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## **Practical Issues in Using the TDF: Methodology of TDF**

**Andrea Patey, MSc (PhD Candidate, City University London)**

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## Behaviours

- Routine Preoperative Testing in Low Perioperative Anaesthetic & Surgical Risk Procedures - Anaesthesiologists, Surgeons
- Routine Use of Fetal Monitoring during Labour – Birthing Unit nurses, Obstetricians, Family Physicians, Midwives
- Use of Lumbar spine X-rays for acute low back pain in chiropractic patients – Canadian & US chiropractors
- Follow-up Bone Mineral Density Screening or Osteoporosis in Women +65yrs with Wrist Fracture - Family physicians, ER Physicians

# Behaviours

- Routine Preoperative Testing in Low Perioperative Anaesthetic & Surgical Risk Procedures - **Anaesthesiologists, Surgeons**

- Routine Use of  
nurses, Obstetric

**Anesthesiologists' and surgeons' perceptions about routine pre-operative testing in low-risk patients: application of the Theoretical Domains Framework (TDF) to identify factors that influence physicians' decisions to order pre-operative tests**

- Use of Lumbar  
chiropractic

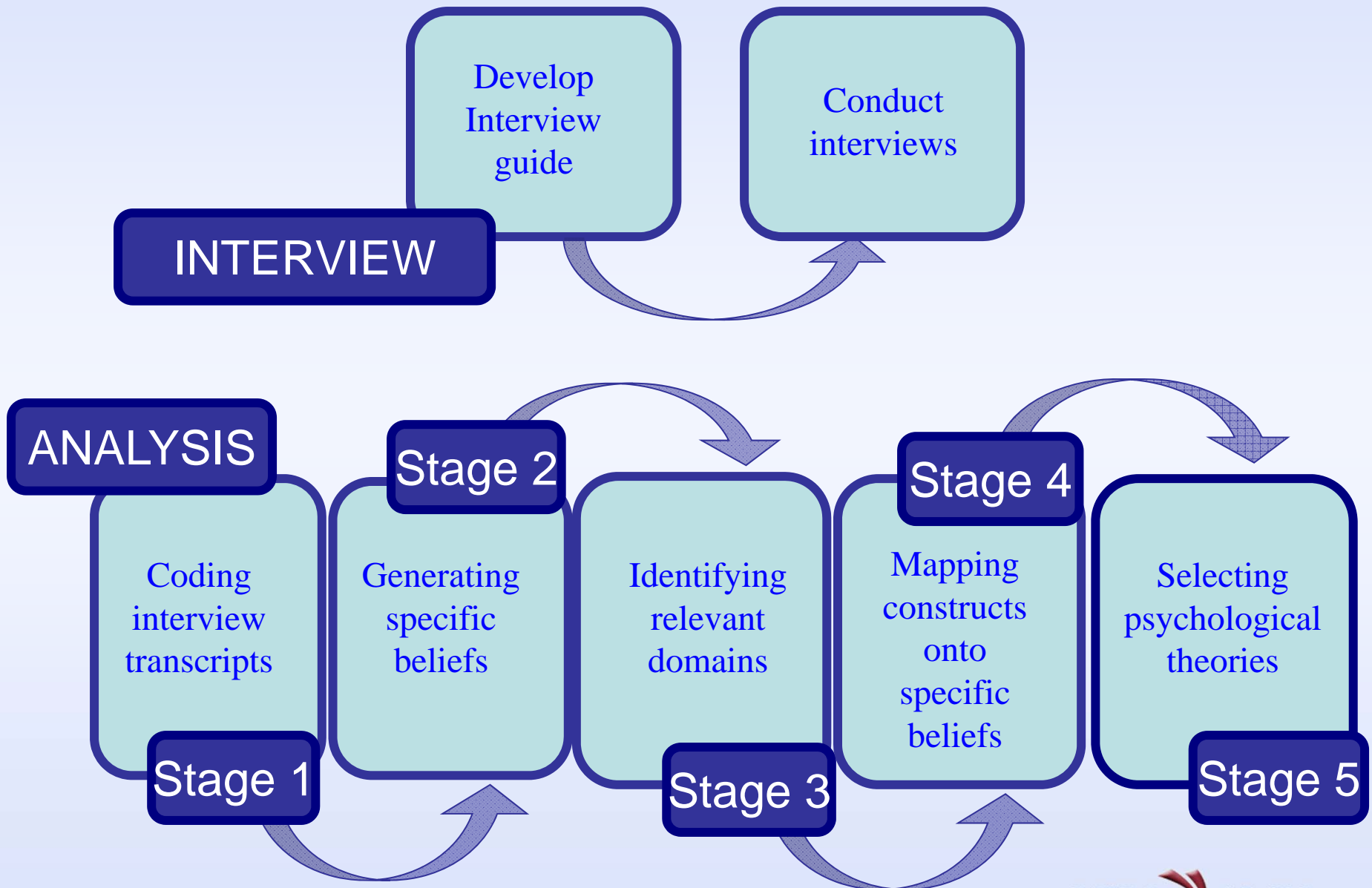
- Follow-up ECG  
Women +65  
Physicians

Andrea M Patey, Rafat Islam, Jill J Francis, Gregory L Bryson, Jeremy M Grimshaw *Implementation Science* 2012, **7**:52 (9 June 2012)

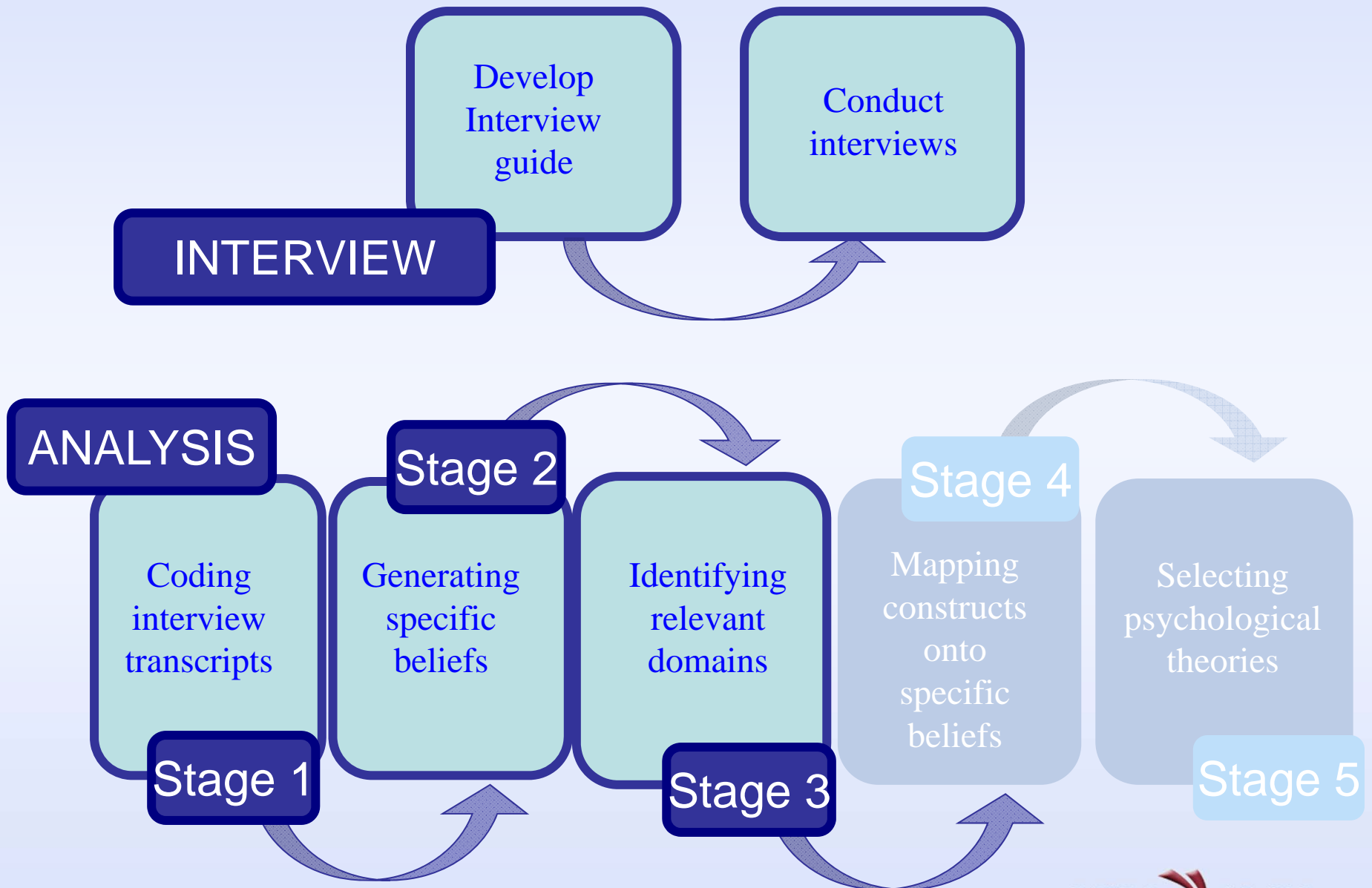
## Methodological Steps



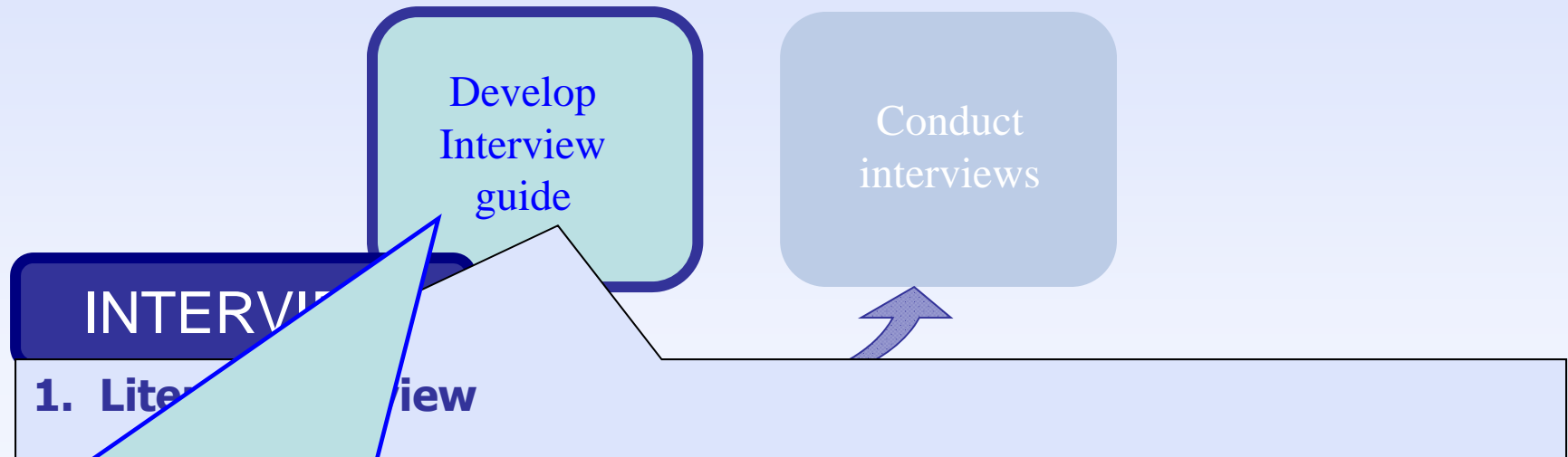
## Methodological Steps



## Methodological Steps



## Methodological Steps



### •CAS Guideline for Pre-anesthesia

*“Policies regarding pre-anesthetic assessment should be established by the Department of Anesthesia. The primary goal of pre-anesthetic assessment is to obtain the information required to plan anesthetic management.”*

- Seemed pretty straight forward
- Should mainly involve Anesthesiologists (with minor input from surgeons)

the core issues in the  
questions in the article

interviews

## Methodological Steps

Develop  
Interview  
guide

Conduct  
interviews

### INTERVIEW

1. Literature review
2. Meet with few key informants to identify the core issues in the area of interest (**3 people**)
3. Develop interview questions based on sample questions in the article to sufficiently represent each domain (**4 Drafts**)
4. Pilot test the interview guide
5. Make necessary changes based on the pilot interviews

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## Methodological Steps

Develop  
Interview  
guide

Conduct  
interviews

### INTERVIEW

1. Literature review
2. Meet with few key informants to identify the core issues in the area of interest
3. Develop interview questions based on sample questions in the article to sufficiently represent each domain
4. **Pilot test the interview guide (2 pilots)**
5. **Make necessary changes based on the pilot interviews (Draft 6)**

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## Methodological Steps

INTERVIEW

“Surgeons are able to order specific tests...” (A1)

“The guideline is the surgeons... if any test is ordered will order the tests.” (A4)

1. 4<sup>th</sup> interview realized a problem

ANALYSIS

“..if a surgeon ordered it, I’m somewhat more reluctant to cancel one of their tests even though I don’t feel it’s that necessary.” (A2)

“I think there needs to be communication between anesthesiologists and surgeons about which tests are required.” (A3)

## Methodological Steps

Develop  
Interview  
guide

Conduct  
interviews

### INTERVIEW

- 1. 4<sup>th</sup> interview realized a problem**
- 2. Added Surgeons**
3. 16 interviews
  - 11 anesthesiologists
  - 5 surgeons

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## Methodological Steps

Develop  
Interview  
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Conduct  
interviews

### INTERVIEW

- 1. 4<sup>th</sup> interview realized a problem**
- 2. Added Surgeons**
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## Methodological Steps



### ANALYSIS

Coding  
interview  
transcripts

Stage 1

- 1. Code interviews by domains (2 coders)**
- 2. Code them into domains - constructs may help in understanding!**
3. Establish a coding protocol with the pilot interviews
4. Calculate Kappa

# Methodological Steps

INTERVIEW

Develop  
Interview  
guide

- Started with the protocol that had been established from previous studies (both Blood Transfusion Studies)
- 4 interviews to set protocol

ANALYSIS

Coding  
interview  
transcripts

Stage 1

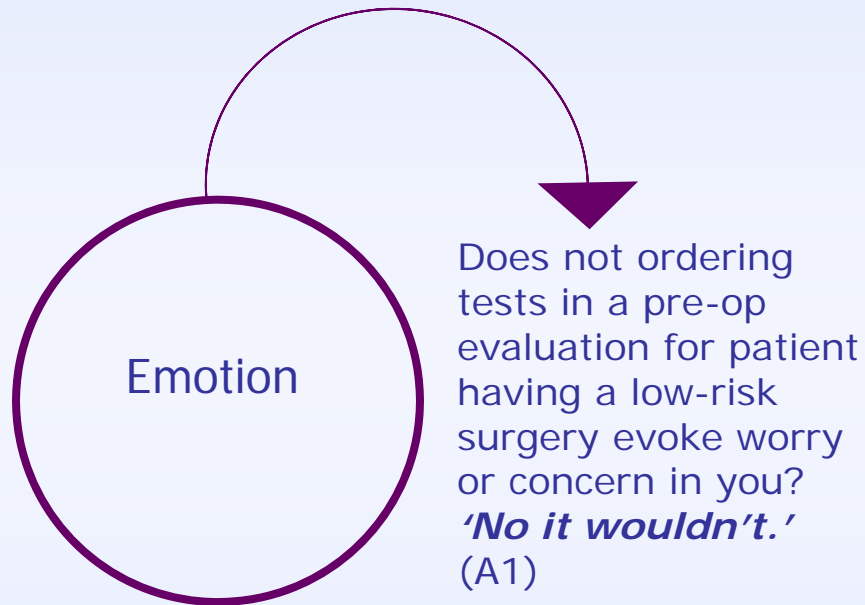
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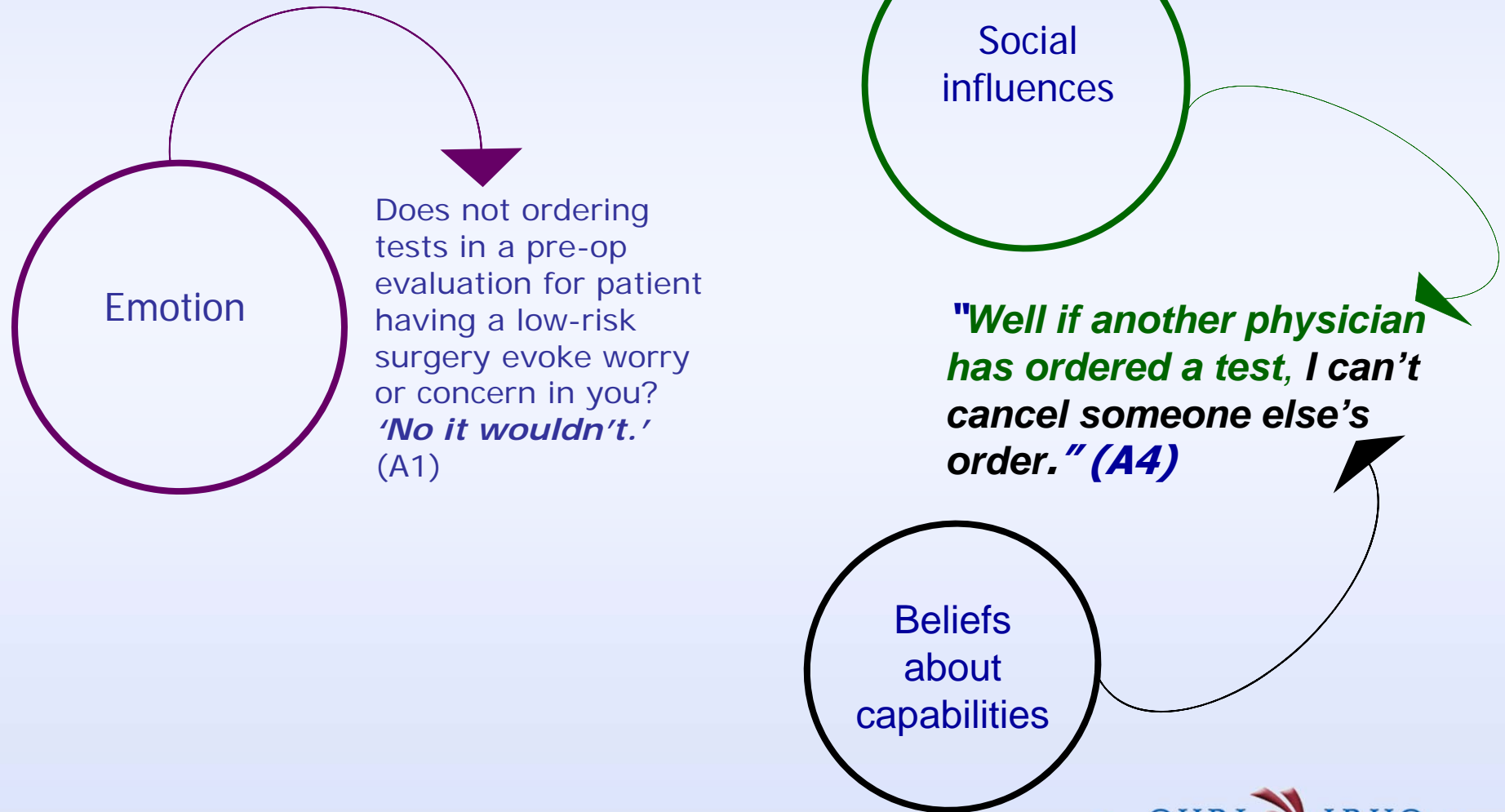
## Coding by Domains

Tried to tie each statement to a domain



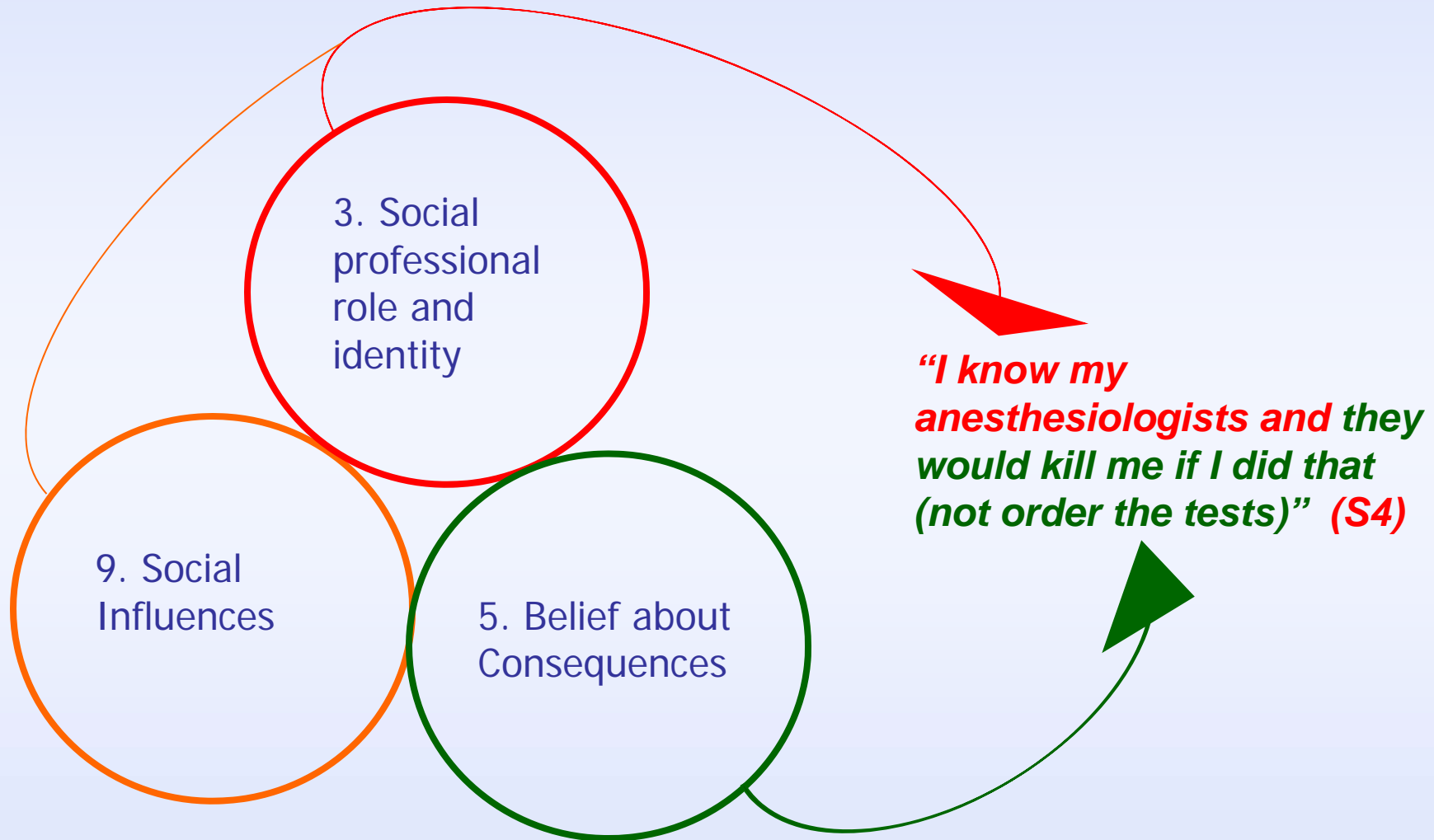
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## Coding by Domains



# Methodological Steps

INTERVIEW

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ANALYSIS

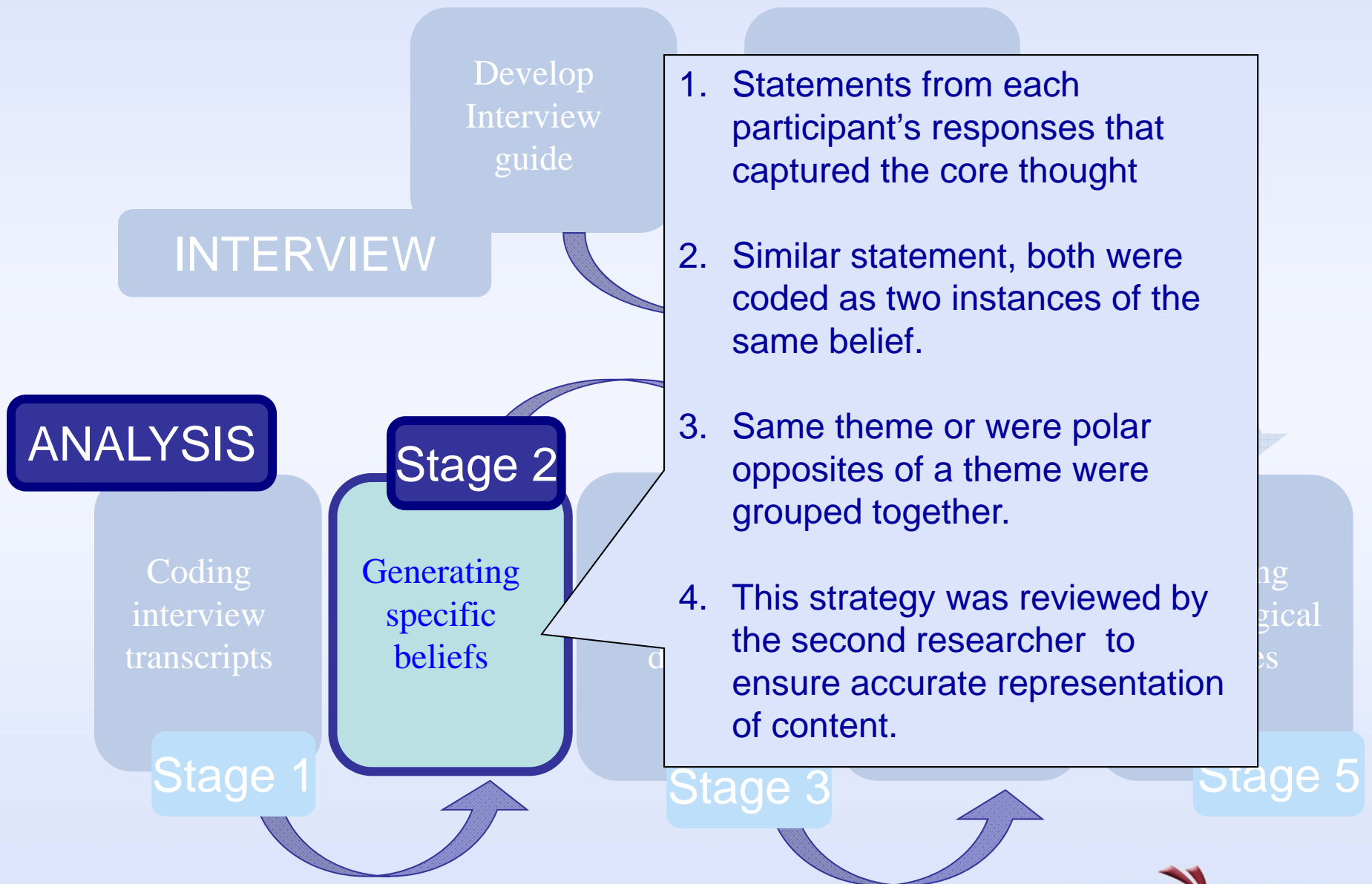
Coding  
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Stage 1

1. Code interviews by d
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4. Calculate Kappa ( $\kappa = 0.84$ ; 95 % CI 0.807 to 0.878)

Page 5

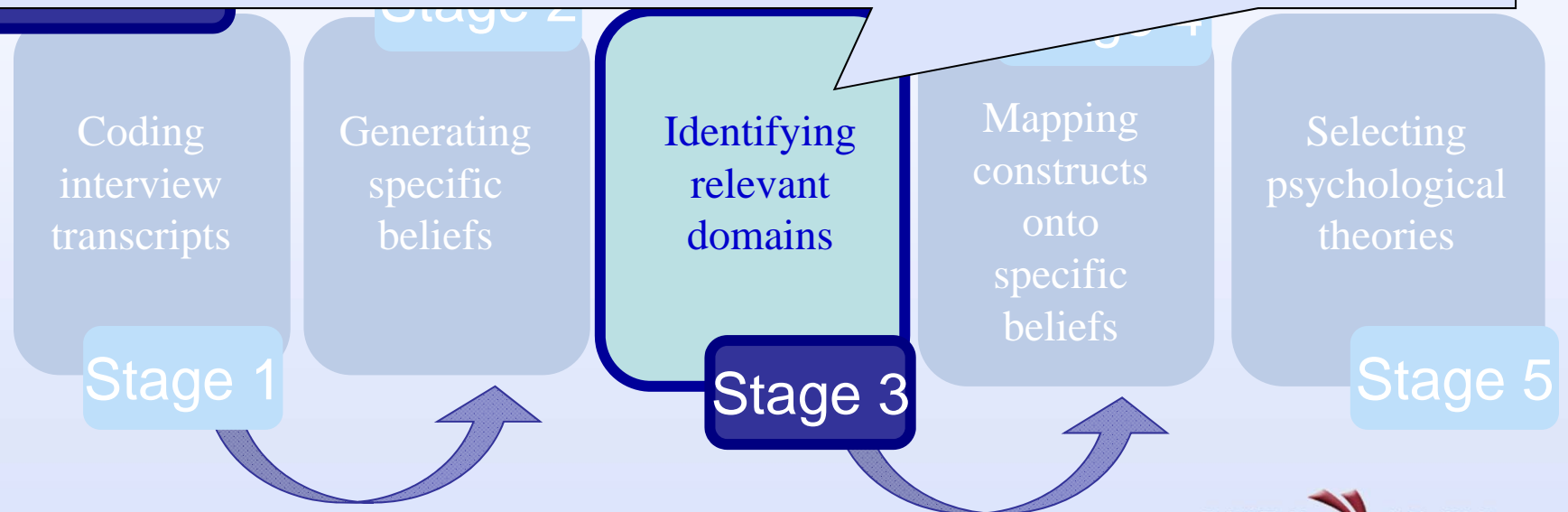
# Methodological Steps



## Methodological Steps

1. Relevant domains were identified through consensus (AMP, RI, JJF).
2. 3 factors were considered
  - *frequency of the beliefs across interviews;*
  - *presence of conflicting beliefs;*
  - *perceived strength of the beliefs impacting the behaviour.*
3. All of these factors were considered concurrently in establishing domain relevance.

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## Domain Selection

*My emotions do not influence whether or not I order routine tests. (n = 16)*

*It's very easy for me to order tests.(n = 16)*

Emotion

Does not ordering tests in a pre-op evaluation for patient having a low-risk surgery evoke worry or concern in you? **'No it wouldn't.'** (A1)

***If they do not need it and I am not ordering it, I'm not at all concerned about it, no.'*** (S4)

Belief about capabilities

***'I pick an order sheet from the desk, I write it down and it happens...'*** (A1)

***'It is dead easy to order tests during a pre-op evaluation. We just write it in and that's part of that's part of why things are the way they are.'*** (S1)

## Domain Selection

Beliefs about consequences

*Reducing tests may delay or cancel a patient's surgery.*  
(n = 9)

*'...if they arrive on the day of surgery and they haven't gotten one and they're going to delay surgery in order to get one, then that's a bit of a problem.'* (A3)

*'The worst thing that can happen the day of there's a bit of surprise in the patient's medical condition and they get cancelled, (right) that's the worst thing that can happen.'* (S2)

*Reducing routine tests would result in little or not change in outcomes.*  
(n = 10)

*'In the vast majority of patients nothing, they would just come through surgery and nobody would care.'* (A2)

*'If I didn't order any at all...I don't think it could make a heck of a lot of difference.'* (S5)

*Reducing routine tests would save money.*  
(n = 11)

*'Well, I mean on the positive side it's going to save us money.'* (A4)

*'The negative effects of pre-op testing, well the cost is one'* (S3)

*Reducing routine testing would avoid unnecessary investigation.*  
(n = 5)

*'Another positive is that it would avoid unnecessary investigations or delay in proceeding to the surgical procedure without changing the management.'* (A6)

*'One of the reasons I don't like ordering lots of tests is I get false positives and then I have to investigate them and I'm not crazy about investigating false positives especially in areas that I don't practice in.'* (S3)

# Theoretical Domains Framework

## Strengths:

- An inclusive method in the process of selecting relevant theory/ies
- Provides systematic approach in selecting theory/ies
- Gives structure to the interview guide
- Methodology unprecedented – alternative?

## Weaknesses:

- Lack of definition of the domains
- Same construct in multiple domains (difficulty in selecting one over the other)
- Difficult to distinguish between domains (Professional Role & Identity) and Domain 9 (Social Context) (broad)



## Things to Consider:

- Interview questions alongside a construct is not necessarily exclusive for that construct
- Some domains tend to hang together (behaviour specific)
- **Quality of statement maybe compromised if you try to delineate the domain specific statements**

## Coding by Domains



- “...*we’re working as a team in our pre-assessment unit and even though we kind of have the final say on the testing that gets done or not done, the testing will be, most of the testing will be ordered either by the nurse some of the testing may be ordered by the physician, before they even get to the PAU” (A3)*”



**Thank you!**

**Discussion**



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# Canadian Intensive Care Physicians' Beliefs About Their Transfusion Behaviour: Application of the TDF to Select Theory

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Senior Research Associate, OHRI

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# Behaviours explored using the TDF

1. Red blood cell transfusion behaviour in patients with borderline hemoglobin among Canadian ICU Physicians

A cross-country comparison of intensive care physician' beliefs about their transfusion behaviour: A qualitative study using the theoretical domains framework.

*Implementation Science* 2012, 7:93 (21 September 2012)

Rafat Islam, Alan T Tinmouth, Jill J Francis, Jamie C Brehaut, Jennifer Born, Charlotte Stockton, Simon J Stanworth, Martin P Eccles, Brian H Cuthbertson, Chris Hyde, Jeremy M Grimshaw

2. Red Blood Cell Transfusion behaviour among Orthopedic surgeons
3. Smoking Cessation Management among Family Physicians

# Background

- **TRICC trial (Hébert *et al.*, 1999)**
  - Large randomized trial comparing restrictive with liberal RBC transfusion.
  - Suggested restrictive transfusion was at least equivalent & possibly superior to liberal transfusion.
- Different behavior change interventions are being used in hospitals and blood transfusion services.
- Rationale for the choice of different interventions was not explicit.
- Definitive conclusions about the effectiveness of different interventions were absent.

# Target Behaviour

*“watching and waiting instead of transfusing red blood cells in patients with borderline hemoglobin”*

# Method

## Phase 1

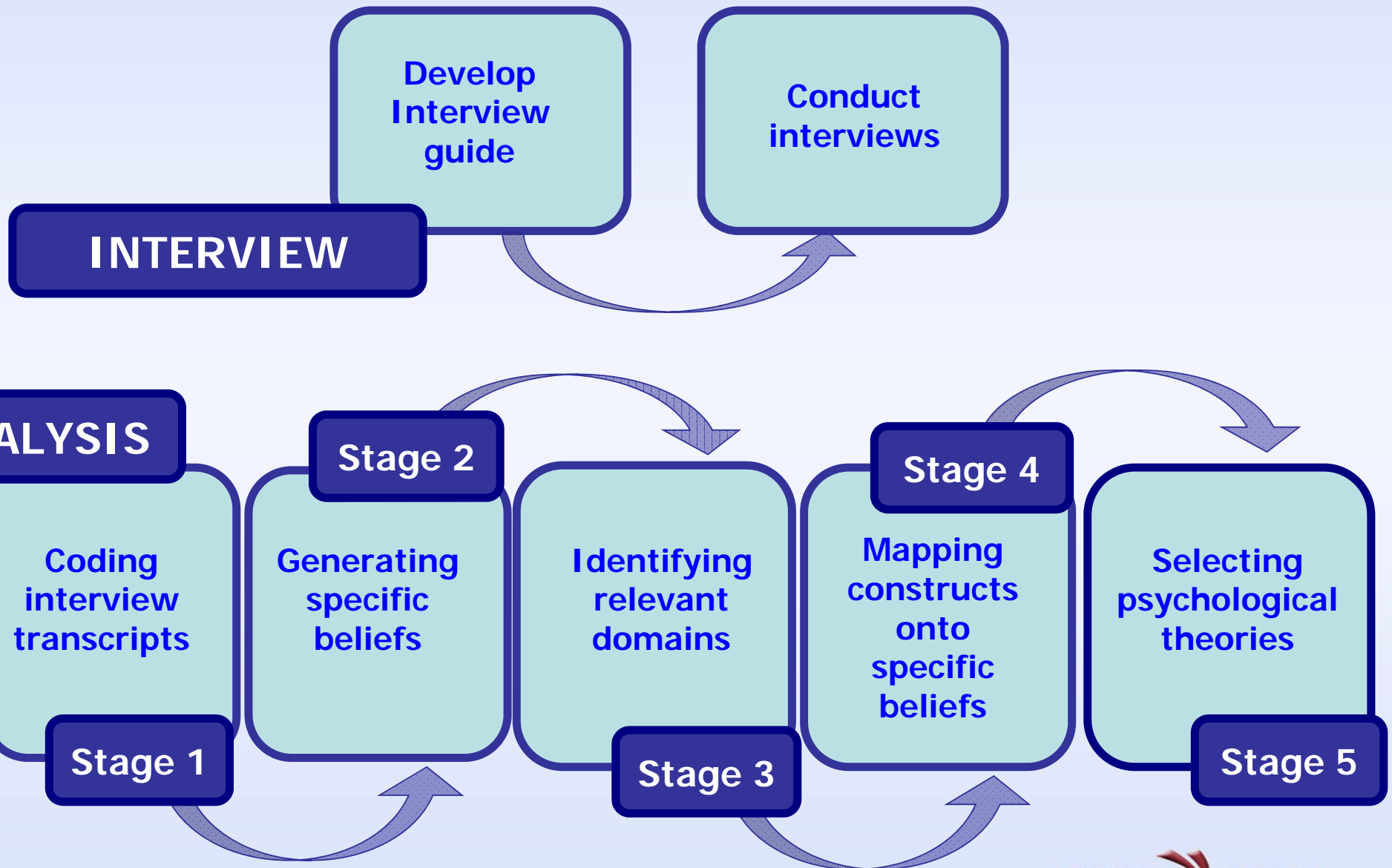
- Semi-structured interviews of ICU physicians using the TDF.
- Selection of theories of behavior change.
- Development of theory-based survey instrument.



## Phase 2

- Mail questionnaire to a random sample of intensive care physicians in Canada.

# Methodological Steps: Phase 1

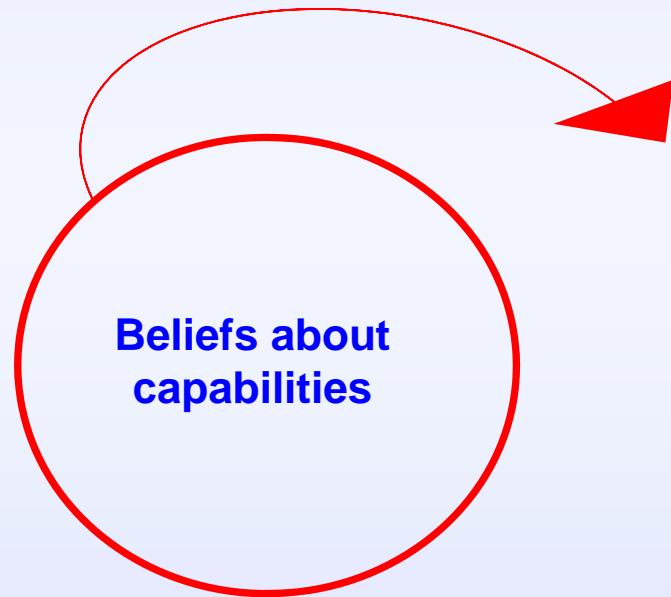




# Method: Analysis

## Stage 1: Coding interview transcripts

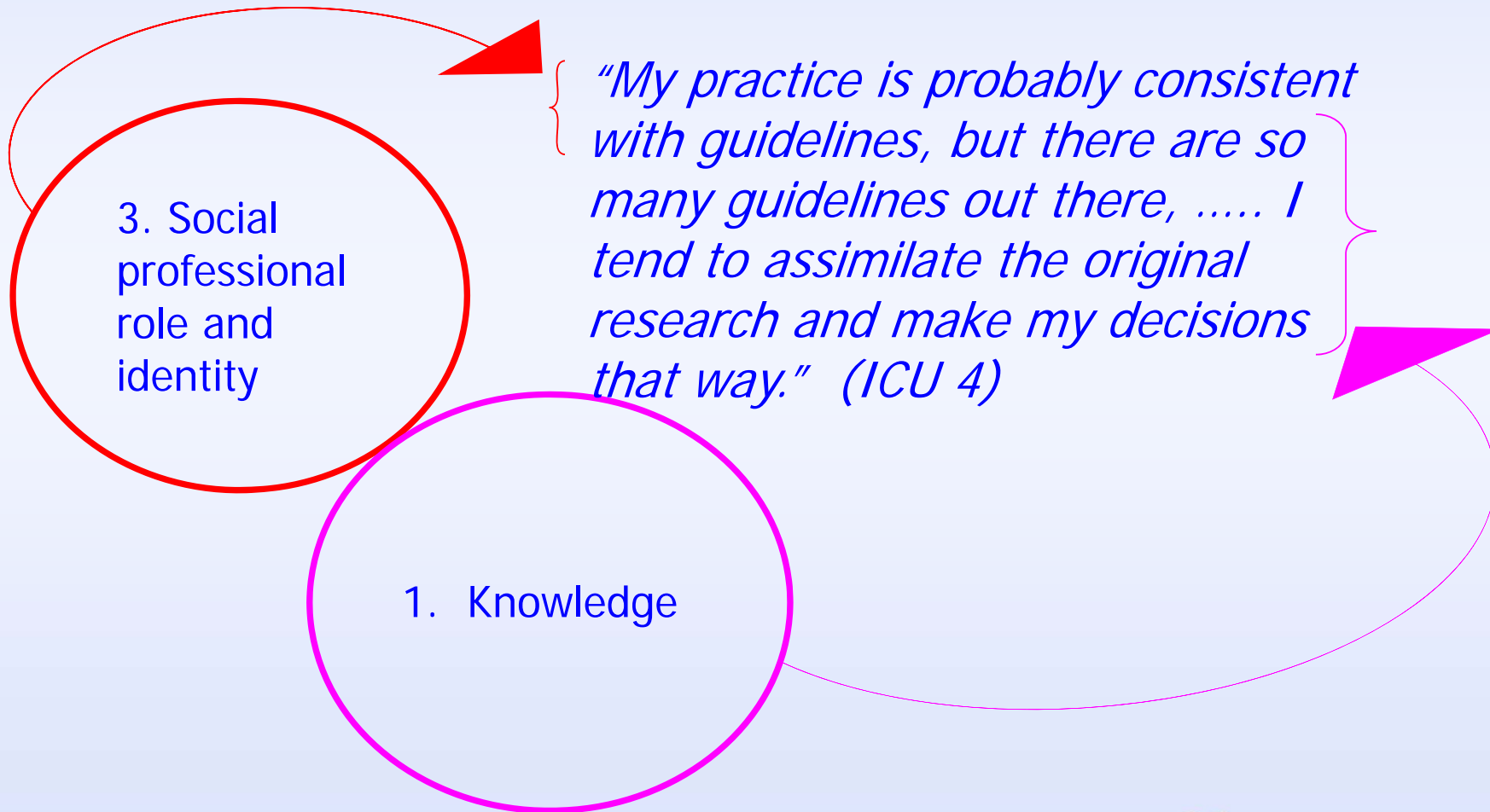
- Tried to tie each statement to a domain



*"Depending on the situation, if the patient is stable it's not hard; if they are unstable it is very difficult." (ICU 2)*

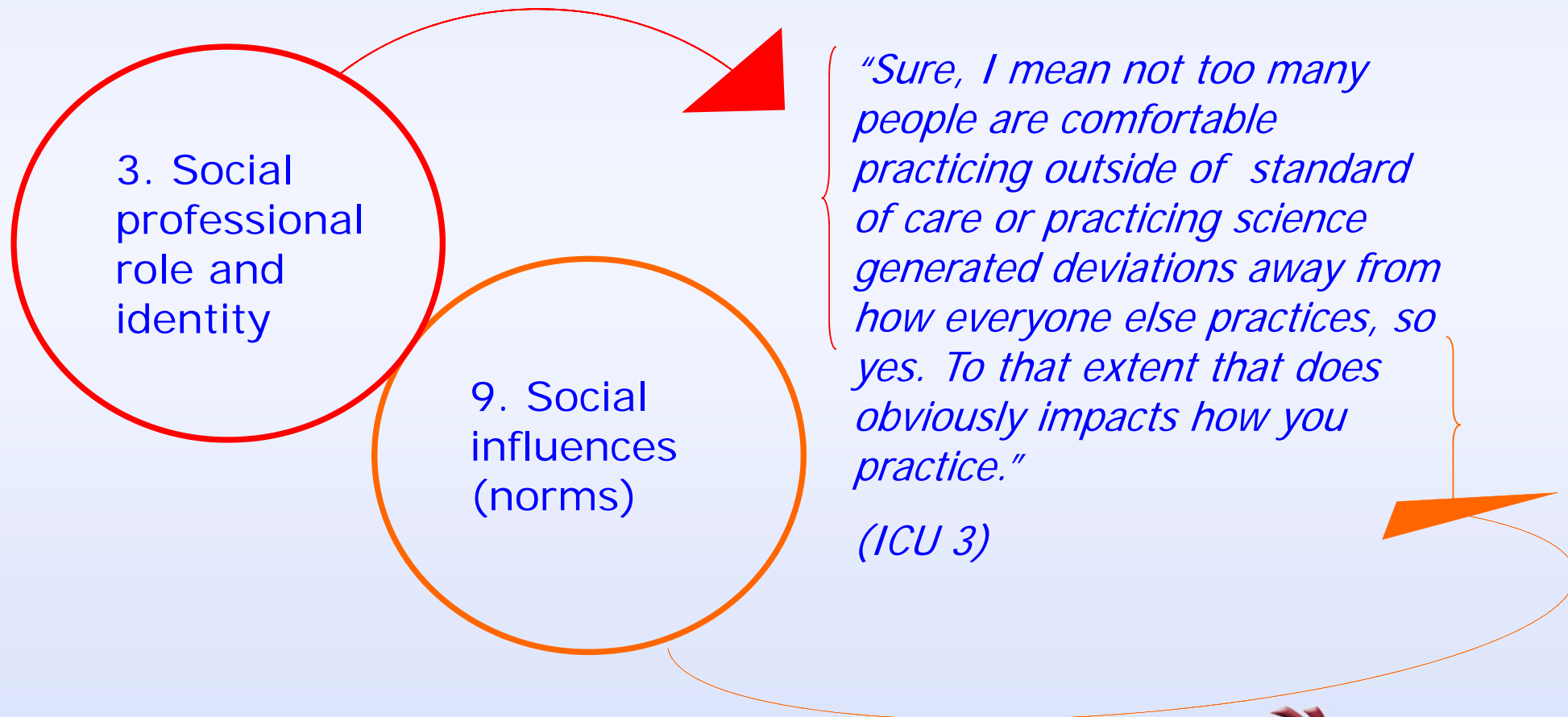
# Method: Analysis

## Stage 1: Coding interview transcripts



# Method: Analysis

## Stage 1: Coding interview transcripts



# Method: Analysis

## Stage 2: Generating Specific beliefs

Theoretical Domain	Quotes	Specific Beliefs	
Beliefs about capabilities	<p>"...if it is a borderline case and nothing significantly changes probably I can trust my team to stick with the plan." (ICU 3)</p> <p>"Very confident, they are excellent here." (ICU 6)</p>	I am confident that the ICU team can manage by watching & waiting.	6
	<p>"Depending on the situation, if the patient is stable it's not hard; if they are unstable it is very difficult." (ICU 2)</p> <p>"Sometimes the problem is when they are going to another care unit...when they go out of the ICU they get a blood transfusion." (ICU 7)</p>	I am confident provided that the patient is stable and in the ICU.	5
	"There are a few ICU physicians, they decide what patients get transfused in the ICU, full stop, nobody else decide." (ICU 8)	I am in complete control.	3
	"You know I am very comfortable, I don't have any problems..."(ICU 7)	I am confident to watch & wait.	8

# Generating Specific Beliefs

## Examples:

*“ There is not a ton of evidence out there.”*

**More evidence is required to support restrictive transfusion practice. (6)**

*“There is more lack of evidence than evidence period.”*

*“I don’t specifically use those.”*

**I don’t adhere to any guidelines. (5)**

*“I haven’t printed them out and I am not informed enough about them.”*

*“Depending on the situation, if the patient is stable it’s not hard; if they are unstable it is very difficult.”*

**I am confident provided that the patient is stable and in the ICU. (5)**

*“Sometimes the problem is when they are going to another care unit...when they go out of the ICU they get a blood transfusion.”*

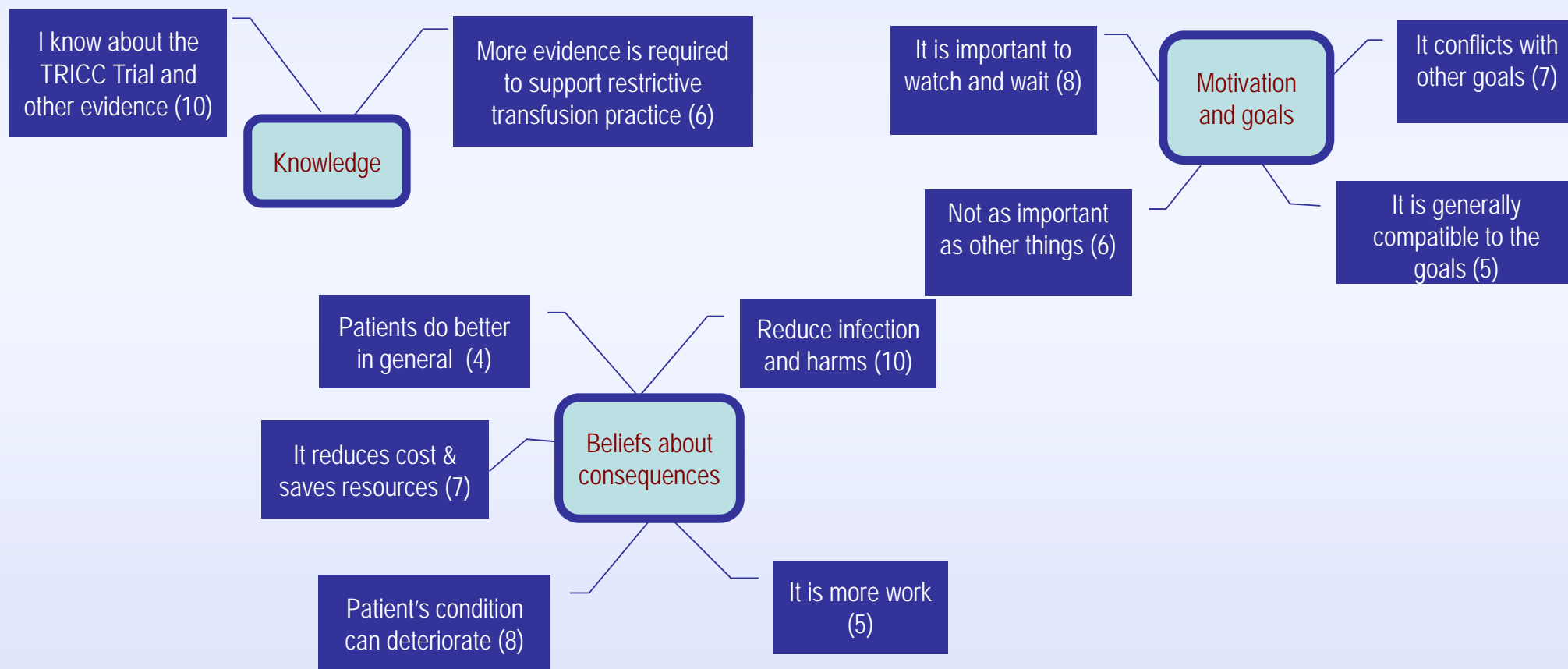
# Method: Analysis

## Stage 3: Identifying relevant domains

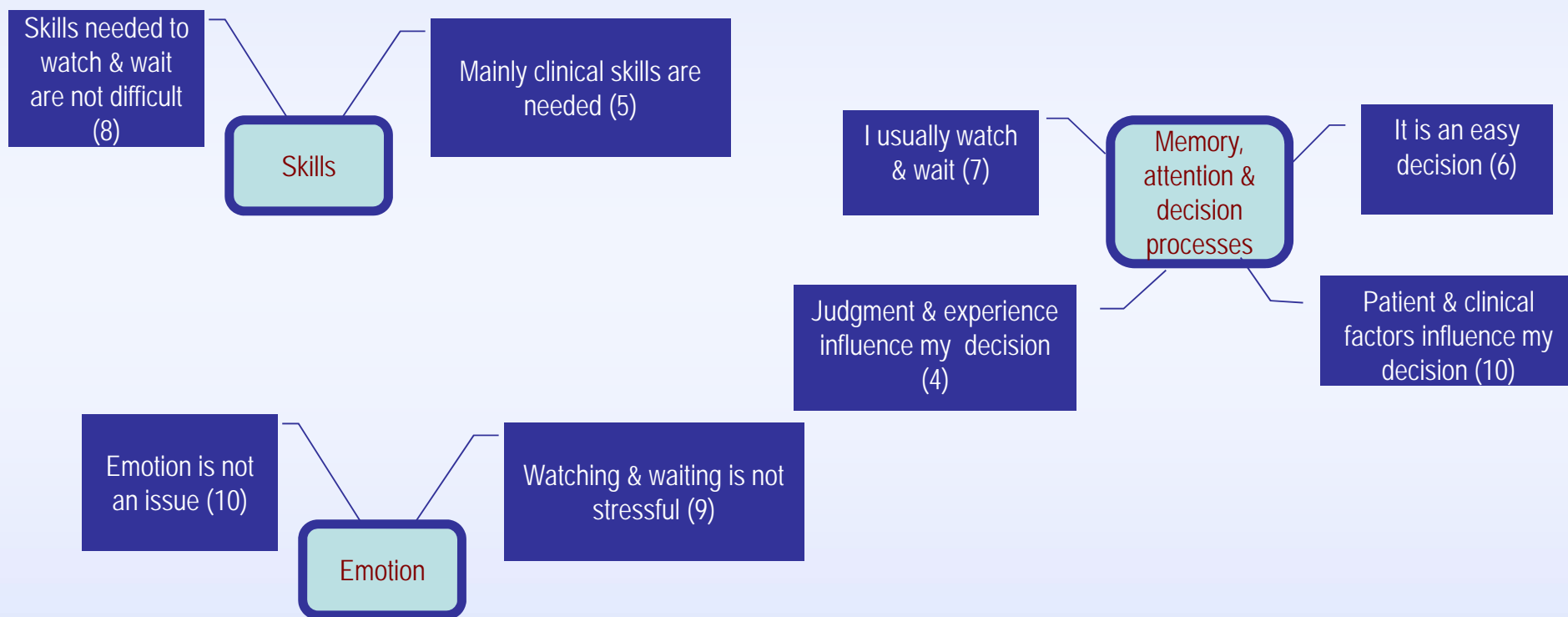
Relevant domains contained specific beliefs that might be potential barriers for changing transfusion behaviour.

- 3 factors were considered in judging domain relevance
  - a) Relatively high frequency of specific beliefs
  - b) Presence of conflicting beliefs
  - c) Evidence of strong beliefs that may impact on the behaviour
- Relevant domains were identified through consensus (RI, JB, JJF, AT)

# Domains Judged as Relevant



# Domains Judged as Not Relevant





# Method: Analysis

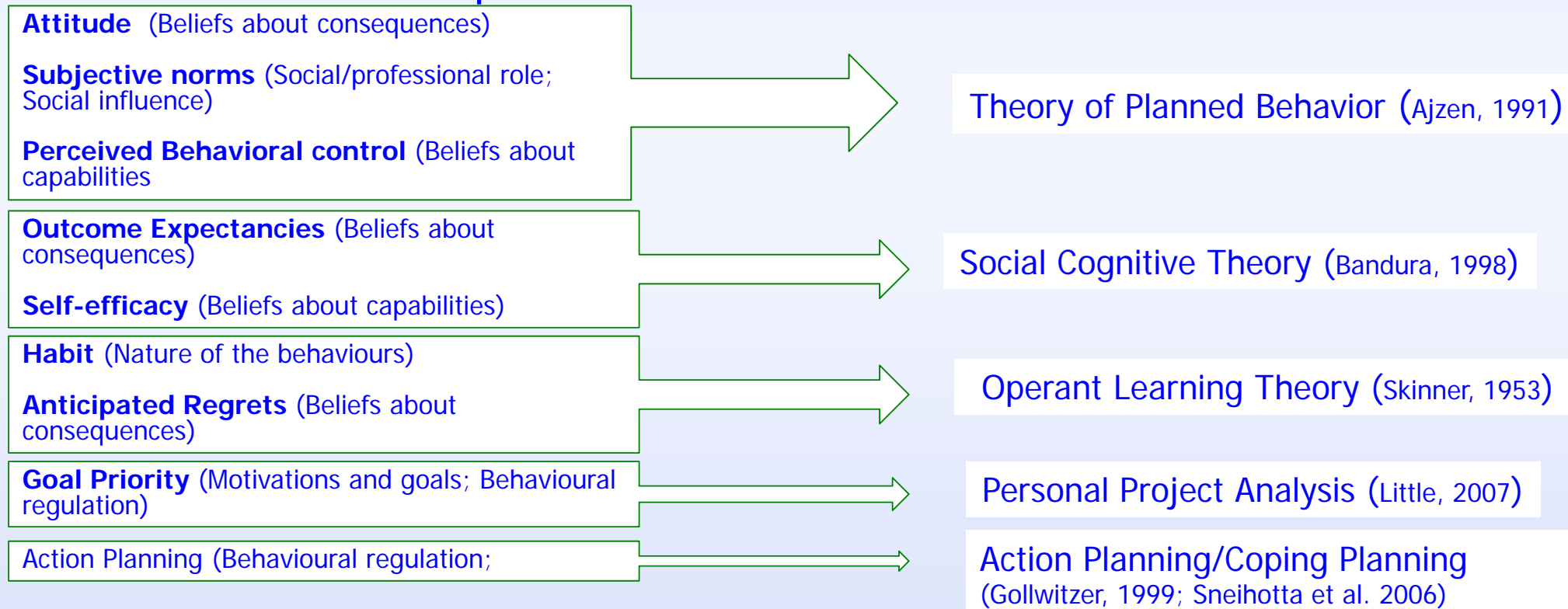
## Stage 4: Mapping Constructs on specific beliefs within a domain (3 coders)

Relevant domain	Specific Belief	Construct (Coder A)	Construct (Coder B)	Construct (Coder C)	Agreement
[1] Knowledge	I know about the TRICC trial & other evidences.	<u>Knowledge about scientific rationale</u>	<u>Knowledge about scientific rationale</u>	Knowledge	2/3
[3] Social/professional role & identity (self-standards)	I refer to evidence to guide my practice.	<u>Professional identity/boundaries/role</u>	Identity	<u>Professional role</u>	2/3
[4] Beliefs about capabilities	I am confident provided that the patient is stable & in the ICU	Self confidence/professional confidence	<u>Control-of behaviour &amp; material &amp; social environment</u>	Self-efficacy, <u>Control-of behaviour &amp; material &amp; social environment</u>	2/3
[9] Social influence (Norms)	Some members of health care team are uncomfortable watching & waiting	Team working	Social comparison	Social/group norms	0/3

# Method: Analysis

## Stage 5: Selecting psychological theories

- through team discussion & consensus
- that best represented all the constructs



# Strengths & Limitations of Using TDF for Selecting Theory

## Strengths:

- Offers theoretically derived domains from a comprehensive list of behavioural theories
- Can be used to identify theories systematically for
  - further testing
  - designing theory informed behaviour-change interventions

## Limitations:

- Effect of subtle differences between constructs within a domain on theory selection
- Familiarity of coders with certain theories

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- Dr. Chris Hyde