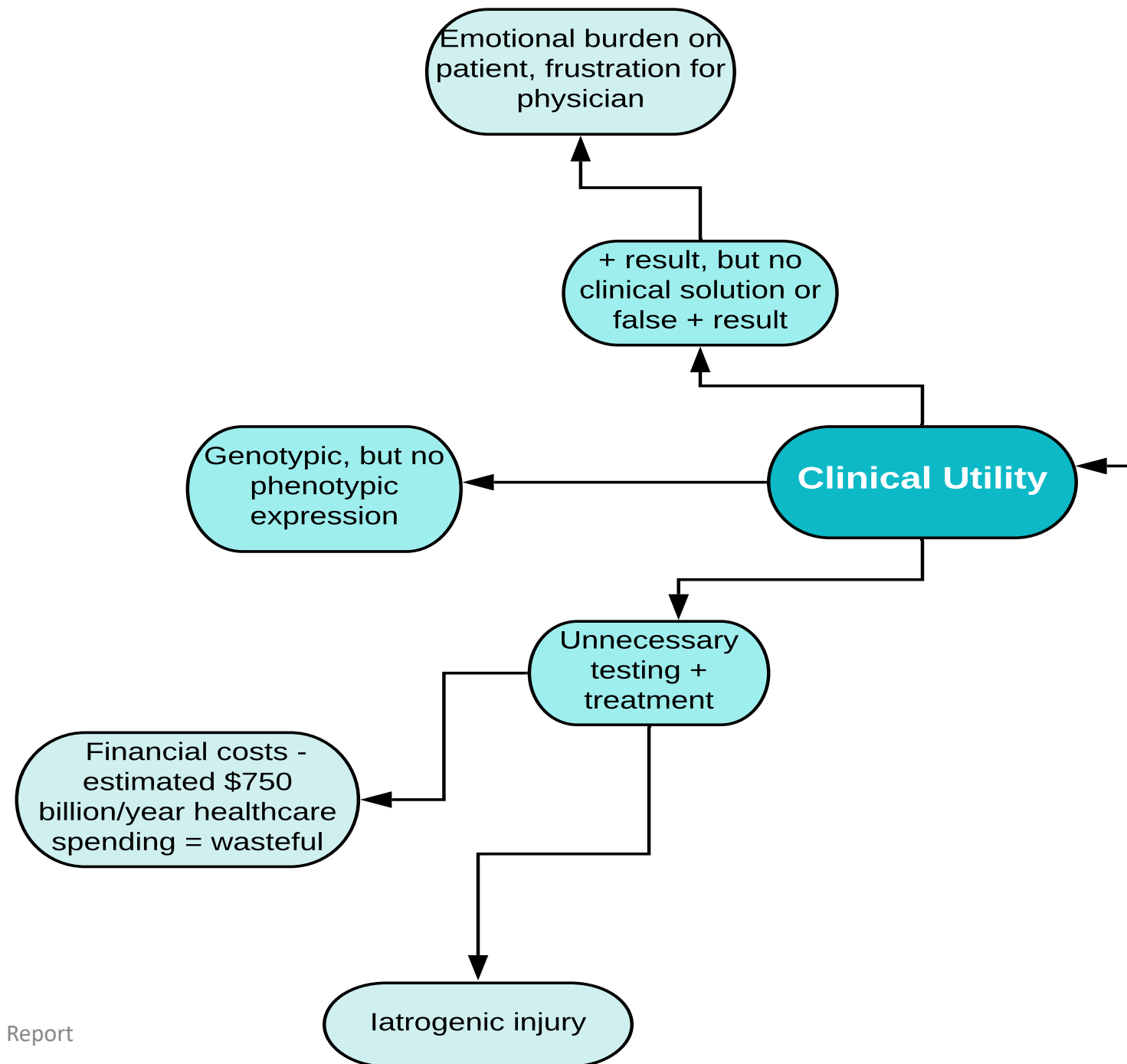
2019 Interview Study: Non-Geneticist Physician Responses Regarding Unsolicited Genetic Results

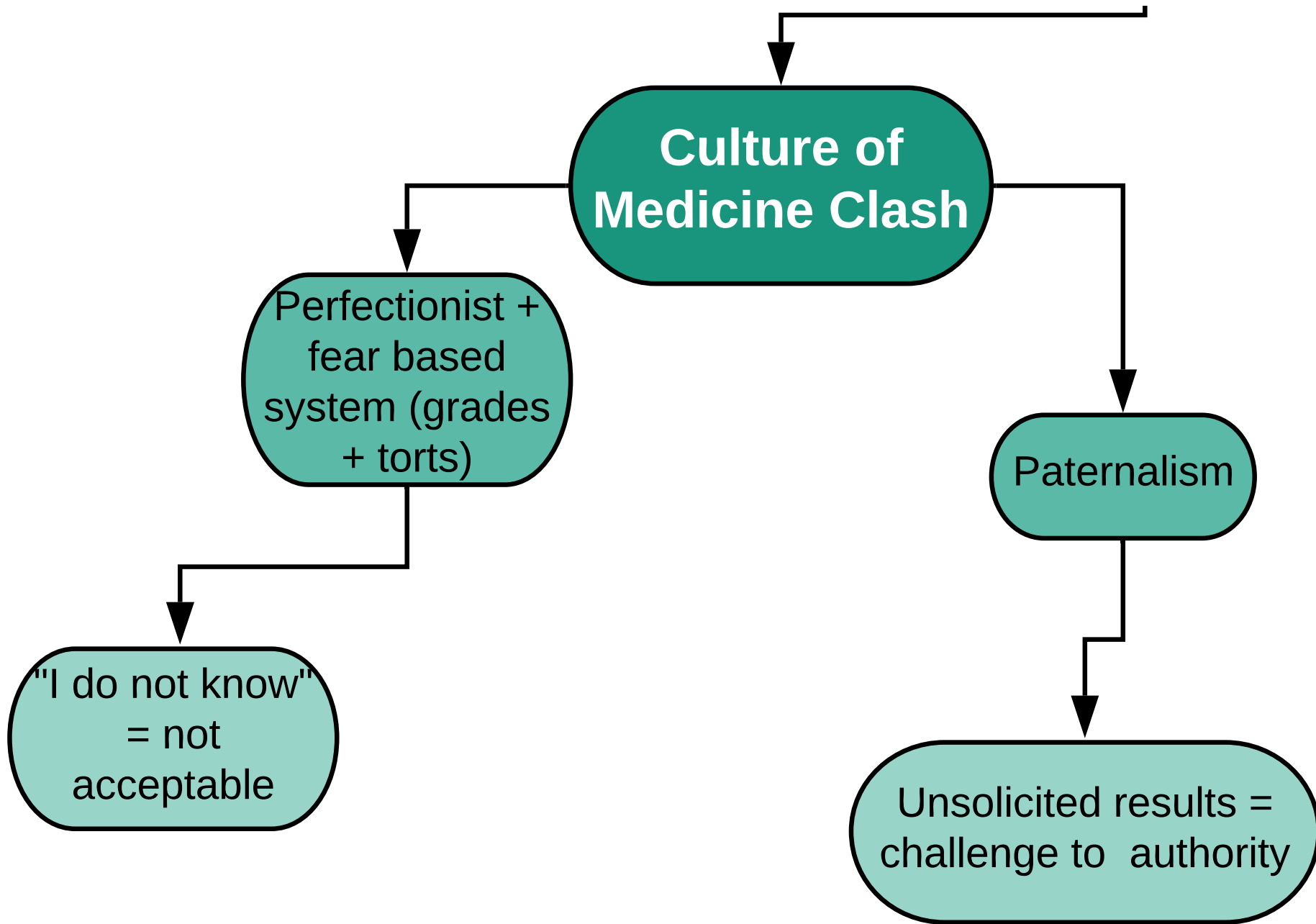


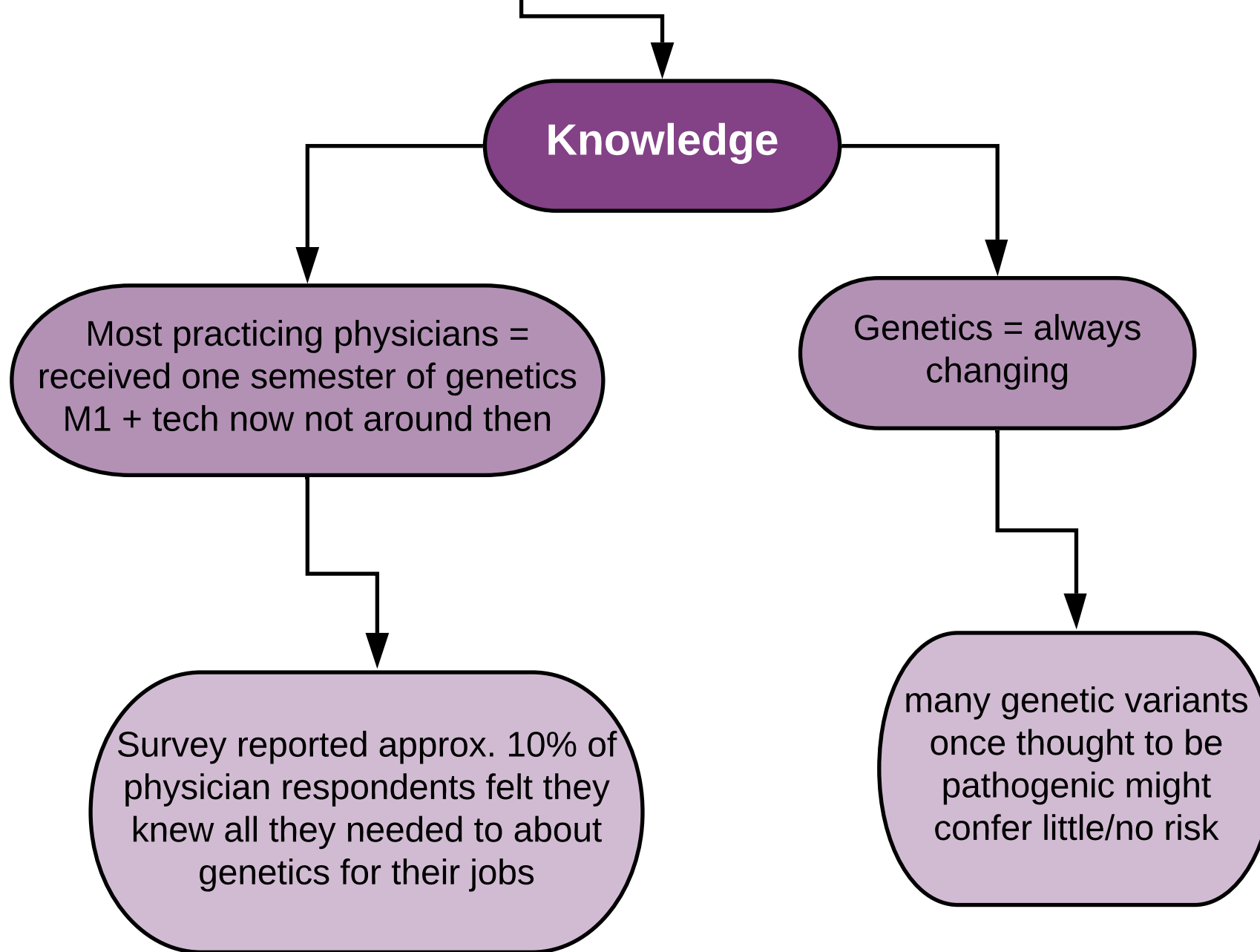


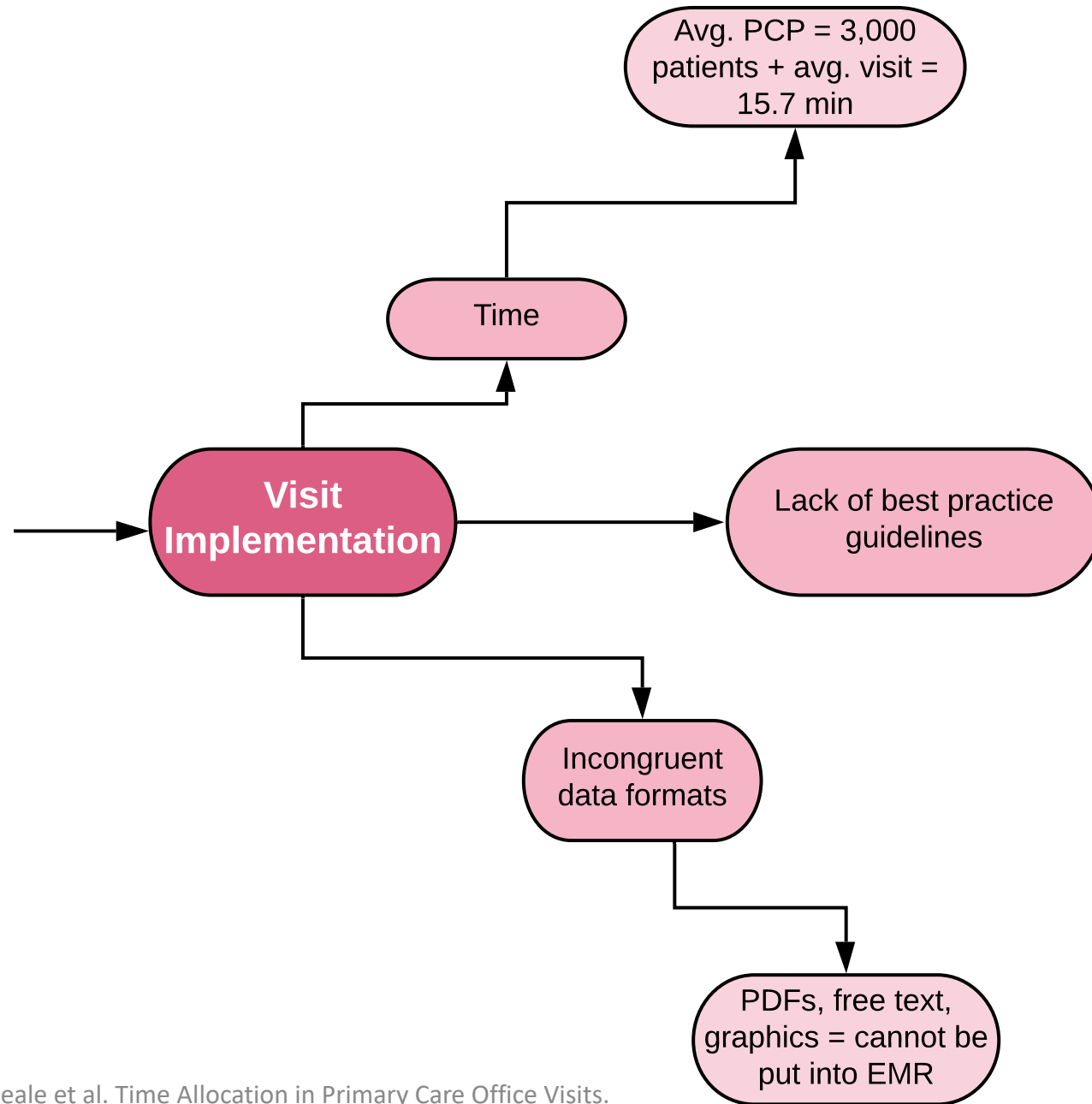


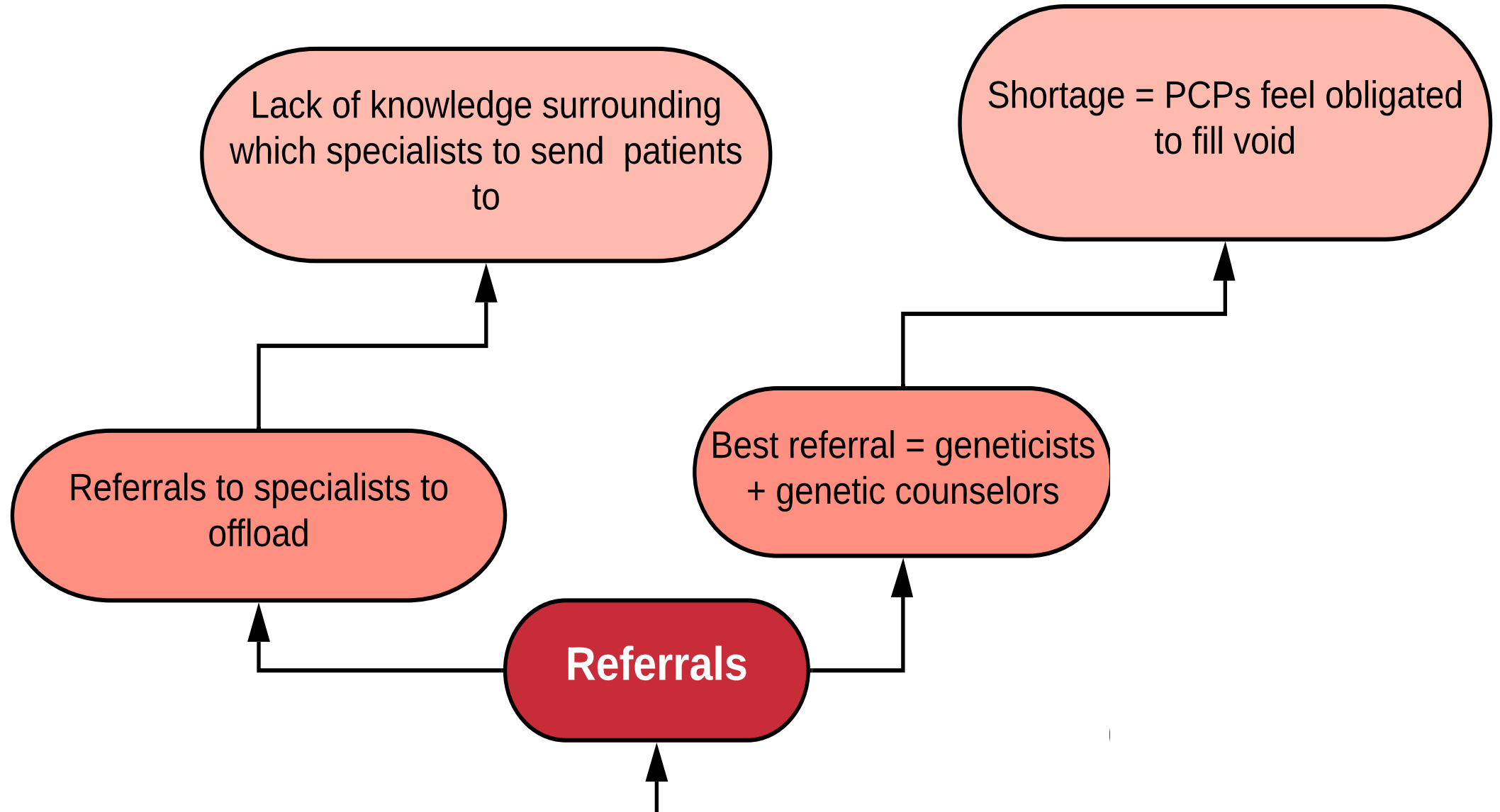
Tandy-Connor et al. False-positive results released by direct-to-consumer genetic tests highlight the importance of clinical confirmation testing for appropriate patient care. *Genetics in Medicine*.












2019 Interview and Pilot Trial Study: Consumer Generated Health Data

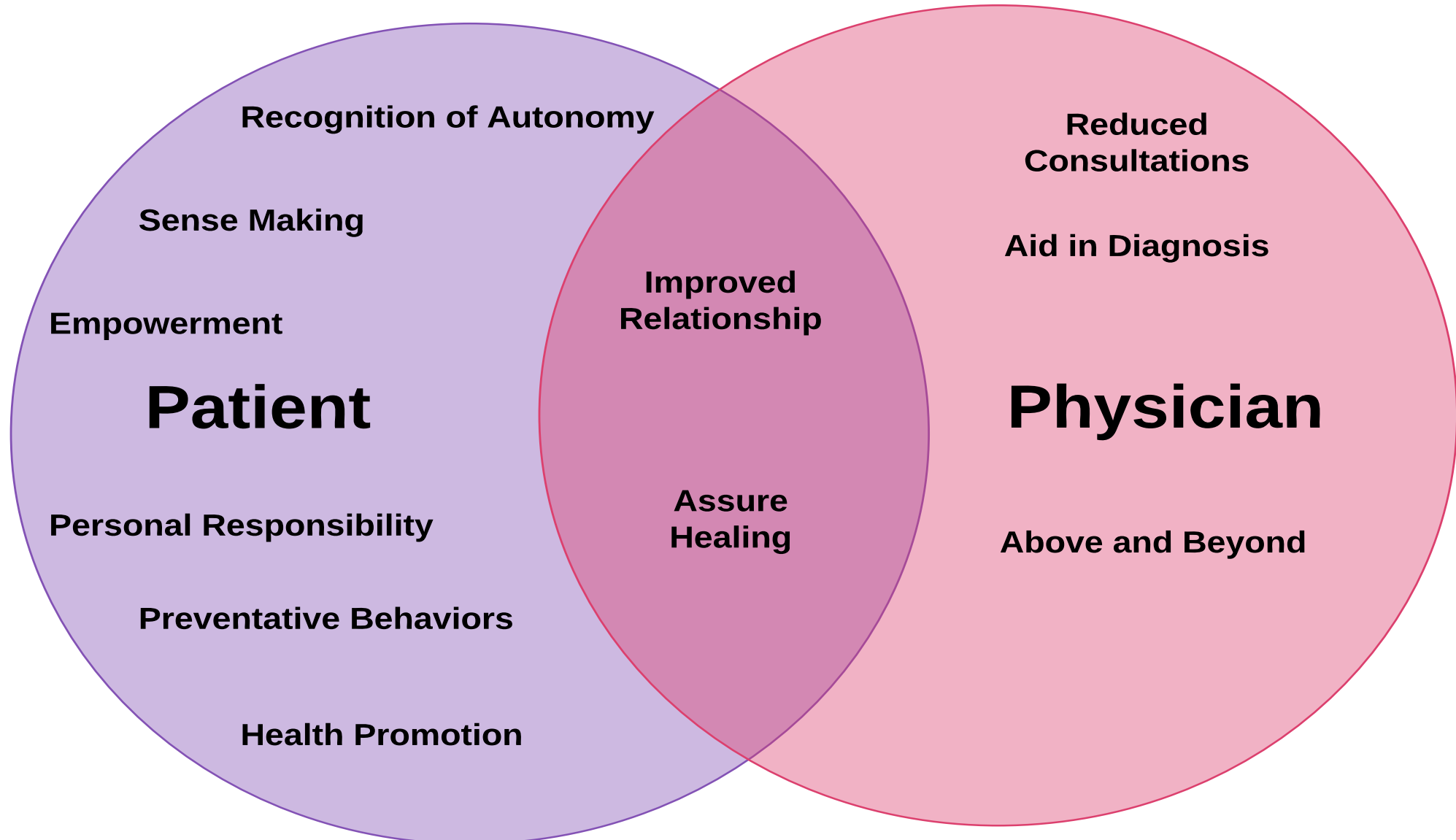
Part 1 = semi-structured interviews of patients, caregivers, and doctors who were experienced in consumer-generated photography



Part 2 = pilot clinical trial with 30 parents of children undergoing laparoscopic appendectomy surgery

- Parents sent surgical site pictures to physician for 10 days post op

Patient and Physician Perceptions of App Based Photo Data



What sets this study apart...

- Physician is involved throughout
- Data has clinical utility
- Physician has the knowledge to interpret the data
- Time saving and improves workflow

Moving forward...

- Strike a balance between:
 - Technological innovation + regulation
 - Individual + professional autonomy
 - User friendliness and clinical utility
- Develop a pathway for clinical integration

Resistance is futile. Accept, integrate, and improve.

Skills Learned

- Systematic review best practices
 - Database selection
 - Free text vs. structured vocabulary
 - Boolean logic
 - PRISMA checklist
- Citation management
- Work individually and in a collaborative environment
- Troubleshooting

Acknowledgements

- Bloss Lab Members
 - Mentor Dr. Cinnamon Bloss
 - Dr. Cynthia Schairer
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 - Caryn Rubanovich
 - Carolina Mayes
 - Colin Burke
 - Sneha Lakshmanan
 - Kevin Ngo
 - Justin Castro
- DBMI Faculty and Staff



THANK YOU!

Questions?

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▶TR/01▶03

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